1st Submittal

Hydrologic and Hydraulic Drainage Report

Project Bruin
Sakioka Farms Business Park
Oxnard, California

Southwest Corner of Ventura Freeway & N Del Norte Boulevard

Date:

March 2020

Prepared for:

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Project Bruin

Hydrologic and Hydraulic Drainage Report

MARCH 2020 | ENTITLEMENT SUBMITTAL

Prepared By:

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This Drainage Report has been prepared by Kimley-Horn and Associates, Inc. under the direct supervision of the following Registered Civil engineer. The undersigned attests to the technical data contained in this study, and to the qualifications of technical specialists providing engineering computations upon which the recommendations and conclusions are based.

Preliminary_____ **March 9, 2020_____**

Eugene Davis Cowan, III CA PE #86803 Date

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1 INTRODUCTION

1.1 PROJECT DESCRIPTION

Seefried Properties, Inc. intends to develop a multi-level distribution center within the Sakioka Farms Business Park Specific Plan (SKBP SP) located in the City of Oxnard, CA. The existing Sakioka Farms Business Park Specific Plan area covers approximately 430 acres located in the northeastern portion of the City of Oxnard. The site is bounded on the north by Ventura Freeway (U.S. Route 101)' on the east by the Oxnard-Camarillo Greenbelt (agricultural preserve); on the south by the existing Proctor & Gamble plant and portion of the McInnes Ranch Business Park, and on the west by Rice Avenue. Refer to **Figure 1** for the Regional Map of Ventura County with the location of the Sakioka Farms Business Park Specific Plan location.

Within the SKBP SP, Project Bruin is located within the Light Industrial land use area that consists of approximately 300-acres. Refer to **Figure 2** for 2030 General Plan Use for the SKBP SP, and **Figure 3** for the Project Site Location. Per the SKBP SP Tentative Tract Map No. 5996-1, Project Bruin will be located on Lots 8, 9, 10, 11, and 12 for a combined project site of approximately 64.65-acres. Project Burin proposes a ±857,173 SF multi-level distribution center, employee parking, trailer parking, and trailer storage on the site. Refer to Figure 4 for the site plan that illustrates the location of these improvements.

This drainage report includes the hydrologic analysis for pre-developed and post-developed conditions, storm drain sizing, as well as the analysis of the onsite underground detention system used to detain peak flows and treatment with water quality design capture volume. Refer to the site-specific Storm Water Quality Management Plan for water quality treatment and analysis, **Appendix G**.

1.2 LAND USE AND ZONING

The project site is located within the Sakioka Farms Business Park Specific Plan, **Appendix O**, with land use designation of Light Industrial, and zoning designation of M-1.

1.3 WATERSHED

OVERALL WATERSHED DESCRIPTION

The project site is part of City of Oxnard Major Drainage Watershed, EF – East Fifth Street, as identified in **Figure 6**, of the City of Oxnard, PM NO. 5.1 – Background Summary, Public Works Integrated Master Plan, provided in **Appendix A**. The EF Watershed consists of approximately 1,119 acres that drains generally from the northwest to the southwest via mains and open channels that discharge to Ventura County Flood Zone 3's Revolon Slough, which is the northern tributary to Calleguas Creek. Additional information related to the Revolon Slough and Calleguas Creek has been provided in **Appendix B**.

SAKIOKA FARMS BUSINESS PARK PROJECT BRUIN

The existing topography ranges from elevation 67.0 to elevation 59.0 generally sloping from the northwest corner to the southeast corner. Per Tentative Tract Map No. 5996., the site will be mass graded with elevations ranging from 65.0 to 62.0 and regional detention basins will be constructed in Lot A and Lot B, immediately adjacent to Project Bruin, **Appendix K**

1.4 FEMA MAPPING

The project site is covered by Map Number 06111C0910E of the FEMA Flood Insurance Rate Map (FIRM) for Ventura County, California and Incorporated Areas. The City of Oxnard, community number 060417 & 060413, is included in this FIRM. None of the project area is within a FEMA-mapped Special Flood Hazard Area. The site is located within a shaded and unshaded Zone X. Shaded Zone X are areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood. Unshaded Zone X are areas determined to be outside the 0.2% annual chance flood. The effective FEMA map is date January 20, 2010 and is provided in **Appendix C.**

1.5 GEOTECHNICAL REPORT

TYPICAL SUBSURFACE PROFILE

The "Geotechnical Engineering Report" prepared by Terracon Consultants, Inc., on May 11, 2018, describes onsite soils as Clayey Sand, Sand, and Lean Clay, and variable amounts of sand, silt, and clay within the embedded layers. Refer to **Appendix D** for the "Geotechnical Engineering Report". Additionally, the Natural Resources Conservation Service (NRCS) has classified soils into four general hydrologic soil groups for comparing infiltration and runoff rates. The NRCS results have been provided in **Appendix E.**

GROUNDWATER

The project Geotechnical Report indicates that groundwater was observed in the test borings at depths ranging between 3 and 11 feet below ground surface. Based on regional data, historical groundwater is anticipated to occur at depths of less than 10-feet below the ground surface. Final engineering design of construction plans will provide recommendations for conduit and structure construction.

PERCOLATION TEST RESULTS

The project Geotechnical Report also discusses percolation tests were performed that yielded the results shown in Page 7 of the Geotechnical Report, which can be found in **Appendix D**.

2 OBJECTIVES

The scope of this report is intended to address the following specific objectives;

1) Determine Pre-Project flow rates during the 100-year event.
2) Determine Post-Project flow rates for the 100-year event based on site grading and creation of new impervious areas
3) Justify the hydraulic sizing and location of proposed storm drain inlets and conduits during the 100-year event to protect the proposed buildings and parking areas from flooding.
4) Justify that proposed sizing of storage areas (i.e. underground detention pipes and surface detention basins) collectively mitigates site discharge to pre-development rate during the 100-year event.
5) Demonstrate compliance with City of Oxnard standards for the design and implementation of permanent stormwater Best Management Practices (BMPs).

The methodology used to achieve objectives 1-5 is discussed in detail within **Chapter 3** of this report. Objective 5 is generally discussed within **Chapter 7** and further detailed within **Appendix G**.

3 PROCEDURE

3.1 METHODOLOGY

The design of this site is based on Ventura County Watershed Protection District's (VCWPD) "Design Hydrology Manual" and Ventura County's "Technical Guidance Manual for Stormwater Quality Control Measures," Errata Update June 2018 .

The hydrologic and hydraulic modeling software utilized in this study is PC SWMM 2019 developed by Computational Hydraulics International (CHI). The PC SWMM model is designed to simulate precipitation, runoff, and storage of flow through a system of interconnected hydraulic components.

3.2 SUBCATCHMENT AREA

Subcatchment areas were delineated based on proposed topography from the preliminary engineering plans prepared by Kimley-Horn and regional discharge point located in Lot A. Peak runoff for individual subcatchment areas were established per the hydrologic parameters described below, and used to develop the conduit system model.

RUNOFF METHOD

The hydrologic methodology used for this project is the "2017 Ventura County Rational" method, which is a modified rational method designed for the analysis of design hydrology within the Ventura County area. The detailed explanation of the theory and background is presented in the "Design Hydrology Manual" from Ventura County Watershed Protection District.

SOIL TYPE

Ventura County groups their soils into seven hydrologically homogenous families based on the SCS Hydrologic Soil Group (now NRCS). Hydrologic Soil Groups A, B, and C are assigned two families, which are the upper and lower limits of the HSG's runoff coefficient curves and a single family is assigned to Hydrologic Soil Group D. Hydrologic Soil Group B encompasses a majority of the site and is consistent with Soil Type 4 and 5 in the hydrologic model. For preliminary storm system modeling, Soil Type 4, the upper limits of Hydrologic Soil Group B's runoff coefficient curve, was used as it generates a higher peak runoff compared to Soil Type 5.

HYDROGRAPH FATTENING

Ventura County's Modified Rational Method provides a hydrograph characterized by a relatively sharp and narrow peak, and generally the yield under the hydrograph is less than would be expected from a NRCS yield evaluation using Curve Numbers. Therefore, the hydrographs generated from Ventura County's Modified Rational Method cannot be used for detention basin design as it would be undersized. A method called "fattening" is used to adjust the generated hydrograph in order to match the hydrograph into the appropriate parameters used for detention basin design. The SCS Curve Number method was used for the hydrograph fattening of this project.

CURVE NUMBER

For the given soil, CN values were determined from appropriate columns of *Exhibit 14C*, which can be found in the "Design Hydrology Manual". A land use of Agriculture – Straight Row Good with Hydrologic Soil Group 4 provides a curve number of **80** in the pre-developed conditions. While an Impervious Parking Lot curve number of **98** was assumed in post-developed conditions as the site consist of mainly impervious areas.

PRECIPITATION

Precipitation values for the hydrologic analysis were determined from the site-specific precipitation frequency estimates published online in the NOAA Atlas 14. For this site, a precipitation of 6.06 inches was used for the 100-year, 24-hour storm precipitation depth. Refer to **Appendix F** for the tabular output from the NOAA Atlas 14.

TIME OF CONCENTRATION

The Ventura County hydrologic methodology limits time of concentration within an individual subcatchment area between 5 minutes minimum and 30 minutes maximum. Post-developed conditions assume a minimum time of concentration of 5 minutes due to the smaller subcatchment areas and increase in impervious area.

3.3 JUNCTIONS

Junctions nodes are used to represent hydraulic elements of the storm system such as manholes or pipe connections. The input paraments for junction nodes are the rim and invert elevations of the structure. A surcharge depth of 0.5-feet was set for all junction nodes to allow necessary head between the finished surface or parking areas and top of curbs.

3.4 DIVIDERS

For this project, "dividers" were used as theoretical nodes to represent grate inlet and curb inlet capture efficiency. They discharge through "dummy" conduits into downstream nodes used to represent subsurface pipe entrances. The type of divider used is based on the manner in which inflows are diverted. This model uses a tabular diversion curve as a function of inflow versus outflow for each specific combination of inlet type and size. Invert elevation of the dividers are set at the rim of the junction structure to provide positive drainage to the junction structure.

GRATE INLET DIVERSION CURVE

The grate inlet design is based on Plate No. 504 for the Grated Catch Basin and Plate No. 511 for the Grate Detail from the City of Oxnard's Standard Details. Equation 4-26 from the Federal Highway Administration's "Urban Drainage Design Manual" was used to set the inflow/outflow parameters of the diversion curve. The grate operates as a weir in sag conditions with an allowable depth of 0.5-feet across the grate. The parameters of the grate inlet diversion curve can be found in **Appendix I**.

CURB OPENING INLET DIVERSION CURVE

The curb opening design is based off of Plate No. 501 for the Curb Opening Catch Basin from the City of Oxnard's Standard Details. Equation 4-28 from the Federal Highway Administration's "Urban Drainage

Design Manual" was used to set the inflow/outflow parameters of the diversion curve. The curb opening operates as a weir in sag conditions with an allow depth of 0.5-feet across the curb opening. The parameters of the curb opening inlet diversion curve can be found in **Appendix I**.

3.5 STORAGE

Storage nodes are used to represent the two above ground detention ponds within the project site. The tabular storage information is based off the finished grade and contour area information for each detention basin.

3.6 OUTFALLS

Outfall nodes define the discharge location on the downstream end of the storm system. The proposed development has three discharge locations: the southeast detention basin, the south underground detention basin, and the southwest detention basin. The geometric parameters of the outfall nodes are based off the rim and invert of the discharge location. A time series curve was set to all the outfall nodes to model the tailwater effect from the adjacent regional detention facility (Lot A).

3.7 CONDUITS

The conduits are used to represent pipes that link one node to another in the storm system. The proposed storm drain encompasses only circular pipes with diameters ranging from 24-inches to 60-inches. The conduit system uses a Manning's "n" coefficient of 0.01 for all conduit links.

3.8 CONDUIT LINKS AND STRUCTURE NODE CONSIDERATIONS

Based on the preliminary grading and drainage plan, there will be storm drain infrastructure located within the highest observed groundwater throughout the site. The project will propose water tight joints, anchoring, and buoyancy calculations for conduits and structures. This information and details will be determined during final design and coordinated with the geotechnical engineer for review.

4 HYDROLOGY

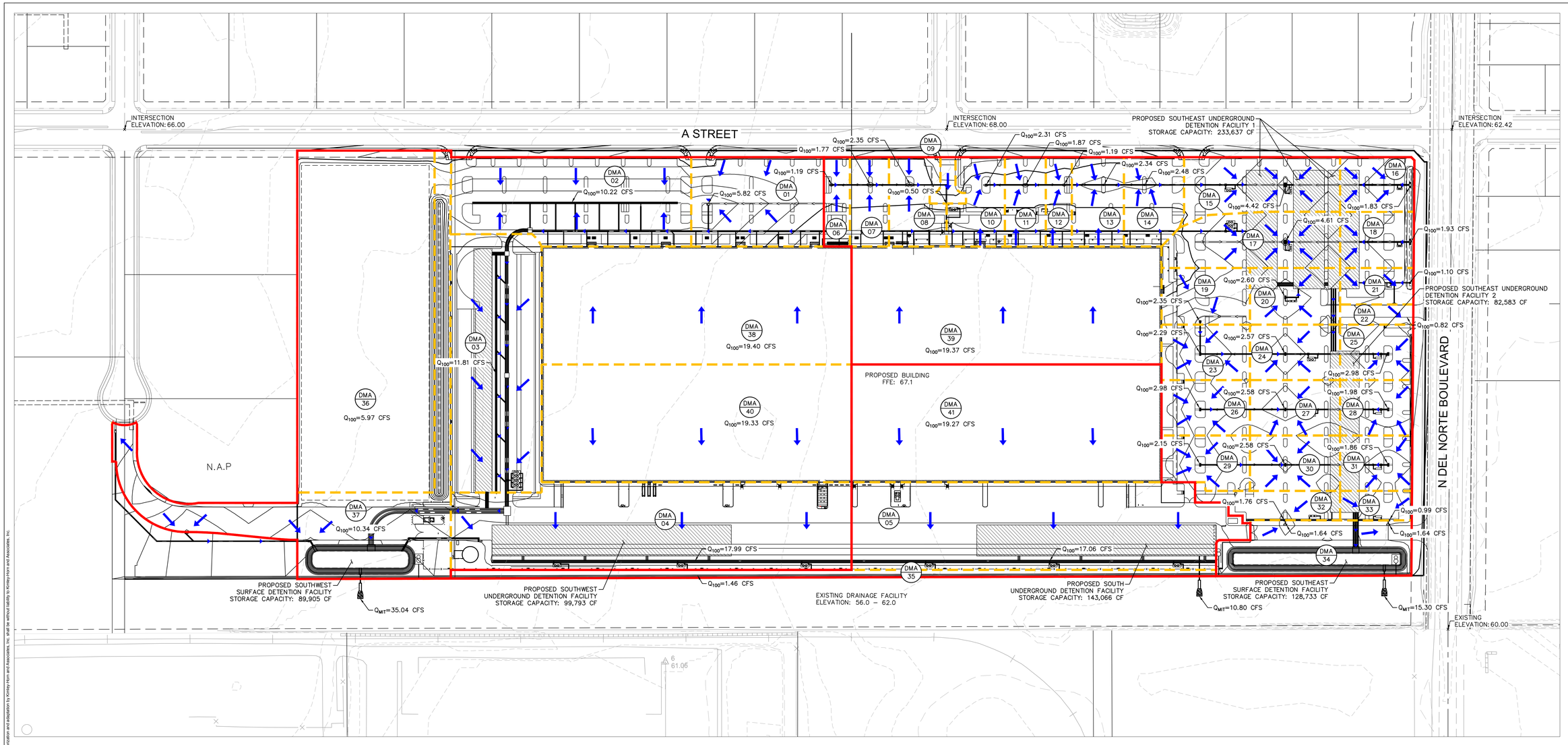
The existing hydrology will be modified to account for new elevation for the proposed building and associated hardscaping. The proposed hydrology will mimic the existing drainage patterns by conveying flow from the north side of the site to the south side of the pipe. Per the conceptual grading and drainage plans, the site storm system will discharge to three outfall areas along the southerly property line that ultimately discharge into the regional basin facility on Lot A, see attached Drainage Exhibit. Information related to the Sakioka Farms Business Park Master Drainage Report can be found in **Appendix J**. **Table 1** and **Table 2** below summarizes the peak 100-year flow summary for the pre-developed and post-developed conditions. Note that on **Table 2** basins are based on their respective outfall locations.

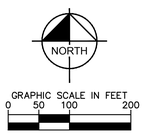
Table 1: Pre-Developed 100-Year Flow Summary

Basin ID	Basin Area (acres)	Q100 (cfs)
Project Site	64.45	65

Table 2: Post-Developed 100-Year Flow Summary

Outfall ID	DMA (acres)	Q100 (cfs)
Southwest Outfall	31.6	101
South Outfall	10.6	38
Southeast Outfall	22.3	81



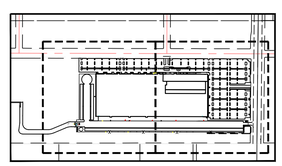


LEGEND

- DMA ID (XX / XX: DMA ID NUMBER)
- DMA BOUNDARY
- OVERALL DRAINAGE BOUNDARY
- FLOW DIRECTION
- PROPERTY LINE
- PROPOSED STORM DRAIN LINE
- FLOWLINE

FLOW SUMMARY TABLE

DMA ID	AREA (acres)	Q100 (cfs)	DMA ID	AREA (acres)	Q100 (cfs)
DMA01	1.59	5.82	DMA21	0.36	1.10
DMA02	2.74	10.22	DMA22	0.20	0.82
DMA03	3.16	11.81	DMA23	0.66	2.29
DMA04	4.59	17.99	DMA24	0.67	2.57
DMA05	4.36	17.06	DMA25	0.54	1.95
DMA06	0.31	1.19	DMA26	0.66	2.30
DMA07	0.47	1.77	DMA27	0.67	2.58
DMA08	0.64	2.35	DMA28	0.54	1.98
DMA09	0.13	0.50	DMA29	0.61	2.15
DMA10	0.63	2.31	DMA30	0.67	2.58
DMA11	0.49	1.87	DMA31	0.54	1.86
DMA12	0.31	1.19	DMA32	0.50	1.76
DMA13	0.62	2.34	DMA33	0.28	0.99
DMA14	0.68	2.48	DMA34	1.37	3.27
DMA15	1.19	4.42	DMA35	0.77	1.46
DMA16	0.54	1.83	DMA36	6.31	5.97
DMA17	1.24	4.61	DMA37	3.47	10.34
DMA18	0.56	1.93	DMA38	4.91	19.40
DMA19	0.67	2.35	DMA39	4.91	19.37
DMA20	0.69	2.60	DMA40	4.90	19.33
			DMA41	4.90	19.27



KEY MAP

No.	REVISIONS	DATE	BY

Kimley»Horn

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KHA PROJECT 195170003
DATE 3/5/2020
SCALE AS SHOWN
DESIGNED BY KS
DRAWN BY KS
CHECKED BY DC

PROPOSED DRAINAGE EXHIBIT

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.

CITY OF OXNARD CA

DMA

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5 UNDERGROUND/SURFACE DETENTION BASINS

5.1 UNDERGROUND DETENTION BASIN

The underground detention facilities physically represent a series of large diameter pipes set on a flat slope which collect and detain flow in the case of a 100-year storm event. A series of junction nodes and conduits are used to model the underground detention facilities. There are three separate underground detention facilities for each outfall location. The southwest underground detention facility contains a series of nine pipes for with a length of approximately 565-feet and a diameter of 60-inches the south underground detention facility also contains a series of nine pipes but with a length of approximately 300-feet and a diameter of 60-inches. The southeast underground detention facility consists a multiple smaller underground detention facility. The underground detention facilities contain thirty-nine pipes with lengths ranging from 280-feet to 394-feet. **Table 2** below summarizes the total storage volume of each underground detention basin. Note that the detention basins are identified by their discharge location.

Table 3: Underground Detention Basin Volume

Detention Basin	Storage Volume (cu. ft.)
Southwest Underground Detention Basin	99,793
South Underground Detention Basin	143,066
Southweast Underground Detention Basin	233,636

UNDERGROUND DETENTION STORAGE CONSIDERATIONS

Based on the preliminary grading and drainage plan, **Appendix L**, the underground detention system will be located below the highest observed groundwater by an estimated 2.5 feet - 3.0 feet. Due to the variation in the groundwater, the underground detention basin will be a sealed system that will be designed to prevent groundwater from entering the system and will also be designed for buoyancy. The detention system may require a concrete slab to be constructed beneath the detention system to anchor the pipes to prevent flotation. Currently, the project has not determined if a concrete vault system or concrete pipe system will be used. This information and details will be determined during final design and coordinated with the geotechnical engineer for review.

5.2 SURFACE DETENTION BASIN

Two proposed surface detention basins located in the southwest and southeast of the project site provide storage in case of a 100-year storm event. The surface detention basins are modeled using storage nodes which was described previously in the Storage section of the Procedure in **Chapter 3**. Refer to **Appendix L** for the location of the proposed underground detention system and **Appendix I** for the Storage Output Table for the PC SWMM Model results. **Table 4** below summarizes the total storage volume for each surface detention basin. Note that the detention basins are identified by their discharge location.

Table 4: Surface Detention Basin Volume

Detention Basin	Bottom Elevation	Top Elevation	Max Q100 WSE	Storage Volume (cu. ft.)
Southwest Surface Detention Basin	54.8	62	61	89,905
Southeast Surface Detention Basin	54.8	62	61	128,733

SURFACE DETENTION BASIN STORAGE CONSIDERATIONS

Based on the preliminary grading and drainage plan, **Appendix L**, the bottom of the surface detention basin will be located below the highest observed groundwater by an estimated 2.5 feet - 3.0 feet. Due to the variation in the groundwater, the above-ground detention basin will be lined with concrete or other suitable liner to prevent groundwater from entering the basin. This information and details will be determined during final design and coordinated with the geotechnical engineer for review.

5.3 STORMWATER PUMP

Three proposed stormwater pumps will be provided for the three discharge locations. The stormwater pumps will be required to discharge the storage of the pond that is between elevation 54.80 to 62.00. **Table 5** below summarizes the Pump Curve used to discharge the flow depths below the invert.

Table 5: Pump Curves

Southwest		South		Southeast	
Depth (ft)	Flow (cfs)	Depth (ft)	Flow (cfs)	Depth (ft)	Flow (cfs)
0	5	0	1	0	0.5
1	5	1	1	1	0.5
2	5	2	1	2	0.5
3	5	3	1	3	0.5
4	5	4	1	4	0.5
5	5	5	1	5	0.5
6	5	6	1	6	0.5
7	5	7	1	7	0.5

6 COMPUTATIONS

The results of the PC SWMM Model can be found in **Appendix I**.

7 RESULTS

The computational results from the PC SWMM Model show that the hydrologic and hydraulic analysis of the proposed development will meet all the objectives previously stated above. The discussion below re-iterates the objectives for this report as well as a discussion on how the objectives were met.

1) **Determine Pre-Project flow rates during the 100-year event.**

   Peak runoff for pre-developed conditions was determined using Ventura County' Modified Rational Method. A total of 65 cfs is generated based off existing topography and land use.

2) **Determine Post-Project flow rates for the 100-year event based on site grading and creation of new impervious areas**

   Post-developed conditions followed the same hydrologic methodology as the pre-developed conditions. Additional subcatchment areas were delineated based off preliminary site grading and discharge locations. A total of 220 cfs is generated in the 100-year storm event due to the proposed development of this project.

3) **Justify the hydraulic sizing and location of proposed storm drain inlets and conduits during the 100-year event to protect the proposed buildings and parking areas from flooding.**

   Output results from the PC SWMM model calculated that there is zero flooding throughout the site during the 100-year peak storm event. This can be interpreted that the proposed inlets and storm structures were sized appropriately and the entirety of the peak 100-year storm event is captured and conveyed to their respective outfall locations.

4) **Justify that proposed sizing of storage areas (i.e. underground detention pipes and surface detention basins) collectively mitigates site discharge to pre-development rate during the 100-year event.**

   The Detention section above discusses the design and modeling methodology of the surface and underground detention basins. The PC SWMM model results show that the combination of both the underground and surface detention basins adequately detain the additional volume generated from post-developed conditions and discharges at a rate that is consistent with pre-developed conditions.

5) **Demonstrate compliance with City of Oxnard standards for the design and implementation of permanent stormwater Best Management Practices (BMPs).**

   Appendix G refers to the project specific WQMP report provided for this project.

8 REFERENCES

1. "*Geotechnical Engineering Report*," Terracon Consultants Inc., May 2018
2. "*Custom Soil Resource Report for Ventura Area, California*," Natural Resources Conservation Service, February 2020
3. "*Ventura County Technical Guidance Manual for Stormwater Quality Control Measures*," Larry Walker Associates & Geosyntec Consultants, Revised June 2018
4. "*City of Oxnard's Public Works Integrated Master Plan*" Carollo Engineers, December 2018
5. "*Design Hydrology Manual*" Ventura County Watershed Protection District, Updated July 2017
6. *"Urban Drainage Design Manual"* U.S Department of Transportation, Federal Highway Administration, Revised August 2013

FIGURES

Figure 1. Regional Map of Ventura County

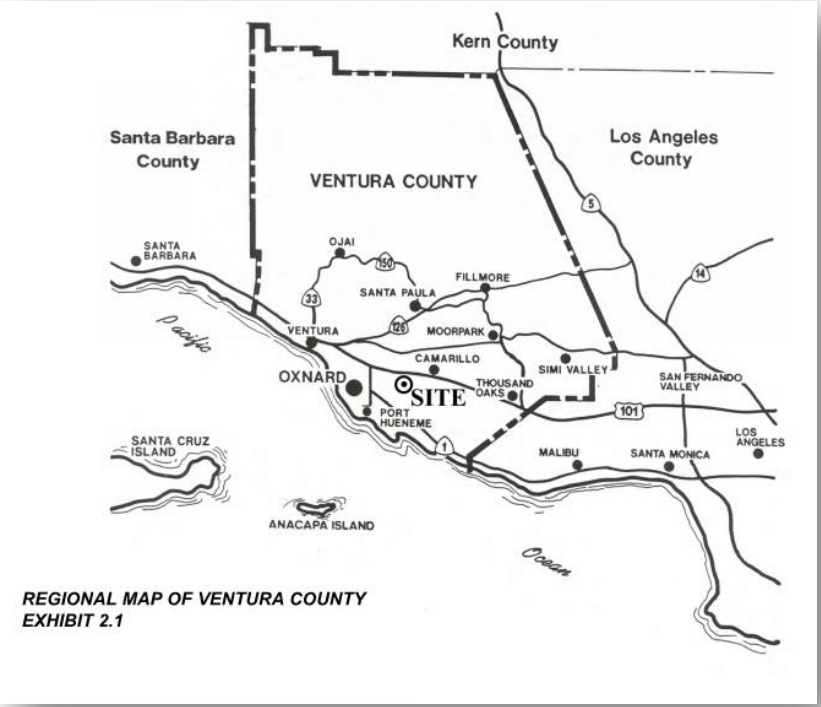

Figure 2. 2020 General Plan Land Uses

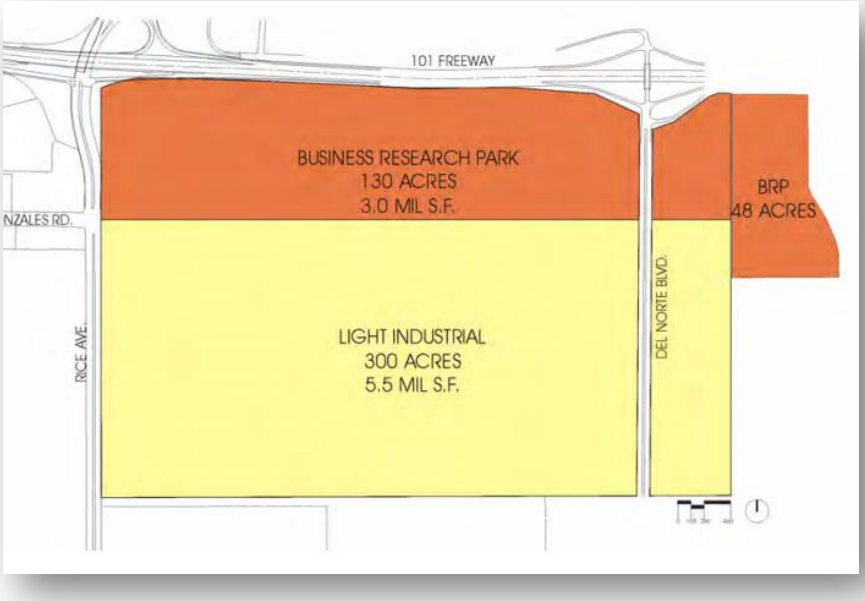

Figure 3. Project Site Location

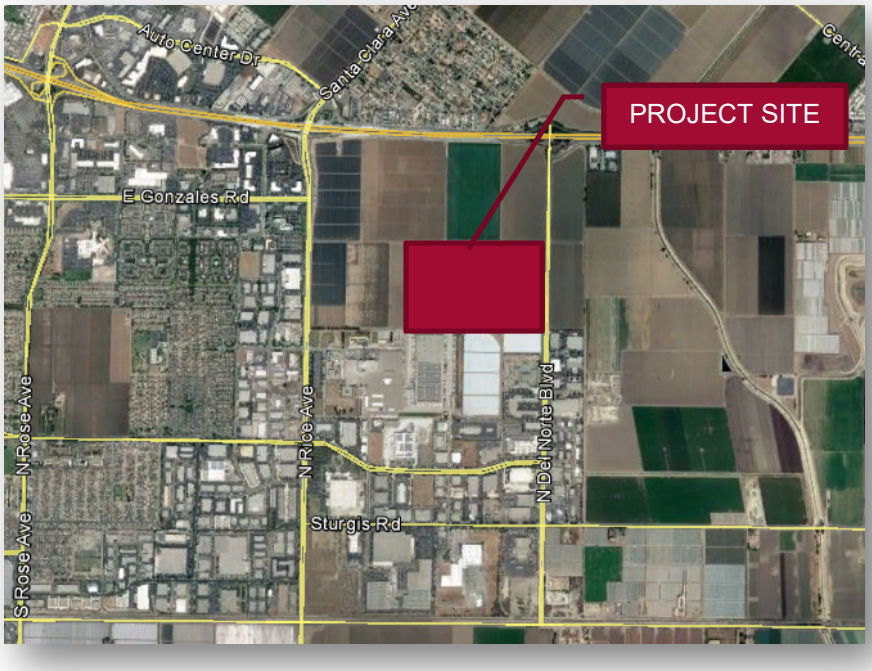

Figure 4. Site Plan

APPENDICES

APPENDIX A

CITY OF OXNARD MAJOR DRAINAGE WATERSHEDS

This document is released for the purpose of information exchange review and planning only under the authority of Hugh Steve McDonald, December 2015, State of California, PE No. 44074 and Tracy Anne Clinton, December 2015, State of California, PE No. 48199

City of Oxnard

Public Works Integrated Master Plan

STORMWATER

PROJECT MEMORANDUM 5.1
BACKGROUND SUMMARY

FINAL DRAFT
December 2015

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City of Oxnard

Public Works Integrated Master Plan

STORMWATER

PROJECT MEMORANDUM 5.1
BACKGROUND SUMMARY

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BACKGROUND SUMMARY

1.0 INTRODUCTION

The City of Oxnard's (City's) stormwater system serves the City and the surrounding lands that drain into Oxnard, approximately 35 square miles in area. The City's drainage channels are either partly or completely under the jurisdiction of the Ventura County Flood Control District (VCFCD). The drainage facilities for the City either discharge directly into the ocean or they discharge into the VCFCD facilities and then into the ocean. The City maintains a network of storm drains comprised of gravity pipes, force mains, lift stations, and various other infrastructure associated with a stormwater drainage system.

This Project Memorandum (PM) gives a brief background on the project area and the City's existing stormwater system and outlines the regulatory and water quality considerations of this system.

1.1 Project Memoranda (PMs) Used for Reference

Other PMs that expand on the wastewater system needs/recommended projects include:

- PM 5.2 - Stormwater System - Infrastructure Modeling and Alternatives.
- PM 5.3 - Stormwater System - Condition Assessment.
- PM 5.4 - Stormwater System - Treatment Alternatives.

1.2 Other Reports Used for Reference

In developing the alternatives in this Public Works Integrated Master Plan (PWIMP), recommendations from other reports were incorporated to ensure a well-rounded and holistic look at the stormwater system. The following reports are referred to in this PM:

- VCWPD Report of Waste Discharge, Ventura Countywide Stormwater Quality Management Program, (VCWPD, 2015).
- VCWPD Final Environmental Impact Report J Street Drain Project, January 2012 (VCWPD EIR, 2012).
- MS4 NPDES Permit CAS004002, Order No. R4-2010-0108, California Regional Water Quality Control Board, July 2010 (MS4 Permit, 2010).
- City of Oxnard 2030 General Plan, Development Services Department Planning Division, October 2011 (City of Oxnard General Plan, 2011).

- Feasibility of Using the Oxnard Advanced Water Purification Facility to Treat Storm Water from the J Street and Oxnard Industrial Drains (CH2M Hill, 2013).
- Ventura Countywide Stormwater Quality Management Program Annual Report, VCWPD, 2014 (VCWPD, 2014).
- Zhang, X., F.W. Zwiers, G.C. Hegerl, F.H. Lambert, N.P. Gillett, S. Solomon, P.A. Stott and T. Nozawa (July 2007) “Detection of human influence on twentieth-century precipitation trends” Nature 448, 461-465. (Zhang *et al.*, 2007).
- Karl, T.R., R.W. Knight, D.R. Easterling, and R.G. Quayle (February 1996) Indices of Climate Change for the United States. Bulletin of the American Meteorological Society. Vol 77, No. 2, Pp. 279-292. (Karl *et al.*, 1996).
- Knowles, Noah, M.D. Dettinger, D.R. Cayan, 2006: Trends in Snowfall versus Rainfall in the Western United States. Journal of Climate, 19, 4545–4559. (Knowles *et al.*, 2006).
- Kharin, V.V., and F.W. Zwiers (2005) Estimating Extremes in Transient Climate Change Simulations, Journal of Climate 18: 1156–1173. (Kharin and Zweirs, 2005).
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- Meehl, G. A., J. M. Arblaster, and C. Tebaldi (September 2005) Understanding future patterns of increased precipitation intensity in climate model simulations, Geophysical Research Letter, 32, L18719. (Meehl *et al.*, 2005).

- Kharin, V.V., F.W. Zwiers, X. Zhang, and G.C. Hegerl (April 2007) Changes in temperature and precipitation extremes in the IPCC ensemble of global coupled model simulations. Journal of Climate 20:1419-1444. (Kharin *et al.*, 2007).
- Dettinger, Michael (2005) From climate-change spaghetti to climate-change distributions for 21st Century California, San Francisco Estuary and Watershed Science, 3(1), article 4. (Dettinger, 2005).
- Santa Clara River Bacteria Total Maximum Daily Load, California EPA, R10-006, March 2012.
- Harbor Beaches of Ventura County Bacteria Total Maximum Daily Load, California EPA, 2007-017 December 2008.

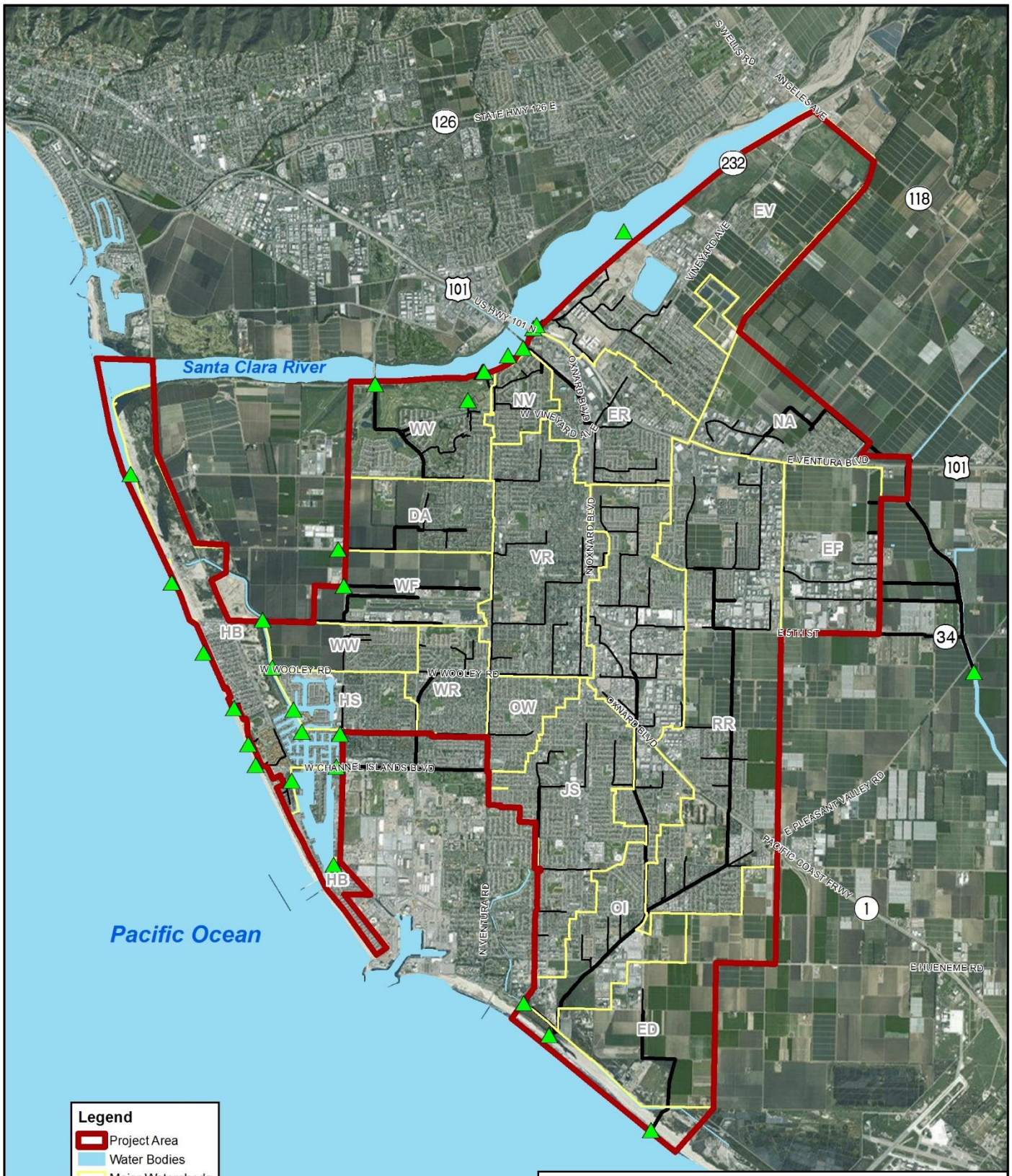
2.0 PROJECT AREA DESCRIPTION

2.1.1 Project Area

The City's project area generally encompasses lands within the city limits of Oxnard together with surrounding lands that drain into Oxnard. The City's drainage area is approximately 35 square miles in size. State Highway 1 passes through the center of Oxnard and joins U.S. Highway 101 at the north edge of the drainage area just south of the Santa Clara River. Highway 101 passes through the northern portion of the area. The project area boundary is illustrated in Figure 1.

2.1.2 Climate

The climate of the project area is mild during summer when high temperatures tend to be around 70 degrees Fahrenheit (F) and cool during winter when temperatures tend to be around 50 degrees F. The warmest month of the year is August with an average maximum temperature of 73.9 degrees F, while the coldest month of the year is December with an average minimum temperature of 45.3 degrees F. Average annual rainfall in the project area is 15.6 inches per year. Rainfall is concentrated during the winter months. The wettest month of the year is February with an average rainfall of 3.9 inches (VCWPD EIR, 2012). Precipitation, temperature, and evaporation are the main climatic conditions that drive runoff in a watershed. Along with climate, runoff can be estimated from a watershed dependent on factors relating to the area, shape, slope, and land characteristics.



PROJECT AREA

FIGURE 1

CITY OF OXNARD

PM NO.5.1 – BACKGROUND SUMMARY

PUBLIC WORKS INTEGRATED MASTER PLAN

CITY OF OXNARD CALIFORNIA

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2.1.3 Topography

The City is situated near the mouth of the Santa Clara River on a gently sloping alluvial fan commonly known as the Oxnard Plain. The land generally slopes in a southwesterly direction toward the ocean at an average rate of about 10 to 20 feet per mile, or a gradient of less than one-half percent. This flat topography has a major bearing on the drainage needs of the area and the associated costs for flood protection. Elevations in the City range from mean sea level to about 128 feet above mean sea level, as illustrated in Figure 2.

2.1.4 Land Use Characteristics

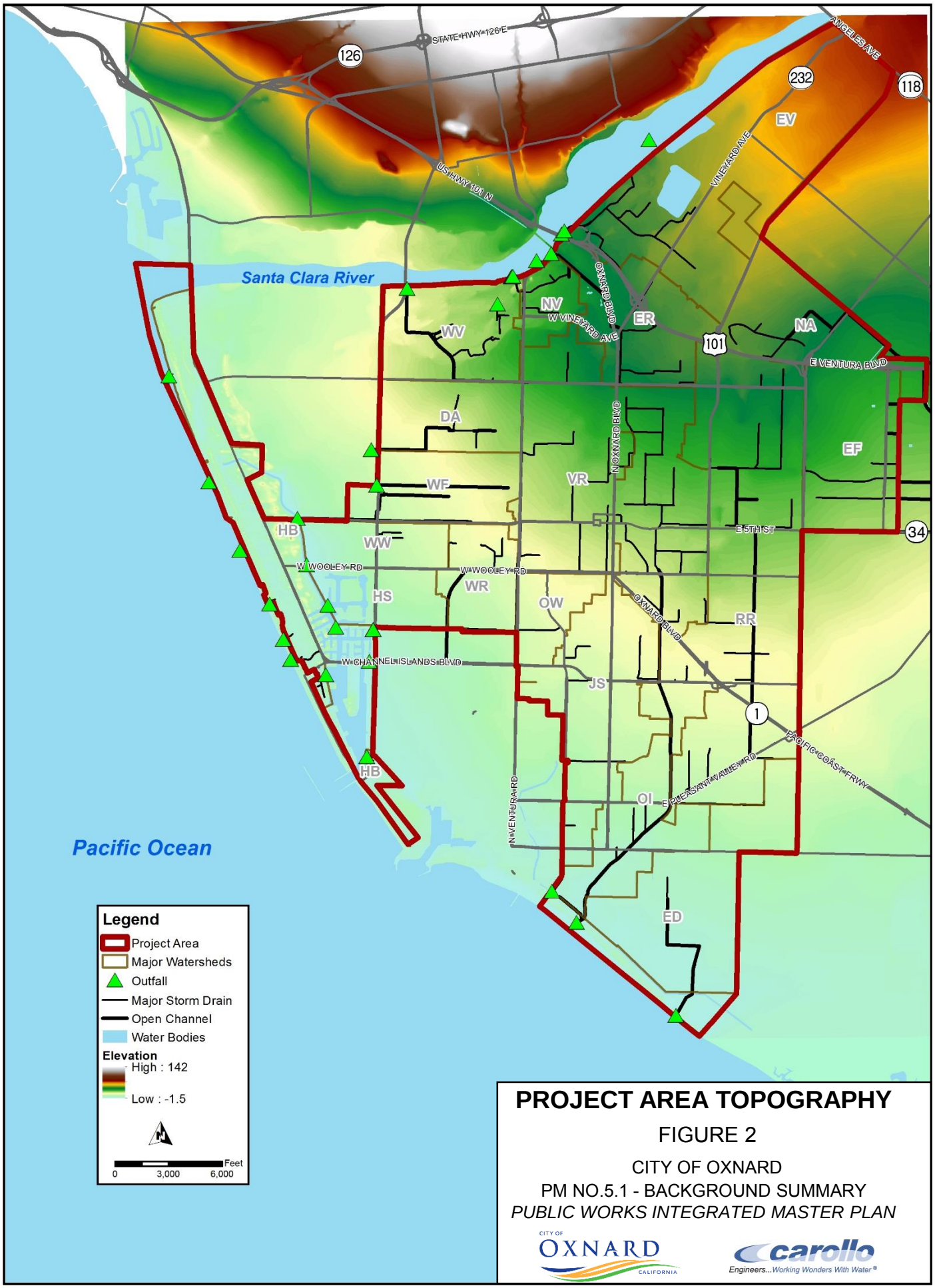
Land use information is an integral component in determining the amount of stormwater runoff generated within a City. The type of land use in an area will affect the pervious surface area, and therefore the volume and characteristics of the stormwater generation. The hydrologic response of a watershed is dependent on surface and subsurface characteristics of the drainage area.

The long service life of storm drainage pipes necessitates that runoff due to future development and changes in land use be accommodated. The type and density of land use is an important factor in runoff estimation because these directly affect surface runoff depending on the imperviousness of the land use type. Detailed existing and future land use were described in PM 1.3, *Population and Land Use Estimates.*

For the purpose of the stormwater system evaluation, land uses presented in PM 1.3 were grouped into 6 categories:

- Agriculture.
- Commercial.
- Industrial.
- Parks/Open Space/Resource Protection.
- Public.
- Residential.

Figure 3 illustrates the existing land use classifications within the project area and used for analysis in PM 5.2.



PROJECT AREA TOPOGRAPHY

FIGURE 2

CITY OF OXNARD

PM NO.5.1 - BACKGROUND SUMMARY

PUBLIC WORKS INTEGRATED MASTER PLAN

CITY OF OXNARD CALIFORNIA

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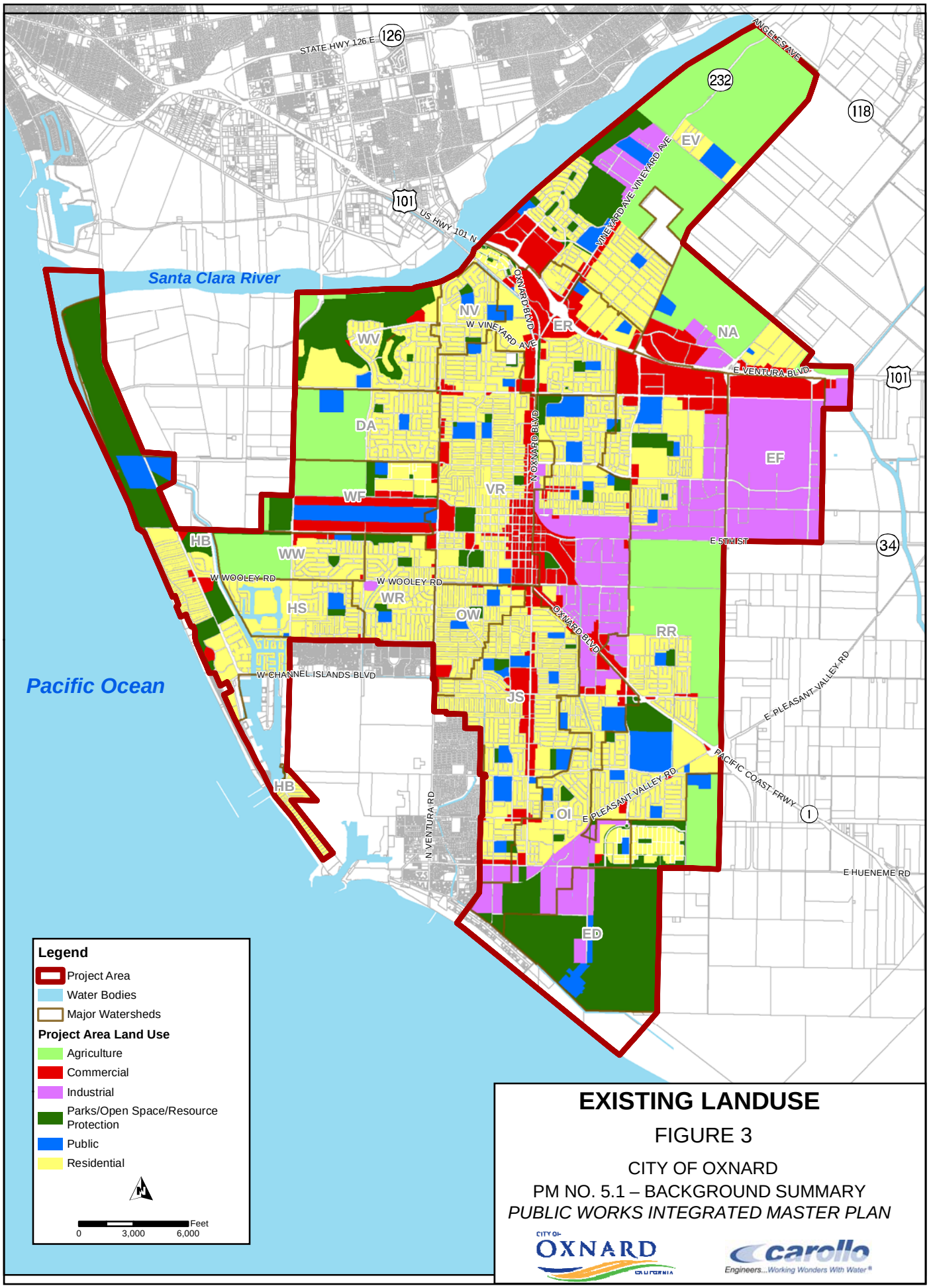

EXISTING LANDUSE

FIGURE 3

CITY OF OXNARD

PM NO. 5.1 – BACKGROUND SUMMARY

PUBLIC WORKS INTEGRATED MASTER PLAN

CITY OF OXNARD CALIFORNIA

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2.1.5 FEMA Flood Zones

The Federal Emergency Management Agency (FEMA) recently revised the Flood Insurance Rate Map (FIRM) for the City in 2010. The City resides in the VCWPD Flood Zone 2. The current DFIRM is illustrated on Figure 4. Four flood hazard areas are identified on this figure:

- Floodway.
- 0.2 percent (500-year) chance of annual flooding hazard.
- Area with minimal flooding.
- Area with reduced flooding due to levee.

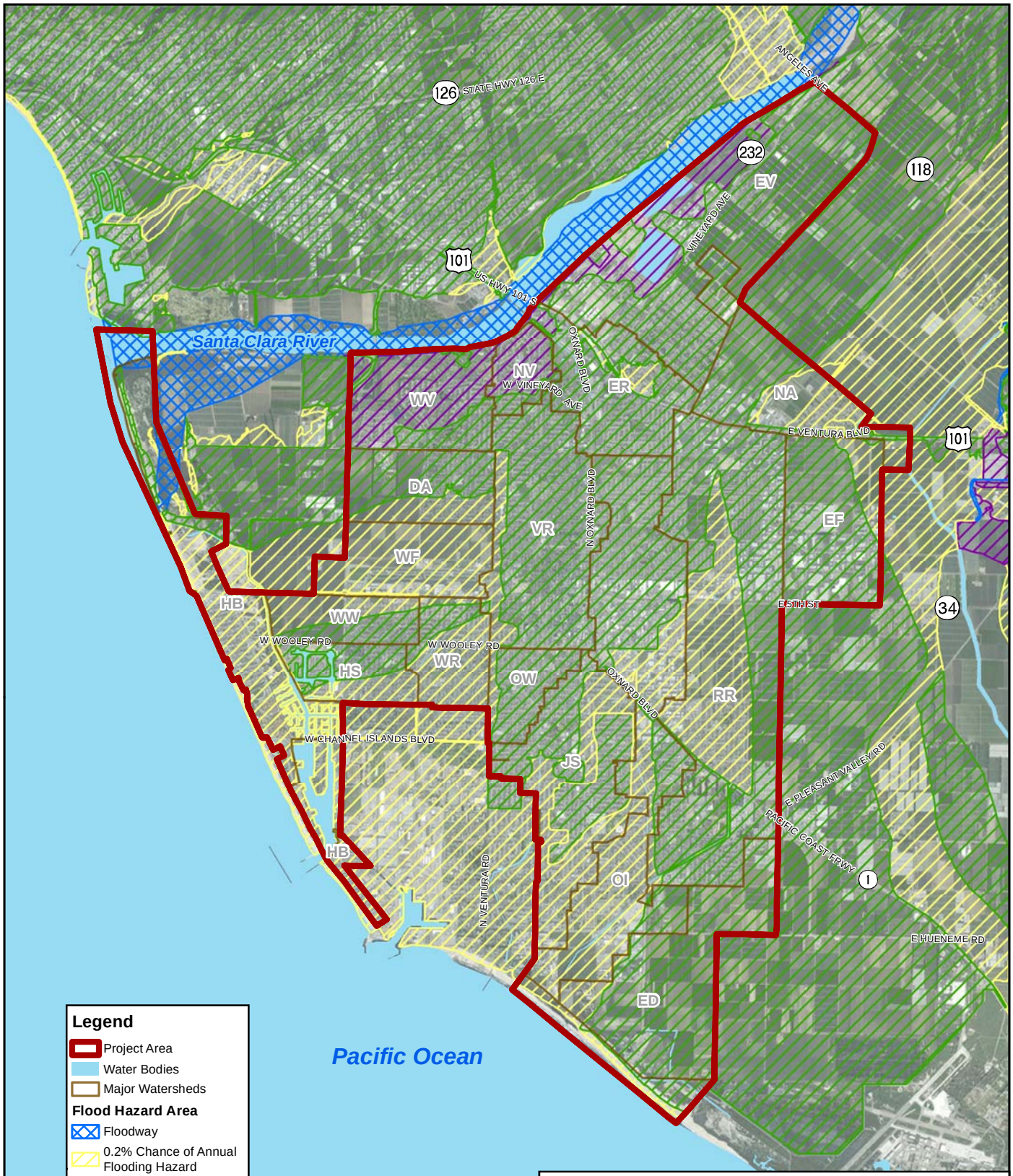
3.0 EXISTING DRAINAGE SYSTEM DESCRIPTION

3.1 System Overview

The City's existing storm drainage system collects and conveys stormwater runoff from developed and undeveloped areas throughout the City. The system includes circular pipelines ranging in size from 4 to 96 inches in diameter, rectangular pipes up to 264-inch by 96-inch in size, open channels, 5 stormwater pump stations, and associated force mains, and various valves and diversion structures throughout the system. Figure 5 shows the existing storm drainage system, including storm drain diameters, detention/retention ponds, pump stations, canals, and outfall locations. In total, there are approximately 162 miles of storm drains and open channels owned by the City, and 28 miles of open channels under the Ventura County jurisdiction.

3.2 Major Drainage Watersheds

The project area is divided into eighteen (18) major drainage watersheds. These boundaries were originally delineated in the 2003 Master Plan of Drainage. The City is familiar with these watersheds, therefore, their delineation has been maintained in this PWIMP for consistency. Figure 6 illustrates these basins, which are defined mainly by topography and major drainage facilities. Table 1 summarizes the areas of these major drainage basins. These major watersheds will be further divided for modeling purposes into smaller subcatchments.



FEMA FLOOD ZONES

FIGURE 4

CITY OF OXNARD

PM NO. 5.1 – BACKGROUND SUMMARY

PUBLIC WORKS INTEGRATED MASTER PLAN

CITY OF OXNARD CALIFORNIA

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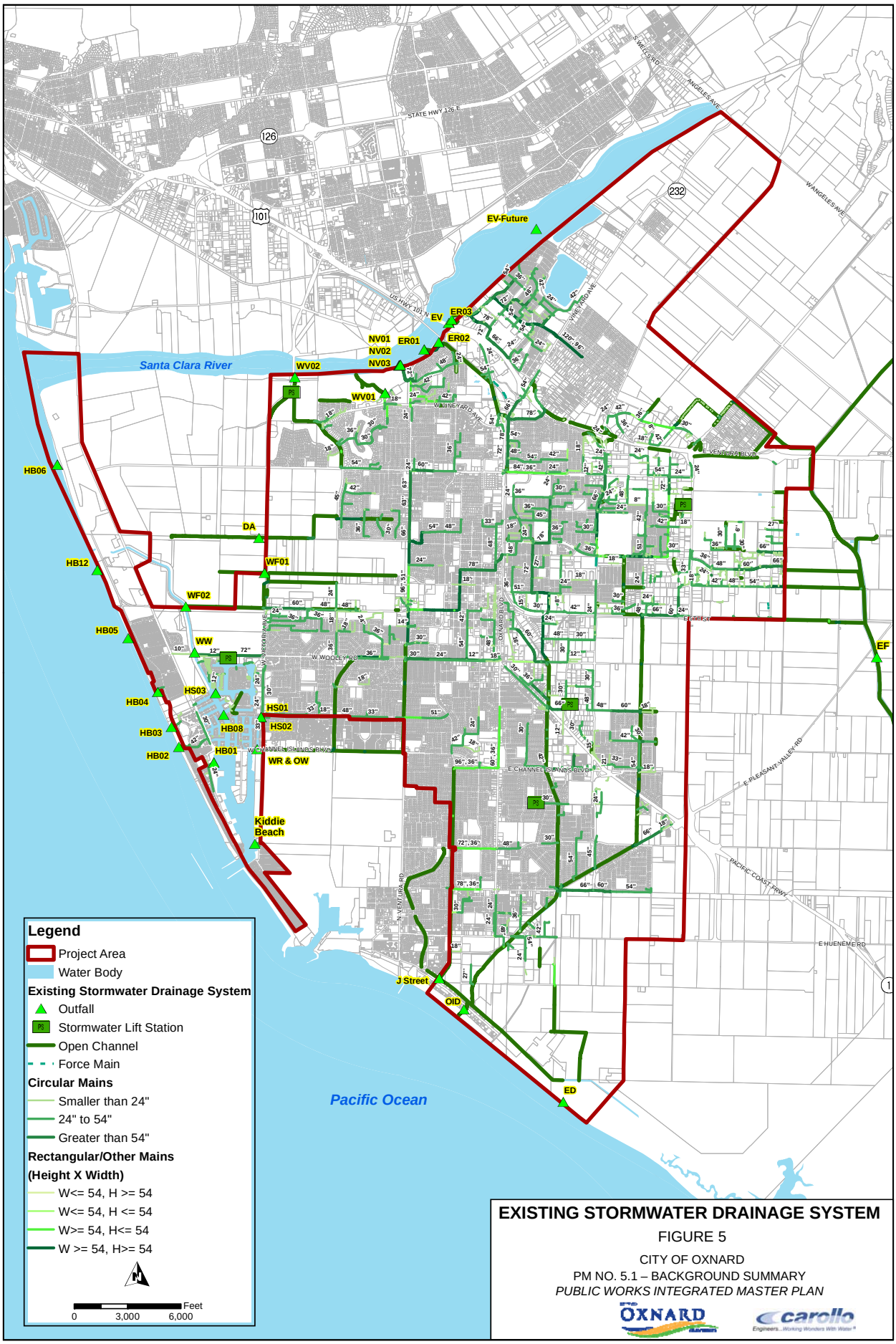


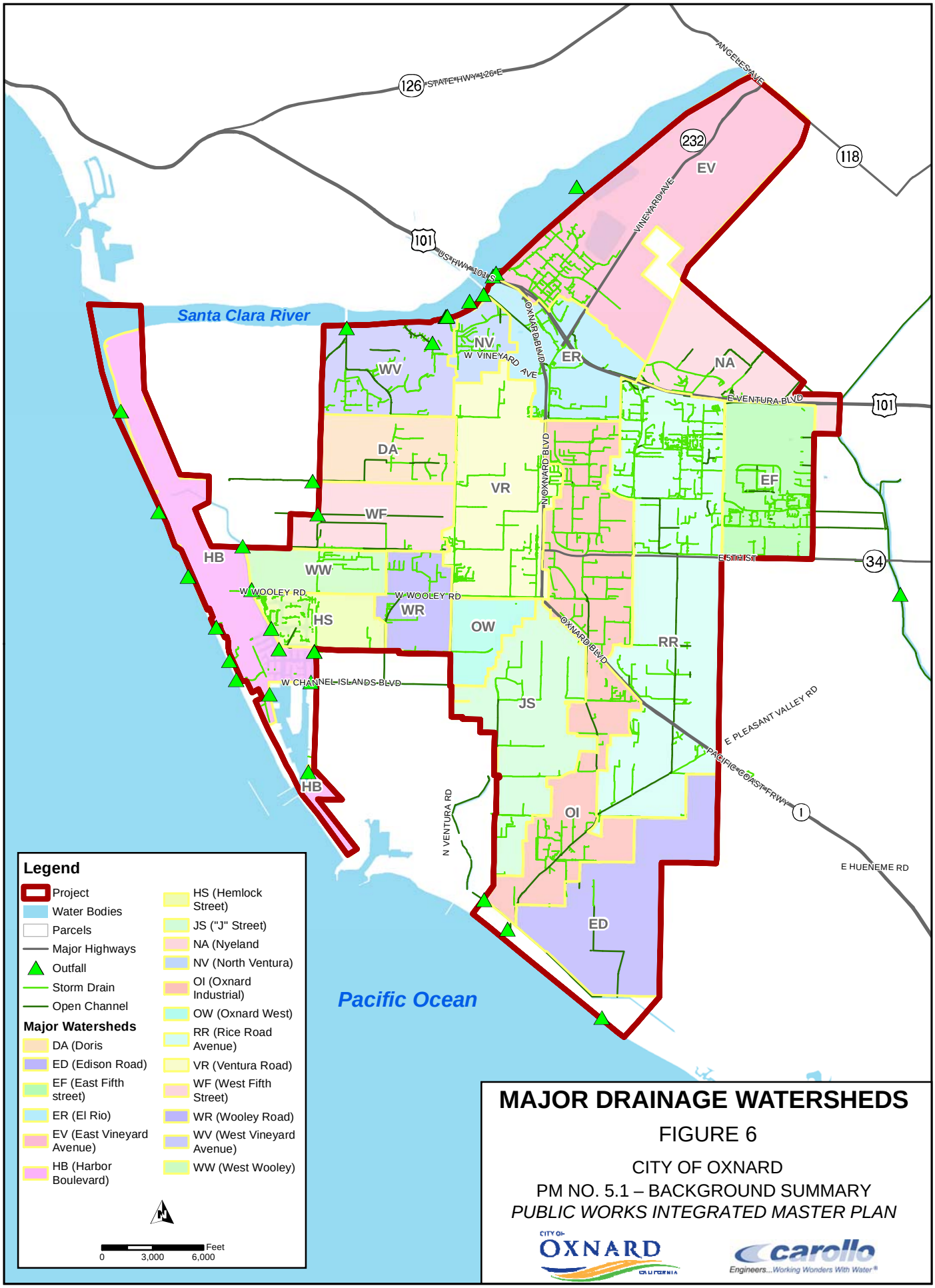
EXISTING STORMWATER DRAINAGE SYSTEM

FIGURE 5

CITY OF OXNARD

PM NO. 5.1 – BACKGROUND SUMMARY

PUBLIC WORKS INTEGRATED MASTER PLAN



MAJOR DRAINAGE WATERSHEDS

FIGURE 6

CITY OF OXNARD

PM NO. 5.1 – BACKGROUND SUMMARY

PUBLIC WORKS INTEGRATED MASTER PLAN

CITY OF OXNARD CALIFORNIA

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Table 1	Major Drainage Watersheds Public Works Integrated Master Plan City of Oxnard		
Basin ID	**Basin Description**	**Acres**	**Square Miles**
RR	Rice Road (Avenue)	3,323	5.19
EV	East Vineyard Avenue	2,744	4.29
OI	Oxnard Industrial	2,548	3.98
ED	Edison Road	1,544	2.41
JS	"J" Street	1,491	2.33
VR	Ventura Road	1,647	2.57
WV	West Vineyard Avenue	974	1.52
EF	East Fifth Street	1,119	1.75
ER	El Rio	1,025	1.60
NA	Nyeland Acres	975	1.52
DA	Doris Avenue	725	1.13
WF	West Fifth Street	802	1.25
HB	Harbor Boulevard	1,420	2.22
WR	Wooley Road	546	0.85
HS	Hemlock Street	508	0.79
WW	West Wooley	482	0.75
OW	Oxnard West	408	0.64
NV	North Ventura	308	0.48
Total Area		**22,586**	**35.29**

3.3 Existing Local Drainage Facilities

3.3.1 Description

The City owns and maintains approximately 162 miles of gravity pipes, open channels, and infrastructures. The majority, or approximately 72 percent, of the pipes are circular pipes, but there also are closed rectangular, or arch shaped gravity drains. Table 2 summarizes the size and length of each of these types of facilities as identified in the City's Geographic Information System (GIS).

Table 3 summarizes the material and age information on the pipelines owned by the City as included in the City's GIS. As shown in Table 3, the majority (approximately 63 percent) of the pipes were built using Reinforced Concrete Pipes (RCP).

Table 2	City Local Drainage Facility Type and Size Distribution Public Works Integrated Master Plan City of Oxnard		
Type	**Length, ft**	**Length, miles**	**Percent of Total, %**
Arch	16,930	3.21	1.98%
Circular	612,074	115.92	71.60%
Single Rectangular Box	63,324	11.99	2.36%
Double Rectangular Box	20,196	3.83	0.09%
Triple Rectangular Box	464	0.09	0.01%
Rectangular	109	0.02	7.41%
Elliptical	809	0.15	0.05%
Open Channel	116,112	21.99	13.58
Unknown	24,822	4.70	2.90%
Total	**854,841**	**161.90**	**100%**

Note:
(1) Source: City GIS Database, June 2014.

Table 3 City Local Drainage Facilities Age and Pipe Type (by length)
Public Works Integrated Master Plan
City of Oxnard

	Length, ft						
Material	**Unknown**	**<10 years**	**10-20 years**	**20-30 years**	**>30 years**	**Total**	**% of Total**
A	-	-	-	884	-	884	0.1%
ACMP	-	-	-	788	936	1,724	0.2%
ACP	-	-	180	3,056	6,098	9,333	1.1%
ADS	-	-	-	7,038	-	7,038	0.8%
APC	-	-	1,458	1,262	1,325	4,045	0.5%
CIPP	-	122	7,045	552	1,877	9,596	1.1%
CMP	-	-	2,384	2,963	8,625	13,973	1.6%
CMPA	-	-	1,638	3,045	8,877	13,560	1.6%
CONC	294	1,697	32,952	44,426	10,626	89,995	10.5%
CSP	-	125	172	865	55	1,216	0.1%
CSPA	-	-	-	1,498	-	1,498	0.2%
DIP	-	164	188	-	-	352	0.0%
HDPE	-	922	9,471	-	-	10,393	1.2%
HERCP	-	-	550	-	-	550	0.1%
PCC	-	0	1,157	1,853	558	3,567	0.4%
PVC	-	1,629	25,341	11,351	836	39,157	4.6%
RCB	-	179	20,231	46,066	36,730	103,206	12.1%
RCP	9,599	61,586	158,458	198,893	110,302	538,837	63.0%

Table 3	City Local Drainage Facilities Age and Pipe Type (by length) Public Works Integrated Master Plan City of Oxnard						
	Length, ft						
Material	**Unknown**	**<10 years**	**10-20 years**	**20-30 years**	**>30 years**	**Total**	**% of Total**
RCPA	-	-	-	514	-	514	0.1%
Steel	-	-	-	-	45	45	0.0%
Unknown	27	1,540	756	3,032	-	5,356	0.6%
Total	**9,920**	**67,964**	**261,980**	**328,086**	**186,891**	**854,841**	**100.0%**

Notes:
(1) A = Aluminum
(2) ACMP = Asphalted Corrugated Metal Pipe
(3) ACP = Asbestos Cement Pipe
(4) ADS = Advanced Drainage System
(5) APC = Asphalted Pipe Culvert
(6) CIPP = Cast in place Pipe
(7) CMP = Corrugated Metal Pipe
(8) CMPA = Corrugated Metal Pipe Arch
(9) CONC = Concrete
(10) CSP = Corrugated Steel Pipe
(11) CSPA = Corrugated Steel Pipe Arch
(12) DIP = Ductile Iron Pipe
(13) HDPE = High Density Poly Ethylene Pipe
(14) PCC = Portland Cement Concrete
(15) PVC = Poly Vinyl Chloride
(16) RCB = Reinforced Concrete Box
(17) RCP = Reinforced Concrete Pipe
(18) RCPA = Reinforced Concrete Pipe Arch

3.4 Ventura County Watershed Flood Control Facilities

The VCWPD, previously called the Ventura County Flood Control District, was formed in 1944 to perform drainage services not readily performed by local agencies. The City resides in the VCWPD Flood Zone 2.

3.4.1 Description

Drainage facilities in the study area that are partly or completely in the jurisdiction of VCWPD are included in Table 4. City drainage facilities discharge into these VCWPD channels, whenever possible. Major drainage channels within Oxnard include Doris Avenue Drain, Fifth Street Drain, Wooley Road Drain, Oxnard West Drain, Oxnard Industrial Drain, Rice Road Drain, "J" Street Drain, El Rio Drain, Camarillo Drain, and Nyeland Drain. The large majority of the Ventra County drainage system generally includes concrete pipe, reinforced concrete culverts, rectangular concrete channels, unlined channels, and manholes. VCWPD drainage facilities are shown on Figure 5 and Table 4.

Table 4 VCWPD Jurisdiction Channels Public Works Integrated Master Plan City of Oxnard		
Description	**Length (feet)**	**Length (miles)**
Beardsley Wash	19,333	3.66
Camarillo Drain	1,967	0.37
Doris Avenue Drain	9,291	1.76
El Rio Drain	4,257	0.81
West 5th Street Drain	5,013	0.95
"J" Street Drain	12,532	2.37
Nyeland Drain	7,141	1.35
Oxnard Industrial Drain	18,148	3.44
Oxnard West Drain	13,118	2.48
Revolon Slough	27,422	5.19
Rice Road Drain	20,214	3.83
Wooley Road Drain	5,185	0.98
Unknown Name	6,058	1.15
Notes: Source: City GIS Database, June 2014.		

3.4.2 Planned J-Street Drain Improvements

The purpose of the J Street Drain Improvement Project is to provide flood protection to the 100-year flood level for the area surrounding J Street Drain. Protection from a 100-year flood is the standard set by FEMA under the National Flood Insurance Program (NFIP). Construction of the proposed project would be the first major step of a proactive effort to protect properties currently threatened with flooding from J Street Drain overflow (VCWPD EIR, 2012).

VCWPD channels were initially designed to the Q50 design event. However, due to further development in the City, as well as other factors, these channels may not currently be able to convey this event. VCWPD is in the process of increasing the capacity of the J Street Drain to relieve flooding concerns in the south of the City. This drain was analyzed in 2005 and found to have a capacity between the Q5 and Q10 design hydrologic events. This is far lower than the initial planned capacity of Q50. The improvements to this drain include deepening the existing open channel to a rectangular configuration to convey the Q100 event. In 2012, a final EIR was completed for the improvement project (VCWPD EIR, 2012).

Other than the planned J Street improvements, it is unknown what modifications VCWPD has completed in the study area since the 2003 Master Plan. However, due to the significantly lower existing capacity found in the J Street Drain, and the implications this could have on flooding in the City, a further investigation into the existing capacity of the other VCWPD channels would be prudent.

4.0 REGULATIONS

4.1 Current

4.1.1 Stormwater Quality

The State Water Resources Control Board (SWRCB), in cooperation with the federal Environmental Protection Agency (EPA) has issued stormwater permits under the National Pollutant Discharge Elimination System (NPDES) program. The NPDES program requires that municipalities and counties with certain population sizes acquire municipal separate stormwater system (MS4) permits for discharges of stormwater from public stormwater systems, and develop a program to reduce stormwater pollution to the "maximum extent practicable."

The City is a co-permittee, along with nine other cities and VCWPD, for the MS4 NPDES permit issued by the California Regional Water Quality Control Board (RWQCB). The current MS4 permit was issued on July 8, 2010 (Permit CAS004002, Order No. R4-2010-0108). Additional information on the stormwater permit can be found at http://www.vcstormwater.org/documents/reference/ventcopermit.pdf. Pursuant to the permit, VCWPD has developed a County-wide Stormwater Quality Management Plan that includes management measures/best management practices (BMPs) associated with the following program elements, as required by the permit:

- Program management.
- Programs for residents.
- Programs for industrial/commercial businesses.
- Programs for land development.
- Programs for construction sites.
- Programs for Co-permittee facility maintenance.
- Programs for illicit discharge control.

Ventura County, through the use of a stormwater ordinance, also regulates stormwater quality in the County. The Ventura County Stormwater Ordinance (Ordinance No. 4142) prohibits the discharge of non- stormwater discharges into County stormwater facilities and seeks to reduce pollutants in stormwater to the maximum extent practicable. This ordinance also requires owners to comply with the State construction general stormwater permit prior

to being issued a grading permit for construction activity. The construction general stormwater permit will require the preparation of a Stormwater Pollution Prevention Plan (SWPPP). Further information on stormwater quality can be found in Section 5.0, below, in this PM.

Each co-permittee is responsible for adoption and enforcement of stormwater pollution prevention ordinances, implementation of self-monitoring programs and BMPs, and conducting applicable inspections. The City of Oxnard has adopted a Stormwater Quality Ordinance (Appendix A). The City also has guidelines that govern specific development concerns for storm sewers and drainage and retains the responsibility for the following:

- Maintain storm drain system with channel capacities less than 500 cfs.
- Collect water quality data.
- Act as floodplain manager for areas inside City boundaries.

4.1.2 Stormwater Quantity

The FEMA administers the National Flood Insurance Program (NFIP). In 1985, FEMA completed Flood Insurance Rate Maps (FIRMs) depicting flood zones that have a one percent annual chance of flooding (at that time known as the 100-year flood zone). These maps have since been digitized (DFIRMs) and for this area were issued in 2010. Property owners within Flood Zone A are federally mandated to purchase flood insurance.

The current DFIRMs are based on pre-1984 hydrologic data and hydraulic analyses conducted over 25 years ago (FEMA Flood Insurance Study 06111CV001A for Ventura County, California and Incorporated Areas, Volume 1 of 3, January 20, 2010). Since that time, Ventura County has experienced several years of record rainfall, including 1995, 1998, and 2005 (VCWPD, 2009). The DFIRMs are therefore based on data that do not reflect the trend of increasing rainfall since the 1980s.

Therefore, communities must adopt a floodplain management ordinance addressing construction and habitation in flood zones. In California, the SWRCB provides and encourages communities to adapt the California Model Floodplain Management Ordinance to deal with these DFIRM deficiencies. Ventura County adopted their Flood Plain Management Ordinance (Ordinance 3741) in 1985. Several revisions have been made since then with the latest ordinance adopted in 1990 (Ordinance 3954). The VCWPD implements this ordinance to ensure compliance with the NFIP. The ordinance addresses the risks of development within the floodplain and includes a list of prohibited discharges, exemption procedures, and requirements for construction and permitting. Further discussions of how the FEMA flood zones impact the City are included in PM 5.2, *Stormwater System – Infrastructure Modeling and Alternatives*.

The City's 2030 General Plan also contains policies applicable to stormwater management. These stormwater policies are summarized as follows:

- Development must mitigate flooding problems identified by the NFIP.
- The City shall continue to provide information to FEMA to ensure the FIRMs which cover Oxnard are updated periodically to address changing flood conditions brought about by urban development.

4.1.3 TMDLs

There are a number of water bodies with TMDLs within Ventura County. The City of Oxnard is a participating party in the Santa Clara River Bacteria TMDL as well as implementing the Harbor Beaches TMDL on its own. A brief status update on the TMDLs follows. TMDL documents and additional information can be found at http://www.waterboards.ca.gov/water_issues/programs/tmdl/.

Santa Clara River Bacteria TMDL went into effect in March 2012. The TMDL Implementation Plan is currently in development through an Agreement among County of Ventura and the cities of Fillmore, Oxnard, Santa Paula, and Ventura (VCWPD, 2015). In addition, the same parties have completed development of the receiving water monitoring plan.

The Harbor Beaches TMDL went into effect in December 2008, and dry and wet weather implementation plans were submitted in 2009 and 2010. The City has implemented and continues to implement BMPs aimed at reducing sources and transport of bacteria into the receiving waters at Kiddie and Hobie Beaches.

4.2 Future (Potential)

In January 2015, the VCWPD submitted their report of waste discharge (ROWD), which serves as the application of renewal of the waste discharge requirements set forth in the current order (Order No. R4-2010-0108). While the provisions of the next permit are currently unknown, the VCWPD is anticipating that their next permit will be based on the MS4 Permit for Los Angeles County, Order R4-2012-0175 (LA Permit) (VCWPD, January 2015). The VCWPD ROWD includes proposed recommendations for changing or modifying specific provisions of the Los Angeles County Permit (VCWPD, 2015) and the justification for these recommendations for the purpose of the VCWPD permit renewal process.

On the statewide level, CASQA (2015) outlined their strategic visions and goals for stormwater management. CASQA (2015) outlines a comprehensive plan for stormwater that will achieve the goals of the clean water act. With respect to future regulations, CASQA identified the need for stormwater to be considered a non-point source rather than a point source, and the need for regulations related to stormwater capture and use as a resource.

At the federal level, there was relatively recent EPA action on developing new federal stormwater regulations. However, this effort has recently been abandoned based on the conclusion that a broad regulatory program may not be the best approach for regulating stormwater. The EPA has not yet developed approaches and programs in lieu of federal regulations.

5.0 STORMWATER QUALITY

This section summarizes what is known of Oxnard's stormwater quality, both during wet weather and dry-weather conditions. Water quality data comes from the following two sources:

- Ventura County Watershed Protection District (VCWPD): Data is collected during both dry and wet weather events at two outfalls in Oxnard. Data has been collected in these outfalls since 2010.
- CH2M Hill Study "Feasibility of Using the Oxnard Advanced Water Purification Facility to Treat Stormwater from the J Street and Oxnard Industrial Drains": Water quality data was collected at multiple locations in the J Street Drain and Oxnard Industrial Drain as a part of this study. Data was collected in late 2009 to early 2010 and again in March 2013.

The VCWPD conducts water quality monitoring for the Ventura National Pollution Discharge Elimination System (NPDES) MS4 permit and for the Santa Clara River Bacteria TMDL. There are two major outfall sampling locations in Oxnard where dry and wet weather flows are regularly recorded. The first, the MO-HUE outfall, is located in the southern portion of Oxnard and water quality samples collected from this outfall measures certain pollutants in the Hueneme Drain, which flows to the Ocean. The second, the MO-OXN outfall, is located in the northern portion of Oxnard and water quality samples collected from this outfall measures certain pollutants in the El Rio Drain, which flows to the Santa Clara River. Both of these sampling locations are shown in Figure 7. Recorded water quality data from 2010 to 2013 for these two outfalls are summarized in Tables 5 and 6 for wet and dry weather, respectively.

STORMWATER SAMPLING LOCATIONS

FIGURE 7

CITY OF OXNARD

PM NO. 5.1 – BACKGROUND SUMMARY

PUBLIC WORKS INTEGRATED MASTER PLAN

CITY OF OXNARD CALIFORNIA

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Table 5 Wet Weather Water Quality Data from VCWPD (2010-2013)[1]
Public Works Integrated Master Plan
City of Oxnard

Constituent	Units	MO-HUE	MO-OXN
Alkalinity as CaCO3	mg/L	185	46
Ammonia as N	mg/L	0.62	0.85
BOD	mg/L	10	17
Calcium	mg/L	131	19
Chloride	mg/L	1,394	14
COD	mg/L	57	145
Cyanide[2]	mg/L	0.0027	0.0027
DO	%	32	48
E. Coli	MPN/100 mL	12,529	8,943
Fecal Coliform	MPN/100 mL	12,711	10,911
Fluoride	mg/L	0.38	0.21
Hardness as CaCO3	mg/L	816	70
Magnesium	mg/L	120	5
MBAS	mg/L	0.17	0.58
Mercury	ng/L	19	54
Oil and Grease	mg/L	1.5	2.4
pH	pH Units	7.7	7.4
Phenolics	mg/L	0.038	0.035
Phosphorus as P	mg/L	0.28	0.48
Salinity	mg/L	2,613	191
TKN	mg/L	1.9	3.4
Total Coliform	MPN/100 mL	291,338	436,180
Total Dissolved Solids	mg/L	2,775	134
Total Organic Carbon	mg/L	10	22
Total Suspended Solids	mg/L	52	208
TPH[2]	mg/L	1.9	1.9
Turbidity	NTU	18	40
Volatile Suspended Solids	mg/L	15	62

Notes:
(1) Wet weather flows are recorded for three storms annually for MS4 compliance.
(2) All data recorded was below detection limit.

Table 6 Dry Weather Water Quality Data from VCWPD (2010-2013)[1]
Public Works Integrated Master Plan
City of Oxnard

Constituent	Units	MO-HUE	MO-OXN
Alkalinity as CaCO3	mg/L	102	233
Ammonia as N	mg/L	0.16	0.44
BOD	mg/L	3.7	3.7
Calcium	mg/L	72	132
Chloride	mg/L	117	1,808
COD	mg/L	58	52
Cyanide[2]	mg/L	0.0027	0.0027
Discharge	cfs	1.2	1.2
DO	%	7.8	7.0
E. Coli	MPN/100mL	1,915	1,566
Fecal Coliform	MPN/100mL	156	953
Fluoride	mg/L	1.1	0.8
Hardness as CaCO3	mg/L	316	769
Magnesium	mg/L	32	107
MBAS	mg/L	0.19	0.19
Mercury	ng/L	-	-
Nitrate as N	mg/L	-	0.52
Oil and Grease	mg/L	-	1.3
pH	pH Units	8.9	8.5
Phenolics	mg/L	0.06	0.05
Phosphorus as P	mg/L	0.12	0.18
Salinity	mg/L	350	2,050
TKN	mg/L	1.5	1.3
Total Coliform	MPN/100mL	55,235	60,863
Total Dissolved Solids	mg/L	680	3,865
Total Organic Carbon	mg/L	14.0	10.6
Total Suspended Solids	mg/L	61	38
TPH[2]	mg/L	1.9	1.9
Turbidity	NTU	9.5	11.0
Volatile Suspended Solids	mg/L	32.0	18.5

Notes:
(1) Dry weather flows are recorded once annually for MS4 compliance. Data is only recorded when there is flow in the channel. Data below detection limit was recorded at detection limit.
(2) All data recorded was below detection limit.

In the CH2M Hill study mentioned above, additional water quality parameters were tested daily from March 18 through March 24, 2013 for two outfalls in the southern part of Oxnard - namely the J Street Drain and the Oxnard Industrial Drain. This study also recorded water quality data that was collected in late 2009 and early 2010 for the same stormwater channels. Tables 7 and 8 tabulate this data. All recorded data from this study is dry weather stormwater channel flows.

Table 7 Dry Weather Water Quality Data from Oxnard Industrial Drain (CH2M Hill)
Public Works Integrated Master Plan
City of Oxnard

Constituent	Units	IOD-A (March 2013)	IOD-B (March 2013)	OID 6 (End of 2009 - Beginning of 2010)	OID 7 (End of 2009 - Beginning of 2010)
Oil and Grease	mg/L	<5	<5	NS	NS
Turbidity	NTU	5.8	0.7	NS	NS
Mercury	mg/L	0.0001	0.0001	0.0001	0.00012
Boron	mg/L	1.5	1.5	NS	NS
Calcium	mg/L	351.4	481.4	314,5	383
Iron	mg/L	1.3	0.09	0.27	0.28
Dissolved Iron	mg/L	NS	NS	0.09	0.1
Lithium	mg/L	0.06	0.08	NS	NS
Magnesium	mg/L	115.7	101.4	169	146
Potassium	mg/L	9.7	10.5	28.3	18.3
Silicon	mg/L	5.2	13.6	NS	NS
Sodium	mg/L	275.7	185.7	710.5	492.5
Strontium	mg/L	2.9	4.1	NS	NS
Aluminum	ug/L	443.3	29.7	83.9	50.4
Antimony	ug/L	0.41	0.49	0.43	0.34
Arsenic	ug/L	1.9	1.6	6.7	5.6
Barium	ug/L	41.6	44.9	39.4	34
Beryllium	ug/L	0.12	0.14	0.66	0.66
Cadmium	ug/L	0.56	0.21	0.5	0.27
Chromium	ug/L	2.3	2	10	10
Cobalt	ug/L	1	0.8	1	1
Copper	ug/L	9.2	3.5	3.6	4
Lead	ug/L	2.7	0.3	0.3	0.3
Manganese	ug/L	468.6	53.9	262.5	213
Molybdenum	ug/L	35	52.4	NS	NS
Nickel	ug/L	6.5	13.4	9.9	10.4
Selenium	ug/L	5.8	4	19.1	18.2

Table 7 Dry Weather Water Quality Data from Oxnard Industrial Drain (CH2M Hill)
Public Works Integrated Master Plan
City of Oxnard

Constituent	Units	IOD-A (March 2013)	IOD-B (March 2013)	OID 6 (End of 2009 - Beginning of 2010)	OID 7 (End of 2009 - Beginning of 2010)
Silver	ug/L	0.11	0.1	0.36	0.36
Thallium	ug/L	>.2	<.2	0.53	0.53
Vanadium	ug/L	48.1	2.5	2	2
Zinc	ug/L	10,800	4	34	34.1
TDS	mg/L	NS	2,740	3,750	3,150
pH	Units	NS	NS	8.1	8.2
Bicarbonate Alk	mg/L	NS	NS	255	250
Chloride	mg/L	NS	NS	1,060	610
Sulfate	mg/L	NS	NS	1,225	1,300
Bromide	mg/L	NS	NS	6.9	6.3
Fluoride	mg/L	NS	NS	0.68	0.64
NH3-N	mg/L	NS	NS	0.09	0.1
NO3-N	mg/L	NS	NS	5	5
TOC	mg/L	NS	NS	5.4	6.4

Notes:
NS = Not Sampled

Table 8 Dry Weather Water Quality Data from J-Street Drain (CH2M Hill)
Public Works Integrated Master Plan
City of Oxnard

Constituent	Units	J St A (March 2013)	J St B (March 2013)	J St 1 (End of 2009 - Beginning of 2010)
Oil and grease	mg/L	<5	<5	NS
Turbidity	NTU	2.61	3.56	NS
Mercury	mg/L	0.04	0.05	0.1
Boron	mg/L	0.59	0.77	NS
Calcium	mg/L	97.86	135.29	243
Iron	mg/L	0.32	0.15	0.3
Dissolved Iron	mg/L	NS	NS	0.4
Lithium	mg/L	0.04	0.04	NS
Magnesium	mg/L	40.29	54.57	353.5
Potassium	mg/L	8.91	11.51	110.4
Silicon	mg/L	7.03	5.94	NS

Table 8 Dry Weather Water Quality Data from J-Street Drain (CH2M Hill)
Public Works Integrated Master Plan
City of Oxnard

Constituent	Units	J St A (March 2013)	J St B (March 2013)	J St 1 (End of 2009 - Beginning of 2010)
Sodium	mg/L	116.4	143.9	2,750
Strontium	mg/L	0.97	1.35	NS
Aluminum	ug/L	112	38.7	85
Antimony	ug/L	0.82	1.35	0.4
Arsenic	ug/L	1.38	1.47	8.4
Barium	ug/L	46.6	58	46.1
Beryllium	ug/L	<0.1	0.25	1.6
Cadmium	ug/L	0.23	0.26	0.8
Chromium	ug/L	1	0.92	10
Cobalt	ug/L	0.35	0.44	0.6
Copper	ug/L	8.37	12.7	2.8
Lead	ug/L	0.74	0.96	0.2
Manganese	ug/L	48.5	34.1	201
Molybdenum	ug/L	11.5	18.7	NS
Nickel	ug/L	2.81	4.77	5.5
Selenium	ug/L	2.87	3.19	19.7
Silver	ug/L	0.12	0.13	0.5
Thallium	ug/L	<0.2	0.28	1.5
Vanadium	ug/L	2.56	1.99	1.2
Zinc	ug/L	15	20.4	34.9
TDS	mg/L	9,100	2,280	10,150
pH	Units	NS	NS	8.1
Bicarbonate Alk	mg/L	NS	NS	255
Chloride	mg/L	NS	NS	5,400
Sulfate	mg/L	NS	NS	1,155
Bromide	mg/L	NS	NS	5.3
Fluoride	mg/L	NS	NS	0.5
NH3-N	mg/L	NS	NS	0.1
NO3-N	mg/L	NS	NS	0.6
TOC	mg/L	NS	NS	4

Notes:
NS = Not Sampled

6.0 CLIMATE CHANGE

6.1 Annual Rainfall

6.1.1 Current Trends

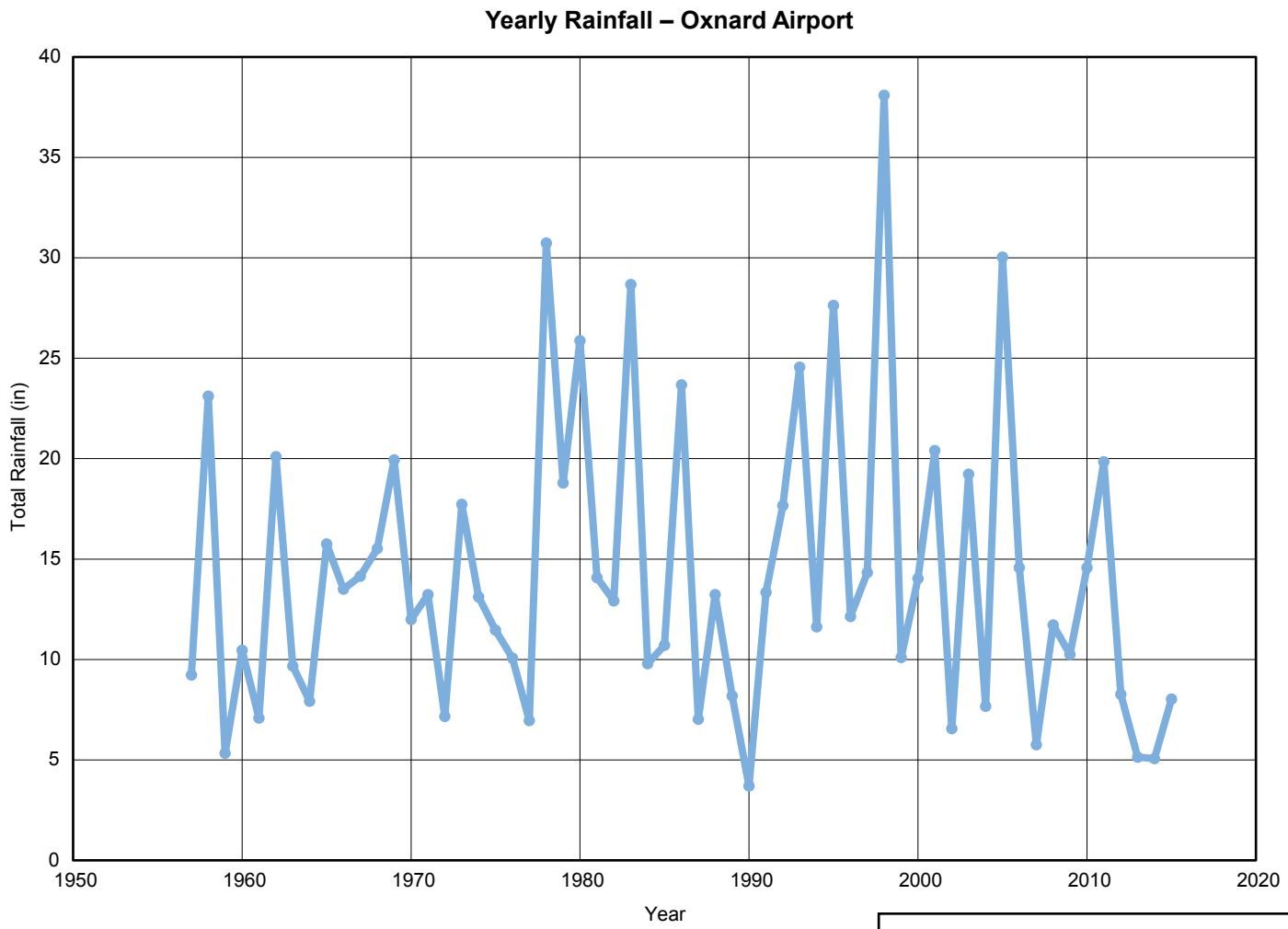
The change in trends of total annual rainfall across the U.S. is already measurable. The results of a recent study performed using two data sets of global rainfall from 1925 through 1999 showed increased annual precipitation in temperate regions of the Northern Hemisphere (Zhang *et al.*, 2007). Since about 1970, total annual precipitation across the U.S. has tended to remain above the twentieth-century mean and averaged about 5 percent more than the previous 70 years (Karl *et al.*, 1996). More importantly, in the western mountains of the U.S., approximately 74 percent of weather stations showed an increase in the fraction of annual precipitation falling as rain rather than snow from 1949 through 2004 (Knowles *et al.*, 2006).

Figure 8 shows the total annual precipitation recorded at the City of Oxnard. The data show an increase in the spread of data points - that is the minimum and maximum levels of total annual precipitation have decreased and increased, respectively, over time. Though it appears that there is a slightly increasing trend for total annual precipitation, it is not statistically significant at this point.

6.1.2 Future Projections

To examine the potential future impacts of global warming, scientists have developed computer models (general circulation and regional climate models) simulating climate. While projected temperature changes are broadly consistent across most modeling efforts, projected changes in total annual precipitation have varied widely across models and emissions scenarios (Kiparsky and Gleick 2003, Madsen and Figdor 2007). In addition, as models are run at finer levels of geographic resolution (e.g., regional or metropolitan level) the accuracy decreases.

California's precipitation patterns vary in different parts of the region. General circulation models (GCMs) do not reproduce detailed precipitation patterns accurately. The usefulness of these models is judged based on their ability to reproduce recent changes. Precipitation relies on meteorological conditions that occur at scales smaller than GCMs currently resolve. In recent years, they have become increasingly accurate and have been applied to more regions of the country. However, most regional studies performed in California have focused on Northern California, and there is still no consensus on projections for total annual precipitation for the Oxnard area. Therefore, it is recommended that long term planning be based on current trends of total annual precipitation analyzed on a monthly basis. Monthly trending would provide more specific information on general trends observed elsewhere of increasing rainfall as snowfall decreases, and the timing of precipitation events occurring earlier in the water year.



HISTORIC ANNUAL PRECIPITATION AT THE OXNARD AIRPORT

FIGURE 8

CITY OF OXNARD

PM NO. 5.1 – BACKGROUND SUMMARY

PUBLIC WORKS INTEGRATED MASTER PLAN

CITY OF OXNARD CALIFORNIA

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6.2 Rainfall Intensity and Distribution

Although projections for total annual precipitation vary significantly, most regional climate model results in the U.S. suggest that the extreme daily precipitation rate will increase relative to changes in the annual mean precipitation rate. During times of high intensity precipitation, runoff rates increase rapidly resulting in less groundwater recharge, decreased surface water quality, and increased reservoir inflow. It is important to consider the potential impact global warming could have on the City's precipitation characteristics (intensity and distribution throughout the year) in order to anticipate necessary modifications to the operational management of the surface water supplies and storage capabilities.

6.2.1 Current Trends

The Environment California Research and Policy Center (ECRPC) released a study in the summer of 2012 evaluating trends in the frequency of extreme levels of precipitation (rainfall or snowfall) across the contiguous U.S. (as well as finer levels of geography). The analysis considered daily precipitation records obtained from the National Climatic Data Center (NCDC) spanning from 1948 through 2011 at more than 3,700 weather stations in 48 states. Patterns in the timing of heavy precipitation relative to the local climate at each weather station were examined (Madsen and Willcox, 2012). The results were found to be consistent with many studies performed previously, including a study completed in 1999 by researchers at the Illinois State Water Survey and the NCDC examining the period from 1931 to 1996 (Kunkel *et al.*, 1999).

The 2012 ECRPC study focused on storms with extreme 24-hour precipitation totals that are defined relative to the local climate, selecting those with an average recurrence interval of 1 year or more. With 95 percent confidence, records show that there is an average increase of 30 percent in frequency of extreme precipitation events across the continental U.S. since 1948. The largest increase is recorded in the New England area, with extreme events happening 85 percent more often than in 1948. In addition, the biggest storms in 2011 produced about 10 percent more precipitation than the biggest storms in 1948 (Madsen and Willcox, 2012).

At the state level, records show a 13 percent increase in frequency of extreme precipitation events in California since 1948 on average – with southern California showing an increasing trend and northern California showing a decreasing trend (Madsen and Willcox, 2012). Detection of statistically significant trends in the frequency of extreme precipitation events becomes more difficult at the metropolitan level. However, in the 2007 version of the study, 55 of the 248 metropolitan areas (as defined by the U.S. Census Bureau) showed a statistically significant increase in the frequency of extreme precipitation events. A review of extreme precipitation for an area including Santa Barbara, Santa Maria and Lompoc showed a 69 percent average increase in frequency of extreme precipitation events since 1948 and an area including Los Angeles, Riverside, and Orange County showed a

58 percent average increase in frequency of extreme precipitation events since 1948 (Madsen and Figdor, 2007).

6.2.2 Future Projections

Further changes in precipitation patterns are projected to occur due to climate change. Both general circulation and regional climate models project the intensity of precipitation is likely to increase around the world, with the most significant increases occurring in the middle to high latitudes (Meehl, 2005). Global simulations show the percentage increase in extreme precipitation is greater than the percentage increase in mean rainfall.

Kharin and Zwiers project the probability of 24-hour precipitation events considered to be extreme will increase by a factor of about 2 by the period of 2046 to 2065 and by a factor of 3 by the end of the 21st century relative to those that occurred during the period of 1981 to 2000. This means that return periods of 10, 20, 50, and 100 years for 24-hour precipitation events will be reduced by a factor of 2 or more (meaning they will occur two or more times as often) by the year 2100 due to climate change (Kharin and Zwiers 2005, Kharin *et al.,* 2007). In effect, these changes will shift design level rainfall. For example, a current 10-year event will become a 5-year event, a 100-year event will become a 50-year event, and so on. This implies that municipalities will have to plan on more frequent and intense flooding events in the future unless new and improved measures are taken.

Projected changes in regions of California are less accurate and do not cover the area of Oxnard. They are mainly associated with changes in moisture flowing in from the Pacific Ocean and the increase in elevation of freezing levels during the winter. By the year 2100, northern California is projected to experience an increase in both low and high intensity events (Dettinger, 2005).

Although there is a lack of model simulation results relevant to projections for the Central Coast, including the area in and around the City, it is recommended that long term planning be based on the current trends of an increase in frequency and change in distribution within the year of extreme levels of precipitation, as opposed to increases or decreases in average annual precipitation.

APPENDIX A - STORMWATER QUALITY ORDINANCE

AGENDA ITEM NO. 5-6

CITY COUNCIL OF THE CITY OF OXNARD

ORDINANCE NO. 2876

ORDINANCE OF THE CITY OF OXNARD, CALIFORNIA, AMENDING ARTICLE XII OF CHAPTER 22 (WATER) OF THE CITY CODE PERTAINING TO STORM WATER QUALITY MANAGEMENT

WHEREAS, the Federal Water Pollution Control Act (Clean Water Act or CWA) (33 USC §§ 1251 et seq.) as implemented by the United States Environmental Protection Agency (EPA) regulations require the adoption of plans and programs for storm water quality management meeting specified criteria; and

WHEREAS, in order to comply with and implement the requirements of the CWA and state clean water laws, the Ventura County Watershed Protection District, County of Ventura and the cities of Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, San Buenaventura, Santa Paula, Simi Valley and Thousand Oaks (collectively referred to as co-permittees) formed the Ventura Countywide Storm Water Quality Management Program and submitted an application to be covered by a single National Pollutant Discharge Elimination System (NPDES) permit for publicly owned municipal separate storm sewers (MS4s) in Ventura County under their respective jurisdictions; and

WHEREAS, the California Regional Water Quality Control Board, Los Angeles Region, has issued various Orders and NPDES permits to the co-permittees regulating storm water and non-storm water discharges from the MS4s within the Ventura County Watershed Protection District, and the County of Ventura and the incorporated cities therein. The current order and permit are Order R4-2010-0108 and Permit No. CAS004002 issued on July 8, 2010 (MS4 Permit); and

WHEREAS, the City has adopted Article XII of Chapter 22 (Storm Water Quality Management) of the City Code in order to comply with the requirements of applicable federal and state water quality laws and to provide an acceptable program for the conservation of water resources within the City, as well as to protect the health, safety and general welfare of its citizens; and

WHEREAS, the City Council desires to amend Article XII to conform to the current MS4 Permit and, where applicable or appropriate, attempt to recover some of the City's costs associated with compliance with the MS4 Permit; and

WHEREAS, the adoption of this ordinance in order to implement the pollutant control measures described in the MS4 Permit in furtherance of these purposes is exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to Sections 15305 and 15307-15309 of the State CEQA Guidelines.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF OXNARD DOES ORDAIN AS FOLLOWS:

Part 1. Article XII of Chapter 22 of the Oxnard City Code is amended to read as follows:

"ARTICLE XII. STORM WATER QUALITY MANAGEMENT

SEC. 22-215. PURPOSE AND INTENT.

This article implements the Federal Water Pollution Control Act (the "Clean Water Act" or "CWA"), 33 U.S.C. Section 1251 et seq., as amended, and Division 7 of the California Water Code by prohibiting the discharge of any pollutant to navigable waters of the United States from a point source unless the discharge is authorized by a permit issued pursuant to the National Pollutant Discharge Elimination System ("NPDES") required by CWA Section 402 (33 U.S.C. Section 1342), and by prohibiting non-storm water discharges into the storm drain system.

SEC. 22-216. DEFINITIONS.

For the purposes of this article, the following words and phrases will have the meanings set forth this section. Words and phrases not defined in this section or elsewhere in this article will have the meanings set forth in the regulations implementing the NPDES, Clean Water Act Section 402, and Division 7 of the California Water Code, as they may be amended from time to time, and if not defined in such laws, then the applicable definitions in the municipal storm water permit will apply.

(A) BASIN PLAN – The Water Quality Control Plan for Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the regional board on June 13, 1994, as amended from time to time.

(B) BEST MANAGEMENT PRACTICES (BMPs) – Measures, practices, and procedures to prevent or reduce, to the maximum extent that is technologically and economically feasible, the discharge of pollutants to the city's storm drain system and receiving waters. A BMP may consist of a structural BMP, source control BMP, treatment control BMP, or any other BMP promulgated by the California Stormwater Quality Association (CASQA), California Department of Transportation (Caltrans), or approved by the director for the purpose of controlling or eliminating storm water pollution.

(C) CHANNEL – An open conduit either naturally or artificially created that periodically or continuously contains moving water, or which forms a connecting link between two waterbodies.

(D) CONSTRUCTION ACTIVITY – Any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that results in a land disturbance. Construction activity does not include emergency construction activities required to immediately protect public health and safety or routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, maintain original line and grade, hydraulic capacity, or original purpose of the facility.

(E) CONTAMINATION – An impairment of the quality of waters of the state by waste to a degree that creates a hazard to the public health through poisoning or spread of disease. Contamination also includes any equivalent effect resulting from the disposal of waste, whether or not waters of the state are affected.

(F) CRITICAL SOURCE FACILITIES – Those commercial or industrial facilities or businesses that have a potential to contribute pollutants to storm water runoff and are listed in Part 4.D and Attachment D of the municipal storm water permit.

(G) DECHLORINATED/DEBROMINATED SWIMMING POOL DISCHARGE – Any swimming pool discharge with a residual chlorine or bromine level of 0.1mg/L or less; and that does not contain any detergents, wastes, algaecides, or cyanuric acid in excess of 50 ppm, or any other chemicals including salts from pools commonly referred to as "salt water pools". The term does not include swimming pool filter backwash or swimming pool water containing bacteria.

(H) DEVELOPMENT – Any construction, rehabilitation, redevelopment or reconstruction for which either a discretionary land use approval or a permit is required, for any public or private residential (whether single-family, multi-unit or planned unit development); industrial; commercial; retail; institutional; and other nonresidential projects, including public agency projects; or mass grading for future construction.

(I) DIRECTOR – The public works director or designee.

(J) DISCHARGE – When used without qualification, the discharge of a pollutant.

(K) DISCHARGE OF A POLLUTANT – Any addition of any pollutant to waters of the United States, to the city's storm drain system, or any addition of any pollutant to waters of the contiguous zone from any point source other than a vessel or other floating craft which is being used as a means of transportation.

(L) DISCHARGER – Any person causing a discharge.

(M) EPA – The Environmental Protection Agency of the United States of America.

(N) ENVIRONMENT – The physical conditions that exist within the area and that will be affected by a proposed project. The environment means both naturally occurring and man-made conditions. The area involved will be the area in which significant effects would occur, either directly or indirectly, as a result of the project.

(O) HAZARDOUS SUBSTANCES – Those substances designated as hazardous substances under Section 311(b)(2)(A) of the Clean Water Act, which are listed in the table at 40 CFR Section 116.4, and other applicable law.

(P) HEARING OFFICER – The director, who will preside at the administrative hearings authorized by this article and issue final decisions on matters raised in such hearings.

(Q) ILLICIT CONNECTION – Any engineered conveyance that is connected to the storm drain system, without a permit, through or by which an illicit discharge may occur.

(R) ILLICIT DISCHARGE – Any discharge to the storm drain system that is prohibited under local, state, or federal statutes, ordinances, codes, or regulations. The term illicit discharge includes all non-storm water discharges not composed entirely of storm water except discharges pursuant to a NPDES permit and discharges which are exempt or conditionally exempt in accordance with any applicable order of the regional board or authorized by the regional board executive officer.

(S) INVOICE FOR COSTS – An invoice for the actual costs and expenses of the city, including, but not limited to administrative overhead, salaries, attorneys' fees and other expenses recoverable under applicable law, incurred during any inspection, investigation or proceeding conducted pursuant to this article, where a notice of violation or other enforcement remedy under this article is used to obtain compliance with this article.

(T) MAXIMUM EXTENT PRACTICABLE – The level of pollutant control that is derived from available technology or other controls at the maximum level that is practicable. Pollution prevention and source control BMPs in combination with structural and treatment methods where appropriate are emphasized to achieve compliance. The maximum extent practicable approach is an ever evolving and advancing concept that considers technical and economic feasibility.

(U) MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) or STORM DRAIN SYSTEM – A conveyance or system of conveyances, including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains, as defined in 40 CFR Section 122.26(b)(8): (1) owned or operated by the city; (2) designed or used for collecting or conveying storm water; (3) which is not a combined sewer; and (4) which is not part of a publicly owned treatment works, as defined in 40 CFR Section 122.2.

(V) MUNICIPAL STORM WATER PERMIT – NPDES Permit No. CAS004002 Waste Discharge Requirements for Storm Water (Wet Weather) and Non-Storm Water (Dry Weather) Discharges from the Municipal Separate Storm Sewer Systems within the Ventura County Watershed Protection District, County of Ventura, and the Incorporated Cities Therein (Regional Board Order R4-2010-0108), as amended from time to time.

(W) NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT – A permit issued under the CWA, including a state general permit and the Municipal Storm Water Permit issued by the regional board.

(X) NEW DEVELOPMENT – Land disturbing activities, structural development, construction or installation of a building structure, creation and replacement of impervious surfaces, and land subdivision.

(Y) NON-STORM WATER DISCHARGE – Any discharge to the storm drain system that is not composed entirely of storm water.

(Z) POINT SOURCE – Any discernible, confined, and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural storm water discharges and return flows from irrigated agriculture.

(AA) POLLUTANT – A "pollutant" as defined in Section 502(6) of the Clean Water Act, 33 U.S.C. Section 1362(6), and incorporated by reference into California Water Code section 13373, or other applicable law, which is discharged into water.

(BB) POLLUTION – The man-made or man-induced alteration of the chemical, physical, biological and radiological integrity of water. Pollution also means an alteration of the quality of waters of the state by waste to a degree that unreasonably affects, or has the potential to unreasonably affect, either the waters for beneficial uses or the facilities which serve these beneficial uses.

(CC) POST-CONSTRUCTION STORM WATER MANAGEMENT PLAN (PCSMP) – A plan that defines the strategy and describes the design, placement and implementation of storm water retention and storm water treatment BMPs to effectively prevent non-storm water discharges and reduce pollutants in storm water discharges to the maximum extent practicable, for post-construction urban runoff to the storm drain system.

(DD) POTABLE WATER SOURCES – The potable water system for the treatment, distribution, and provision of water for residential, commercial, industrial, or institutional use that meets all California safe drinking water regulatory standards for human consumption.

(EE) RECEIVING WATERS – All surface water bodies identified in the basin plan.

(FF) REDEVELOPMENT – Land-disturbing activity that results in the creation, addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site as defined in the municipal storm water permit. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of a routine maintenance activity; and land disturbing activities related to structural or impervious surfaces. For an existing single-family dwelling and accessory structures, redevelopment means projects that create, add, or replace 10,000 square feet of impervious area. Redevelopment does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility, nor does it include emergency construction activities required to immediately protect public health and safety.

(GG) REGIONAL BOARD – The California Regional Water Quality Control Board, Los Angeles Region.

(HH) RESPONSIBLE PERSON – The person(s) identified in and responsible for compliance with the provisions of a SWPPP, SWPCP, or PCSMP.

(II) SOURCE CONTROL BMP – Any schedule of activities, prohibitions of practices, maintenance procedures, managerial practices or operational practices that aim to prevent storm water pollution by reducing the potential for contamination at the source of pollution.

(JJ) STATE BOARD – The California State Water Resources Control Board.

(KK) STATE GENERAL PERMIT – A permit issued by the state board or the regional board pursuant to 40 CFR Sections 122 and 123 to regulate a category of point sources. The term state general permit includes, but is not limited to, the General Permit for Storm Water Discharges Associated with Construction Activity and the General Industrial Activities Storm Water Permit and the terms and requirements of both. In the event the EPA revokes the in-lieu permitting authority of the state board, then the term state general permit will also refer to any EPA administered storm water control program for industrial, construction, and any other category of activities.

(LL) STORM WATER – Any surface flow, runoff, and/or drainage associated with rain storm events and/or snow melt, as defined in 40 CFR Section 122.26(b)(13).

(MM) STORM WATER POLLUTION CONTROL PLAN (SWPCP) – A plan or equivalent form, as required by the municipal storm water permit or by the director, identifying potential pollutant sources from a construction site with less than one acre of soil disturbance and describing proposed design, placement and implementation of BMPs, to effectively prevent non-storm water discharges and reduce pollutants in storm water discharges to the storm drain system, to the maximum extent practicable, during construction activities.

(NN) STORM WATER POLLUTION PREVENTION PLAN (SWPPP) – A plan, as required by a state general permit, identifying potential pollutant sources and describing the design, placement and implementation of BMPs, to effectively prevent non-storm water discharges and reduce pollutants in storm water discharges during activities covered by the state general permit.

(OO) STRUCTURAL BMP – Any structural facility designed and constructed to mitigate the adverse impacts of storm water runoff pollution.

(PP) TREATMENT – The application of engineered systems that use physical, chemical, or biological processes to remove pollutants.

(QQ) TREATMENT CONTROL BMP – Any engineered system designed to remove pollutants by simple gravity settling of particulate pollutants, filtration, biological uptake, media absorption or any other physical, biological, or chemical process.

(RR) VENTURA COUNTY TECHNICAL GUIDANCE MANUAL FOR STORM WATER QUALITY CONTROL MEASURES or TECHNICAL GUIDANCE MANUAL – The county technical guidance manual for storm water quality measures required by the municipal storm water permit, as amended from time to time.

(SS) WASTE – Sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal.

(TT) WATERCOURSE – Any natural or artificial channel for passage of water.

(UU) WATERS OF THE STATE – Any surface water or groundwater, including saline waters, within the boundaries of the state of California.

(VV) WATERS OF THE UNITED STATES – Bodies of water as defined in 40 CFR Section 122.2.

(WW) WET SEASON – The calendar period from October 1 through April 15.

SEC. 22-217. PROHIBITION OF ILLICIT CONNECTIONS AND ILLICIT DISCHARGES.

(A) The discharge of pollutants into the storm drain system is prohibited.

(B) All discharges of material other than storm water into the storm drain system must be in compliance with the city's NPDES permit and any other NPDES permit applicable to the subject property.

(C) No person may do any of the following:

(1) Construct, use, maintain, operate or utilize an illicit connection;

(2) Cause, permit, or allow any agent, employee, independent contractor or other person, to construct, maintain, operate, or utilize an illicit connection;

(3) Cause, allow or facilitate an illicit discharge; or

(4) Cause, permit, or allow any agent, employee, or independent contractor, to cause, allow, or facilitate an illicit discharge.

(D) In addition to any other remedy provided by law, the director may, by written notice, require persons responsible for an illicit discharge or illicit connection to immediately, or by a specified date, discontinue the illicit discharge or illicit connection and, if necessary, to take measures to eliminate the source of the illicit discharge or illicit connection. If the illicit discharge or illicit connection is not discontinued in the time specified, the city may take measures to eliminate the source of the illicit discharge or illicit connection to prevent the occurrence of future illicit discharges or illicit connections.

(E) Whenever the director finds that an illicit discharge or illicit connection resulting in the release of pollutants is taking place or has occurred which may result in or has resulted in the release of pollutants is taking place or has occurred which may result in or has resulted in pollutants entering the storm drain system, or watercourse, the director may require by written notice to the responsible person that the pollution cease, be remediated, and the affected property be restored to its pre-pollution condition within a specified time, along with all other remedies available to the city.

(F) The director may, by written notice, require a person responsible for an illicit connection to the storm drain system to eliminate or to secure approval for the connection within a specified time, regardless of whether or not the connection or discharge to it has been established or approved prior to the effective date of this article.

SEC. 22-218. GENERAL DISCHARGE PROHIBITIONS.

(A) No person may discharge any material, other than storm water into the city storm drain system or receiving waters, unless a permit has first been obtained.

(B) The following discharges are exempt from the general permit requirement in subsection (A) of this section:

(1) Discharges originating from a state, federal, or other source for which the city is preempted from regulating by state or federal law;

(2) Discharges covered by a separate individual or general NPDES permit, or conditional waiver for irrigated lands;

(3) Discharge flows from fire-fighting activities; or

(4) Discharges that fall within one of the categories below that are not a source of pollutants that exceed water quality standards, and where specified, meet all the conditions stated:

(a) Natural flows.

(i) Stream diversions authorized by the state board.

(ii) Natural springs and rising groundwater.

(iii) Uncontaminated groundwater infiltration.

(iv) Flows from riparian habitats or wetlands, provided all necessary permits or authorization are received prior to diverting the stream flow.

(b) Flows incidental to urban activities.

(i) Discharges from potable water sources provided the flows are:

(1) Low volume, incidental, and infrequent releases that are innocuous from a water quality perspective;

(2) Dechlorinated, pH adjusted if necessary, re-oxygenated, and both the volume and velocity are controlled to prevent re-suspension of sediments; and

(3) All sediments must be collected and disposed of in a legal manner.

(ii) Gravity flow from foundation, footing, and crawl space drains.

(iii) Discharges from air conditioning condensate with flow segregated to prevent introduction of pollutants.

(iv) Reclaimed and potable irrigation water runoff with flow segregated to prevent introduction of pollutants.

(v) Dechlorinated/debrominated swimming pool discharges that:

(1) do not have Chlorine or Bromine residuals that exceed 0.1 mg/L;

(2) do not contain any chemicals, detergents, wastes, or algaecides;

(3) do not contain cyanuric acid in excess of 50 ppm;

(4) do not contain salts or pH levels in excess of the water quality standards set forth in the municipal storm water permit;

(5) the volume and velocity is controlled to prevent re-suspension of sediments; and

(6) the cleaning waste water and filter back wash is not discharged to storm drain system.

(c) Non-commercial car washing by residents or non-profit organizations.

(d) Sidewalk rinsing using a high pressure-low volume of water device with no additives.

(e) Pooled storm water from treatment BMPs provided that:

(i) The discharge is not a source of pollutants;

(ii) Sediments are to be disposed of properly in compliance with all applicable laws.

SEC. 22-219. SPECIFIC DISCHARGE PROHIBITIONS.

The following discharges are prohibited from entering the storm drain system:

(A) Discharges from the washing or cleaning of gas stations, auto repair garages, or other types of automotive service facilities.

(B) Discharges from mobile auto washing, carpet cleaning, steam cleaning, sandblasting, and other such mobile commercial and industrial operations.

(C) Discharges from areas where repair of machinery and equipment, which are visibly leaking oil, fluid or antifreeze, is performed.

(D) Discharges from storage areas for materials containing grease, oil, or other hazardous substances, or uncovered receptacles containing hazardous materials.

(E) Discharges from swimming pools that have a chlorine/bromine concentration greater than 0.1 mg/L or a chloride concentration greater than 250 mg/L.

(F) Discharges from swimming pool filter backwash, decorative fountains, and ponds.

(G) Discharges from industrial/commercial areas, including the washing or cleaning of restaurant mats.

(H) Discharges from stationary or mobile pet grooming facilities.

(I) Trash container leachate.

(J) Spills, dumping or disposal of pesticide, fungicide, herbicide, litter, landscape and construction debris, garbage, food, animal waste, fuel or chemical wastes, batteries, and any other materials that have the potential to adversely impact water quality.

SEC. 22-220. REDUCTION OF POLLUTANTS IN STORM WATER.

(A) Discharges of storm water containing pollutants that have not been reduced to the maximum extent practicable are prohibited.

(B) Any person engaged in activities that will or may result in pollutants entering the storm drain system or watercourses must undertake all practicable measures to reduce such pollutants.

(C) With written concurrence of the regional board, the city may exempt in writing other non-storm water discharges that are not a source of pollutants to the storm drain system or watercourses.

SEC. 22-221. REDUCTION OF LITTER.

(A) Prohibition. No person may throw, deposit, leave, maintain, keep, or permit to be thrown, deposited, kept, or maintained, in or upon any public or private driveway, parking area, street, alley, sidewalk, trail, or component of the storm drain system or any receiving waters, any refuse, rubbish, garbage, litter, or other discarded or abandoned objects, articles, accumulations, or pollutant so that the same may cause or contribute to pollution.

(B) Waste Management on Residential Sites. Waste must be deposited in a proper receptacle that must be covered to prevent scattering by wind or animal. Spillage and overflow of wastes around containers must be promptly cleaned and properly disposed of.

(C) Waste Management on Commercial, Industrial Sites and Private Residential Complexes. It is the responsibility of any person owning or operating any commercial establishment, industrial park, or residential complex with common areas to procure and place trash receptacles at their own expense on the premises. Persons placing trash in receptacles must do so in such manner as to prevent litter from being carried or deposited by the elements upon any street, sidewalk, or other public place or upon private property. Persons owning or occupying a place of business, who sell or offer for sale food or other goods for immediate consumption wrapped in paper, plastic, cardboard or other similar disposable materials or containers, must endeavor to implement a general litter removal program so as to remove litter generated by such business at least each business day. No person owning or occupying a place of business may sweep into or deposit in the storm drain system the accumulation of litter from any building or lot from any public or private sidewalk or driveway. Persons owning or occupying places of business must keep the sidewalk in front of their business premises free of litter.

SEC. 22-222. CONSTRUCTION DEVELOPMENT.

(A) Any construction activity that results in a land disturbance that requires a grading, building, or discretionary permit must be undertaken in accordance with:

(1) Any conditions and requirements established by the municipal storm water permit or other applicable NPDES permits which are reasonably related to the reduction or elimination of pollutants in storm water runoff from the construction site.

(2) Any condition or requirement established by the director to protect specific watersheds or drainage basins.

(3) Any construction activity requiring a grading, demolition, or stockpile permit must include a plan identifying the structural and non-structural BMPs to be implemented during the construction activity to reduce pollutants in storm water runoff from the site and prevent construction site discharges from causing or contributing to a violation of water quality standards.

(a) The storm water runoff plan required for the construction activity will be based on the area of land to be disturbed by the construction activity as follows:

(i) Any construction activity requiring a grading, demolition or stockpile permit that results in the disturbance of less than one acre of land will require the applicant for such permit to submit and obtain city approval a SWPCP, or equivalent, as required by the municipal storm water permit.

(ii) Any construction activity requiring a grading, demolition or stockpile permit that results in the disturbance of one acre or greater, will require the applicant for such permit to submit and obtain city approval of a SWPPP in accordance with the municipal storm water permit and state general permit.

(b) Prior to the issuance of a grading permit or any permit authorizing construction activity including demolition, clearing, grading, grubbing, excavation, construction, if required by the state board, or where the director determines there is a substantial potential for discharge of significant levels of a pollutant into the storm drain system or receiving waters, the applicant for such permit must submit and obtain approval for the required plan based on the area of land disturbed by the construction activity.

(c) Each applicable SWPPP or SWPCP, must name a responsible person for the project.

(d) The owners of a development project, and their successors and assigns, and each named responsible person, must implement and adhere to the terms, conditions and requirements of the approved SWPPP or SWPCP. Any failure to implement and adhere to the terms, conditions and requirements of such plan will constitute a violation of this article.

(e) Compliance with the conditions and requirements of a SWPPP or SWPCP will not exempt any responsible person from the requirement to comply independently with each provision of this article.

(f) Any construction activity requiring a SWPPP or SWPCP will be inspected a minimum of once during the wet season for the implementation of storm water quality controls. If the city determines that the SWPCP or SWPPP has been improperly implemented, a follow-up site inspection will be conducted by the city within two weeks of the initial inspection.

(g) The city's costs and expenses incurred in the review, approval, or revision of any SWPPP or SWPCP, as well as for the construction site inspection and reinspection will be included as part of the applicable fee for such plans.

SEC. 22-223. POST CONSTRUCTION DEVELOPMENT.

(A) All new development and redevelopment within the city must be undertaken in accordance with:

(1) Any conditions and requirements established by the municipal storm water permit.

(2) Any condition or requirements established by the city to protect specific watersheds or drainage basins.

(B) Applicability of this article to new development and redevelopment projects will be determined in accordance with the municipal storm water permit.

(C) The following requirements apply to new development and redevelopment projects that are subject to post-construction storm water controls:

(1) A PCSMP will be required to be submitted.

(2) Each PCSMP must:

(a) include the name of the owner or other responsible person for the project;

(b) illustrate the location of proposed post-construction storm water controls;

(c) provide engineering calculations and analysis in accordance with the technical guidance manual that demonstrate that the post-construction storm water controls will function appropriately;

(d) include an operation and maintenance plan in accordance with the technical guidance manual. The operation and maintenance plan must specify a required schedule and requirements for maintenance and monitoring;

(e) include a storm water treatment device access and maintenance agreement on the form provided by the city. The director may require that the agreement be recorded with the County Recorder's office.

(3) The owner or responsible person must implement and adhere to the terms, conditions and requirements of the approved PCSMP. Each failure to implement and adhere to the PCSMP will constitute a separate violation of this article.

(4) The city's costs and expenses incurred in the review, approval or revision of any PCSMP or other related requirements will be charged to the owner or responsible person of the applicable new development or redevelopment project as a fee per the applicable city fee resolution.

(5) Compliance with the conditions and requirements of a PCSMP and related maintenance agreement does not exempt any person or development project from the requirement to comply independently with each provision of this article.

(D) The owner or responsible person of a property with a post-construction storm water control device must submit to the city an annual statement on the form provided by the city that certifies that the post-construction storm water device is being adequately maintained and functions as designed. If the annual statement is not timely received by the city, the city may inspect the post-construction storm water device and the owner or responsible person will be charged a fee per the applicable city fee resolution for such inspection and any necessary reinspections.

SEC. 22-224. BEST MANAGEMENT PRACTICES.

(A) Authorization to Adopt and Enforce Best Management Practices. The director may adopt requirements establishing appropriate BMPs for any activity, operation or facility which may cause or contribute to pollution or contamination of the storm drain system. If relevant BMPs have been promulgated by the city or any federal, state or county agency for an activity, operation or facility that would otherwise cause the discharge of pollutants to the storm drain system or watercourses, every person undertaking such activity or operation, or owning or operating such facility must implement such BMPs.

(B) Responsibility to Implement Best Management Practices. Any person engaged in activities or operations or owning facilities or property that will or may result in pollutants entering the storm drain system, or watercourses, as determined by the director, must implement applicable BMPs to the extent they are technologically and economically achievable to prevent or reduce such pollutants.

(C) Minimum BMPs for particular urban activities.

(1) Minimum BMPs for mobile car washes are full containment under and around the vehicle being washed, capture of all water used in the washing operation, and hauling of the captured wash water to a legal point of disposal.

(2) Minimum BMPs for building or sidewalk pressure washing are to use high pressure and low volume of water with no additives at an average usage of 0.006 gallons per square foot of surface area to be rinsed, capture all water used in the washing operation, and haul the captured wash water to a legal point of disposal.

(3) Minimum BMPs for landscape irrigation are inspection of irrigation systems to minimize contact with impervious surfaces, and segregation of runoff from the irrigated area following treatment (pesticide or fertilizer application) to prevent introduction of pollutants.

SEC. 22-225. COMPLIANCE WITH NPDES PERMITS.

Each industrial discharger associated with any construction activity, or any other discharger described in any NPDES permit, must comply with and undertake all other activities required by any applicable NPDES permit with regard to such discharges.

SEC. 22-226. WATERCOURSE AND STORM DRAIN SYSTEM PROTECTION.

(A) Every owner or responsible person for a property, through which a watercourse or portion of the storm drain system passes, must keep and maintain the property reasonably free of litter, debris, vegetation and other obstacles which may contribute pollutants, contaminates or cause a blockage of the flow of water through the watercourse or storm drain system.

(B) Every owner or responsible person for a property must maintain all existing structures within or adjacent to the storm drain system so that such structures will not become a hazard to the use, function or physical integrity of the storm drain system; and, consistent with other laws regarding riparian habitat protection, may not remove healthy bank vegetation beyond that actually necessary for such maintenance, nor remove any such vegetation in a manner as to increase the vulnerability of a watercourse to erosion.

SEC. 22-227. PROHIBITED ACTS AFFECTING WATERCOURSES OR STORM DRAINS.

No person may commit or cause to be committed any of the following acts, unless an appropriate permit or approval from all agencies with jurisdiction over the proposed act or project has first been obtained:

(A) The discharge of a pollutant into any pipe or channel to a watercourse or storm drain system.

(B) Modify the natural flow of water in a watercourse or storm drain system.

(C) Deposit in, plant in or remove any material from a watercourse or storm drain system including its banks, except as required for maintenance.

(D) Construct, alter, enlarge, connect to, change or remove any structure in a watercourse or storm drain system.

(E) Place any loose or unconsolidated material along the side of or within a watercourse or storm drain system, or so close to the side as to cause a diversion of the flow, or to cause a probability of such material being transported by storm waters passing through a watercourse or storm drain system.

SEC. 22-228. INSPECTIONS.

(A) Right to Inspect. Whenever it is necessary to make an inspection to monitor or enforce any of the provisions of, or perform any duty imposed by, this article, any permit, SWPCP, or other applicable law, or whenever the director has reasonable cause to believe there exists upon any premises, including any mobile or portable vehicles, any violation of the provisions of this article, any permit, SWPCP, or other applicable law, or any condition which makes such premises hazardous, unsafe or dangerous, the director is authorized to enter such property at any reasonable time to inspect the same and perform any duty imposed upon the director by this article, or other applicable law.

(B) Entry. The director is authorized to enter public or private property to investigate the source or potential source of a suspected illicit discharge to a storm drain system or watercourses located within the city at all reasonable times to inspect the same and to inspect and copy records related to storm water compliance. Prior to commencing any inspection as authorized by this article, the director will obtain the consent of the owner or responsible person for the premises or will obtain an administrative inspection warrant or criminal search warrant.

(C) Records Review. The director may examine and copy such records as is necessary to determine compliance with the provisions of this article.

(D) Sample and Test. The director may inspect, sample and test any area runoff, soils area (including groundwater testing), process discharge, materials within any waste storage area (including any container contents), or treatment system discharge for the purpose of determining the potential for contribution of pollutants to the storm drain system. The director may investigate the integrity of all storm drain and sanitary sewer systems or other pipelines on the property using appropriate tests, including but not limited to smoke and dye tests or video surveys. The director may take photographs or videotape, make measurements or drawings and create any other record reasonably necessary to document conditions on the property.

(E) Monitoring. The director may undertake monitoring and analysis including both the construction and maintenance of devices at the owners' expense, or require the owner or responsible person to undertake construction and maintenance of devices, at the owners' expense, for the purpose of measuring any discharge or potential source of discharge to the storm drain system.

(F) Test Results. The owner or responsible person of property subject to inspection must provide copies of test results to the city. On submission of a written request to the director, such person will be entitled to receive copies of any results of tests conducted by the city.

SEC. 22-229. INSPECTIONS OF CRITICAL SOURCE FACILITIES.

The city will conduct regular inspections of critical source facilities in accordance with the requirements of the municipal storm water permit. In order to defray the cost of these mandatory inspections, critical source facilities are required to pay the applicable inspection fee established by city council resolution.

SEC. 22-230. REMEDIES FOR VIOLATIONS.

(A) Notice of Violation. The director will review each report of illicit connection or illicit discharge, and, if appropriate, may serve a notice of violation to the owner or responsible person of any public or private property as to which an illicit connection or illicit discharge exists. The notice of violation shall:

(1) Identify the provision(s) of this article, the applicable SWPPP, SWPCP, PCSMP, or permit alleged to have been violated;

(2) State that continued noncompliance may result in civil, criminal or administrative enforcement actions;

(3) State a compliance date;

(4) Describe the manner of abatement required;

(5) Order any necessary remediation work; and

(6) State that the city may recover its costs of abating the violation.

(B) The notice of violation may include where deemed applicable by the director, the following:

(1) Specific steps and time schedules for compliance as reasonably necessary to prevent threatened or future unauthorized illicit discharges, including but not limited to, the threat of an illicit discharge from any pond, pit, well, surface impoundment, holding or storage area;

(2) Specific steps and time schedules for compliance as reasonably necessary to discontinue any illicit connection;

(3) Specific requirements for containment, cleanup, removal, storage, installation of overhead covering or proper disposal of any pollutant having the potential to contact storm water;

(4) Any other terms or requirements reasonably calculated to prevent continued or threatened violations of this article including, but not limited to, requirements for compliance with BMPs guidance documents promulgated by any federal, state or local agency;

(5) Any other terms or requirements reasonably calculated to achieve full compliance with the terms, conditions and requirements of an applicable SWPPP, SWPCP, PCSMP or NPDES permit, or this article.

(C) Cease and Desist Orders.

(1) The director may issue a cease and desist order where the public health, safety and/or welfare requires the same, directing the owner or responsible person to:

(a) Immediately discontinue any illicit connection or illicit discharge to the storm drain system;

(b) Immediately contain or divert any flow of non-storm water off the property, where the flow is occurring in violation of this article;

(c) Immediately discontinue any other violation of this article; and

(d) Clean up the area affected by the violation.

(2) The director may direct by cease and desist order that the owner or responsible person immediately cease any activity not in compliance with the terms, conditions and requirements of the applicable plan, NPDES permit or this article. For construction projects and activities for which a grading or building permit is required a stop work order may be issued by the director or building and safety official of the city to ensure corrective actions are made to the satisfaction of the director. No construction work may proceed until corrective actions have been completed to the satisfaction of the director.

(3) A cease and desist order will be considered a notice of violation.

(D) Recovery of Costs. The director will serve an invoice for costs upon the owner or other responsible person who is subject to a notice of violation or a cease and desist order. If any owner or other responsible person fails to pay the invoice for costs, then the city may institute collection proceedings.

(E) Service of Notices. Any notice of violation, cease and desist order or invoice for costs (collectively, "order") must be served pursuant to the requirements of this article and will be subject to the following:

(1) Each order must state that the recipient has a right to appeal the matter as set forth in this article.

(2) The order must include the address of the affected property and be addressed to the owner as shown on the most recently issued equalized assessment roll or as may otherwise appear in the current records of the city.

(3) If the owner or other responsible person cannot be located after the reasonable efforts of the director, the order will be deemed served 10 business days after posting on the property.

(F) Emergency Abatement. The director is authorized to take any reasonably necessary precautions including, but not limited to, decontamination, packaging, dyking and transportation of materials, in order to protect life, protect property or prevent damage resulting from a condition which is likely to result in a discharge presenting an imminent hazard to the public health, safety or welfare; or which, either individually or in conjunction with other discharges, is an imminent hazard to the city's storm drain system, the environment or which places the city in violation of its NPDES permit. In the furtherance of such an operation, city personnel, any party contracting with the city or a duly authorized representative of another government agency will have immediate access to the premises. The director may prohibit access to the scene of such emergency by any person, vehicle, vessel or thing, and all persons not actually employed in the extinguishment of the condition or the preservation of lives and property in the vicinity thereof. Any costs incurred by the city in performing emergency abatement procedures may be recovered pursuant to subsection (D) of this section.

(G) Consecutive Violations. Each day in which a violation occurs and each separate failure to comply with either a separate provision of this article, a notice of violation, a cease and desist order, an applicable SWPPP, SWPCP, PCSMP, or a condition or requirement of a NPDES permit, constitutes a separate violation.

SEC. 22-231. APPEALS.

(A) Any person aggrieved by the issuance of an order may appeal from the issuance of such order in accordance with the following:

(1) Any such appeal must be filed in writing within 15 days of the date of service of the order by the director upon the appealing party.

(2) No such appeal will be valid for any purpose unless it is timely filed with the City Clerk and unless a filing and processing fee is paid contemporaneously with the filing thereof in an amount as set by city council resolution.

(3) Upon the timely filing of such an appeal, the hearing officer will set a time and place for a hearing on such appeal as expeditiously as is possible and notify the appellant in writing of the time and place of the hearing.

(4) At the time of such hearing, the hearing officer will permit any interested person to present any relevant evidence bearing on the matters involved in the issuance of the order which is the subject of the appeal. The hearing officer need not follow the strict provisions of the rules of evidence as utilized in a judicial proceeding but will follow the substance of such rule to the end that the decision rendered is based upon reliable relevant evidentiary material. The hearing officer's decision will be final and subject only to judicial review.

(B) The provisions of Sections 1094.5 and 1094.6 of the Code of Civil Procedure set forth the procedure for judicial review of any action taken by the city pursuant to this article."

Part 2. Severability. If any section, subsection, sentence, clause, phrase, part or portion of this Ordinance is for any reason held to be invalid or unconstitutional by any court of competent jurisdiction, such decision will not affect the validity of the remaining portions of this Ordinance. The City Council declares that it would have adopted this Ordinance and each section, subsection, sentence, clause, phrase, part or portion thereof, irrespective of the fact that any one of more section, subsections, sentences, clauses, phrases, parts or portions be declared invalid or unconstitutional.

Part 3. Pursuant to Government Code Section 36933(c)(1), the City Attorney was designated to prepare, and the City Clerk published, a summary of this ordinance, and a certified copy of the ordinance was posted in the Office of the City Clerk a minimum of five days before the City Council's adoption of the ordinance.

Part 4. The City Clerk shall certify as to the adoption of this ordinance and shall cause the summary thereof to be published within fifteen calendar (15) days of the adoption and shall post a certified copy of this ordinance, including the vote for and against the same, in the office of the City Clerk, in accordance with Government Code Section 36933. Ordinance No. 2876 was first read on November 5, 2013, and finally adopted on _____, 2013, to become effective thirty days thereafter.

AYES:

NOES:

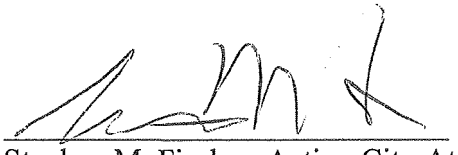
ABSENT:

_____
Tim Flynn, Mayor

ATTEST:

_____
Daniel Martinez, City Clerk

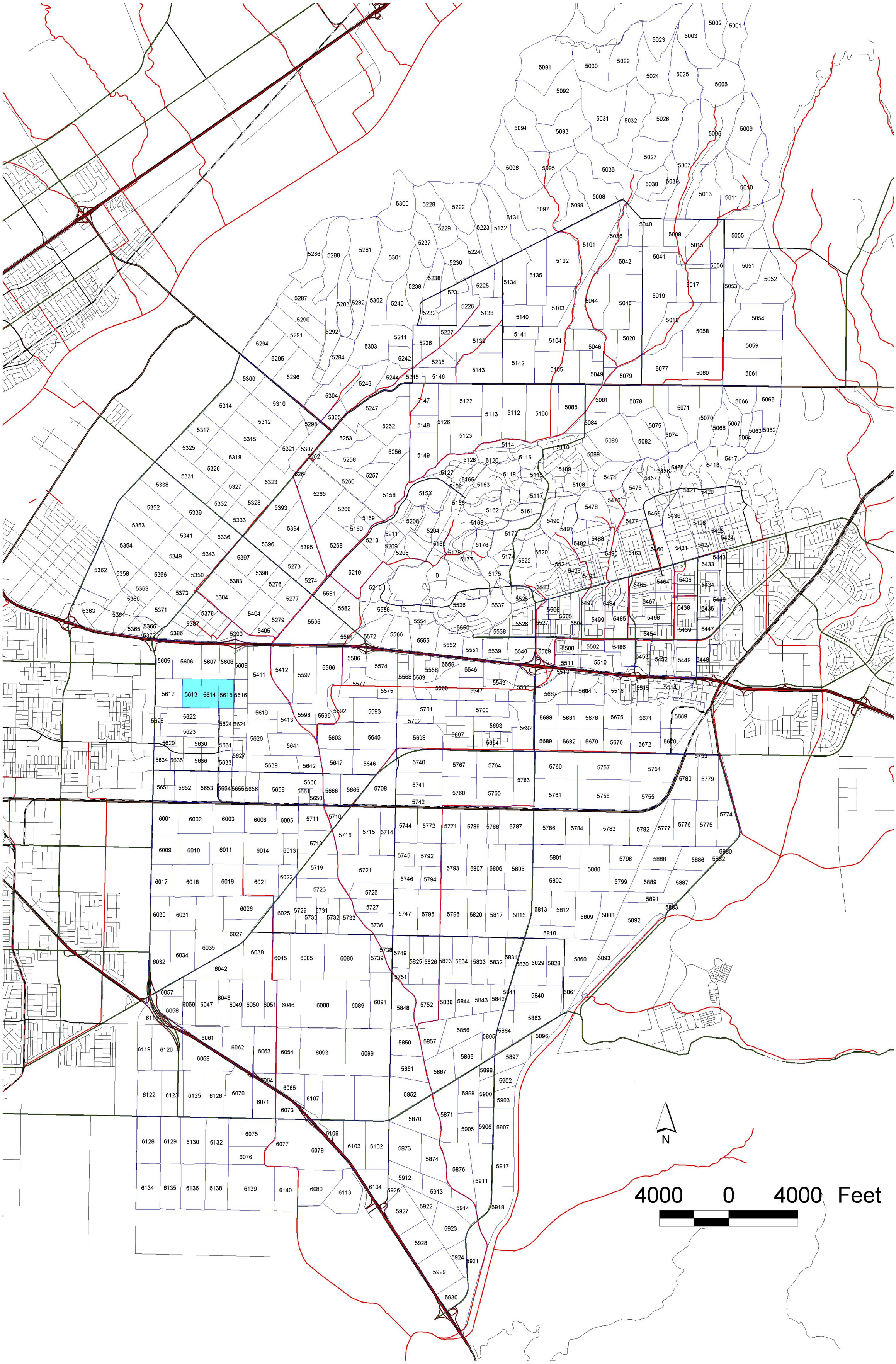
APPROVED AS TO FORM:



Stephen M. Fischer, Acting City Attorney

APPENDIX B

REVOLON SLOUGH AND CALLEGUAS CREEK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APPENDIX C

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1994 or later.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to confirm to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

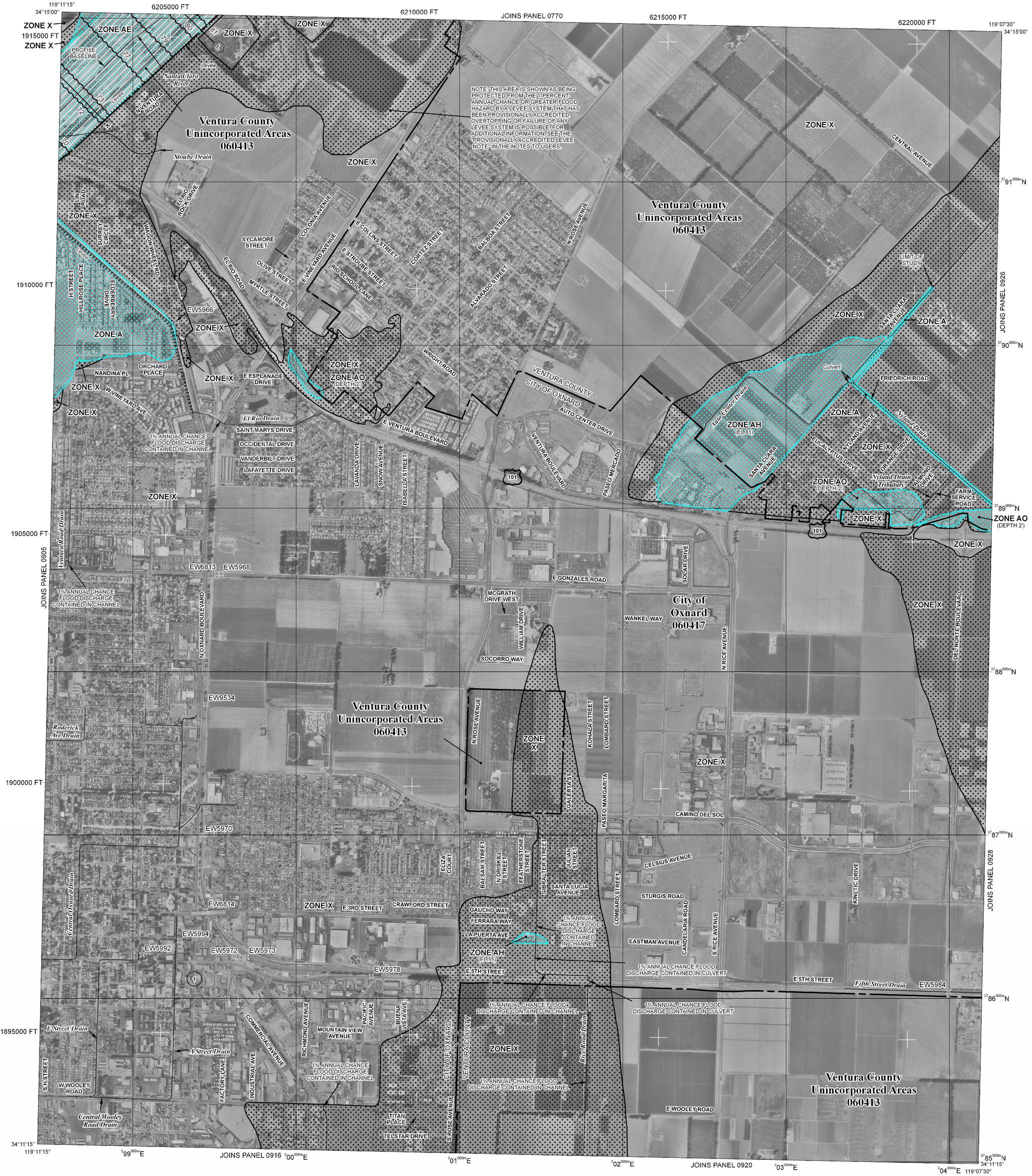
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.mcs.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.

Provisionally Accredited Levee Notes to Users: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To maintain accreditation, the levee owner or community is required to submit the data and documentation necessary to comply with Section 65.10 of the NFIP regulations by December 1, 2009. If the community or owner does not provide the necessary data and documentation or if the data and documentation provided indicate the levee system does not comply with Section 65.10 requirements, FEMA will revise the flood hazard and risk information for this area to reflect de-accreditation of the levee system. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA Website at http://www.fema.gov/business/nfip/index.shtm.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

(A)———(A)	Cross section line
(23)- - - - - -(23)	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
3976000mN	1000-meter Universal Transverse Mercator grid values, zone 11
600000 FT	5000-foot grid ticks: California State Plane coordinate system, zone V (FIPSZONE 0405), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
●M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
January 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0910E

FIRM
FLOOD INSURANCE RATE MAP

VENTURA COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 910 OF 1275
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
OXNARD, CITY OF	060417	0910	E
VENTURA COUNTY	060413	0910	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06111C0910E

EFFECTIVE DATE
JANUARY 20, 2010

Federal Emergency Management Agency

APPENDIX D

GEOTECHNICAL REPORT

Geotechnical Engineering Report

Proposed Oxnard Confidential Project Gaucho

Southwest Corner of Hwy 101 and N Del Norte Blvd.

Oxnard, California

May 11, 2018

Terracon Project No. 60185017

Prepared for:
Seefried Industrial Properties, Inc.
El Segundo, California

Prepared by:
Terracon Consultants, Inc.
Tustin, California

DRAFT

May 11, 2018

Seefried Industrial Properties, Inc.
2301 Rosecrans Avenue, Suite 3165
El Segundo, CA 90245

Attn: Mr. Dan Bick
P: 310-536-7900
E: danbick@seefriedproperties.com

Re: Geotechnical Engineering Report
Oxnard Confidential Project Gaucho
Southwest Corner of Hwy 101 and N Del Norte Blvd.
Oxnard, California
Terracon Project No. 60185017

Dear Mr. Bick:

Terracon Consultants, Inc. (Terracon) has completed the geotechnical engineering services for the above referenced project. These services were performed in general accordance with our proposal number P60185017 dated March 13, 2018.

This geotechnical engineering report presents the results of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations, floor slab, pavements, and infiltration systems for the proposed development.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Sivasubramaniam (Raj) Pirathiviraj, P.E., G.E.
Senior Geotechnical Engineer

F. Fred Buhamdan, P.E.
Principal

DRAFT

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Exhibit D-8	Liquefaction Analysis Summary - CPT-20

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GEOTECHNICAL ENGINEERING REPORT
OXNARD CONFIDENTIAL PROJECT GAUCHO
SOUTHWEST CORNER OF HWY 101 AND N DEL NORTE BLVD.
OXNARD, CALIFORNIA

Terracon Project No. 60185017

May 11, 2018

1.0 INTRODUCTION

This report presents the results of our geotechnical engineering services performed for the Oxnard Confidential Project (Gaucho) to be located at the southwest corner of Hwy 101 and N Del Norte Blvd. in Oxnard, California. The Site Location Plan (Exhibit A-1) is included in Appendix A of this report. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- subsurface soil conditions
- earthwork
- seismic considerations
- floor slab design and construction
- groundwater conditions
- foundation design and construction
- pavement design and construction
- infiltration systems

Our geotechnical engineering scope of work for this project included the advancement of thirty-seven (37) test borings and six (6) Cone Penetrometer Test (CPT) soundings to approximate depths ranging between 5 to 58 feet below existing site grades.

Logs of the borings along with the Exploration Location Plan (Exhibit A-2) are included in Appendix A of this report. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included in Appendix B of this report. Descriptions of the field exploration and laboratory testing are included in their respective appendices.

2.0 PROJECT INFORMATION

2.1 Project Description

ITEM	DESCRIPTION
Site layout	Refer to the Exploration Location Plan (Exhibit A-2 in Appendix A).
Structures	The proposed project will consist in the development of the 54-acre project site to include a 640,000-square foot warehouse surrounded by rigid and flexible pavement.

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ITEM	DESCRIPTION
Construction	Reinforced concrete columns and masonry walls or tilt-up walls supported on a reinforced concrete foundation system with concrete slab-on-grade floors.
Finished floor elevation	Assumed within one foot of existing grade (assumed).
Maximum loads	Provided structural loads are presented below: ▪ Steel Columns: 1100 to 1760 kips ▪ Walls: 10 kips per linear foot (klf) ▪ Pilasters: 760 kips ▪ Slabs: 500 pounds per square foot (psf) plus weight of the slab
Proposed Roadway	A new 150-ft wide roadway is proposed with an east-west alignment and approximate length of 4,600 feet. The road will pass along the northern border of the project and extends from N Del Norte Boulevard to N Rice Avenue.
Grading	Grading will include over-excavation and backfill to bring the site to construction grade.
Below Grade Structures / Basements	Not Anticipated
Onsite Infiltration Systems	The development will also include a storm water retention system along the south side of the property.
Pavements	Paved driveway and parking will be constructed on approximately 25 acres of the parcel. We assume both rigid (concrete) and flexible (asphalt) pavement sections should be considered. Anticipated traffic is as follows: ▪ Autos/light trucks: 100 vehicles per day ▪ Light delivery and trash collection vehicles: 50 vehicles per week ▪ Tractor-trailer trucks: approximately 200 vehicles per day The pavement design period is 20 years based on Caltrans Highway Design Manual.

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2.2 Site Location and Description

Item	Description
Location	The site is located west of North Del Norte Boulevard approximately 2,250 feet south of Highway 101 in Oxnard, California. The site encompasses an approximate area of 62.5 acres.
Existing improvements	The project site is currently vacant agricultural land.
Current ground cover	Asphalt pavement with associated hardscape and landscape.
Existing topography	The site is relatively flat.
Anticipated Seismic Hazards	Based on our review of the State Fault Hazard Maps, the project site is not located within Alquist-Priolo Earthquake Fault Zones. However, the project site is mapped within a liquefaction potential zone as designated by the California Geologic Survey.

3.0 SUBSURFACE CONDITIONS

3.1 Site Geology

The site is situated within the eastern Transverse Range Geomorphic Province in Southern California. Geologic structures within the Transverse Ranges Province trend mostly east west, in contrast to the prevailing northwest trend elsewhere in the state. The Transverse Range Province contains the highest peaks composed of pre-Phanerozoic rocks south of the Sierra Nevada, four of the eight islands off the southern California coast, and is both bounded and transected by several major fault zones.[1, 2] Based on the geologic map of California (Los Angeles Sheet), the proposed project site is underlain by Alluvium (Qal).

3.2 Typical Subsurface Profile

Specific conditions encountered at the boring locations are indicated on the individual boring logs. Stratification boundaries on the boring logs represent the approximate location of changes in soil types; in-situ, the transition between materials may be gradual. Details for the borings can be found on the boring logs included in Appendix A. Based on the results of the borings, subsurface conditions on the project site can be generalized as follows:

[1] Harden, D. R., "*California Geology, Second Edition*," Pearson Prentice Hall, 2004.

[2] Norris, R. M. and Webb, R. W., *"Geology of California, Second Edition,"* John Wiley & Sons, Inc., 1990.

Description	Approximate Depth to Bottom of Stratum	Material Encountered	Consistency/Density
Stratum 1	2 to 8	Clayey Sand	Very Loose to Loose
Stratum 2	10 to 15	Sand with variable amounts of silt and clay with interbedded layers of Lean Clay with variable amounts of sand	Very Loose to Medium Dense
Stratum 3	25 to 29	Lean Clay with variable amounts of sand with interbedded layers of Sand with variable amounts of silt and clay	Very Soft to Hard
Stratum 4	28 to 35	Sand with variable amounts of clay, silt and gravel	Medium Dense
Stratum 5	51½	Lean Clay with variable amounts of sand with interbedded layers of Clayey Sand	Medium Stiff to Hard

Laboratory tests were conducted on selected soil samples and the test results are presented in Appendix B. Atterberg limits test indicates that on-site clayey soils have low to medium plasticity. An Expansion Index test was performed on the near surface clayey soils and indicates that these materials have an Expansion Index of 12 and 15. Consolidation/swell tests indicate that the clayey soils encountered at approximate depth of 2½ feet have slight collapse potential when saturated under normal footing loads of 2,000 psf. Direct shear test was performed in a sandy soils encountered at the depth of 7½ feet indicates a ultimate friction angle of 32 degrees and corresponding cohesion of 78 psf. R-value test indicates that the near surface materials have R-values ranging between 69 and 72.

3.3 Groundwater

Groundwater was observed in the test borings at depths ranging between 3 and 11 feet below ground surface (bgs) at the time of field exploration. These observations represent groundwater conditions at the time of the field exploration and may not be indicative of other times, or at other locations.

In clayey soils with low permeability, the accurate determination of groundwater level may not be possible without long term observation. Long term observation after drilling could not be performed as borings were backfilled immediately upon completion due to safety concerns. Groundwater levels can best be determined by implementation of a groundwater monitoring plan. Such a plan would include installation of groundwater monitoring wells, and periodic measurement of groundwater levels over a sufficient period of time.

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Based on regional data, historical groundwater is anticipated to occur at depths of less than 10 feet below the ground surface at the project location.[3]

3.4 Faulting and Estimated Ground Motions

The site is located in a seismically active area. The type and magnitude of seismic hazards affecting the site are dependent on the distance to causative faults, the intensity, and the magnitude of the seismic event. The following table indicates the distance of the fault zones and the associated maximum credible earthquake that can be produced by nearby seismic events, as calculated using the USGS Unified Hazard Tool. The Simi-Santa Rosa Fault, which is located approximately 3.5 kilometers from the site, is considered to have the most significant effect at the site from a design standpoint.

Estimated Earthquakes for Regional Faults

Fault Name	Approximate Distance to Site (kilometers)	Maximum Credible Earthquake (MCE) Magnitude
Simi-Santa Rosa	3.5	6.94
Oak Ridge (Onshore)	6.5	7.36
Ventura-Pitas Point	10.4	7.41
Oak Ridge (Offshore)	13.3	6.87

Based on these sources, the mean earthquake magnitude at the subject site for a 2% Probability of Exceedance in 50 years (Return period of 2475 years) is expected to be about 6.89. Based on the USGS Design Maps Summary Report, using the American Society of Civil Engineers (ASCE 7-10) standard, the peak ground acceleration (PGA_M) at the project site is expected to be 0.935 g.

The site is not located within an Alquist-Priolo Earthquake Fault Zone based on our review of the State Fault Hazard Maps.[4]

3.5 Liquefaction Potential

Liquefaction is a mode of ground failure that results from the generation of high pore water pressures during earthquake ground shaking, causing loss of shear strength. Liquefaction is typically a hazard where loose sandy soils exist below groundwater. The California Geologic Survey (CGS) has designated certain areas within southern California as potential liquefaction hazard zones. These are areas considered at a risk of liquefaction-related ground failure during

3. California Geologic Survey, Seismic Hazard Zone Report for the Oxnard 7.5-Minute Quadrangle, Orange County, CA.
4. California Department of Conservation Division of Mines and Geology (CDMG), *"Digital Images of Official Maps of Alquist-Priolo Earthquake Fault Zones of California, Southern Region"*, CDMG Compact Disc 2000-003, 2000.

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a seismic event, based upon mapped surficial deposits and the presence of a relatively shallow water table.

The project site is located within a potential liquefaction hazard zone as designated by the CGS. Materials encountered at the project site generally consisted of interbedded layers of fine and coarse grained soils. Groundwater was observed in the test borings at depths ranging between 3 and 11 feet bgs at the time of field exploration. Historical high groundwater in the project vicinity is shallower than 10 feet below the ground surface.

Liquefaction analysis for the site was performed in general accordance with the DMG Special Publication 117. The liquefaction study utilized the software "LiquefyPro" by CivilTech Software. This analysis was based on the soils data using CPT soundings CPT-16, CPT-18, CPT-19 and CPT-20. Peak Ground Acceleration (PGAm) was of 0.935 g was used. The CPT calculation was performed using the modified Robertson et al method which includes fine correction for liquefaction and settlement. Settlement analysis used the Tokimatsu, M-correction method. Liquefaction potential analysis was calculated from a depth of 0 to 50 feet bgs. Liquefaction potential analysis is attached in Appendix D of this report.

Based on the subsurface conditions presented in CPTs and based on the calculation results, seismically-induced settlements are expected to range between 2.5 and 3 inches and seismically-induced dry sand differential settlements are expected to range between 1.3 and 2.0 inches.

3.6 Seismic Considerations

DESCRIPTION	VALUE
2016 California Building Code Site Classification (CBC) [1]	E [2]
Site Latitude	N 34.2138°
Site Longitude	W -119.1309°
S_s Spectral Acceleration for a Short Period	2..641g
S_1 Spectral Acceleration for a 1-Second Period	0.954g
F_a Site Coefficient for a Short Period (Class E) [2]	0.9
F_v Site Coefficient for a 1-Second Period (Class E) [2]	2.4

[1] Note: The 2016 California Building Code (CBC) requires a site soil profile determination extending to a depth of 100 feet for seismic site classification.

[2] Per CBC Table 1613.5.2, any profile containing soils vulnerable to potential failure or collapse under seismic loading such as liquefiable soils. However, for structures with fundamental periods of vibration less than 0.5 seconds, Section 20.3.1 of ASCE 7-05 allows the site coefficients (F_a and F_v) to be determined assuming that liquefaction does not occur (i.e., Site Class E). The structure's fundamental period should be verified by the structural engineer.

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3.7 Percolation Test Results

Six (6) borings were advanced to approximate depths ranging between 3 and 7 feet bgs and were utilized for percolation testing (falling head borehole permeability). After the borings were advanced the augers were removed from the ground and an approximately 2-inch thick layer of gravel was placed in the bottom of each boring, and a 3-inch diameter perforated pipe was installed on top of the gravel layer in the three borings. Gravel was used to backfill between the perforated pipes and the boring sidewall. The borings were then filled with water for a pre-soak period. At the beginning of each test, the pipes were refilled with water and readings were taken at 10-minute time intervals. Percolation rates are provided in the following table:

TEST RESULTS				
Test Location (depth of percolation)	**Soil Classification**	**Percolation Rate, in/hr**	**Infiltration Rate[1], in/hr**	**Initial Water Head, in**
Perc-1 (0ft - 5ft)	Clayey Sand	5.0	0.44	42
Perc-2 (0ft - 5ft)	Clayey Sand	0.5	<0.1	56
Perc-3 (0ft - 5ft)	Clayey Sand	2.0	0.15	51
Perc-4 (0ft - 6ft)	Clayey Sand	19.5	1.35	57
Perc-5 (0ft - 7ft)	Clayey Sand	3.0	0.31	35
Perc-6 (0ft - 3ft)	Clayey Sand	1.0	0.11	31

[1]If proposed infiltration system will mainly rely on vertical downward seepage, the correlated infiltration rates should be used. The correlated infiltration rates were calculated using the LA County Reduction Factor method

The field test results are not intended to be design rates. They represent the result of our tests, at the depths and locations indicated, as described above. The design rate should be determined by the designer by applying an appropriate factor of safety. The designer should take into consideration the variability of the native soils when selecting appropriate design rates. With time, the bottoms of infiltration systems tend to plug with organics, sediments, and other debris. Long term maintenance will likely be required to remove these deleterious materials to help reduce decreases in actual percolation rates.

The percolation test was performed with clear water, whereas the storm water will likely not be clear, but may contain organics, fines, and grease/oil. The presence of these deleterious materials will tend to decrease the rate that water percolates from the infiltration system. Design of the storm water infiltration systems should account for the presence of these materials and should incorporate structures/devices to remove these deleterious materials.

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Based on the soils encountered in our borings, we expect the percolation rates of the soils could be different than measured in the field due to variations in fines and gravel content. The design elevation and size of the proposed infiltration system should account for this expected variability in infiltration rates.

Infiltration testing should be performed after construction of the infiltration system to verify the design infiltration rates. It should be noted that siltation and vegetation growth, along with other factors, may affect the infiltration rates of the infiltration areas. The actual infiltration rate may vary from the values reported here. Infiltration systems should be located at least 10 feet from any existing or proposed foundation system.

3.8 Corrosion Potential

Results of soluble sulfate testing indicate that ASTM Type V Portland cement should be used for all concrete on and below grade. Foundation concrete may be designed for exposure class S2 in accordance with the provisions of the ACI Design Manual, Section 318, Chapter 19.

Laboratory test results indicate the on-site soils have a pH of 8.19 and 7.97, a minimum resistivity values of 669 and 970 ohm-centimeters, sulfate contents of 0.15 and 0.37 percent, and a chloride contents of 95 and 145 ppm, as shown on the attached Summary of Laboratory Results sheet.

These values indicate corrosive environment for the ferrous metals and corrosion engineer should be consulted to further evaluate corrosive potential of the on-site soils to underground ferrous metals.

Refer to the Summary of Laboratory Results in Appendix B for the complete results of the corrosivity testing conducted in conjunction with this geotechnical exploration.

4.0 RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

4.1 Geotechnical Considerations

The site appears suitable for the proposed construction based upon geotechnical conditions encountered in the test borings and provided the geotechnical engineering recommendations included in this report are implemented in the design and construction of the project.

Due to the anticipated seismic induced settlement, liquefaction potential, and presence of relatively high compressibility of clay soils, we recommend that the upper subsurface soils be improved and densified by rammed aggregate pier (RAP) systems. The proposed building may be supported by shallow foundations bearing on the RAP improved soils. As an alternative, the

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proposed building may be supported on drilled shaft foundations. Shallow foundations bearing on engineered fill may be used to support minor on-site structures.

Due to the low bearing capacity of the near surface soils, the upper on-site soils should be over-excavated to the depth of 2 feet below the deepest bottom of foundation or 4 feet below the existing grades, whichever is greater, within the footprint of the proposed building. The excavated soils should be replaced with engineered fill. On-site soils are considered suitable for use as engineered fill beneath floor slabs and foundations.

Geotechnical engineering recommendations for foundation systems and other earth connected phases of the project are outlined below. The recommendations contained in this report are based upon the results of field and laboratory testing (which are presented in Appendices A and B), engineering analyses, and our current understanding of the proposed project.

4.2 Earthwork

The following presents recommendations for site preparation, excavation, subgrade preparation and placement of engineered fills on the project. The recommendations presented for the design and construction of earth supported elements including, foundations, slabs, and pavements, are contingent upon following the recommendations outlined in this section.

Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, foundation bearing soils, and other geotechnical conditions exposed during the construction of the project.

4.2.1 Site Preparation

Strip and remove existing vegetation, top soil, organic materials, root systems, and other deleterious materials from proposed building and pavement areas. We recommend stripping topsoil to depths that expose soils with less than 3 percent organics and no roots having a diameter greater than 1/8 inch. While the depth of the unsuitable soils should be expected to vary, the thickness of the top soil layer may be estimated to range between 6 and 12 inches for construction budgeting purposes. The thickness of the top soil layer was not determined during our field exploration. Therefore, the actual depth of stripping should be verified by engineering observations made during the grading operations at the project. Exposed surfaces should be free of mounds and depressions which could prevent uniform compaction.

Stripped materials consisting of vegetation and organic materials should be wasted from the site, or used to revegetate landscaped areas or exposed slopes after completion of grading operations. If it is necessary to dispose of organic materials on site, they should be placed in non-structural areas, and in fill sections not exceeding 5 feet in height

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The site should be initially graded to create a relatively level surface to receive fill, and provide for a relatively uniform thickness of fill beneath proposed building structures.

Excavations that extend below groundwater would involve construction dewatering to maintain excavations in a relatively dry condition. Pumping from sumps may be utilized to control water within excavations. Well points may be required for significant groundwater flow, or where excavations penetrate groundwater to a significant depth. Excavation contractors are responsible for dewatering the planned temporary excavations and maintaining the stability of the excavations.

Although evidence of fill or underground facilities such as septic tanks, cesspools, basements, and utilities was not observed during the site reconnaissance, such features could be encountered during construction. If fill materials or underground facilities are encountered, such materials and features should be removed and the excavation thoroughly cleaned prior to backfill placement and/or construction.

4.2.2 Subgrade Preparation

Due to the low bearing capacity of the near surface soils, the upper on-site soils should be over-excavated within the footprint of the proposed buildings to a depth of 4 feet below existing grades, or 2 feet below the deepest foundation, whichever is greater. Over-excavation should extend laterally a minimum of 3 feet beyond the perimeter of the proposed buildings.

Excavations should then be backfilled with engineered fill placed in lifts of 8 inches or less in loose thickness and should be moisture conditioned and compacted following the recommendations in section 4.2.4 of this report.

Care should be taken to prevent wetting or drying of the bearing materials during construction. Wet, dry, or loose/disturbed material in the bottom of the footing excavations should be removed before foundation concrete is placed.

Subsequent to the surface clearing, grubbing, and other overexcavation efforts, subgrade soils beneath exterior slabs and pavements should be scarified, moisture conditioned, and compacted to a minimum depth of 10 inches. The moisture content and compaction of subgrade soils should be maintained until slab or pavement construction.

Exposed areas which will receive fill, once properly cleared and benched where necessary, should be scarified to a minimum depth of 10 inches, moisture conditioned, and compacted per the compaction requirements in Section 4.2.4.

The exposed soils at the bottom of the excavations are expected to have elevated water contents and may pump or yield during attempts to compact the bottom of the excavation. If such conditions occur, the bottom of the pits should be over-excavated to a minimum depth of

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12 inches, and replaced with well sorted crushed aggregate materials. The aggregate materials should be wrapped (top, bottom and sides) with non-woven geotextile such as Mirafi 140N, or an approved equivalent. The crushed aggregate could have a nominal particle size of ¾ to 1 inch. The aggregate layer and the geotextile layer are anticipated to create a stable platform beneath the overlying backfill materials.

4.2.3 Fill Materials and Placement

All fill materials should be inorganic soils free of vegetation, debris, and fragments larger than three inches in size. Pea gravel or other similar non-cementitious, poorly-graded materials should not be used as fill or backfill without the prior approval of the geotechnical engineer. The on-site soils are considered suitable for use as engineered fill for this project.

Approved on-site and imported materials may be used as fill material for the following:

- general site grading
- foundation areas
- interior floor slab areas
- foundation backfill
- pavement areas
- exterior slab areas

Imported soils for use as fill material within proposed building and structure areas should conform to low volume change materials as indicated below:

Gradation	Percent Finer by Weight (ASTM C 136)
3”	100
No. 4 Sieve	50-100
No. 200 Sieve	20-50

- Liquid Limit ..... 30 (max)
- Plasticity Index ..... 15 (max)
- Maximum expansion index* ..... 20 (max)

*ASTM D 4829

Engineered fill should be placed and compacted in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift. Fill lifts should not exceed eight inches loose thickness.

4.2.4 Compaction Requirements

Recommended compaction and moisture content criteria for engineered fill materials are as follows:

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Material Type and Location	Per the Modified Proctor Test (ASTM D 1557)		
	Minimum Compaction Requirement (%)	Range of Moisture Contents for Compaction Above Optimum	
		Minimum	Maximum
On-site soils and low volume change imported fill:			
Beneath foundations:	95	0%	+3%
Beneath interior slabs:	95	0%	+3%
Fill greater than 5 feet in depth	95	0%	+3%
Miscellaneous backfill and behind retain walls:	90	0%	+3%
Beneath pavements:	95	0%	+3%
Utility Trenches*:	90	0%	+3%
Bottom of native soil excavation receiving fill:	95	0%	+3%
Aggregate base (beneath pavements):	95	0%	+3%

* Upper 12 inches should be compacted to 95% within pavement and structural areas. Low-volume change imported soils should be used in structural areas.

4.2.5 Grading and Drainage

Positive drainage should be provided during construction and maintained throughout the life of the development. Infiltration of water into utility trenches or foundation excavations should be prevented during construction. Planters and other surface features which could retain water in areas adjacent to the building or pavements should be sealed or eliminated. In areas where sidewalks or paving do not immediately adjoin the structure, we recommend that protective slopes be provided with a minimum grade of approximately 5 percent for at least 10 feet from perimeter walls.

Backfill against footings, exterior walls, and in utility and sprinkler line trenches should be well compacted and free of all construction debris to reduce the possibility of moisture infiltration. We recommend a minimum horizontal setback distance of 10 feet from the perimeter of any building and the high-water elevation of the nearest storm-water retention basin.

Roof drainage should discharge into splash blocks or extensions when the ground surface beneath such features is not protected by exterior slabs or paving. Sprinkler systems and landscaped irrigation should not be installed within 5 feet of foundation walls.

4.2.6 Exterior Slab Design and Construction

Exterior slabs-on-grade, exterior architectural features, and utilities founded on, or in backfill may experience some movement due to the volume change of the backfill. To reduce the potential for damage caused by movement, we recommend:

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- exterior slabs should be supported directly on subgrade fill with no, or very low expansion potential;
- strict moisture-density control during placement of subgrade fills;
- maintain proper subgrade moisture until placement of slabs;
- placement of effective control joints on relatively close centers and isolation joints between slabs and other structural elements;
- provision for adequate drainage in areas adjoining the slabs;
- using of designs which allow vertical movement between the exterior slabs and adjoining structural elements.

4.2.7 Utility Trenches

It is anticipated that the on-site soils and fill materials will provide suitable support for underground utilities and piping that may be installed. Any soft and/or unsuitable material encountered at the bottom of excavations should be removed and be replaced with an adequate bedding material. A non-expansive granular material with a sand equivalent greater than 30 should be used for bedding and shading of utilities, unless specified otherwise by the utility manufacturer.

On-site materials are considered suitable for backfill of utility and pipe trenches from one foot above the top of the pipe to the final ground surface, provided the material is free of organic matter and deleterious substances. Imported low volume change soils should be used for trench backfill in structural areas.

Trench backfill should be mechanically placed and compacted as discussed earlier in this report. Compaction of initial lifts should be accomplished with hand-operated tampers or other lightweight compactors. Where trenches are placed beneath slabs or footings, the backfill should satisfy the gradation and expansion index requirements of engineered fill discussed in this report. Flooding or jetting for placement and compaction of backfill is not recommended.

4.2.8 Construction Considerations

It is anticipated that excavations for the proposed construction can be accomplished with conventional earthmoving equipment. On-site clayey soils may pump and unstable subgrade conditions could develop during general construction operations, particularly if the soils are wetted and/or subjected to repetitive construction traffic. The use of light construction equipment would aid in reducing subgrade disturbance. The use of remotely operated equipment, such as a backhoe, would be beneficial to perform cuts and reduce subgrade disturbance. Should unstable subgrade conditions develop stabilization measures will need to be employed.

At the time of our study, moisture contents of the surface and near-surface native soils ranged from about 10 percent to 25 percent. Based on these moisture contents, some moisture conditioning will likely be needed for the project. The soils may need to be dried by aeration

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during dry weather conditions, or an additive, such as lime, cement, or kiln dust, may be needed to stabilize the soil.

Upon completion of filling and grading, care should be taken to maintain the subgrade moisture content prior to construction of floor slabs and pavements. Construction traffic over the completed subgrade should be avoided to the extent practical. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. If the subgrade should become desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and recompacted prior to floor slab and pavement construction.

The geotechnical engineer should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation, proof-rolling, placement and compaction of controlled compacted fills, backfilling of excavations to the completed subgrade.

We recommend that the earthwork portion of this project be completed during extended periods of dry weather if possible. If earthwork is completed during the wet season (typically November through April) it may be necessary to take extra precautionary measures to protect subgrade soils. Wet season earthwork operations may require additional mitigative measures beyond that which would be expected during the drier summer and fall months. This could include diversion of surface runoff around exposed soils and draining of ponded water on the site. Once subgrades are established, it may be necessary to protect the exposed subgrade soils from construction traffic.

Excavations into the on-site soils will possibly encounter groundwater, depending upon the final depth of excavation. The individual contractor(s) is responsible for designing and constructing stable, temporary excavations as required to maintain stability of both the excavation sides and bottom. Excavations should be sloped or shored in the interest of safety following local, and federal regulations, including current OSHA excavation and trench safety standards.

4.3 Foundations

Due to the anticipated seismic induced settlement, liquefaction potential, and presence of relatively high compressibility clay soils, we recommend that the upper subsurface soils be improved and densified by rammed aggregate piers (RAP) systems. The proposed building may be supported by shallow foundations bearing on the RAP improved soils. As an alternative, the proposed building may be supported on drilled shaft foundations. Shallow foundations bearing on engineered fill may be used to support minor on-site structures.

4.3.1 Rammed Aggregate Pier (RAP) Recommendations

Rammed Aggregate Pier elements may be installed for support of the main building. RAP elements provide increased bearing capacity, reduce liquefaction potential, and enhance settlement control by delivering a composite stiffened bearing materials to reduce the matrix soil compressibility.

The construction process typically consists of utilizing pre-augered or displacement methods. The augered or displaced cavities are backfilled with aggregate that is compacted in place using static crowd pressure augmented with a high frequency, low amplitude, vibratory hammer. The impact hammer densifies aggregate vertically while the tamper foot forces aggregate laterally into cavity sidewalls resulting in stiff RAP elements and a stiffened matrix/soil. Constructed diameters may range from 20 to 30 inches depending on the method of installation.

In the event that RAP foundation systems are considered for the project, the proposed buildings can be supported on shallow foundations. RAP design is typically performed by a specialty design build ground improvement contractor who should be consulted to provide further analysis and recommendations. The specialty contractor shall make their own interpretation of strength parameters and soil characteristics from the boring logs, CPT soundings, and laboratory testing presented in Appendix A and B of this report.

4.3.2 Shallow Foundations with RAP Design Recommendations

DESCRIPTION	RECOMMENDATION
Structures	Proposed Main Building
Bearing Material	Improved subsurface soils comprised of a composite of RAP systems, engineered fill extending to a minimum of 4 feet below existing grades or 2 feet below deepest foundation, whichever is greater, and onsite soils beneath 4 feet bgs.
Allowable Bearing Pressure	To be provided by specialty contractor based on RAP design
Minimum Width	Walls: 18 inches; Columns: 24 inches
Minimum Embedment Depth Below Finished Grade	18 inches
Estimated Static Settlement	1 inch (should be achieved by specialty contractor design)
Estimated Differential Static Settlement	¾ inch in 40 feet. (should be achieved by specialty contractor design)

4.3.3 Shallow Foundations Design Recommendations

DESCRIPTION	RECOMMENDATION
Structures	Minor structures with foundation width less than 5 feet

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DESCRIPTION	RECOMMENDATION
	such as trash enclosures, equipment pads, and low retaining walls.
Bearing Material	Engineered fill extending to a minimum of 4 feet below existing grades or 2 feet below the deepest foundation, whichever is greater.
Allowable Bearing Pressure	2,000 psf for footing widths up to 6 feet.
Maximum Width	6 feet
Minimum Width	Walls: 18 inches; Columns: 24 inches
Minimum Embedment Depth Below Finished Grade	18 inches
Estimated Static Settlement	1 inch
Estimated Differential Static Settlement	¾ inch in 40 feet.

4.3.4 Drilled Shaft Design Recommendations

As an alternative, the proposed building may be supported on drilled shaft foundations. Terracon can provide design and construction recommendations to support the proposed building in the event shallow foundations and RAP systems were not feasible.

4.4 Floor Slab

DESCRIPTION	VALUE
Interior floor system	Slab-on-grade concrete.
Floor slab support	Engineered fill extending to a minimum of 4 feet below existing grades or 2 feet below the deepest foundation, whichever is greater.
Sub-base/Capillary break	4-inches of Class II Aggregate Base materials
Modulus of subgrade reaction	200 pounds per square inch per inch (psi/in) (The modulus was obtained based on engineered fill, aggregate sub-base, and estimates obtained from NAVFAC 7.1 design charts). This value is for a small loaded area (1 Sq. ft or less) such as for point loads and should be adjusted for larger loaded areas.

In areas of exposed concrete, control joints should be saw cut into the slab after concrete placement in accordance with ACI Design Manual, Section 302.1R-37 8.3.12 (tooled control joints are not recommended). Additionally, dowels should be placed at the location of proposed construction joints. To control the width of cracking (should it occur) continuous slab reinforcement should be considered in exposed concrete slabs.

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Positive separations and/or isolation joints should be provided between slabs and all foundations, columns or utility lines to allow independent movement. Interior trench backfill placed beneath slabs should be compacted in accordance with recommendations outlined in the Earthwork section of this report. Other design and construction considerations, as outlined in the ACI Design Manual, Section 302.1R are recommended.

The use of a vapor retarder or barrier should be considered beneath concrete slabs on grade that will be covered with moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture to prevent moisture migration. When conditions warrant the use of a vapor retarder, the slab designer and slab contractor should refer to ACI 302 and ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder/barrier.

4.5 Lateral Earth Pressures

The lateral earth pressure recommendations herein are applicable to the design of rigid retaining walls subject to slight rotation, such as cantilever, or gravity type concrete walls. These recommendations are not applicable to the design of geogrid-reinforced-backfill walls. Recommendations covering these types of wall systems are beyond the scope of services for this assignment; however, we are available to develop recommendations for the design of such wall systems upon request.

For onsite soils used as engineered fill above any free water surface, recommended equivalent fluid pressures for foundation elements are:

ITEM	VALUE (Onsite Soils)
Active Case	37 psf/ft
Passive Case[1]	385 psf/ft
At-Rest Case	57 psf/ft
Surcharge Pressure	0.31*(Surcharge)
Coefficient of friction	0.35[2]

[1] Note: Ignore passive pressure in the upper 18 inches because of soil disturbance.
[2] Note: Reduce to 0.30 when used in conjunction with passive pressure.

The lateral earth pressures herein do not include any factor of safety and are not applicable for submerged soils/hydrostatic loading. Additional recommendations may be necessary if such conditions are to be included in the design.

Surcharge pressure for uniform pressure acting at the back of the wall should be applied to the wall as a uniform pressure over the entire wall height and is added to the static earth pressures. Other surcharge loads should be considered where they are located within a horizontal distance

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behind the wall equal to 1.5 times the height of the wall. Surcharge stresses due to point loads, line loads, and those of limited extent, such as compaction equipment, should be evaluated using elastic theory.

Fill against foundation and retaining walls should be compacted to densities specified in the Earthwork section of this report. Compaction of each lift adjacent to walls should be accomplished with hand-operated tampers or other lightweight compactors.

Adequate drainage should be provided behind the walls to collect water from irrigation, landscaping, surface runoff, or other sources, to achieve a free-draining backfill condition. The wall back drain should consist of Class 2 permeable materials that are placed behind the entire wall height to within 18 inches of ground surface at the top of the wall. As a minimum, the width of Class 2 permeable materials behind the wall should be two feet. Water collected by the back drain should be directed to an appropriate outlet, such as weep holes or perforated pipes, for disposal.

4.6 Pavements

4.6.1 Design Recommendations

Three samples of the near surface soils were obtained and tested to determine their Resistance Value (R-value). These tests all produced R-values above 50. These samples were taken in the upper 24 inches of the surface. Given the cut and fills anticipated at the site, we recommend obtaining additional R-value samples once rough grading is near completion, within 1 foot. Some of the underlying soils have more fines and will eventually mixed with the upper materials, likely resulting in lower R-values. At this time, a design R-value of 45 was used for the Asphalt Concrete (AC) and Portland Cement Concrete (PCC) pavement designs. The anticipated daily traffic of 200 trucks corresponds to a traffic index (TI) of 10.0. Since the entire parking area will not receive this much truck traffic, we are also providing pavement sections for TI's of 6.0, 7.0, and 8.0 for use by the civil engineer in determining which pavement section to use for the truck parking areas. These TI's correspond to daily truck traffic volumes of 2, 10, and 30, respectively. We have also included a pavement section for automobile traffic using a TI of 5.0.

Assuming the pavement subgrades will be prepared as recommended within this report, the following pavement sections should be considered minimums for this project for the traffic indices assumed in the table below. As more specific traffic information becomes available, we should be contacted to reevaluate the pavement design recommendations.

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Conventional Asphalt Concrete Design					
Layer	**Thickness (inches)**				
	TI=5.0	**TI=6.0**	**TI=7.0**	**TI=8.0**	**TI= 10.0**
Asphalt Concrete	3.0	3.0	4.0	4.0	5.0
Aggregate Base	4.0	6.0	6.0	9.0	11.0

1. See **Project Description** for more specifics regarding traffic classifications.
2. All materials should meet the current California Department of Transportation (Caltrans) Standard Specifications, latest edition.

Portland Cement Concrete Design			
Layer	**Thickness (inches)**		
	TI=5.0	**TI=10.0**	**Dumpster Pad** [3]
PCC	4”	8” Jointed reinforced with dowels or 10” Plain Jointed	7”
Aggregate Base	--	4”	4”

1. All materials should meet the current Caltrans Standard Specifications, latest edition.
2. In areas of anticipated heavy traffic, fire trucks, delivery trucks, or concentrated loads (e.g. dumpster pads), and areas with repeated turning or maneuvering of heavy vehicles.

These pavement sections are considered minimal sections based upon the expected traffic and the existing subgrade conditions. However, they are expected to function with periodic maintenance and overlays if good drainage is provided and maintained.

Subgrade soils beneath all pavements should be scarified, moisture conditioned, and compacted to a minimum depth of 10 inches. All materials should meet the CALTRANS Standard Specifications for Highway Construction. Aggregate base materials should meet the gradation and quality requirement of Class 2 Aggregate Base in Caltrans Standard Specifications, latest edition, Sections 25 through 29.

All concrete for rigid pavements should have a minimum flexural strength of 600 psi, and be placed with a maximum slump of four inches. Proper joint spacing will also be required to prevent excessive slab curling and shrinkage cracking. All joints should be sealed to prevent entry of foreign material and dowelled where necessary for load transfer.

It is our experience that asphalt pavement sections will suffer severe distress and shoving in tight turning radiuses areas. We recommend that portland cement concrete pavement should be used for such areas.

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Asphalt concrete sections must be thickened to 8 inches at transitions with concrete, especially at the trash enclosure pad, loading zones, escape lane intersections, and any other transitions with concrete.

Preventative maintenance should be planned and provided for through an on-going pavement management program in order to enhance future pavement performance. Preventative maintenance activities are intended to slow the rate of pavement deterioration, and to preserve the pavement investment.

Preventative maintenance consists of both localized maintenance (e.g. crack sealing and patching) and global maintenance (e.g. surface sealing). Preventative maintenance is usually the first priority when implementing a planned pavement maintenance program and provides the highest return on investment for pavements.

4.6.2 Pavement Construction Considerations

Materials and construction of pavements for the project should be in accordance with the requirements and specifications of the State of California Department of Transportation, or other approved local governing specifications.

Base course or pavement materials should not be placed when the surface is wet. Surface drainage should be provided away from the edge of paved areas to minimize lateral moisture transmission into the subgrade.

5.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related construction phases of the project.

The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between explorations, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or

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prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

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APPENDIX A

FIELD EXPLORATION

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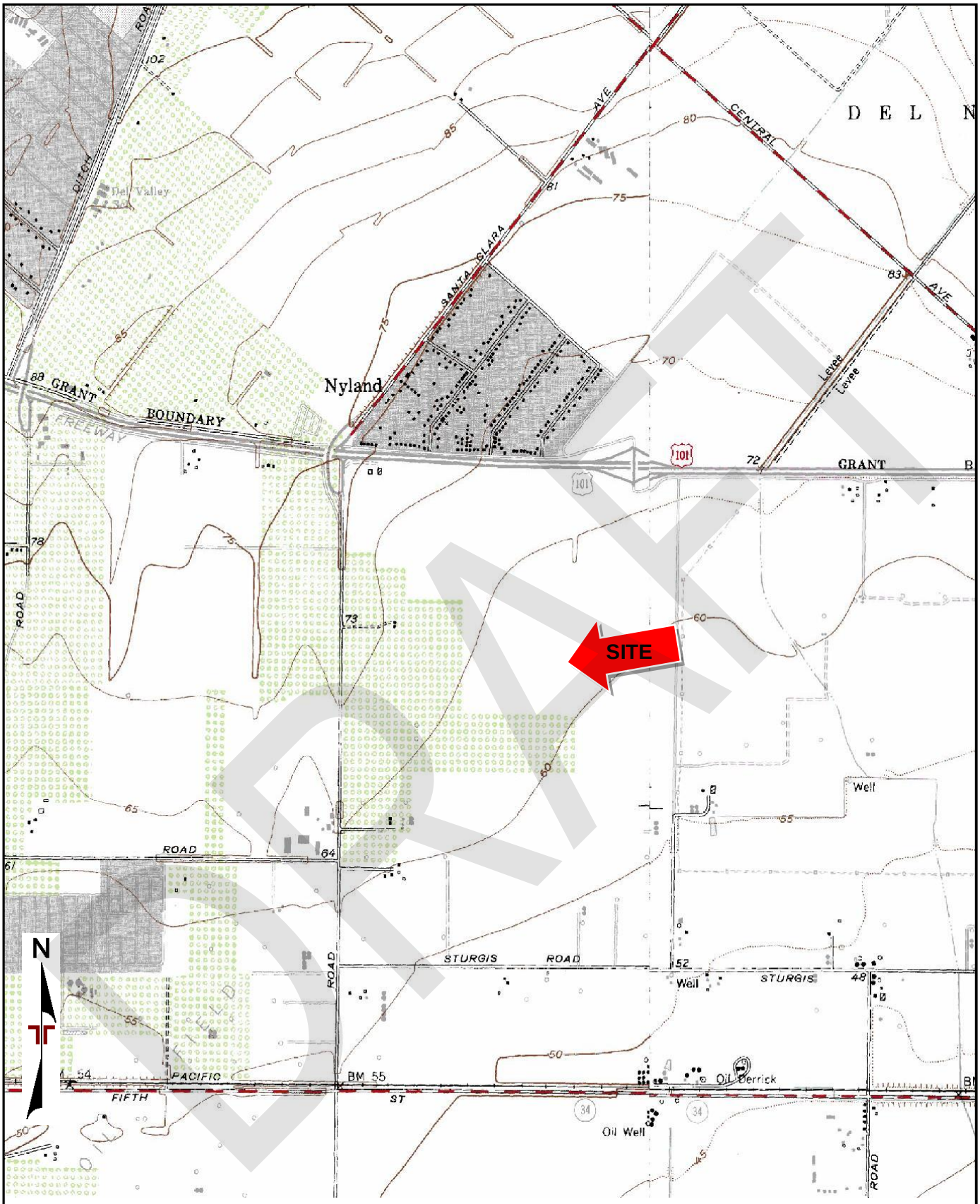
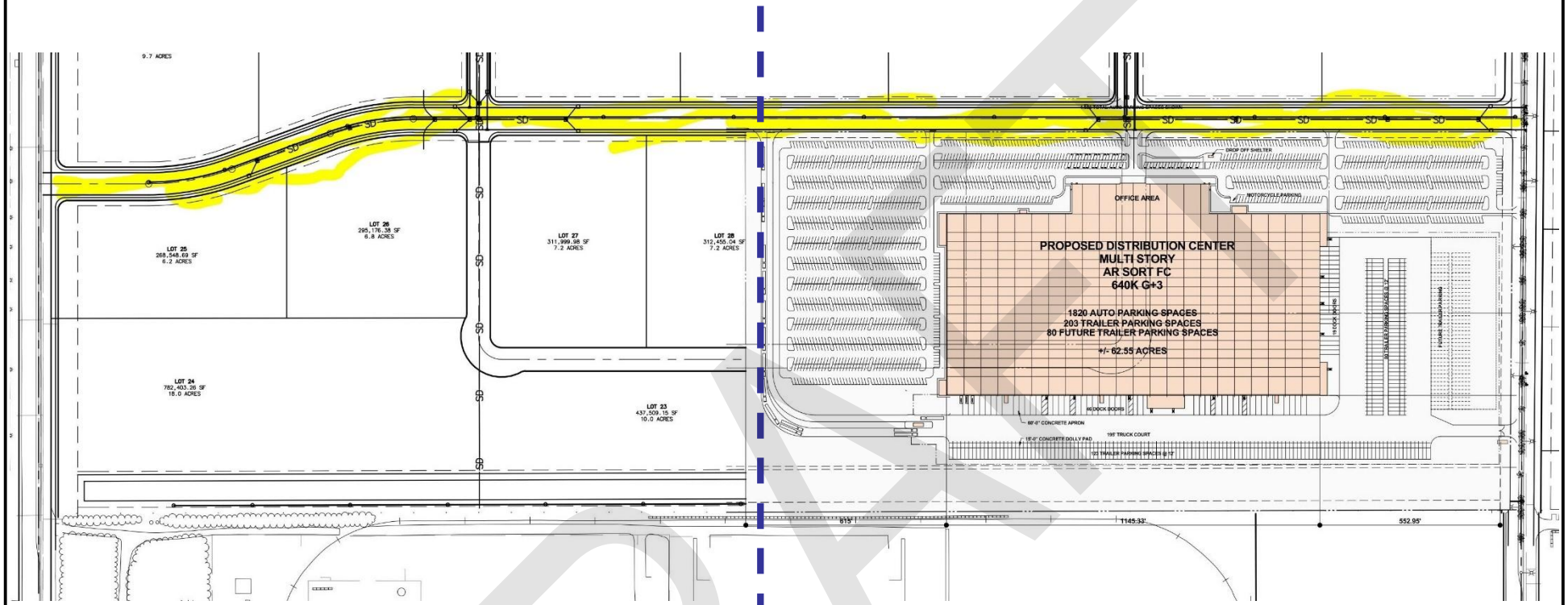


TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY
QUADRANGLES INCLUDE: OXNARD, CA (1/1/1967) and CAMARILLO, CA (1/1/1967).

Project Manager: JM	Project No. 60185017	Terracon 1421 Edinger Ave Ste C Tustin, CA 92780-6287	SITE LOCATION	Exhibit
Drawn by: DTB	Scale: 1"=2,000'		Seefried: Industrial Warehouse; Oxnard **Highway 101 and Del Norte Boulevard** **Oxnard, CA**	A-1
Checked by: JM	File Name: A-1			
Approved by: FB	Date: 04/2018			



A-3

A-4

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DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	JM
Drawn by:	DTB
Checked by:	JM
Approved by:	FB

Project No.	60185017
Scale:	1"≈480'
File Name:	A-2
Date:	04/2018

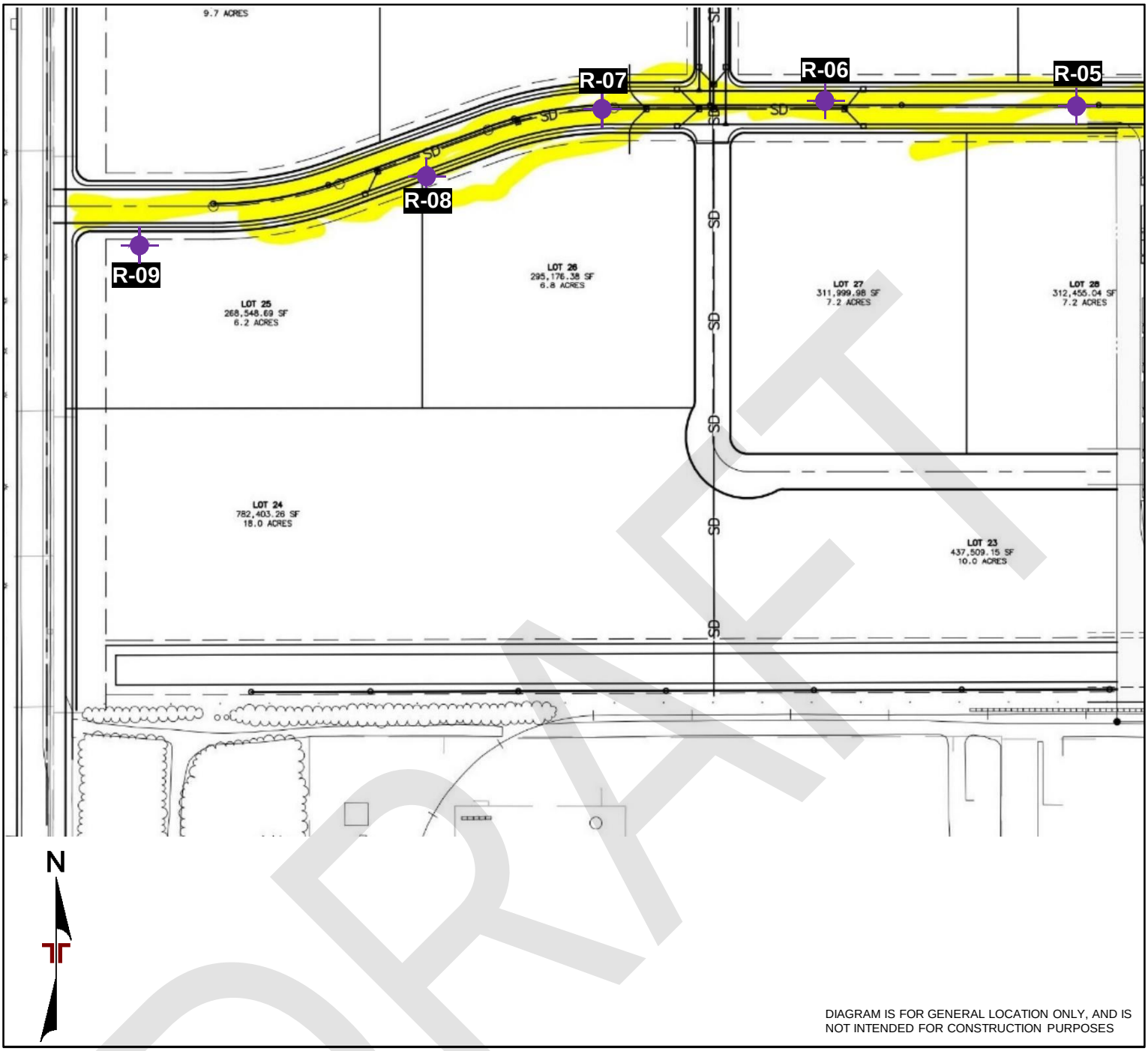
Terracon
Consulting Engineers & Scientists
1421 Edinger Avenue Ste C Tustin, California 92780
PH. (949) 261-0051 FAX. (949) 261-6110

BORING LOCATION PLAN

Seefried: Industrial Warehouse; Oxnard
Highway 101 and Del Norte Boulevard
Oxnard, CA

Exhibit

A-2



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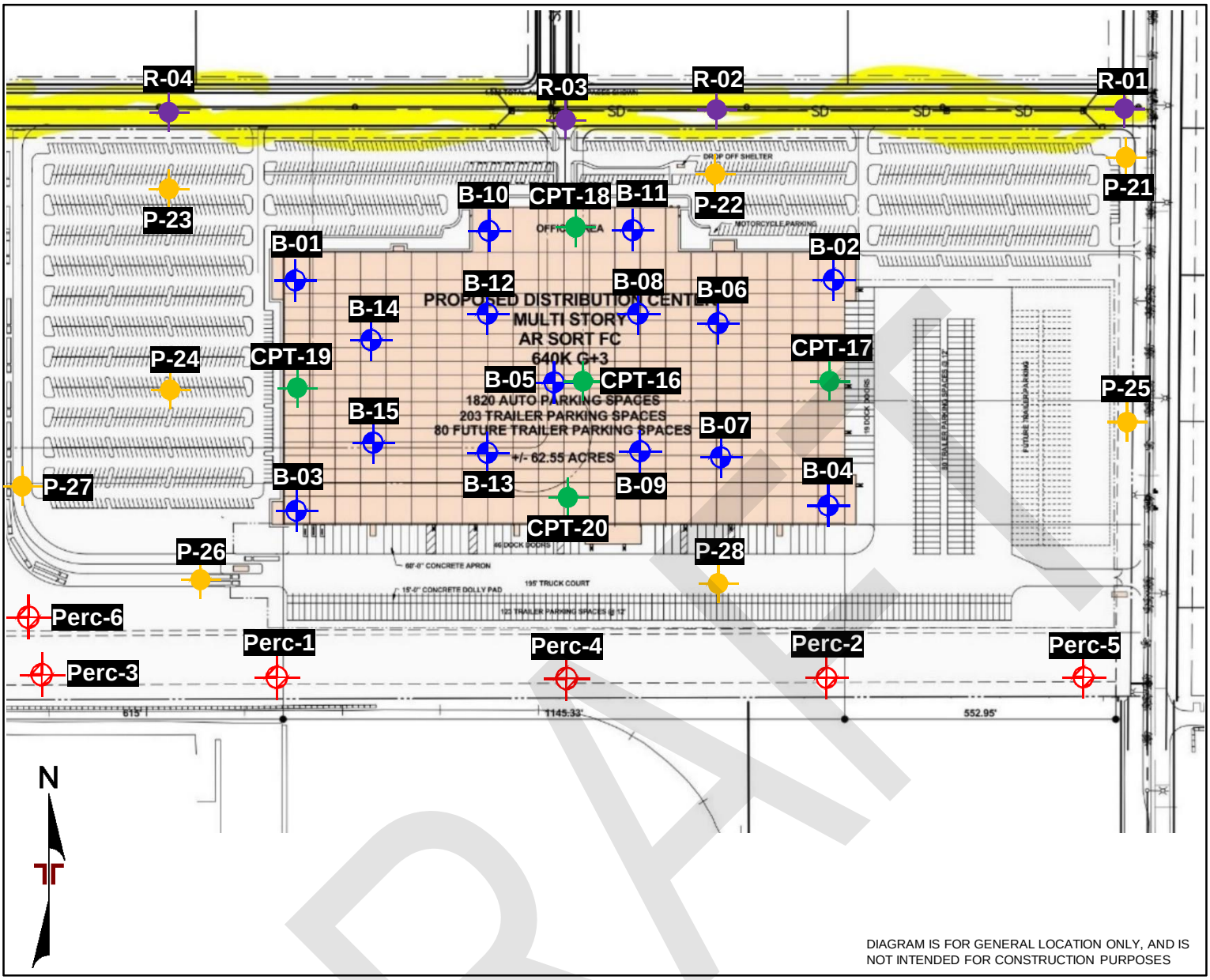
LEGEND

R-01 **BORING APPROXIMATE LOCATION**

Project Manager: JM	Project No. 60185017	Terracon Consulting Engineers & Scientists	BORING LOCATION PLAN
Drawn by: DTB	Scale: 1"≈300'	1421 Edinger Avenue Ste C, Tustin, California 92780	Seefried: Industrial Warehouse; Oxnard
Checked by: JM	File Name: A-3	PH. (949) 261-0051, FAX. (949) 261-6110	**Highway 101 and Del Norte Boulevard**
Approved by: FB	Date: 04/2018		**Oxnard, CA**

Exhibit A-3



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LEGEND

- **B-01** BORING APPROXIMATE LOCATION
- **Perc-1** BORING AND PERCOLATION TEST APPROXIMATE LOCATION
- **P-01** BORING APPROXIMATE LOCATION
- **CPT-01** CONE PENETRATION TEST APPROXIMATE LOCATION
- **R-01** BORING APPROXIMATE LOCATION

Project Manager: JM	Project No. 60185017	Terracon Consulting Engineers & Scientists	BORING LOCATION PLAN
Drawn by: DTB	Scale: 1"≈300'	1421 Edinger Avenue Ste C, Tustin, California 92780	Seefried: Industrial Warehouse; Oxnard
Checked by: JM	File Name: A-4	PH. (949) 261-0051, FAX. (949) 261-6110	Highway 101 and Del Norte Boulevard
Approved by: FB	Date: 04/2018		Oxnard, CA

Exhibit A-4

Field Exploration Description

Field exploration program included the advancement of thirty-seven (37) test borings and six (6) Cone Penetrometer Test (CPT) soundings to approximate depths ranging between 5 to 58 feet below existing site grades. The field program was performed at the site between April 3 and April 11, 2018. Due to current agricultural operations, the location of B-10 was not accessible to our crew. Furthermore. one additional CPT attempt was performed onsite to advance through refusal materials.

The drilled test borings were advanced with a truck-mounted Mobil B-61 drill rig utilizing 6-inch diameter hollow-stem auger. CPT soundings were advanced with a 30-ton truck providing the reaction weight for pushing the cone assembly into the ground at a constant rate of 20-mm per second (approximately four feet per minute). The cone tip resistance and sleeve friction resistance were recorded every 2-cm (approximately ¾-inch) and stored in digital form.

The borings were located in the field by using the proposed site plan, an aerial photograph of the site, a hand-held GPS device, and measuring from existing site features and property lines. The accuracy of boring locations should only be assumed to the level implied by the method used. The location of the borings and CPT soundings is shown on the attached Boring Location Plan, Exhibit A-2.

Continuous lithologic logs of the borings were recorded by the field engineer during the drilling operations. At selected intervals, samples of the subsurface materials were taken by driving split-spoon or ring-barrel samplers. Bulk samples of subsurface materials were also obtained. Groundwater conditions were evaluated in the borings at the time of site exploration.

Penetration resistance measurements were obtained by driving the split-spoon and ring-barrel samplers into the subsurface materials with a 140-pound automatic hammer falling 30 inches. The penetration resistance value is a useful index in estimating the consistency or relative density of materials encountered.

An automatic hammer was used to advance the split-barrel sampler in the borings performed on this site. A significantly greater efficiency is achieved with the automatic hammer compared to the conventional safety hammer operated with a cathead and rope. This higher efficiency has an appreciable effect on the SPT-N value. The effect of the automatic hammer's efficiency has been considered in the interpretation and analysis of the subsurface information for this report.

The samples were tagged for identification, sealed to reduce moisture loss, and taken to our laboratory for further examination, testing, and classification. Information provided on the boring logs attached to this report includes soil descriptions, consistency evaluations, boring depths, sampling intervals, and groundwater conditions. The borings were backfilled with auger cuttings prior to the drill crew leaving the site.

DRAFT

BORING LOG NO. B-01

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2144° Longitude: -119.1328°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
4.0	58+/-	
		SANDY LEAN CLAY (CL), dark brown, very soft
7.5	54.5+/-	
		POORLY GRADED SAND WITH SILT (SP-SM), trace clay, brown, loose
		medium dense
14.5	47.5+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown stiff
		very soft

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
								25-16-9	41
		2-2-2				25	96		
5		0-0-1 N=1							
		1-5-11				22	100		
10		4-7-7 N=14							10
15		7-6-6				21	105		
20		0-0-0 N=0						37-25-12	72
25									

WATER LEVEL OBSERVATIONS: ▽ (5 ft)

EXPANSION INDEX

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-6

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-01

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2144° Longitude: -119.1328°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		LEAN CLAY WITH SAND (CL), dark grayish brown *(continued)* stiff
28.0	34+/-	**POORLY GRADED SAND WITH SILT (SP-SM)**, grayish brown, medium dense
33.5	28.5+/-	**SANDY LEAN CLAY (CL)**, dark grayish brown, very stiff
39.5	22.5+/-	**FAT CLAY (CH)**, dark grayish brown, medium stiff
43.3	19+/-	**SANDY LEAN CLAY (CL)**, dark grayish brown, very stiff
47.3	15+/-	**CLAYEY SAND (SC)**, dark grayish brown
50.0	12+/-	

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	4-5-5	32	92		
30	3-7-5 N=12			NP	11
35	5-10-31	21	104		
40	2-2-5 N=7			54-27-27	97
45	6-15-10	41	85		
50					

WATER LEVEL OBSERVATIONS; SAMPLE TYPE; EXPANSION INDEX; STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)): not recorded.

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-6

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-01

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2144° Longitude: -119.1328°

Approximate Surface Elev: 62 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		SANDY LEAN CLAY (CL), dark grayish brown, very stiff				8-10-11 N=21								52
	51.5	10.5+/-												
		Boring Terminated at 51.5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-6

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-02

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2143° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
0.0	53+/-	**CLAYEY SAND (SC)**, dark brown, very loose
5.0	42.5+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown, medium dense; very loose
15.5	38.5+/-	**SANDY LEAN CLAY (CL)**, dark brown, soft
19.5	33+/-	**LEAN CLAY WITH SAND (CL)**, brown, stiff
25.0		

DEPTH (Ft.)	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		15						24-16-8	37
	0-2-1 N=3								
5	5-9-12					21	106		
	4-7-3 N=10								
10	1-1-1					20			
15	2-2-1 N=3								
20	5-9-7					24	101		
25									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018
Boring Completed: 04-05-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-7

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-02

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2143° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), brown, medium dense
28.5	29.5+/-	
		POORLY GRADED SAND WITH GRAVEL (SP), tan, medium dense
35.0	23+/-	
		SANDY LEAN CLAY (CL), dark grayish brown, stiff
39.3	19+/-	
		LEAN CLAY WITH SAND (CL), dark gray stiff
		very stiff

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
		4-7-5 N=12		
30		8-10-35	17	
35		4-6-7 N=13		
40		4-7-8	45	78
45		2-7-12 N=19		
50				

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018 | Boring Completed: 04-05-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-7

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BORING LOG NO. B-02

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2143° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	LEAN CLAY WITH SAND (CL), dark gray *(continued)*					10-21-23					22	103		
51.5	hard													
	6.5+/-													
	Boring Terminated at 51.5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018
Boring Completed: 04-05-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-7

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BORING LOG NO. B-03

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1328°

Approximate Surface Elev: 63 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		SILTY CLAYEY SAND (SC-SM), dark brown, very loose
4.8	58.5+/-	
		SANDY LEAN CLAY (CL), dark brown, medium stiff
7.3	56+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, loose
9.8	53.5+/-	
		CLAYEY SAND (SC), dark brown, medium dense
		loose
16.0	47+/-	
		SANDY LEAN CLAY (CL), dark grayish brown, medium stiff
19.5	43.5+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown medium stiff

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
			12						24-17-7	45
		0-2-1 N=3								
5		0-3-2					22	104		
		0-0-5 N=5								
10		11-14-9					22	103		
15		1-3-2 N=5								
20		3-4-5					30	96		
25										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-8

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-03

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1328°

Approximate Surface Elev: 63 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
		LEAN CLAY WITH SAND (CL), dark grayish brown *(continued)* stiff		3-4-5 N=9		
29.0	34+/-	**CLAYEY SAND**, dark grayish brown, medium dense	30	11-19-11	17	111
35.0	28+/-	**LEAN CLAY WITH SAND (CL)**, dark grayish brown, medium stiff	35	4-4-4 N=8		
40.3	23+/-	**LEAN CLAY (CL)**, trace sand, dark grayish brown, stiff	40	5-7-10	38	82
42.0	21+/-	**CLAYEY SAND (SC)**, dark grayish brown				
45.0	18+/-	**LEAN CLAY (CL)**, trace sand, dark grayish brown, very stiff	45	6-10-9 N=19	33	92
			50			

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-8

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-03

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1328°

Approximate Surface Elev: 63 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), trace sand, dark grayish brown, very stiff *(continued)*					8-15-12					26	98		
	51.5 black	11.5+/-												
	Boring Terminated at 51.5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018 | Boring Completed: 04-06-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-8

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-04

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
4.5	53.5+/-	**CLAYEY SAND (SC)**, dark brown, very loose
11.0	47+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown, medium dense; loose, sample not recovered; very loose
24.0	34+/-	**LEAN CLAY WITH SAND (CL)**, dark brown, very soft; dark grayish brown, medium stiff; brown, stiff
		SANDY LEAN CLAY (CL), dark brown, hard

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
	2-2-4	20	104
5	3-5-5 N=10		
	15-9-5		
10	0-0-1 N=1		
15	0-3-3	32	89
20	4-6-6 N=12		

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018 | Boring Completed: 04-05-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-9

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-04

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
		SANDY LEAN CLAY (CL), dark brown, hard *(continued)*		5-20-36	20	108
		stiff	30	3-6-9 N=15		
		very stiff	35	8-12-14	32	91
39.0	19+/-					
		LEAN CLAY WITH SAND (CL), dark grayish brown, stiff	40	3-7-4 N=11		
43.0	15+/-					
		SANDY LEAN CLAY (CL), dark brown, very stiff	45	5-6-15		
			50			

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018 | Boring Completed: 04-05-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-9

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-04

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	SANDY LEAN CLAY (CL), dark brown, very stiff *(continued)*					3-5-11 N=16								
	51.5	6.5+/-												
	Boring Terminated at 51.5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018
Boring Completed: 04-05-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-9

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-05

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2138° Longitude: -119.131°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
0.0	59	**SILTY CLAYEY SAND (SC-SM)**, dark brown, very loose brown
6.0	53+/-	**SILTY SAND (SM)**, brown, medium dense
10.5	48.5+/-	**LEAN CLAY (CL)**, trace sand, dark grayish brown, soft
13.0	46+/-	**SILTY CLAYEY SAND (SC-SM)**, dark brown, very loose
		loose
25.0	34+/-	

Sample Depth (Ft.)	Field Test Results	Atterberg Limits LL-PL-PI	Percent Fines
0.0–6.0		24-17-7	46
2.5	0-0-1 N=1		
5.0	3-6-6 N=12	NP	18
7.5	5-14-9 N=23		
10.0	2-1-1 N=2		
15.0	2-1-1 N=2	23-18-5	46
20.0	0-2-3 N=5		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-10

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-05

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2138° Longitude: -119.131°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		LEAN CLAY WITH SAND (CL), dark grayish brown, medium stiff
		stiff
31.0	28+/-	**CLAYEY SAND**, dark brown, loose
35.0	24+/-	**SILT (ML)**, dark grayish brown, stiff
40.0	19+/-	**LEAN CLAY (CL)**, trace sand, dark grayish brown, stiff

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		2-3-4 N=7						43-24-19	75
30		7-4-5 N=9							
35		5-7-6 N=13						36-25-11	98
40		2-3-6 N=9							
45		2-4-5 N=9						40-24-16	87
50									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-10

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-05

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2138° Longitude: -119.131°

Approximate Surface Elev: 59 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), trace sand, dark grayish brown, stiff *(continued)*					5-5-7 N=12								
	51.5	7.5+/-												
	Boring Terminated at 51.5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-10

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-06

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2141° Longitude: -119.1299°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		loose
7.3	51+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown, medium dense
10.0	48+/-	**LEAN CLAY WITH SAND (CL)**, dark grayish brown, soft
13.5	44.5+/-	**POORLY GRADED SAND WITH CLAY**, grayish brown, very loose
15.5	42.5+/-	**LEAN CLAY WITH SAND (CL)**, dark grayish brown, soft
		very stiff
21.5	36.5+/-	***Boring Terminated at 21.5 Feet***

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		2-1-2 N=3							
5		2-3-5				10	81		
		2-5-9 N=14							
10		0-1-2				39	81		
15		0-1-2 N=3							
20		8-15-20				28	99		

WATER LEVEL OBSERVATIONS: While drilling; At completion of drilling

EXPANSION INDEX

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-09-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-11

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BORING LOG NO. B-07

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2134° Longitude: -119.1299°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		loose
7.5	50.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, medium dense
		very loose
11.0	47+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, very soft
14.8	43.5+/-	
		CLAYEY SAND (SC), grayish brown, medium dense
		loose
20.8	37.5+/-	
21.5	36.5+/-	**LEAN CLAY WITH SAND (CL)**, dark grayish brown, medium stiff to stiff
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
5	0-1-2	24	98
	2-2-3 N=5		
10	9-16-26	16	108
	0-0-0 N=0		
15	3-10-13	21	103
20	2-3-5 N=8		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-09-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-12

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BORING LOG NO. B-08

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2141° Longitude: -119.1304°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
4.5	54.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, loose
6.5	52.5+/-	
		CLAYEY SAND (SC), dark brown
7.5	51.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, dense
10.0	49+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, very stiff
		soft
		very stiff
21.5	37.5+/-	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		1-1-1 N=2							
5		2-4-8				20	101		
		17-23-23 N=46							
10		22-22-12				38	87		
15		0-1-1 N=2							
20		4-11-13				24	101		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-03-2018
Boring Completed: 04-03-2018
Drill Rig: LAR
Driller: CalPac
Project No.: 60185017
Exhibit: A-13

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-09

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2134° Longitude: -119.1304°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		medium dense
7.0	52+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, medium dense
9.8	49.5+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, very soft
13.5	45.5+/-	
		CLAYEY SAND (SC), dark brown, loose
17.0	42+/-	
		SANDY LEAN CLAY (CL), dark grayish brown, very soft
21.0	38+/-	
21.5	37.5+/-	**CLAYEY SAND (SC)**, dark brown, very loose
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
	2-3-3	25	99
5	4-7-10 N=17		
	10-23-27	19	108
10	0-0-1 N=1		
15	4-8-7	21	102
20	0-0-1 N=1		

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-03-2018 | Boring Completed: 04-03-2018

Drill Rig: LAR | Driller: CalPac

Project No.: 60185017 | Exhibit: A-14

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BORING LOG NO. B-11

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2146° Longitude: -119.1305°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
4.5	54.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), dark brown, medium dense
		brown
10.8	48.5+/-	very loose
		LEAN CLAY WITH SAND (CL), dark grayish brown, soft
13.5	45.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), dark brown, medium dense
		sample not recovered
19.5	39.5+/-	
		SANDY LEAN CLAY (CL), dark brown, stiff
21.5	37.5+/-	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
		2-2-4	19	106
5		2-4-6 N=10		
		16-21-24	20	110
10		1-1-1 N=2		
15		19-18-16		
20		0-4-7 N=11		

WATER LEVEL OBSERVATIONS: ▽ While drilling; ▽ At completion of drilling

GRAPHIC LOG | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018 | Boring Completed: 04-04-2018
Drill Rig: LAR | Driller: CalPac
Project No.: 60185017 | Exhibit: A-15

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-12

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.214° Longitude: -119.1323°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		brown, medium dense
6.0	54+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, medium dense
		very loose
10.8	49+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, soft
		medium stiff
		medium stiff to stiff
21.5	38.5+/-	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
	4-3-3	23	102
5	3-5-7 N=12		
	13-23-33	21	107
10	2-1-1 N=2		
15	3-2-5	35	89
20	2-4-4 N=8		

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-10-2018 | Boring Completed: 04-10-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-16

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-13

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2134° Longitude: -119.1316°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		brown
5.0	55+/-	
		CLAYEY SAND (SC), brown, medium dense
6.8	53.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, medium dense
		very loose
11.0	49+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, soft
		stiff
21.5	38.5+/-	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
	1-1-1 N=2		
5	2-6-12	19	111
	6-6-5 N=11		
10	3-1-2	31	89
15	1-1-1 N=2		
20	2-4-9	25	99

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-10-2018
Boring Completed: 04-10-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-17

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-14

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.214° Longitude: -119.1323°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		brown, loose
6.5	53.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, medium dense trace gravel
		no gravel
13.3	47+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, soft
		very stiff
21.5	38.5+/-	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	1-1-1 N=2							
5	3-4-8				19	111		
	5-7-7 N=14							
10	8-17-7				17	112		
15	2-1-1 N=2							
20	7-13-15				25	99		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-10-2018
Boring Completed: 04-10-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-18

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-15

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2135° Longitude: -119.1323°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		brown
5.8	56.5+/-	loose
		POORLY GRADED SAND WITH CLAY (SP), brown, loose
		medium dense
11.0	51+/-	very loose
		LEAN CLAY WITH SAND (CL), dark grayish brown, soft
14.0	48+/-	**POORLY GRADED SAND WITH CLAY (SP)**, grayish brown, loose sample not recovered
20.3	42+/-	
21.5	40.5+/-	**LEAN CLAY WITH SAND (CL)**, dark grayish brown, medium stiff to stiff
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
	2-1-2	21	102
5	1-5-4 N=9		
	19-24-24	19	107
10	1-2-1 N=3		
15	3-5-5		
20	2-4-4 N=8		

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-10-2018 | Boring Completed: 04-10-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-19

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-21

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.215° Longitude: -119.1272°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)
5.0	53+/-

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), dark brown												
	5											
Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

At completion of drilling

at 10 Minutes

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018	Boring Completed: 04-04-2018
Drill Rig: Hand Auger	Driller: Hand Auger
Project No.: 60185017	Exhibit: A-20

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-22

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2149° Longitude: -119.1299°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	POORLY GRADED SAND (SP), dark brown												
	brown											21-18-3	2
5.0	54+/-	5											
	Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

At completion of drilling

at 10 Minutes

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018 | Boring Completed: 04-04-2018

Drill Rig: Hand Auger | Driller: Hand Auger

Project No.: 60185017 | Exhibit: A-21

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-23

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2149° Longitude: -119.1336°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), dark brown													
5.0	57+/-	5	▽										
Boring Terminated at 5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018 | Boring Completed: 04-11-2018

Drill Rig: CME 75 | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-22

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-24

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2138° Longitude: -119.1336°

Approximate Surface Elev: 63 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		SILTY CLAYEY SAND (SC-SM), dark brown											22-18-4	27
4.0	59+/-													
5.0	58+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown	5	▽										
		Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018 | Boring Completed: 04-11-2018

Drill Rig: CME 75 | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-23

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-25

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2135° Longitude: -119.1272°

Approximate Surface Elev: 57 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), dark brown													
brown													
dark brown													
5.0	52+/-	5											
Boring Terminated at 5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018
Boring Completed: 04-04-2018
Drill Rig: Hand Auger
Driller: Hand Auger
Project No.: 60185017
Exhibit: A-24

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-26

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2127° Longitude: -119.1334°

Approximate Surface Elev: 65 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), dark brown brown													
5.0	60+/-	5	▽										
Boring Terminated at 5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*
▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018 | Boring Completed: 04-04-2018
Drill Rig: Hand Auger | Driller: Hand Auger
Project No.: 60185017 | Exhibit: A-25

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-27

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2132° Longitude: -119.1347°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown
4.0	58+/-	
		LEAN CLAY WITH SAND, dark brown
5.0	57+/-	
		Boring Terminated at 5 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-26

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-28

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2126° Longitude: -119.13°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown												
	brown												
5.0	55+/-	5											
	Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018
Boring Completed: 04-04-2018
Drill Rig: Hand Auger
Driller: Hand Auger
Project No.: 60185017
Exhibit: A-27

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-1

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2121° Longitude: -119.1329°

Approximate Surface Elev: 64 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown, loose													
	5.0	59+/-	5			1-3-5					18	102		
	Boring Terminated at 5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-28

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-2

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2121° Longitude: -119.1292°

Approximate Surface Elev: 59 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown, very loose													
	5.0	54+/-				0-2-4					24	101		
	Boring Terminated at 5 Feet		5											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-29

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-3

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2121° Longitude: -119.1345°

Approximate Surface Elev: 64 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	FIELD TEST RESULTS	TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	LL-PL-PI
		5	1-1-4				16	82	

CLAYEY SAND (SC), dark brown, very loose

6.0 — 58+/-

SANDY LEAN CLAY (CL), dark brown, medium stiff

7.0 — 57+/-

Boring Terminated at 7 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-30

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-4

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.212° Longitude: -119.131°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
6.0	54+/-	
		SANDY LEAN CLAY (CL), dark brown
7.0	53+/-	
		Boring Terminated at 7 Feet

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
5		2-1-1				13			

GRAPHIC LOG

WATER LEVEL OBSERVATIONS

EXPANSION INDEX

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-31

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-5

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2121° Longitude: -119.1275°

Approximate Surface Elev: 56 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown, very loose													
			5			1-2-4					23	99		
	7.0	49+/-												
	Boring Terminated at 7 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-32

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-6

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2125° Longitude: -119.1347°

Approximate Surface Elev: 63 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown													
	3.0	60+/-												
	Boring Terminated at 3 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-33

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-01

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2153° Longitude: -119.1272°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
		CLAYEY SAND (SC), dark brown
		brown
10.0	49+/-	***Boring Terminated at 10 Feet***

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
		▽										
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018	Boring Completed: 04-09-2018
Drill Rig: CME 75	Driller: S/G Drilling
Project No.: 60185017	Exhibit: A-34

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-02

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2153° Longitude: -119.1299°

Approximate Surface Elev: 57 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		POORLY GRADED SAND (SP), dark brown												
			5	▽									22-17-5	2
		brown												
10.0	47+/-		10											
		Boring Terminated at 10 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018 | Boring Completed: 04-09-2018

Drill Rig: CME 75 | Driller: S/G Drilling

Project No.: 60185017 | Exhibit: A-35

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-03

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2153° Longitude: -119.1309°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
		CLAYEY SAND (SC), dark brown
5.0	55+/-	
5.8	54.5+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown
		Boring Terminated at 5.75 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5	▽										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018 | Boring Completed: 04-11-2018

Drill Rig: CME 75 | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-36

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-04

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2153° Longitude: -119.1336°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
		CLAYEY SAND (SC), dark brown
5.3	57+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown
10.0	52+/-	
		Boring Terminated at 10 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5	▽										
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-37

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-05

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2153° Longitude: -119.1352°

Approximate Surface Elev: 63 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
3.5	59.5+/-	**CLAYEY SAND (SC)**, dark brown
6.3	57+/-	**LEAN CLAY WITH SAND (CL)**, dark brown
10.0	53+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown
		Boring Terminated at 10 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

At completion of drilling

at 10 Minutes

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-38

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-06

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2154° Longitude: -119.1369°

Approximate Surface Elev: 66 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown
2.8	63.5+/-	
		LEAN CLAY WITH SAND (CL), dark brown
7.0	59+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown
10.0	56+/-	
		Boring Terminated at 10 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-39

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-07

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2154° Longitude: -119.1384°

Approximate Surface Elev: 67 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
0		**CLAYEY SAND (SC)**, dark brown
3.0	64+/-	**LEAN CLAY WITH SAND (CL)**, dark brown
6.0	61+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown
9.0	58+/-	**CLAYEY SAND (SC)**, dark brown
10.0	57+/-	***Boring Terminated at 10 Feet***

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-40

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-08

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.215° Longitude: -119.1395°

Approximate Surface Elev: 68 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown
2.5	65.5+/-	
		LEAN CLAY WITH SAND (CL), dark brown
5.5	62.5+/-	
		SANDY LEAN CLAY (CL), brown
8.0	60+/-	
		CLAYEY SAND (SC), brown
10.0	58+/-	
		Boring Terminated at 10 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-41

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-09

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2146° Longitude: -119.1415°

Approximate Surface Elev: 67 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
0.0	67	**CLAYEY SAND (SC)**, dark brown
6.0	61+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown
10.0	57+/-	***Boring Terminated at 10 Feet***

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-42

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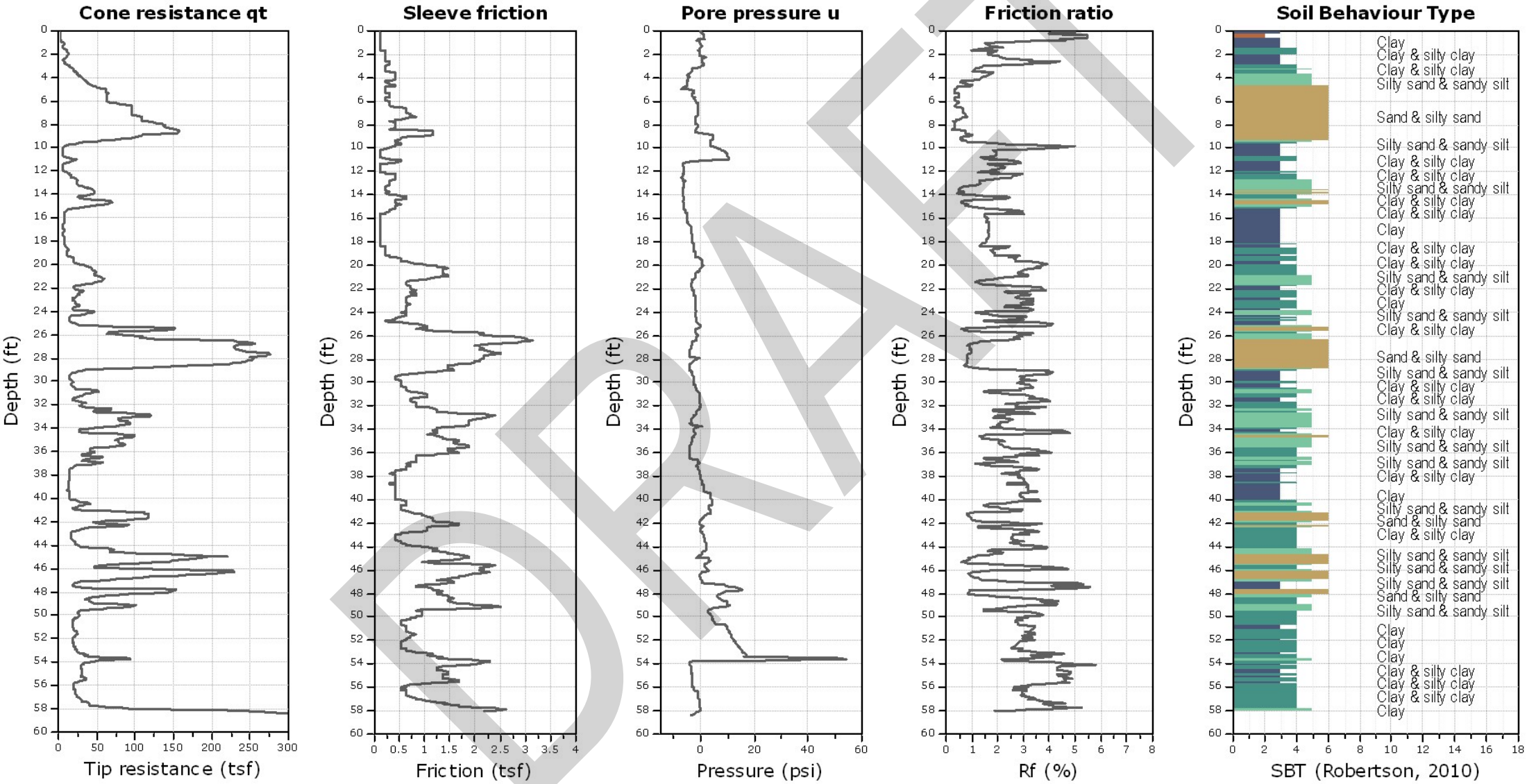
THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-16

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 58.35 ft, Date: 5/3/2018
Cone Type: Vertek



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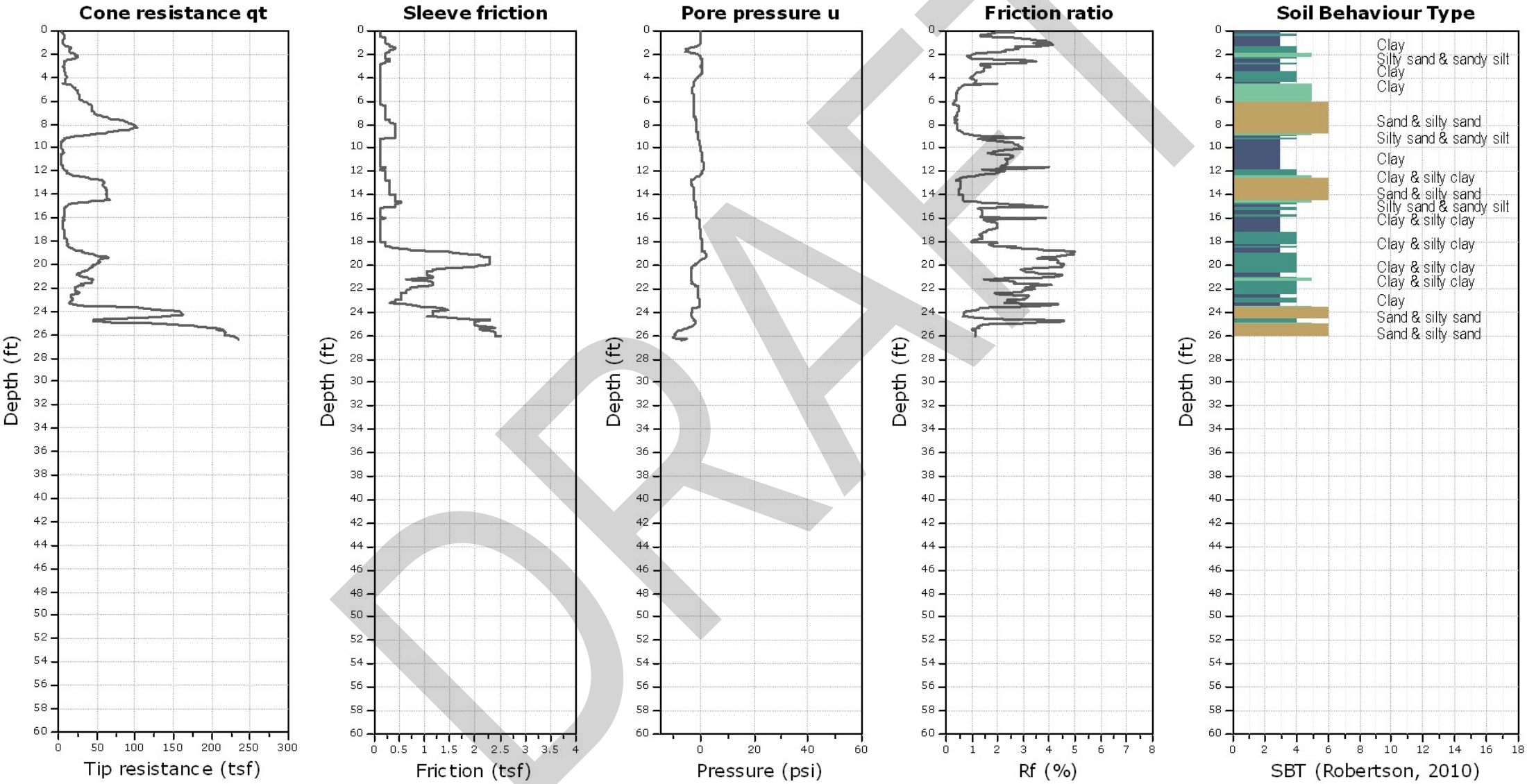
Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-17

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 26.38 ft, Date: 5/4/2018
Cone Type: Vertek



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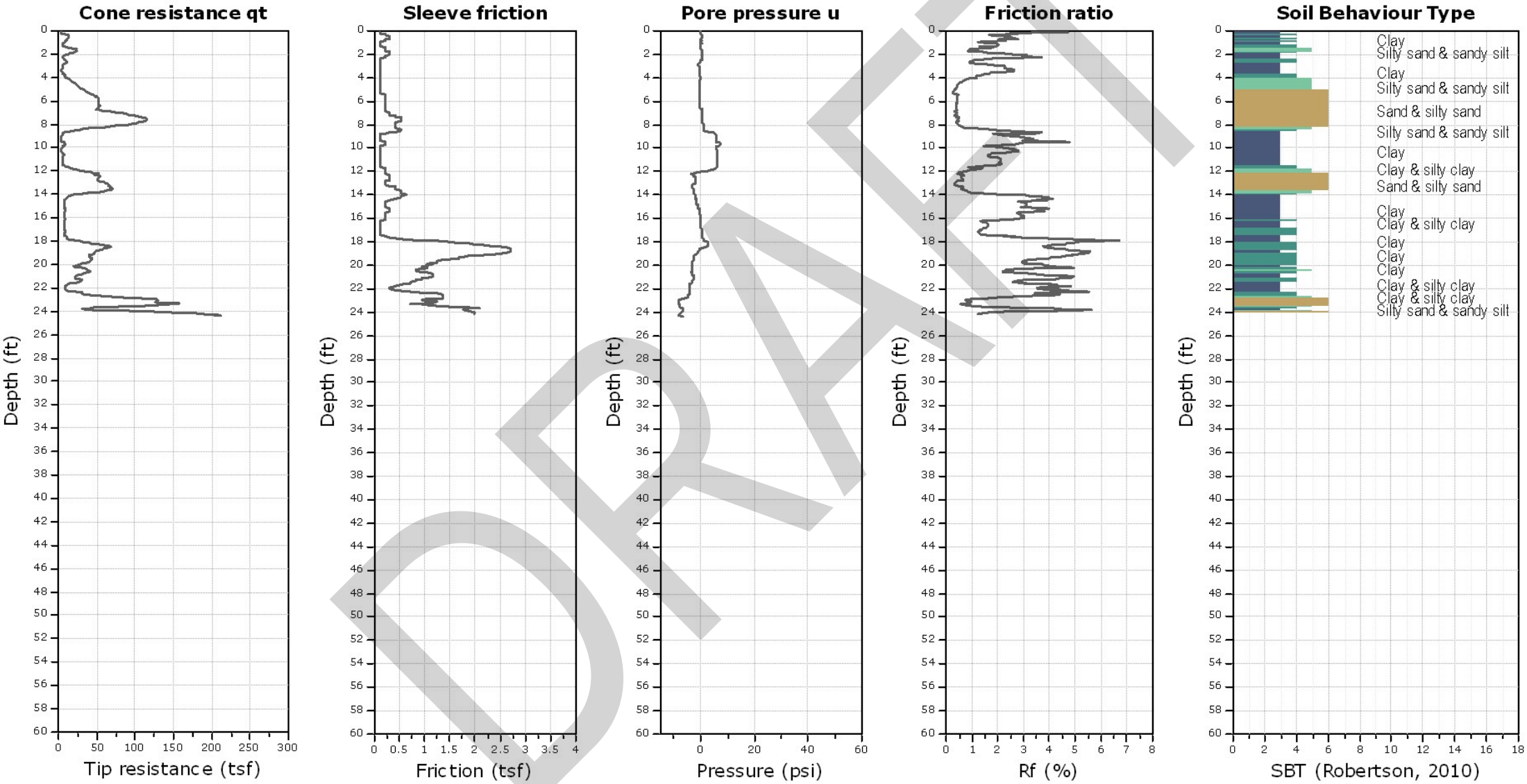
Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-17B

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 24.43 ft, Date: 5/4/2018
Cone Type: Vertek



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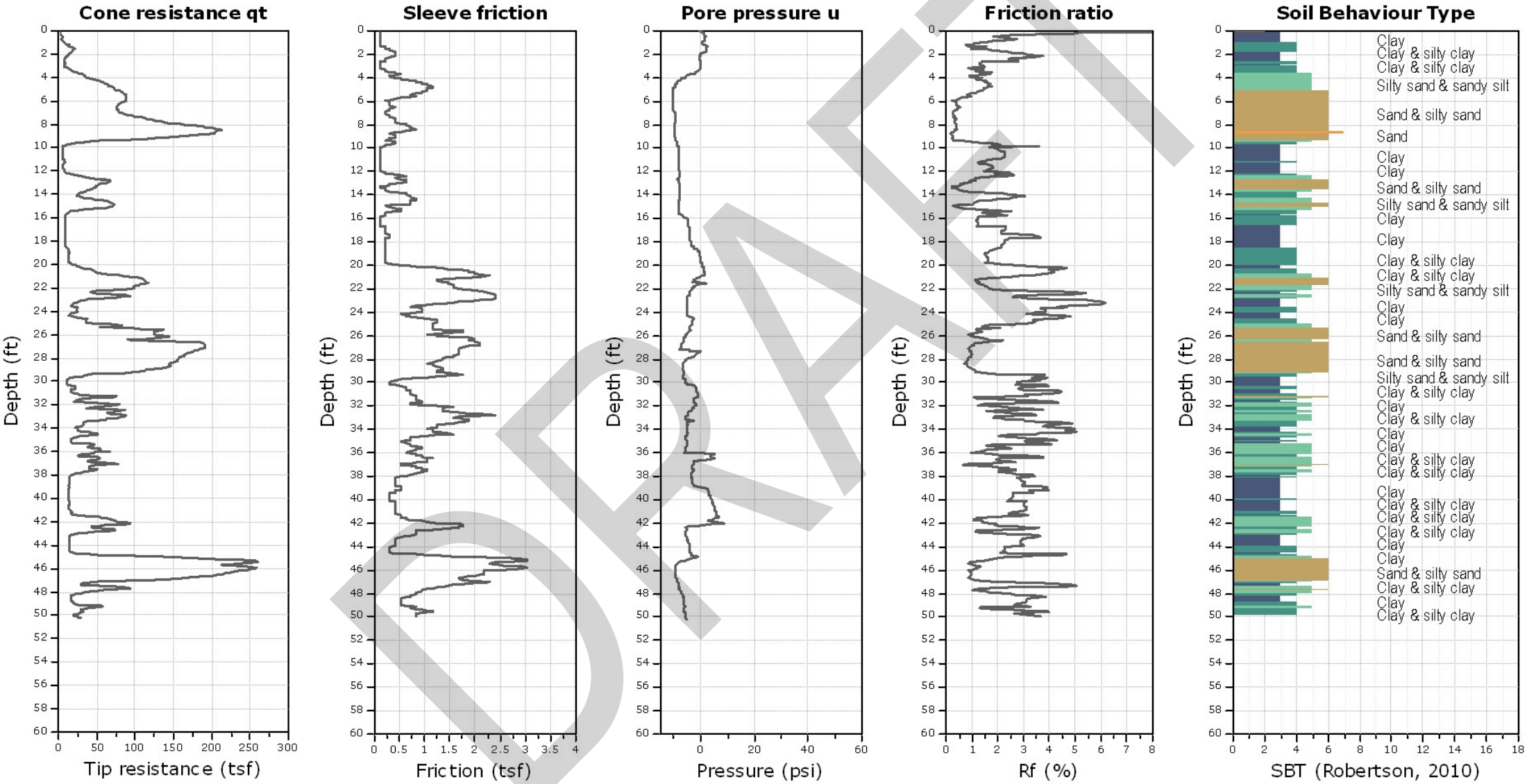
Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-18

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 50.22 ft, Date: 5/4/2018
Cone Type: Vertek



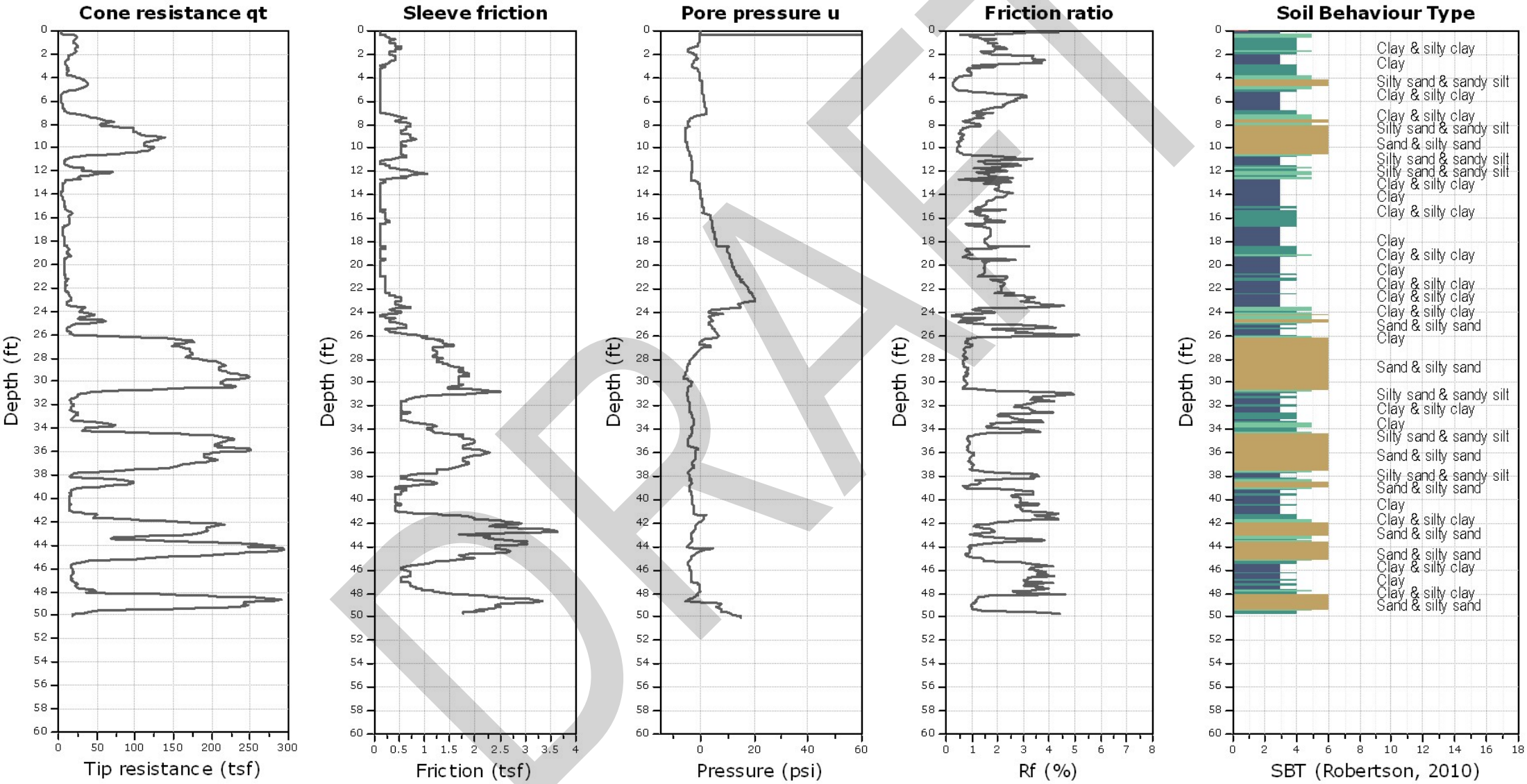
DRAFT

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-19

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 50.02 ft, Date: 5/4/2018
Cone Type: Vertek



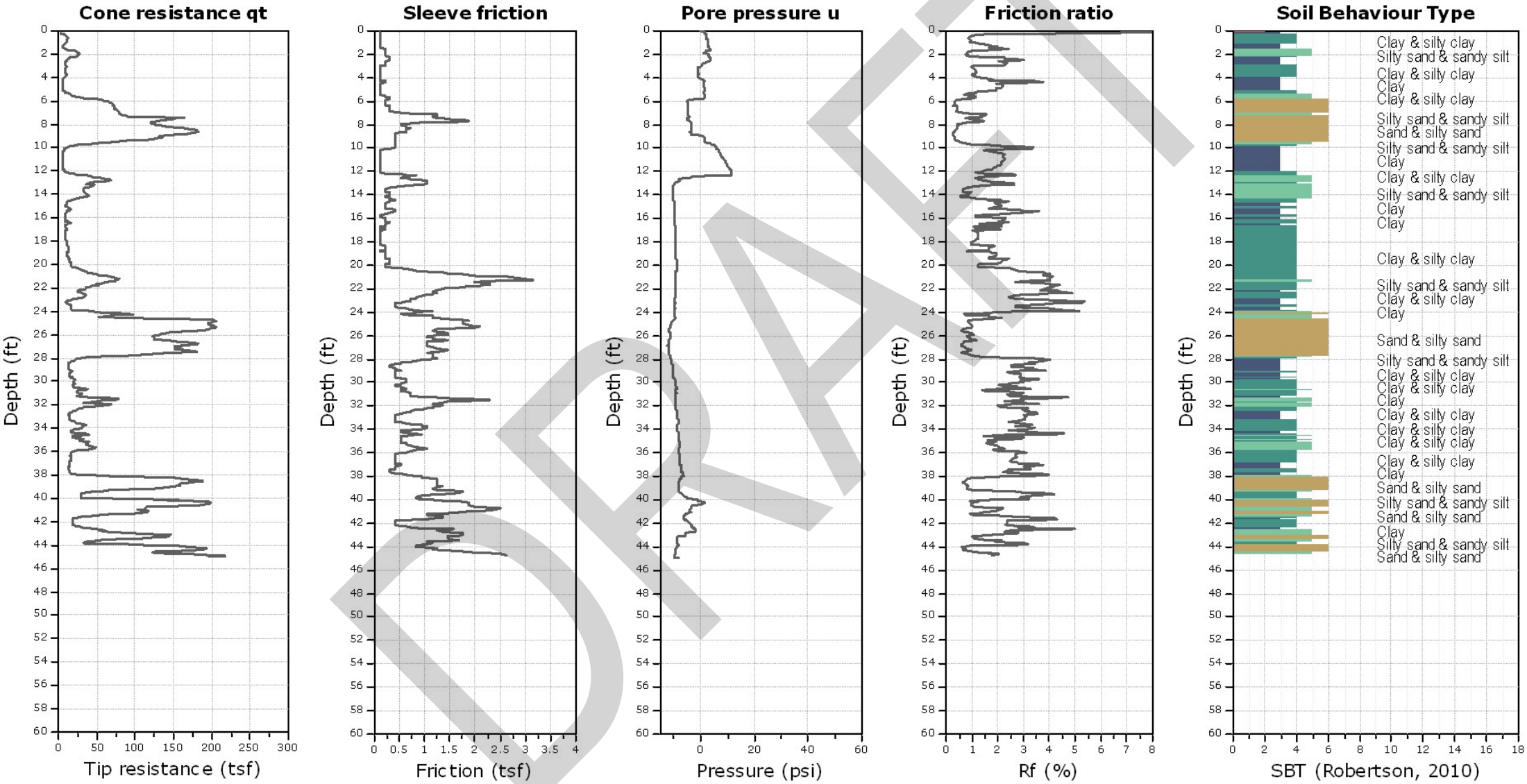
DRAFT

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-20

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 45.02 ft, Date: 5/3/2018
Cone Type: Vertek



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APPENDIX B

LABORATORY TESTING

DRAFT

Laboratory Testing

Samples retrieved during the field exploration were taken to the laboratory for further observation by the project geotechnical engineer and were classified in accordance with the Unified Soil Classification System (USCS) described in Appendix A. At that time, the field descriptions were confirmed or modified as necessary and an applicable laboratory testing program was formulated to determine engineering properties of the subsurface materials.

Laboratory tests were conducted on selected soil samples and the test results are presented in this appendix. The laboratory test results were used for the geotechnical engineering analyses, and the development of foundation and earthwork recommendations. Laboratory tests were performed in general accordance with the applicable ASTM, local or other accepted standards.

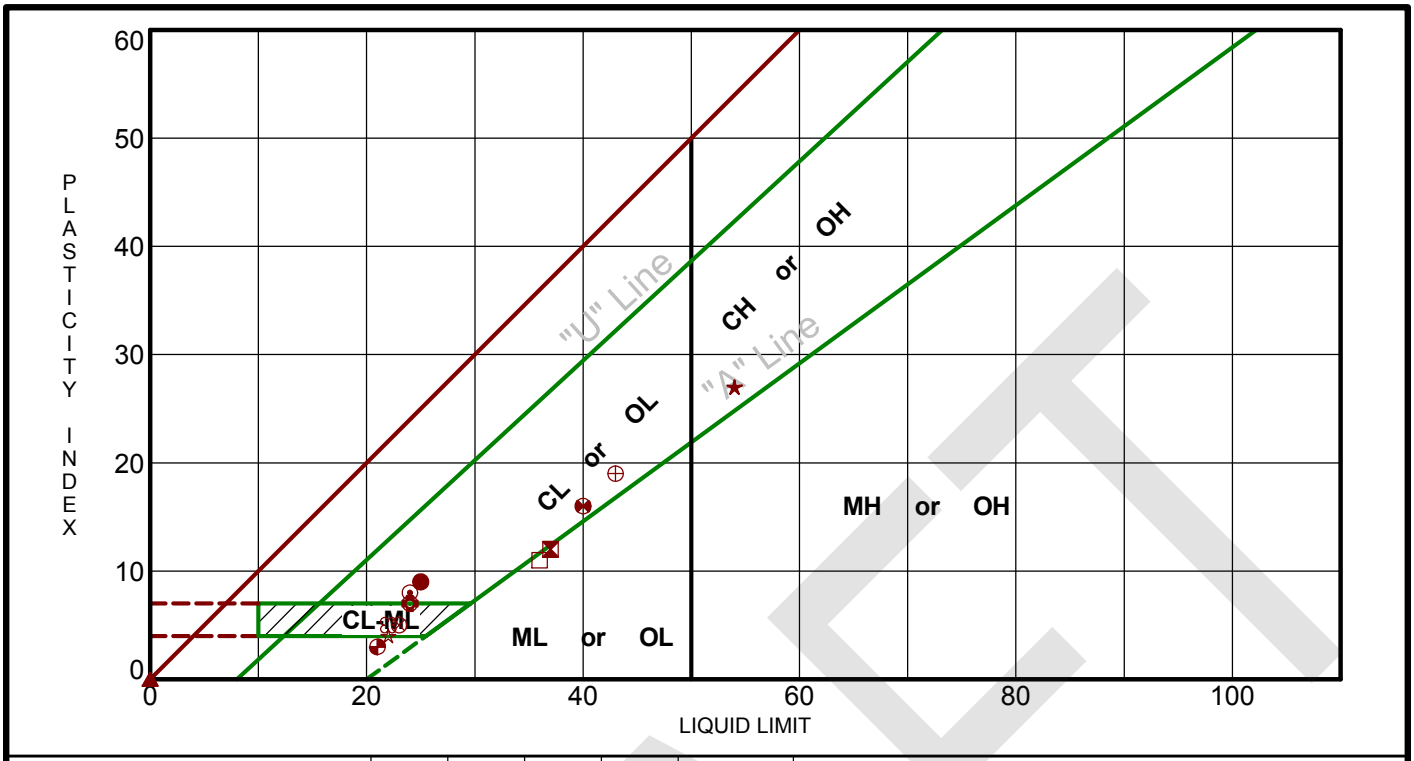
Selected soil samples obtained from the site were tested for the following engineering properties:

- In-situ Dry Density
- Soluble Chlorides
- pH
- Percent Passing #200 Sieve
- Atterberg Limits
- Direst Shear
- In-situ Water Content
- Soluble Sulfates
- Minimum Resistivity
- Consolidation/Collapse Potential
- Expansion Index
- R-Value

DRAFT

ATTERBERG LIMITS RESULTS

ASTM D4318



	Boring ID	Depth	LL	PL	PI	Fines	USCS	Description
●	B-01	0 - 2.5	25	16	9	41	SC	CLAYEY SAND
⊠	B-01	20 - 21.5	37	25	12	72	ML	SILT with SAND
▲	B-01	30 - 31.5	NP	NP	NP	11	SP-SM	POORLY GRADED SAND WITH SILT
★	B-01	40 - 41.5	54	27	27	97	CH	FAT CLAY
⊙	B-02	0 - 2.5	24	16	8	37	SC	CLAYEY SAND
✿	B-03	0 - 2.5	24	17	7	45	SC-SM	SILTY, CLAYEY SAND
○	B-05	0 - 2.5	24	17	7	46	SC-SM	SILTY, CLAYEY SAND
△	B-05	5 - 6.5	NP	NP	NP	18	SM	SILTY SAND
⊗	B-05	15 - 16.5	23	18	5	46	SC-SM	SILTY, CLAYEY SAND
⊕	B-05	25 - 26.5	43	24	19	75	CL	LEAN CLAY with SAND
□	B-05	35 - 36.5	36	25	11	98	ML	SILT
⊗	B-05	45 - 46.5	40	24	16	87	CL	LEAN CLAY
◕	P-22	0 - 5	21	18	3	2	SP	POORLY GRADED SAND
☆	P-24	0 - 4	22	18	4	27	SC-SM	SILTY, CLAYEY SAND
✿	R-02	0 - 10	22	17	5	2	SP	POORLY GRADED SAND

PROJECT: Oxnard Confidential Project Gaucho

SITE: Highway 101 and Del Norte Boulevard

Terracon
1421 Edinger Ave Ste C
Tustin, CA

PROJECT NUMBER: 60185017

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

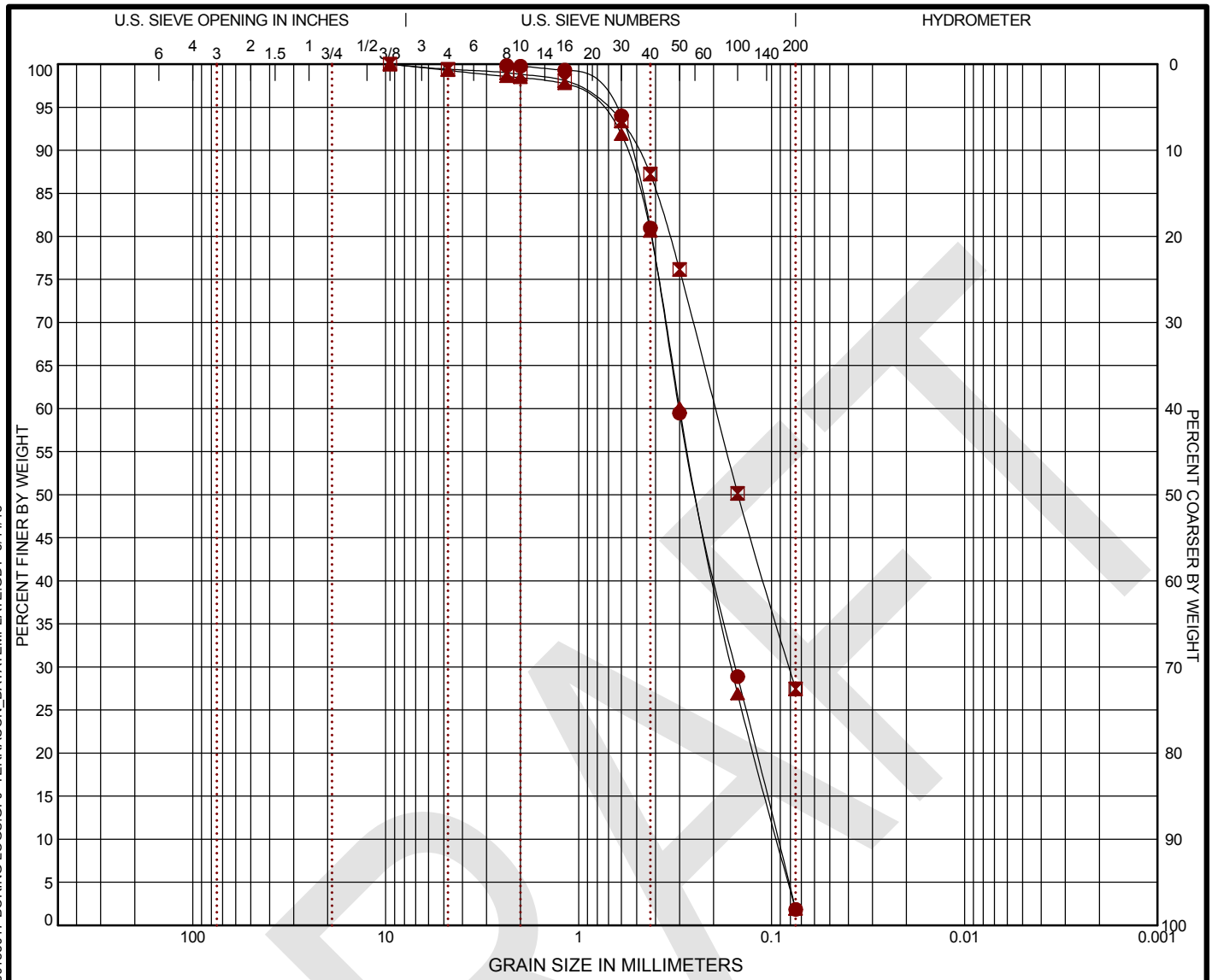
EXHIBIT: B-2

DRAFT

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. ATTERBERG LIMITS 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BORING ID	DEPTH	% COBBLES	% GRAVEL	% SAND	% SILT	% FINES	% CLAY	USCS
●	**P-22**	**0 - 5**			**98.0**		**1.8**		**SP**
⊠	**P-24**	**0 - 4**	**0.0**	**0.6**	**72.0**		**27.5**		**SC-SM**
▲	**R-02**	**0 - 10**	**0.0**	**0.7**	**97.4**		**1.9**		**SP**

	GRAIN SIZE		
	●	⊠	▲
D_{60}	**0.303**	**0.195**	**0.299**
D_{30}	**0.154**	**0.081**	**0.16**
D_{10}	**0.092**		**0.094**
	COEFFICIENTS		
C_C	**0.85**		**0.91**
C_U	**3.27**		**3.18**

●		⊠		▲	
Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
#8	**99.84**	**3/8"**	**100.0**	**3/8"**	**100.0**
#10	**99.76**	**#4**	**99.41**	**#4**	**99.27**
#16	**99.3**	**#8**	**99.0**	**#8**	**98.57**
#30	**94.0**	**#10**	**98.82**	**#10**	**98.43**
#40	**80.98**	**#16**	**98.09**	**#16**	**97.73**
#50	**59.49**	**#30**	**93.4**	**#30**	**91.84**
#100	**28.89**	**#40**	**87.23**	**#40**	**80.6**
#200	**1.85**	**#50**	**76.14**	**#50**	**60.11**
		#100	**50.17**	**#100**	**26.89**
		#200	**27.45**	**#200**	**1.85**

SOIL DESCRIPTION

● POORLY GRADED SAND (SP)

⊠ SILTY, CLAYEY SAND (SC-SM)

▲ POORLY GRADED SAND (SP)

REMARKS

●

⊠

▲

PROJECT: Oxnard Confidential Project Gaucho

SITE: Highway 101 and Del Norte Boulevard

Terracon
1421 Edinger Ave Ste C
Tustin, CA

PROJECT NUMBER: 60185017

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

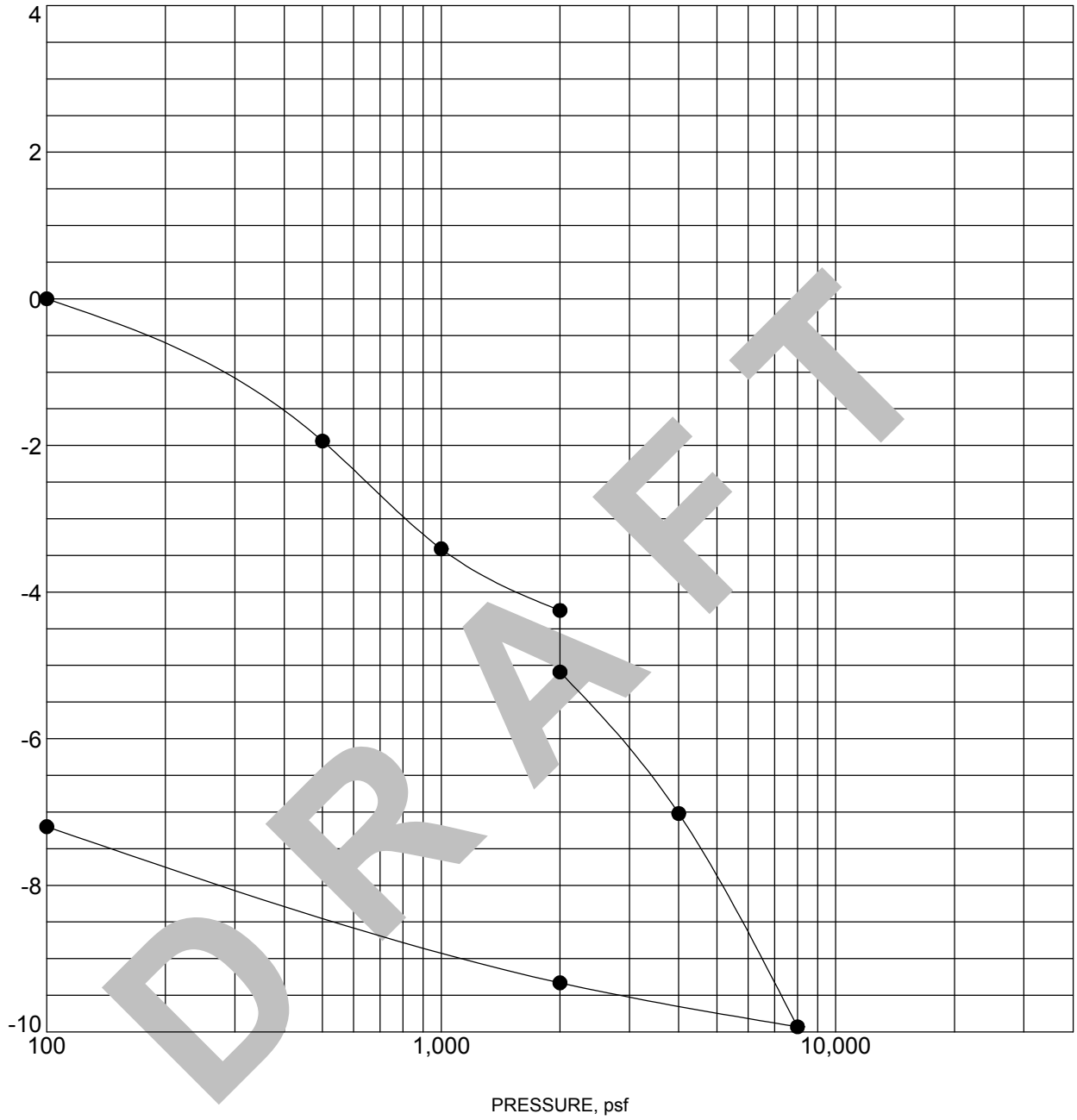
EXHIBIT: B-3

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS 1 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

DRAFT

SWELL CONSOLIDATION TEST

ASTM D2435



Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-01	2.5 - 4 ft	CLAYEY SAND	96	25

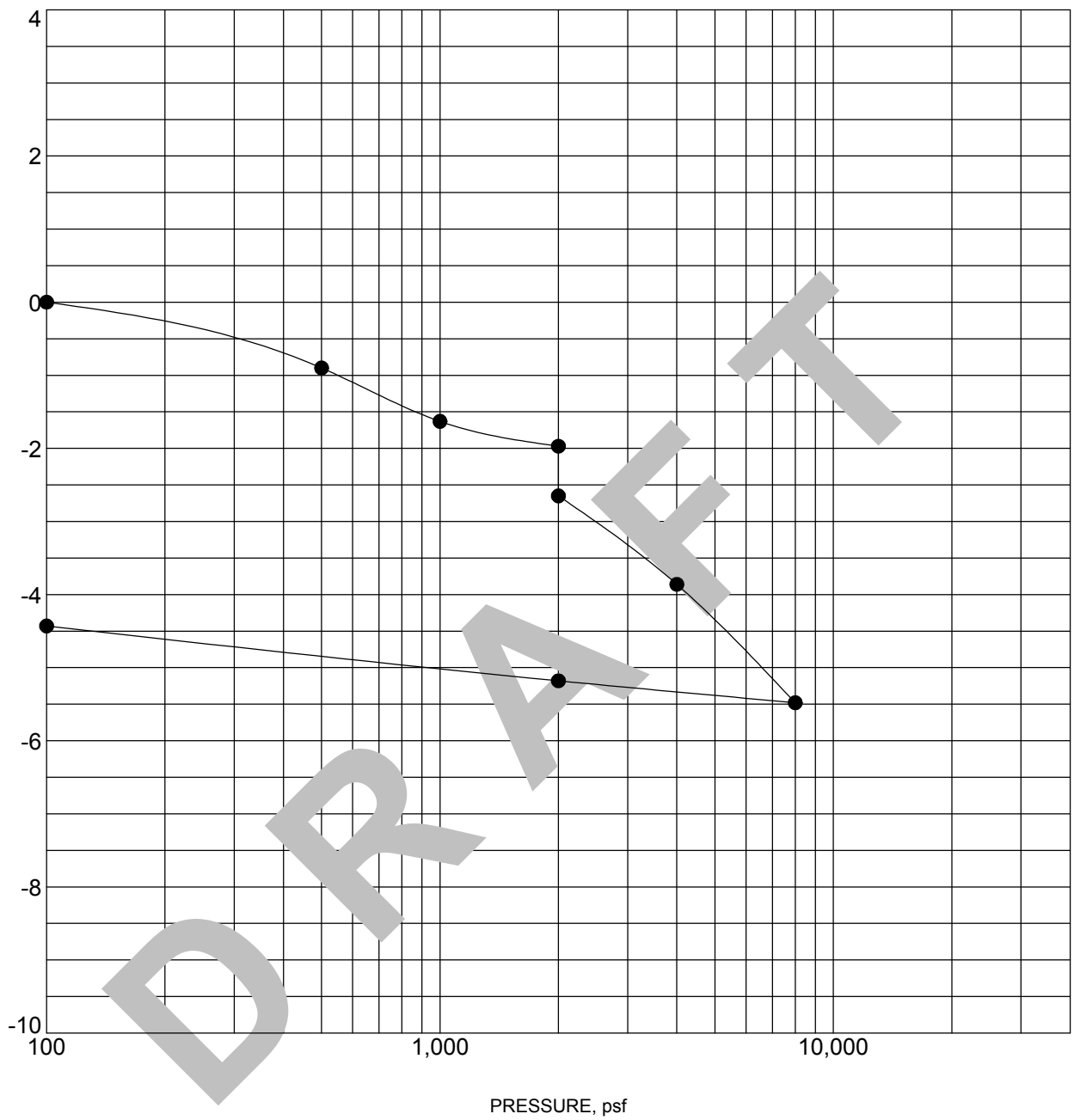
NOTES: Water added at 2,000 psf.

PROJECT: Oxnard Confidential Project Gaucho	Terracon 1421 Edinger Ave Ste C Tustin, CA	PROJECT NUMBER: 60185017
SITE: Highway 101 and Del Norte Boulevard		CLIENT: Seefried Industrial Properties, Inc. El Segundo, CA
		EXHIBIT: B-4

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

SWELL CONSOLIDATION TEST

ASTM D2435



Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-04	2.5 - 4 ft	CLAYEY SAND	104	20

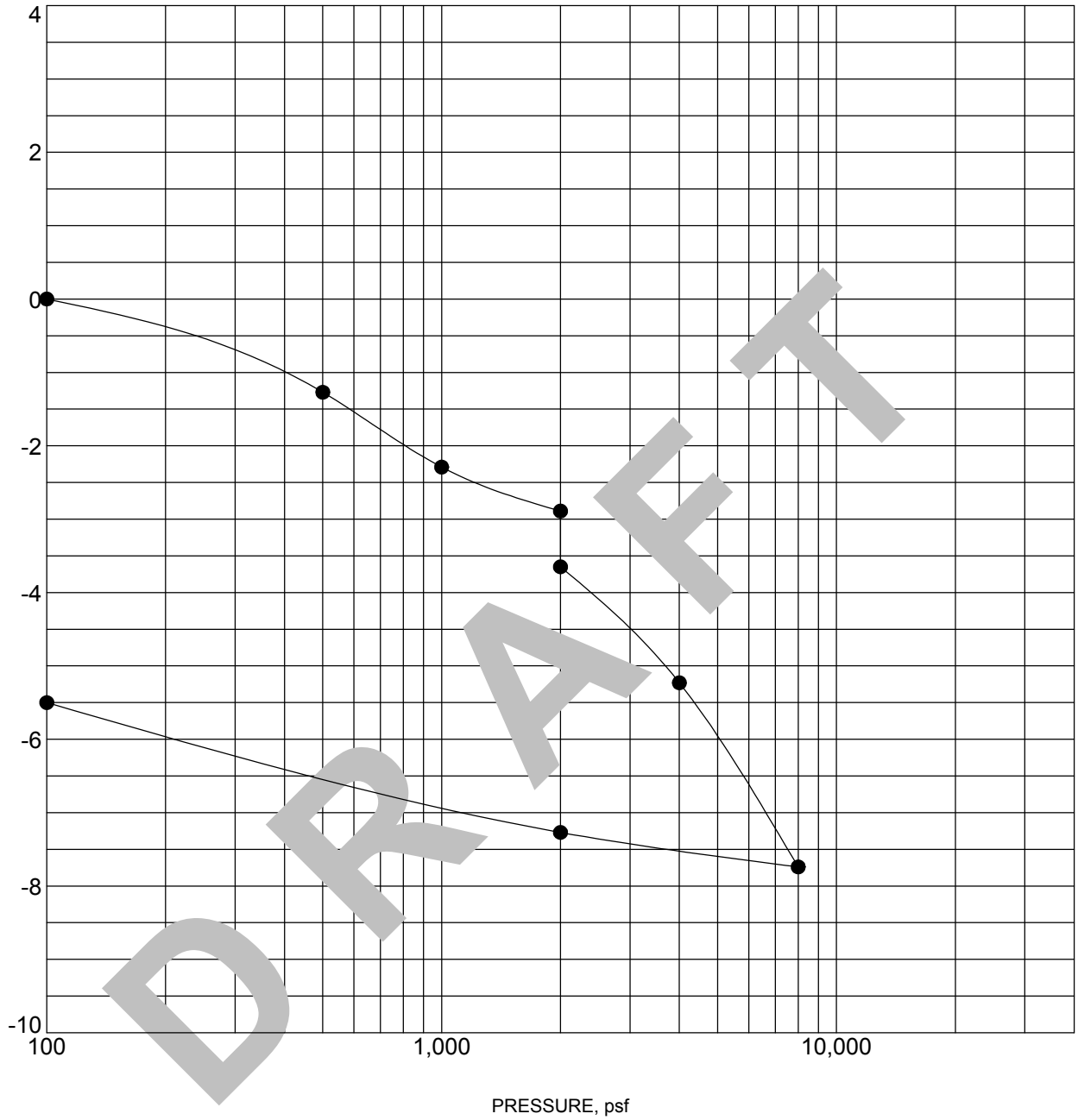
NOTES: Water added at 2,000 psf

PROJECT: Oxnard Confidential Project Gaucho	Terracon 1421 Edinger Ave Ste C Tustin, CA	PROJECT NUMBER: 60185017
SITE: Highway 101 and Del Norte Boulevard		CLIENT: Seefried Industrial Properties, Inc. El Segundo, CA
		EXHIBIT: B-5

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

SWELL CONSOLIDATION TEST

ASTM D2435



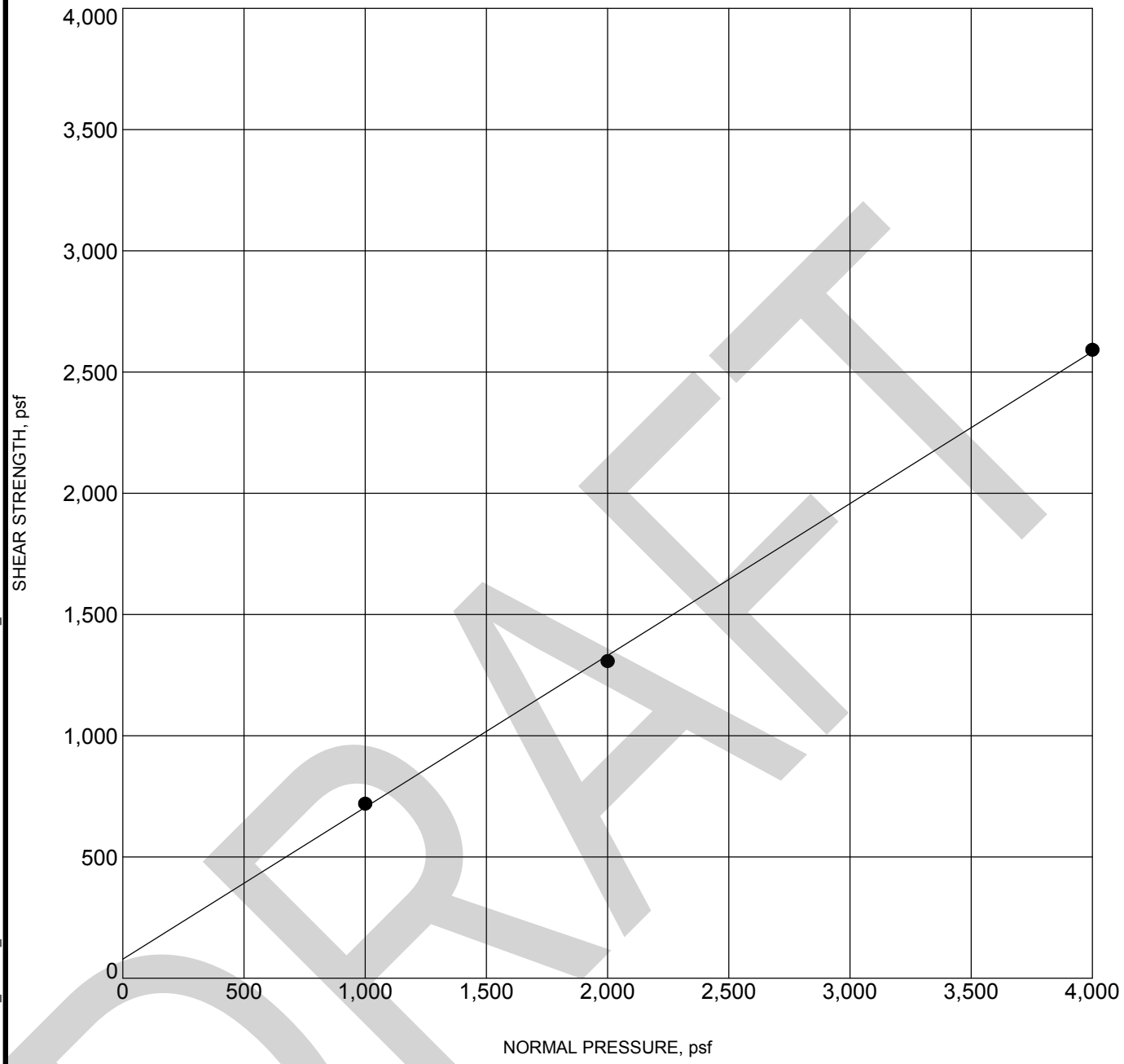
Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-07	2.5 - 4 ft	CLAYEY SAND	98	24

NOTES: Water added at 2,000 psf.

PROJECT: Oxnard Confidential Project Gaucho	Terracon 1421 Edinger Ave Ste C Tustin, CA	PROJECT NUMBER: 60185017
SITE: Highway 101 and Del Norte Boulevard		CLIENT: Seefried Industrial Properties, Inc. El Segundo, CA
		EXHIBIT: B-6

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

DIRECT SHEAR TEST ASTM D3080



	Specimen Identification		Classification	γ_d, pcf	WC,%	c, psf	ϕ^o
●	**B-01**	**7.5ft**	**POORLY GRADED SAND WITH SILT SP-SM**	**100**	**22**	**78**	**32**

PROJECT: Oxnard Confidential Project Gaucho

SITE: Highway 101 and Del Norte Boulevard

Terracon
1421 Edinger Ave Ste C
Tustin, CA

PROJECT NUMBER: 60185017

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

EXHIBIT: B-7

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_DIRECT_SHEAR 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

DRAFT

CHEMICAL LABORATORY TEST REPORT

Project Number: 60185017
Service Date: 04/30/18
Report Date: 05/04/18
Task:

Terracon
750 Pilot Road, Suite F
Las Vegas, Nevada 89119
(702) 597-9393

Client

Seefried Industrial Properties, Inc.

Project

Seefried: Industrial Warehouse; Oxnard

Sample Submitted By: Terracon (60) **Date Received:** 4/27/2018 **Lab No.: 18-0481**

Results of Corrosion Analysis

Sample Number		
Sample Location	B-1	B-5
Sample Depth (ft.)	Bulk	Bulk
pH Analysis, AWWA 4500 H	8.19	7.97
Water Soluble Sulfate (SO4), AWWA 4500 E (percent %)	0.15	0.37
Sulfides, AWWA 4500-S D, (mg/kg)	Nil	Nil
Chlorides, ASTM D 512, (mg/kg)	95	145
Red-Ox, AWWA 2580, (mV)	+661	+662
Total Salts, AWWA 2540, (mg/kg)	3786	8260
Resistivity, ASTM G 57, (ohm-cm)	970	669

Analyzed By: Trisha Campo

Trisha Campo
Chemist

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

DRAFT

'R' VALUE CA 301

Client: Terracon / Gancho

Date: 5/4/18

By: LD

Client's Job No.: 60185017

Sample No.: P-22 / Bulk

GLA Reference: 2011-0104

Soil Type: Brown, Clayey Sand

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	**200**	**350**	**300**	
Initial Moisture Content	%	**10.4**	**10.4**	**10.4**	
Water Added	ml	**20**	**10**	**15**	
Moisture at Compaction	%	12.3	11.4	11.8	
Sample & Mold Weight	gms	**3173**	**3208**	**3196**	
Mold Weight	gms	**2098**	**2102**	**2104**	
Net Sample Weight	gms	1075	1106	1092	
Sample Height	in.	**2.44**	**2.49**	**2.48**	
Dry Density	pcf	118.9	120.9	119.3	
Pressure	lbs	**1905**	**6715**	**3650**	
Exudation Pressure	psi	152	535	291	
Expansion Dial	x 0.0001	**2**	**18**	**11**	
Expansion Pressure	psf	9	78	48	
Ph at 1000lbs	psi	**26**	**15**	**20**	
Ph at 2000lbs	psi	**44**	**26**	**33**	
Displacement	turns	**3.98**	**3.81**	**3.93**	
R' Value		62	77	71	
Corrected 'R' Value		**62**	**77**	**71**	

FINAL 'R' VALUE	
By Exudation Pressure (@ 300 psi):	**72**
By Epansion Pressure :	**70**
TI = 5	

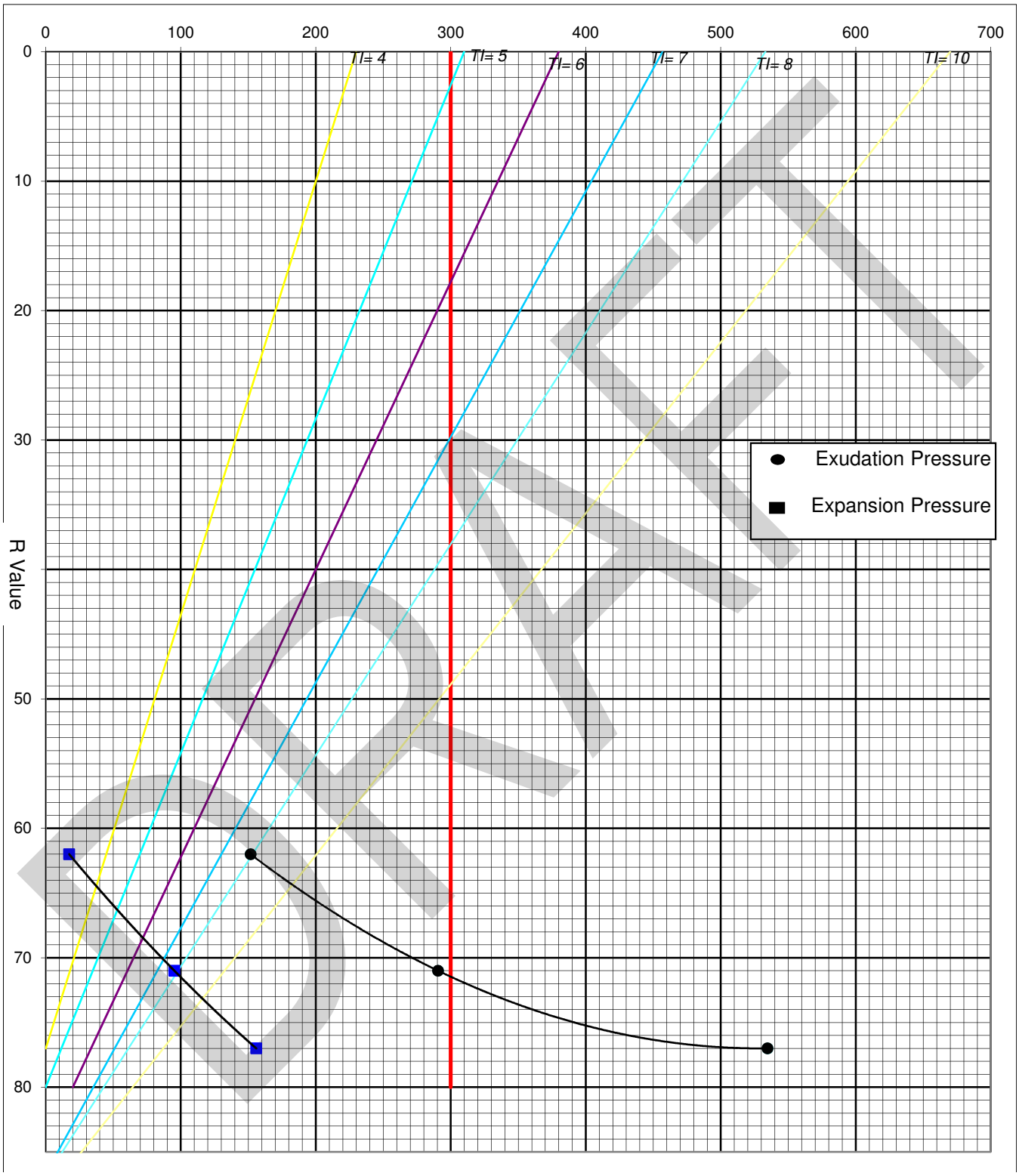
DRAFT

Geo-Logic ASSOCIATES

'R' VALUE CA 301

Job No. 2011-0104 Client# 60185017
Sample: P-22 / Bulk
1.104403

Exudation Pressure



Geo-Logic ASSOCIATES

'R' VALUE CA 301

Client: Terracon / Gancho

Date: 5/4/18

By: LD

Client's Job No.: 60185017

Sample No.: P-24 / Bulk

GLA Reference: 2011-0104

Soil Type: Brown, Clayey Sand

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	**250**	**350**	**300**	
Initial Moisture Content	%	**8.2**	**8.2**	**8.2**	
Water Added	ml	**40**	**30**	**35**	
Moisture at Compaction	%	11.8	10.9	11.3	
Sample & Mold Weight	gms	**3172**	**3198**	**3168**	
Mold Weight	gms	**2105**	**2101**	**2096**	
Net Sample Weight	gms	1067	1097	1072	
Sample Height	in.	**2.48**	**2.472**	**2.466**	
Dry Density	pcf	116.6	121.3	118.3	
Pressure	lbs	**2270**	**6795**	**4050**	
Exudation Pressure	psi	181	541	322	
Expansion Dial	x 0.0001	**3**	**20**	**12**	
Expansion Pressure	psf	13	87	52	
Ph at 1000lbs	psi	**22**	**15**	**18**	
Ph at 2000lbs	psi	**41**	**29**	**34**	
Displacement	turns	**3.95**	**3.9**	**3.92**	
R' Value		65	74	70	
Corrected 'R' Value		**65**	**74**	**70**	

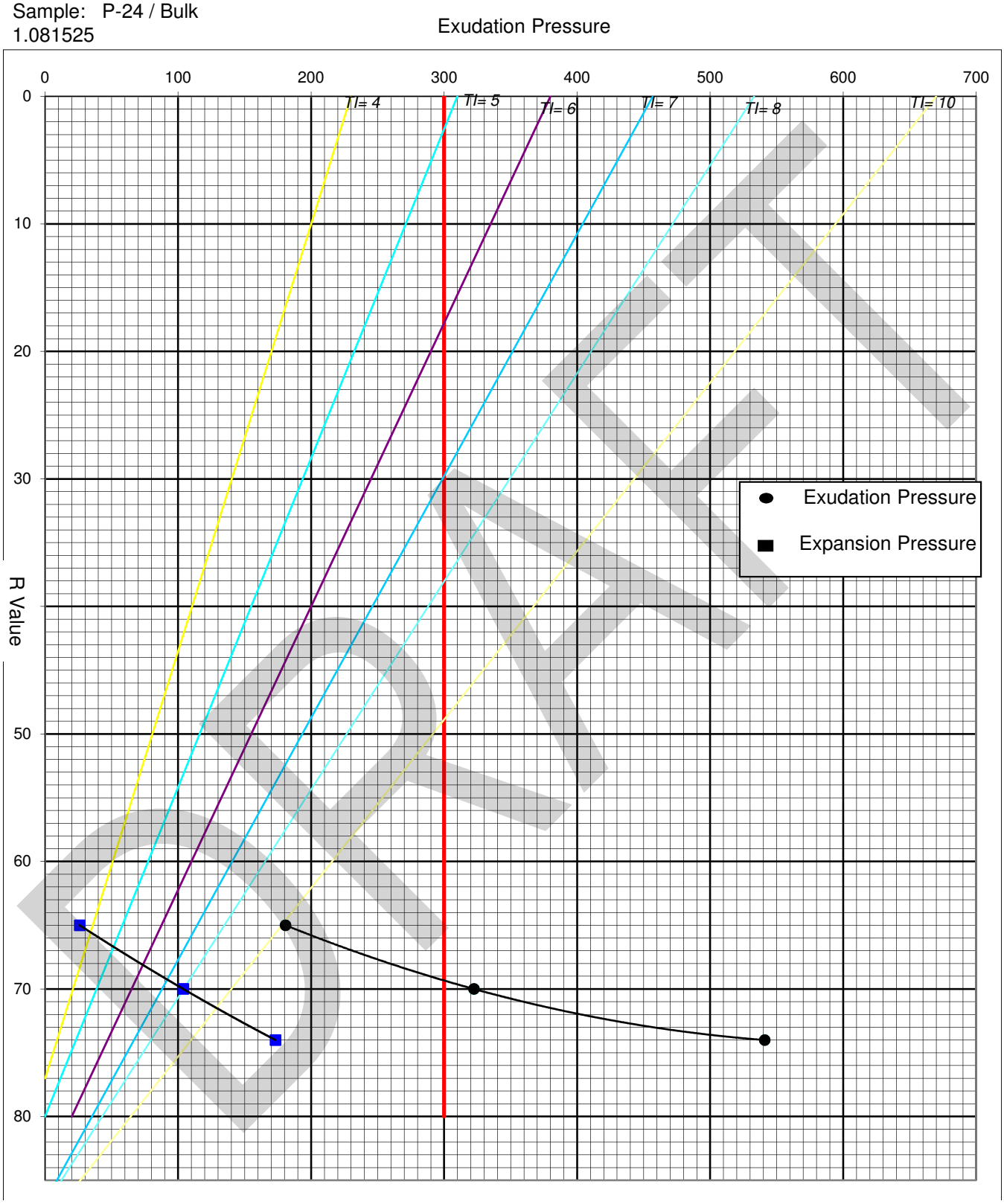
FINAL 'R' VALUE		
By Exudation Pressure (@ 300 psi):		**69**
By Epansion Pressure	:	**69**
TI =	5	

DRAFT

Geo-Logic ASSOCIATES

'R' VALUE CA 301

Job No. 2011-0104 Client# 60185017
Sample: P-24 / Bulk
1.081525



Geo-Logic ASSOCIATES

'R' VALUE CA 301

Client: Terracon / Gancho

Date: 5/4/18

By: LD

Client's Job No.: 60185017

Sample No.: R-2 / Bulk

GLA Reference: 2011-0104

Soil Type: Brown, Clayey Sand

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	**250**	**350**	**300**	
Initial Moisture Content	%	**8.9**	**8.9**	**8.9**	
Water Added	ml	**30**	**20**	**25**	
Moisture at Compaction	%	11.6	10.7	11.2	
Sample & Mold Weight	gms	**3173**	**3179**	**3169**	
Mold Weight	gms	**2102**	**2104**	**2099**	
Net Sample Weight	gms	1071	1075	1070	
Sample Height	in.	**2.462**	**2.435**	**2.448**	
Dry Density	pcf	118.1	120.8	119.2	
Pressure	lbs	**2860**	**7855**	**4120**	
Exudation Pressure	psi	228	625	328	
Expansion Dial	x 0.0001	**2**	**14**	**7**	
Expansion Pressure	psf	9	61	30	
Ph at 1000lbs	psi	**21**	**15**	**18**	
Ph at 2000lbs	psi	**40**	**25**	**33**	
Displacement	turns	**3.95**	**3.61**	**3.88**	
R' Value		66	79	71	
Corrected 'R' Value		**66**	**79**	**71**	

FINAL 'R' VALUE		
By Exudation Pressure (@ 300 psi):		**70**
By Epansion Pressure	:	**73**
TI =	5	

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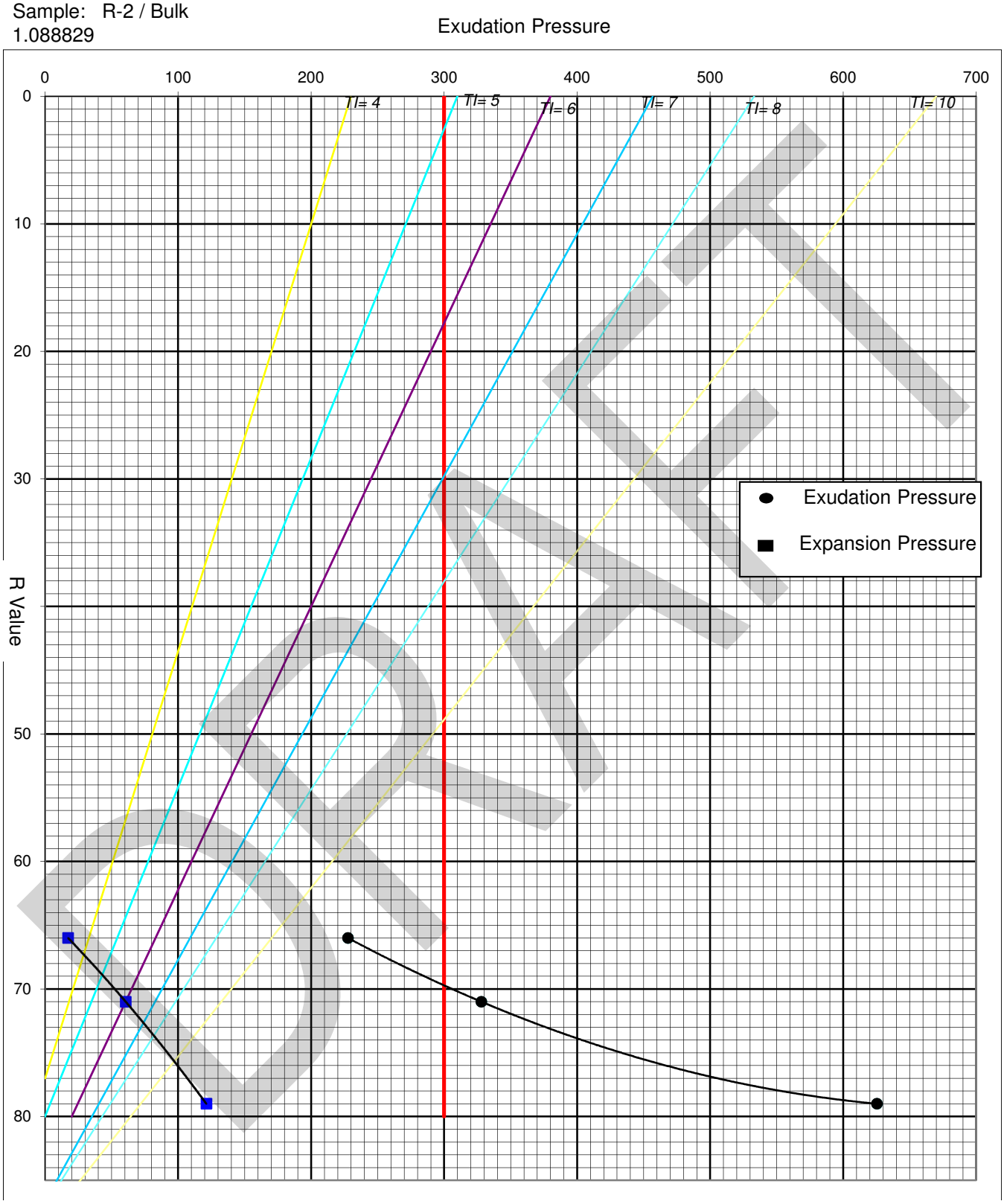
Geo-Logic ASSOCIATES

'R' VALUE CA 301

Job No. 2011-0104 Client# 60185017
Sample: R-2 / Bulk
1.088829



Geo-Logic ASSOCIATES

APPENDIX C

SUPPORTING DOCUMENTS

DRAFT

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING

Auger	Shelby Tube	Split Spoon
Rock Core	Macro Core	Modified California Ring Sampler
Grab Sample	No Recovery	Modified Dames & Moore Ring Sampler

WATER LEVEL

- Water Initially Encountered
- Water Level After a Specified Period of Time
- Water Level After a Specified Period of Time

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

(HP)	Hand Penetrometer
(T)	Torvane
(b/f)	Standard Penetration Test (blows per foot)
N	N value
(PID)	Photo-Ionization Detector
(OVA)	Organic Vapor Analyzer
(WOH)	Weight of Hammer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels and sands.			CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance Includes silts and clays.			
Descriptive Term (Density)	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.	Descriptive Term (Consistency)	Unconfined Compressive Strength, Qu, psf	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.
Very Loose	0 - 3	0 - 6	Very Soft	less than 500	0 - 1	< 3
Loose	4 - 9	7 - 18	Soft	500 to 1,000	2 - 4	3 - 4
Medium Dense	10 - 29	19 - 58	Medium-Stiff	1,000 to 2,000	4 - 8	5 - 9
Dense	30 - 50	59 - 98	Stiff	2,000 to 4,000	8 - 15	10 - 18
Very Dense	> 50	≥ 99	Very Stiff	4,000 to 8,000	15 - 30	19 - 42
			Hard	> 8,000	> 30	> 42

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

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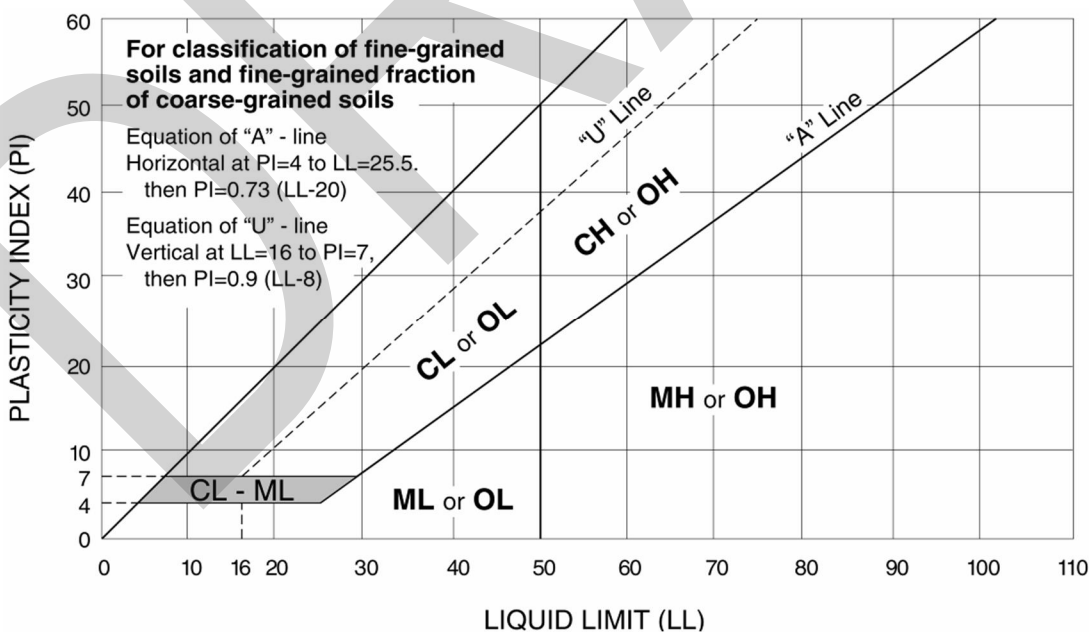
UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel [F,G,H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G,H,I]
			Fines classify as CL or CH		SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]		CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OL	Organic clay [K,L,M,N]
						Organic silt [K,L,M,O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K,L,M]
			PI plots below "A" line		MH	Elastic Silt [K,L,M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OH	Organic clay [K,L,M,P]
						Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve
[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.
[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.
[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.
[H] If fines are organic, add "with organic fines" to group name.
[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.
[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.
[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.
[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.
[N] PI ≥ 4 and plots on or above "A" line.
[O] PI < 4 or plots below "A" line.
[P] PI plots on or above "A" line.
[Q] PI plots below "A" line.



DRAFT

Terracon

Exhibit C-2

USGS Design Maps Detailed Report

ASCE 7-10 Standard (34.2138°N, 119.1309°W)

Site Class E – "Soft Clay Soil", Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_S) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From Figure 22-1 [1] S_S = 2.641 g

From Figure 22-2 [2] S_1 = 0.954 g

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class E, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\bar{v}_s$	$\bar{N}$ or $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index PI > 20, • Moisture content w ≥ 40%, and • Undrained shear strength $\bar{s}_u$ < 500 psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

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Section 11.4.3 — Site Coefficients and Risk–Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4–1: Site Coefficient F_a

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at Short Period				
	$S_S \leq 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_S

For Site Class = E and S_S = 2.641 g, F_a = 0.900

Table 11.4–2: Site Coefficient F_v

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at 1–s Period				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_1

For Site Class = E and S_1 = 0.954 g, F_v = 2.400

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Equation (11.4–1): $S_{MS} = F_a S_S = 0.900 \times 2.641 = 2.377$ g

Equation (11.4–2): $S_{M1} = F_v S_1 = 2.400 \times 0.954 = 2.290$ g

Section 11.4.4 — Design Spectral Acceleration Parameters

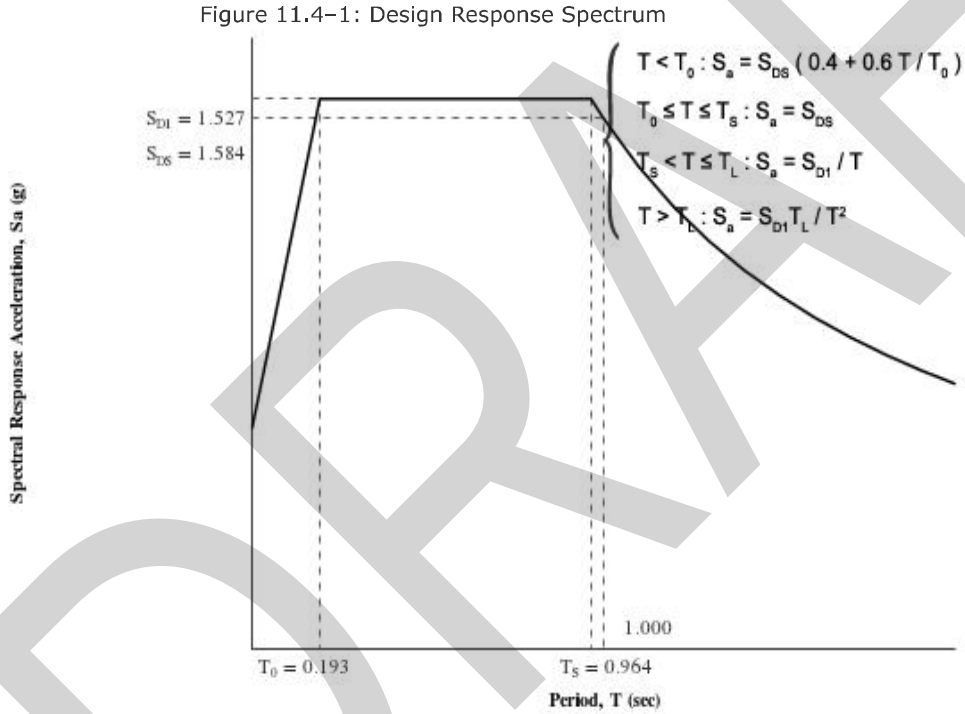
Equation (11.4–3): $S_{DS} = ⅔\ S_{MS} = ⅔ \times 2.377 = 1.584$ g

Equation (11.4–4): $S_{D1} = ⅔\ S_{M1} = ⅔ \times 2.290 = 1.527$ g

Section 11.4.5 — Design Response Spectrum

From Figure 22-12 [3] $T_L = 8$ seconds

Figure 11.4–1: Design Response Spectrum



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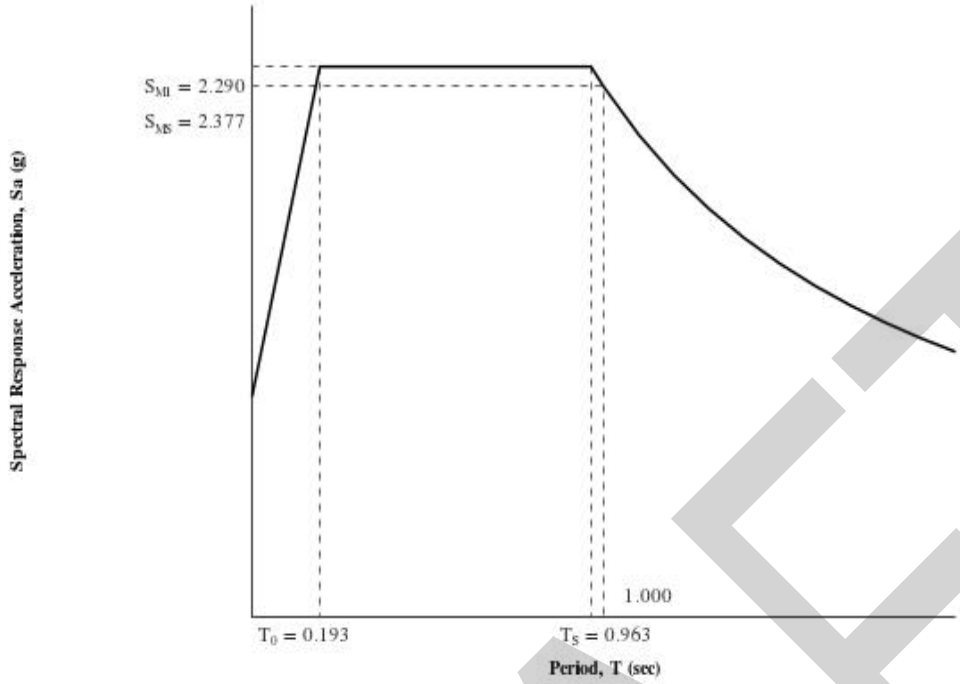
Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



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Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From Figure 22-7 [4] PGA = 1.039

Equation (11.8–1): $PGA_M = F_{PGA}PGA = 0.900 \times 1.039 = 0.935$ g

Table 11.8–1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of PGA

For Site Class = E and PGA = 1.039 g, F_{PGA} = 0.900

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From Figure 22-17 [5] C_{RS} = 0.908

From Figure 22-18 [6] C_{R1} = 0.908

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Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 1.584 g, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 1.527 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = E

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

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APPENDIX D

LIQUEFACTION ANALYSIS

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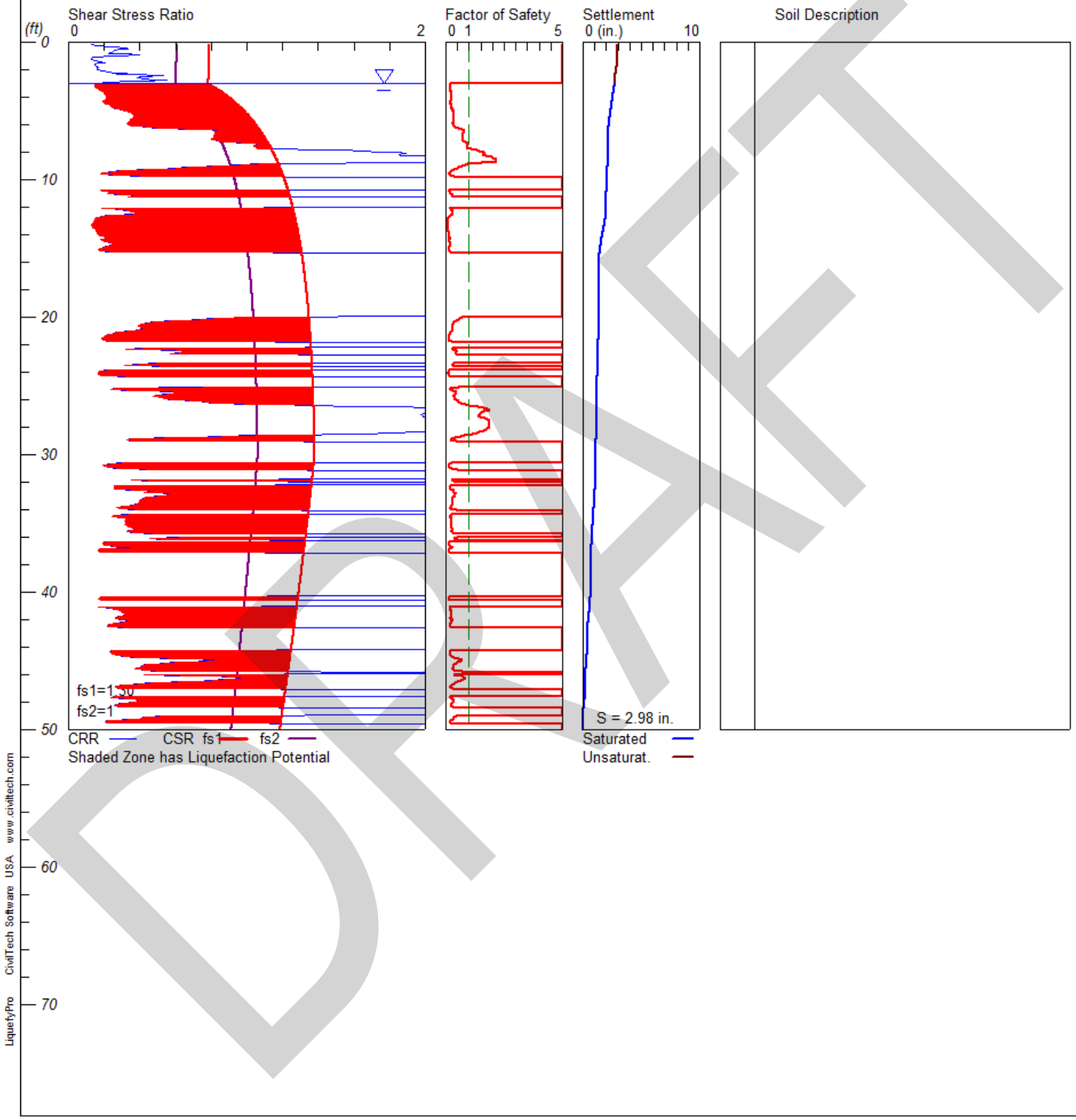
LIQUEFACTION ANALYSIS

Oxnard Warehouse

Hole No.=CPT-16 Water Depth=3 ft

Magnitude=6.89
Acceleration=0.935g



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LIQUEFACTION ANALYSIS SUMMARY
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Input File Name: N:\Projects\2018\60185017\Working Files\Calculations-Analyses\CPT-16.liq
Title: Oxnard Warehouse
Subtitle: 60185017

Surface Elev.=
Hole No.=CPT-16
Depth of Hole= 50.00 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration= 0.94 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=CPT-16
Depth of Hole=50.00 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration=0.94 g
Earthquake Magnitude=6.89
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot two CSR (fs1=User, fs2=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines	D50 mm
0.16	2.60	0.03	1.15	120.00	0.00	0.50
1.15	6.80	0.07	1.03	120.00	0.00	0.50
2.13	11.00	0.22	2.00	120.00	0.00	0.50
3.12	17.10	0.22	1.29	120.00	0.00	0.50
4.10	32.80	0.39	1.19	120.00	0.00	0.50
5.09	61.20	0.25	0.41	120.00	0.00	0.50
6.07	65.20	0.29	0.44	120.00	0.00	0.50
7.05	96.50	0.68	0.70	120.00	0.00	0.50
8.04	138.60	0.41	0.30	120.00	0.00	0.50
9.02	105.10	0.67	0.64	120.00	0.00	0.50
10.00	5.80	0.22	3.79	120.00	0.00	0.50
10.99	20.00	0.41	2.05	120.00	0.00	0.50
11.97	7.10	0.09	1.27	120.00	0.00	0.50
12.95	23.90	0.31	1.30	120.00	0.00	0.50
13.94	45.20	0.33	0.73	120.00	0.00	0.50
14.92	54.60	0.46	0.84	120.00	0.00	0.50
15.91	6.80	0.13	1.91	120.00	0.00	0.50
16.89	6.40	0.11	1.72	120.00	0.00	0.50
17.88	6.80	0.10	1.47	120.00	0.00	0.50
18.86	11.30	0.22	1.95	120.00	0.00	0.50
19.84	22.30	0.88	3.95	120.00	0.00	0.50
20.83	46.50	1.42	3.05	120.00	0.00	0.50
21.81	23.10	0.69	2.99	120.00	0.00	0.50
22.80	20.90	0.67	3.21	120.00	0.00	0.50
23.78	19.10	0.65	3.40	120.00	0.00	0.50

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24.77	14.20	0.31	2.18	120.00	0.00	0.50
25.75	75.20	2.06	2.74	120.00	0.00	0.50
26.73	254.20	2.12	0.83	120.00	0.00	0.50
27.72	273.10	2.21	0.81	120.00	0.00	0.50
28.70	159.10	1.46	0.92	120.00	0.00	0.50
29.69	14.10	0.43	3.05	120.00	0.00	0.50
30.67	31.00	0.63	2.03	120.00	0.00	0.50
31.66	21.80	0.78	3.58	120.00	0.00	0.50
32.64	51.20	1.79	3.50	120.00	0.00	0.50
33.62	92.90	1.79	1.93	120.00	0.00	0.50
34.61	98.70	1.29	1.31	120.00	0.00	0.50
35.59	64.50	1.56	2.42	120.00	0.00	0.50
36.58	46.60	0.88	1.89	120.00	0.00	0.50
37.56	14.60	0.42	2.88	120.00	0.00	0.50
38.54	13.30	0.37	2.78	120.00	0.00	0.50
39.53	14.50	0.41	2.83	120.00	0.00	0.50
40.51	35.50	0.55	1.55	120.00	0.00	0.50
41.50	116.70	1.10	0.94	120.00	0.00	0.50
42.48	53.00	1.07	2.02	120.00	0.00	0.50
43.47	16.20	0.50	3.09	120.00	0.00	0.50
44.45	68.90	1.32	1.92	120.00	0.00	0.50
45.43	138.60	1.53	1.10	120.00	0.00	0.50
46.42	203.80	1.89	0.93	120.00	0.00	0.50
47.40	17.90	0.91	5.08	120.00	0.00	0.50
48.39	51.70	1.54	2.98	120.00	0.00	0.50
49.37	63.20	1.12	1.77	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=2.72 in.
Settlement of Unsaturated Sands=0.25 in.
Total Settlement of Saturated and Unsaturated Sands=2.98 in.
Differential Settlement=1.488 to 1.964 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.16	0.13	0.79	5.00	2.72	0.25	2.98
1.16	0.13	0.79	5.00	2.72	0.25	2.97
2.16	0.22	0.79	5.00	2.72	0.08	2.81
3.16	0.15	0.80	0.19*	2.69	0.00	2.69
4.16	0.20	0.91	0.22*	2.51	0.00	2.51
5.16	0.35	1.00	0.35*	2.34	0.00	2.34
6.16	0.44	1.06	0.41*	2.18	0.00	2.18
7.16	0.84	1.11	0.75*	2.12	0.00	2.12
8.16	1.85	1.15	1.61	2.11	0.00	2.11
9.16	0.60	1.19	0.51*	2.10	0.00	2.10
10.16	2.00	1.22	5.00	2.02	0.00	2.02
11.16	0.36	1.24	0.29*	1.97	0.00	1.97
12.16	0.28	1.26	0.22*	1.96	0.00	1.96
13.16	0.14	1.28	0.11*	1.84	0.00	1.84
14.16	0.20	1.29	0.15*	1.62	0.00	1.62
15.16	0.17	1.31	0.13*	1.44	0.00	1.44
16.16	2.00	1.32	5.00	1.42	0.00	1.42
17.16	2.00	1.33	5.00	1.42	0.00	1.42
18.16	2.00	1.34	5.00	1.42	0.00	1.42
19.16	2.00	1.34	5.00	1.42	0.00	1.42
20.16	0.74	1.35	0.55*	1.42	0.00	1.42
21.16	0.25	1.36	0.19*	1.39	0.00	1.39
22.16	2.00	1.36	5.00	1.29	0.00	1.29
23.16	2.00	1.36	5.00	1.28	0.00	1.28
24.16	0.17	1.37	0.12*	1.23	0.00	1.23
25.16	0.26	1.37	0.19*	1.20	0.00	1.20
26.16	0.76	1.37	0.56*	1.14	0.00	1.14
27.16	1.98	1.38	1.44	1.14	0.00	1.14
28.16	2.38	1.38	1.73	1.14	0.00	1.14
29.16	2.00	1.38	5.00	1.11	0.00	1.11
30.16	2.00	1.38	5.00	1.11	0.00	1.11

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31.16	2.00	1.37	5.00	1.06	0.00	1.06
32.16	2.00	1.36	5.00	1.05	0.00	1.05
33.16	0.42	1.35	0.31*	0.99	0.00	0.99
34.16	2.00	1.35	5.00	0.92	0.00	0.92
35.16	0.32	1.34	0.24*	0.82	0.00	0.82
36.16	0.52	1.33	0.39*	0.76	0.00	0.76
37.16	2.00	1.32	5.00	0.64	0.00	0.64
38.16	2.00	1.31	5.00	0.64	0.00	0.64
39.16	2.00	1.30	5.00	0.64	0.00	0.64
40.16	2.00	1.29	5.00	0.64	0.00	0.64
41.16	0.23	1.28	0.18*	0.58	0.00	0.58
42.16	0.31	1.27	0.24*	0.44	0.00	0.44
43.16	2.00	1.26	5.00	0.38	0.00	0.38
44.16	2.00	1.25	5.00	0.38	0.00	0.38
45.16	0.54	1.24	0.43*	0.29	0.00	0.29
46.16	0.89	1.23	0.73*	0.22	0.00	0.22
47.16	2.00	1.22	5.00	0.15	0.00	0.15
48.16	0.27	1.21	0.22*	0.08	0.00	0.08
49.16	0.40	1.19	0.34*	0.05	0.00	0.05

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

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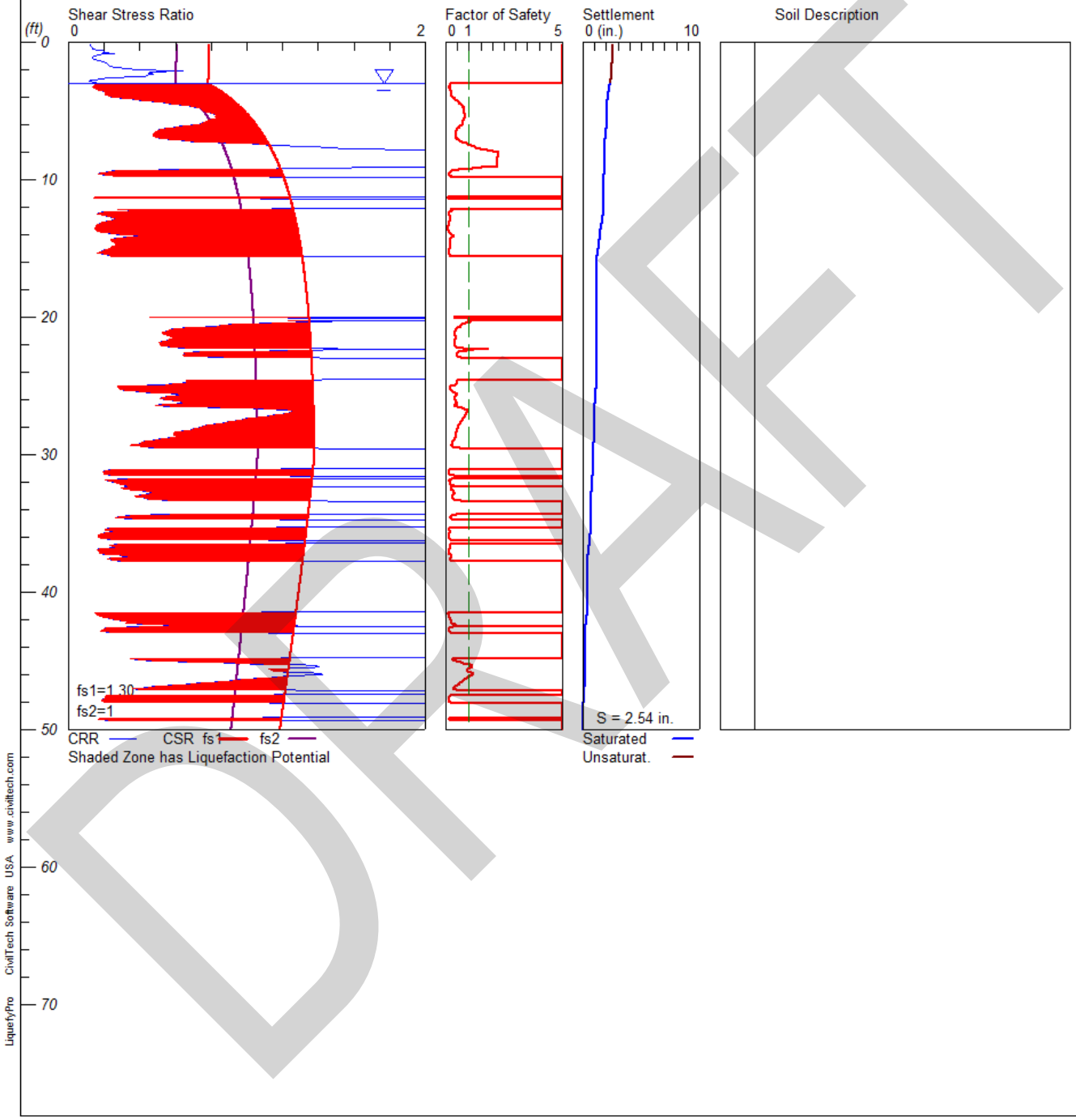
LIQUEFACTION ANALYSIS

Oxnard Warehouse

Hole No.=CPT-18 Water Depth=3 ft

Magnitude=6.89
Acceleration=0.935g



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Input File Name: N:\Projects\2018\60185017\Working Files\Calculations-Analyses\CPT-18.liq
Title: Oxnard Warehouse
Subtitle: 60185017

Surface Elev.=
Hole No.=CPT-18
Depth of Hole= 50.00 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration= 0.94 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=CPT-18
Depth of Hole=50.00 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration=0.94 g
Earthquake Magnitude=6.89
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot two CSR (fs1=User, fs2=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines mm	D50
0.16	2.00	0.02	1.00	120.00	0.00	0.50
1.15	11.50	0.10	0.87	120.00	0.00	0.50
2.13	12.10	0.39	3.22	120.00	0.00	0.50
3.12	9.10	0.12	1.32	120.00	0.00	0.50
4.10	45.60	0.58	1.27	120.00	0.00	0.50
5.09	76.40	1.01	1.32	120.00	0.00	0.50
6.07	85.90	0.30	0.35	120.00	0.00	0.50
7.05	83.90	0.25	0.30	120.00	0.00	0.50
8.04	167.50	0.60	0.36	120.00	0.00	0.50
9.02	166.50	0.42	0.25	120.00	0.00	0.50
10.00	5.90	0.11	1.86	120.00	0.00	0.50
10.99	6.30	0.08	1.27	120.00	0.00	0.50
11.97	7.70	0.14	1.82	120.00	0.00	0.50
12.95	63.40	0.44	0.69	120.00	0.00	0.50
13.94	25.80	0.62	2.40	120.00	0.00	0.50
14.92	72.30	0.30	0.41	120.00	0.00	0.50
15.91	8.70	0.15	1.72	120.00	0.00	0.50
16.89	9.30	0.22	2.37	120.00	0.00	0.50
17.88	9.30	0.19	2.04	120.00	0.00	0.50
18.86	12.90	0.24	1.86	120.00	0.00	0.50
19.84	15.50	0.33	2.13	120.00	0.00	0.50
20.83	68.60	2.21	3.22	120.00	0.00	0.50
21.81	100.40	1.59	1.58	120.00	0.00	0.50
22.80	76.30	2.39	3.13	120.00	0.00	0.50
23.78	24.50	0.94	3.84	120.00	0.00	0.50

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24.77	36.80	1.24	3.37	120.00	0.00	0.50
25.75	125.10	1.45	1.16	120.00	0.00	0.50
26.73	190.30	2.06	1.08	120.00	0.00	0.50
27.72	165.20	1.57	0.95	120.00	0.00	0.50
28.70	145.10	1.31	0.90	120.00	0.00	0.50
29.69	17.10	0.64	3.74	120.00	0.00	0.50
30.67	18.40	0.70	3.80	120.00	0.00	0.50
31.66	21.60	0.85	3.94	120.00	0.00	0.50
32.64	67.60	1.91	2.83	120.00	0.00	0.50
33.62	32.10	1.34	4.17	120.00	0.00	0.50
34.61	39.60	0.91	2.30	120.00	0.00	0.50
35.59	38.60	0.91	2.36	120.00	0.00	0.50
36.58	52.60	1.05	2.00	120.00	0.00	0.50
37.56	50.60	1.00	1.98	120.00	0.00	0.50
38.54	13.60	0.41	3.01	120.00	0.00	0.50
39.53	12.10	0.34	2.81	120.00	0.00	0.50
40.51	13.60	0.43	3.16	120.00	0.00	0.50
41.50	42.60	0.56	1.31	120.00	0.00	0.50
42.48	43.80	1.47	3.36	120.00	0.00	0.50
43.47	14.50	0.40	2.76	120.00	0.00	0.50
44.45	14.10	0.30	2.13	120.00	0.00	0.50
45.43	259.90	2.38	0.92	120.00	0.00	0.50
46.42	216.00	2.08	0.96	120.00	0.00	0.50
47.40	31.40	1.33	4.24	120.00	0.00	0.50
48.39	16.80	0.55	3.27	120.00	0.00	0.50
49.37	36.80	0.99	2.69	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=2.31 in.
Settlement of Unsaturated Sands=0.23 in.
Total Settlement of Saturated and Unsaturated Sands=2.54 in.
Differential Settlement=1.270 to 1.676 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.16	0.12	0.79	5.00	2.31	0.23	2.54
1.16	0.14	0.79	5.00	2.31	0.21	2.53
2.16	0.46	0.79	5.00	2.31	0.13	2.44
3.16	0.14	0.80	0.17*	2.29	0.00	2.29
4.16	0.37	0.91	0.41*	2.11	0.00	2.11
5.16	0.80	1.00	0.80*	2.07	0.00	2.07
6.16	0.61	1.06	0.57*	2.02	0.00	2.02
7.16	0.66	1.11	0.59*	1.89	0.00	1.89
8.16	2.58	1.15	2.24	1.87	0.00	1.87
9.16	1.36	1.19	1.15	1.87	0.00	1.87
10.16	2.00	1.22	5.00	1.78	0.00	1.78
11.16	2.00	1.24	5.00	1.78	0.00	1.78
12.16	0.28	1.26	0.22*	1.76	0.00	1.76
13.16	0.18	1.28	0.14*	1.61	0.00	1.61
14.16	0.33	1.29	0.25*	1.44	0.00	1.44
15.16	0.19	1.31	0.15*	1.28	0.00	1.28
16.16	2.00	1.32	5.00	1.21	0.00	1.21
17.16	2.00	1.33	5.00	1.21	0.00	1.21
18.16	2.00	1.34	5.00	1.21	0.00	1.21
19.16	2.00	1.34	5.00	1.21	0.00	1.21
20.16	2.00	1.35	5.00	1.21	0.00	1.21
21.16	0.52	1.36	0.39*	1.20	0.00	1.20
22.16	0.57	1.36	0.42*	1.15	0.00	1.15
23.16	2.00	1.36	5.00	1.15	0.00	1.15
24.16	2.00	1.37	5.00	1.15	0.00	1.15
25.16	0.29	1.37	0.21*	1.12	0.00	1.12
26.16	0.64	1.37	0.46*	1.03	0.00	1.03
27.16	1.13	1.38	0.82*	1.02	0.00	1.02
28.16	0.69	1.38	0.50*	1.00	0.00	1.00
29.16	0.40	1.38	0.29*	0.91	0.00	0.91
30.16	2.00	1.38	5.00	0.89	0.00	0.89

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31.16	0.20	1.37	0.15*	0.88	0.00	0.88
32.16	0.29	1.36	0.21*	0.77	0.00	0.77
33.16	0.43	1.35	0.32*	0.71	0.00	0.71
34.16	2.00	1.35	5.00	0.71	0.00	0.71
35.16	2.00	1.34	5.00	0.69	0.00	0.69
36.16	0.24	1.33	0.18*	0.56	0.00	0.56
37.16	0.18	1.32	0.13*	0.45	0.00	0.45
38.16	2.00	1.31	5.00	0.38	0.00	0.38
39.16	2.00	1.30	5.00	0.38	0.00	0.38
40.16	2.00	1.29	5.00	0.38	0.00	0.38
41.16	2.00	1.28	5.00	0.38	0.00	0.38
42.16	0.33	1.27	0.26*	0.26	0.00	0.26
43.16	2.00	1.26	5.00	0.18	0.00	0.18
44.16	2.00	1.25	5.00	0.18	0.00	0.18
45.16	0.93	1.24	0.75*	0.17	0.00	0.17
46.16	1.17	1.23	0.95*	0.17	0.00	0.17
47.16	2.00	1.22	5.00	0.13	0.00	0.13
48.16	2.00	1.21	5.00	0.03	0.00	0.03
49.16	0.18	1.19	0.15*	0.03	0.00	0.03

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

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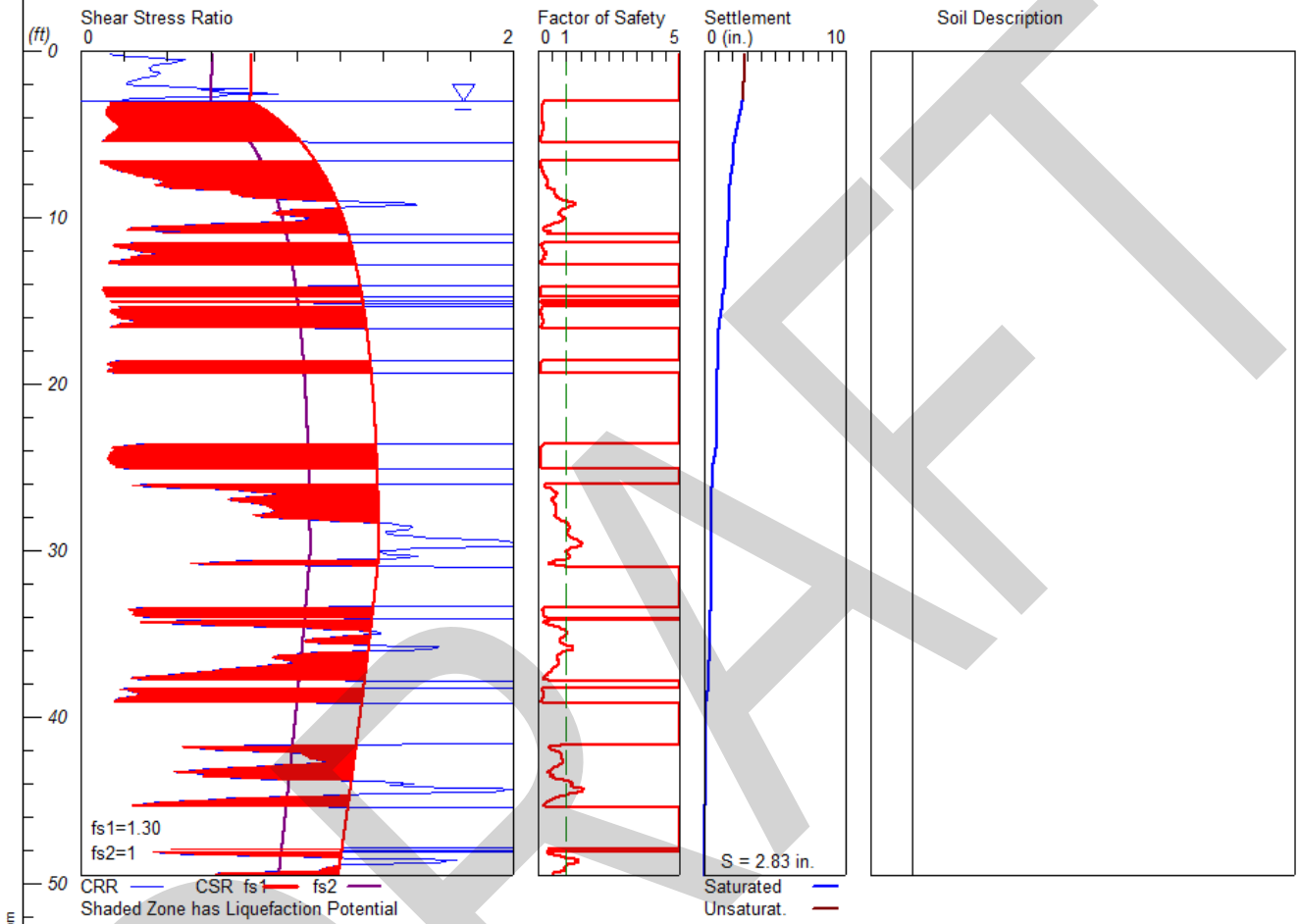
LIQUEFACTION ANALYSIS

Oxnard Warehouse

Hole No.=CPT-19 Water Depth=3 ft

Magnitude=6.89
Acceleration=0.935g



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Input File Name: N:\Projects\2018\60185017\Working Files\Calculations-Analyses\CPT-19.liq
Title: Oxnard Warehouse
Subtitle: 60185017

Surface Elev.=
Hole No.=CPT-19
Depth of Hole= 49.50 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration= 0.94 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=CPT-19
Depth of Hole=49.50 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration=0.94 g
Earthquake Magnitude=6.89
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot two CSR (fs1=User, fs2=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines	D50 mm
0.16	3.50	0.04	1.14	120.00	0.00	0.50
1.15	22.30	0.38	1.70	120.00	0.00	0.50
2.13	13.50	0.40	2.96	120.00	0.00	0.50
3.12	11.90	0.15	1.26	120.00	0.00	0.50
4.10	29.20	0.07	0.24	120.00	0.00	0.50
5.09	17.80	0.13	0.73	120.00	0.00	0.50
6.07	4.10	-0.01	-0.24	120.00	0.00	0.50
7.05	17.70	0.25	1.41	120.00	0.00	0.50
8.04	55.30	0.76	1.37	120.00	0.00	0.50
9.02	125.10	0.75	0.60	120.00	0.00	0.50
10.00	123.70	0.53	0.43	120.00	0.00	0.50
10.99	10.10	0.30	2.97	120.00	0.00	0.50
11.97	31.40	0.76	2.42	120.00	0.00	0.50
12.95	7.20	0.10	1.39	120.00	0.00	0.50
13.94	4.40	0.01	0.23	120.00	0.00	0.50
14.92	7.00	0.06	0.86	120.00	0.00	0.50
15.91	12.90	0.17	1.32	120.00	0.00	0.50
16.89	5.80	0.10	1.72	120.00	0.00	0.50
17.88	6.80	0.12	1.76	120.00	0.00	0.50
18.86	11.70	0.08	0.68	120.00	0.00	0.50
19.84	6.60	0.11	1.67	120.00	0.00	0.50
20.83	7.80	0.09	1.15	120.00	0.00	0.50
21.81	9.50	0.19	2.00	120.00	0.00	0.50
22.80	15.00	0.46	3.07	120.00	0.00	0.50
23.78	29.90	0.37	1.24	120.00	0.00	0.50

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24.77	53.20	0.30	0.56	120.00	0.00	0.50
25.75	15.30	0.47	3.07	120.00	0.00	0.50
26.73	159.10	1.50	0.94	120.00	0.00	0.50
27.72	173.00	1.18	0.68	120.00	0.00	0.50
28.70	215.10	1.65	0.77	120.00	0.00	0.50
29.69	246.00	1.68	0.68	120.00	0.00	0.50
30.67	122.00	2.27	1.86	120.00	0.00	0.50
31.66	15.00	0.56	3.73	120.00	0.00	0.50
32.64	23.00	0.57	2.48	120.00	0.00	0.50
33.62	66.80	1.16	1.74	120.00	0.00	0.50
34.61	200.40	1.73	0.86	120.00	0.00	0.50
35.59	213.40	1.81	0.85	120.00	0.00	0.50
36.58	200.00	1.75	0.88	120.00	0.00	0.50
37.56	93.90	1.21	1.29	120.00	0.00	0.50
38.54	95.30	1.21	1.27	120.00	0.00	0.50
39.53	15.70	0.44	2.80	120.00	0.00	0.50
40.51	15.50	0.45	2.90	120.00	0.00	0.50
41.50	48.40	1.87	3.86	120.00	0.00	0.50
42.48	194.50	3.18	1.63	120.00	0.00	0.50
43.47	74.10	2.76	3.72	120.00	0.00	0.50
44.45	286.10	2.55	0.89	120.00	0.00	0.50
45.43	31.40	1.02	3.25	120.00	0.00	0.50
46.42	19.10	0.74	3.87	120.00	0.00	0.50
47.40	23.00	0.77	3.35	120.00	0.00	0.50
48.39	220.20	2.80	1.27	120.00	0.00	0.50
49.37	177.00	2.08	1.18	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=2.69 in.
Settlement of Unsaturated Sands=0.14 in.
Total Settlement of Saturated and Unsaturated Sands=2.83 in.
Differential Settlement=1.415 to 1.868 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.16	0.14	0.79	5.00	2.69	0.14	2.83
1.16	0.32	0.79	5.00	2.69	0.14	2.83
2.16	0.47	0.79	5.00	2.69	0.05	2.74
3.16	0.14	0.80	0.17*	2.66	0.00	2.66
4.16	0.14	0.91	0.16*	2.41	0.00	2.41
5.16	0.12	1.00	0.12*	2.18	0.00	2.18
6.16	2.00	1.06	5.00	2.09	0.00	2.09
7.16	0.17	1.11	0.15*	1.94	0.00	1.94
8.16	0.39	1.15	0.34*	1.79	0.00	1.79
9.16	1.54	1.19	1.30	1.73	0.00	1.73
10.16	1.03	1.22	0.84*	1.71	0.00	1.71
11.16	2.00	1.24	5.00	1.64	0.00	1.64
12.16	0.34	1.26	0.27*	1.54	0.00	1.54
13.16	2.00	1.28	5.00	1.43	0.00	1.43
14.16	0.10	1.29	0.08*	1.43	0.00	1.43
15.16	2.00	1.31	5.00	1.23	0.00	1.23
16.16	0.24	1.32	0.18*	1.10	0.00	1.10
17.16	2.00	1.33	5.00	1.02	0.00	1.02
18.16	2.00	1.34	5.00	1.02	0.00	1.02
19.16	0.12	1.34	0.09*	0.91	0.00	0.91
20.16	2.00	1.35	5.00	0.87	0.00	0.87
21.16	2.00	1.36	5.00	0.87	0.00	0.87
22.16	2.00	1.36	5.00	0.87	0.00	0.87
23.16	2.00	1.36	5.00	0.87	0.00	0.87
24.16	0.13	1.37	0.10*	0.77	0.00	0.77
25.16	2.00	1.37	5.00	0.55	0.00	0.55
26.16	0.33	1.37	0.24*	0.54	0.00	0.54
27.16	0.80	1.38	0.58*	0.49	0.00	0.49
28.16	1.10	1.38	0.80*	0.46	0.00	0.46
29.16	1.56	1.38	1.13	0.46	0.00	0.46
30.16	1.39	1.38	1.01	0.46	0.00	0.46

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31.16	2.00	1.37	5.00	0.46	0.00	0.46
32.16	2.00	1.36	5.00	0.46	0.00	0.46
33.16	2.00	1.35	5.00	0.46	0.00	0.46
34.16	0.56	1.35	0.42*	0.38	0.00	0.38
35.16	1.18	1.34	0.88*	0.35	0.00	0.35
36.16	1.03	1.33	0.77*	0.35	0.00	0.35
37.16	0.62	1.32	0.47*	0.33	0.00	0.33
38.16	2.00	1.31	5.00	0.26	0.00	0.26
39.16	2.00	1.30	5.00	0.11	0.00	0.11
40.16	2.00	1.29	5.00	0.11	0.00	0.11
41.16	2.00	1.28	5.00	0.11	0.00	0.11
42.16	1.02	1.27	0.80*	0.10	0.00	0.10
43.16	0.53	1.26	0.42*	0.10	0.00	0.10
44.16	1.54	1.25	1.23	0.08	0.00	0.08
45.16	0.31	1.24	0.25*	0.06	0.00	0.06
46.16	2.00	1.23	5.00	0.02	0.00	0.02
47.16	2.00	1.22	5.00	0.02	0.00	0.02
48.16	0.39	1.21	0.32*	0.02	0.00	0.02
49.16	1.11	1.19	0.93*	0.01	0.00	0.01

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

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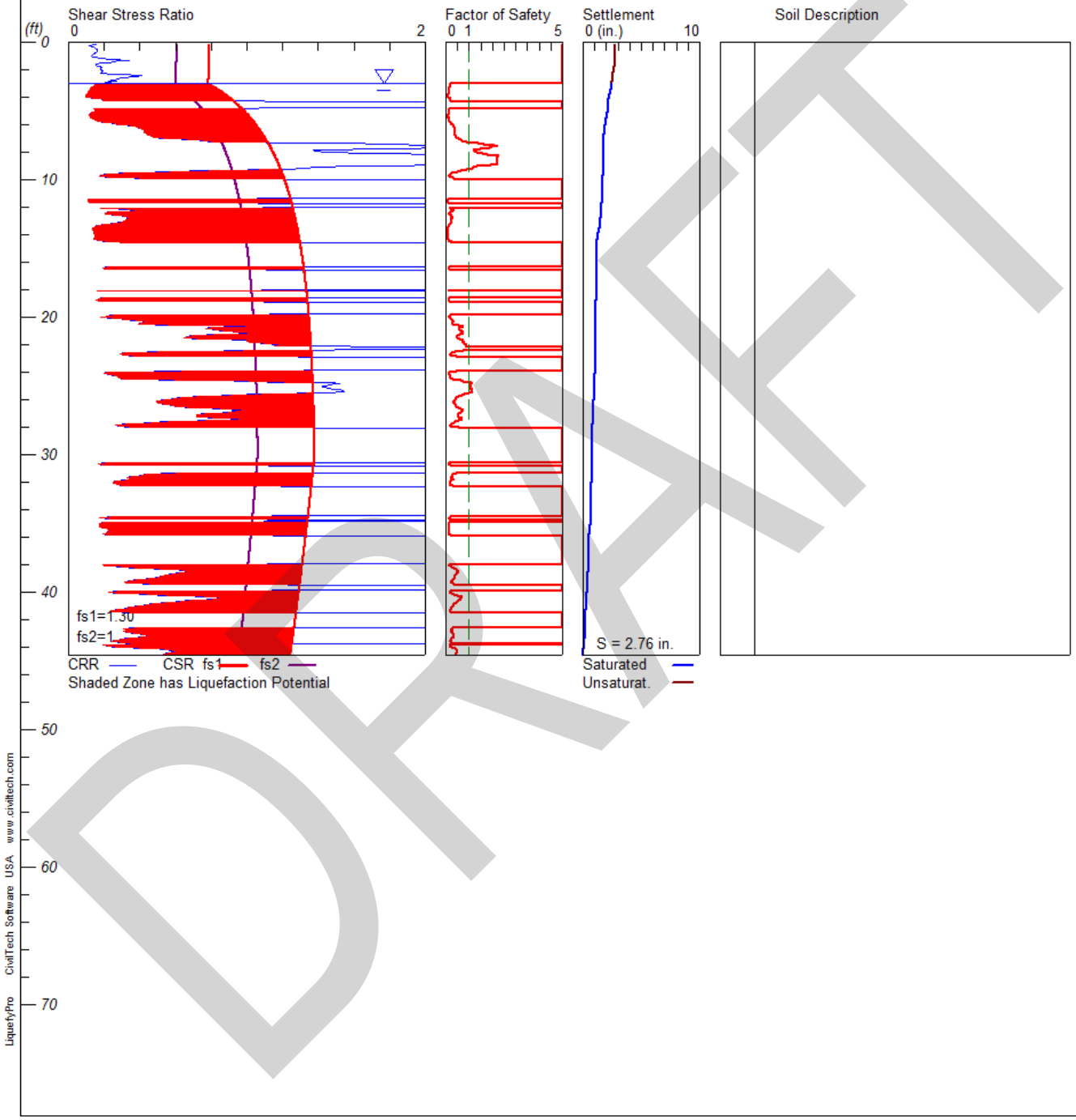
LIQUEFACTION ANALYSIS

Oxnard Warehouse

Hole No.=CPT-20 Water Depth=3 ft

Magnitude=6.89
Acceleration=0.935g



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Input File Name: N:\Projects\2018\60185017\Working Files\Calculations-Analyses\CPT-20.liq
Title: Oxnard Warehouse
Subtitle: 60185017

Surface Elev.=
Hole No.=CPT-20
Depth of Hole= 44.60 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration= 0.94 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=CPT-20
Depth of Hole=44.60 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration=0.94 g
Earthquake Magnitude=6.89
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot two CSR (fs1=User, fs2=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines mm	D50
0.16	1.70	0.02	1.18	120.00	0.00	0.50
1.15	7.60	0.13	1.71	120.00	0.00	0.50
2.13	24.70	0.26	1.05	120.00	0.00	0.50
3.12	10.30	0.14	1.36	120.00	0.00	0.50
4.10	5.90	0.07	1.19	120.00	0.00	0.50
5.09	5.40	0.05	0.93	120.00	0.00	0.50
6.07	65.50	0.20	0.31	120.00	0.00	0.50
7.05	79.40	1.01	1.27	120.00	0.00	0.50
8.04	128.80	0.57	0.44	120.00	0.00	0.50
9.02	132.30	0.37	0.28	120.00	0.00	0.50
10.00	9.30	0.28	3.01	120.00	0.00	0.50
10.99	4.30	0.03	0.70	120.00	0.00	0.50
11.97	7.00	0.08	1.14	120.00	0.00	0.50
12.95	45.90	1.05	2.29	120.00	0.00	0.50
13.94	37.00	0.28	0.76	120.00	0.00	0.50
14.92	10.20	0.23	2.25	120.00	0.00	0.50
15.91	9.40	0.18	1.91	120.00	0.00	0.50
16.89	10.20	0.17	1.67	120.00	0.00	0.50
17.88	9.70	0.11	1.13	120.00	0.00	0.50
18.86	12.40	0.15	1.21	120.00	0.00	0.50
19.84	16.00	0.28	1.75	120.00	0.00	0.50
20.83	49.50	1.91	3.86	120.00	0.00	0.50
21.81	44.10	1.81	4.10	120.00	0.00	0.50
22.80	30.70	0.79	2.57	120.00	0.00	0.50
23.78	17.00	0.75	4.41	120.00	0.00	0.50

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24.77	202.70	1.80	0.89	120.00	0.00	0.50
25.75	149.30	1.42	0.95	120.00	0.00	0.50
26.73	180.50	1.02	0.57	120.00	0.00	0.50
27.72	104.50	1.13	1.08	120.00	0.00	0.50
28.70	12.70	0.37	2.91	120.00	0.00	0.50
29.69	17.50	0.57	3.26	120.00	0.00	0.50
30.67	36.00	0.56	1.56	120.00	0.00	0.50
31.66	57.00	1.46	2.56	120.00	0.00	0.50
32.64	16.30	0.53	3.25	120.00	0.00	0.50
33.62	30.80	0.89	2.89	120.00	0.00	0.50
34.61	33.10	0.55	1.66	120.00	0.00	0.50
35.59	47.20	0.98	2.08	120.00	0.00	0.50
36.58	17.00	0.41	2.41	120.00	0.00	0.50
37.56	13.70	0.33	2.41	120.00	0.00	0.50
38.54	184.00	1.26	0.68	120.00	0.00	0.50
39.53	34.30	1.35	3.94	120.00	0.00	0.50
40.51	189.80	1.91	1.01	120.00	0.00	0.50
41.50	35.80	1.26	3.52	120.00	0.00	0.50
42.48	29.70	1.31	4.41	120.00	0.00	0.50
43.47	79.70	1.47	1.84	120.00	0.00	0.50
44.45	150.20	1.99	1.32	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=2.47 in.
Settlement of Unsaturated Sands=0.29 in.
Total Settlement of Saturated and Unsaturated Sands=2.76 in.
Differential Settlement=1.381 to 1.823 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.16	0.15	0.79	5.00	2.47	0.29	2.76
1.16	0.18	0.79	5.00	2.47	0.27	2.74
2.16	0.19	0.79	5.00	2.47	0.12	2.59
3.16	0.14	0.80	0.17*	2.45	0.00	2.45
4.16	0.19	0.91	0.21*	2.18	0.00	2.18
5.16	0.13	1.00	0.13*	2.09	0.00	2.09
6.16	0.38	1.06	0.36*	1.88	0.00	1.88
7.16	0.75	1.11	0.68*	1.76	0.00	1.76
8.16	2.05	1.15	1.78	1.75	0.00	1.75
9.16	1.33	1.19	1.12	1.75	0.00	1.75
10.16	2.00	1.22	5.00	1.67	0.00	1.67
11.16	2.00	1.24	5.00	1.67	0.00	1.67
12.16	0.34	1.26	0.27*	1.58	0.00	1.58
13.16	0.25	1.28	0.20*	1.47	0.00	1.47
14.16	0.14	1.29	0.11*	1.25	0.00	1.25
15.16	2.00	1.31	5.00	1.18	0.00	1.18
16.16	2.00	1.32	5.00	1.18	0.00	1.18
17.16	2.00	1.33	5.00	1.15	0.00	1.15
18.16	2.00	1.34	5.00	1.14	0.00	1.14
19.16	2.00	1.34	5.00	1.10	0.00	1.10
20.16	0.31	1.35	0.23*	1.06	0.00	1.06
21.16	1.01	1.36	0.74*	1.05	0.00	1.05
22.16	2.00	1.36	5.00	1.05	0.00	1.05
23.16	2.00	1.36	5.00	1.03	0.00	1.03
24.16	0.22	1.37	0.16*	1.01	0.00	1.01
25.16	1.45	1.37	1.06	0.95	0.00	0.95
26.16	0.50	1.37	0.36*	0.91	0.00	0.91
27.16	0.72	1.38	0.52*	0.85	0.00	0.85
28.16	2.00	1.38	5.00	0.79	0.00	0.79
29.16	2.00	1.38	5.00	0.79	0.00	0.79
30.16	2.00	1.38	5.00	0.79	0.00	0.79
31.16	2.00	1.37	5.00	0.76	0.00	0.76
32.16	0.27	1.36	0.20*	0.70	0.00	0.70
33.16	2.00	1.35	5.00	0.69	0.00	0.69
34.16	2.00	1.35	5.00	0.69	0.00	0.69
35.16	0.17	1.34	0.13*	0.62	0.00	0.62

DRAFT

36.16	2.00	1.33	5.00	0.51	0.00	0.51
37.16	2.00	1.32	5.00	0.51	0.00	0.51
38.16	0.29	1.31	0.22*	0.48	0.00	0.48
39.16	0.34	1.30	0.26*	0.37	0.00	0.37
40.16	0.44	1.29	0.34*	0.31	0.00	0.31
41.16	0.32	1.28	0.25*	0.26	0.00	0.26
42.16	2.00	1.27	5.00	0.21	0.00	0.21
43.16	0.44	1.26	0.35*	0.16	0.00	0.16
44.16	0.54	1.25	0.43*	0.04	0.00	0.04

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

DRAFT

APPENDIX E

NATIONAL RESOURCES CONSERVATION SERVICES (NRCS)

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Ventura Area, California

February 25, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

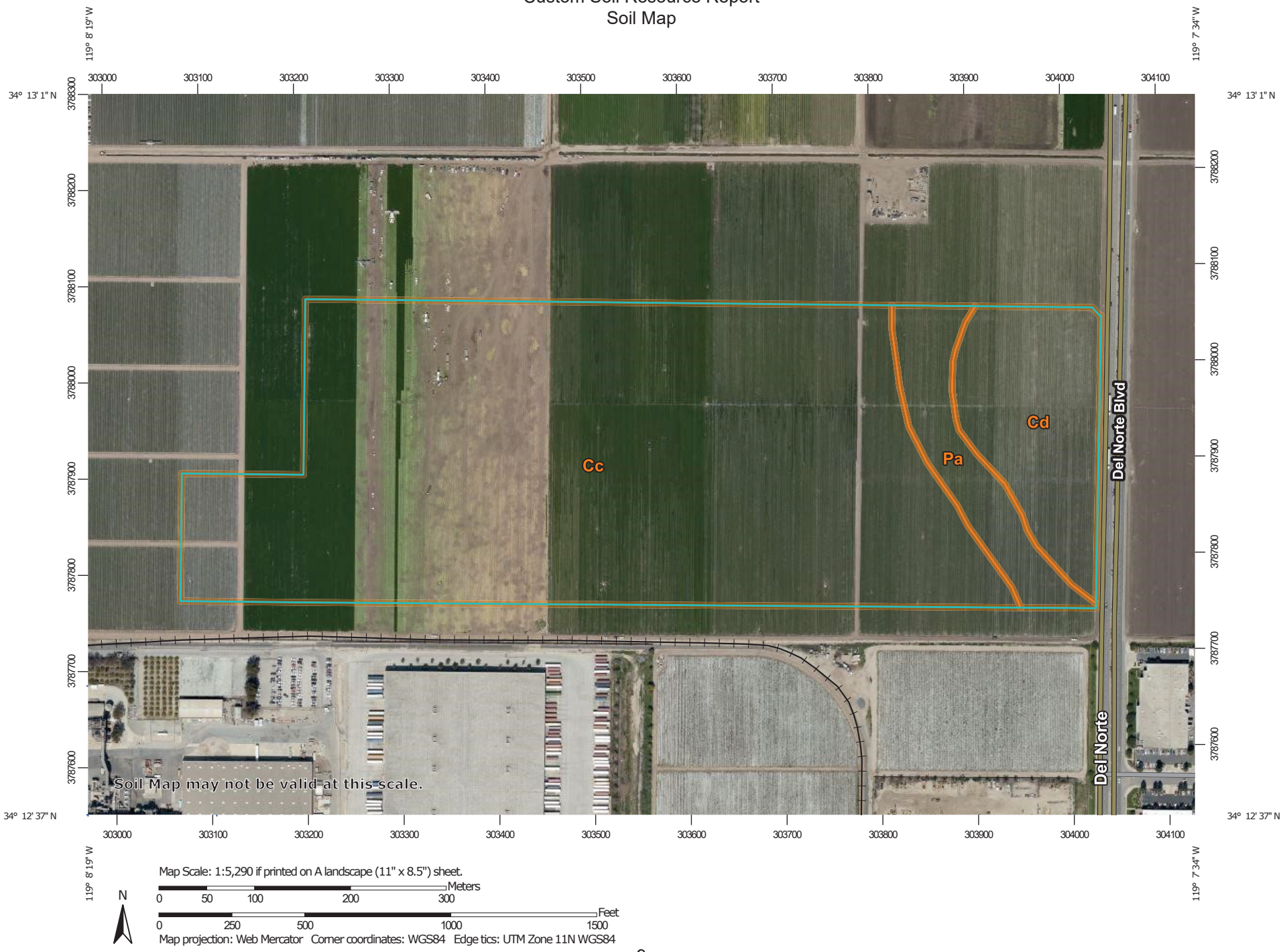
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:5,290 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ventura Area, California
Survey Area Data: Version 14, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 9, 2018—Jun 1, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Cc	Camarillo sandy loam, 0 to 2 percent slopes, MLRA 19	55.8	81.0%
Cd	Camarillo loam	8.2	12.0%
Pa	Pacheco silty clay loam	4.8	7.0%
Totals for Area of Interest		**68.8**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the

development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Ventura Area, California

Cc—Camarillo sandy loam, 0 to 2 percent slopes, MLRA 19

Map Unit Setting

National map unit symbol: 2tyzg
Elevation: 0 to 140 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 61 to 62 degrees F
Frost-free period: 330 to 360 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Camarillo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Camarillo

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock

Typical profile

A - 0 to 24 inches: sandy loam
Ckyg - 24 to 44 inches: stratified sandy loam to sandy clay loam
Cg - 44 to 80 inches: stratified sand to fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 1.98 in/hr)
Depth to water table: About 24 to 60 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Camarillo, hydric

Percent of map unit: 10 percent
Landform: Tidal flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Hueneme, hydric

Percent of map unit: 2 percent
Landform: Tidal flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Mocho

Percent of map unit: 1 percent
Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Aquic xerofluvents, hydric

Percent of map unit: 1 percent
Landform: Alluvial flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Pacheco, hydric

Percent of map unit: 1 percent
Landform: Tidal flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Cd—Camarillo loam

Map Unit Setting

National map unit symbol: hc7m
Elevation: 10 to 200 feet
Mean annual precipitation: 12 to 20 inches
Mean annual air temperature: 59 degrees F
Frost-free period: 275 to 350 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Camarillo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Camarillo

Setting

Landform: Alluvial flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 24 inches: loam
H2 - 24 to 50 inches: stratified sandy loam to sandy clay loam
H3 - 50 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 24 to 60 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Available water storage in profile: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B

Hydric soil rating: No

Minor Components

Mocho

Percent of map unit: 4 percent
Hydric soil rating: No

Pacheco

Percent of map unit: 3 percent
Landform: Tidal flats
Hydric soil rating: Yes

Hueneme

Percent of map unit: 3 percent
Landform: Tidal flats
Hydric soil rating: Yes

Camarillo, sandy loam

Percent of map unit: 3 percent
Landform: Tidal flats
Hydric soil rating: Yes

Unnamed

Percent of map unit: 2 percent
Landform: Alluvial flats
Hydric soil rating: Yes

Pa—Pacheco silty clay loam

Map Unit Setting

National map unit symbol: hcb5
Elevation: 400 feet
Mean annual precipitation: 15 inches
Mean annual air temperature: 59 degrees F
Frost-free period: 250 to 330 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Pacheco and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pacheco

Setting

Landform: Alluvial flats
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Stratified alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 17 inches: silty clay loam
H2 - 17 to 46 inches: silt loam
H3 - 46 to 60 inches: stratified sand to silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 24 to 60 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Pacheco

Percent of map unit: 10 percent
Landform: Tidal flats
Hydric soil rating: Yes

Camarillo

Percent of map unit: 3 percent
Landform: Tidal flats
Hydric soil rating: Yes

Hueneme

Percent of map unit: 1 percent
Landform: Tidal flats
Hydric soil rating: Yes

Cropley variant

Percent of map unit: 1 percent
Hydric soil rating: No

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APPENDIX F

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)

NOAA Atlas 14, Volume 6, Version 2
Location name: Oxnard, California, USA*
Latitude: 34.2143°, Longitude: -119.1321°
Elevation: 65.11 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.127 (0.106-0.153)	0.162 (0.135-0.195)	0.205 (0.171-0.248)	0.238 (0.197-0.291)	0.281 (0.224-0.356)	0.312 (0.243-0.404)	0.342 (0.260-0.455)	0.372 (0.274-0.510)	0.409 (0.288-0.588)	0.437 (0.296-0.651)
10-min	0.182 (0.152-0.219)	0.232 (0.194-0.279)	0.293 (0.245-0.355)	0.341 (0.282-0.417)	0.403 (0.321-0.510)	0.447 (0.348-0.580)	0.490 (0.372-0.653)	0.533 (0.392-0.731)	0.587 (0.413-0.842)	0.626 (0.425-0.933)
15-min	0.220 (0.184-0.265)	0.280 (0.234-0.338)	0.355 (0.296-0.430)	0.413 (0.341-0.504)	0.487 (0.388-0.617)	0.541 (0.421-0.701)	0.593 (0.450-0.789)	0.644 (0.474-0.884)	0.710 (0.500-1.02)	0.757 (0.514-1.13)
30-min	0.324 (0.271-0.390)	0.413 (0.345-0.498)	0.523 (0.436-0.633)	0.608 (0.503-0.743)	0.717 (0.572-0.909)	0.797 (0.621-1.03)	0.874 (0.663-1.16)	0.949 (0.699-1.30)	1.05 (0.736-1.50)	1.12 (0.757-1.66)
60-min	0.504 (0.423-0.608)	0.643 (0.538-0.776)	0.814 (0.679-0.986)	0.947 (0.783-1.16)	1.12 (0.891-1.42)	1.24 (0.967-1.61)	1.36 (1.03-1.81)	1.48 (1.09-2.03)	1.63 (1.15-2.34)	1.74 (1.18-2.59)
2-hr	0.735 (0.616-0.886)	0.933 (0.781-1.13)	1.18 (0.983-1.43)	1.37 (1.13-1.67)	1.61 (1.28-2.04)	1.79 (1.39-2.32)	1.96 (1.49-2.61)	2.12 (1.56-2.91)	2.34 (1.65-3.35)	2.49 (1.69-3.71)
3-hr	0.915 (0.767-1.10)	1.16 (0.972-1.40)	1.47 (1.22-1.78)	1.70 (1.41-2.08)	2.01 (1.60-2.54)	2.22 (1.73-2.88)	2.44 (1.85-3.24)	2.64 (1.95-3.63)	2.91 (2.05-4.17)	3.10 (2.10-4.62)
6-hr	1.30 (1.09-1.56)	1.65 (1.38-1.99)	2.09 (1.75-2.53)	2.43 (2.01-2.97)	2.87 (2.29-3.63)	3.18 (2.48-4.12)	3.48 (2.64-4.64)	3.78 (2.78-5.19)	4.16 (2.93-5.97)	4.44 (3.01-6.61)
12-hr	1.68 (1.40-2.02)	2.16 (1.81-2.61)	2.77 (2.31-3.35)	3.23 (2.67-3.94)	3.82 (3.04-4.84)	4.24 (3.31-5.50)	4.65 (3.53-6.19)	5.05 (3.72-6.93)	5.56 (3.92-7.98)	5.93 (4.02-8.84)
24-hr	2.08 (1.85-2.40)	2.74 (2.42-3.16)	3.55 (3.13-4.10)	4.16 (3.64-4.86)	4.95 (4.19-5.97)	5.52 (4.57-6.79)	6.06 (4.90-7.65)	6.60 (5.19-8.56)	7.28 (5.49-9.84)	7.77 (5.66-10.9)
2-day	2.54 (2.25-2.93)	3.42 (3.02-3.94)	4.50 (3.97-5.20)	5.33 (4.66-6.22)	6.40 (5.42-7.72)	7.18 (5.95-8.84)	7.93 (6.41-10.0)	8.66 (6.81-11.2)	9.61 (7.25-13.0)	10.3 (7.51-14.4)
3-day	2.83 (2.51-3.27)	3.87 (3.43-4.47)	5.17 (4.56-5.98)	6.18 (5.40-7.21)	7.48 (6.33-9.03)	8.44 (6.99-10.4)	9.37 (7.58-11.8)	10.3 (8.10-13.4)	11.5 (8.67-15.5)	12.4 (9.02-17.3)
4-day	3.08 (2.72-3.55)	4.23 (3.74-4.89)	5.69 (5.02-6.58)	6.83 (5.97-7.97)	8.32 (7.04-10.0)	9.41 (7.80-11.6)	10.5 (8.48-13.2)	11.6 (9.10-15.0)	13.0 (9.78-17.5)	14.0 (10.2-19.6)
7-day	3.58 (3.17-4.12)	4.91 (4.34-5.66)	6.60 (5.82-7.64)	7.95 (6.95-9.27)	9.73 (8.23-11.7)	11.1 (9.16-13.6)	12.4 (10.0-15.6)	13.7 (10.8-17.8)	15.5 (11.7-20.9)	16.8 (12.3-23.5)
10-day	3.87 (3.43-4.46)	5.30 (4.68-6.11)	7.13 (6.29-8.25)	8.60 (7.53-10.0)	10.6 (8.95-12.8)	12.1 (9.99-14.9)	13.5 (11.0-17.1)	15.1 (11.8-19.5)	17.1 (12.9-23.1)	18.6 (13.6-26.1)
20-day	4.57 (4.04-5.26)	6.25 (5.53-7.22)	8.47 (7.47-9.80)	10.3 (8.99-12.0)	12.7 (10.8-15.4)	14.6 (12.1-18.0)	16.5 (13.4-20.9)	18.5 (14.6-24.0)	21.2 (16.0-28.7)	23.3 (17.0-32.6)
30-day	5.43 (4.81-6.26)	7.43 (6.57-8.58)	10.1 (8.89-11.7)	12.3 (10.7-14.3)	15.3 (12.9-18.4)	17.6 (14.6-21.7)	20.0 (16.2-25.2)	22.5 (17.7-29.2)	25.9 (19.5-35.0)	28.6 (20.8-40.0)
45-day	6.43 (5.70-7.42)	8.77 (7.75-10.1)	11.9 (10.5-13.8)	14.5 (12.7-16.9)	18.1 (15.3-21.8)	20.9 (17.3-25.7)	23.8 (19.2-30.0)	26.8 (21.1-34.8)	31.0 (23.4-41.9)	34.3 (25.0-48.0)
60-day	7.37 (6.53-8.50)	9.99 (8.84-11.5)	13.5 (11.9-15.6)	16.4 (14.4-19.2)	20.5 (17.3-24.7)	23.7 (19.6-29.2)	27.0 (21.8-34.1)	30.5 (24.0-39.5)	35.3 (26.6-47.7)	39.1 (28.5-54.7)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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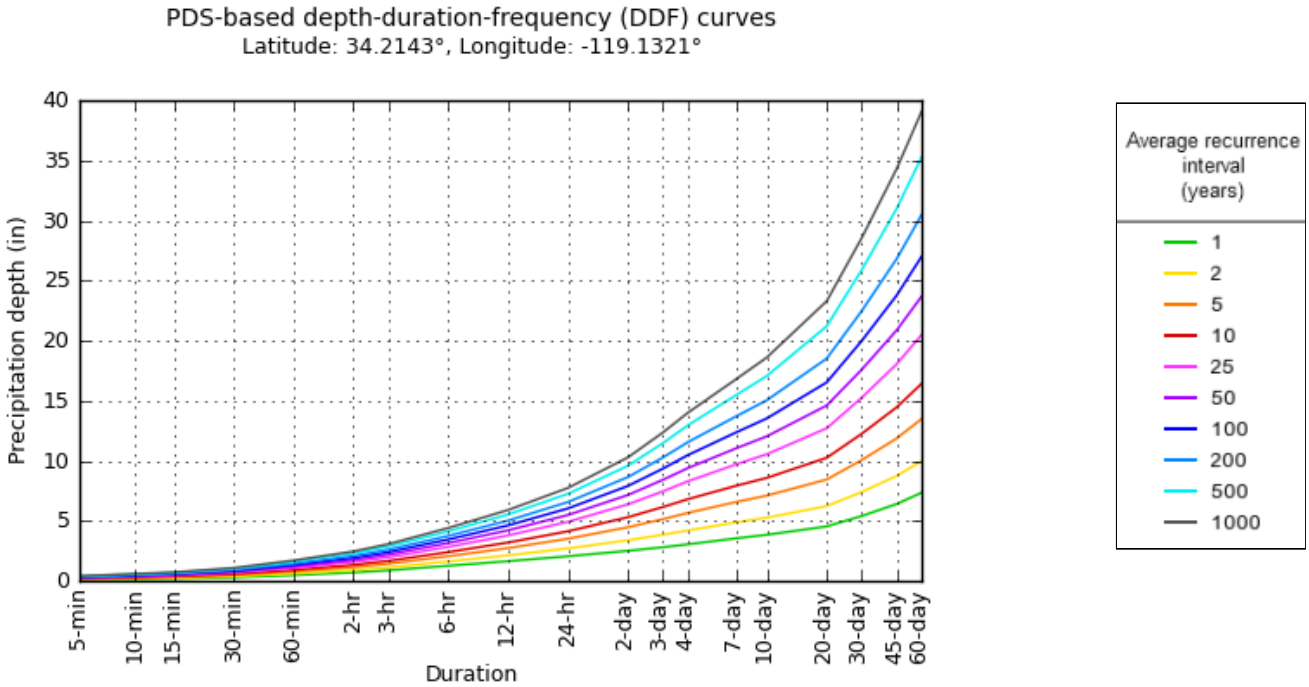
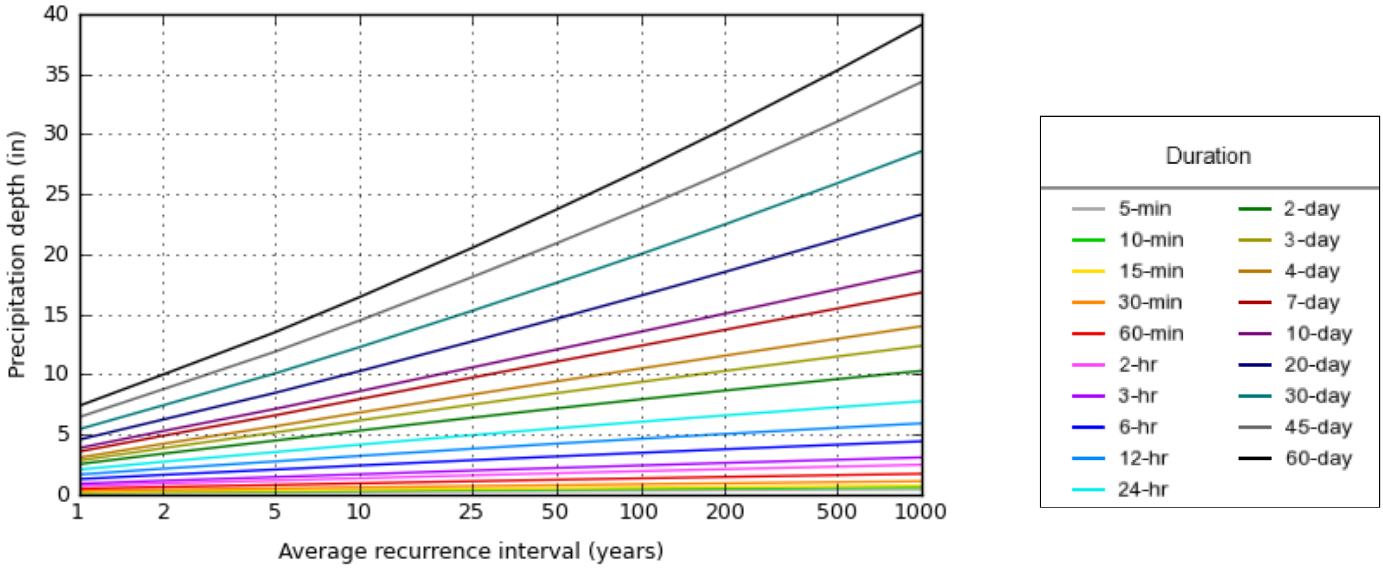
PF graphical





NOAA Atlas 14, Volume 6, Version 2 Created (GMT): Wed Feb 12 21:30:14 2020

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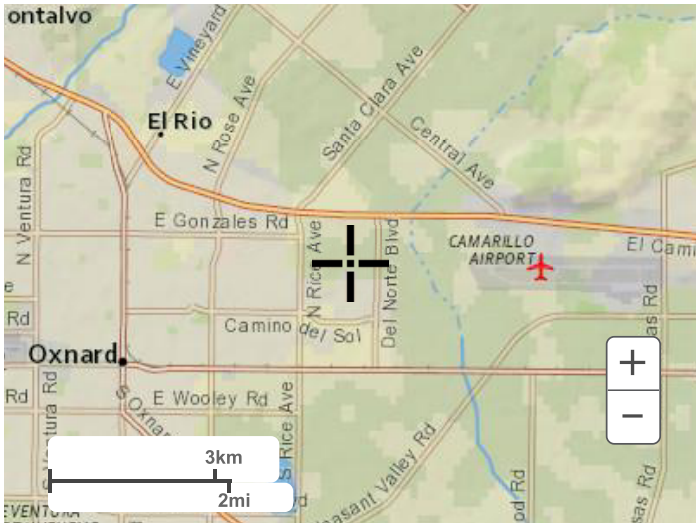
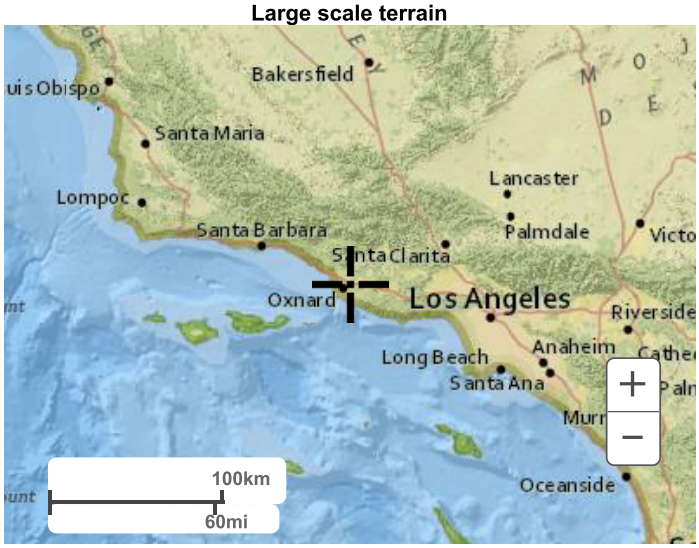
Maps & aerials

Small scale terrain



Large scale terrain



Large scale map

Large scale aerial

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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

APPENDIX G

STORMWATER QUALITY MANAGEMENT PLAN

1st Submittal

Stormwater Quality Management Plan

Prepared in accordance with the Ventura County Technical Guidance Manual

for Stormwater Quality Control Measures, Manual Update 2011, Errata Update 2018

For Tract ### (or Planning and Zoning Permit ##-###-###)

Project Bruin
Oxnard, California

Southwest Corner of Ventura Freeway & N Del Norte Boulevard

Date:

March 2020

Prepared for:

Seefried Industrial Properties, Inc.

2201 E. Camelback Road, Suite 225B

Phoenix, AZ 85016

310.536.7900

Stormwater Quality Management Plan
Project Bruin

MARCH 2020 | ENTITLEMENT SUBMITTAL

Prepared By:

Kimley»Horn

Project Owner's Certification

This Stormwater Quality Management Plan (SWQMP) has been prepared for Seefried Industrial Properties, Inc. by Kimley-Horn and Associates. The SWQMP is intended to comply with the requirements of the City of Oxnard, Ventura County and the NPDES Areawide Stormwater Program requiring the preparation of a SWQMP. The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with Ventura County Technical Guidance Manual for Stormwater Quality Control Measures, Manual Update 2011, Errata Update 2018, and the intent of the NPDES Permit for Ventura County. Once the undersigned transfers its interest in the property, its successors in interest and the City of Oxnard and Ventura County shall be notified of the transfer. The new owner will be informed of its responsibility under this SWQMP. A copy of the approved SWQMP shall be available on the subject site in perpetuity.

"I certify under a penalty of law that the provisions (implementation, operation, maintenance, and funding) of the WQMP have been accepted and that the plan will be transferred to future successors."

Project Data			
Permit/Application Number(s):	TBD	Grading Permit Number(s):	TBD
Tract/Parcel Map Number(s):	Tract No. 5996-1; Lot 8, 9, 10, 11, and 12	Building Permit Number(s):	TBD
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract):			APN 216-0-030-155

Owner's Signature			
Owner Name: Jason Quintel			
Title	Senior Vice President – Western Region		
Company	Seefried Industrial Properties, Inc.		
Address	527 W. 7th Street, Suite 308, Los Angeles, CA 90014		
Email	jasonquintel@seefriedproperties.com		
Telephone #	602-337-8730, Ext. 28		
Signature		Date	

Preparer's Certification

Project Data			
Permit/Application Number(s):	TBD	Grading Permit Number(s):	TBD
Tract/Parcel Map Number(s):	Tract No. 5996-1; Lot 8, 9, 10, 11, and 12	Building Permit Number(s):	TBD
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract):			APN 216-0-030-155

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan were prepared under my oversight and meet the requirements of Regional Water Quality Control Board Order No. R4-2010-0108."

Engineer: Davie Cowan, CA PE #86803		PE Stamp Below
Title	Civil Engineer	
Company	Kimley-Horn and Associates	
Address	401 B Street, Suite 600, San Diego, CA 92101	
Email	Davie.cowan@kimley-horn.com	
Telephone #	619-744-0144	
Signature		
Date		

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Appendices

Appendix A Project Specific Information

Appendix B WQMP Site Plan Exhibit and BMP Calculations

Appendix C BMP Educational Material

Appendix D WQMP Agreement

Appendix E BMP Operation and Maintenance

Appendix F Hydromodification Control Plan Applicability Map

Appendix G Geotechnical Report

Appendix H Project Bruin Hydrology and Hydraulic Drainage Report

Appendix I Project Bruin Civil Engineering Plans

Appendix J Sakioka Farms Business Park Master Drainage Report

SECTION 1 DISCRETIONARY PERMIT(S)

Project Information					
Project Name	Project Bruin				
Project Owner Contact Name:	Jason Quintel				
Mailing Address:	2201 E. Camelback Road, Suite 225B	E-mail Address:	jasonquintel@seefriedproperties.com	Telephone:	602-337-8730, Ext. 28
Permit/Application Number(s):	TBD		Tract/Parcel Map Number(s):	TBD	
Additional Information/ Comments:					
Description of Project:	Seefried Properties, Inc. intends to develop a multi-level distribution center within the Sakioka Farms Business Park Specific Plan (SFBP SP) located in the City of Oxnard, CA. The existing Sakioka Farms Business Park Specific Plan area covers approximately 430 acres located in the northeastern portion of the City of Oxnard. The site is bounded on the north by Ventura Freeway (U.S. Route 101)' on the east by the Oxnard-Camarillo Greenbelt (agricultural preserve); on the south by the existing Proctor & Gamble plant and portion of the McInnes Ranch Business Park, and on the west by Rice Avenue. Refer to **Appendix A: Figure 1-1** for the Regional Map of Ventura County with the location of the Sakioka Farms Business Park Specific Plan location. Within the SFBP SP, Project Bruin is located within the Light Industrial land use area that consistent of approximately 300-acres. Based on the Specific Plan, refer to **Appendix A: Figure 1-2** for 2030 General Plan Use for the SFBP SP, and **Appendix A: Figure 1-3** for the Project Site Location. Per the SFBP SP Tentative Tract Map No. 5996-1, Project Bruin will be located on Lot 8, 9, 10, 11, and 12 for a combined project site of approximately 64.65-acres. Project Bruin proposes an 857,173 SF multi-level distribution center, employee parking, trailer parking, and trailer storage on the site. Refer to **Appendix A: Figure 1-4** for the project site plan. This Stormwater Quality Management Plan includes the analysis for the post-development condition with water quality Best Management Practices (BMPs). This project will utilize bioretention with underdrain (BIO-1)and Proprietary Biotreatment (BIO-5). Conveyance of water quality storm events will be through the Project Bruin storm drain system, **Appendix H**. The Project Bruin storm drain system will discharge into the Sakioka Farm Business Park Regional Drainage Facility, located on Lot A and Lot B of Tract Map No. 5996-1. The Sakioka Farm Business Park Regional Drainage Study has been provided in **Appendix J** of the Storm Water Quality Management Plan.				

1.1 PROPERTY OWNERSHIP/MANAGEMENT

Property Ownership/Management
Describe property ownership/management responsible for long-term maintenance of WQMP stormwater facilities:
The project site, including the proposed building, paved areas, landscape areas, onsite utilities and the BMPs included within this WQMP will be owned, operated and maintained by Seefried Industrial Properties, Inc. and/or lease/tenant transaction occurs. No transfer of infrastructure to public agencies is anticipated. Long-term stormwater facility maintenance will be conducted by Seefried Industrial Properties, Inc. and/or Lease/Tenant.

SECTION 2 STORMWATER MANAGEMENT STANDARDS

2.1. INTRODUCTION

The selection of appropriate stormwater management control measures should be a collaborative effort between the project proponent and the local permitting agency staff. It is recommended that discussion between project planners, engineers, and local permitting agency staff regarding selection of stormwater management control measures occur earlier in the design process.

2.2. PROJECT APPLICABILITY

VENTURA COUNTY MS-4 PERMIT ORDER NO. R4-2010-0108

The City of Oxnard is a co-permittee of the Ventura County MS-4 Permit Order No. R4-2010-00108. New development and redevelopment projects meeting the applicability criteria contained in Section 4.E.11 of Order R4-2010-0109 [presented in Section 1.5 of the 2011 TGM] must include control measures specific in the 2011 TGM.

The following information regarding “Purpose” has been derived from Order R4-2010-0108:

a) Lessen the water quality impacts of development by using smart growth practices such as compact development, direction development towards existing communities via infill or redevelopment, safe guarding of environmentally sensitive areas, mixing of land uses (e.g., homes offices, and shops), transit accessibility, and better pedestrian bicycle amenities.

b) Minimize the adverse impacts from storm water runoff on the biological integrity of Natural Drainage Systems and the beneficial use of waterbodies in accordance with the requirements under CEQA (Cal. Pub. Resources Code § 21100).

c) Minimize the percentage of effective impervious surfaces on land developments to mimic predevelopment water balance through infiltration, evapotranspiration, and reuse.

d) Minimize pollutant loadings from impervious surfaces such as roof-tops, parking lots, and roadways through the use of properly designed, technically appropriate BMPs (including Source Control BMPs such as good housekeeping practices), Low Impact Development Strategies, and Treatment Control BMPs.

e) Properly select, design and maintain Treatment Control BMPs and Hydromodification Control BMPs to address pollutants that are likely to be generated, assure long-term function, and to avoid the breeding of vectors.

f) Prioritize the selection of BMPs suites to remove storm water pollutants, reduce storm water runoff volume, and beneficially reuse storm water to support and integrated approach to protecting water quality and managing water resources in the following order of preference:

    - Infiltration BMPs
    - BMPs that store and reuse storm water runoff
    - BMPs that incorporate vegetation to promote pollutant removal and runoff volume reduction and integrate multiple uses

- BMPs which percolate runoff through engineered soil and allow it to discharge downstream slowly
- Approved modular/proprietary treatment control BMPs that are based on LID concepts and that meet pollution removal goals

The following information regarding "New Development Performance Criteria" has been derived from Order R4-2010-0109:

1. Integrated Water Quality/ Flow Reduction/Resources Management Criteria

a) Except as provided in subpart 4.E.III.1.(c), Permittees shall require all New Development and Redevelopment projects identified in subpart 4.E.II to control pollutants, pollutant loads, and runoff volume emanating from impervious surfaces through infiltration, storage for reuse, evapotranspiration, or bioretention/ biofiltration by reducing the percentage of Effective Impervious Area (EIA) to 5 percent or less of the total project area.

b) Impervious surfaces may be rendered "ineffective", and thus not count toward the 5 percent EIA limitation, if the stormwater runoff from those surfaces is fully retained on-site for the design storm event specified in provision (c), below. To satisfy the EIA limitation and low-impact development requirements, the permittees must require stormwater runoff to be infiltrated, reused, or evapotranspired on-site through a stormwater management technique allowed under the terms of this permit and implementing documents. If on-site retention is determined to be technically infeasible pursuant to 4.E.III.2(b), an on-site biofiltration system that achieves equivalent stormwater volume and pollutant load reduction as would have been achieved by on-site retention shall satisfy the EIA limitation. An on-site biofiltration system that releases above the design volume shall achieve 1.5 times the amount of stormwater volume and pollutant load reduction as would have been achieved by on-site retention and, thereby, shall satisfy the EIA limitation.

c) The permittees shall require all features constructed or otherwise utilized to render impervious surfaces "ineffective", as described in provision (b), above, to be properly sized to infiltrate, store for reuse, or evapotranspire, without any runoff at least the volume of water, or in the case of biofiltration with release above the design volume, 1.5 times the volume of water, that results from:

- The 85th percentile 24-hour runoff event determined as the maximized capture stormwater volume for the area using a 48 to 72-hour draw down time, from the formula recommended in Urban Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87, (1998);
- The volume of annual runoff based on unit basin storage water quality volume, to achieve 80 percent or more volume treatment by the method recommended in the Ventura County Technical Guidance Manual for Storm Water Quality Control Measures (July 2002 and its revisions); or
- The volume of runoff produced from a 0.75-inch storm event.

d) To address any impervious surfaces that may not be rendered "ineffective", surface discharge of stormwater runoff if any, that results from New Development and Redevelopment projects identified in subpart 4.E.II which have complied with subparts 4.E.III.1.(a)-(c), above, shall be mitigated in accordance with subpart 4.E.III.4.

2. Alternative Compliance for Technical Infeasibility

a) To encourage smart growth and infill development of existing urban centers where on-site compliance with post-construction requirements may be technically infeasible, the permittees may allow projects that are unable to meet the Integrated Water Quality/Flow Reduction/Resources Management Criteria in subpart 4.E.III.1, above, to comply with this permit through the alternative compliance measures described in subpart 4.E.III.2.(c), below.

b) To utilize alternative compliance measures, the project applicant must demonstrate that compliance with the applicable post-construction requirements would be technically infeasible by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer, geologist, architect, and/or landscape architect. Technical infeasibility may result from conditions including the following:

1. Locations where seasonal high groundwater is within 5 feet of the surface
2. Locations within 100 feet of a groundwater well used for drinking water
3. Brownfield development sites or other locations where pollutant mobilization is a documented concern
4. Locations with potential geotechnical hazards
5. Smart growth and infill or redevelopment locations where the density and/ or nature of the project would create significant difficulty for compliance with the on-site volume retention requirement
6. Other site or implementation constraints identified in the LID Technical Guidance document required by subpart 4.E.IV.4.

c) Alternative Compliance Measures. When a permittee finds that a project applicant has demonstrated technical infeasibility, the permittee shall identify alternative compliance measures that the project will need to comply with as a substitute for the otherwise applicable post-construction requirements listed in subparts 4.E.III.1.(a)-(c) of this permit. The Ventura County Technical Guidance Manual shall be revised to identify the alternative compliance measures and shall include the following requirement:

1. Minimum on-site requirement. The project must take all feasible measures to reduce the percentage of Effective Impervious Area to no more than 30 percent of the total project area and treat all remaining runoff pursuant to the design and sizing requirements of subparts 4.E.III.1.(b)-(d). (2) Offsite mitigation volume. The difference in volume between the amount of stormwater infiltrated, reused, and/ or evapotranspired and/or biofiltered by the project on-site and the otherwise applicable requirements of subparts 4.E.III.1.(a)-(c) (the "offsite mitigation volume'), above, must be mitigated by the project applicant either by performing offsite mitigation that is approved by the permittee or by providing sufficient funding for public or private offsite mitigation to achieve equivalent stormwater volume and pollutant load reduction through infiltration, reuse, evapotranspiration and/ or biofiltration. For projects with demonstrable technical infeasibility that cannot reduce the Effective Impervious Area to 5% or less of the total project, but are able to reduce the Effective Impervious Area to no more than 30 percent of the total project, mitigation or payment in lieu must be equivalent to the amount of stormwater not managed on site.

2. For projects with demonstrable technical infeasibility that cannot reduce the Effective Impervious Area to 30% of the total project or less, mitigation or payment in lieu must be for 1.5 times the amount of stormwater not managed on site

3. Location of offsite mitigation. Offsite mitigation projects must be located in the same sub-watershed (defined as draining to the same hydrologic area in the Basin Plan) as the new development or redevelopment project. A list of eligible public and private offsite mitigation projects available for funding shall be identified by the Permittees and provided to the project applicant. Offsite mitigation projects include green streets projects, parking lot retrofits, other site specific LID BMPs, and regional BMPs. Project applicants seeking to utilize these alternative compliance provisions may propose other offsite mitigation projects, which the Permittees may approve if they meet the requirements of this subpart.

4. Timing and Reporting Requirements for Offsite Mitigation Projects. The Permittee(s) shall develop a schedule for the completion of offsite mitigation projects, including milestone dates to identify fund, design, and construct the projects. Offsite mitigation projects shall be completed as soon as possible, and at the latest, within 4 years of the certificate of occupancy for the first project that contributed funds toward the construction of the offsite mitigation project, unless a longer period is otherwise authorized by the Executive Officer. For public offsite mitigation projects, the permittees must provide in their annual reports a summary of total offsite mitigation funds raised to date and a description (including location, general design concept, volume of water expected to be retained, and total estimated budget) of all pending public offsite mitigation projects. Funding sufficient to address the offsite mitigation volume must be transferred to the permittee (for public offsite mitigation projects) or to an escrow account (for private offsite mitigation projects) within one year of the initiation of construction.

5. The project applicant must demonstrate that the EIA achieved on-site is as close to 5 percent EIA as technically feasible, given the site's constraints.

d) Watershed equivalence. Regardless of the methods through which permittees allow project applicants to implement alternative compliance measures, the sub-watershed -wide (defined as draining to the same hydrologic area in the Basin Plan) result of all development must be at least the same level of water quality protection as would have been achieved if all projects utilizing these alternative compliance provisions had complied with subparts 4.E.III.1.(a)-(d) of the permit. The permittees shall provide in their annual report to the Regional Board a list of mitigation project descriptions and pollutant and flow reduction analyses (compiled from design specifications submitted by project applicants and approved by the permittee(s)) comparing the expected aggregate results of alternative compliance projects to the results that would otherwise have been achieved by meeting the 5 percent EIA requirement on-site.

Applicability			
New Development Projects			
☒ All development projects equal to 1 acre or greater of disturbed area and adding more than 10,000 square feet of impervious surface area	☒Industrial park 10,000 square feet or more of surface area	☐ Commercial strip mall 10,000 square feet or more of impervious surface area	☐Retail gasoline outlet 5,000 square feet or more of surface area
☐ Restaurant (SIC 5812) 5,000 square feet or more of surface area	☒ Parking lot 5,000 square feet or more of impervious surface area, or with 25 of more parking spaces	☐ Streets, roads, highways, and freeway construction of 10,000 square feet of more of impervious surface area shall incorporate USEPA guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets to the maximum extent practicable.	☐ Automotive service facilities (SIC 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) [5,000 square feet of more of surface area]
☐ Redevelopment projects in subject categories that meet Redevelopment thresholds (identified in subpart E.II.2)	☐ Project located in or directly adjacent to an Environmentally Sensitive Area (ESA), where the development will: (A) Discharge storm water runoff that is likely to impact a sensitive biological species or habitat; and (B) Create 2,500 square feet or more of impervious surface area.	☐ Single family hillside homes.	☐ Redevelopment Project
Project Area (ft2):	2,815,985 SF (64.65 AC)	SIC Code: 1541	
Is Project going to be phased? Yes ☐ No ☒			
Does Project include roads? Yes ☐ No ☒			

DECISION FLOWCHART

STORMWATER MANAGEMENT STANDARDS

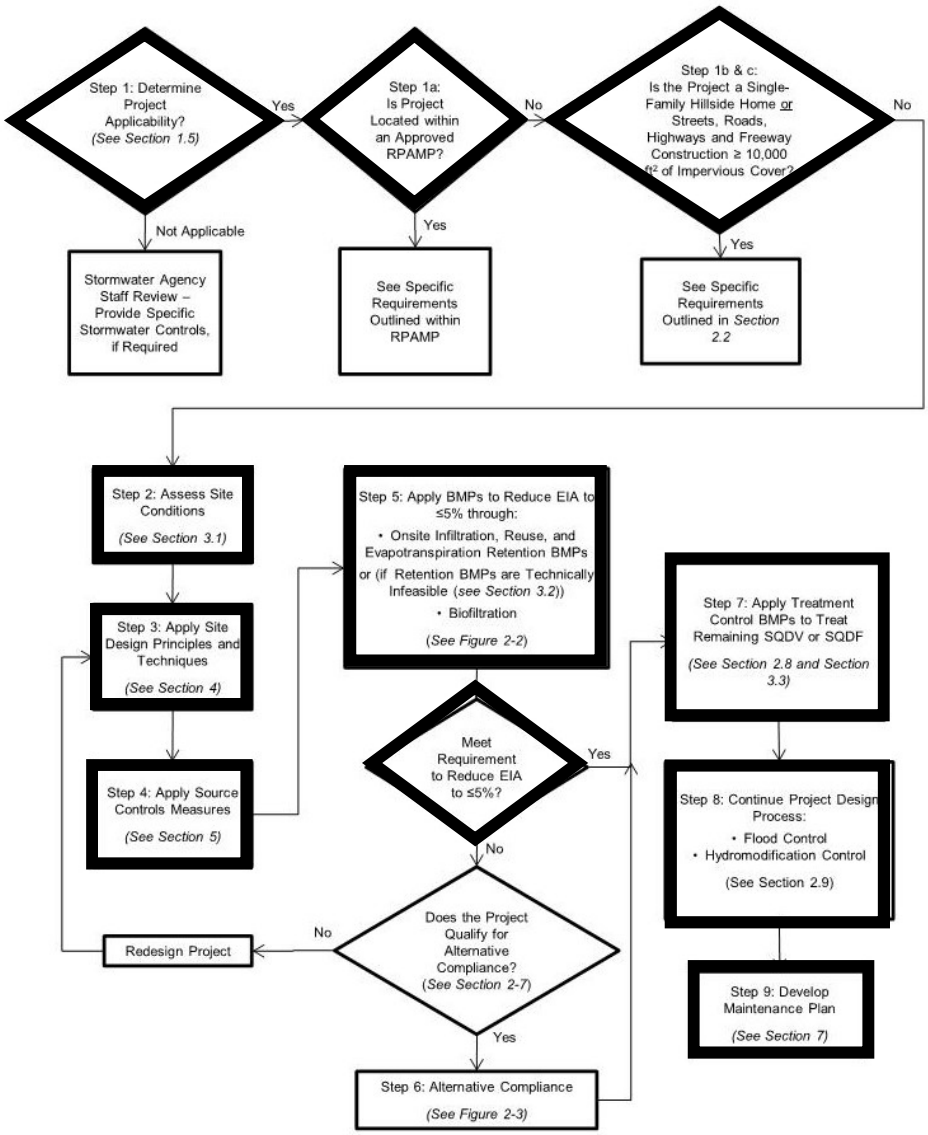

Figure 2-1: Stormwater Management Control Measures Design Decision Flowchart

SECTION 3 SITE ASSESSMENT AND BMP SELECTION

The next step is to collect site information that is critical for the selection and implementation of Retention BMPs, Biofiltration BMPs, and Treatment Control Measures. The following information should be documented: topography, soil type and geology, groundwater, geotechnical considerations, offsite drainage, existing utilities, and Environmentally Sensitive Areas. In addition, soil and infiltration testing should be conducted. Detailed guidance on assessing site conditions can be found in Section 3.1.

3.1. ASSESSING SITE CONDITIONS AND OTHER CONSTRAINTS

Site Conditions	
Topography	The proposed project grading plan consists of areas of paved and pervious areas. Majority of the paved areas have a slope that ranges from 1.0% to 5.0% depending on the location. The pervious areas have a slope that ranges from 1.0% to 50% (2:1 slopes). The pervious area with considerable slope is located in an above ground detention basin for the 100-year storm event.
Soil Type and Geology	Based on the Natural Resource Conservation Service (NRCS) of the U.S. Department of Agriculture, Project Bruin is mainly NRCS Hydrologic Soils Group B, 93%. There is a section of the site that is NRCS Hydrologic Soils Group C, 7%. Based on the Ventura County Hydrology Manual, Group B soils correspond to Ventura County soil numbers 4 and 5.
Infiltration Data	Infiltration-based BMPs should be feasible in areas mapped with Ventura County Soil Numbers 4 through 7. Based on the site-specific infiltration testing performed by Terracon Consultants, Inc. on May 11, 2018, the infiltration rates of six (6) borings for the site were recorded as followed in inch/hr: 0.44, <0.1, 0.15, 1.35, 0.31, and 0.11. Based on these results, the average infiltration rate was 0.4 in./hr., which is lower than the 0.5 in.hr. considered feasible for infiltration. Therefore, infiltration has been considered infeasible for this project.
Groundwater Consideration	Based on the Terracon Consultants, Inc. Geotechnical Report, groundwater was observed in the test borings at depths ranging between 3 and 11 feet below ground surface (bgs) at the time of the field exploration. Based on the existing topography and proposed grading, it is assumed that groundwater would prohibit the use of infiltration at the site as depth to groundwater would be less than five feet of separation.
Geotechnical Considerations	1. This project is located in a seismically active area; 2. This project is located within a potential liquefaction hazard zone as designated by the California Geologic Survey (CGS); 3. Historical high ground water in the project vicinity is shallower than 10 feet below the surface; 4. Based on the liquefication study, the project site seismically-induced settlements are expected to range between 2.4 and 3 inches and seismically-induced dry sand differential settlements are expected to range between 1.3 to 2.0 inches.

Managing Offsite Drainage	There are no anticipated offsite run-on drainage flows from surrounding roadway infrastructure or existing land.
Existing Utilities	There are no existing utilities on the project site. BMPs will be located away from proposed utilities of water, sewer, power, and communications.
Environmentally Sensitive Areas	There are no identified Environmentally Sensitive Areas (ESAs) located on the project site.

3.2. TECHNICAL FEASIBILITY SCREENING

Technical Infeasibility List	Description	Applicable
1	Locations where seasonal high groundwater or mounded groundwater beneath an infiltration BMP is within 5 feet of the bottom of the infiltration BMP	Yes
2	Location on the project site where soils are mapped with Ventura Hydrology Manual Soil Numbers 1-2 or site-specific analyses show that the soils have an infiltration rate less than 0.3 inches per hours. Locations where soils are mapped with Ventura Hydrology Manual Soil Number 3, or where a site-specific analysis have an infiltration rate of 0.3 to 0.5 inches per hour, and no other infiltration-related infeasibility apply, shall use a Bioinfiltration BMP or Rainwater Harvesting (if feasible) to achieve the 5% EIA requirement	Yes
3	Locations on the project site within 100 feet of a groundwater well used for drinking water, non-potable wells, drain fields, and springs; locations less than 50 feet away from slopes steeper than 15 percent or an alternative setback established by the geotechnical expert for the project; and locations less than eight feet from building foundations or an alternative setback established by the geotechnical expert for the project.	No
4	Locations where pollutant mobilization is a documented concern, unless a site-specific analysis determines that infiltration would not be detrimental. Portions of brownfield development sites may be eligible for alternative compliance where pollutant mobilization is a concern.	No
5	Locations with potential geotechnical hazards established by the geotechnical professional for the project.	No
6	Projects with high-risk areas such as service/gas stations, truck stops, and heavy industrial sites.	No
7	Locations where reduction of surface runoff may potentially impair beneficial uses of the receiving water as documented in a site-specific study (e.g., California Environmental Quality Act (CEQA) analysis) or watershed plan.	No
8	Location where an increase in infiltration over natural conditions could potentially cause impairments to downstream beneficial uses, such as change of seasonality of ephemeral washes, as confirmed through a site-specific study.	No
9	Green roofs are not required to be considered for all project locations and types; this evapotranspiration BMP is considered optional subject to the approval of the permitting authority.	N/A

10	Projects that do not provide sufficient demand for harvested stormwater such that the system provides 80% capture with a 72-hour drawdown time considering all "allowable and reliable demand."	N/A
11	BMPs that are not allowable per current federal, state or local codes are considered infeasible. Local codes will be updated by mid-2012 as required in Order R4-2010-0108 (Provision III.D).	N/A
12	The following project types where the density and/or nature of the project would create significant difficulty for compliance with the requirement to reduce EIA to ≤5%	No
13	Pedestrian/bike trail projects	N/A
14	Agency flood control, drainage, and wet utilities projects	N/A
15	Historical preservation projects	N/A
16	Low income housing projects that occur within existing urban areas (as defined by the maps provided in Appendix B)	N/A

3.3. TECHNICAL FEASIBILITY SCREENING

Determining Maximum Volume Feasibly Infiltrated and/or Biofiltered		
	Criteria for Maximum Infiltration Volume	**Applicable**
1	BMPs are designed to the maximum depth allowed by design standards but are not required to exceed the depth that infiltrates within 48 hours at the design percolation rate.	Yes
2	All practicable methods are employed to enhance the design percolation rate, including: • Use of soil amendments to native soil below infiltration BMPs • Provision of pretreatment to reduce the allowable factor of safety, • Additional site investigation to reduce uncertainty in infiltration rate and allow the use of a lower factor of safety.	Yes
3	Good site practices have been integrated to provide the maximum pervious area feasible for infiltration BMPs, and infiltration BMPs have been configured to make use of this area. **Table 3-1** provides recommended percentages of a site, by project type, that should be feasible to dedicate to infiltration BMPs (where technically feasible) within pervious areas. If the project has not provided this portion of the project site for infiltration BMPs (where technically feasible), an attempt should be made to improve site design to provide more pervious area until it is either infeasible to provide more pervious area or EIA is reduced to ≤5%. The minimum percent of parking lot pavement area considered feasible to dedicate to permeable pavement (where technically feasible) is 20%; this does not apply to parking lots that anticipate heavy truck traffic such as truck stops and heavy industrial areas. The criteria provided in Table 3-1 are guidance; each project will be individually evaluated by the local permitting authority to determine if good site practices have been integrated into the project to provide the maximum pervious area feasible for	Yes

	siting infiltration BMPs.	

Table 3-1: Recommended Criteria for Percent of Site Feasible to Dedicate to BMPs

Table 3-1: Recommended Criteria for Percent of Site Feasible to Dedicate to BMPs

Project Type		Percent of Site[1]
New Development	SF/MF Residential < 7 du/ac	10
	SF/MF Residential 7 – 18 du/ac	7
	SF/MF Residential > 18 du/ac	5
	Mixed Use, Commercial, Institutional/Industrial w/ FAR < 1.0	10
	Mixed Use, Commercial, Institutional/Industrial w/ FAR 1.0 – 2.0	7
	Mixed Use, Commercial, Institutional/Industrial w/ FAR > 2.0	5
	Podium (parking under > 75% of project)	3
	Projects with zoning allowing development to lot lines	2
	Transit Oriented Development	5
	Parking	5

3.4. TREATMENT CONTORL MEASURE SELECTION GUIDANCE

Treatment Control Measure selection criteria contained in Order R4-2010-0108 include the following:

- Treatment Control Measures shall be selected based on the primary class of pollutants likely to be discharged from the project (e.g., metals from an auto repair shop).
- For projects that discharge to an impaired waterbody and whose discharges contain the pollutant causing impairment, the project shall select Treatment Control Measures from the top three performing BMP categories, or alternative BMPs that are designed to meet or exceed the performance of the highest performing BMP, for the pollutant causing impairment.

Land Use and Associated Pollutants		
Class of Pollutant	**Potential Land Use and Activities Source**	**Applicable**
Sediment (TSS and Turbidity)	Streets, driveways, roads, landscaped areas, construction activities, soil erosion (channels and slopes)	Yes
Nutrients	Landscape fertilizers, atmospheric deposition, automobile exhaust, soil erosion, animal waste, detergents	Yes
Metals/Metalloids	Automobiles, bridges, atmospheric deposition, industrial areas, soil erosion, metal surfaces, combustion processes	Yes
Pesticides	Landscaped areas, roadsides, utility rights-of-way	Yes
Organic Materials/ Oxygen Demanding Substances	Landscaped areas, animal wastes, industrial wastes	Yes
Oil and Grease/ Organics Associated with Petroleum	Roads, driveways, parking lots, vehicle maintenance areas, gas stations, automobile emissions, restaurants	Yes
Bacteria and Viruses	Lawns, roads, leaky sanitary sewer lines, sanitary sewer cross-connections, animal waste (domestic and wild), septic systems, homeless encampments, sediments/biofilms in stormwater conveyance system	No
Trash and Debris (Gross Solids and Floatables)	Commercial areas, roadways, schools, trash receptacles/storage/disposal	Yes

When designated beneficial uses of a particular receiving water body are being compromised by water quality for specific or multiple pollutants, Section 303(d) of the CWA requires identifying and listing that water body as “impaired”. Table 3-3 below lists the categories of pollutants and specific pollutants that are included on the 2010 303(d) list for Ventura County. Project proponents should consult the most recent 303(d) list to identify whether the project’s receiving waterbody is listed as impaired. The most recent 303(d) list is located on the State Water Resources Control Board website (click on water issues/programs/water quality assessment).

From the 303(d) list, the Calleguas Creek Reach 4 (was Revolon Slough Main Branch: Mugu Lagoon to Central Avenue on 1998 303d list). Water Body Type: River & Stream. Assessed Area: 7.188 miles. Integrated Report category:5. See **Appendix XX** for Final California 2012 Integrated Report (303(d) List/305(b) Report).

Impaired Waterbodies				
Table 3-3: Ventura County 2010 303(d)-listed Water Quality Pollutants				
Project is tributary to *Calleguas Creek Reach 4*				
Class of Pollutant	**Specific Pollutants**	**Applicable to Calleguas Creek Reach**	**303(d) Determination**	**Project Bruin Requirement for BMPs**
Sediment	▪ Sedimentation/Siltation	▪ Sedimentation/ Siltation	▪ List on 303(d)	Yes
Nutrients	▪ Ammonia ▪ Nitrate and Nitrite ▪ Nitrate ▪ Nitrogen ▪ Organic Enrichment/ Low Dissolved Oxygen ▪ Algae ▪ Eutrophic	▪ Nitrate as Nitrate (NO3) ▪ Nitrogen	▪ Nitrate - List on 303(d) ▪ Nitrogen – List on 303(d) ▪	Yes
Metals/ Metalloids	▪ Boron ▪ Copper ▪ Copper, Dissolved ▪ Lead ▪ Mercury ▪ Nickel ▪ Selenium ▪ Zinc	▪ Boron ▪ Selenium	▪ Boron – Delist from 303(d) list ▪ Selenium – List on 303(d)	Yes
Pesticides	▪ ChemA (tissue) ▪ Chlordane ▪ Chlordane (tissue & ▪ sediment) ▪ Chlordane (tissue) ▪ Chlorpyrifos ▪ Chlorpyrifos (tissue) ▪ DDT ▪ DDT (sediment) ▪ DDT (tissue & sediment) ▪ DDT (tissue) ▪ Diazinon ▪ Dieldrin ▪ Dieldrin (tissue) ▪ Endosulfane (tissue & sediment) ▪ Organophosphorous ▪ Pesticides ▪ Toxaphene ▪ Toxaphene (tissue & ▪ sediment) ▪ Toxaphene (tissue)	▪ DDT ▪ ChemA ▪ Chlordane (tissue & sediement) ▪ Chlorpyrifos (tiss) ▪ Diazinon ▪ Dieldrin (tissue) ▪ Endosulfane (tissue & sediment) ▪ Toxaphene (tissue & sediment)	▪ DDT– Do Not Delist from 303(d) ▪ ChemA - List on 303(d) ▪ Chlordane - List on 303(d) ▪ Chlorpyrifos – List on 303(d) ▪ Diazinon – List on 303(d) ▪ Dieldrin (tissue) 0 List on 303(d) ▪ Endosulfane (tissue & sulfane) – List on 303(d) ▪ Toxaphene (tissue & sediment) – List of 303(d)	Yes
Trash and Debris	▪ Trash and Debris	▪ Trash	▪ List on 303(d)	Yes
Other Organics	▪ PCBs	▪ PCBs	▪ List on 303(d)	Yes
Bacteria and Viruses	▪ Coliform Bacteria ▪ Indicator Bacteria	▪ Coliform	▪ Fecal Coliform – Do Not Delist from 303(d) list	No
Salinity	▪ Chloride	N/A	N/A	N/A
Toxicity	▪ Sediment Toxicity ▪ Toxicity	▪ Toxicity	▪ Toxicity – List on 303(d)	No
Miscellaneous	▪ pH ▪ Scum/Foam-unnatural ▪ Sulfates		▪ Excess Algal Growth – Delist from 303(d) list ▪ Sulfates - Delist from 303(d) list	No

Table 3-4: Treatment Control Measures for Addressing Pollutants of Concern		
Class of Pollutant	**Recommended BMP**	**Project Bruin Implementation**
Sediment	▪ Retention BMP (Infiltration) ▪ Biofiltration BMPs	Yes
Nutrients	▪ Retention BMP (Infiltration) ▪ Biofiltration BMPs	Yes
Metals/ Metalloids	▪ Retention BMP (Infiltration) ▪ Biofiltration BMPs	Yes
Pesticides	▪ Source Controls, Erosion Controls ▪ Retention BMP (Infiltration) ▪ Biofiltration BMPs	Yes
Trash and Debris	▪ Source Control ▪ Trash Screens	Yes

Table 3-5: Site Suitability Considerations					
BMP	**Tributary Area (Acres)**	**Site Slope (%)**	**Depth to Groundwater**	**Soil Number**	**Project Bruin Implementation**
BIO-1: Bioretention with Underdrain	<5	< 15; planter boxes are generally, more suitable for steep slopes2,3	> 2 with underdrains; > 5 without underdrains	Underdrains should be provided for Soil Numbers 1, 2, and 3	Yes
BIO-3: Vegetated Swale	<5	<10 site slope; 0.5 to 6 longitudinal slopes of swale	> 2 with underdrains; > 5 without underdrains	Any	Yes
BIO-5: Proprietary Biotreatment Devices	The site suitability requirements for specific propriety devices must be proved by the manufacturer and should be verified by independent sources of assessed by a quality water quality professional				Yes
PT-1: Hydrodynamic Devices	The site suitability requirements for specific propriety devices must be proved by the manufacturer and should be verified by independent sources of assessed by a quality water quality professional				Yes
PT-2: Catch Basin Inserts	The site suitability requirements for specific propriety devices must be proved by the manufacturer and should be verified by independent sources of assessed by a quality water quality professional				Yes

SECTION 4 SITE DESIGN PRINCIPLES AND TECHNIQUES

The third step is to apply Site Design Principles & Techniques (see Section 4). The implementation of LID requires an integrated approach to site design and stormwater management. Traditional approaches to stormwater management planning within the site planning process are not likely to achieve the LID performance standard of the MS4 Permit. The use of the site planning techniques presented in Section 4 (Site Design Principles & Techniques) will help generate a more hydrologically functional site, maximize the effectiveness of Retention BMPs, and integrate stormwater management throughout the site.

4.1. PROJECT BRUIN SITE CHARACTERISTICS

Project Bruin has implemented LID in the approach to site design and stormwater management. The project proposes several locations for treatment areas through landscape planters that have been designed for Bioretention BMPs, Vegetated Swale BMPs, Proprietary Biotreatment Devices, Hydrodynamic Devices, and Catch Basin Inserts. This information is presented in the Stormwater Quality Management Plan Exhibit. The project has been designed for water quality measures and flood control requirements.

Based on the existing topography, Project Bruin is maintaining the existing drainage patterns to convey stormwater from the northwest corner to the south end of the site. By implementing BMPs throughout the site, the project has approached stormwater management to mimic the natural hydrology of the site by retaining rainfall onsite to the maximum extent practicable. The project has used slopes at a minimum of 1% for pervious and impervious areas to limit the increase of time of concentration. Additionally, this project encourages the use of multiple modes of transportation for bicycle and pedestrian-friendly access, well-connected sidewalks, and access to the public streets from the site.

Due to the high groundwater for the project site, the site is proposing minimal infiltration to the natural ground, however, the use of BMPs will promote the treatment of stormwater. Additionally, this project will implement drought-tolerant landscaping to reduce the water consumption for typical landscaping in industrial developments.

SECTION 5 SOURCE CONTROLS MEASURES

All applicable projects must implement applicable Source Control Measures. Source Control Measures are operational practices that reduce potential pollutants at the source. They typically do not require maintenance or significant construction. Guidance on Source Control Measures can be found in Section 5.

Non-Structural Source Control BMPs				
Identifier	Name	Check One		Describe BMP Implementation OR, if not applicable, state reason
		Included	Not Applicable	
N1	Education of Property Owners, Tenants and Occupants on Stormwater BMPs	☒	☐	Property owner will familiarize himself/ herself with the education materials provided within this WQMP and educate tenants and employees.
N2	Activity Restrictions	☒	☐	No outdoor work areas, processing, storage or wash area proposed.
N3	Landscape Management BMPs	☒	☐	Irrigation must be consistent with the City's Water Conservation Ordinance. Fertilizer and pesticide usage will be consistent with County Management Guidelines for Use of Fertilizers and Pesticides.
N4	BMP Maintenance	☒	☐	BMP maintenance, implementation schedules, and responsible parties are included within this WQMP.
N5	Title 22 CCR Compliance (How development will comply)	☐	☒	Not Applicable – No hazardous waste onsite.
N6	Local Water Quality Ordinances	☐	☒	Not Applicable
N7	Spill Contingency Plan	☒	☐	Owner will have a spill contingency plan based on site needs.
N8	Underground Storage Tank Compliance	☐	☒	Not Applicable – No underground storage tank proposed onsite.
N9	Hazardous Materials Disclosure Compliance	☐	☒	Not Applicable – No hazardous materials onsite.
N10	Uniform Fire Code Implementation	☒	☐	Owner will comply with Article 80 of the Uniform Fire Code enforced by the fire protection agency.
N11	Litter/Debris Control Program	☒	☐	Owner to implement litter debris control program to provide during regularly scheduled maintenance.
N12	Employee Training	☒	☐	Owner to ensure tenants are familiar with onsite BMPs and the associated maintenance required. Owner will check with City and County at least once a year to obtain new or updated education materials and provide these materials to tenants. Employees shall be trained to clean up spills and participate in ongoing maintenance. The WQMP requires bi-annually employee training and training for new hires within 2 months.
N13	Housekeeping of Loading Docks	☒	☐	All fluids to be kept indoors. Clean up spills immediately and keep spills from entering the storm drain system. No direct discharges are allowed into the storm drain system. Area shall be inspected weekly for proper containment and practices with spills cleansed up immediately and disposed of properly.
N14	Catch Basin Inspection Program	☒	☐	Monthly catch basin and inlet inspection by Owner's designee required. Vacuum when sediment or trash becomes 2 inches deep and dispose of properly.
N15	Vacuum Sweeping of Private Streets and Parking Lots	☒	☐	All landscape maintenance contractors will be required to vacuum sweep up all landscape cuttings, mowing and fertilizer materials off paved areas weekly and dispose of properly. Parking areas and drive ways will be swept monthly by sweeping contractor.
N16	Other Non-structural Measures for Public Agency Projects	☐	☒	Not Applicable – Not a public agency project.

N17	Comply with all other applicable NPDES permits	☒	☐	Project will comply with Construction General permit.

Structural Source Control BMPs				
Identifier	Name	Check One		Describe BMP Implementation OR, If not applicable, state reason
		Included	Not Applicable	
S1	Provide storm drain system stencilling and signage (CASQA New Development BMP Handbook SD-13)	☒	☐	"No Dumping" stencils will be included on all proposed catch basins and inlets. Legibility of stencil will be maintained on a yearly basis.
S2	Design and construct outdoor material storage areas to reduce pollution introduction (CASQA New Development BMP Handbook SD-34)	☐	☒	Not Applicable – No outdoor material storage areas onsite.
S3	Design and construct trash and waste storage areas to reduce pollution introduction (CASQA New Development BMP Handbook SD-32)	☒	☐	Trash and wastes storage areas will be paved with an impervious surface and not allow any run-on from adjacent areas. Drainage will be diverted from adjoining roofs and pavements. Trash and waste storage area will be screened or walled to prevent offsite transport of trash and have solid roof or awning to prevent direct contact with rainfall.
S4	Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control (State wide Model Landscape Ordinance; CASQA New Development BMP Handbook SD-12)	☒	☐	Irrigation systems shall include reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines. Timers will be used to avoid over watering and watering cycles and duration shall be adjusted seasonally by the landscape maintenance contractor. The landscaping areas will be grouped with plants that have similar water requirements. Native or drought tolerant species shall also be used where appropriate to reduce excess irrigation runoff and propose surface filtration.
S5	Finish grade of landscaped areas at a minimum of 1-2 inches below top of curb, sidewalk, or pavement	☒	☐	Where applicable, landscaped areas will be depressed in order to increase retention of stormwater/ irrigation water promote infiltration. This includes around parking lots.
S6	Protect slopes and channels and provide energy dissipation (CASQA New Development BMP Handbook SD-10)	☒	☐	All slopes will be vegetated or properly mulched with non-organic mulch (gravel/rocks) and maintained to prevent erosion and transport of sediment. Energy dissipaters are installed at all inlets into the basin.
S7	Covered dock areas (CASQA New Development BMP Handbook SD-31)	☐	☒	Not Applicable – Loading docks are not covered
S8	Covered maintenance bays with spill containment plans (CASQA New Development BMP Handbook SD-31)	☐	☒	Not Applicable – No maintenance bays onsite.
S9	Vehicle wash areas with spill containment plans (CASQA New Development BMP Handbook SD-33)	☐	☒	Not Applicable – No vehicle wash areas onsite.
S10	Covered outdoor processing areas (CASQA New Development BMP Handbook SD-36)	☐	☒	Not Applicable – No outdoor processing areas onsite.
S11	Equipment wash areas with spill containment plans (CASQA New Development BMP Handbook SD-33)	☐	☒	Not Applicable - No equipment wash area on-site.
S12	Fueling areas (CASQA New Development BMP Handbook SD-30)	☐	☒	Not Applicable - No fueling areas on-site.

S13	Hillside landscaping (CASQA New Development BMP Handbook SD-10)	☐	☒	Not Applicable – No Hillside landscaping
S14	Wash water control for food preparation areas	☐	☒	Not Applicable – No food preparation areas onsite.
S15	Community car wash racks (CASQA New Development BMP Handbook SD-33)	☐	☒	Not Applicable - No community car wash racks on-site.

SECTION 6 STORMWATER BMP DESIGN

Retention BMPs, Biofiltration BMPs, and Treatment Control Measures are required to augment Site Design Principles and Techniques and Source Control Measures to reduce pollution from stormwater discharges to the maximum extent practicable. Retention BMPs are engineered facilities that are designed to retain surface runoff on the project site. Biofiltration BMPs are vegetated stormwater BMPs that remove pollutants by filtering stormwater through vegetation and soils. Treatment Control Measures are engineered BMPs that provide a reduction of pollutant loads and concentrations in stormwater runoff. The type(s) of Retention BMPs and Biofiltration BMPs to be implemented depends on site suitability factors discussed in this chapter. The type of Treatment Control Measure(s) to be implemented at a site depends on a number of factors including: type of pollutants in the stormwater runoff, quantity of stormwater runoff to be treated, project site conditions, receiving water conditions, and state industrial permit requirements, where applicable. Land requirements and costs to design, construct, and maintain Treatment Control Measures vary by type. Unlike flood control measures that are designed to handle peak flows, stormwater Retention BMPs, Biofiltration BMPs, and Treatment Control Measures are designed to retain or treat the more frequent, lower-flow storm events, or the first flush runoff from larger storm events (typically referred to as the first flush events). Small, frequent storm events represent most of the total average annual rainfall for the area. It's the volume from such small events, referred to as the Stormwater Quality Design Volume (SQDV), that is targeted for retention onsite in Retention BMPs. Biofiltration BMPs and Treatment Control Measures can be sized to capture either the SQDV or the Stormwater Quality Design Flow (SQDF). Calculation methods for the SQDV and the SQDF are presented in Section 2 and Appendix E.

6.1 PROJECT BRUIN BMPS

BIO-1: BIORETENTION WITH UNDERDRAIN

Bioretention stormwater treatment facilities are landscaped shallow depressions that capture and filter stormwater runoff. These facilities function as a soil and plant-based filtration device that removes pollutants through a variety of physical, biological, and chemical treatment processes. The facilities normally consist of a ponding area, mulch layer, planting soils, and plantings. As stormwater passes down through the planting soil, pollutants are filtered, adsorbed, and biodegraded by the soil and plants. Bioretention with an underdrain is a treatment control measures that can be used for areas with low permeability native soils or steep slopes.

The following design elements are conceptually planned for the Bioretention with Undrain:

- Overflow Device for 100-Year Storm Event
- Perforated 6" PVC Pipe underdrain
- 4" of mulch/gravel
- 24 inches/36 inches of planting mix
- Ponding Depth of 6"
- Impermeable liner on all sides and bottom with anchors

BIO-5: PROPRIETARY BIOTREATMENT DEVICES

Proprietary biotreatment devices are manufactured treatment BMPs that incorporate plants, soil, and microbes engineered to provide treatment at higher flow rates or volumes and with smaller footprints than their non-proprietary counterparts. Incoming flows are typically pretreated to remove larger particles/debris, filtered through a planting media (mulch, compost, soil, and plants), collected by an underdrain, and delivered to the stormwater conveyance system.

The following design elements are planned to be implemented:

- BioClean - Modular Wetlands System Linear

P2-2: CATCH BASIN INSERTS

Catch basin inserts are manufactured filters or fabric placed in a drop inlet to remove sediment and debris and may include sorbent media (oil absorbent pouches) to remove floating oils and grease. Catch basin inserts are selected specifically based upon the orientation of the inlet.

The following design elements are conceptually planned to be implemented of upstream above ground detention basins:

- ACF Environmental – ACF Gratemaster
- ACF Environmental – Trench Drain Filter

Calculations

Site Data

- Project Area ($A_{project}$) = 64.65 Acres
- Total Impervious Area (TIA) = 51.26 Acres (2,232,890 SF)
- Pervious Area = 13.39 Acres (583,270 SF)

Allowable EIA

- $EIA_{allowable}$ = ($A_{project}$) * (5%)
- $EIA_{allowable}$ = (64.65 Acres) * (5%)
- $EIA_{allowable}$ = 3.2325 Acres

Impervious Area to be Retained

- A_{Retain} = TIA - $EIA_{allowable}$
- A_{Retain} = 51.26 Acres – 3.2325 Acres
- A_{Retain} = 48.0275 Acres

Area of Treatment

- $A_{Treatment}$ = EIA + Landscape Area
- $A_{Treatment}$ = 3.2325 + 13.39 Acres
- $A_{Treatment}$ = 16.6225 Acres

Runoff Volume that that is to be retained onsite

- Methodology #3 = 0.75-inch storm event
- V_{Retain} = C*(0.75/12)*A_{Retain}
- V_{Retain} = 0.95*(0.75/12)*(48.0275)
- V_{Retain} = 2.85 Acre-Feet

The project must retain at least 2.85 acre-feet from impervious surfaces using Retention BMPs.

6.2 STORMWATER QUALITY DESIGN FLOW (SQDF)

The Stormwater Quality Design Flow (SQDF) was calculated by the following procedure as outlined in the Ventura County Technical Guidance Manual for Stormwater Quality Control Measures:

#1 – Determine the drainage area from which the flow-based BMP will be receiving runoff ($A_{project}$)

#2 – Calculate the runoff coefficient (C) as a function of impervious and pervious area ratios

#3 – Determine the Stormwater Runoff Design Flow (SQDF):

where SQDV = C*I*A, where I = 0.35 in/hr assuming a Time of Concentration of 5 minutes per Table 2-1 below.

Table 2-1: Flow-Based Biofiltration BMP Design Intensity for 150% Sizing

Time of Concentration, minutes	Design Intensity for 150% Sizing, in/hr
30	0.24
20	0.25
15	0.28
10	0.31
5	0.35

The table below summarizes the SQDF for the Project.

DMA ID	AREA (ac)	IMPERVIOUS AREA (ac)	C, WEIGHTED RUNOFF COEFFICIENT	SQDF (cfs)
1	12.40	11.55	0.89	3.86
2	9.49	9.49	0.95	3.16
3	4.91	4.91	0.95	1.63
4	9.26	9.23	0.95	3.07
5	1.55	1.45	0.89	0.48
6	2.73	2.47	0.86	0.83
7	1.16	1.05	0.86	0.35
8	0.54	0.39	0.71	0.13
9	1.26	1.14	0.86	0.38
10	0.56	0.44	0.75	0.15
11	2.00	1.68	0.81	0.57
12	0.69	0.65	0.89	0.22
13	0.56	0.34	0.60	0.12
14	0.54	0.45	0.81	0.15
15	1.33	1.16	0.84	0.39
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18	0.54	0.44	0.78	0.15
19	0.70	0.56	0.77	0.19
20	0.51	0.39	0.74	0.13
21	0.94	0.00	0.05	SELF MITIGATING
22	0.77	0.00	0.05	SELF MITIGATING
23	3.45	1.87	0.54	0.65
24	6.31	0.00	0.05	SELF MITIGATING
25	1.55	0.00	0.05	SELF MITIGATING

6.3 ALTERNATIVE COMPLIANCE

Certain new development and redevelopment project types are eligible for alternative compliance measures if onsite Retention BMPs and/or Biofiltration BMPs cannot feasibly be used to meet the 5% EIA standard (see Section 3.2). Alternative Compliance is not proposed on Project Bruin since the project will utilize retention and biofiltration BMPs for water quality mitigation.

6.4 APPLY TREATMENT CONTROL BMPS TO TREAT REMAINING SQDV OR SQDF

Stormwater runoff from EIA and developed pervious surfaces shall be mitigated using Retention BMPs, Biofiltration BMPs, or Treatment Control Measures [Chapter 6] selected per the BMP selection process outlined in Section 3.3. Biofiltration BMPs and Treatment Control Measures may be sized to meet the Stormwater Quality Design Volume (SQDV) or the Stormwater Quality Design Flow (SQDF). Treatment Control Measures should be designed in adherence with the guidance provided in Section 6 of the 2011 TGM in order to assure a level of pollutant removal comparable to those listed in Attachment “C” of Order R4-2010-0108 (also provided in Appendix D.1). Projects that are eligible for Offsite Mitigation must still provide treatment for all impervious surfaces and developed pervious areas using Treatment Control Measures sized to meet the SQDV or SQDF on site. Treatment Control Measures must be selected per the BMP selection process outlined in Section 3.3.

6.5 CONTINUE PROJECT DESIGN PROCESS

The project applicant should continue with the design process to address additional requirements that the City of Oxnard may require in their review.

6.6 DEVELOP MAINTENANCE PLAN

The Ventura Countywide Stormwater Quality Management Program (Program) requires the submittal of a Maintenance Plan and execution of a Maintenance Agreement with the owner/operator of any stormwater control that requires maintenance including Site Design Principles and Techniques (Section 4); Source Control Measures (Section 5; and Retention BMPs, Biofiltration BMPs, and Treatment Control Measures (Section 6). Maintenance Plans must include guidelines for how and when inspection and maintenance should occur for each control. Section 7 and Appendices H and I provide additional information and guidance on compliance with maintenance requirements.

Appendices

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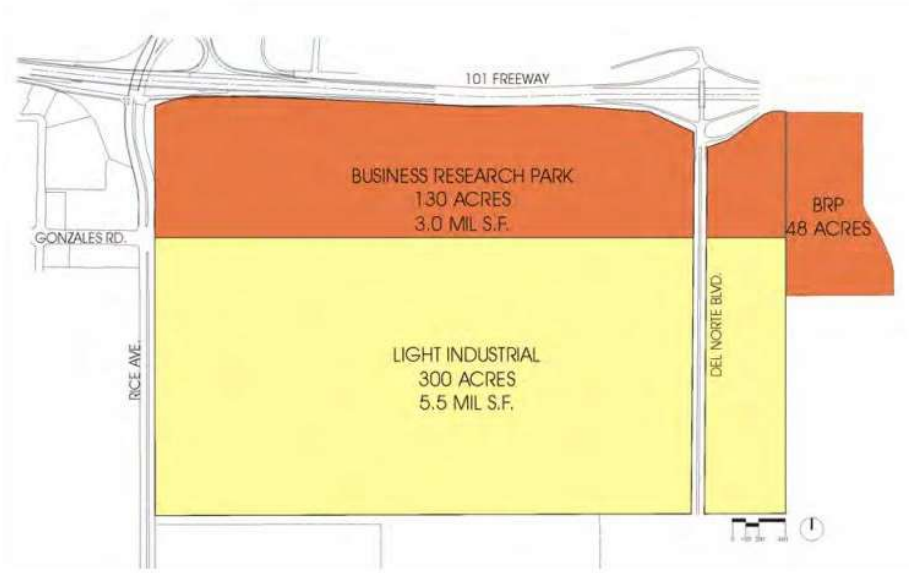
Attachment by Delane Engineering 15

Appendix A Project Specific Information

Figure 1-1 – Regional Map of Ventura County

Source: Sakioka Farms Business Park Specific Plan, June 2012

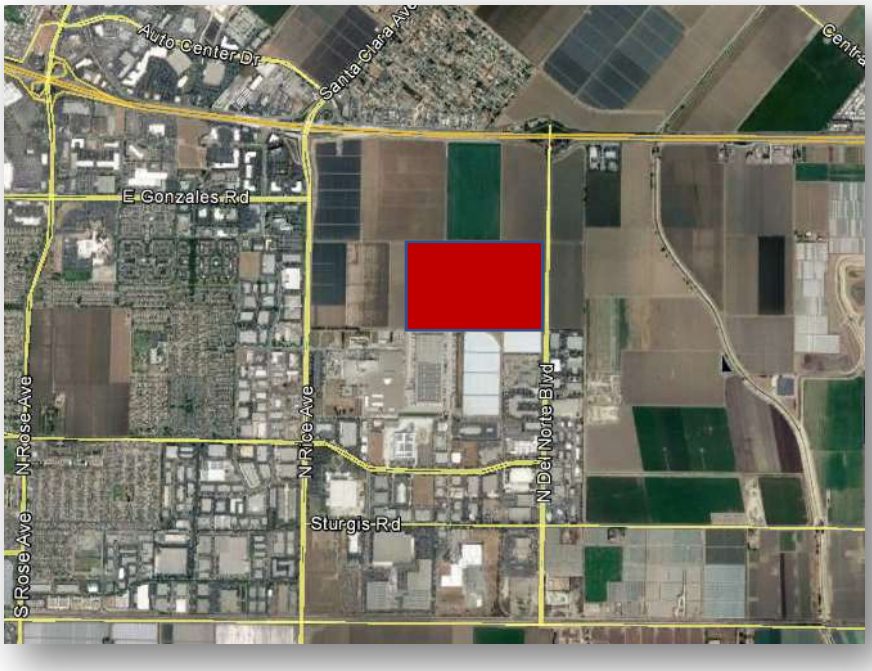
Figure 1-2 – 2030 General Plan Use for Sakioka Farms Business Park



2030 GENERAL PLAN LAND USES
EXHIBIT 2.3

Source: Sakioka Farms Business Park Specific Plan, June 2012

Figure 1-3 – Project Site Location

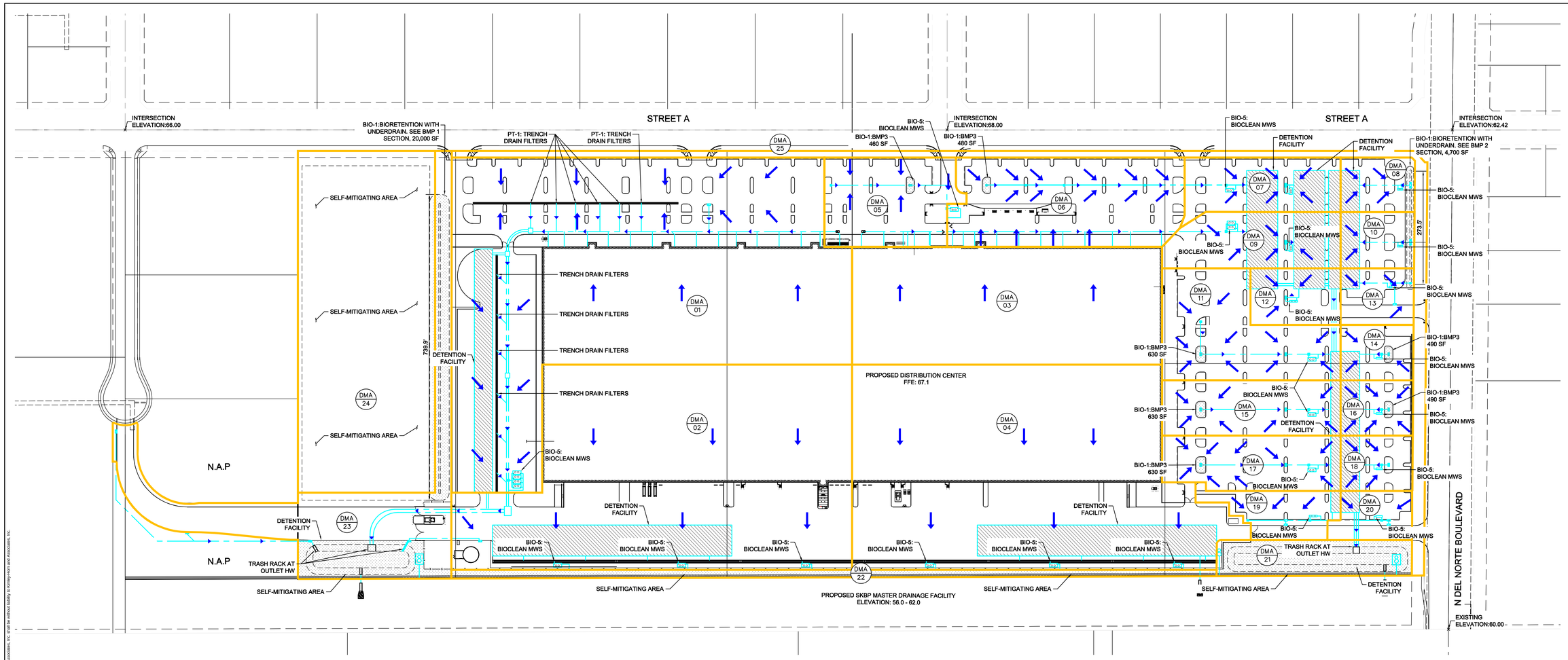


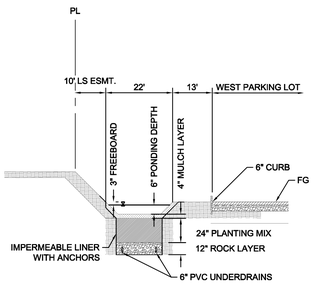
Source: Google Maps, 2020

Figure 1-4 – Project Site Plan

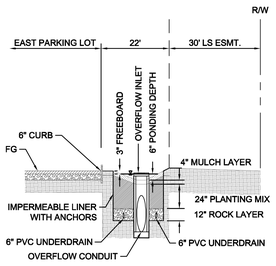
Source: Ware Malcomb, 2020

Appendix B WQMP Site Plan Exhibit and BMP Calculations

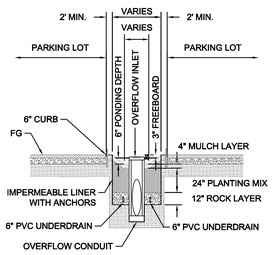




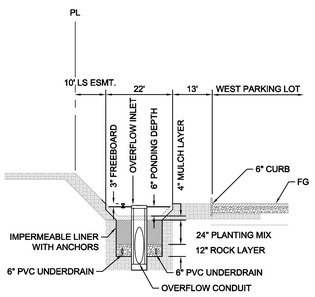
BIO-1: BMP 1
HORZ: 1"=20'
VERT: 1"=4'



BIO-1: BMP 2
HORZ: 1"=20'
VERT: 1"=4'



BIO-1: TYP. PARKING LOT BMP 3
HORZ: 1"=20'
VERT: 1"=4'



BIO-1: BMP 1
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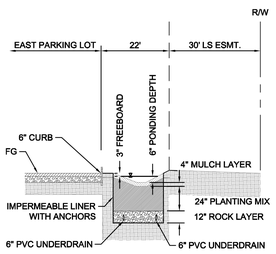

BIO-1: BMP 2
HORZ: 1"=20'
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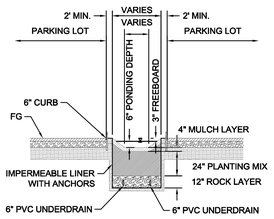

BIO-1: TYP. PARKING LOT BMP 3
HORZ: 1"=20'
VERT: 1"=4'

SQDF TREATMENT FLOW SUMMARY TABLE

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1	12.40	11.55	0.89	3.86
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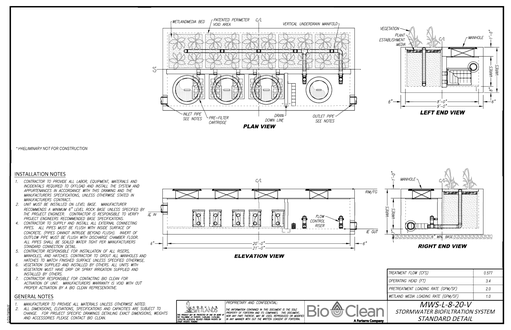


BIO-5: BIOCLEAN MWS
NTS

LEGEND

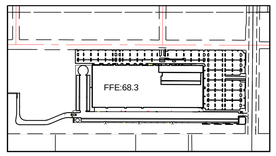
- DMA ID (XX / XX): DMA ID NUMBER
- DMA BOUNDARY
- FLOW DIRECTION
- PROPERTY LINE
- PROPOSED STORM DRAIN LINE
- FLOWLINE

NOTES

1. PROJECT PROPOSES TO INSTALL CURB INLET INSERTS, TRENCH DRAIN FILTERS, AND TRASH RACKS AT DETENTION BASIN OUTLETS AS MEANS OF PRETREATMENT
2. DMAS COMPRISED OF 100% PERVIOUS AREA ARE CONSIDERING SELF MITIGATING AND DO NOT REQUIRE FURTHER WATER QUALITY MEASURES.

NORTH

GRAPHIC SCALE IN FEET
0 50 100 200



KEY MAP

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2020 KIMLEY-HORN AND ASSOCIATES, INC.
401 B STREET, SUITE 600, SAN DIEGO, CA 92101
PHONE: 619-234-9411
WWW.KIMLEY-HORN.COM

PRELIMINARY
NOT FOR CONSTRUCTION
Prepared for Concept Plan submittal
Not for construction purposes or permits.
Kimley»Horn
Engineer EUGENE D. COWAN III.
P.E. No. 86803 Date 3/5/2020

KHA PROJECT	196170003
DATE	3/5/2020
SCALE	AS SHOWN
DESIGNED BY	KS&DC
DRAWN BY	KS
CHECKED BY	DC

STORM WATER QUALITY MAP

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD, CA

SHEET NUMBER
OF 8

Plotted By:ahsia, Kris; Sheet Set:Kha Layout:STORM WATER QUALITY MAP, March 05, 2020 01:14:29pm \\snsfhc01\projects\IND_LDEV\196170003 - Project Bruin\Stormwater\Exhibit\STORM WATER QUALITY MAP.dwg
This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

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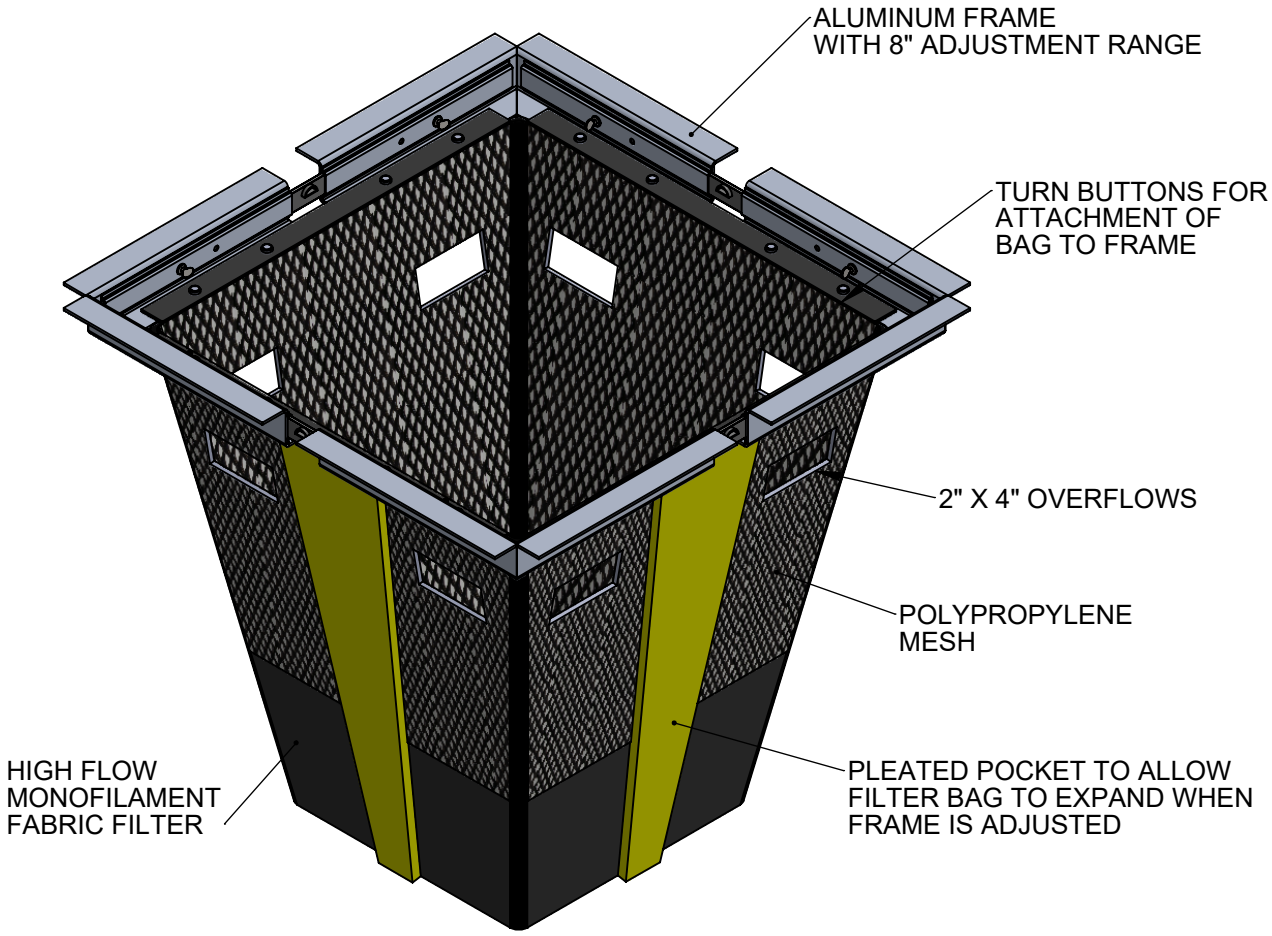
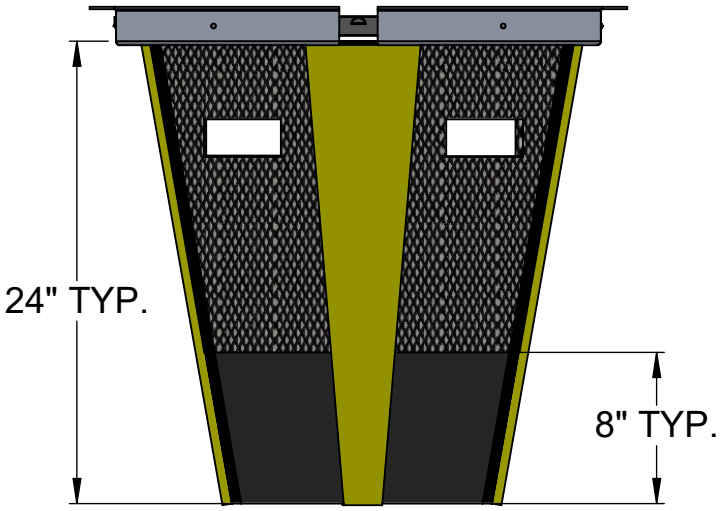
Appendix C BMP Educational Material





PART NUMBER	ADJUSTMENT RANGE
GRTMA1927S	19" - 27" x 19" - 27"
GRTMA2837S	28" - 37" x 28" - 37"
GRTMA3849S	38" - 49" x 38" - 49"
GRTMAS2X3R	23" - 31" x 35" - 43"
GRTMAS2X4R	23" - 31" x 41" - 49"

ACF ENVIRONMENTAL
LET'S GET IT DONE

ACF GRATEMASTER
TYPE A (STANDARD)

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF ENVIRONMENTAL, 800-448-3636 / WWW.ACFENVIRONMENTAL.COM

DATE 1/19/17

Bio Clean

A Forterra Company

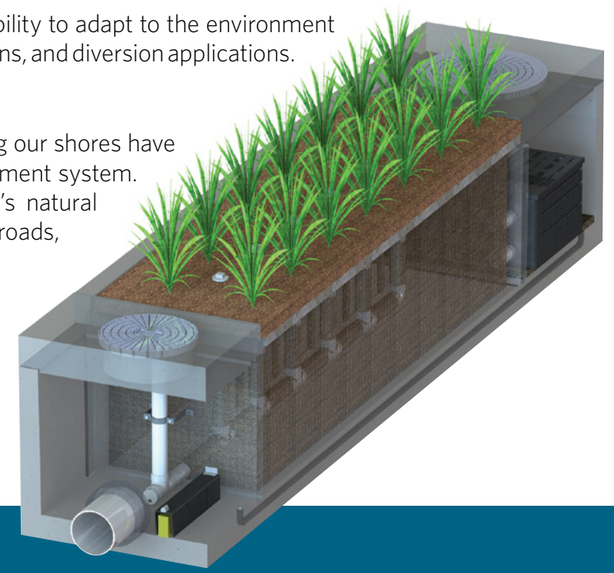
Modular Wetlands® System Linear

A Stormwater Biofiltration Solution

OVERVIEW

The Bio Clean Modular Wetlands® System Linear (MWS Linear) represents a pioneering breakthrough in stormwater technology as the only biofiltration system to utilize patented horizontal flow, allowing for a smaller footprint, higher treatment capacity, and a wide range of versatility. While most biofilters use little or no pretreatment, the Modular Wetlands System Linear incorporates an advanced pretreatment chamber that includes separation and pre-filter cartridges. In this chamber, sediment and hydrocarbons are removed from runoff before entering the biofiltration chamber, reducing maintenance costs and improving performance.

Horizontal flow also gives the system the unique ability to adapt to the environment through a variety of configurations, bypass orientations, and diversion applications.



The Urban Impact

For hundreds of years, natural wetlands surrounding our shores have played an integral role as nature's stormwater treatment system. But as cities grow and develop, our environment's natural filtration systems are blanketed with impervious roads, rooftops, and parking lots.

Bio Clean understands this loss and has spent years re-establishing nature's presence in urban areas, and rejuvenating waterways with the MWS Linear.

PERFORMANCE

The Modular Wetlands® System Linear continues to outperform other treatment methods with superior pollutant removal for TSS, heavy metals, nutrients, hydrocarbons, and bacteria. Since 2007 the MWS Linear has been field tested on numerous sites across the country and is proven to effectively remove pollutants through a combination of physical, chemical, and biological filtration processes. In fact, the MWS Linear harnesses some of the same biological processes found in natural wetlands in order to collect, transform, and remove even the most harmful pollutants.

66% REMOVAL OF DISSOLVED ZINC	69% REMOVAL OF TOTAL ZINC	38% REMOVAL OF DISSOLVED COPPER	64% REMOVAL OF TOTAL PHOSPHORUS

45% REMOVAL OF NITROGEN	50% REMOVAL OF TOTAL COPPER	95% REMOVAL OF MOTOR OIL	67% REMOVAL OF ORTHO PHOSPHORUS	85% REMOVAL OF TSS

APPROVALS

The Modular Wetlands® System Linear has successfully met years of challenging technical reviews and testing from some of the most prestigious and demanding agencies in the nation and perhaps the world. Here is a list of some of the most high-profile approvals, certifications, and verifications from around the country.

Washington State Department of Ecology TAPE Approved
The MWS Linear is approved for General Use Level Designation (GULD) for Basic, Enhanced, and Phosphorus treatment at 1 gpm/ft^2 loading rate. The highest performing BMP on the market for all main pollutant categories.

California Water Resources Control Board, Full Capture Certification
The Modular Wetlands® System is the first biofiltration system to receive certification as a full capture trash treatment control device.

Virginia Department of Environmental Quality, Assignment
The Virginia Department of Environmental Quality assigned the MWS Linear the highest phosphorus removal rating for manufactured treatment devices to meet the new Virginia Stormwater Management Program (VSMP) regulation technical criteria.

Maryland Department of the Environment, Approved ESD
Granted Environmental Site Design (ESD) status for new construction, redevelopment, and retrofitting when designed in accordance with the design manual.

MASTEP Evaluation
The University of Massachusetts at Amherst – Water Resources Research Center issued a technical evaluation report noting removal rates up to 84% TSS, 70% total phosphorus, 68.5% total zinc, and more.

Rhode Island Department of Environmental Management, Approved BMP
Approved as an authorized BMP and noted to achieve the following minimum removal efficiencies: 85% TSS, 60% pathogens, 30% total phosphorus, and 30% total nitrogen.

Texas Commission on Environmental Quality

Atlanta Regional Commission

ADVANTAGES

- HORIZONTAL FLOW BIOFILTRATION
- GREATER FILTER SURFACE AREA
- PRETREATMENT CHAMBER
- PATENTED PERIMETER VOID AREA
- FLOW CONTROL
- NO DEPRESSED PLANTER AREA
- AUTO DRAINDOWN MEANS NO MOSQUITO VECTOR

OPERATION

The Modular Wetlands® System Linear is the most efficient and versatile biofiltration system on the market, and it is the only system with horizontal flow which:

- Improves performance
- Reduces footprint
- Minimizes maintenance

Figure 1 & Figure 2 illustrate the invaluable benefits of horizontal flow and the multiple treatment stages.

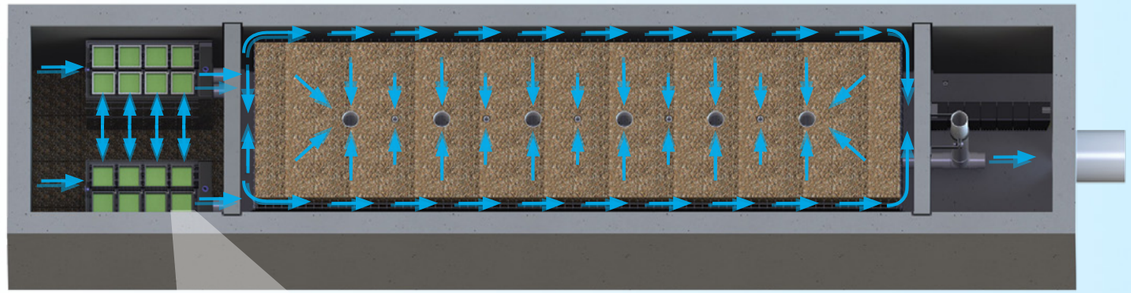


Figure 2, Top View

2x to 3x more surface area than traditional downward flow bioretention systems.

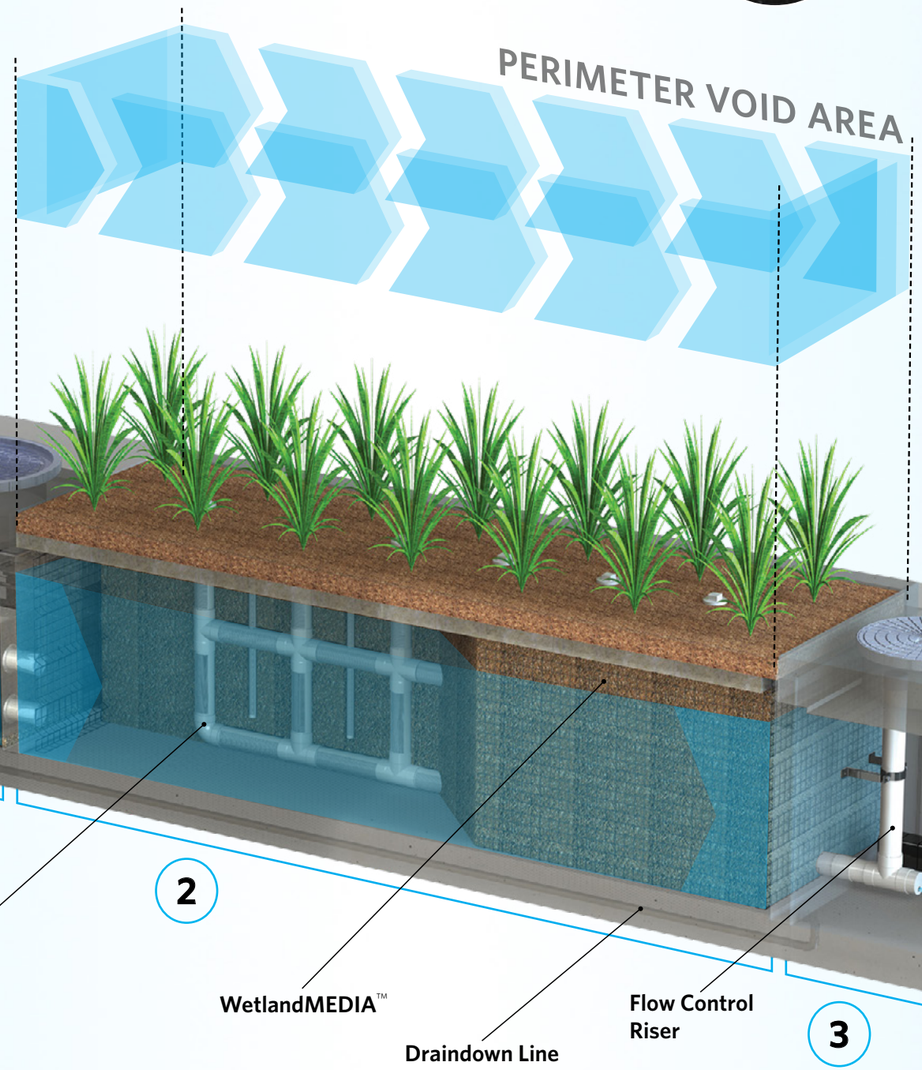
1 PRETREATMENT

SEPARATION

- Trash, sediment, and debris are separated before entering the pre-filter boxes
- Designed for easy maintenance access

PRE-FILTER BOXES

- Over 25 sq. ft. of surface area per box
- Utilizes BioMediaGREEN™ filter material
- Removes over 80% of TSS and 90% of hydrocarbons
- Prevents pollutants that cause clogging from migrating to the biofiltration chamber



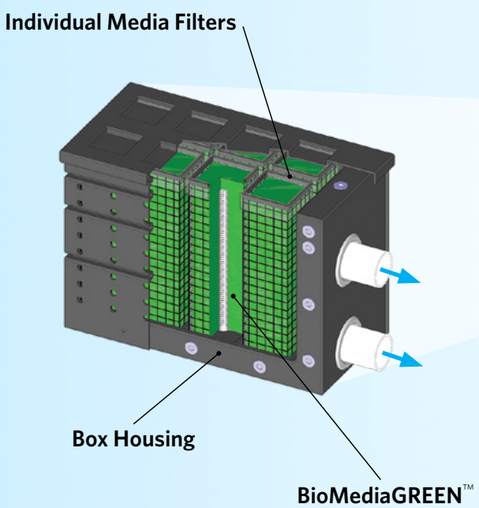


Figure 1

2 BIOFILTRATION

HORIZONTAL FLOW

- Less clogging than downward flow biofilters
- Water flow is subsurface
- Improves biological filtration

PATENTED PERIMETER VOID AREA

- Vertically extends void area between the walls and the WetlandMEDIA™ on all four sides
- Maximizes surface area of the media for higher treatment capacity

WETLANDMEDIA

- Contains no organics and removes phosphorus
- Greater surface area and 48% void space
- Maximum evapotranspiration
- High ion exchange capacity and lightweight

3 DISCHARGE

FLOW CONTROL

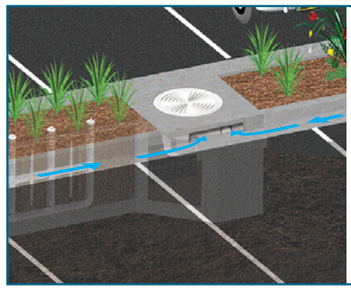
- Orifice plate controls flow of water through WetlandMEDIA™ to a level lower than the media's capacity
- Extends the life of the media and improves performance

DRAINDOWN FILTER

- The draindown is an optional feature that completely drains the pretreatment chamber
- Water that drains from the pretreatment chamber between storm events will be treated

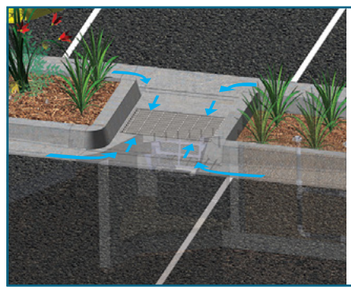
CONFIGURATIONS

The Modular Wetlands® System Linear is the preferred biofiltration system of civil engineers across the country due to its versatile design. This highly versatile system has available "pipe-in" options on most models, along with built-in curb or grated inlets for simple integration into your storm drain design.



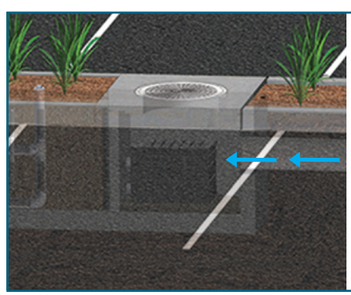
CURB TYPE

The Curb Type configuration accepts sheet flow through a curb opening and is commonly used along roadways and parking lots. It can be used in sump or flow-by conditions. Length of curb opening varies based on model and size.



GRATE TYPE

The Grate Type configuration offers the same features and benefits as the Curb Type but with a grated/drop inlet above the systems pretreatment chamber. It has the added benefit of allowing pedestrian access over the inlet. ADA-compliant grates are available to assure easy and safe access. The Grate Type can also be used in scenarios where runoff needs to be intercepted on both sides of landscape islands.



VAULT TYPE

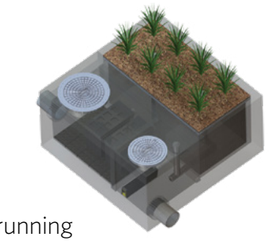
The system's patented horizontal flow biofilter is able to accept inflow pipes directly into the pretreatment chamber, meaning the Modular Wetlands® can be used in end-of-the-line installations. This greatly improves feasibility over typical decentralized designs that are required with other biofiltration/ bioretention systems. Another benefit of the "pipe-in" design is the ability to install the system downstream of underground detention systems to meet water quality volume requirements.

DOWNSPOUT TYPE

The Downspout Type is a variation of the Vault Type and is designed to accept a vertical downspout pipe from rooftop and podium areas. Some models have the option of utilizing an internal bypass, simplifying the overall design. The system can be installed as a raised planter, and the exterior can be stuccoed or covered with other finishes to match the look of adjacent buildings.

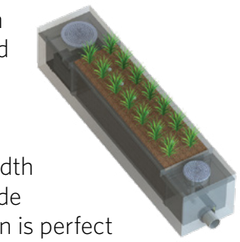
ORIENTATIONS

SIDE-BY-SIDE



The Side-By-Side orientation places the pretreatment and discharge chamber adjacent to one another with the biofiltration chamber running parallel on either side. This minimizes the system length, providing a highly compact footprint. It has been proven useful in situations such as streets with directly adjacent sidewalks, as half of the system can be placed under that sidewalk. This orientation also offers internal bypass options as discussed below.

END-TO-END



The End-To-End orientation places the pretreatment and discharge chambers on opposite ends of the biofiltration chamber, therefore minimizing the width of the system to 5 ft. (outside dimension). This orientation is perfect for linear projects and street retrofits where existing utilities and sidewalks limit the amount of space available for installation. One limitation of this orientation is that bypass must be external.

BYPASS

INTERNAL BYPASS WEIR (SIDE-BY-SIDE ONLY)

The Side-By-Side orientation places the pretreatment and discharge chambers adjacent to one another allowing for integration of internal bypass. The wall between these chambers can act as a bypass weir when flows exceed the system's treatment capacity, thus allowing bypass from the pretreatment chamber directly to the discharge chamber.

EXTERNAL DIVERSION WEIR STRUCTURE

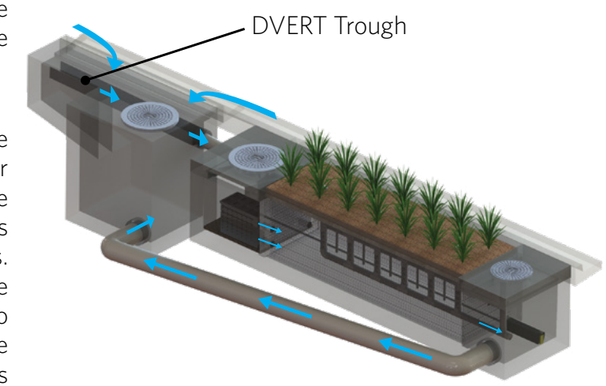
This traditional offline diversion method can be used with the Modular Wetlands® System Linear in scenarios where runoff is being piped to the system. These simple and effective structures are generally configured with two outflow pipes. The first is a smaller pipe on the upstream side of the diversion weir - to divert low flows over to the MWS Linear for treatment. The second is the main pipe that receives water once the system has exceeded treatment capacity and water flows over the weir.

FLOW-BY-DESIGN

This method is one in which the system is placed just upstream of a standard curb or grate inlet to intercept the first flush. Higher flows simply pass by the MWS Linear and into the standard inlet downstream.

DVERT LOW FLOW DIVERSION

This simple yet innovative diversion trough can be installed in existing or new curb and grate inlets to divert the first flush to the Modular Wetlands® System Linear via pipe. It works similar to a rain gutter and is installed just below the opening into the inlet. It captures the low flows and channels



them over to a connecting pipe exiting out the wall of the inlet and leading to the MWS Linear. The DVERT is perfect for retrofit and green street applications that allow the system to be installed anywhere space is available.

SPECIFICATIONS

FLOW-BASED DESIGNS

The Modular Wetlands® System Linear can be used in stand-alone applications to meet treatment flow requirements, and since it is the only biofiltration system that can accept inflow pipes several feet below the surface, it can be used not only in decentralized design applications but also as a large central end-of-the-line application for maximum feasibility.

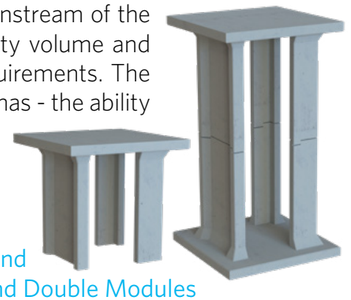
MODEL #	DIMENSIONS	WETLANDMEDIA SURFACE AREA (sq. ft.)	TREATMENT FLOW RATE (cfs)
MWS-L-4-4	4′ x 4′	23	0.052
MWS-L-4-6	4′ x 6′	32	0.073
MWS-L-4-8	4′ x 8′	50	0.115
MWS-L-4-13	4′ x 13′	63	0.144
MWS-L-4-15	4′ x 15′	76	0.175
MWS-L-4-17	4′ x 17′	90	0.206
MWS-L-4-19	4′ x 19′	103	0.237
MWS-L-4-21	4′ x 21′	117	0.268
MWS-L-6-8	7′ x 9′	64	0.147
MWS-L-8-8	8′ x 8′	100	0.230
MWS-L-8-12	8′ x 12′	151	0.346
MWS-L-8-16	8′ x 16′	201	0.462
MWS-L-8-20	9′ x 21′	252	0.577
MWS-L-8-24	9′ x 25′	302	0.693
MWS-L-10-20	10' x 20'	302	0.693

VOLUME-BASED DESIGNS

HORIZONTAL FLOW BIOFILTRATION ADVANTAGE

MODULAR WETLANDS® SYSTEM LINEAR WITH URBANPOND™ PRESTORAGE

In the example above, the Modular Wetlands® System Linear is installed downstream of the UrbanPond storage system. The MWS Linear is designed for the water quality volume and will treat and discharge the required volume within local draindown time requirements. The MWS Linear's unique horizontal flow design, gives it benefits no other biofilter has - the ability to be placed downstream of detention ponds, extended dry detention basins, underground storage systems and permeable paver reservoirs. The system's horizontal flow configuration and built-in orifice control allows it to be installed with just 6" of fall between inlet and outlet pipe for a simple connection to projects with shallow downstream tie-in points.



UrbanPond
Single and Double Modules

DESIGN SUPPORT

Bio Clean engineers are trained to provide you with superior support for all volume sizing configurations throughout the country. Our vast knowledge of state and local regulations allow us to quickly and efficiently size a system to maximize feasibility. Volume control and hydromodification regulations are expanding the need to decrease the cost and size of your biofiltration system. Bio Clean will help you realize these cost savings with the MWS Linear, the only biofilter than can be used downstream of storage BMPs.

ADVANTAGES

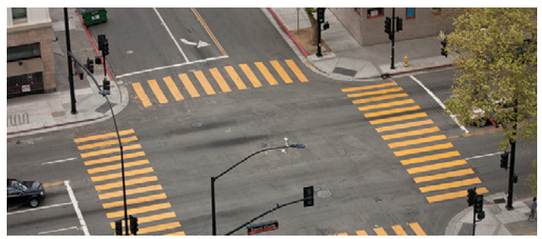
- LOWER COST THAN FLOW-BASED DESIGN
- MEETS LID REQUIREMENTS
- BUILT-IN ORIFICE CONTROL STRUCTURE
- WORKS WITH DEEP INSTALLATIONS

APPLICATIONS

The Modular Wetlands® System Linear has been successfully used on numerous new construction and retrofit projects. The system's superior versatility makes it beneficial for a wide range of stormwater and waste water applications - treating rooftops, streetscapes, parking lots, and industrial sites.

INDUSTRIAL
Many states enforce strict regulations for discharges from industrial sites. The MWS Linear has helped various sites meet difficult EPA-mandated effluent limits for dissolved metals and other pollutants.

RESIDENTIAL
Low to high density developments can benefit from the versatile design of the MWS Linear. The system can be used in both decentralized LID design and cost-effective end-of-the-line configurations.



STREETS
Street applications can be challenging due to limited space. The MWS Linear is very adaptable, and it offers the smallest footprint to work around the constraints of existing utilities on retrofit projects.

PARKING LOTS
Parking lots are designed to maximize space and the Modular Wetlands'® 4 ft. standard planter width allows for easy integration into parking lot islands and other landscape medians.

COMMERCIAL
Compared to bioretention systems, the MWS Linear can treat far more area in less space, meeting treatment and volume control requirements.

MIXED USE
The MWS Linear can be installed as a raised planter to treat runoff from rooftops or patios, making it perfect for sustainable "live-work" spaces.

More applications include:
• Agriculture • Reuse • Low Impact Development • Waste Water

PLANT SELECTION

Abundant plants, trees, and grasses bring value and an aesthetic benefit to any urban setting, but those in the Modular Wetlands® System Linear do even more - they increase pollutant removal. What's not seen, but very important, is that below grade, the stormwater runoff/flow is being subjected to nature's secret weapon: a dynamic physical, chemical, and biological process working to break down and remove non-point source pollutants. The flow rate is controlled in the MWS Linear, giving the plants more contact time so that pollutants are more successfully decomposed, volatilized, and incorporated into the biomass of the Modular Wetlands'® micro/macro flora and fauna.

A wide range of plants are suitable for use in the Modular Wetlands®, but selections vary by location and climate. View suitable plants by visiting biocleanenvironmental.com/plants.

INSTALLATION

The Modular Wetlands® System Linear is simple, easy to install, and has a space-efficient design that offers lower excavation and installation costs compared to traditional tree-box type systems. The structure of the system resembles precast catch basin or utility vaults and is installed in a similar fashion.

The system is delivered fully assembled for quick installation. Generally, the structure can be unloaded and set in place in 15 minutes. Our experienced team of field technicians is available to supervise installations and provide technical support.

MAINTENANCE

Reduce your maintenance costs, man hours, and materials with the Modular Wetlands® System Linear. Unlike other biofiltration systems that provide no pretreatment, the MWS Linear is a self-contained treatment train which incorporates simple and effective pretreatment.

Maintenance requirements for the biofilter itself are almost completely eliminated, as the pretreatment chamber removes and isolates trash, sediments, and hydrocarbons. What's left is the simple maintenance of an easily accessible pretreatment chamber that can be cleaned by hand or with a standard vac truck. Only periodic replacement of low-cost media in the pre-filter boxes is required for long-term operation, and there is absolutely no need to replace expensive biofiltration media.

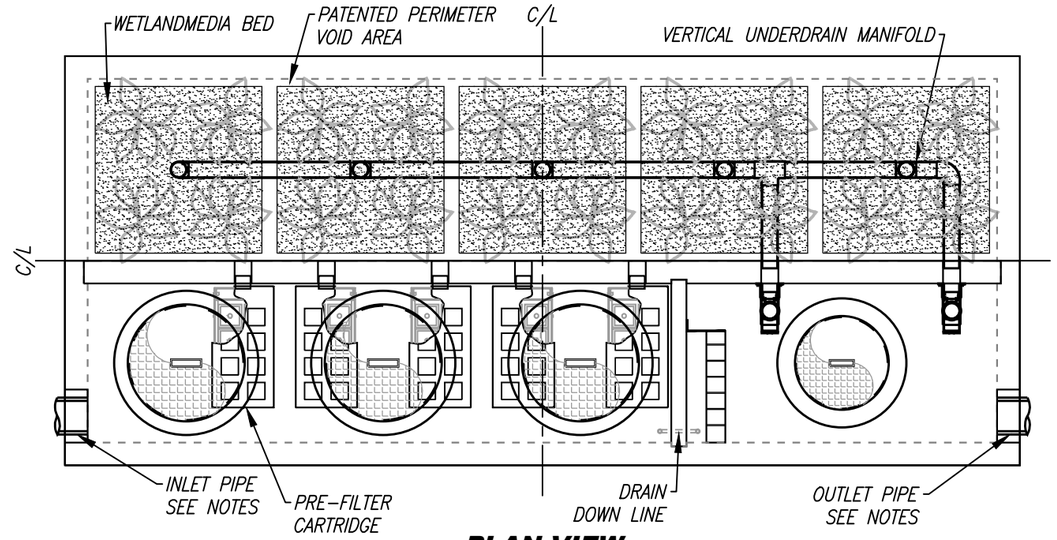
Bio Clean
A Forterra Company

5796 Armada Drive Suite 250
Carlsbad, CA 92008
855.566.3938
stormwater@forterrabp.com
biocleanenvironmental.com

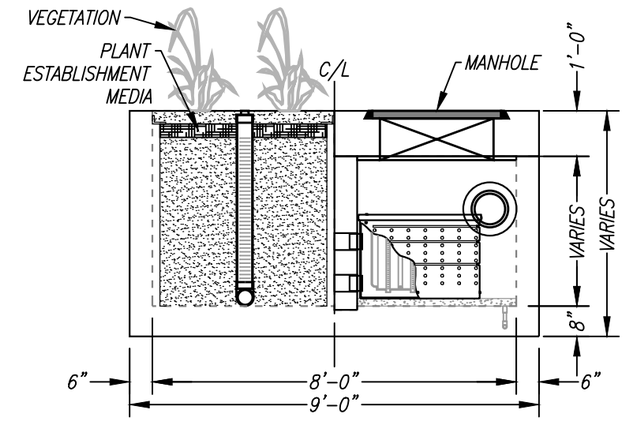
01172020

SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
N/A		0.577	
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
FRAME & COVER	3EA ø30"	OPEN PLANTER	ø24"
NOTES:			

* PRELIMINARY NOT FOR CONSTRUCTION



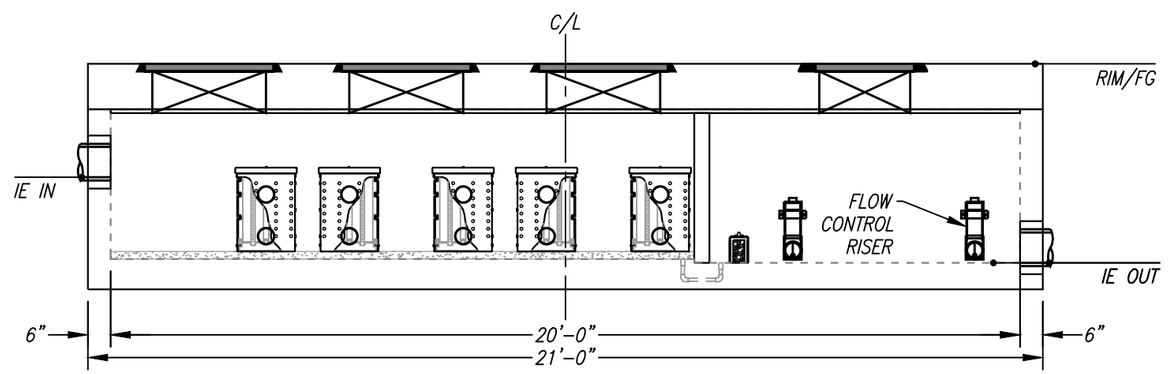
PLAN VIEW



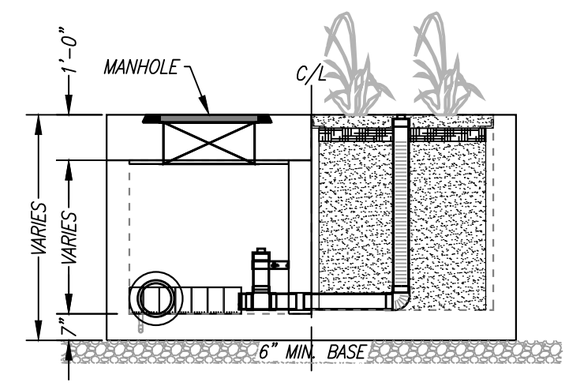
LEFT END VIEW

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURERS STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURERS WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.



ELEVATION VIEW



RIGHT END VIEW

TREATMENT FLOW (CFS)	0.577
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.

MODULAR WETLANDS

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING US PATENTS: 7,425,262; 7,470,362; 7,674,378; 8,303,816; RELATED FOREIGN PATENTS OR OTHER PATENTS PENDING

PROPRIETARY AND CONFIDENTIAL:

THE INFORMATION CONTAINED IN THIS DOCUMENT IS THE SOLE PROPERTY OF FORTERRA AND ITS COMPANIES. THIS DOCUMENT, NOR ANY PART THEREOF, MAY BE USED, REPRODUCED OR MODIFIED IN ANY MANNER WITH OUT THE WRITTEN CONSENT OF FORTERRA.

Bio Clean
A Forterra Company

MWS-L-8-20-V
STORMWATER BIOFILTRATION SYSTEM STANDARD DETAIL

5/23/19TOLEE

NOTES:

1. WEIGHT (DRY): 15-LBS

2. MATERIALS:
   A. DEBRIS SHIELD: PERFORATED STAINLESS STEEL ALLOY WITH 51% OPEN AREA
   B. BYPASS HOOD: ALUMINUM ALLOY, 0.062 THK
   C. SUPPORT HARDWARE: CRES 300 SERIES

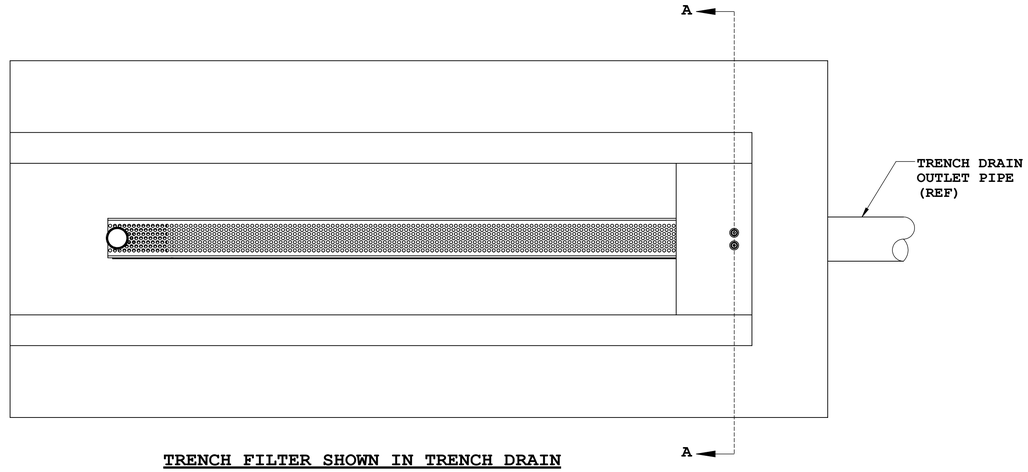
3. PERFORMANCE CHARACTERISTICS:
   A. PERFORATED DEBRIS SHIELD FLOW RATE: 1440 GPM (3.2 CFS)
   B. DEBRIS CAPACITY: 0.96 CU-FT
   C. BYPASS FLOW RATE: 109 GPM (0.24 CFS)

4. ADJUSTMENT RANGE:
   A. MINIMUM TRENCH WIDTH: 6.0-IN
   B. MAXIMUM TRENCH WIDTH: 10.0-IN
   C. MINIMUM TRENCH DRAIN DEPTH: 10" BELOW BOTTOM OF GRATE(s)

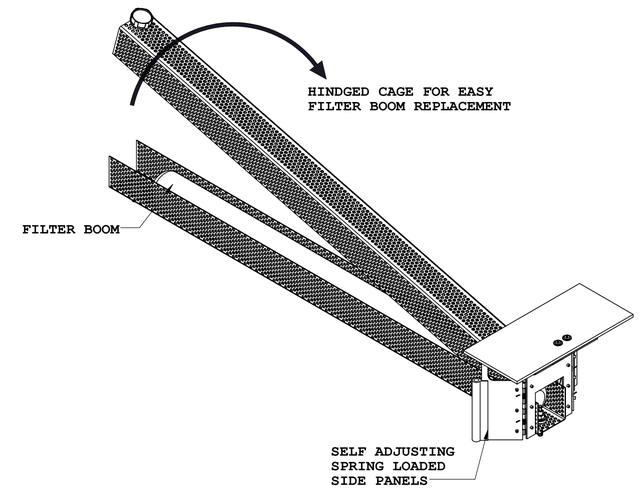
5. TYPICAL INSTALLATION:
   CAREFULLY REMOVE THE TRENCH DRAIN GRATE(S) AND PLACE THE FILTER UNIT DIRECTLY ON THE DRAIN FLOOR. VERIFY THAT THE BYPASS HOOD IS AT OR BELOW THE GRATE SUPPORT LEDGE SO NOT TO INTERFERE WITH THE RE-INSTALLED GRATE(S). WITH THE TRENCH DRAIN FILTER APPROXIMATELY CENTERED IN THE DRAIN TROUGH, MARK, DRILL AND SECURE UNIT IN PLACE WITH THE STRIKE ANCHORS PROVIDED

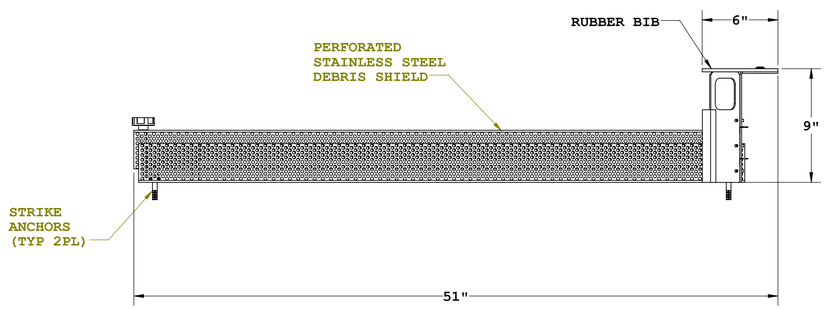
6. MAINTENANCE:
   SYSTEM IS DESIGNED TO BE EASILY OPENED FOR CLEANING OF DEBRIS AND REMOVAL OF FILTER BOOM. USE STANDARD VACTOR HOSE OR SIMPLE SHOVEL AND RAKE TO REMOVE DEBRIS. DISPOSE OF FILTER BOOM AND DEBRIS ACCORDING TO LOCAL ORDINANCES/ REGULATIONS. PRESSURE WASH DEBRIS SHIELD AS NEEDED AND INSERT NEW FILTER BOOM.
   USE ONLY FABCO REPLACEABLE FILTER BOOM,P/N: 10063-1-"SEE TABLE".

REPLACEABLE FILTRATION BOOMS	
10063-1-710	OIL BOOM
10063-1-720	NUTRIENT BOOM
10063-1-730	BACTERIA BOOM

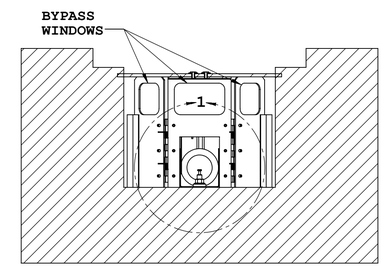


TRENCH FILTER SHOWN IN TRENCH DRAIN

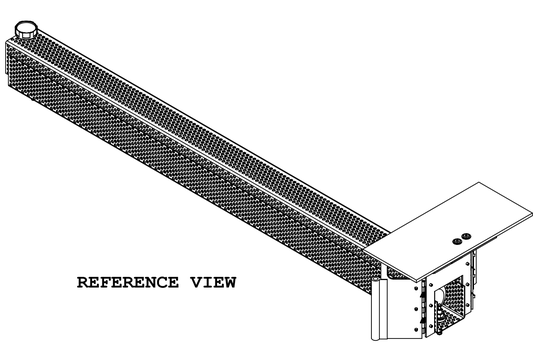




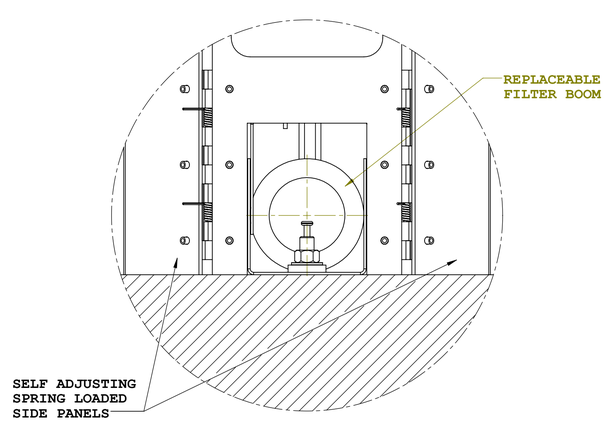
TRENCH DRAIN COVER GRATE NOT SHOWN FOR CLARITY



SECTION A-A



REFERENCE VIEW



DETAIL 1

UNLESS OTHERWISE SPECIFIED
REMOVE ALL BURRS
BREAK SHARP EDGES .002 - .020
FILLETS .020 MAX
DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES

TOLERANCES:
DEC .00 ± .01
DEC .000 ± .005
FRACT ± 1/16
ANGLE ± 2°

	APPROVALS	DATE
DWN	MS	11/25/14
CHKR		
ENGR	JP	11/25/14
ARVD		

PROJECT

MATERIAL: SEE NOTES

MODEL LINK: 10063-1-000

FABCO INDUSTRIES, INC.
66 CENTRAL AVENUE
FARMINGDALE, NY 11735

WWW.FABCO-INDUSTRIES.COM

TITLE: TRENCH DRAIN FILTER 6"-10" CLEAR WIDTH

SIZE: D | DWG. NO.: 10063-1-000 | REV: E

SCALE: 1:6 | WEIGHT: | SHEET 1 OF 1

EPA
United States Environmental Protection Agency

EPA 841-F-03-003

Protecting Water Quality *from* URBAN RUNOFF

Clean Water Is Everybody's Business

In urban and suburban areas, much of the land surface is covered by buildings and pavement, which do not allow rain and snowmelt to soak into the ground. Instead, most developed areas rely on storm drains to carry large amounts of runoff from roofs and paved areas to nearby waterways. The stormwater runoff carries pollutants such as oil, dirt, chemicals, and lawn fertilizers directly to streams and rivers, where they seriously harm water quality. To protect surface water quality and groundwater resources, development should be designed and built to minimize increases in runoff.

The most recent National Water Quality Inventory reports that runoff from urbanized areas is the leading source of water quality impairments to surveyed estuaries and the third-largest source of impairments to surveyed lakes.

Did you know that because of impervious surfaces like pavement and rooftops, a typical city block generates more than 5 times more runoff than a woodland area of the same size?

How Urbanized Areas Affect Water Quality

Increased Runoff

The porous and varied terrain of natural landscapes like forests, wetlands, and grasslands traps rainwater and snowmelt and allows them to filter slowly into the ground. In contrast, impervious (nonporous) surfaces like roads, parking lots, and rooftops prevent rain and snowmelt from infiltrating, or soaking, into the ground. Most of the rainfall and snowmelt remains above the surface, where it runs off rapidly in unnaturally large amounts.

Storm sewer systems concentrate runoff into smooth, straight conduits. This runoff gathers speed and erosional power as it travels underground. When this runoff leaves the storm drains and empties into a stream, its excessive volume and power blast out streambanks, damaging streamside vegetation and wiping out aquatic habitat. These increased storm flows carry sediment loads from construction sites and other denuded surfaces and eroded streambanks. They often carry higher water temperatures from streets, roof tops, and parking lots, which are harmful to the health and reproduction of aquatic life.

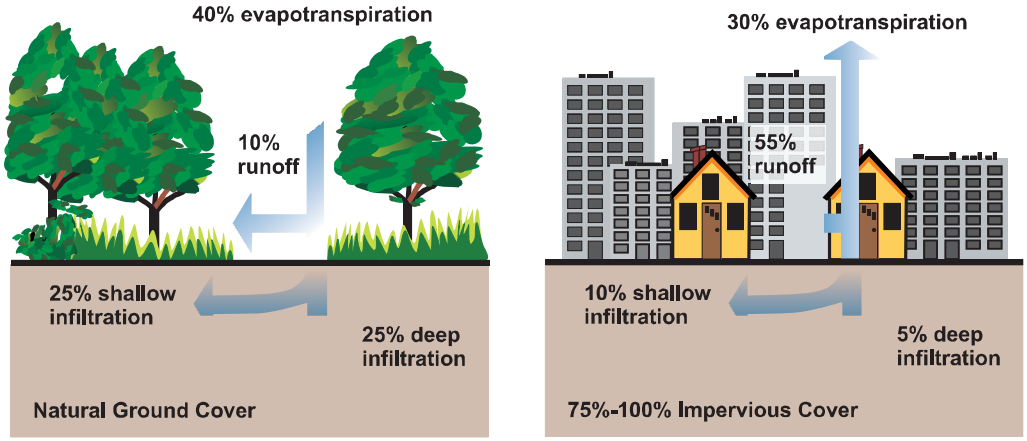
The loss of infiltration from urbanization may also cause profound groundwater changes. Although urbanization leads to great increases in flooding during and immediately after wet weather, in many instances it results in lower stream flows during dry weather. Many native fish and other aquatic life cannot survive when these conditions prevail.

Increased Pollutant Loads

Urbanization increases the variety and amount of pollutants carried into streams, rivers, and lakes. The pollutants include:

- Sediment
- Oil, grease, and toxic chemicals from motor vehicles
- Pesticides and nutrients from lawns and gardens
- Viruses, bacteria, and nutrients from pet waste and failing septic systems
- Road salts
- Heavy metals from roof shingles, motor vehicles, and other sources
- Thermal pollution from dark impervious surfaces such as streets and rooftops

These pollutants can harm fish and wildlife populations, kill native vegetation, foul drinking water supplies, and make recreational areas unsafe and unpleasant.



Relationship between impervious cover and surface runoff. Impervious cover in a watershed results in increased surface ruunoff. As little as 10 percent impervious cover in a watershed can result in stream degradation.

Managing Urban Runoff

What Homeowners Can Do

To decrease polluted runoff from paved surfaces, households can develop alternatives to areas traditionally covered by impervious surfaces. Porous pavement materials are available for driveways and sidewalks, and native vegetation and mulch can replace high maintenance grass lawns. Homeowners can use fertilizers sparingly and sweep driveways, sidewalks, and roads instead of using a hose. Instead of disposing of yard waste, they can use the materials to start a compost pile. And homeowners can learn to use Integrated Pest Management (IPM) to reduce dependence on harmful pesticides.

In addition, households can prevent polluted runoff by picking up after pets and using, storing, and disposing of chemicals properly. Drivers should check their cars for leaks and recycle their motor oil and antifreeze when these fluids are changed. Drivers can also avoid impacts from car wash runoff (e.g., detergents, grime, etc.) by using car wash facilities that do not generate runoff. Households served by septic systems should have them professionally inspected and pumped every 3 to 5 years. They should also practice water conservation measures to extend the life of their septic systems.

Controlling Impacts from New Development

Developers and city planners should attempt to control the volume of runoff from new development by using low impact development, structural controls, and pollution prevention strategies. Low impact development includes measures that conserve natural areas (particularly sensitive hydrologic areas like riparian buffers and infiltrable soils); reduce development impacts; and reduce site runoff rates by maximizing surface roughness, infiltration opportunities, and flow paths.

Controlling Impacts from Existing Development

Controlling runoff from existing urban areas is often more costly than controlling runoff from new developments. Economic efficiencies are often realized through approaches that target "hot spots" of runoff pollution or have multiple benefits, such as high-efficiency street sweeping (which addresses aesthetics, road safety, and water quality). Urban planners and others responsible for managing urban and suburban areas can first identify and implement pollution prevention strategies and examine source control opportunities. They should seek out priority pollutant reduction opportunities, then protect natural areas that help control runoff, and finally begin ecological restoration and retrofit activities to clean up degraded water bodies. Local governments are encouraged to take lead roles in public education efforts through public signage, storm drain marking, pollution prevention outreach campaigns, and partnerships with citizen groups and businesses. Citizens can help prioritize the clean-up strategies, volunteer to become involved in restoration efforts, and mark storm drains with approved "don't dump" messages.

Related Publications

Turn Your Home into a Stormwater Pollution Solution!
www.epa.gov/nps

This web site links to an EPA homeowner's guide to healthy habits for clean water that provides tips for better vehicle and garage care, lawn and garden techniques, home improvement, pet care, and more.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas
www.epa.gov/owow/nps/urbanmm

This technical guidance and reference document is useful to local, state, and tribal managers in implementing management programs for polluted runoff. Contains information on the best available, economically achievable means of reducing pollution of surface waters and groundwater from urban areas.

Onsite Wastewater Treatment System Resources
www.epa.gov/owm/onsite

This web site contains the latest brochures and other resources from EPA for managing onsite wastewater treatment systems (OWTS) such as conventional septic systems and alternative decentralized systems. These resources provide basic information to help individual homeowners, as well as detailed, up-to-date technical guidance of interest to local and state health departments.

Low Impact Development Center
www.lowimpactdevelopment.org

This center provides information on protecting the environment and water resources through integrated site design techniques that are intended to replicate preexisting hydrologic site conditions.

Stormwater Manager's Resource Center (SMRC)
www.stormwatercenter.net

Created and maintained by the Center for Watershed Protection, this resource center is designed specifically for stormwater practitioners, local government officials, and others that need technical assistance on stormwater management issues.

Strategies: Community Responses to Runoff Pollution
www.nrdc.org/water/pollution/storm/stoinx.asp

The Natural Resources Defense Council developed this interactive web document to explore some of the most effective strategies that communities are using around the nation to control urban runoff pollution. The document is also available in print form and as an interactive CD-ROM.

For More Information

U.S. Environmental Protection Agency
Nonpoint Source Control Branch (4503T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/nps

February 2003

Building & Grounds Maintenance SC-41

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	
Metals	✓
Bacteria	✓
Oil and Grease	
Organics	

Description

Stormwater runoff from building and grounds maintenance activities can be contaminated with toxic hydrocarbons in solvents, fertilizers and pesticides, suspended solids, heavy metals, abnormal pH, and oils and greases. Utilizing the protocols in this fact sheet will prevent or reduce the discharge of pollutants to stormwater from building and grounds maintenance activities by washing and cleaning up with as little water as possible, following good landscape management practices, preventing and cleaning up spills immediately, keeping debris from entering the storm drains, and maintaining the stormwater collection system.

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

Pollution Prevention

- Switch to non-toxic chemicals for maintenance when possible.
- Choose cleaning agents that can be recycled.
- Encourage proper lawn management and landscaping, including use of native vegetation.

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- Encourage use of Integrated Pest Management techniques for pest control.
- Encourage proper onsite recycling of yard trimmings.
- Recycle residual paints, solvents, lumber, and other material as much as possible.

Suggested Protocols

Pressure Washing of Buildings, Rooftops, and Other Large Objects

- In situations where soaps or detergents are used and the surrounding area is paved, pressure washers must use a water collection device that enables collection of wash water and associated solids. A sump pump, wet vacuum or similarly effective device must be used to collect the runoff and loose materials. The collected runoff and solids must be disposed of properly.
- If soaps or detergents are not used, and the surrounding area is paved, wash runoff does not have to be collected but must be screened. Pressure washers must use filter fabric or some other type of screen on the ground and/or in the catch basin to trap the particles in wash water runoff.
- If you are pressure washing on a grassed area (with or without soap), runoff must be dispersed as sheet flow as much as possible, rather than as a concentrated stream. The wash runoff must remain on the grass and not drain to pavement.

Landscaping Activities

- Dispose of grass clippings, leaves, sticks, or other collected vegetation as garbage, or by composting. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Use mulch or other erosion control measures on exposed soils.

Building Repair, Remodeling, and Construction

- Do not dump any toxic substance or liquid waste on the pavement, the ground, or toward a storm drain.
- Use ground or drop cloths underneath outdoor painting, scraping, and sandblasting work, and properly dispose of collected material daily.
- Use a ground cloth or oversized tub for activities such as paint mixing and tool cleaning.
- Clean paintbrushes and tools covered with water-based paints in sinks connected to sanitary sewers or in portable containers that can be dumped into a sanitary sewer drain. Brushes and tools covered with non-water-based paints, finishes, or other materials must be cleaned in a manner that enables collection of used solvents (e.g., paint thinner, turpentine, etc.) for recycling or proper disposal.
- Use a storm drain cover, filter fabric, or similarly effective runoff control mechanism if dust, grit, wash water, or other pollutants may escape the work area and enter a catch basin. This is particularly necessary on rainy days. The containment device(s) must be in place at the beginning of the work day, and accumulated dirty runoff and solids must be collected and disposed of before removing the containment device(s) at the end of the work day.

- If you need to de-water an excavation site, you may need to filter the water before discharging to a catch basin or off-site. If directed off-site, you should direct the water through hay bales and filter fabric or use other sediment filters or traps.
- Store toxic material under cover during precipitation events and when not in use. A cover would include tarps or other temporary cover material.

Mowing, Trimming, and Planting

- Dispose of leaves, sticks, or other collected vegetation as garbage, by composting or at a permitted landfill. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Use mulch or other erosion control measures when soils are exposed.
- Place temporarily stockpiled material away from watercourses and drain inlets, and berm or cover stockpiles to prevent material releases to the storm drain system.
- Consider an alternative approach when bailing out muddy water: do not put it in the storm drain; pour over landscaped areas.
- Use hand weeding where practical.

Fertilizer and Pesticide Management

- Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of fertilizers and pesticides and training of applicators and pest control advisors.
- Use less toxic pesticides that will do the job when applicable. Avoid use of copper-based pesticides if possible.
- Do not use pesticides if rain is expected.
- Do not mix or prepare pesticides for application near storm drains.
- Use the minimum amount needed for the job.
- Calibrate fertilizer distributors to avoid excessive application.
- Employ techniques to minimize off-target application (e.g., spray drift) of pesticides, including consideration of alternative application techniques.
- Apply pesticides only when wind speeds are low.
- Fertilizers should be worked into the soil rather than dumped or broadcast onto the surface.
- Irrigate slowly to prevent runoff and then only as much as is needed.
- Clean pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.
- Dispose of empty pesticide containers according to the instructions on the container label.

- Use up the pesticides. Rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- Implement storage requirements for pesticide products with guidance from the local fire department and County Agricultural Commissioner. Provide secondary containment for pesticides.

Inspection

- Inspect irrigation system periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering and repair leaks in the irrigation system as soon as they are observed.

Training

- Educate and train employees on pesticide use and in pesticide application techniques to prevent pollution.
- Train employees and contractors in proper techniques for spill containment and cleanup.
- Be sure the frequency of training takes into account the complexity of the operations and the nature of the staff.

Spill Response and Prevention

- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Place a stockpile of spill cleanup materials, such as brooms, dustpans, and vacuum sweepers (if desired) near the storage area where it will be readily accessible.
- Have employees trained in spill containment and cleanup present during the loading/unloading of dangerous wastes, liquid chemicals, or other materials.
- Familiarize employees with the Spill Prevention Control and Countermeasure Plan.
- Clean up spills immediately.

Other Considerations

Alternative pest/weed controls may not be available, suitable, or effective in many cases.

Requirements

Costs

- Cost will vary depending on the type and size of facility.
- Overall costs should be low in comparison to other BMPs.

Maintenance

Sweep paved areas regularly to collect loose particles. Wipe up spills with rags and other absorbent material immediately, do not hose down the area to a storm drain.

Supplemental Information

Further Detail of the BMP

Fire Sprinkler Line Flushing

Building fire sprinkler line flushing may be a source of non-stormwater runoff pollution. The water entering the system is usually potable water, though in some areas it may be non-potable reclaimed wastewater. There are subsequent factors that may drastically reduce the quality of the water in such systems. Black iron pipe is usually used since it is cheaper than potable piping, but it is subject to rusting and results in lower quality water. Initially, the black iron pipe has an oil coating to protect it from rusting between manufacture and installation; this will contaminate the water from the first flush but not from subsequent flushes. Nitrates, poly-phosphates and other corrosion inhibitors, as well as fire suppressants and antifreeze may be added to the sprinkler water system. Water generally remains in the sprinkler system a long time (typically a year) and between flushes may accumulate iron, manganese, lead, copper, nickel, and zinc. The water generally becomes anoxic and contains living and dead bacteria and breakdown products from chlorination. This may result in a significant BOD problem and the water often smells. Consequently dispose fire sprinkler line flush water into the sanitary sewer. Do not allow discharge to storm drain or infiltration due to potential high levels of pollutants in fire sprinkler line water.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Mobile Cleaners Pilot Program: Final Report. 1997. Bay Area Stormwater Management Agencies Association (BASMAA). http://www.basmaa.org/

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Association (BASMAA). http://www.basmaa.org/

Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net/

Parking/Storage Area Maintenance SC-43

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Description

Parking lots and storage areas can contribute a number of substances, such as trash, suspended solids, hydrocarbons, oil and grease, and heavy metals that can enter receiving waters through stormwater runoff or non-stormwater discharges. The following protocols are intended to prevent or reduce the discharge of pollutants from parking/storage areas and include using good housekeeping practices, following appropriate cleaning BMPs, and training employees.

Approach

Pollution Prevention

- Encourage alternative designs and maintenance strategies for impervious parking lots. (See New Development and Redevelopment BMP Handbook).
- Keep accurate maintenance logs to evaluate BMP implementation.

Suggested Protocols

General

- Keep the parking and storage areas clean and orderly. Remove debris in a timely fashion.
- Allow sheet runoff to flow into biofilters (vegetated strip and swale) and/or infiltration devices.
- Utilize sand filters or oleophilic collectors for oily waste in low concentrations.

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- Arrange rooftop drains to prevent drainage directly onto paved surfaces.
- Design lot to include semi-permeable hardscape.

Controlling Litter

- Post "No Littering" signs and enforce anti-litter laws.
- Provide an adequate number of litter receptacles.
- Clean out and cover litter receptacles frequently to prevent spillage.
- Provide trash receptacles in parking lots to discourage litter.
- Routinely sweep, shovel and dispose of litter in the trash.

Surface cleaning

- Use dry cleaning methods (e.g. sweeping or vacuuming) to prevent the discharge of pollutants into the stormwater conveyance system.
- Establish frequency of public parking lot sweeping based on usage and field observations of waste accumulation.
- Sweep all parking lots at least once before the onset of the wet season.
- If water is used follow the procedures below:
  - Block the storm drain or contain runoff.
  - Wash water should be collected and pumped to the sanitary sewer or discharged to a pervious surface, do not allow wash water to enter storm drains.
  - Dispose of parking lot sweeping debris and dirt at a landfill.
- When cleaning heavy oily deposits:
  - Use absorbent materials on oily spots prior to sweeping or washing.
  - Dispose of used absorbents appropriately.

Surface Repair

- Pre-heat, transfer or load hot bituminous material away from storm drain inlets.
- Apply concrete, asphalt, and seal coat during dry weather to prevent contamination form contacting stormwater runoff.
- Cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc., where applicable. Leave covers in place until job is complete and until all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal.

- Use only as much water as necessary for dust control, to avoid runoff.
- Catch drips from paving equipment that is not in use with pans or absorbent material placed under the machines. Dispose of collected material and absorbents properly.

Inspection

- Have designated personnel conduct inspections of the parking facilities and stormwater conveyance systems associated with them on a regular basis.
- Inspect cleaning equipment/sweepers for leaks on a regular basis.

Training

- Provide regular training to field employees and/or contractors regarding cleaning of paved areas and proper operation of equipment.
- Train employees and contractors in proper techniques for spill containment and cleanup.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Keep your Spill Prevention Control and countermeasure (SPCC) plan up-to-date, nad implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Limitations related to sweeping activities at large parking facilities may include high equipment costs, the need for sweeper operator training, and the inability of current sweeper technology to remove oil and grease.

Requirements

Costs

Cleaning/sweeping costs can be quite large, construction and maintenance of stormwater structural controls can be quite expensive as well.

Maintenance

- Sweep parking lot to minimize cleaning with water.
- Clean out oil/water/sand separators regularly, especially after heavy storms.
- Clean parking facilities on a regular basis to prevent accumulated wastes and pollutants from being discharged into conveyance systems during rainy conditions.

Supplemental Information

Further Detail of the BMP

Surface Repair

Apply concrete, asphalt, and seal coat during dry weather to prevent contamination form contacting stormwater runoff. Where applicable, cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc. Leave covers in place until job is complete and until all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal. Use only as much water as necessary for dust control, to avoid runoff.

References and Resources

http://www.stormwatercenter.net/

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality control Board. July 1998 (Revised February 2002 by the California Coastal Commission).

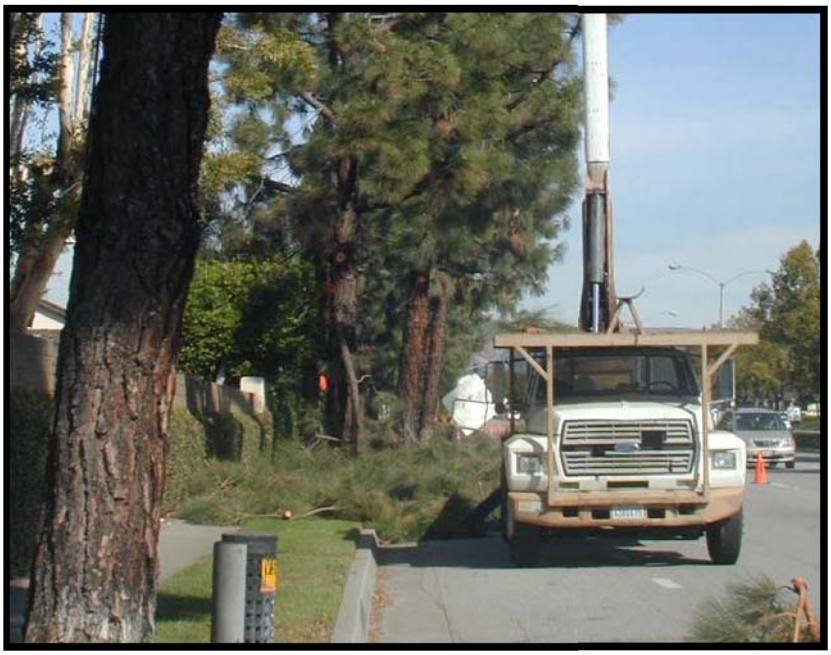
Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp

Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Association (BASMAA) http://www.basma.org

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program (URMP)
http://www.projectcleanwater.org/pdf/Model%20Program%20Municipal%20Facilities.pdf

Landscape Maintenance SC-73



Objectives

- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	
Bacteria	
Oil and Grease	
Organics	
Oxygen Demanding	☑

Description

Landscape maintenance activities include vegetation removal; herbicide and insecticide application; fertilizer application; watering; and other gardening and lawn care practices. Vegetation control typically involves a combination of chemical (herbicide) application and mechanical methods. All of these maintenance practices have the potential to contribute pollutants to the storm drain system. The major objectives of this BMP are to minimize the discharge of pesticides, herbicides and fertilizers to the storm drain system and receiving waters; prevent the disposal of landscape waste into the storm drain system by collecting and properly disposing of clippings and cuttings, and educating employees and the public.

Approach

Pollution Prevention

- Implement an integrated pest management (IPM) program. IPM is a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools.
- Choose low water using flowers, trees, shrubs, and groundcover.
- Consider alternative landscaping techniques such as naturescaping and xeriscaping.
- Conduct appropriate maintenance (i.e. properly timed fertilizing, weeding, pest control, and pruning) to help preserve the landscapes water efficiency.

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- Consider grass cycling (grass cycling is the natural recycling of grass by leaving the clippings on the lawn when mowing. Grass clippings decompose quickly and release valuable nutrients back into the lawn).

Suggested Protocols

Mowing, Trimming, and Weeding

- Whenever possible use mechanical methods of vegetation removal (e.g mowing with tractor-type or push mowers, hand cutting with gas or electric powered weed trimmers) rather than applying herbicides. Use hand weeding where practical.
- Avoid loosening the soil when conducting mechanical or manual weed control, this could lead to erosion. Use mulch or other erosion control measures when soils are exposed.
- Performing mowing at optimal times. Mowing should not be performed if significant rain events are predicted.
- Mulching mowers may be recommended for certain flat areas. Other techniques may be employed to minimize mowing such as selective vegetative planting using low maintenance grasses and shrubs.
- Collect lawn and garden clippings, pruning waste, tree trimmings, and weeds. Chip if necessary, and compost or dispose of at a landfill (see waste management section of this fact sheet).
- Place temporarily stockpiled material away from watercourses, and berm or cover stockpiles to prevent material releases to storm drains.

Planting

- Determine existing native vegetation features (location, species, size, function, importance) and consider the feasibility of protecting them. Consider elements such as their effect on drainage and erosion, hardiness, maintenance requirements, and possible conflicts between preserving vegetation and the resulting maintenance needs.
- Retain and/or plant selected native vegetation whose features are determined to be beneficial, where feasible. Native vegetation usually requires less maintenance (e.g., irrigation, fertilizer) than planting new vegetation.
- Consider using low water use groundcovers when planting or replanting.

Waste Management

- Compost leaves, sticks, or other collected vegetation or dispose of at a permitted landfill. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Place temporarily stockpiled material away from watercourses and storm drain inlets, and berm or cover stockpiles to prevent material releases to the storm drain system.
- Reduce the use of high nitrogen fertilizers that produce excess growth requiring more frequent mowing or trimming.

- Avoid landscape wastes in and around storm drain inlets by either using bagging equipment or by manually picking up the material.

Irrigation

- Where practical, use automatic timers to minimize runoff.
- Use popup sprinkler heads in areas with a lot of activity or where there is a chance the pipes may be broken. Consider the use of mechanisms that reduce water flow to sprinkler heads if broken.
- Ensure that there is no runoff from the landscaped area(s) if re-claimed water is used for irrigation.
- If bailing of muddy water is required (e.g. when repairing a water line leak), do not put it in the storm drain; pour over landscaped areas.
- Irrigate slowly or pulse irrigate to prevent runoff and then only irrigate as much as is needed.
- Apply water at rates that do not exceed the infiltration rate of the soil.

Fertilizer and Pesticide Management

- Utilize a comprehensive management system that incorporates integrated pest management (IPM) techniques. There are many methods and types of IPM, including the following:
  - Mulching can be used to prevent weeds where turf is absent, fencing installed to keep rodents out, and netting used to keep birds and insects away from leaves and fruit.
  - Visible insects can be removed by hand (with gloves or tweezers) and placed in soapy water or vegetable oil. Alternatively, insects can be sprayed off the plant with water or in some cases vacuumed off of larger plants.
  - Store-bought traps, such as species-specific, pheromone-based traps or colored sticky cards, can be used.
  - Slugs can be trapped in small cups filled with beer that are set in the ground so the slugs can get in easily.
  - In cases where microscopic parasites, such as bacteria and fungi, are causing damage to plants, the affected plant material can be removed and disposed of (pruning equipment should be disinfected with bleach to prevent spreading the disease organism).
  - Small mammals and birds can be excluded using fences, netting, tree trunk guards.
  - Beneficial organisms, such as bats, birds, green lacewings, ladybugs, praying mantis, ground beetles, parasitic nematodes, trichogramma wasps, seed head weevils, and spiders that prey on detrimental pest species can be promoted.
- Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of fertilizers and pesticides and training of applicators and pest control advisors.

- Use pesticides only if there is an actual pest problem (not on a regular preventative schedule).
- Do not use pesticides if rain is expected. Apply pesticides only when wind speeds are low (less than 5 mph).
- Do not mix or prepare pesticides for application near storm drains.
- Prepare the minimum amount of pesticide needed for the job and use the lowest rate that will effectively control the pest.
- Employ techniques to minimize off-target application (e.g. spray drift) of pesticides, including consideration of alternative application techniques.
- Fertilizers should be worked into the soil rather than dumped or broadcast onto the surface.
- Calibrate fertilizer and pesticide application equipment to avoid excessive application.
- Periodically test soils for determining proper fertilizer use.
- Sweep pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.
- Purchase only the amount of pesticide that you can reasonably use in a given time period (month or year depending on the product).
- Triple rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- Dispose of empty pesticide containers according to the instructions on the container label.

Inspection

- Inspect irrigation system periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering, and repair leaks in the irrigation system as soon as they are observed.
- Inspect pesticide/fertilizer equipment and transportation vehicles daily.

Training

- Educate and train employees on use of pesticides and in pesticide application techniques to prevent pollution. Pesticide application must be under the supervision of a California qualified pesticide applicator.
- Train/encourage municipal maintenance crews to use IPM techniques for managing public green areas.
- Annually train employees within departments responsible for pesticide application on the appropriate portions of the agency's IPM Policy, SOPs, and BMPs, and the latest IPM techniques.

- Employees who are not authorized and trained to apply pesticides should be periodically (at least annually) informed that they cannot use over-the-counter pesticides in or around the workplace.
- Use a training log or similar method to document training.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup
- Have spill cleanup materials readily available and in a know in location
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- The Federal Pesticide, Fungicide, and Rodenticide Act and California Title 3, Division 6, Pesticides and Pest Control Operations place strict controls over pesticide application and handling and specify training, annual refresher, and testing requirements. The regulations generally cover: a list of approved pesticides and selected uses, updated regularly; general application information; equipment use and maintenance procedures; and record keeping. The California Department of Pesticide Regulations and the County Agricultural Commission coordinate and maintain the licensing and certification programs. All public agency employees who apply pesticides and herbicides in "agricultural use" areas such as parks, golf courses, rights-of-way and recreation areas should be properly certified in accordance with state regulations. Contracts for landscape maintenance should include similar requirements.
- All employees who handle pesticides should be familiar with the most recent material safety data sheet (MSDS) files.
- Municipalities do not have the authority to regulate the use of pesticides by school districts, however the California Healthy Schools Act of 2000 (AB 2260) has imposed requirements on California school districts regarding pesticide use in schools. Posting of notification prior to the application of pesticides is now required, and IPM is stated as the preferred approach to pest management in schools.

Requirements

Costs

Additional training of municipal employees will be required to address IPM techniques and BMPs. IPM methods will likely increase labor cost for pest control which may be offset by lower chemical costs.

Maintenance

Not applicable

Supplemental Information

Further Detail of the BMP

Waste Management

Composting is one of the better disposal alternatives if locally available. Most municipalities either have or are planning yard waste composting facilities as a means of reducing the amount of waste going to the landfill. Lawn clippings from municipal maintenance programs as well as private sources would probably be compatible with most composting facilities

Contractors and Other Pesticide Users

Municipal agencies should develop and implement a process to ensure that any contractor employed to conduct pest control and pesticide application on municipal property engages in pest control methods consistent with the IPM Policy adopted by the agency. Specifically, municipalities should require contractors to follow the agency's IPM policy, SOPs, and BMPs; provide evidence to the agency of having received training on current IPM techniques when feasible; provide documentation of pesticide use on agency property to the agency in a timely manner.

References and Resources

King County Stormwater Pollution Control Manual. Best Management Practices for Businesses. 1995. King County Surface Water Management. July. On-line: http://dnr.metrokc.gov/wlr/dss/spcm.htm

Los Angeles County Stormwater Quality Model Programs. Public Agency Activities http://ladpw.org/wmd/npdes/model_links.cfm

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July. 1998.

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Santa Clara Valley Urban Runoff Pollution Prevention Program. 1997 Urban Runoff Management Plan. September 1997, updated October 2000.

United States Environmental Protection Agency (USEPA). 2002. Pollution Prevention/Good Housekeeping for Municipal Operations Landscaping and Lawn Care. Office of Water. Office of Wastewater Management. On-line: http://www.epa.gov/npdes/menuofbmps/poll_8.htm

Drainage System Maintenance SC-74

Photo Credit: Geoff Brosseau

Objectives

- Contain
- Educate
- Reduce/Minimize

Description

As a consequence of its function, the stormwater conveyance system collects and transports urban runoff that may contain certain pollutants. Maintaining catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis will remove pollutants, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the system functions properly hydraulically to avoid flooding.

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Approach

Suggested Protocols

Catch Basins/Inlet Structures

- Municipal staff should regularly inspect facilities to ensure the following:
  - Immediate repair of any deterioration threatening structural integrity.
  - Cleaning before the sump is 40% full. Catch basins should be cleaned as frequently as needed to meet this standard.
  - Stenciling of catch basins and inlets (see SC-75 Waste Handling and Disposal).
- Clean catch basins, storm drain inlets, and other conveyance structures in high pollutant load areas just before the wet season to remove sediments and debris accumulated during the summer.

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- Conduct inspections more frequently during the wet season for problem areas where sediment or trash accumulates more often. Clean and repair as needed.
- Keep accurate logs of the number of catch basins cleaned.
- Record the amount of waste collected.
- Store wastes collected from cleaning activities of the drainage system in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain.
- Dewater the wastes with outflow into the sanitary sewer if permitted. Water should be treated with an appropriate filtering device prior to discharge to the sanitary sewer. If discharge to the sanitary sewer is not allowed, water should be pumped or vacuumed to a tank and properly disposed of. Do not dewater near a storm drain or stream.
- Except for small communities with relatively few catch basins that may be cleaned manually, most municipalities will require mechanical cleaners such as eductors, vacuums, or bucket loaders.

Storm Drain Conveyance System

- Locate reaches of storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.
- Collect flushed effluent and pump to the sanitary sewer for treatment.

Pump Stations

- Clean all storm drain pump stations prior to the wet season to remove silt and trash.
- Do not allow discharge from cleaning a storm drain pump station or other facility to reach the storm drain system.
- Conduct quarterly routine maintenance at each pump station.
- Inspect, clean, and repair as necessary all outlet structures prior to the wet season.
- Sample collected sediments to determine if landfill disposal is possible, or illegal discharges in the watershed are occurring.

Open Channel

- Consider modification of storm channel characteristics to improve channel hydraulics, to increase pollutant removals, and to enhance channel/creek aesthetic and habitat value.
- Conduct channel modification/improvement in accordance with existing laws. Any person, government agency, or public utility proposing an activity that will change the natural (emphasis added) state of any river, stream, or lake in California, must enter into a steam or Lake Alteration Agreement with the Department of Fish and Game. The developer-applicant should also contact local governments (city, county, special districts), other state agencies

(SWRCB, RWQCB, Department of Forestry, Department of Water Resources), and Federal Corps of Engineers and USFWS

Illicit Connections and Discharges

- During routine maintenance of conveyance system and drainage structures field staff should look for evidence of illegal discharges or illicit connections:
  - Is there evidence of spills such as paints, discoloring, etc.
  - Are there any odors associated with the drainage system
  - Record locations of apparent illegal discharges/illicit connections
  - Track flows back to potential dischargers and conduct aboveground inspections. This can be done through visual inspection of up gradient manholes or alternate techniques including zinc chloride smoke testing, fluorometric dye testing, physical inspection testing, or television camera inspection.
  - Once the origin of flow is established, require illicit discharger to eliminate the discharge.
- Stencil storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

Illegal Dumping

- Regularly inspect and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.
- Establish a system for tracking incidents. The system should be designed to identify the following:
  - Illegal dumping hot spots
  - Types and quantities (in some cases) of wastes
  - Patterns in time of occurrence (time of day/night, month, or year)
  - Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills)
  - Responsible parties
- Post "No Dumping" signs in problem areas with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

- The State Department of Fish and Game has a hotline for reporting violations called Cal TIP (1-800-952-5400). The phone number may be used to report any violation of a Fish and Game code (illegal dumping, poaching, etc.).
- The California Department of Toxic Substances Control's Waste Alert Hotline, 1-800-69TOXIC, can be used to report hazardous waste violations.

Training

- Train crews in proper maintenance activities, including record keeping and disposal.
- Only properly trained individuals are allowed to handle hazardous materials/wastes.
- Train municipal employees from all departments (public works, utilities, street cleaning, parks and recreation, industrial waste inspection, hazardous waste inspection, sewer maintenance) to recognize and report illegal dumping.
- Train municipal employees and educate businesses, contractors, and the general public in proper and consistent methods for disposal.
- Train municipal staff regarding non-stormwater discharges (See SC-10 Non-Stormwater Discharges).

Spill Response and Prevention

- Refer to SC-11, Prevention, Control & Cleanup
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Cleanup activities may create a slight disturbance for local aquatic species. Access to items and material on private property may be limited. Trade-offs may exist between channel hydraulics and water quality/riparian habitat. If storm channels or basins are recognized as wetlands, many activities, including maintenance, may be subject to regulation and permitting.
- Storm drain flushing is most effective in small diameter pipes (36-inch diameter pipe or less, depending on water supply and sediment collection capacity). Other considerations associated with storm drain flushing may include the availability of a water source, finding a downstream area to collect sediments, liquid/sediment disposal, and disposal of flushed effluent to sanitary sewer may be prohibited in some areas.
- Regulations may include adoption of substantial penalties for illegal dumping and disposal.
- Municipal codes should include sections prohibiting the discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the storm drain system.
- Private property access rights may be needed to track illegal discharges up gradient.

- Requirements of municipal ordinance authority for suspected source verification testing for illicit connections necessary for guaranteed rights of entry.

Requirements

Costs

- An aggressive catch basin cleaning program could require a significant capital and O&M budget. A careful study of cleaning effectiveness should be undertaken before increased cleaning is implemented. Catch basin cleaning costs are less expensive if vacuum street sweepers are available; cleaning catch basins manually can cost approximately twice as much as cleaning the basins with a vacuum attached to a sweeper.

- Methods used for illicit connection detection (smoke testing, dye testing, visual inspection, and flow monitoring) can be costly and time-consuming. Site-specific factors, such as the level of impervious area, the density and ages of buildings, and type of land use will determine the level of investigation necessary. Encouraging reporting of illicit discharges by employees can offset costs by saving expense on inspectors and directing resources more efficiently. Some programs have used funds available from "environmental fees" or special assessment districts to fund their illicit connection elimination programs.

Maintenance

- Two-person teams may be required to clean catch basins with vactor trucks.

- Identifying illicit discharges requires teams of at least two people (volunteers can be used), plus administrative personnel, depending on the complexity of the storm sewer system.

- Arrangements must be made for proper disposal of collected wastes.

- Requires technical staff to detect and investigate illegal dumping violations, and to coordinate public education.

Supplemental Information

Further Detail of the BMP

Storm Drain flushing

Sanitary sewer flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants in sanitary sewer systems. The same principles that make sanitary sewer flushing effective can be used to flush storm drains. Flushing may be designed to hydraulically convey accumulated material to strategic locations, such as to an open channel, to another point where flushing will be initiated, or over to the sanitary sewer and on to the treatment facilities, thus preventing re-suspension and overflow of a portion of the solids during storm events. Flushing prevents "plug flow" discharges of concentrated pollutant loadings and sediments. The deposits can hinder the designed conveyance capacity of the storm drain system and potentially cause backwater conditions in severe cases of clogging.

Storm drain flushing usually takes place along segments of pipe with grades that are too flat to maintain adequate velocity to keep particles in suspension. An upstream manhole is selected to place an inflatable device that temporarily plugs the pipe. Further upstream, water is pumped into the line to create a flushing wave. When the upstream reach of pipe is sufficiently full to

cause a flushing wave, the inflated device is rapidly deflated with the assistance of a vacuum pump, releasing the backed up water and resulting in the cleaning of the storm drain segment.

To further reduce the impacts of stormwater pollution, a second inflatable device, placed well downstream, may be used to re-collect the water after the force of the flushing wave has dissipated. A pump may then be used to transfer the water and accumulated material to the sanitary sewer for treatment. In some cases, an interceptor structure may be more practical or required to re-collect the flushed waters.

It has been found that cleansing efficiency of periodic flush waves is dependent upon flush volume, flush discharge rate, sewer slope, sewer length, sewer flow rate, sewer diameter, and population density. As a rule of thumb, the length of line to be flushed should not exceed 700 feet. At this maximum recommended length, the percent removal efficiency ranges between 65-75 percent for organics and 55-65 percent for dry weather grit/inorganic material. The percent removal efficiency drops rapidly beyond that. Water is commonly supplied by a water truck, but fire hydrants can also supply water. To make the best use of water, it is recommended that reclaimed water be used or that fire hydrant line flushing coincide with storm drain flushing.

Flow Management

Flow management has been one of the principal motivations for designing urban stream corridors in the past. Such needs may or may not be compatible with the stormwater quality goals in the stream corridor.

Downstream flood peaks can be suppressed by reducing through flow velocity. This can be accomplished by reducing gradient with grade control structures or increasing roughness with boulders, dense vegetation, or complex banks forms. Reducing velocity correspondingly increases flood height, so all such measures have a natural association with floodplain open space. Flood elevations laterally adjacent to the stream can be lowered by increasing through flow velocity.

However, increasing velocity increases flooding downstream and inherently conflicts with channel stability and human safety. Where topography permits, another way to lower flood elevation is to lower the level of the floodway with drop structures into a large but subtly excavated bowl where flood flows we allowed to spread out.

Stream Corridor Planning

Urban streams receive and convey stormwater flows from developed or developing watersheds. Planning of stream corridors thus interacts with urban stormwater management programs. If local programs are intended to control or protect downstream environments by managing flows delivered to the channels, then it is logical that such programs should be supplemented by management of the materials, forms, and uses of the downstream riparian corridor. Any proposal for steam alteration or management should be investigated for its potential flow and stability effects on upstream, downstream, and laterally adjacent areas. The timing and rate of flow from various tributaries can combine in complex ways to alter flood hazards. Each section of channel is unique, influenced by its own distribution of roughness elements, management activities, and stream responses.

Flexibility to adapt to stream features and behaviors as they evolve must be included in stream reclamation planning. The amenity and ecology of streams may be enhanced through the landscape design options of 1) corridor reservation, 2) bank treatment, 3) geomorphic restoration, and 4) grade control.

Corridor reservation - Reserving stream corridors and valleys to accommodate natural stream meandering, aggradation, degradation, and over bank flows allows streams to find their own form and generate less ongoing erosion. In California, open stream corridors in recent urban developments have produced recreational open space, irrigation of streamside plantings, and the aesthetic amenity of flowing water.

Bank treatment - The use of armoring, vegetative cover, and flow deflection may be used to influence a channel's form, stability, and biotic habitat. To prevent bank erosion, armoring can be done with rigid construction materials, such as concrete, masonry, wood planks and logs, riprap, and gabions. Concrete linings have been criticized because of their lack of provision of biotic habitat. In contrast, riprap and gabions make relatively porous and flexible linings. Boulders, placed in the bed reduce velocity and erosive power.

Riparian vegetation can stabilize the banks of streams that are at or near a condition of equilibrium. Binding networks of roots increase bank shear strength. During flood flows, resilient vegetation is forced into erosion-inhibiting mats. The roughness of vegetation leads to lower velocity, further reducing erosive effects. Structural flow deflection can protect banks from erosion or alter fish habitat. By concentrating flow, a deflector causes a pool to be scoured in the bed.

Geomorphic restoration – Restoration refers to alteration of disturbed streams so their form and behavior emulate those of undisturbed streams. Natural meanders are retained, with grading to gentle slopes on the inside of curves to allow point bars and riffle-pool sequences to develop. Trees are retained to provide scenic quality, biotic productivity, and roots for bank stabilization, supplemented by plantings where necessary.

A restorative approach can be successful where the stream is already approaching equilibrium. However, if upstream urbanization continues new flow regimes will be generated that could disrupt the equilibrium of the treated system.

Grade Control - A grade control structure is a level shelf of a permanent material, such as stone, masonry, or concrete, over which stream water flows. A grade control structure is called a sill, weir, or drop structure, depending on the relation of its invert elevation to upstream and downstream channels.

A sill is installed at the preexisting channel bed elevation to prevent upstream migration of nick points. It establishes a firm base level below which the upstream channel can not erode.

A weir or check dam is installed with invert above the preexisting bed elevation. A weir raises the local base level of the stream and causes aggradation upstream. The gradient, velocity, and erosive potential of the stream channel are reduced. A drop structure lowers the downstream invert below its preexisting elevation, reducing downstream gradient and velocity. Weirs and drop structure control erosion by dissipating energy and reducing slope velocity.

When carefully applied, grade control structures can be highly versatile in establishing human and environmental benefits in stabilized channels. To be successful, application of grade control structures should be guided by analysis of the stream system both upstream and downstream from the area to he reclaimed.

Examples

The California Department of Water Resources began the Urban Stream Restoration Program in 1985. The program provides grant funds to municipalities and community groups to implement stream restoration projects. The projects reduce damages from streambank aid watershed instability arid floods while restoring streams' aesthetic, recreational, and fish and wildlife values.

In Buena Vista Park, upper floodway slopes are gentle and grassed to achieve continuity of usable park land across the channel of small boulders at the base of the slopes.

The San Diego River is a large, vegetative lined channel, which was planted in a variety of species to support riparian wildlife while stabilizing the steep banks of the floodway.

References and Resources

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Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp

Santa Clara Valley Urban Runoff Pollution Prevention Program. 1997 Urban Runoff Management Plan. September 1997, updated October 2000.

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program (URMP) Municipal Activities Model Program Guidance. 2001. Project Clean Water. November.

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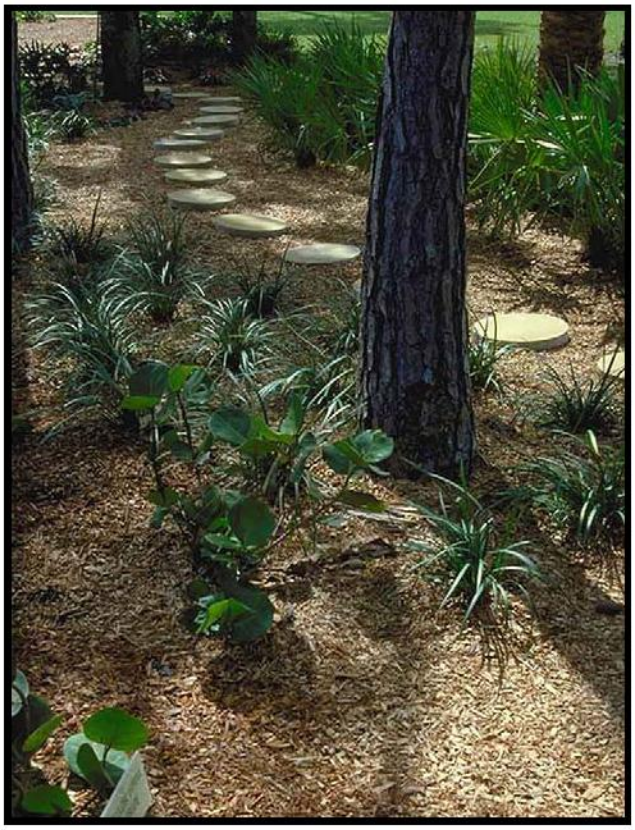
United States Environmental Protection Agency (USEPA). 1999. Stormwater O&M Fact Sheet Catch Basin Cleaning. EPA 832-F-99-011. Office of Water, Washington, D.C. September.

United States Environmental Protection Agency (USEPA). 2002. Pollution Prevention/Good Housekeeping for Municipal Operations Illegal Dumping Control. On line: http://www.epa.gov/npdes/menuofbmps/poll_7.htm

United States Environmental Protection Agency (USEPA). 2002. Pollution Prevention/Good Housekeeping for Municipal Operations Storm Drain System Cleaning. On line: http://www.epa.gov/npdes/menuofbmps/poll_16.htm

Site Design & Landscape Planning SD-10



Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- ☑ Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Integrating and incorporating appropriate landscape planning methodologies into the project design is the most effective action that can be done to minimize surface and groundwater contamination from stormwater.

Approach

Landscape planning should couple consideration of land suitability for urban uses with consideration of community goals and projected growth. Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for site design and landscapes planning should conform to applicable standards and specifications of agencies with jurisdiction and be consistent with applicable General Plan and Local Area Plan policies.

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Designing New Installations

Begin the development of a plan for the landscape unit with attention to the following general principles:

- Formulate the plan on the basis of clearly articulated community goals. Carefully identify conflicts and choices between retaining and protecting desired resources and community growth.

- Map and assess land suitability for urban uses. Include the following landscape features in the assessment: wooded land, open unwooded land, steep slopes, erosion-prone soils, foundation suitability, soil suitability for waste disposal, aquifers, aquifer recharge areas, wetlands, floodplains, surface waters, agricultural lands, and various categories of urban land use. When appropriate, the assessment can highlight outstanding local or regional resources that the community determines should be protected (e.g., a scenic area, recreational area, threatened species habitat, farmland, fish run). Mapping and assessment should recognize not only these resources but also additional areas needed for their sustenance.

Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Conserve Natural Areas during Landscape Planning

If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

- Cluster development on least-sensitive portions of a site while leaving the remaining land in a natural undisturbed condition.

- Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.

- Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.

- Promote natural vegetation by using parking lot islands and other landscaped areas.

- Preserve riparian areas and wetlands.

Maximize Natural Water Storage and Infiltration Opportunities Within the Landscape Unit

- Promote the conservation of forest cover. Building on land that is already deforested affects basin hydrology to a lesser extent than converting forested land. Loss of forest cover reduces interception storage, detention in the organic forest floor layer, and water losses by evapotranspiration, resulting in large peak runoff increases and either their negative effects or the expense of countering them with structural solutions.

- Maintain natural storage reservoirs and drainage corridors, including depressions, areas of permeable soils, swales, and intermittent streams. Develop and implement policies and

regulations to discourage the clearing, filling, and channelization of these features. Utilize them in drainage networks in preference to pipes, culverts, and engineered ditches.

- Evaluating infiltration opportunities by referring to the stormwater management manual for the jurisdiction and pay particular attention to the selection criteria for avoiding groundwater contamination, poor soils, and hydrogeological conditions that cause these facilities to fail. If necessary, locate developments with large amounts of impervious surfaces or a potential to produce relatively contaminated runoff away from groundwater recharge areas.

Protection of Slopes and Channels during Landscape Design

- Convey runoff safely from the tops of slopes.
- Avoid disturbing steep or unstable slopes.
- Avoid disturbing natural channels.
- Stabilize disturbed slopes as quickly as possible.
- Vegetate slopes with native or drought tolerant vegetation.
- Control and treat flows in landscaping and/or other controls prior to reaching existing natural drainage systems.
- Stabilize temporary and permanent channel crossings as quickly as possible, and ensure that increases in run-off velocity and frequency caused by the project do not erode the channel.
- Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.
- Line on-site conveyance channels where appropriate, to reduce erosion caused by increased flow velocity due to increases in tributary impervious area. The first choice for linings should be grass or some other vegetative surface, since these materials not only reduce runoff velocities, but also provide water quality benefits from filtration and infiltration. If velocities in the channel are high enough to erode grass or other vegetative linings, riprap, concrete, soil cement, or geo-grid stabilization are other alternatives.
- Consider other design principles that are comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Redevelopment may present significant opportunity to add features which had not previously been implemented. Examples include incorporation of depressions, areas of permeable soils, and swales in newly redeveloped areas. While some site constraints may exist due to the status of already existing infrastructure, opportunities should not be missed to maximize infiltration, slow runoff, reduce impervious areas, disconnect directly connected impervious areas.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Stormwater Management Manual for Western Washington, Washington State Department of Ecology, August 2001.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Efficient Irrigation SD-12

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

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- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.
- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:
  - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff
  - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect
  - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible
  - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth
- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Storm Drain Signage SD-13

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include "NO DUMPING

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– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.

- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Trash Storage Areas SD-32

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Description

Trash storage areas are areas where a trash receptacle (s) are located for use as a repository for solid wastes. Stormwater runoff from areas where trash is stored or disposed of can be polluted. In addition, loose trash and debris can be easily transported by water or wind into nearby storm drain inlets, channels, and/or creeks. Waste handling operations that may be sources of stormwater pollution include dumpsters, litter control, and waste piles.

Approach

This fact sheet contains details on the specific measures required to prevent or reduce pollutants in stormwater runoff associated with trash storage and handling. Preventative measures including enclosures, containment structures, and impervious pavements to mitigate spills, should be used to reduce the likelihood of contamination.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Design requirements for waste handling areas are governed by Building and Fire Codes, and by current local agency ordinances and zoning requirements. The design criteria described in this fact sheet are meant to enhance and be consistent with these code and ordinance requirements. Hazardous waste should be handled in accordance with legal requirements established in Title 22, California Code of Regulation.

Wastes from commercial and industrial sites are typically hauled by either public or commercial carriers that may have design or access requirements for waste storage areas. The design criteria in this fact sheet are recommendations and are not intended to be in conflict with requirements established by the waste hauler. The waste hauler should be contacted prior to the design of your site trash collection areas. Conflicts or issues should be discussed with the local agency.

Designing New Installations

Trash storage areas should be designed to consider the following structural or treatment control BMPs:

- Design trash container areas so that drainage from adjoining roofs and pavement is diverted around the area(s) to avoid run-on. This might include berming or grading the waste handling area to prevent run-on of stormwater.
- Make sure trash container areas are screened or walled to prevent off-site transport of trash.

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

- Use lined bins or dumpsters to reduce leaking of liquid waste.
- Provide roofs, awnings, or attached lids on all trash containers to minimize direct precipitation and prevent rainfall from entering containers.
- Pave trash storage areas with an impervious surface to mitigate spills.
- Do not locate storm drains in immediate vicinity of the trash storage area.
- Post signs on all dumpsters informing users that hazardous materials are not to be disposed of therein.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Additional Information

Maintenance Considerations

The integrity of structural elements that are subject to damage (i.e., screens, covers, and signs) must be maintained by the owner/operator. Maintenance agreements between the local agency and the owner/operator may be required. Some agencies will require maintenance deed restrictions to be recorded of the property title. If required by the local agency, maintenance agreements or deed restrictions must be executed by the owner/operator before improvement plans are approved.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Street Sweeping and Vacuuming SE-7

Categories

EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	☑
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	☑
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Street sweeping and vacuuming includes use of self-propelled and walk-behind equipment to remove sediment from streets and roadways, and to clean paved surfaces in preparation for final paving. Sweeping and vacuuming prevents sediment from the project site from entering storm drains or receiving waters.

Suitable Applications

Sweeping and vacuuming are suitable anywhere sediment is tracked from the project site onto public or private paved streets and roads, typically at points of egress. Sweeping and vacuuming are also applicable during preparation of paved surfaces for final paving.

Limitations

Sweeping and vacuuming may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose).

Implementation

- Controlling the number of points where vehicles can leave the site will allow sweeping and vacuuming efforts to be focused, and perhaps save money.
- Inspect potential sediment tracking locations daily.
- Visible sediment tracking should be swept or vacuumed on a daily basis.
- Do not use kick brooms or sweeper attachments. These tend to spread the dirt rather than remove it.

- If not mixed with debris or trash, consider incorporating the removed sediment back into the project

Costs

Rental rates for self-propelled sweepers vary depending on hopper size and duration of rental. Expect rental rates from $58/hour (3 yd^3 hopper) to $88/hour (9 yd^3 hopper), plus operator costs. Hourly production rates vary with the amount of area to be swept and amount of sediment. Match the hopper size to the area and expect sediment load to minimize time spent dumping.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- When actively in use, points of ingress and egress must be inspected daily.
- When tracked or spilled sediment is observed outside the construction limits, it must be removed at least daily. More frequent removal, even continuous removal, may be required in some jurisdictions.
- Be careful not to sweep up any unknown substance or any object that may be potentially hazardous.
- Adjust brooms frequently; maximize efficiency of sweeping operations.
- After sweeping is finished, properly dispose of sweeper wastes at an approved dumpsite.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Labor Surcharge and Equipment Rental Rates, State of California Department of Transportation (Caltrans), April 1, 2002 – March 31, 2003.

Appendix D WQMP Agreement

Recorded at the request of:

City of _____

After recording, return to:

City of _____

City Clerk

Stormwater Treatment Device Access and Maintenance Agreement

OWNER:

PROPERTY ADDRESS:_____

APN:

THIS AGREEMENT is made and entered into in_____, California, this___day of_____, by and between_____ _____, hereinafter referred to as "Owner" and the CITY OF____ _____, a municipal corporation, located in the County of Ventura, State of California hereinafter referred to as "CITY";

WHEREAS, the Owner owns real property ("Property") in the City of _____, County of Ventura, State of California, more specifically described in Exhibit "A" and depicted in Exhibit "B", each of which exhibits is attached hereto and incorporated herein by this reference;

WHEREAS, at the time of initial approval of development project known as____ _____within the Property described herein, the City required the project to employ on-site control measures to minimize pollutants in urban runoff;

WHEREAS, the Owner has chosen to install a _____ _____, hereinafter referred to as "Device", as the on-site control measure to minimize pollutants in urban runoff;

WHEREAS, said Device has been installed in accordance with plans and specifications accepted by the City;

WHEREAS, said Device, with installation on private property and draining only private property, is a private facility with all maintenance or replacement, therefore, the sole responsibility of the Owner in accordance with the terms of this Agreement;

WHEREAS, the Owner is aware that periodic and continuous maintenance, including, but not necessarily limited to, filter material replacement and sediment removal, is required to assure peak performance of Device and that, furthermore, such maintenance activity will require compliance with all Local, State, or Federal laws and regulations, including those pertaining to confined space and waste disposal methods, in effect at the time such maintenance occurs;

NOW THEREFORE, it is mutually stipulated and agreed as follows:

1) Owner hereby provides the City of City's designee complete access, of any duration, to the Device and its immediate vicinity at any time, upon reasonable notice, or in the event of emergency, as determined by City's Director of Public Works no advance notice, for the purpose of inspection, sampling, testing of the Device, and in case of emergency, to undertake all necessary repairs or other preventative measures at owner's expense as provided in paragraph 3 below. City shall make every effort at all times to minimize or avoid interference with Owner's use of the Property.

2) Owner shall use its best efforts diligently to maintain the Device in a manner assuring peak performance at all times. All reasonable precautions shall be exercised by Owner and Owner's representative or contractor in the removal and extraction of material(s) from the Device and the ultimate disposal of the material(s) in a manner consistent with all relevant laws and regulations in effect at the time. As may be requested from time to time by the City, the Owner shall provide the City with documentation identifying the material(s) removed, the quantity, and disposal destination.

3) In the event Owner, or its successors or assigns, fails to accomplish the necessary maintenance contemplated by this Agreement, within five (5) days of being given written notice by the City, the City is hereby authorized to cause any maintenance necessary to be done and charge the entire cost and expense to the Owner or Owner's successors or assigns, including administrative costs, attorneys fees and interest thereon at the maximum rate authorized by the Civil Code from the date of the notice of expense until paid in full.

4) The City may require the owner to post security in form and for a time period satisfactory to the city of guarantee of the performance of the obligations stated herein. Should the Owner fail to perform the obligations under the Agreement, the City may, in the case of a cash bond, act for the Owner using the proceeds from it, or in the case of a surety bond, require the sureties to perform the obligations of the Agreement. As an additional remedy, the Director may withdraw any previous stormwater related approval with respect to the

property on which a Device has been installed until such time as Owner repays to City it's reasonable costs incurred in accordance with paragraph 3 above.

5) This agreement shall be recorded in the Office of the Recorder of Ventura County, California, at the expense of the Owner and shall constitute notice to all successors and assigns of the title to said Property of the obligation herein set forth, and also a lien in such amount as will fully reimburse the City, including interest as herein above set forth, subject to foreclosure in event of default in payment.

6) In event of legal action occasioned by any default or action of the Owner, or its successors or assigns, then the Owner and its successors or assigns agree(s) to pay all costs incurred by the City in enforcing the terms of this Agreement, including reasonable attorney's fees and costs, and that the same shall become a part of the lien against said Property.

7) It is the intent of the parties hereto that burdens and benefits herein undertaken shall constitute covenants that run with said Property and constitute a lien there against.

8) The obligations herein undertaken shall be binding upon the heirs, successors, executors, administrators and assigns of the parties hereto. The term "Owner" shall include not only the present Owner, but also its heirs, successors, executors, administrators, and assigns. Owner shall notify any successor to title of all or part of the Property about the existence of this Agreement. Owner shall provide such notice prior to such successor obtaining an interest in all or part of the Property. Owner shall provide a copy of such notice to the City at the same time such notice is provided to the successor.

9) Time is of the essence in the performance of this Agreement.

10) Any notice to a party required or called for in this Agreement shall be served in person, or by deposit in the U.S. Mail, first class postage prepaid, to the address set forth below. Notice(s) shall be deemed effective upon receipt, or seventy-two (72) hours after deposit in the U.S. Mail, whichever is earlier. A party may change a notice address only by providing written notice thereof to the other party.

IF TO CITY:	IF TO OWNER:
_____	_____
_____	_____
_____	_____

IN WITNESS THEREOF, the parties hereto have affixed their signatures as of the date first written above.

APPROVED AS TO FORM:

_____
City Attorney

OWNER:

_____
Owner

Name: _____

Title: _____

CITY OF_____:

_____

Name:_____

Title:_____

OWNER:

_____

Name:_____

Title:_____

ATTEST:

_____

City Clerk Date

Notaries on Following Page

EXHIBIT A

(Legal Description)

EXHIBIT B

(Map/illustration)

Appendix E BMP Operation and Maintenance

Attachment 1 – Bioclean Modular Wetland Maintenance Documents

Attachment 2 – Bioretention Inspection and Maintenance Form

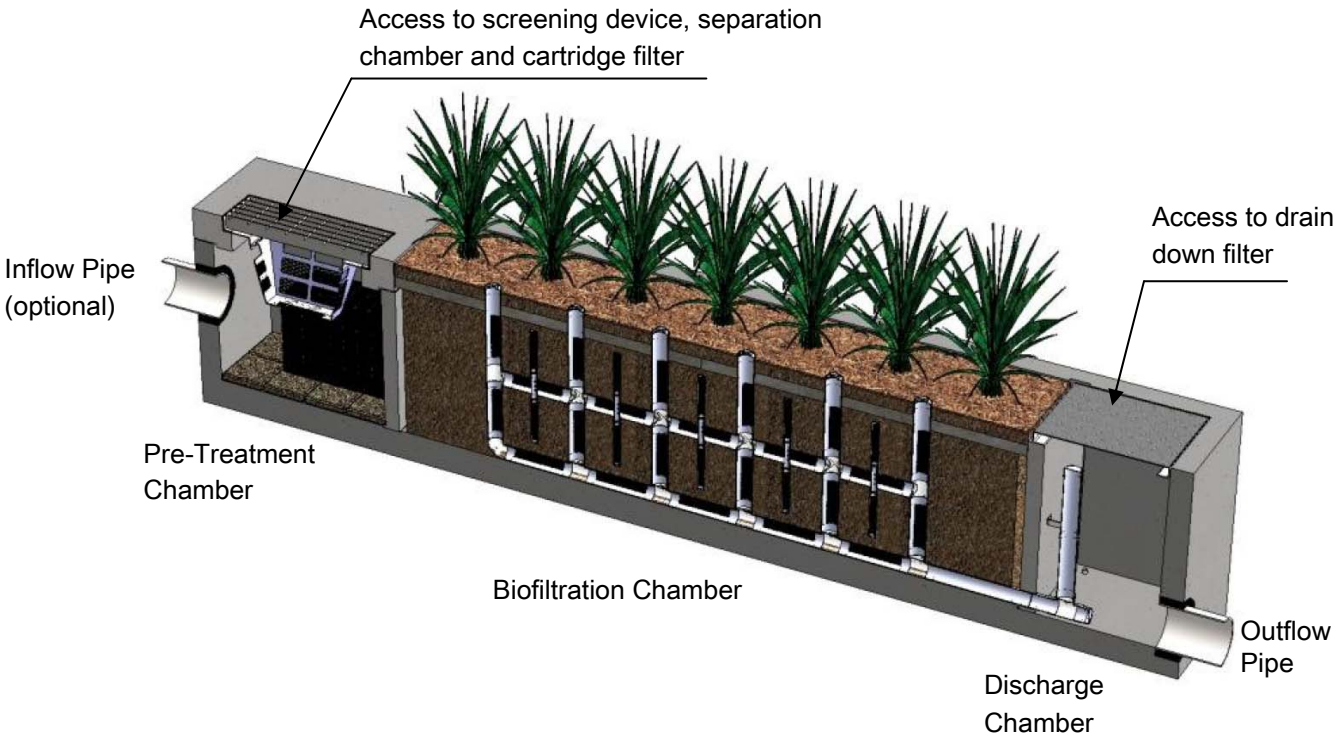
Attachment 3 – Proprietary BMP Inspection and Maintenance Form

Maintenance Guidelines for Modular Wetland System - Linear

Maintenance Summary

- Remove Trash from Screening Device – average maintenance interval is 6 to 12 months.
  - (*5 minute average service time*).
- Remove Sediment from Separation Chamber – average maintenance interval is 12 to 24 months.
  - (*10 minute average service time*).
- Replace Cartridge Filter Media – average maintenance interval 12 to 24 months.
  - (*10-15 minute per cartridge average service time*).
- Replace Drain Down Filter Media – average maintenance interval is 12 to 24 months.
  - (*5 minute average service time*).
- Trim Vegetation – average maintenance interval is 6 to 12 months.
  - (*Service time varies*).

System Diagram



Maintenance Procedures

Screening Device

1. Remove grate or manhole cover to gain access to the screening device in the Pre-Treatment Chamber. Vault type units do not have screening device. Maintenance can be performed without entry.
2. Remove all pollutants collected by the screening device. Removal can be done manually or with the use of a vacuum truck. The hose of the vacuum truck will not damage the screening device.
3. Screening device can easily be removed from the Pre-Treatment Chamber to gain access to separation chamber and media filters below. Replace grate or manhole cover when completed.

Separation Chamber

1. Perform maintenance procedures of screening device listed above before maintaining the separation chamber.
2. With a pressure washer spray down pollutants accumulated on walls and cartridge filters.
3. Vacuum out Separation Chamber and remove all accumulated pollutants. Replace screening device, grate or manhole cover when completed.

Cartridge Filters

1. Perform maintenance procedures on screening device and separation chamber before maintaining cartridge filters.
2. Enter separation chamber.
3. Unscrew the two bolts holding the lid on each cartridge filter and remove lid.
4. Remove each of 4 to 8 media cages holding the media in place.
5. Spray down the cartridge filter to remove any accumulated pollutants.
6. Vacuum out old media and accumulated pollutants.
7. Reinstall media cages and fill with new media from manufacturer or outside supplier. Manufacturer will provide specification of media and sources to purchase.
8. Replace the lid and tighten down bolts. Replace screening device, grate or manhole cover when completed.

Drain Down Filter

1. Remove hatch or manhole cover over discharge chamber and enter chamber.
2. Unlock and lift drain down filter housing and remove old media block. Replace with new media block. Lower drain down filter housing and lock into place.
3. Exit chamber and replace hatch or manhole cover.

Maintenance Notes

1. Following maintenance and/or inspection, it is recommended the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.

2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.

3. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.

4. Entry into chambers may require confined space training based on state and local regulations.

5. No fertilizer shall be used in the Biofiltration Chamber.

6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may require irrigation.

Maintenance Procedure Illustration

Screening Device

The screening device is located directly under the manhole or grate over the Pre-Treatment Chamber. It's mounted directly underneath for easy access and cleaning. Device can be cleaned by hand or with a vacuum truck.

Separation Chamber

The separation chamber is located directly beneath the screening device. It can be quickly cleaned using a vacuum truck or by hand. A pressure washer is useful to assist in the cleaning process.

Cartridge Filters

The cartridge filters are located in the Pre-Treatment chamber connected to the wall adjacent to the biofiltration chamber. The cartridges have removable tops to access the individual media filters. Once the cartridge is open media can be easily removed and replaced by hand or a vacuum truck.

Drain Down Filter

The drain down filter is located in the Discharge Chamber. The drain filter unlocks from the wall mount and hinges up. Remove filter block and replace with new block.

Trim Vegetation

Vegetation should be maintained in the same manner as surrounding vegetation and trimmed as needed. No fertilizer shall be used on the plants. Irrigation per the recommendation of the manufacturer and or landscape architect. Different types of vegetation requires different amounts of irrigation.

Inspection Form

Modular Wetland System, Inc.
P. 760.433-7640
F. 760-433-3176
E. Info@modularwetlands.com

www.modularwetlands.com

Inspection Report
Modular Wetlands System

For Office Use Only
(Reviewed By)
(Date) Office personnel to complete section to the left.

Project Name _____

Project Address _____ (city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

Inspector Name _____ Date ____/____/____ Time _____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

Inspection Checklist

Modular Wetland System Type (Curb, Grate or UG Vault): _____ Size (22', 14' or etc.): _____

Structural Integrity:	**Yes**	**No**	**Comments**
Damage to pre-treatment access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Damage to discharge chamber access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Does the MWS unit show signs of structural deterioration (cracks in the wall, damage to frame)?			
Is the inlet/outlet pipe or drain down pipe damaged or otherwise not functioning properly?			
Working Condition:			
Is there evidence of illicit discharge or excessive oil, grease, or other automobile fluids entering and clogging the unit?			
Is there standing water in inappropriate areas after a dry period?			
Is the filter insert (if applicable) at capacity and/or is there an accumulation of debris/trash on the shelf system?			
Does the depth of sediment/trash/debris suggest a blockage of the inflow pipe, bypass or cartridge filter? If yes, specify which one in the comments section. Note depth of accumulation in in pre-treatment chamber.			Depth:
Does the cartridge filter media need replacement in pre-treatment chamber and/or discharge chamber?			Chamber:
Any signs of improper functioning in the discharge chamber? Note issues in comments section.			
Other Inspection Items:			
Is there an accumulation of sediment/trash/debris in the wetland media (if applicable)?			
Is it evident that the plants are alive and healthy (if applicable)? Please note Plant Information below.			
Is there a septic or foul odor coming from inside the system?			

Waste:	**Yes**	**No**
Sediment / Silt / Clay		
Trash / Bags / Bottles		
Green Waste / Leaves / Foliage		

Recommended Maintenance	
No Cleaning Needed	
Schedule Maintenance as Planned	
Needs Immediate Maintenance	

Plant Information	
Damage to Plants	
Plant Replacement	
Plant Trimming	

Additional Notes:

2972 San Luis Rey Road, Oceanside, CA 92058 P (760) 433-7640 F (760) 433-3176

Maintenance Report

Modular Wetland System, Inc.
P. 760.433-7640
F. 760-433-3176
E. Info@modularwetlands.com

www.modularwetlands.com

Cleaning and Maintenance Report
Modular Wetlands System

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

Inspector Name _____ Date ____/____/_____ Time _____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

Site Map #	GPS Coordinates of Insert	Manufacturer / Description / Sizing	Trash Accumulation	Foliage Accumulation	Sediment Accumulation	Total Debris Accumulation	Condition of Media 25/50/75/100 (will be changed @ 75%)	Operational Per Manufactures' Specifications (If not, why?)
	Lat: Long:	MWS Catch Basins						
		MWS Sedimentation Basin						
		Media Filter Condition						
		Plant Condition						
		Drain Down Media Condition						
		Discharge Chamber Condition						
		Drain Down Pipe Condition						
		Inlet and Outlet Pipe Condition						

Comments:

2972 San Luis Rey Road, Oceanside, CA 92058 P. 760.433.7640 F. 760.433.3176

Section [_____]
Modular Subsurface Flow Wetland System

PART 1 – GENERAL

01.01.00 Purpose
The purpose of this specification is to establish generally acceptable criteria for Modular Subsurface Flow Wetland Systems used for biofiltration of stormwater runoff including dry weather flows and other contaminated water sources. It is intended to serve as a guide to producers, distributors, architects, engineers, contractors, plumbers, installers, inspectors, agencies and users; to promote understanding regarding materials, manufacture and installation; and to provide for identification of devices complying with this specification.

01.02.00 Description
Modular Subsurface Flow Wetland Systems (MSFWS) are used for filtration of stormwater runoff including dry weather flows. The MSFWS is a pre-engineered biofiltration system composed of a pretreatment chamber containing filtration cartridges, a horizontal flow biofiltration chamber with a peripheral void area and a centralized and vertically extending underdrain, the biofiltration chamber containing a sorptive media mix which does not contain any organic material and a layer of plant establishment media, and a discharge chamber containing an orifice control structure . Treated water flows horizontally in series through the pretreatment chamber cartridges, biofiltration chamber and orifice control structure.

01.03.00 Manufacturer
The manufacturer of the MSFWS shall be one that is regularly engaged in the engineering design and production of systems developed for the treatment of stormwater runoff for at least (10) years, and which have a history of successful production, acceptable to the engineer of work. In accordance with the drawings, the MSFWS(s) shall be a filter device Manufactured by Bio Clean Environmental Services, Inc., or Modular Wetland Systems, Inc., or assigned distributors or licensees. Bio Clean Environmental Services Inc., and Modular Wetland Systems, Inc., can be reached at:

Corporate Headquarters:
Bio Clean Environmental Service, Inc.
2972 San Luis Rey Road
Oceanside, CA 92058
Phone: (760) 433-7640
Fax: (760) 433-3176
www.biocleanenvironmental.net

Corporate Headquarters:
Modular Wetland Systems, Inc.
P.O. Box 869
Oceanside, CA 92049
Phone: (760) 433-7650
www.modularwetlands.net

01.04.00 Submittals

01.04.01 Shop drawings are to be submitted with each order to the contractor and consulting engineer.

01.04.02 Shop drawings are to detail the MSFWS and all components required and the sequence for installation, including:

- System configuration with primary dimensions
- Interior components
- Any accessory equipment called out on shop drawings

01.04.03 Inspection and maintenance documentation submitted upon request.

01.05.00 Work Included

01.05.01 Specification requirements for installation of MSFWS.

01.05.02 Manufacturer to supply components of the MSFWS(s):

- Pretreatment chamber components (pre-assembled)
- Concrete Structure(s)
- Biofiltration chamber components (pre-assembled)
- Flow control discharge structure (pre-assembled)

01.06.00 Reference Standards

ASTM C 29	Standard Test Method for Unit Weight and Voids in Aggregate
ASTM C 88	C 88 Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C131	C 131 Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregates by Abrasion and Impact in the Los Angeles Machine
ASTM C 136	C 136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C 330	C 330 Standard Specification for Lightweight Aggregate for Structural Concrete
ASTM D 698	Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft.-lbf/ft3 (600 kN-m/m3)
ASTM D 1621	10 Standard Test Method for Compressive Properties Of Rigid Cellular Plastics
ASTM D 1777	ASTM D1777 - 96(2007) Standard Test Method for Thickness of Textile Materials
ASTM D 4716	Standard Test Method for Determining the (In-plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head
AASHTO T 99-01	Standard Method of Test for Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in) Drop
AASHTO T 104	Standard Method of Test for Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate
AASHTO T 260	Standard Method of Test for Sampling and Testing for Chloride Ion in Concrete and Concrete Raw Materials.
AASHTO T 288	Standard Method of Test for Determining Minimum Laboratory Soil Resistivity
AASHTO T 289	Standard Method of Test for Determining ph of Soil for Use in Corrosion Testing
AASHTO T 291	Standard Method of Test for Determining Water Soluble Chloride Ion Content in Soil
AASHTO T 290	T 290 Standard Method of Test for Determining Water Soluble Sulfate Ion Content in Soil

PART 2 – COMPONENTS

The Modular Subsurface Flow Wetland Systems (MSFWS) and all of its components shall be self-contained within a concrete structure constructed of concrete with a minimum 28 day compressive strength of 5,000 psi, with reinforcing per ASTM A 615, Grade 60, and supports and H20 loading as indicated by AASHTO. Each Chamber shall have appropriate access hatches for easy maintenance and sized to allow removal of all internal components without disassembly. All water transfer system components shall conform with the following;

- Filter netting shall be 100% Polyester with a number 16 sieve size, and strength tested per ASTM D 3787.
- Drainage cells shall be manufactured of lightweight injection-molded plastic and have a minimum compressive strength test of 6,000 psi and a void area along the surface making contact with the filter media of 75% or greater. The cells shall be at least 2" in thickness and allow water to freely flow in all four directions.

02.01.00 Pretreatment Chamber Components

02.01.01 Filter Cartridges shall operate at a loading rate not to exceed 3 gallons per minute per square foot surface area.

02.01.02 Drain Down System shall include a pervious floor that allows water to drain into the underdrain pipe that is connected to the discharge chamber.

02.02.00 Biofiltration Chamber Components

02.02.01 Media shall consist of ceramic material produced by expanding and vitrifying select material in a rotary kiln. Media must be produced to meet the requirements of ASTM C330, ASTM C331, and AASHTO M195. Aggregates must have a minimum 24-hour water absorption of 10.5% mass. Media shall not contain any organic material. Flow through media shall be horizontal from the outer perimeter of the chamber toward the centralized and vertically extending underdrain. The retention time in the media shall be at least 3 minutes. Downward flow filters are not acceptable alternatives. The thickness of the media shall be at least 19" from influent end to effluent end. The loading rate on the media shall not exceed 1.1 gallons per minute per square foot surface area. Media must be contained within structure that spaces the surface of the media at least 2" from all vertically extending walls of the concrete structure.

02.02.02 Planting shall be native, drought tolerant species recommend by manufacturer and/or landscape architect.

02.02.03 Plant Support Media shall be made of a 3" thick moisture retention cell that is inert and contains no chemicals or fertilizers, is not made of organic material and has an internal void percentage of 80%.

02.03.00 Discharge Chamber

The discharge device shall house a flow control orifice plate that restricts flows greater than designed treatment flow rate. All piping components shall be made of a high-density polyethylene. The discharge chamber shall also contain a drain down filter if specified on the drawing.

PART 3 – PERFORMANCE

03.01.00 General

03.01.01 Function - The MSFWS has no moving internal components and functions based on gravity flow, unless otherwise specified. The MSFWS is composed of a pretreatment chamber, a biofiltration chamber and a discharge chamber. The pretreatment device houses cartridge media filters, which consist of filter media housed in a perforated enclosure. The untreated runoff flows into the system via subsurface piping and or surface inlet. Water entering the system is forced through the filter cartridge enclosures by gravity flow. Then the flow contacts the filter media. The flow through the media is horizontal toward the center of each individual media filter. In the center of the media shall be a round slotted PVC pipe of no greater than 1.5" in diameter. The slotted PVC pipe shall extend downward into the water transfer cavity of the cartridge. The slotted PVC pipe shall be threaded on the bottom to connect to the water transfer cavity. After pollutants have been removed by the filter media the water discharges the pretreatment chamber and flows into the water transfer system and is conveyed to the biofiltration chamber. Once runoff has been filtered by the biofiltration chamber it is collected by the vertical underdrain and conveyed to a discharge chamber equipped with a flow control orifice plate. Finally the treated flow exits the system.

03.01.02 Pollutants - The MSFWS will remove and retain debris, sediments, TSS, dissolved and particulate metals and nutrients including nitrogen and phosphorus species, bacteria, BOD, oxygen demanding substances, organic compounds and hydrocarbons entering the filter during frequent storm events and continuous dry weather flows.

03.01.03 Treatment Flow Rate and Bypass - The MSFWS operates in-line. The MSFWS will treat 100% of the required water quality treatment flow based on a minimum filtration capacities listed in section 03.02.00. The size of the system must match those provided on the drawing to ensure proper performance and hydraulic residence time.

Minimum Treatment Capabilities

• System must be capable of treating flows to the specified treatment flow rate on the drawings. The flow rate shall be controlled by an orifice plate.

PART 4 - EXECUTION

04.01.00 General

The installation of the MSFWS shall conform to all applicable national, state, state highway, municipal and local specifications.

04.02.00 Installation

The Contractor shall furnish all labor, equipment, materials and incidentals required to install the (MSFWS) device(s) and appurtenances in accordance with the drawings and these specifications.

04.02.01 Grading and Excavation site shall be properly surveyed by a registered professional surveyor, and clearly marked with excavation limits and elevations. After site is marked it is the responsibility of the contractor to contact local utility companies and/or DigAlert to check for underground utilities. All grading permits shall be approved by governing agencies before commencement of grading and excavation. Soil conditions shall be tested in accordance with the governing agencies requirements. All earth removed shall be transported, disposed, stored, and handled per governing agencies standards. It is the responsibility of the contractor to install and maintain proper erosion control measures during grading and excavation operations.

04.02.02 Compaction – All soil shall be compacted per registered professional soils engineer's recommendations prior to installation of MSFWS components.

04.02.03 Backfill shall be placed according to a registered professional soils engineer's recommendations, and with a minimum of 6" of gravel under all concrete structures.

04.02.04 Concrete Structures – After backfill has been inspected by the governing agency and approved the concrete structures shall be lifted and placed in proper position per plans.

04.02.05 Subsurface Flow Wetland Media shall be carefully loaded into area so not to damage the Wetland Liner or Water Transfer Systems. The entire wetland area shall be filled to a level 9 inches below finished surface.

04.02.06 Planting layer shall be installed per manufacturer's drawings and consist of a minimum 3" grow enhancement media that ensures greater than 95% plant survival rate, and 6" of wetland media. Planting shall consist of native plants recommended by manufacturer and/or landscape architect. Planting shall be drip irrigated for at least the first 3 months to insure long term plant growth. No chemical herbicides, pesticides, or fertilizers shall be used in the planting or care and maintenance of the planted area.

04.03.00 Shipping, Storage and Handling

04.03.01 Shipping – MSFWS shall be shipped to the contractor's address or job site, and is the responsibility of the contractor to offload the unit(s) and place in the exact site of installation.

04.03.02 Storage and Handling– The contractor shall exercise care in the storage and handling of the MSFWS and all components prior to and during installation. Any repair or replacement costs associated with events occurring after delivery is accepted and unloading has commenced shall be born by the contractor. The MSFWS(s) and all components shall always be stored indoors and transported inside the original shipping container until the unit(s) are ready to be installed. The MSFWS shall always be handled with care and lifted according to OSHA and NIOSA lifting recommendations and/or contractor's workplace safety professional recommendations.

04.04.00 Maintenance and Inspection

04.04.01 Inspection – After installation, the contractor shall demonstrate that the MSFWS has been properly installed at the correct location(s), elevations, and with appropriate components. All components associated with the MSFWS and its installation shall be subject to inspection by the engineer at the place of installation. In addition, the contractor shall demonstrate that the MSFWS has been installed per the manufacturer's specifications and recommendations. All

components shall be inspected by a qualified person once a year and results of inspection shall be kept in an inspection log.

04.04.02 Maintenance – The manufacturer recommends cleaning and debris removal maintenance of once a year and replacement of the Cartridge Filters as needed. The maintenance shall be performed by someone qualified. A Maintenance Manual is available upon request from the manufacturer. The manual has detailed information regarding the maintenance of the MSFWS. A Maintenance/Inspection record shall be kept by the maintenance operator. The record shall include any maintenance activities preformed, amount and description of debris collected, and the condition of the filter.

04.04.03 Material Disposal - All debris, trash, organics, and sediments captured by the MSFWS shall be transported and disposed of at an approved facility for disposal in accordance with local and state requirements. Please refer to state and local regulations for the proper disposal of toxic and non-toxic material.

PART 5 – QUALITY ASSURNACE

05.01.00 Warranty

The Manufacturer shall guarantee the MSFWS against all manufacturing defects in materials and workmanship for a period of (5) years from the date of delivery to the _____. The manufacturer shall be notified of repair or replacement issues in writing within the warranty period. The MSFWS is limited to recommended application for which it was designed.

05.02.00 Performance Certification

The MSFWS manufacturer shall submit to the Engineer of Record a “Manufacturer’s Performance Certificate” certifying the MSFWS is capable of achieving the specified removal efficiency for suspended solids, phosphorous and dissolved metals.

I.1 Bioretention/Planter Box Inspection and Maintenance Checklist

Date: _____ Work Order # _____

Type of Inspection: □ post-storm □ annual □ routine □ post-wet season □ pre-wet season

Facility: _____ Inspector(s): _____

Defect	Conditions When Maintenance Is Needed	Inspection Result (0, 1, or 2)†	Date Maintenance Performed	Comments or Action(s) Taken to Resolve Issue
Appearance	Untidy			
Trash and Debris Accumulation	Trash, plant litter and dead leaves accumulated on surface.			
Vegetation	Unhealthy plants and appearance.			
Irrigation	Functioning incorrectly (if applicable).			
Inlet	Inlet pipe blocked or impeded.			
Splash Blocks	Blocks or pads correctly positioned to prevent erosion.			
Overflow	Overflow pipe blocked or broken.			
Filter media	Infiltration design rate is met (e.g., drains 36-48 hours after moderate - large storm event).			

†Maintenance: Enter 0 if satisfactory, 1 if maintenance is needed and include WO#. Enter 2 if maintenance was performed same day.

I.10 Proprietary Device Inspection and Maintenance Checklist

Date: _____ Work Order # _____

Type of Inspection: □ post-storm □ annual □ routine □ post-wet season □ pre-wet season

Facility: _____ Inspector(s): _____

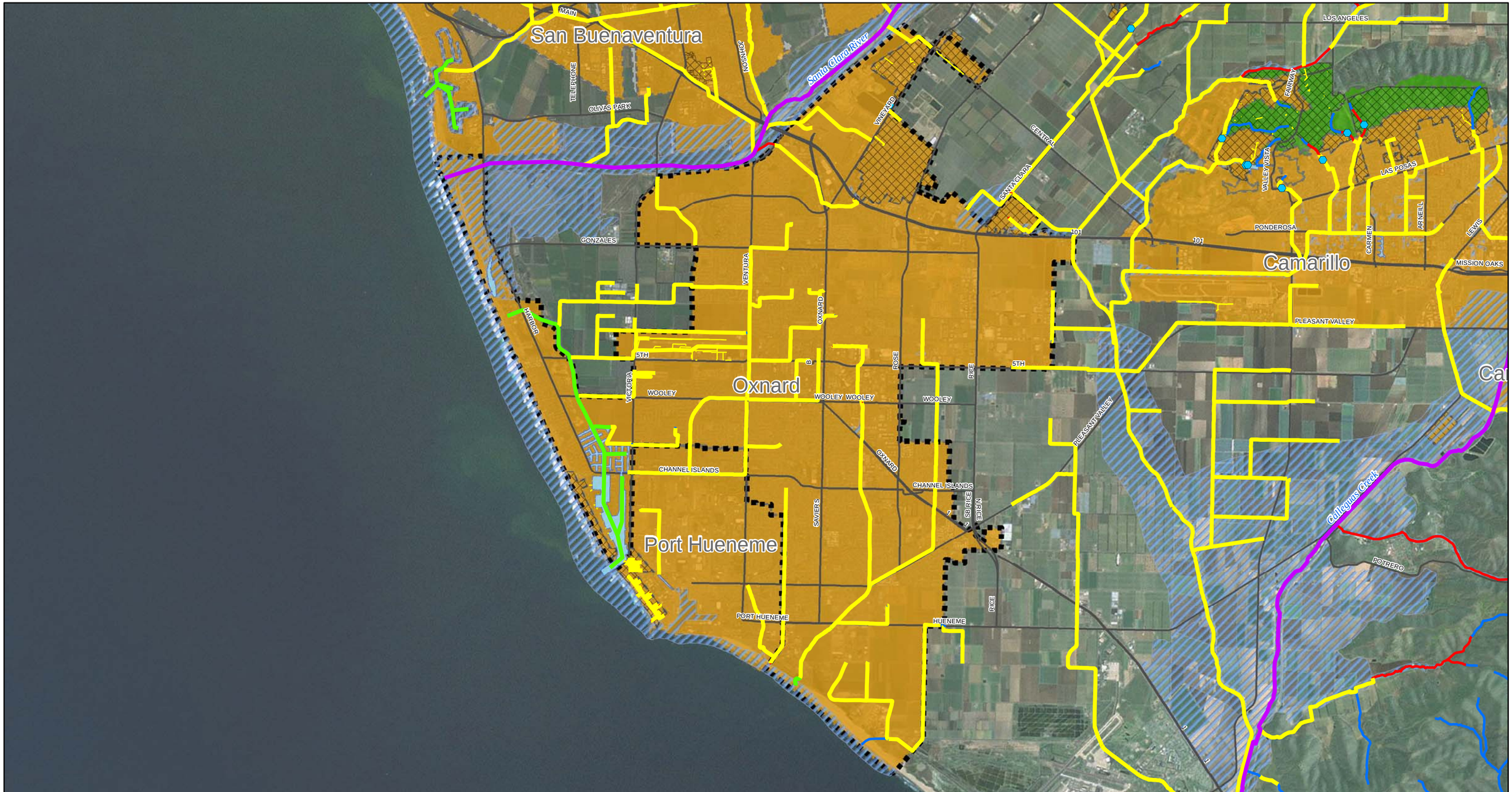
Defect	Conditions When Maintenance Is Needed	Inspection Result (0,1, or 2) †	Date Maintenance Performed	Comments or Action(s) taken to resolve issue
Refer to the manufacturer's instructions for maintenance/inspection requirements, below are generic guidelines to supplement manufacturer's recommendations.				
Underground Vault				
Sediment Accumulation on Media	Sediment depth exceeds 0.25-inches.			
Sediment Accumulation in Vault	Sediment depth exceeds 6-inches in first chamber.			
Trash/Debris Accumulation	Trash and debris accumulated on compost filter bed.			
Sediment in Drain Pipes or Cleanouts	When drain pipes, clean-outs, become full with sediment and/or debris.			
Damaged Pipes	Any part of the pipes that are crushed or damaged due to corrosion and/or settlement.			
Access Cover Damaged/Not Working	Cover cannot be opened; one person cannot open the cover using normal lifting pressure, corrosion/deformation of cover.			
Vault Structure Includes Cracks in Wall, Bottom, Damage to	Cracks wider than 1/2-inch or evidence of soil particles entering the structure through the cracks, or maintenance/inspection personnel determine that the vault is not structurally sound.			

Defect	Conditions When Maintenance Is Needed	Inspection Result (0,1, or 2) †	Date Maintenance Performed	Comments or Action(s) taken to resolve issue
Frame and/or Top Slab	Cracks wider than 1/2-inch at the joint of any inlet/outlet pipe or evidence of soil particles entering through the cracks.			
Baffles	Baffles corroding, cracking warping, and/or showing signs of failure as determined by maintenance/inspection person.			
Access Ladder Damaged	Ladder is corroded or deteriorated, not functioning properly, not securely attached to structure wall, missing rungs, cracks, or misaligned.			
Below Ground Cartridge Type				
Filter Media	Drawdown of water through the media takes longer than 1 hour and/or overflow occurs frequently.			
Short Circuiting	Flows do not properly enter filter cartridges.			

†Maintenance: Enter 0 if satisfactory, 1 if maintenance is needed and include WO#. Enter 2 if maintenance was performed same day.

Appendix F Hydromodification Control Plan Applicability Map

Attachment from Ventura County Hydromodification Control Plan (HCP), September 2013



Legend

- Large Channel (Q100>25,000 cfs) - Not Susceptible
- Modified Channel - Not Susceptible
- Storm Drain - Not Susceptible
- Tidal Channel - Not Susceptible
- Natural Redline Channel - Susceptible
- Natural Blueline Channel - Susceptible
- Lakes
- 100 Year Floodplain
- Urban County
- Street
- Basins

Hydromod Applicability
- Applicable
- Exempt
- Undetermined

Note: Applicability maps are provided for illustrative purposes. Determination of applicability is based on the requirements of the MS4 Permit and will be made by the land development permitting agency.

N

0 3,250 6,500 13,000 Feet

Basemap Source: ESRI

Hydromodification Control Applicability Map

Oxnard, CA

Geosyntec consultants

WW1717 | September 2013

Figure 3-6

P:\GIS\Ventura_County_HCP\Projects\Cities\Figure3-6Oxnard.mxd

Appendix G Geotechnical Report

Attachment by Terracon Consultants, Inc.

Geotechnical Engineering Report

Proposed Oxnard Confidential Project Gaucho

Southwest Corner of Hwy 101 and N Del Norte Blvd.

Oxnard, California

May 11, 2018

Terracon Project No. 60185017

Prepared for:
Seefried Industrial Properties, Inc.
El Segundo, California

Prepared by:
Terracon Consultants, Inc.
Tustin, California

DRAFT

May 11, 2018

Seefried Industrial Properties, Inc.
2301 Rosecrans Avenue, Suite 3165
El Segundo, CA 90245

Attn: Mr. Dan Bick
P: 310-536-7900
E: danbick@seefriedproperties.com

Re: Geotechnical Engineering Report
Oxnard Confidential Project Gaucho
Southwest Corner of Hwy 101 and N Del Norte Blvd.
Oxnard, California
Terracon Project No. 60185017

Dear Mr. Bick:

Terracon Consultants, Inc. (Terracon) has completed the geotechnical engineering services for the above referenced project. These services were performed in general accordance with our proposal number P60185017 dated March 13, 2018.

This geotechnical engineering report presents the results of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations, floor slab, pavements, and infiltration systems for the proposed development.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Sivasubramaniam (Raj) Pirathiviraj, P.E., G.E.
Senior Geotechnical Engineer

F. Fred Buhamdan, P.E.
Principal

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GEOTECHNICAL ENGINEERING REPORT
OXNARD CONFIDENTIAL PROJECT GAUCHO
SOUTHWEST CORNER OF HWY 101 AND N DEL NORTE BLVD.
OXNARD, CALIFORNIA

Terracon Project No. 60185017

May 11, 2018

1.0 INTRODUCTION

This report presents the results of our geotechnical engineering services performed for the Oxnard Confidential Project (Gaucho) to be located at the southwest corner of Hwy 101 and N Del Norte Blvd. in Oxnard, California. The Site Location Plan (Exhibit A-1) is included in Appendix A of this report. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- subsurface soil conditions
- earthwork
- seismic considerations
- floor slab design and construction
- groundwater conditions
- foundation design and construction
- pavement design and construction
- infiltration systems

Our geotechnical engineering scope of work for this project included the advancement of thirty-seven (37) test borings and six (6) Cone Penetrometer Test (CPT) soundings to approximate depths ranging between 5 to 58 feet below existing site grades.

Logs of the borings along with the Exploration Location Plan (Exhibit A-2) are included in Appendix A of this report. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included in Appendix B of this report. Descriptions of the field exploration and laboratory testing are included in their respective appendices.

2.0 PROJECT INFORMATION

2.1 Project Description

ITEM	DESCRIPTION
Site layout	Refer to the Exploration Location Plan (Exhibit A-2 in Appendix A).
Structures	The proposed project will consist in the development of the 54-acre project site to include a 640,000-square foot warehouse surrounded by rigid and flexible pavement.

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ITEM	DESCRIPTION
Construction	Reinforced concrete columns and masonry walls or tilt-up walls supported on a reinforced concrete foundation system with concrete slab-on-grade floors.
Finished floor elevation	Assumed within one foot of existing grade (assumed).
Maximum loads	Provided structural loads are presented below: ▪ Steel Columns: 1100 to 1760 kips ▪ Walls: 10 kips per linear foot (klf) ▪ Pilasters: 760 kips ▪ Slabs: 500 pounds per square foot (psf) plus weight of the slab
Proposed Roadway	A new 150-ft wide roadway is proposed with an east-west alignment and approximate length of 4,600 feet. The road will pass along the northern border of the project and extends from N Del Norte Boulevard to N Rice Avenue.
Grading	Grading will include over-excavation and backfill to bring the site to construction grade.
Below Grade Structures / Basements	Not Anticipated
Onsite Infiltration Systems	The development will also include a storm water retention system along the south side of the property.
Pavements	Paved driveway and parking will be constructed on approximately 25 acres of the parcel. We assume both rigid (concrete) and flexible (asphalt) pavement sections should be considered. Anticipated traffic is as follows: ▪ Autos/light trucks: 100 vehicles per day ▪ Light delivery and trash collection vehicles: 50 vehicles per week ▪ Tractor-trailer trucks: approximately 200 vehicles per day The pavement design period is 20 years based on Caltrans Highway Design Manual.

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2.2 Site Location and Description

Item	Description
Location	The site is located west of North Del Norte Boulevard approximately 2,250 feet south of Highway 101 in Oxnard, California. The site encompasses an approximate area of 62.5 acres.
Existing improvements	The project site is currently vacant agricultural land.
Current ground cover	Asphalt pavement with associated hardscape and landscape.
Existing topography	The site is relatively flat.
Anticipated Seismic Hazards	Based on our review of the State Fault Hazard Maps, the project site is not located within Alquist-Priolo Earthquake Fault Zones. However, the project site is mapped within a liquefaction potential zone as designated by the California Geologic Survey.

3.0 SUBSURFACE CONDITIONS

3.1 Site Geology

The site is situated within the eastern Transverse Range Geomorphic Province in Southern California. Geologic structures within the Transverse Ranges Province trend mostly east west, in contrast to the prevailing northwest trend elsewhere in the state. The Transverse Range Province contains the highest peaks composed of pre-Phanerozoic rocks south of the Sierra Nevada, four of the eight islands off the southern California coast, and is both bounded and transected by several major fault zones.[1, 2] Based on the geologic map of California (Los Angeles Sheet), the proposed project site is underlain by Alluvium (Qal).

3.2 Typical Subsurface Profile

Specific conditions encountered at the boring locations are indicated on the individual boring logs. Stratification boundaries on the boring logs represent the approximate location of changes in soil types; in-situ, the transition between materials may be gradual. Details for the borings can be found on the boring logs included in Appendix A. Based on the results of the borings, subsurface conditions on the project site can be generalized as follows:

[1] Harden, D. R., "*California Geology, Second Edition*," Pearson Prentice Hall, 2004.

[2] Norris, R. M. and Webb, R. W., *"Geology of California, Second Edition,"* John Wiley & Sons, Inc., 1990.

Description	Approximate Depth to Bottom of Stratum	Material Encountered	Consistency/Density
Stratum 1	2 to 8	Clayey Sand	Very Loose to Loose
Stratum 2	10 to 15	Sand with variable amounts of silt and clay with interbedded layers of Lean Clay with variable amounts of sand	Very Loose to Medium Dense
Stratum 3	25 to 29	Lean Clay with variable amounts of sand with interbedded layers of Sand with variable amounts of silt and clay	Very Soft to Hard
Stratum 4	28 to 35	Sand with variable amounts of clay, silt and gravel	Medium Dense
Stratum 5	51½	Lean Clay with variable amounts of sand with interbedded layers of Clayey Sand	Medium Stiff to Hard

Laboratory tests were conducted on selected soil samples and the test results are presented in Appendix B. Atterberg limits test indicates that on-site clayey soils have low to medium plasticity. An Expansion Index test was performed on the near surface clayey soils and indicates that these materials have an Expansion Index of 12 and 15. Consolidation/swell tests indicate that the clayey soils encountered at approximate depth of 2½ feet have slight collapse potential when saturated under normal footing loads of 2,000 psf. Direct shear test was performed in a sandy soils encountered at the depth of 7½ feet indicates a ultimate friction angle of 32 degrees and corresponding cohesion of 78 psf. R-value test indicates that the near surface materials have R-values ranging between 69 and 72.

3.3 Groundwater

Groundwater was observed in the test borings at depths ranging between 3 and 11 feet below ground surface (bgs) at the time of field exploration. These observations represent groundwater conditions at the time of the field exploration and may not be indicative of other times, or at other locations.

In clayey soils with low permeability, the accurate determination of groundwater level may not be possible without long term observation. Long term observation after drilling could not be performed as borings were backfilled immediately upon completion due to safety concerns. Groundwater levels can best be determined by implementation of a groundwater monitoring plan. Such a plan would include installation of groundwater monitoring wells, and periodic measurement of groundwater levels over a sufficient period of time.

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Based on regional data, historical groundwater is anticipated to occur at depths of less than 10 feet below the ground surface at the project location.[3]

3.4 Faulting and Estimated Ground Motions

The site is located in a seismically active area. The type and magnitude of seismic hazards affecting the site are dependent on the distance to causative faults, the intensity, and the magnitude of the seismic event. The following table indicates the distance of the fault zones and the associated maximum credible earthquake that can be produced by nearby seismic events, as calculated using the USGS Unified Hazard Tool. The Simi-Santa Rosa Fault, which is located approximately 3.5 kilometers from the site, is considered to have the most significant effect at the site from a design standpoint.

Estimated Earthquakes for Regional Faults

Fault Name	Approximate Distance to Site (kilometers)	Maximum Credible Earthquake (MCE) Magnitude
Simi-Santa Rosa	3.5	6.94
Oak Ridge (Onshore)	6.5	7.36
Ventura-Pitas Point	10.4	7.41
Oak Ridge (Offshore)	13.3	6.87

Based on these sources, the mean earthquake magnitude at the subject site for a 2% Probability of Exceedance in 50 years (Return period of 2475 years) is expected to be about 6.89. Based on the USGS Design Maps Summary Report, using the American Society of Civil Engineers (ASCE 7-10) standard, the peak ground acceleration (PGA_M) at the project site is expected to be 0.935 g.

The site is not located within an Alquist-Priolo Earthquake Fault Zone based on our review of the State Fault Hazard Maps.[4]

3.5 Liquefaction Potential

Liquefaction is a mode of ground failure that results from the generation of high pore water pressures during earthquake ground shaking, causing loss of shear strength. Liquefaction is typically a hazard where loose sandy soils exist below groundwater. The California Geologic Survey (CGS) has designated certain areas within southern California as potential liquefaction hazard zones. These are areas considered at a risk of liquefaction-related ground failure during

3. California Geologic Survey, Seismic Hazard Zone Report for the Oxnard 7.5-Minute Quadrangle, Orange County, CA.
4. California Department of Conservation Division of Mines and Geology (CDMG), *"Digital Images of Official Maps of Alquist-Priolo Earthquake Fault Zones of California, Southern Region"*, CDMG Compact Disc 2000-003, 2000.

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a seismic event, based upon mapped surficial deposits and the presence of a relatively shallow water table.

The project site is located within a potential liquefaction hazard zone as designated by the CGS. Materials encountered at the project site generally consisted of interbedded layers of fine and coarse grained soils. Groundwater was observed in the test borings at depths ranging between 3 and 11 feet bgs at the time of field exploration. Historical high groundwater in the project vicinity is shallower than 10 feet below the ground surface.

Liquefaction analysis for the site was performed in general accordance with the DMG Special Publication 117. The liquefaction study utilized the software "LiquefyPro" by CivilTech Software. This analysis was based on the soils data using CPT soundings CPT-16, CPT-18, CPT-19 and CPT-20. Peak Ground Acceleration (PGAm) was of 0.935 g was used. The CPT calculation was performed using the modified Robertson et al method which includes fine correction for liquefaction and settlement. Settlement analysis used the Tokimatsu, M-correction method. Liquefaction potential analysis was calculated from a depth of 0 to 50 feet bgs. Liquefaction potential analysis is attached in Appendix D of this report.

Based on the subsurface conditions presented in CPTs and based on the calculation results, seismically-induced settlements are expected to range between 2.5 and 3 inches and seismically-induced dry sand differential settlements are expected to range between 1.3 and 2.0 inches.

3.6 Seismic Considerations

DESCRIPTION	VALUE
2016 California Building Code Site Classification (CBC) [1]	E [2]
Site Latitude	N 34.2138°
Site Longitude	W -119.1309°
S_s Spectral Acceleration for a Short Period	2..641g
S_1 Spectral Acceleration for a 1-Second Period	0.954g
F_a Site Coefficient for a Short Period (Class E) [2]	0.9
F_v Site Coefficient for a 1-Second Period (Class E) [2]	2.4

[1] Note: The 2016 California Building Code (CBC) requires a site soil profile determination extending to a depth of 100 feet for seismic site classification.

[2] Per CBC Table 1613.5.2, any profile containing soils vulnerable to potential failure or collapse under seismic loading such as liquefiable soils. However, for structures with fundamental periods of vibration less than 0.5 seconds, Section 20.3.1 of ASCE 7-05 allows the site coefficients (F_a and F_v) to be determined assuming that liquefaction does not occur (i.e., Site Class E). The structure's fundamental period should be verified by the structural engineer.

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3.7 Percolation Test Results

Six (6) borings were advanced to approximate depths ranging between 3 and 7 feet bgs and were utilized for percolation testing (falling head borehole permeability). After the borings were advanced the augers were removed from the ground and an approximately 2-inch thick layer of gravel was placed in the bottom of each boring, and a 3-inch diameter perforated pipe was installed on top of the gravel layer in the three borings. Gravel was used to backfill between the perforated pipes and the boring sidewall. The borings were then filled with water for a pre-soak period. At the beginning of each test, the pipes were refilled with water and readings were taken at 10-minute time intervals. Percolation rates are provided in the following table:

TEST RESULTS				
Test Location (depth of percolation)	**Soil Classification**	**Percolation Rate, in/hr**	**Infiltration Rate[1], in/hr**	**Initial Water Head, in**
Perc-1 (0ft - 5ft)	Clayey Sand	5.0	0.44	42
Perc-2 (0ft - 5ft)	Clayey Sand	0.5	<0.1	56
Perc-3 (0ft - 5ft)	Clayey Sand	2.0	0.15	51
Perc-4 (0ft - 6ft)	Clayey Sand	19.5	1.35	57
Perc-5 (0ft - 7ft)	Clayey Sand	3.0	0.31	35
Perc-6 (0ft - 3ft)	Clayey Sand	1.0	0.11	31

[1]If proposed infiltration system will mainly rely on vertical downward seepage, the correlated infiltration rates should be used. The correlated infiltration rates were calculated using the LA County Reduction Factor method

The field test results are not intended to be design rates. They represent the result of our tests, at the depths and locations indicated, as described above. The design rate should be determined by the designer by applying an appropriate factor of safety. The designer should take into consideration the variability of the native soils when selecting appropriate design rates. With time, the bottoms of infiltration systems tend to plug with organics, sediments, and other debris. Long term maintenance will likely be required to remove these deleterious materials to help reduce decreases in actual percolation rates.

The percolation test was performed with clear water, whereas the storm water will likely not be clear, but may contain organics, fines, and grease/oil. The presence of these deleterious materials will tend to decrease the rate that water percolates from the infiltration system. Design of the storm water infiltration systems should account for the presence of these materials and should incorporate structures/devices to remove these deleterious materials.

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Based on the soils encountered in our borings, we expect the percolation rates of the soils could be different than measured in the field due to variations in fines and gravel content. The design elevation and size of the proposed infiltration system should account for this expected variability in infiltration rates.

Infiltration testing should be performed after construction of the infiltration system to verify the design infiltration rates. It should be noted that siltation and vegetation growth, along with other factors, may affect the infiltration rates of the infiltration areas. The actual infiltration rate may vary from the values reported here. Infiltration systems should be located at least 10 feet from any existing or proposed foundation system.

3.8 Corrosion Potential

Results of soluble sulfate testing indicate that ASTM Type V Portland cement should be used for all concrete on and below grade. Foundation concrete may be designed for exposure class S2 in accordance with the provisions of the ACI Design Manual, Section 318, Chapter 19.

Laboratory test results indicate the on-site soils have a pH of 8.19 and 7.97, a minimum resistivity values of 669 and 970 ohm-centimeters, sulfate contents of 0.15 and 0.37 percent, and a chloride contents of 95 and 145 ppm, as shown on the attached Summary of Laboratory Results sheet.

These values indicate corrosive environment for the ferrous metals and corrosion engineer should be consulted to further evaluate corrosive potential of the on-site soils to underground ferrous metals.

Refer to the Summary of Laboratory Results in Appendix B for the complete results of the corrosivity testing conducted in conjunction with this geotechnical exploration.

4.0 RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

4.1 Geotechnical Considerations

The site appears suitable for the proposed construction based upon geotechnical conditions encountered in the test borings and provided the geotechnical engineering recommendations included in this report are implemented in the design and construction of the project.

Due to the anticipated seismic induced settlement, liquefaction potential, and presence of relatively high compressibility of clay soils, we recommend that the upper subsurface soils be improved and densified by rammed aggregate pier (RAP) systems. The proposed building may be supported by shallow foundations bearing on the RAP improved soils. As an alternative, the

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proposed building may be supported on drilled shaft foundations. Shallow foundations bearing on engineered fill may be used to support minor on-site structures.

Due to the low bearing capacity of the near surface soils, the upper on-site soils should be over-excavated to the depth of 2 feet below the deepest bottom of foundation or 4 feet below the existing grades, whichever is greater, within the footprint of the proposed building. The excavated soils should be replaced with engineered fill. On-site soils are considered suitable for use as engineered fill beneath floor slabs and foundations.

Geotechnical engineering recommendations for foundation systems and other earth connected phases of the project are outlined below. The recommendations contained in this report are based upon the results of field and laboratory testing (which are presented in Appendices A and B), engineering analyses, and our current understanding of the proposed project.

4.2 Earthwork

The following presents recommendations for site preparation, excavation, subgrade preparation and placement of engineered fills on the project. The recommendations presented for the design and construction of earth supported elements including, foundations, slabs, and pavements, are contingent upon following the recommendations outlined in this section.

Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, foundation bearing soils, and other geotechnical conditions exposed during the construction of the project.

4.2.1 Site Preparation

Strip and remove existing vegetation, top soil, organic materials, root systems, and other deleterious materials from proposed building and pavement areas. We recommend stripping topsoil to depths that expose soils with less than 3 percent organics and no roots having a diameter greater than 1/8 inch. While the depth of the unsuitable soils should be expected to vary, the thickness of the top soil layer may be estimated to range between 6 and 12 inches for construction budgeting purposes. The thickness of the top soil layer was not determined during our field exploration. Therefore, the actual depth of stripping should be verified by engineering observations made during the grading operations at the project. Exposed surfaces should be free of mounds and depressions which could prevent uniform compaction.

Stripped materials consisting of vegetation and organic materials should be wasted from the site, or used to revegetate landscaped areas or exposed slopes after completion of grading operations. If it is necessary to dispose of organic materials on site, they should be placed in non-structural areas, and in fill sections not exceeding 5 feet in height

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The site should be initially graded to create a relatively level surface to receive fill, and provide for a relatively uniform thickness of fill beneath proposed building structures.

Excavations that extend below groundwater would involve construction dewatering to maintain excavations in a relatively dry condition. Pumping from sumps may be utilized to control water within excavations. Well points may be required for significant groundwater flow, or where excavations penetrate groundwater to a significant depth. Excavation contractors are responsible for dewatering the planned temporary excavations and maintaining the stability of the excavations.

Although evidence of fill or underground facilities such as septic tanks, cesspools, basements, and utilities was not observed during the site reconnaissance, such features could be encountered during construction. If fill materials or underground facilities are encountered, such materials and features should be removed and the excavation thoroughly cleaned prior to backfill placement and/or construction.

4.2.2 Subgrade Preparation

Due to the low bearing capacity of the near surface soils, the upper on-site soils should be over-excavated within the footprint of the proposed buildings to a depth of 4 feet below existing grades, or 2 feet below the deepest foundation, whichever is greater. Over-excavation should extend laterally a minimum of 3 feet beyond the perimeter of the proposed buildings.

Excavations should then be backfilled with engineered fill placed in lifts of 8 inches or less in loose thickness and should be moisture conditioned and compacted following the recommendations in section 4.2.4 of this report.

Care should be taken to prevent wetting or drying of the bearing materials during construction. Wet, dry, or loose/disturbed material in the bottom of the footing excavations should be removed before foundation concrete is placed.

Subsequent to the surface clearing, grubbing, and other overexcavation efforts, subgrade soils beneath exterior slabs and pavements should be scarified, moisture conditioned, and compacted to a minimum depth of 10 inches. The moisture content and compaction of subgrade soils should be maintained until slab or pavement construction.

Exposed areas which will receive fill, once properly cleared and benched where necessary, should be scarified to a minimum depth of 10 inches, moisture conditioned, and compacted per the compaction requirements in Section 4.2.4.

The exposed soils at the bottom of the excavations are expected to have elevated water contents and may pump or yield during attempts to compact the bottom of the excavation. If such conditions occur, the bottom of the pits should be over-excavated to a minimum depth of

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12 inches, and replaced with well sorted crushed aggregate materials. The aggregate materials should be wrapped (top, bottom and sides) with non-woven geotextile such as Mirafi 140N, or an approved equivalent. The crushed aggregate could have a nominal particle size of ¾ to 1 inch. The aggregate layer and the geotextile layer are anticipated to create a stable platform beneath the overlying backfill materials.

4.2.3 Fill Materials and Placement

All fill materials should be inorganic soils free of vegetation, debris, and fragments larger than three inches in size. Pea gravel or other similar non-cementitious, poorly-graded materials should not be used as fill or backfill without the prior approval of the geotechnical engineer. The on-site soils are considered suitable for use as engineered fill for this project.

Approved on-site and imported materials may be used as fill material for the following:

- general site grading
- foundation areas
- interior floor slab areas
- foundation backfill
- pavement areas
- exterior slab areas

Imported soils for use as fill material within proposed building and structure areas should conform to low volume change materials as indicated below:

Gradation	Percent Finer by Weight (ASTM C 136)
3”	100
No. 4 Sieve	50-100
No. 200 Sieve	20-50

- Liquid Limit ..... 30 (max)
- Plasticity Index ..... 15 (max)
- Maximum expansion index* ..... 20 (max)

*ASTM D 4829

Engineered fill should be placed and compacted in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift. Fill lifts should not exceed eight inches loose thickness.

4.2.4 Compaction Requirements

Recommended compaction and moisture content criteria for engineered fill materials are as follows:

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Material Type and Location	Per the Modified Proctor Test (ASTM D 1557)		
	Minimum Compaction Requirement (%)	Range of Moisture Contents for Compaction Above Optimum	
		Minimum	Maximum
On-site soils and low volume change imported fill:			
Beneath foundations:	95	0%	+3%
Beneath interior slabs:	95	0%	+3%
Fill greater than 5 feet in depth	95	0%	+3%
Miscellaneous backfill and behind retain walls:	90	0%	+3%
Beneath pavements:	95	0%	+3%
Utility Trenches*:	90	0%	+3%
Bottom of native soil excavation receiving fill:	95	0%	+3%
Aggregate base (beneath pavements):	95	0%	+3%

* Upper 12 inches should be compacted to 95% within pavement and structural areas. Low-volume change imported soils should be used in structural areas.

4.2.5 Grading and Drainage

Positive drainage should be provided during construction and maintained throughout the life of the development. Infiltration of water into utility trenches or foundation excavations should be prevented during construction. Planters and other surface features which could retain water in areas adjacent to the building or pavements should be sealed or eliminated. In areas where sidewalks or paving do not immediately adjoin the structure, we recommend that protective slopes be provided with a minimum grade of approximately 5 percent for at least 10 feet from perimeter walls.

Backfill against footings, exterior walls, and in utility and sprinkler line trenches should be well compacted and free of all construction debris to reduce the possibility of moisture infiltration. We recommend a minimum horizontal setback distance of 10 feet from the perimeter of any building and the high-water elevation of the nearest storm-water retention basin.

Roof drainage should discharge into splash blocks or extensions when the ground surface beneath such features is not protected by exterior slabs or paving. Sprinkler systems and landscaped irrigation should not be installed within 5 feet of foundation walls.

4.2.6 Exterior Slab Design and Construction

Exterior slabs-on-grade, exterior architectural features, and utilities founded on, or in backfill may experience some movement due to the volume change of the backfill. To reduce the potential for damage caused by movement, we recommend:

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- exterior slabs should be supported directly on subgrade fill with no, or very low expansion potential;
- strict moisture-density control during placement of subgrade fills;
- maintain proper subgrade moisture until placement of slabs;
- placement of effective control joints on relatively close centers and isolation joints between slabs and other structural elements;
- provision for adequate drainage in areas adjoining the slabs;
- using of designs which allow vertical movement between the exterior slabs and adjoining structural elements.

4.2.7 Utility Trenches

It is anticipated that the on-site soils and fill materials will provide suitable support for underground utilities and piping that may be installed. Any soft and/or unsuitable material encountered at the bottom of excavations should be removed and be replaced with an adequate bedding material. A non-expansive granular material with a sand equivalent greater than 30 should be used for bedding and shading of utilities, unless specified otherwise by the utility manufacturer.

On-site materials are considered suitable for backfill of utility and pipe trenches from one foot above the top of the pipe to the final ground surface, provided the material is free of organic matter and deleterious substances. Imported low volume change soils should be used for trench backfill in structural areas.

Trench backfill should be mechanically placed and compacted as discussed earlier in this report. Compaction of initial lifts should be accomplished with hand-operated tampers or other lightweight compactors. Where trenches are placed beneath slabs or footings, the backfill should satisfy the gradation and expansion index requirements of engineered fill discussed in this report. Flooding or jetting for placement and compaction of backfill is not recommended.

4.2.8 Construction Considerations

It is anticipated that excavations for the proposed construction can be accomplished with conventional earthmoving equipment. On-site clayey soils may pump and unstable subgrade conditions could develop during general construction operations, particularly if the soils are wetted and/or subjected to repetitive construction traffic. The use of light construction equipment would aid in reducing subgrade disturbance. The use of remotely operated equipment, such as a backhoe, would be beneficial to perform cuts and reduce subgrade disturbance. Should unstable subgrade conditions develop stabilization measures will need to be employed.

At the time of our study, moisture contents of the surface and near-surface native soils ranged from about 10 percent to 25 percent. Based on these moisture contents, some moisture conditioning will likely be needed for the project. The soils may need to be dried by aeration

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during dry weather conditions, or an additive, such as lime, cement, or kiln dust, may be needed to stabilize the soil.

Upon completion of filling and grading, care should be taken to maintain the subgrade moisture content prior to construction of floor slabs and pavements. Construction traffic over the completed subgrade should be avoided to the extent practical. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. If the subgrade should become desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and recompacted prior to floor slab and pavement construction.

The geotechnical engineer should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation, proof-rolling, placement and compaction of controlled compacted fills, backfilling of excavations to the completed subgrade.

We recommend that the earthwork portion of this project be completed during extended periods of dry weather if possible. If earthwork is completed during the wet season (typically November through April) it may be necessary to take extra precautionary measures to protect subgrade soils. Wet season earthwork operations may require additional mitigative measures beyond that which would be expected during the drier summer and fall months. This could include diversion of surface runoff around exposed soils and draining of ponded water on the site. Once subgrades are established, it may be necessary to protect the exposed subgrade soils from construction traffic.

Excavations into the on-site soils will possibly encounter groundwater, depending upon the final depth of excavation. The individual contractor(s) is responsible for designing and constructing stable, temporary excavations as required to maintain stability of both the excavation sides and bottom. Excavations should be sloped or shored in the interest of safety following local, and federal regulations, including current OSHA excavation and trench safety standards.

4.3 Foundations

Due to the anticipated seismic induced settlement, liquefaction potential, and presence of relatively high compressibility clay soils, we recommend that the upper subsurface soils be improved and densified by rammed aggregate piers (RAP) systems. The proposed building may be supported by shallow foundations bearing on the RAP improved soils. As an alternative, the proposed building may be supported on drilled shaft foundations. Shallow foundations bearing on engineered fill may be used to support minor on-site structures.

4.3.1 Rammed Aggregate Pier (RAP) Recommendations

Rammed Aggregate Pier elements may be installed for support of the main building. RAP elements provide increased bearing capacity, reduce liquefaction potential, and enhance settlement control by delivering a composite stiffened bearing materials to reduce the matrix soil compressibility.

The construction process typically consists of utilizing pre-augered or displacement methods. The augered or displaced cavities are backfilled with aggregate that is compacted in place using static crowd pressure augmented with a high frequency, low amplitude, vibratory hammer. The impact hammer densifies aggregate vertically while the tamper foot forces aggregate laterally into cavity sidewalls resulting in stiff RAP elements and a stiffened matrix/soil. Constructed diameters may range from 20 to 30 inches depending on the method of installation.

In the event that RAP foundation systems are considered for the project, the proposed buildings can be supported on shallow foundations. RAP design is typically performed by a specialty design build ground improvement contractor who should be consulted to provide further analysis and recommendations. The specialty contractor shall make their own interpretation of strength parameters and soil characteristics from the boring logs, CPT soundings, and laboratory testing presented in Appendix A and B of this report.

4.3.2 Shallow Foundations with RAP Design Recommendations

DESCRIPTION	RECOMMENDATION
Structures	Proposed Main Building
Bearing Material	Improved subsurface soils comprised of a composite of RAP systems, engineered fill extending to a minimum of 4 feet below existing grades or 2 feet below deepest foundation, whichever is greater, and onsite soils beneath 4 feet bgs.
Allowable Bearing Pressure	To be provided by specialty contractor based on RAP design
Minimum Width	Walls: 18 inches; Columns: 24 inches
Minimum Embedment Depth Below Finished Grade	18 inches
Estimated Static Settlement	1 inch (should be achieved by specialty contractor design)
Estimated Differential Static Settlement	¾ inch in 40 feet. (should be achieved by specialty contractor design)

4.3.3 Shallow Foundations Design Recommendations

DESCRIPTION	RECOMMENDATION
Structures	Minor structures with foundation width less than 5 feet

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DESCRIPTION	RECOMMENDATION
	such as trash enclosures, equipment pads, and low retaining walls.
Bearing Material	Engineered fill extending to a minimum of 4 feet below existing grades or 2 feet below the deepest foundation, whichever is greater.
Allowable Bearing Pressure	2,000 psf for footing widths up to 6 feet.
Maximum Width	6 feet
Minimum Width	Walls: 18 inches; Columns: 24 inches
Minimum Embedment Depth Below Finished Grade	18 inches
Estimated Static Settlement	1 inch
Estimated Differential Static Settlement	¾ inch in 40 feet.

4.3.4 Drilled Shaft Design Recommendations

As an alternative, the proposed building may be supported on drilled shaft foundations. Terracon can provide design and construction recommendations to support the proposed building in the event shallow foundations and RAP systems were not feasible.

4.4 Floor Slab

DESCRIPTION	VALUE
Interior floor system	Slab-on-grade concrete.
Floor slab support	Engineered fill extending to a minimum of 4 feet below existing grades or 2 feet below the deepest foundation, whichever is greater.
Sub-base/Capillary break	4-inches of Class II Aggregate Base materials
Modulus of subgrade reaction	200 pounds per square inch per inch (psi/in) (The modulus was obtained based on engineered fill, aggregate sub-base, and estimates obtained from NAVFAC 7.1 design charts). This value is for a small loaded area (1 Sq. ft or less) such as for point loads and should be adjusted for larger loaded areas.

In areas of exposed concrete, control joints should be saw cut into the slab after concrete placement in accordance with ACI Design Manual, Section 302.1R-37 8.3.12 (tooled control joints are not recommended). Additionally, dowels should be placed at the location of proposed construction joints. To control the width of cracking (should it occur) continuous slab reinforcement should be considered in exposed concrete slabs.

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Positive separations and/or isolation joints should be provided between slabs and all foundations, columns or utility lines to allow independent movement. Interior trench backfill placed beneath slabs should be compacted in accordance with recommendations outlined in the Earthwork section of this report. Other design and construction considerations, as outlined in the ACI Design Manual, Section 302.1R are recommended.

The use of a vapor retarder or barrier should be considered beneath concrete slabs on grade that will be covered with moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture to prevent moisture migration. When conditions warrant the use of a vapor retarder, the slab designer and slab contractor should refer to ACI 302 and ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder/barrier.

4.5 Lateral Earth Pressures

The lateral earth pressure recommendations herein are applicable to the design of rigid retaining walls subject to slight rotation, such as cantilever, or gravity type concrete walls. These recommendations are not applicable to the design of geogrid-reinforced-backfill walls. Recommendations covering these types of wall systems are beyond the scope of services for this assignment; however, we are available to develop recommendations for the design of such wall systems upon request.

For onsite soils used as engineered fill above any free water surface, recommended equivalent fluid pressures for foundation elements are:

ITEM	VALUE (Onsite Soils)
Active Case	37 psf/ft
Passive Case[1]	385 psf/ft
At-Rest Case	57 psf/ft
Surcharge Pressure	0.31*(Surcharge)
Coefficient of friction	0.35[2]

[1] Note: Ignore passive pressure in the upper 18 inches because of soil disturbance.
[2] Note: Reduce to 0.30 when used in conjunction with passive pressure.

The lateral earth pressures herein do not include any factor of safety and are not applicable for submerged soils/hydrostatic loading. Additional recommendations may be necessary if such conditions are to be included in the design.

Surcharge pressure for uniform pressure acting at the back of the wall should be applied to the wall as a uniform pressure over the entire wall height and is added to the static earth pressures. Other surcharge loads should be considered where they are located within a horizontal distance

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behind the wall equal to 1.5 times the height of the wall. Surcharge stresses due to point loads, line loads, and those of limited extent, such as compaction equipment, should be evaluated using elastic theory.

Fill against foundation and retaining walls should be compacted to densities specified in the Earthwork section of this report. Compaction of each lift adjacent to walls should be accomplished with hand-operated tampers or other lightweight compactors.

Adequate drainage should be provided behind the walls to collect water from irrigation, landscaping, surface runoff, or other sources, to achieve a free-draining backfill condition. The wall back drain should consist of Class 2 permeable materials that are placed behind the entire wall height to within 18 inches of ground surface at the top of the wall. As a minimum, the width of Class 2 permeable materials behind the wall should be two feet. Water collected by the back drain should be directed to an appropriate outlet, such as weep holes or perforated pipes, for disposal.

4.6 Pavements

4.6.1 Design Recommendations

Three samples of the near surface soils were obtained and tested to determine their Resistance Value (R-value). These tests all produced R-values above 50. These samples were taken in the upper 24 inches of the surface. Given the cut and fills anticipated at the site, we recommend obtaining additional R-value samples once rough grading is near completion, within 1 foot. Some of the underlying soils have more fines and will eventually mixed with the upper materials, likely resulting in lower R-values. At this time, a design R-value of 45 was used for the Asphalt Concrete (AC) and Portland Cement Concrete (PCC) pavement designs. The anticipated daily traffic of 200 trucks corresponds to a traffic index (TI) of 10.0. Since the entire parking area will not receive this much truck traffic, we are also providing pavement sections for TI's of 6.0, 7.0, and 8.0 for use by the civil engineer in determining which pavement section to use for the truck parking areas. These TI's correspond to daily truck traffic volumes of 2, 10, and 30, respectively. We have also included a pavement section for automobile traffic using a TI of 5.0.

Assuming the pavement subgrades will be prepared as recommended within this report, the following pavement sections should be considered minimums for this project for the traffic indices assumed in the table below. As more specific traffic information becomes available, we should be contacted to reevaluate the pavement design recommendations.

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Conventional Asphalt Concrete Design					
Layer	**Thickness (inches)**				
	TI=5.0	**TI=6.0**	**TI=7.0**	**TI=8.0**	**TI= 10.0**
Asphalt Concrete	3.0	3.0	4.0	4.0	5.0
Aggregate Base	4.0	6.0	6.0	9.0	11.0

1. See **Project Description** for more specifics regarding traffic classifications.
2. All materials should meet the current California Department of Transportation (Caltrans) Standard Specifications, latest edition.

Portland Cement Concrete Design			
Layer	**Thickness (inches)**		
	TI=5.0	**TI=10.0**	**Dumpster Pad** [3]
PCC	4”	8” Jointed reinforced with dowels or 10” Plain Jointed	7”
Aggregate Base	--	4”	4”

1. All materials should meet the current Caltrans Standard Specifications, latest edition.
2. In areas of anticipated heavy traffic, fire trucks, delivery trucks, or concentrated loads (e.g. dumpster pads), and areas with repeated turning or maneuvering of heavy vehicles.

These pavement sections are considered minimal sections based upon the expected traffic and the existing subgrade conditions. However, they are expected to function with periodic maintenance and overlays if good drainage is provided and maintained.

Subgrade soils beneath all pavements should be scarified, moisture conditioned, and compacted to a minimum depth of 10 inches. All materials should meet the CALTRANS Standard Specifications for Highway Construction. Aggregate base materials should meet the gradation and quality requirement of Class 2 Aggregate Base in Caltrans Standard Specifications, latest edition, Sections 25 through 29.

All concrete for rigid pavements should have a minimum flexural strength of 600 psi, and be placed with a maximum slump of four inches. Proper joint spacing will also be required to prevent excessive slab curling and shrinkage cracking. All joints should be sealed to prevent entry of foreign material and dowelled where necessary for load transfer.

It is our experience that asphalt pavement sections will suffer severe distress and shoving in tight turning radiuses areas. We recommend that portland cement concrete pavement should be used for such areas.

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Asphalt concrete sections must be thickened to 8 inches at transitions with concrete, especially at the trash enclosure pad, loading zones, escape lane intersections, and any other transitions with concrete.

Preventative maintenance should be planned and provided for through an on-going pavement management program in order to enhance future pavement performance. Preventative maintenance activities are intended to slow the rate of pavement deterioration, and to preserve the pavement investment.

Preventative maintenance consists of both localized maintenance (e.g. crack sealing and patching) and global maintenance (e.g. surface sealing). Preventative maintenance is usually the first priority when implementing a planned pavement maintenance program and provides the highest return on investment for pavements.

4.6.2 Pavement Construction Considerations

Materials and construction of pavements for the project should be in accordance with the requirements and specifications of the State of California Department of Transportation, or other approved local governing specifications.

Base course or pavement materials should not be placed when the surface is wet. Surface drainage should be provided away from the edge of paved areas to minimize lateral moisture transmission into the subgrade.

5.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related construction phases of the project.

The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between explorations, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or

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prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

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APPENDIX A

FIELD EXPLORATION

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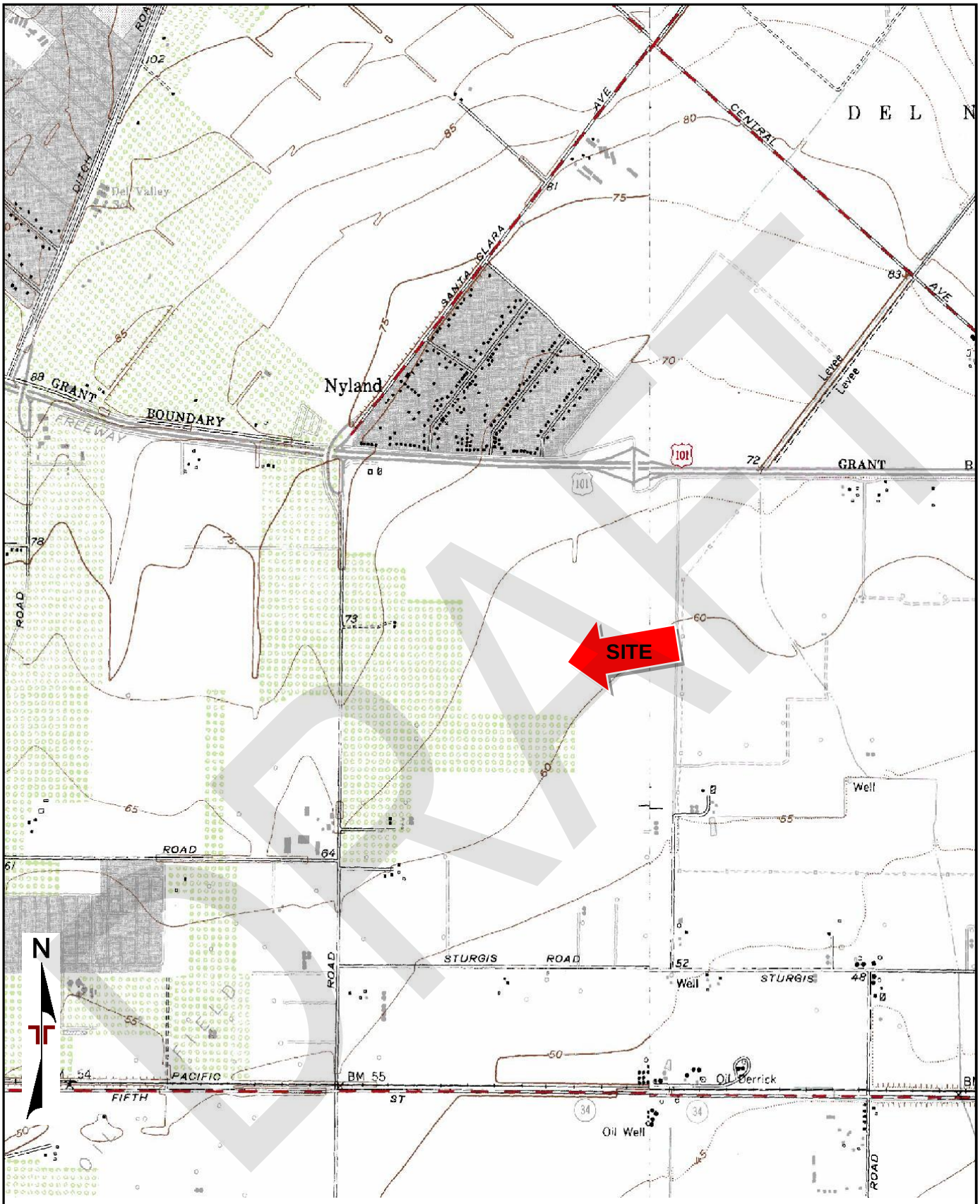
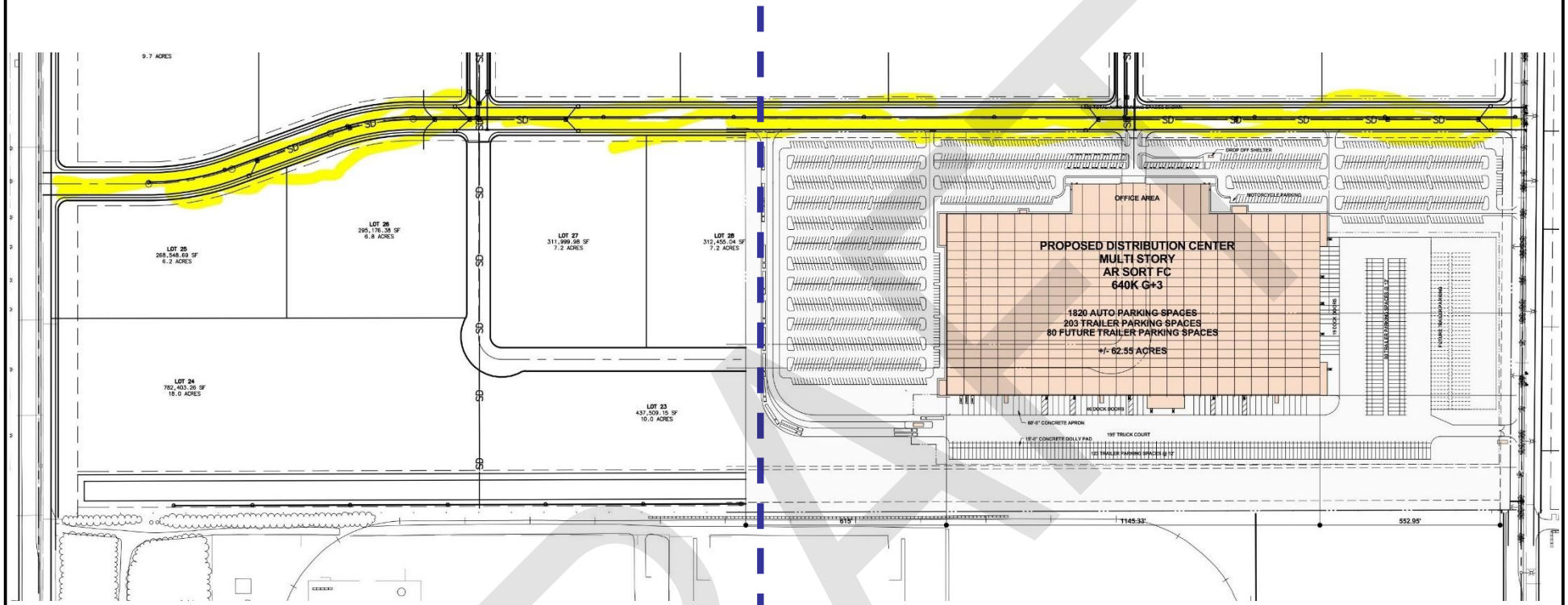


TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY
QUADRANGLES INCLUDE: OXNARD, CA (1/1/1967) and CAMARILLO, CA (1/1/1967).

Project Manager: JM	Project No. 60185017	Terracon 1421 Edinger Ave Ste C Tustin, CA 92780-6287	SITE LOCATION	Exhibit
Drawn by: DTB	Scale: 1"=2,000'		Seefried: Industrial Warehouse; Oxnard **Highway 101 and Del Norte Boulevard** **Oxnard, CA**	A-1
Checked by: JM	File Name: A-1			
Approved by: FB	Date: 04/2018			



A-3

A-4

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DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	JM
Drawn by:	DTB
Checked by:	JM
Approved by:	FB

Project No.	60185017
Scale:	1"≈480'
File Name:	A-2
Date:	04/2018

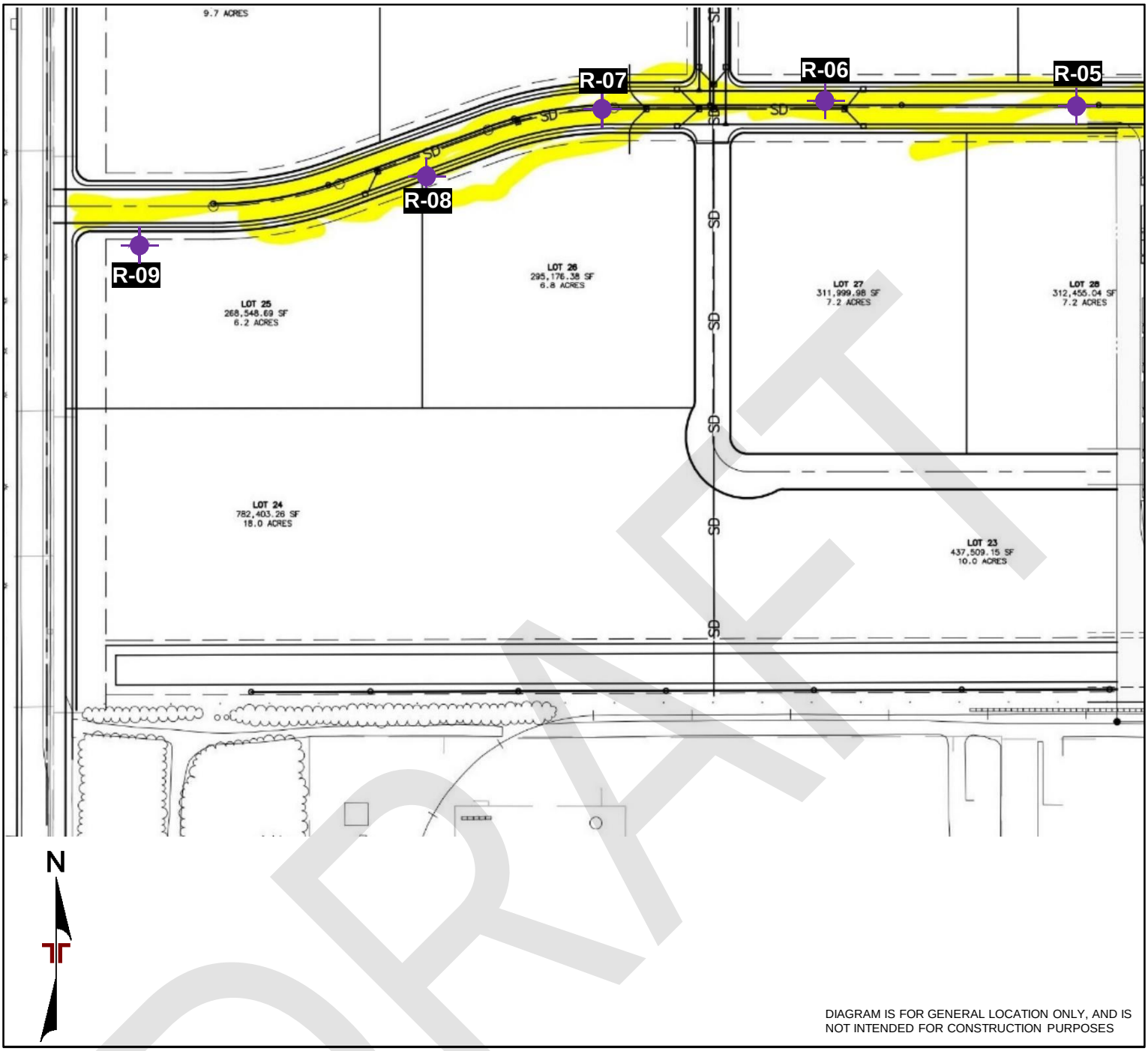
Terracon
Consulting Engineers & Scientists
1421 Edinger Avenue Ste C Tustin, California 92780
PH. (949) 261-0051 FAX. (949) 261-6110

BORING LOCATION PLAN

Seefried: Industrial Warehouse; Oxnard
Highway 101 and Del Norte Boulevard
Oxnard, CA

Exhibit

A-2



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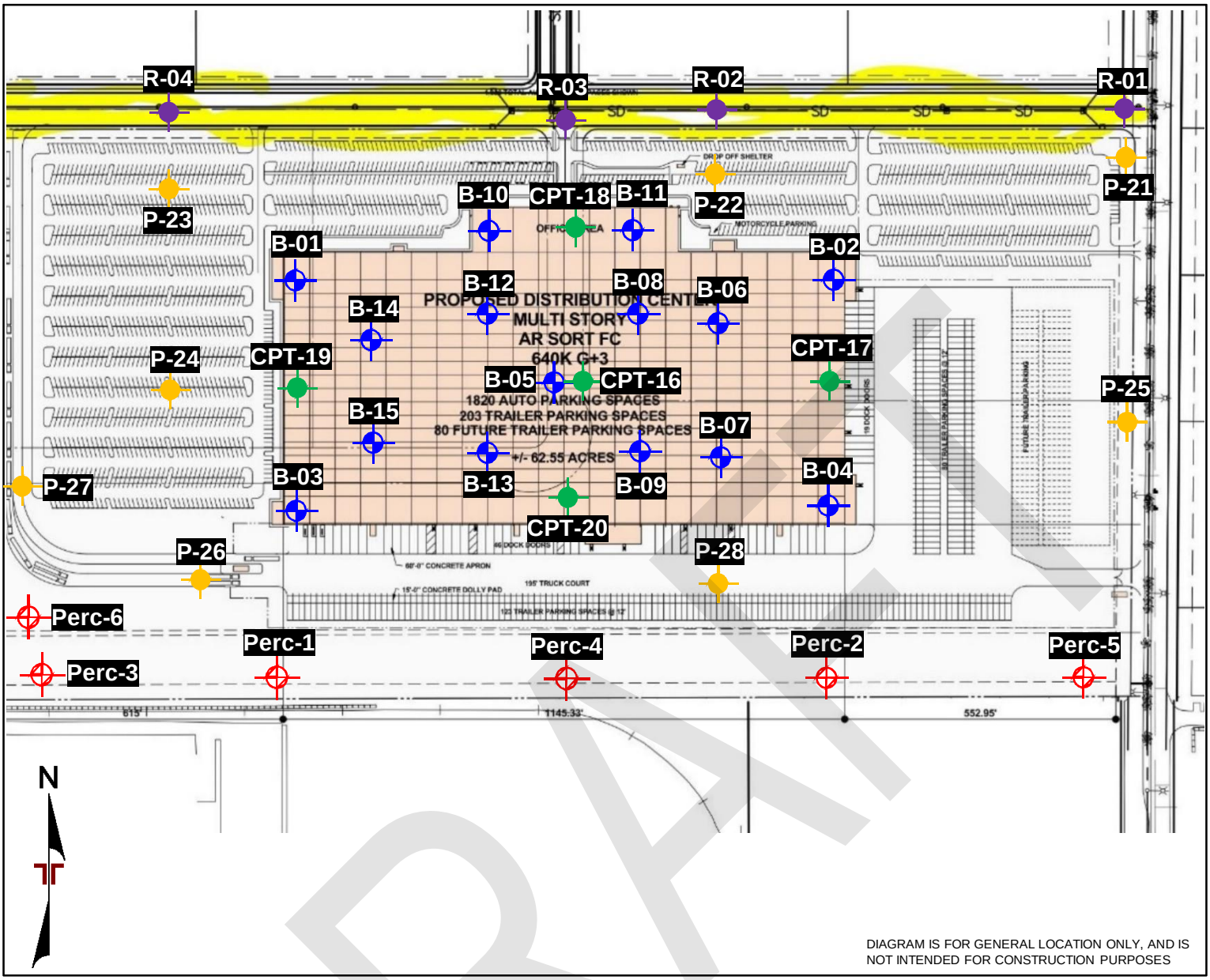
LEGEND

R-01 **BORING APPROXIMATE LOCATION**

Project Manager: JM	Project No. 60185017	Terracon Consulting Engineers & Scientists	BORING LOCATION PLAN
Drawn by: DTB	Scale: 1"≈300'	1421 Edinger Avenue Ste C, Tustin, California 92780	Seefried: Industrial Warehouse; Oxnard
Checked by: JM	File Name: A-3	PH. (949) 261-0051, FAX. (949) 261-6110	**Highway 101 and Del Norte Boulevard**
Approved by: FB	Date: 04/2018		**Oxnard, CA**

Exhibit A-3



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LEGEND

- **B-01** BORING APPROXIMATE LOCATION
- **Perc-1** BORING AND PERCOLATION TEST APPROXIMATE LOCATION
- **P-01** BORING APPROXIMATE LOCATION
- **CPT-01** CONE PENETRATION TEST APPROXIMATE LOCATION
- **R-01** BORING APPROXIMATE LOCATION

Project Manager: JM	Project No. 60185017	Terracon Consulting Engineers & Scientists	BORING LOCATION PLAN
Drawn by: DTB	Scale: 1"≈300'	1421 Edinger Avenue Ste C, Tustin, California 92780	Seefried: Industrial Warehouse; Oxnard
Checked by: JM	File Name: A-4	PH. (949) 261-0051, FAX. (949) 261-6110	Highway 101 and Del Norte Boulevard
Approved by: FB	Date: 04/2018		Oxnard, CA

Exhibit A-4

Field Exploration Description

Field exploration program included the advancement of thirty-seven (37) test borings and six (6) Cone Penetrometer Test (CPT) soundings to approximate depths ranging between 5 to 58 feet below existing site grades. The field program was performed at the site between April 3 and April 11, 2018. Due to current agricultural operations, the location of B-10 was not accessible to our crew. Furthermore. one additional CPT attempt was performed onsite to advance through refusal materials.

The drilled test borings were advanced with a truck-mounted Mobil B-61 drill rig utilizing 6-inch diameter hollow-stem auger. CPT soundings were advanced with a 30-ton truck providing the reaction weight for pushing the cone assembly into the ground at a constant rate of 20-mm per second (approximately four feet per minute). The cone tip resistance and sleeve friction resistance were recorded every 2-cm (approximately ¾-inch) and stored in digital form.

The borings were located in the field by using the proposed site plan, an aerial photograph of the site, a hand-held GPS device, and measuring from existing site features and property lines. The accuracy of boring locations should only be assumed to the level implied by the method used. The location of the borings and CPT soundings is shown on the attached Boring Location Plan, Exhibit A-2.

Continuous lithologic logs of the borings were recorded by the field engineer during the drilling operations. At selected intervals, samples of the subsurface materials were taken by driving split-spoon or ring-barrel samplers. Bulk samples of subsurface materials were also obtained. Groundwater conditions were evaluated in the borings at the time of site exploration.

Penetration resistance measurements were obtained by driving the split-spoon and ring-barrel samplers into the subsurface materials with a 140-pound automatic hammer falling 30 inches. The penetration resistance value is a useful index in estimating the consistency or relative density of materials encountered.

An automatic hammer was used to advance the split-barrel sampler in the borings performed on this site. A significantly greater efficiency is achieved with the automatic hammer compared to the conventional safety hammer operated with a cathead and rope. This higher efficiency has an appreciable effect on the SPT-N value. The effect of the automatic hammer's efficiency has been considered in the interpretation and analysis of the subsurface information for this report.

The samples were tagged for identification, sealed to reduce moisture loss, and taken to our laboratory for further examination, testing, and classification. Information provided on the boring logs attached to this report includes soil descriptions, consistency evaluations, boring depths, sampling intervals, and groundwater conditions. The borings were backfilled with auger cuttings prior to the drill crew leaving the site.

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BORING LOG NO. B-01

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2144° Longitude: -119.1328°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
4.0	58+/-	
		SANDY LEAN CLAY (CL), dark brown, very soft
7.5	54.5+/-	
		POORLY GRADED SAND WITH SILT (SP-SM), trace clay, brown, loose
		medium dense
14.5	47.5+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown stiff
		very soft

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
								25-16-9	41
		2-2-2				25	96		
5		0-0-1 N=1							
		1-5-11				22	100		
10		4-7-7 N=14							10
15		7-6-6				21	105		
20		0-0-0 N=0						37-25-12	72
25									

WATER LEVEL OBSERVATIONS: ▽ (5 ft)

EXPANSION INDEX

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-6

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-01

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2144° Longitude: -119.1328°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		LEAN CLAY WITH SAND (CL), dark grayish brown *(continued)* stiff
28.0	34+/-	**POORLY GRADED SAND WITH SILT (SP-SM)**, grayish brown, medium dense
33.5	28.5+/-	**SANDY LEAN CLAY (CL)**, dark grayish brown, very stiff
39.5	22.5+/-	**FAT CLAY (CH)**, dark grayish brown, medium stiff
43.3	19+/-	**SANDY LEAN CLAY (CL)**, dark grayish brown, very stiff
47.3	15+/-	**CLAYEY SAND (SC)**, dark grayish brown
50.0	12+/-	

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	4-5-5	32	92		
30	3-7-5 N=12			NP	11
35	5-10-31	21	104		
40	2-2-5 N=7			54-27-27	97
45	6-15-10	41	85		
50					

WATER LEVEL OBSERVATIONS; SAMPLE TYPE; EXPANSION INDEX; STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)): not recorded.

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-6

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-01

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2144° Longitude: -119.1328°

Approximate Surface Elev: 62 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		SANDY LEAN CLAY (CL), dark grayish brown, very stiff				8-10-11 N=21								52
	51.5	10.5+/-												
		Boring Terminated at 51.5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-6

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-02

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2143° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
0.0	53+/-	**CLAYEY SAND (SC)**, dark brown, very loose
5.0	42.5+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown, medium dense; very loose
15.5	38.5+/-	**SANDY LEAN CLAY (CL)**, dark brown, soft
19.5	33+/-	**LEAN CLAY WITH SAND (CL)**, brown, stiff
25.0		

DEPTH (Ft.)	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		15						24-16-8	37
	0-2-1 N=3								
5	5-9-12					21	106		
	4-7-3 N=10								
10	1-1-1					20			
15	2-2-1 N=3								
20	5-9-7					24	101		
25									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018
Boring Completed: 04-05-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-7

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-02

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2143° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), brown, medium dense
28.5	29.5+/-	
		POORLY GRADED SAND WITH GRAVEL (SP), tan, medium dense
35.0	23+/-	
		SANDY LEAN CLAY (CL), dark grayish brown, stiff
39.3	19+/-	
		LEAN CLAY WITH SAND (CL), dark gray stiff
		very stiff

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
		4-7-5 N=12		
30		8-10-35	17	
35		4-6-7 N=13		
40		4-7-8	45	78
45		2-7-12 N=19		
50				

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018 | Boring Completed: 04-05-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-7

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-02

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2143° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	LEAN CLAY WITH SAND (CL), dark gray *(continued)*					10-21-23					22	103		
51.5	hard													
	6.5+/-													
	Boring Terminated at 51.5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018
Boring Completed: 04-05-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-7

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BORING LOG NO. B-03

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1328°

Approximate Surface Elev: 63 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		SILTY CLAYEY SAND (SC-SM), dark brown, very loose
4.8	58.5+/-	
		SANDY LEAN CLAY (CL), dark brown, medium stiff
7.3	56+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, loose
9.8	53.5+/-	
		CLAYEY SAND (SC), dark brown, medium dense
		loose
16.0	47+/-	
		SANDY LEAN CLAY (CL), dark grayish brown, medium stiff
19.5	43.5+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown medium stiff

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
			12						24-17-7	45
		0-2-1 N=3								
5		0-3-2					22	104		
		0-0-5 N=5								
10		11-14-9					22	103		
15		1-3-2 N=5								
20		3-4-5					30	96		
25										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-8

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-03

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1328°

Approximate Surface Elev: 63 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
		LEAN CLAY WITH SAND (CL), dark grayish brown *(continued)* stiff		3-4-5 N=9		
29.0	34+/-	**CLAYEY SAND**, dark grayish brown, medium dense	30	11-19-11	17	111
35.0	28+/-	**LEAN CLAY WITH SAND (CL)**, dark grayish brown, medium stiff	35	4-4-4 N=8		
40.3	23+/-	**LEAN CLAY (CL)**, trace sand, dark grayish brown, stiff	40	5-7-10	38	82
42.0	21+/-	**CLAYEY SAND (SC)**, dark grayish brown				
45.0	18+/-	**LEAN CLAY (CL)**, trace sand, dark grayish brown, very stiff	45	6-10-9 N=19	33	92
			50			

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-8

DRAFT

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BORING LOG NO. B-03

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1328°

Approximate Surface Elev: 63 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), trace sand, dark grayish brown, very stiff *(continued)*					8-15-12					26	98		
	51.5 black	11.5+/-												
	Boring Terminated at 51.5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018 | Boring Completed: 04-06-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-8

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-04

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
4.5	53.5+/-	**CLAYEY SAND (SC)**, dark brown, very loose
11.0	47+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown, medium dense; loose, sample not recovered; very loose
24.0	34+/-	**LEAN CLAY WITH SAND (CL)**, dark brown, very soft; dark grayish brown, medium stiff; brown, stiff
		SANDY LEAN CLAY (CL), dark brown, hard

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
	2-2-4	20	104
5	3-5-5 N=10		
	15-9-5		
10	0-0-1 N=1		
15	0-3-3	32	89
20	4-6-6 N=12		

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018 | Boring Completed: 04-05-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-9

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-04

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
		SANDY LEAN CLAY (CL), dark brown, hard *(continued)*		5-20-36	20	108
		stiff	30	3-6-9 N=15		
		very stiff	35	8-12-14	32	91
39.0	19+/-					
		LEAN CLAY WITH SAND (CL), dark grayish brown, stiff	40	3-7-4 N=11		
43.0	15+/-					
		SANDY LEAN CLAY (CL), dark brown, very stiff	45	5-6-15		
			50			

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018 | Boring Completed: 04-05-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-9

DRAFT

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BORING LOG NO. B-04

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	SANDY LEAN CLAY (CL), dark brown, very stiff *(continued)*					3-5-11 N=16								
	51.5	6.5+/-												
	Boring Terminated at 51.5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018
Boring Completed: 04-05-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-9

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-05

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2138° Longitude: -119.131°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
0.0	59	**SILTY CLAYEY SAND (SC-SM)**, dark brown, very loose brown
6.0	53+/-	**SILTY SAND (SM)**, brown, medium dense
10.5	48.5+/-	**LEAN CLAY (CL)**, trace sand, dark grayish brown, soft
13.0	46+/-	**SILTY CLAYEY SAND (SC-SM)**, dark brown, very loose
		loose
25.0	34+/-	

Sample Depth (Ft.)	Field Test Results	Atterberg Limits LL-PL-PI	Percent Fines
0.0–6.0		24-17-7	46
2.5	0-0-1 N=1		
5.0	3-6-6 N=12	NP	18
7.5	5-14-9 N=23		
10.0	2-1-1 N=2		
15.0	2-1-1 N=2	23-18-5	46
20.0	0-2-3 N=5		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-10

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-05

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2138° Longitude: -119.131°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		LEAN CLAY WITH SAND (CL), dark grayish brown, medium stiff
		stiff
31.0	28+/-	**CLAYEY SAND**, dark brown, loose
35.0	24+/-	**SILT (ML)**, dark grayish brown, stiff
40.0	19+/-	**LEAN CLAY (CL)**, trace sand, dark grayish brown, stiff

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		2-3-4 N=7						43-24-19	75
30		7-4-5 N=9							
35		5-7-6 N=13						36-25-11	98
40		2-3-6 N=9							
45		2-4-5 N=9						40-24-16	87
50									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-10

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-05

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2138° Longitude: -119.131°

Approximate Surface Elev: 59 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), trace sand, dark grayish brown, stiff *(continued)*					5-5-7 N=12								
	51.5	7.5+/-												
	Boring Terminated at 51.5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-10

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-06

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2141° Longitude: -119.1299°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		loose
7.3	51+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown, medium dense
10.0	48+/-	**LEAN CLAY WITH SAND (CL)**, dark grayish brown, soft
13.5	44.5+/-	**POORLY GRADED SAND WITH CLAY**, grayish brown, very loose
15.5	42.5+/-	**LEAN CLAY WITH SAND (CL)**, dark grayish brown, soft
		very stiff
21.5	36.5+/-	***Boring Terminated at 21.5 Feet***

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		2-1-2 N=3							
5		2-3-5				10	81		
		2-5-9 N=14							
10		0-1-2				39	81		
15		0-1-2 N=3							
20		8-15-20				28	99		

WATER LEVEL OBSERVATIONS: While drilling; At completion of drilling

EXPANSION INDEX

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-09-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-11

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-07

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2134° Longitude: -119.1299°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		loose
7.5	50.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, medium dense
		very loose
11.0	47+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, very soft
14.8	43.5+/-	
		CLAYEY SAND (SC), grayish brown, medium dense
		loose
20.8	37.5+/-	
21.5	36.5+/-	**LEAN CLAY WITH SAND (CL)**, dark grayish brown, medium stiff to stiff
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
5	0-1-2	24	98
	2-2-3 N=5		
10	9-16-26	16	108
	0-0-0 N=0		
15	3-10-13	21	103
20	2-3-5 N=8		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-09-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-12

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BORING LOG NO. B-08

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2141° Longitude: -119.1304°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
4.5	54.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, loose
6.5	52.5+/-	
		CLAYEY SAND (SC), dark brown
7.5	51.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, dense
10.0	49+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, very stiff
		soft
		very stiff
21.5	37.5+/-	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		1-1-1 N=2							
5		2-4-8				20	101		
		17-23-23 N=46							
10		22-22-12				38	87		
15		0-1-1 N=2							
20		4-11-13				24	101		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-03-2018
Boring Completed: 04-03-2018
Drill Rig: LAR
Driller: CalPac
Project No.: 60185017
Exhibit: A-13

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BORING LOG NO. B-09

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2134° Longitude: -119.1304°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		medium dense
7.0	52+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, medium dense
9.8	49.5+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, very soft
13.5	45.5+/-	
		CLAYEY SAND (SC), dark brown, loose
17.0	42+/-	
		SANDY LEAN CLAY (CL), dark grayish brown, very soft
21.0	38+/-	
21.5	37.5+/-	**CLAYEY SAND (SC)**, dark brown, very loose
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
	2-3-3	25	99
5	4-7-10 N=17		
	10-23-27	19	108
10	0-0-1 N=1		
15	4-8-7	21	102
20	0-0-1 N=1		

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-03-2018 | Boring Completed: 04-03-2018

Drill Rig: LAR | Driller: CalPac

Project No.: 60185017 | Exhibit: A-14

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BORING LOG NO. B-11

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2146° Longitude: -119.1305°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
4.5	54.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), dark brown, medium dense
		brown
10.8	48.5+/-	very loose
		LEAN CLAY WITH SAND (CL), dark grayish brown, soft
13.5	45.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), dark brown, medium dense
		sample not recovered
19.5	39.5+/-	
		SANDY LEAN CLAY (CL), dark brown, stiff
21.5	37.5+/-	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
		2-2-4	19	106
5		2-4-6 N=10		
		16-21-24	20	110
10		1-1-1 N=2		
15		19-18-16		
20		0-4-7 N=11		

WATER LEVEL OBSERVATIONS: ▽ While drilling; ▽ At completion of drilling

GRAPHIC LOG | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018 | Boring Completed: 04-04-2018
Drill Rig: LAR | Driller: CalPac
Project No.: 60185017 | Exhibit: A-15

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-12

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.214° Longitude: -119.1323°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		brown, medium dense
6.0	54+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, medium dense
		very loose
10.8	49+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, soft
		medium stiff
		medium stiff to stiff
21.5	38.5+/-	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
	4-3-3	23	102
5	3-5-7 N=12		
	13-23-33	21	107
10	2-1-1 N=2		
15	3-2-5	35	89
20	2-4-4 N=8		

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-10-2018 | Boring Completed: 04-10-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-16

DRAFT

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BORING LOG NO. B-13

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2134° Longitude: -119.1316°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		brown
5.0	55+/-	
		CLAYEY SAND (SC), brown, medium dense
6.8	53.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, medium dense
		very loose
11.0	49+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, soft
		stiff
21.5	38.5+/-	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
	1-1-1 N=2		
5	2-6-12	19	111
	6-6-5 N=11		
10	3-1-2	31	89
15	1-1-1 N=2		
20	2-4-9	25	99

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-10-2018
Boring Completed: 04-10-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-17

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BORING LOG NO. B-14

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.214° Longitude: -119.1323°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		brown, loose
6.5	53.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, medium dense trace gravel
		no gravel
13.3	47+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, soft
		very stiff
21.5	38.5+/-	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	1-1-1 N=2							
5	3-4-8				19	111		
	5-7-7 N=14							
10	8-17-7				17	112		
15	2-1-1 N=2							
20	7-13-15				25	99		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-10-2018
Boring Completed: 04-10-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-18

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BORING LOG NO. B-15

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2135° Longitude: -119.1323°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		brown
5.8	56.5+/-	loose
		POORLY GRADED SAND WITH CLAY (SP), brown, loose
		medium dense
11.0	51+/-	very loose
		LEAN CLAY WITH SAND (CL), dark grayish brown, soft
14.0	48+/-	**POORLY GRADED SAND WITH CLAY (SP)**, grayish brown, loose sample not recovered
20.3	42+/-	
21.5	40.5+/-	**LEAN CLAY WITH SAND (CL)**, dark grayish brown, medium stiff to stiff
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
	2-1-2	21	102
5	1-5-4 N=9		
	19-24-24	19	107
10	1-2-1 N=3		
15	3-5-5		
20	2-4-4 N=8		

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-10-2018 | Boring Completed: 04-10-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-19

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-21

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.215° Longitude: -119.1272°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)
5.0	53+/-

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), dark brown												
	5											
Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

At completion of drilling

at 10 Minutes

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018	Boring Completed: 04-04-2018
Drill Rig: Hand Auger	Driller: Hand Auger
Project No.: 60185017	Exhibit: A-20

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-22

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2149° Longitude: -119.1299°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	POORLY GRADED SAND (SP), dark brown												
	brown											21-18-3	2
5.0	54+/-	5											
	Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

At completion of drilling

at 10 Minutes

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018 | Boring Completed: 04-04-2018

Drill Rig: Hand Auger | Driller: Hand Auger

Project No.: 60185017 | Exhibit: A-21

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-23

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2149° Longitude: -119.1336°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), dark brown													
5.0	57+/-	5	▽										
Boring Terminated at 5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018 | Boring Completed: 04-11-2018

Drill Rig: CME 75 | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-22

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-24

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2138° Longitude: -119.1336°

Approximate Surface Elev: 63 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		SILTY CLAYEY SAND (SC-SM), dark brown											22-18-4	27
4.0	59+/-													
5.0	58+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown	5	▽										
		Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018 | Boring Completed: 04-11-2018

Drill Rig: CME 75 | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-23

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-25

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2135° Longitude: -119.1272°

Approximate Surface Elev: 57 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), dark brown													
brown													
dark brown													
5.0	52+/-	5											
Boring Terminated at 5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018
Boring Completed: 04-04-2018
Drill Rig: Hand Auger
Driller: Hand Auger
Project No.: 60185017
Exhibit: A-24

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-26

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2127° Longitude: -119.1334°

Approximate Surface Elev: 65 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), dark brown brown													
5.0	60+/-	5	▽										
Boring Terminated at 5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*
▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018 | Boring Completed: 04-04-2018
Drill Rig: Hand Auger | Driller: Hand Auger
Project No.: 60185017 | Exhibit: A-25

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-27

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2132° Longitude: -119.1347°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown
4.0	58+/-	
		LEAN CLAY WITH SAND, dark brown
5.0	57+/-	
		Boring Terminated at 5 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-26

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-28

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2126° Longitude: -119.13°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown												
	brown												
5.0	55+/-	5											
	Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018
Boring Completed: 04-04-2018
Drill Rig: Hand Auger
Driller: Hand Auger
Project No.: 60185017
Exhibit: A-27

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-1

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2121° Longitude: -119.1329°

Approximate Surface Elev: 64 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown, loose													
	5.0	59+/-	5			1-3-5					18	102		
	Boring Terminated at 5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-28

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-2

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2121° Longitude: -119.1292°

Approximate Surface Elev: 59 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown, very loose													
	5.0	54+/-				0-2-4					24	101		
	Boring Terminated at 5 Feet		5											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-29

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-3

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2121° Longitude: -119.1345°

Approximate Surface Elev: 64 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	FIELD TEST RESULTS	TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	LL-PL-PI
		5	1-1-4				16	82	

CLAYEY SAND (SC), dark brown, very loose

6.0 — 58+/-

SANDY LEAN CLAY (CL), dark brown, medium stiff

7.0 — 57+/-

Boring Terminated at 7 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-30

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-4

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.212° Longitude: -119.131°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
6.0	54+/-	
		SANDY LEAN CLAY (CL), dark brown
7.0	53+/-	
		Boring Terminated at 7 Feet

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
5		2-1-1				13			

GRAPHIC LOG

WATER LEVEL OBSERVATIONS

EXPANSION INDEX

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-31

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-5

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2121° Longitude: -119.1275°

Approximate Surface Elev: 56 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown, very loose													
			5			1-2-4					23	99		
	7.0	49+/-												
	Boring Terminated at 7 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-32

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-6

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2125° Longitude: -119.1347°

Approximate Surface Elev: 63 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown													
	3.0	60+/-												
	Boring Terminated at 3 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-33

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-01

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2153° Longitude: -119.1272°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
		CLAYEY SAND (SC), dark brown
		brown
10.0	49+/-	***Boring Terminated at 10 Feet***

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
		▽										
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018	Boring Completed: 04-09-2018
Drill Rig: CME 75	Driller: S/G Drilling
Project No.: 60185017	Exhibit: A-34

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-02

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2153° Longitude: -119.1299°

Approximate Surface Elev: 57 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		POORLY GRADED SAND (SP), dark brown												
			5	▽									22-17-5	2
		brown												
10.0	47+/-		10											
		Boring Terminated at 10 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018 | Boring Completed: 04-09-2018

Drill Rig: CME 75 | Driller: S/G Drilling

Project No.: 60185017 | Exhibit: A-35

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-03

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2153° Longitude: -119.1309°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
		CLAYEY SAND (SC), dark brown
5.0	55+/-	
5.8	54.5+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown
		Boring Terminated at 5.75 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5	▽										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018 | Boring Completed: 04-11-2018

Drill Rig: CME 75 | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-36

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-04

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2153° Longitude: -119.1336°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
		CLAYEY SAND (SC), dark brown
5.3	57+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown
10.0	52+/-	
		Boring Terminated at 10 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5	▽										
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-37

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-05

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2153° Longitude: -119.1352°

Approximate Surface Elev: 63 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
3.5	59.5+/-	**CLAYEY SAND (SC)**, dark brown
6.3	57+/-	**LEAN CLAY WITH SAND (CL)**, dark brown
10.0	53+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown
		Boring Terminated at 10 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

At completion of drilling

at 10 Minutes

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-38

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-06

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2154° Longitude: -119.1369°

Approximate Surface Elev: 66 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown
2.8	63.5+/-	
		LEAN CLAY WITH SAND (CL), dark brown
7.0	59+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown
10.0	56+/-	
		Boring Terminated at 10 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-39

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-07

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2154° Longitude: -119.1384°

Approximate Surface Elev: 67 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
0		**CLAYEY SAND (SC)**, dark brown
3.0	64+/-	**LEAN CLAY WITH SAND (CL)**, dark brown
6.0	61+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown
9.0	58+/-	**CLAYEY SAND (SC)**, dark brown
10.0	57+/-	***Boring Terminated at 10 Feet***

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-40

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-08

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.215° Longitude: -119.1395°

Approximate Surface Elev: 68 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown
2.5	65.5+/-	
		LEAN CLAY WITH SAND (CL), dark brown
5.5	62.5+/-	
		SANDY LEAN CLAY (CL), brown
8.0	60+/-	
		CLAYEY SAND (SC), brown
10.0	58+/-	
		Boring Terminated at 10 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-41

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-09

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2146° Longitude: -119.1415°

Approximate Surface Elev: 67 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
0.0	67	**CLAYEY SAND (SC)**, dark brown
6.0	61+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown
10.0	57+/-	***Boring Terminated at 10 Feet***

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-42

DRAFT

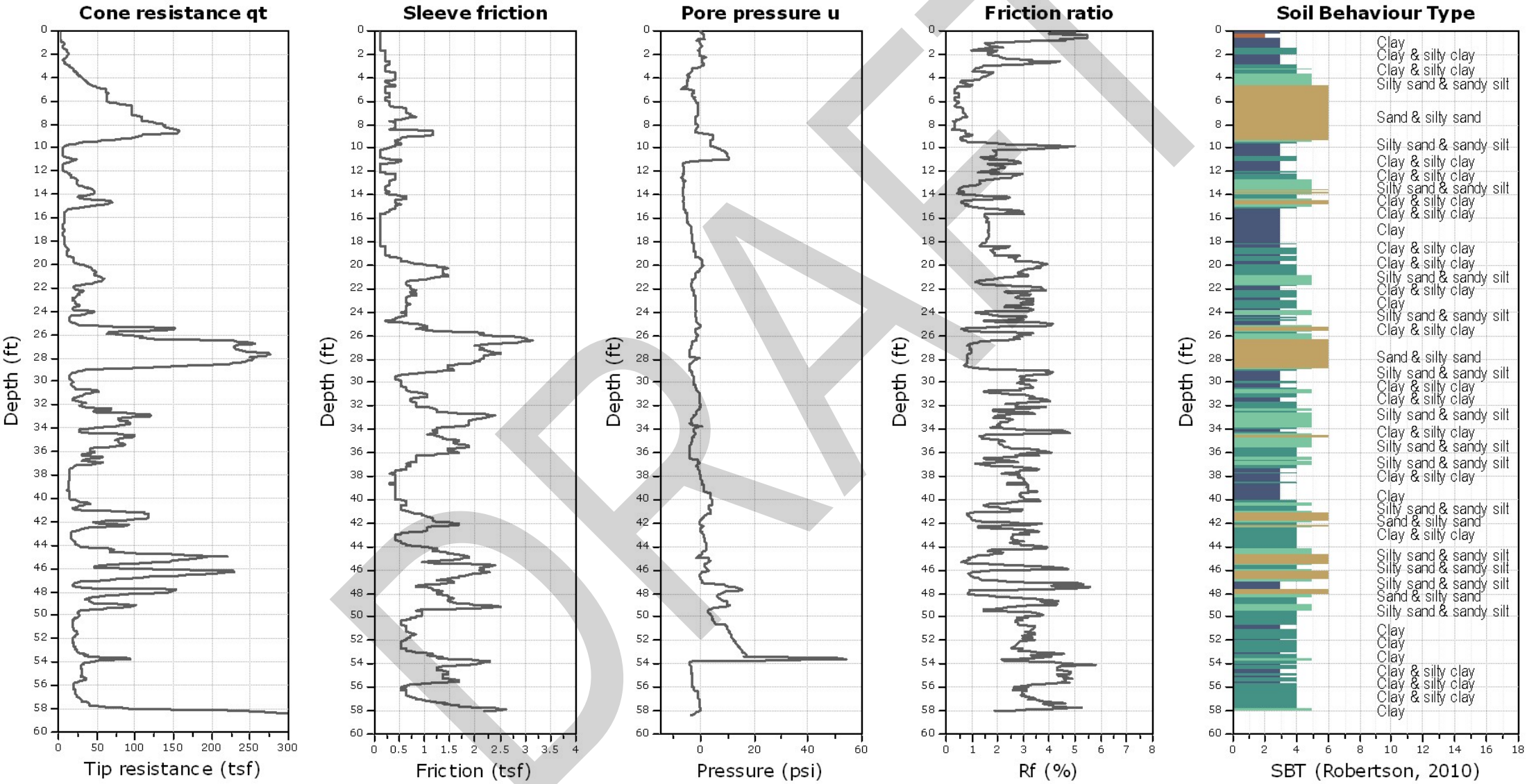
THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-16

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 58.35 ft, Date: 5/3/2018
Cone Type: Vertek



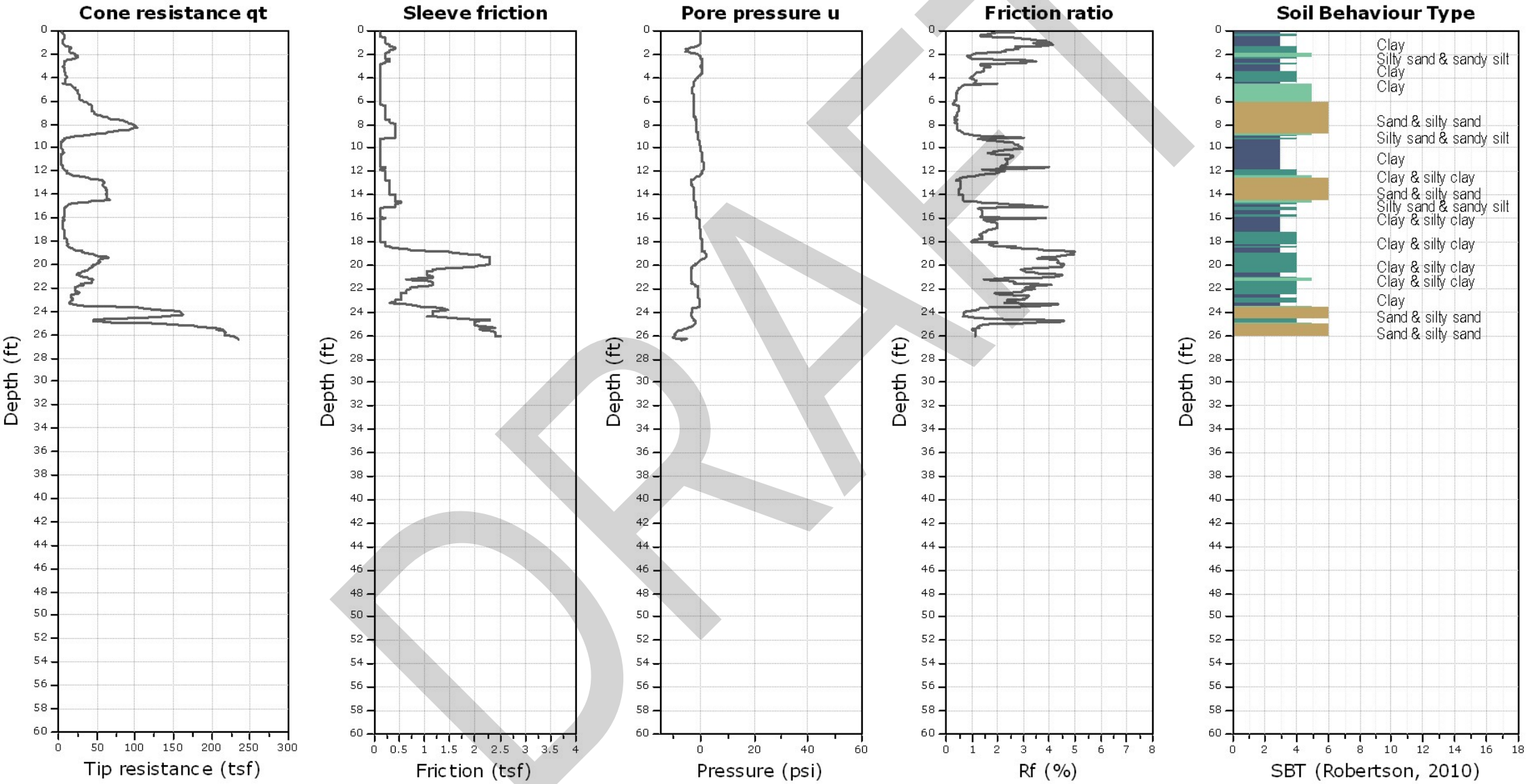
DRAFT

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-17

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 26.38 ft, Date: 5/4/2018
Cone Type: Vertek



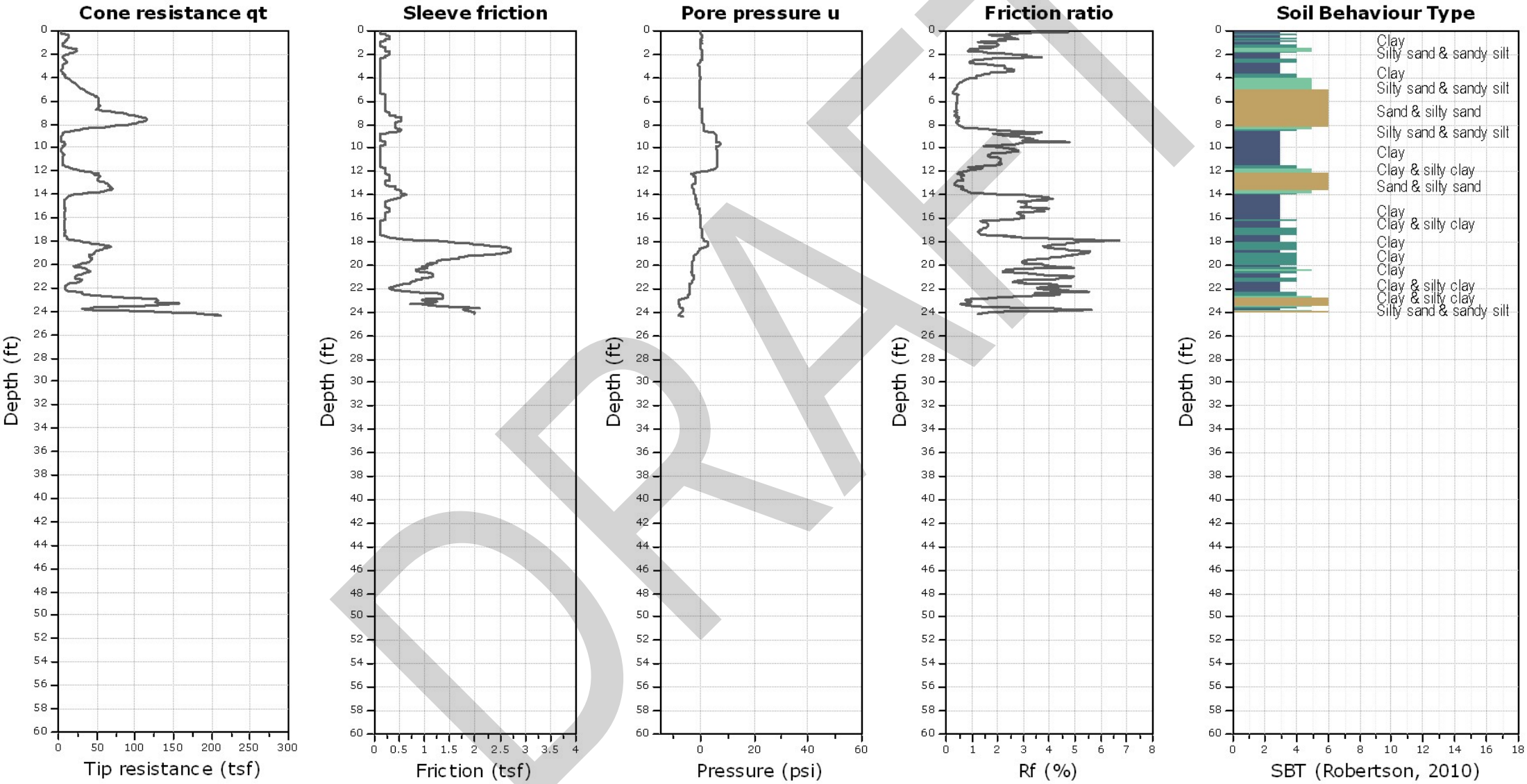
DRAFT

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-17B

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 24.43 ft, Date: 5/4/2018
Cone Type: Vertek



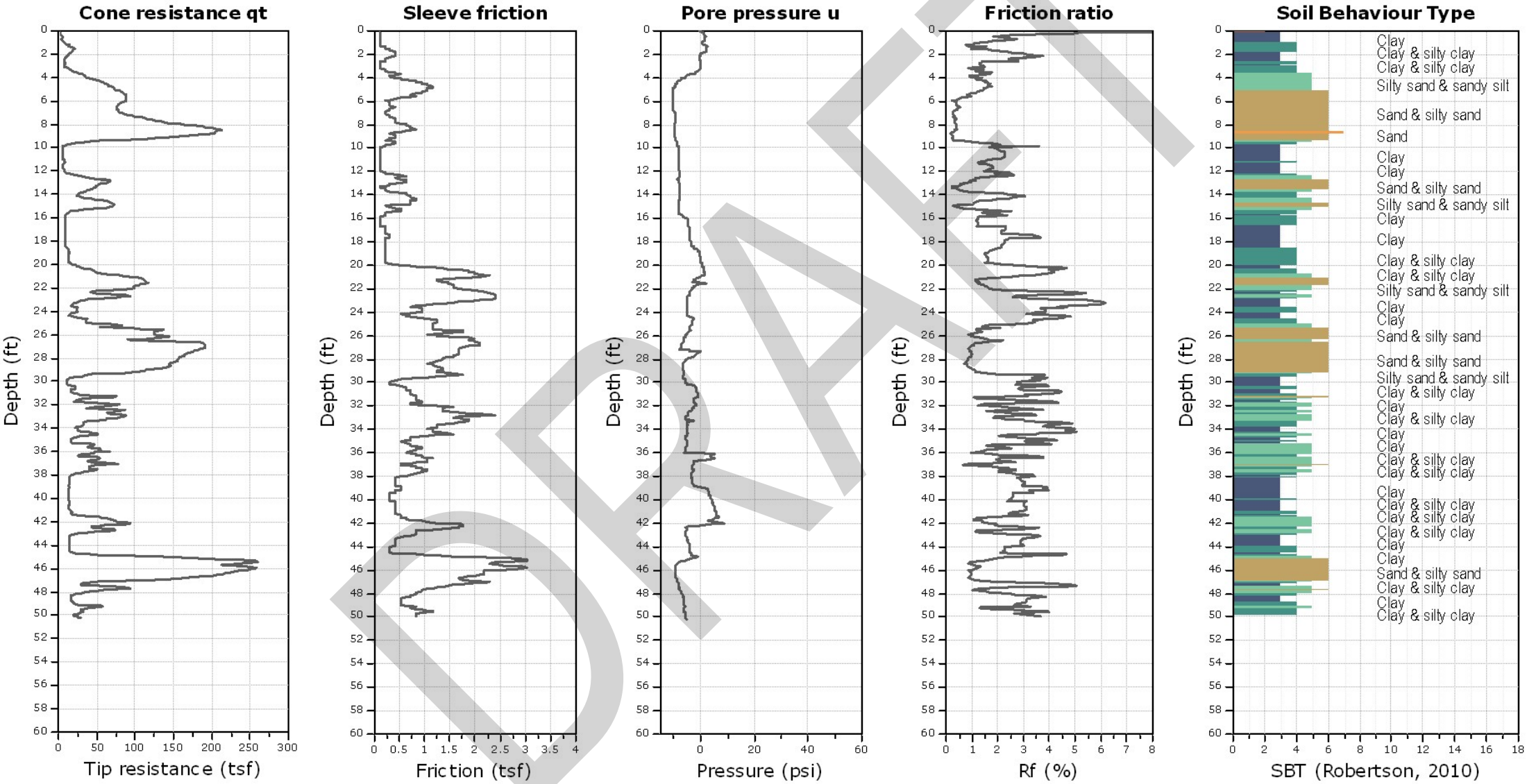
DRAFT

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-18

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 50.22 ft, Date: 5/4/2018
Cone Type: Vertek



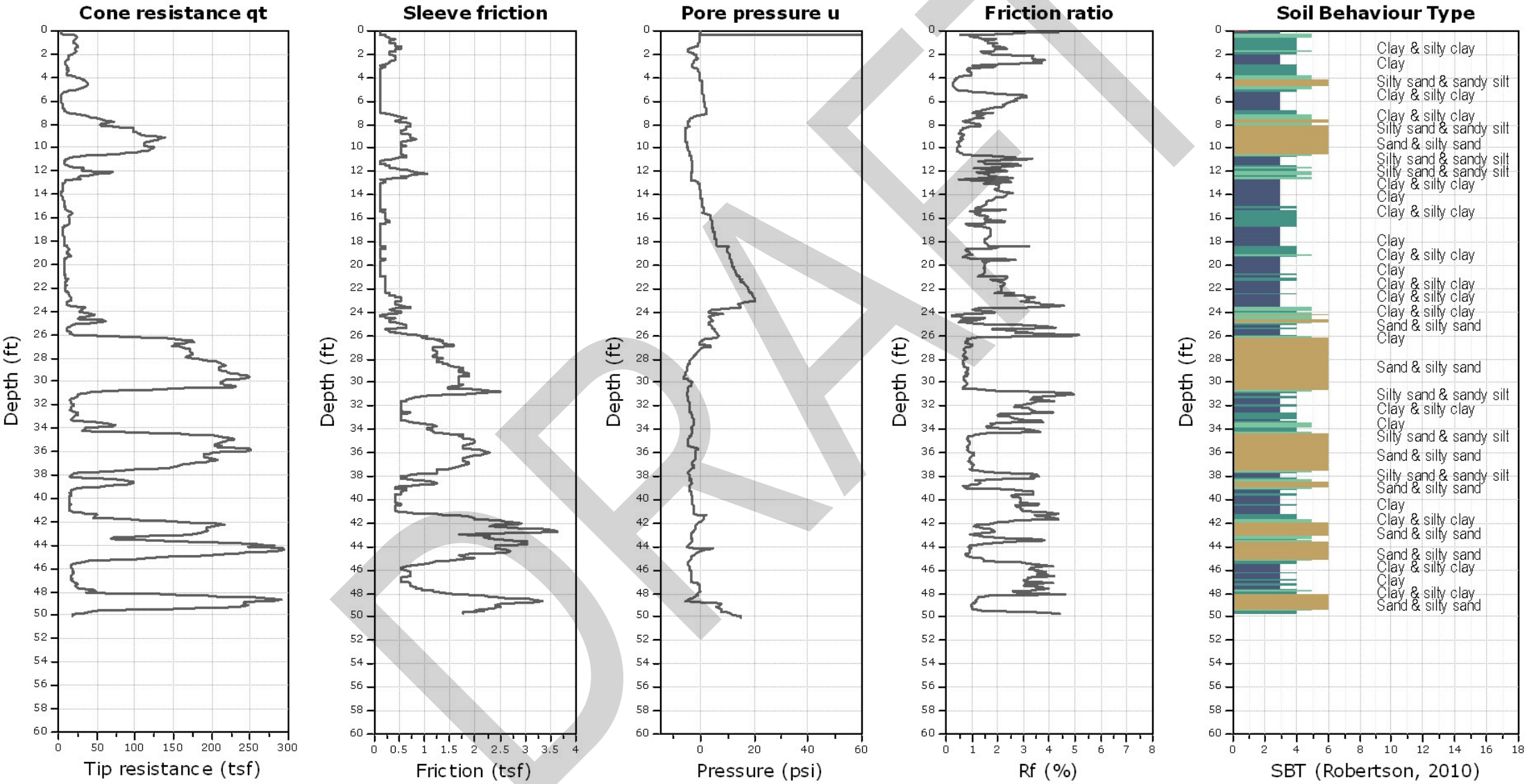
DRAFT

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-19

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 50.02 ft, Date: 5/4/2018
Cone Type: Vertek



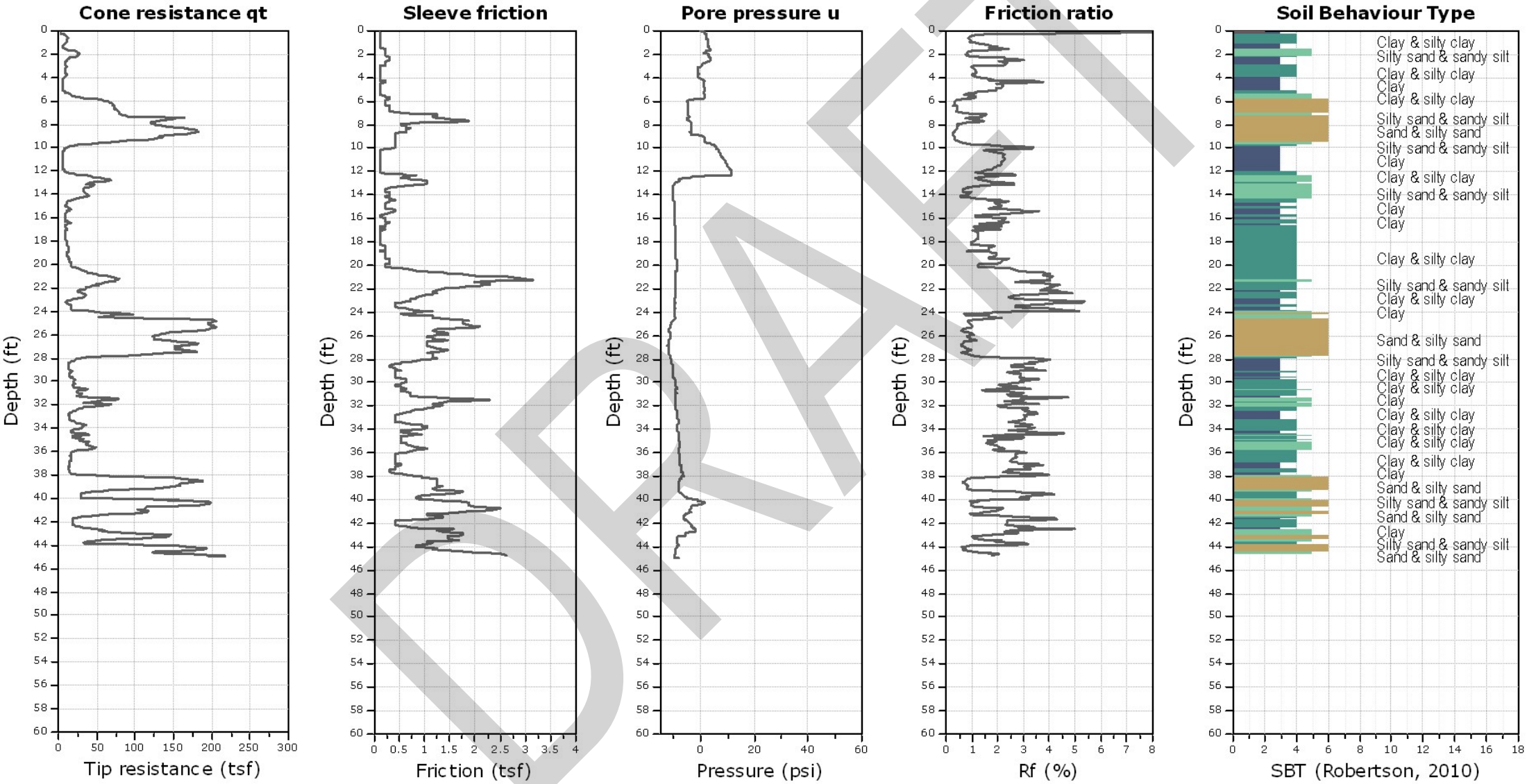
DRAFT

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-20

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 45.02 ft, Date: 5/3/2018
Cone Type: Vertek



DRAFT

APPENDIX B

LABORATORY TESTING

DRAFT

Laboratory Testing

Samples retrieved during the field exploration were taken to the laboratory for further observation by the project geotechnical engineer and were classified in accordance with the Unified Soil Classification System (USCS) described in Appendix A. At that time, the field descriptions were confirmed or modified as necessary and an applicable laboratory testing program was formulated to determine engineering properties of the subsurface materials.

Laboratory tests were conducted on selected soil samples and the test results are presented in this appendix. The laboratory test results were used for the geotechnical engineering analyses, and the development of foundation and earthwork recommendations. Laboratory tests were performed in general accordance with the applicable ASTM, local or other accepted standards.

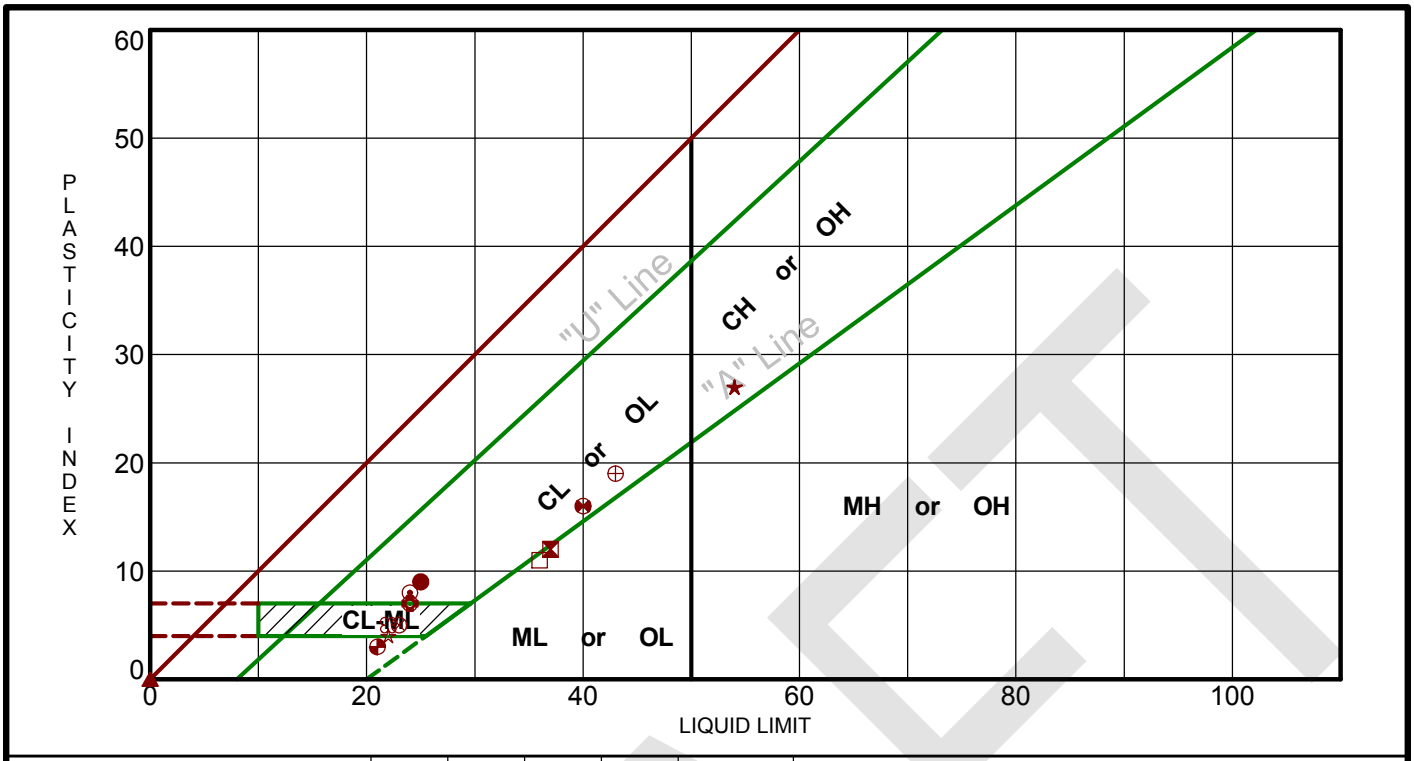
Selected soil samples obtained from the site were tested for the following engineering properties:

- In-situ Dry Density
- Soluble Chlorides
- pH
- Percent Passing #200 Sieve
- Atterberg Limits
- Direst Shear
- In-situ Water Content
- Soluble Sulfates
- Minimum Resistivity
- Consolidation/Collapse Potential
- Expansion Index
- R-Value

DRAFT

ATTERBERG LIMITS RESULTS

ASTM D4318



	Boring ID	Depth	LL	PL	PI	Fines	USCS	Description
●	B-01	0 - 2.5	25	16	9	41	SC	CLAYEY SAND
⊠	B-01	20 - 21.5	37	25	12	72	ML	SILT with SAND
▲	B-01	30 - 31.5	NP	NP	NP	11	SP-SM	POORLY GRADED SAND WITH SILT
★	B-01	40 - 41.5	54	27	27	97	CH	FAT CLAY
⊙	B-02	0 - 2.5	24	16	8	37	SC	CLAYEY SAND
✿	B-03	0 - 2.5	24	17	7	45	SC-SM	SILTY, CLAYEY SAND
○	B-05	0 - 2.5	24	17	7	46	SC-SM	SILTY, CLAYEY SAND
△	B-05	5 - 6.5	NP	NP	NP	18	SM	SILTY SAND
⊗	B-05	15 - 16.5	23	18	5	46	SC-SM	SILTY, CLAYEY SAND
⊕	B-05	25 - 26.5	43	24	19	75	CL	LEAN CLAY with SAND
□	B-05	35 - 36.5	36	25	11	98	ML	SILT
⊗	B-05	45 - 46.5	40	24	16	87	CL	LEAN CLAY
◕	P-22	0 - 5	21	18	3	2	SP	POORLY GRADED SAND
☆	P-24	0 - 4	22	18	4	27	SC-SM	SILTY, CLAYEY SAND
✿	R-02	0 - 10	22	17	5	2	SP	POORLY GRADED SAND

PROJECT: Oxnard Confidential Project Gaucho

SITE: Highway 101 and Del Norte Boulevard

Terracon
1421 Edinger Ave Ste C
Tustin, CA

PROJECT NUMBER: 60185017

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

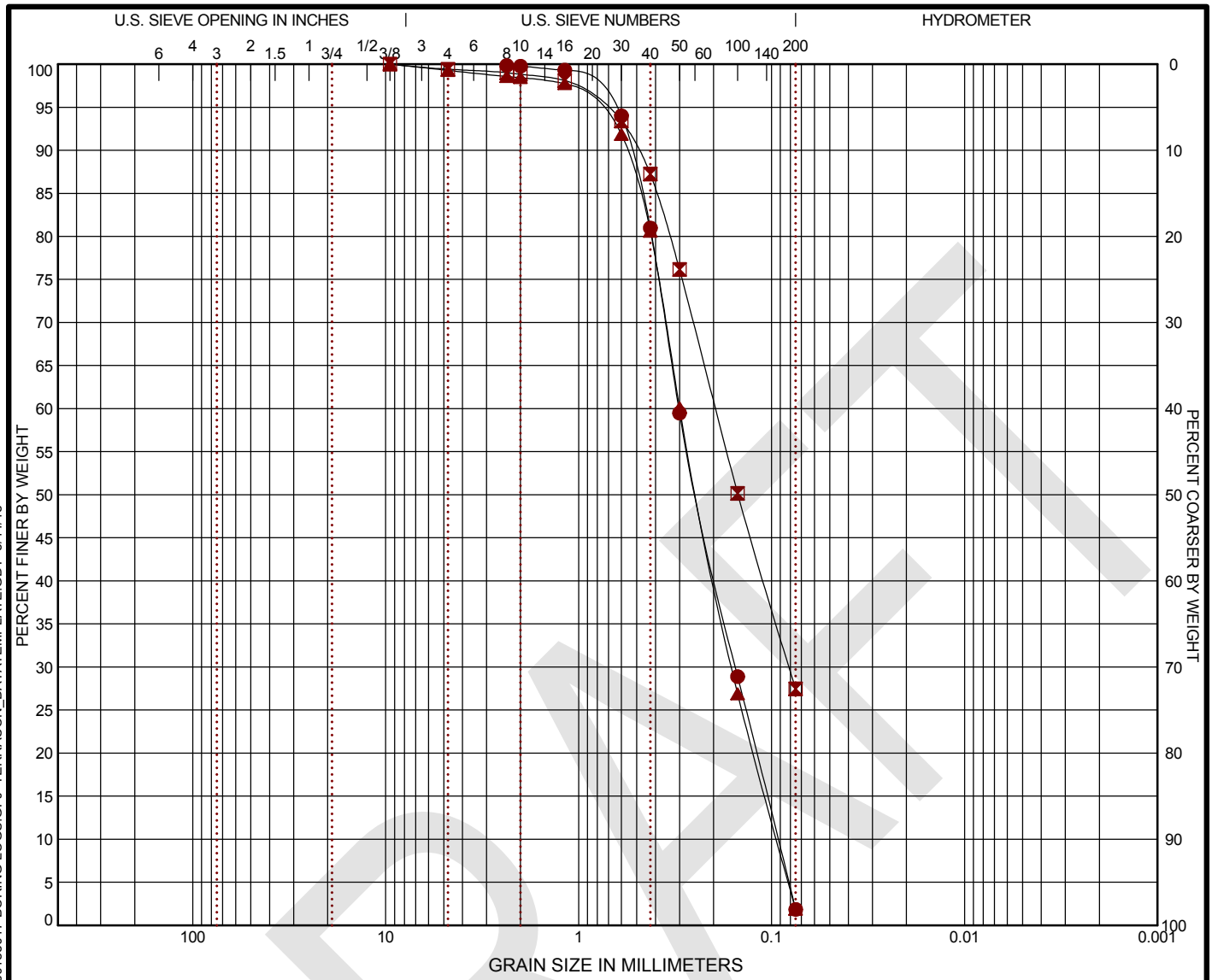
EXHIBIT: B-2

DRAFT

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. ATTERBERG LIMITS 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BORING ID	DEPTH	% COBBLES	% GRAVEL	% SAND	% SILT	% FINES	% CLAY	USCS
●	**P-22**	**0 - 5**			**98.0**		**1.8**		**SP**
⊠	**P-24**	**0 - 4**	**0.0**	**0.6**	**72.0**		**27.5**		**SC-SM**
▲	**R-02**	**0 - 10**	**0.0**	**0.7**	**97.4**		**1.9**		**SP**

	GRAIN SIZE		
	●	⊠	▲
D_{60}	**0.303**	**0.195**	**0.299**
D_{30}	**0.154**	**0.081**	**0.16**
D_{10}	**0.092**		**0.094**
	COEFFICIENTS		
C_C	**0.85**		**0.91**
C_U	**3.27**		**3.18**

●		⊠		▲	
Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
#8	**99.84**	**3/8"**	**100.0**	**3/8"**	**100.0**
#10	**99.76**	**#4**	**99.41**	**#4**	**99.27**
#16	**99.3**	**#8**	**99.0**	**#8**	**98.57**
#30	**94.0**	**#10**	**98.82**	**#10**	**98.43**
#40	**80.98**	**#16**	**98.09**	**#16**	**97.73**
#50	**59.49**	**#30**	**93.4**	**#30**	**91.84**
#100	**28.89**	**#40**	**87.23**	**#40**	**80.6**
#200	**1.85**	**#50**	**76.14**	**#50**	**60.11**
		#100	**50.17**	**#100**	**26.89**
		#200	**27.45**	**#200**	**1.85**

SOIL DESCRIPTION

● POORLY GRADED SAND (SP)

⊠ SILTY, CLAYEY SAND (SC-SM)

▲ POORLY GRADED SAND (SP)

REMARKS

●

⊠

▲

PROJECT: Oxnard Confidential Project Gaucho

SITE: Highway 101 and Del Norte Boulevard

Terracon
1421 Edinger Ave Ste C
Tustin, CA

PROJECT NUMBER: 60185017

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

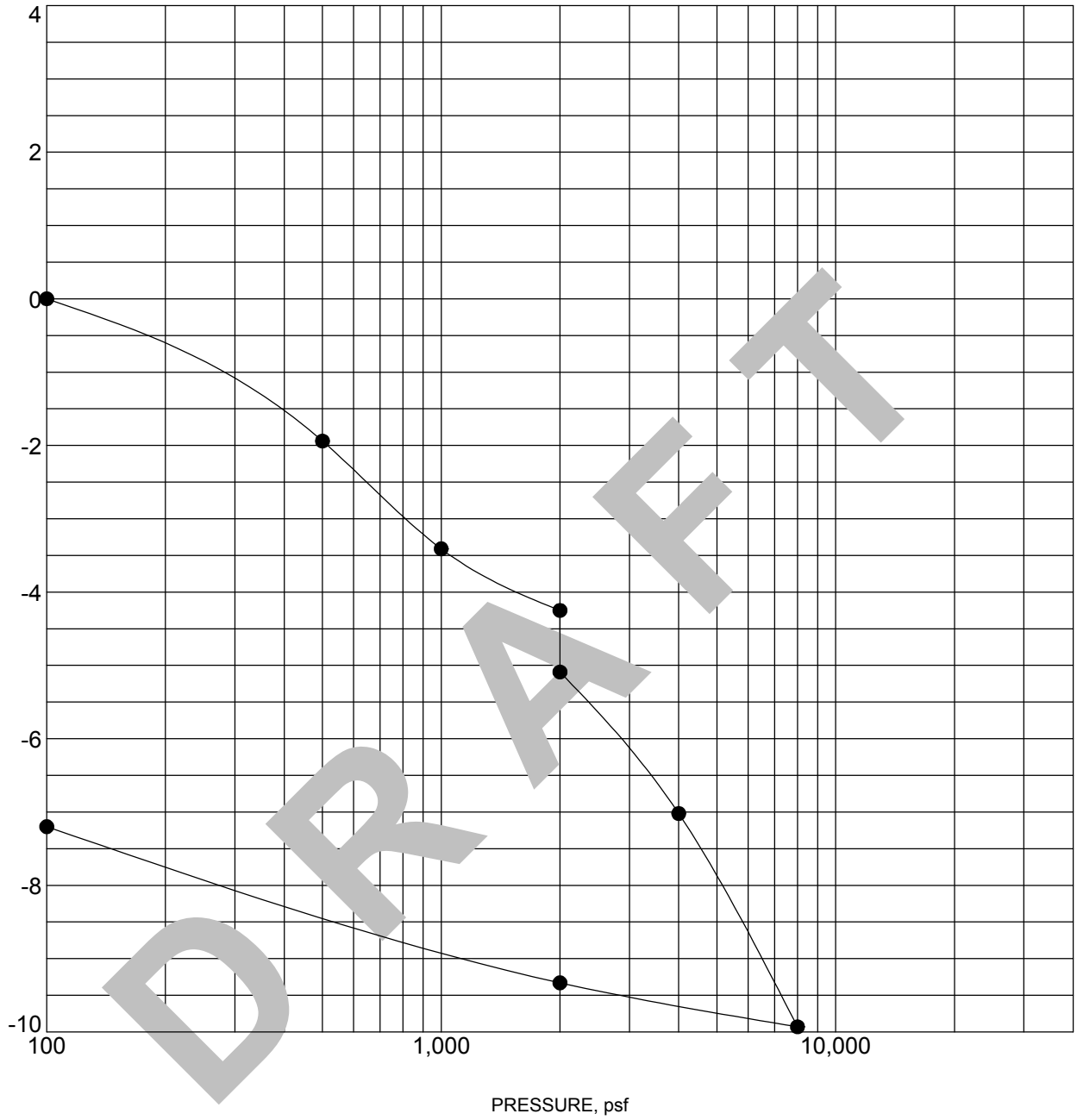
EXHIBIT: B-3

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS 1 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

DRAFT

SWELL CONSOLIDATION TEST

ASTM D2435



Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-01	2.5 - 4 ft	CLAYEY SAND	96	25

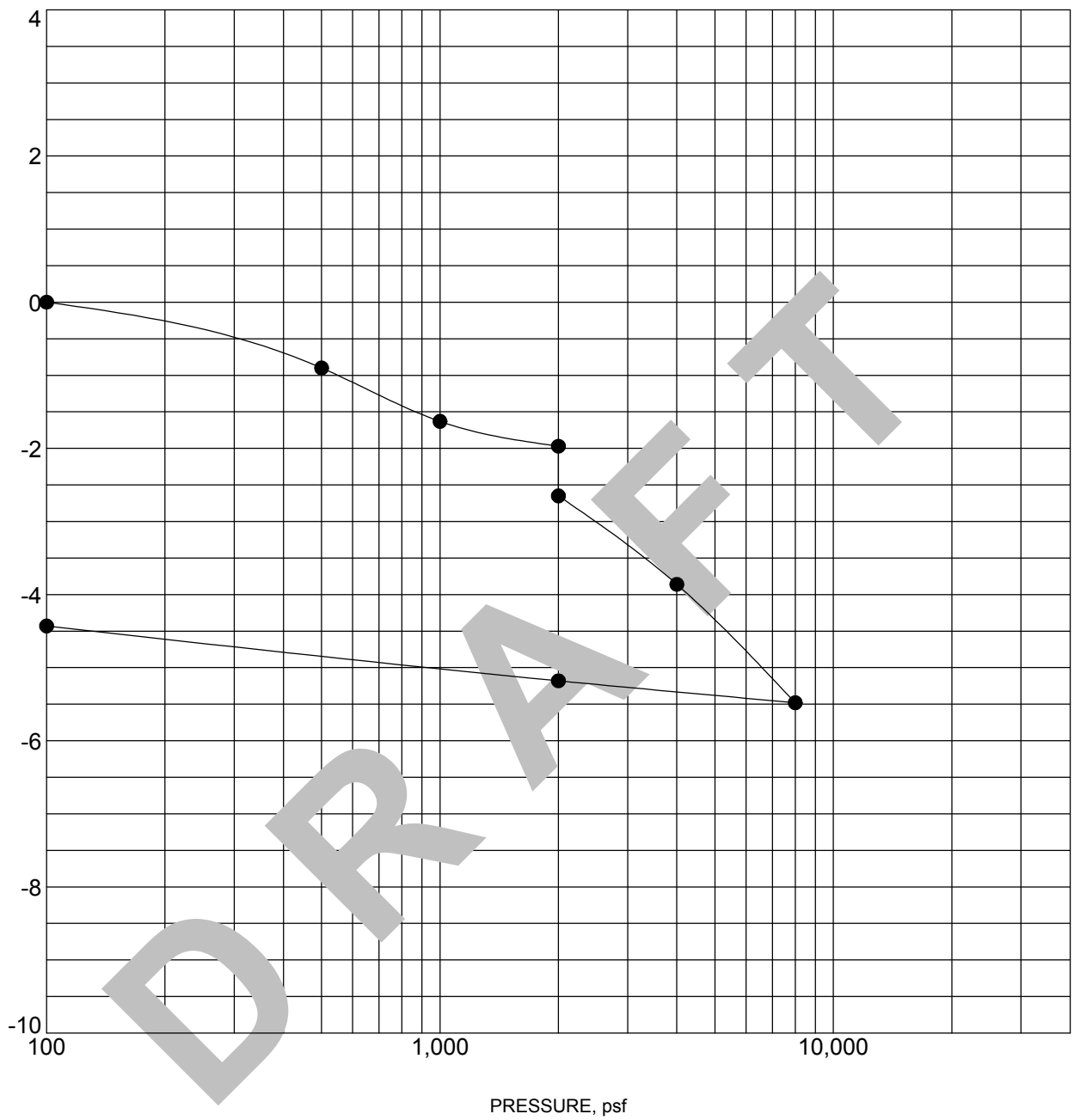
NOTES: Water added at 2,000 psf.

PROJECT: Oxnard Confidential Project Gaucho	Terracon 1421 Edinger Ave Ste C Tustin, CA	PROJECT NUMBER: 60185017
SITE: Highway 101 and Del Norte Boulevard		CLIENT: Seefried Industrial Properties, Inc. El Segundo, CA
		EXHIBIT: B-4

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

SWELL CONSOLIDATION TEST

ASTM D2435



Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-04	2.5 - 4 ft	CLAYEY SAND	104	20

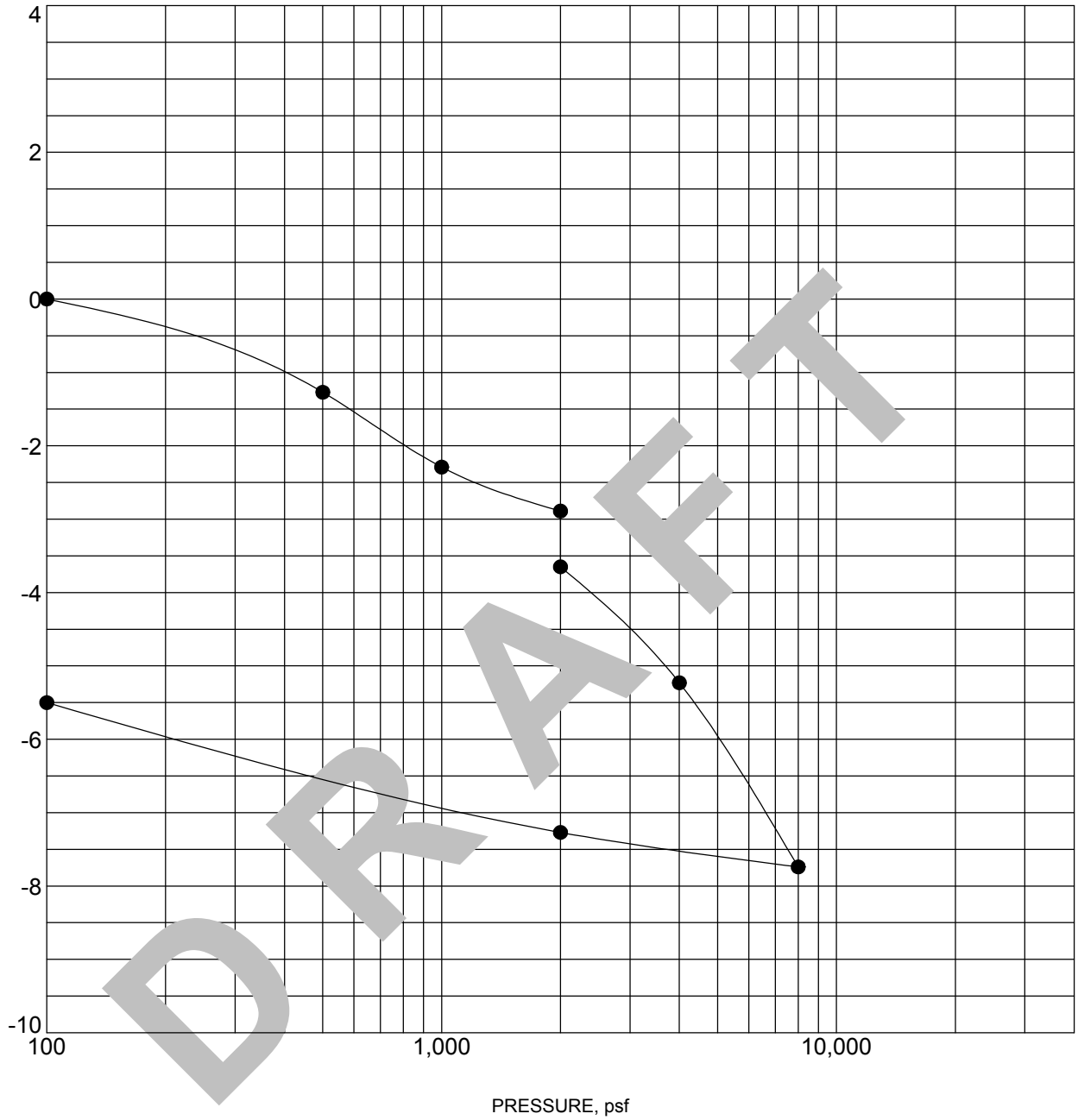
NOTES: Water added at 2,000 psf

PROJECT: Oxnard Confidential Project Gaucho	Terracon 1421 Edinger Ave Ste C Tustin, CA	PROJECT NUMBER: 60185017
SITE: Highway 101 and Del Norte Boulevard		CLIENT: Seefried Industrial Properties, Inc. El Segundo, CA
		EXHIBIT: B-5

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

SWELL CONSOLIDATION TEST

ASTM D2435



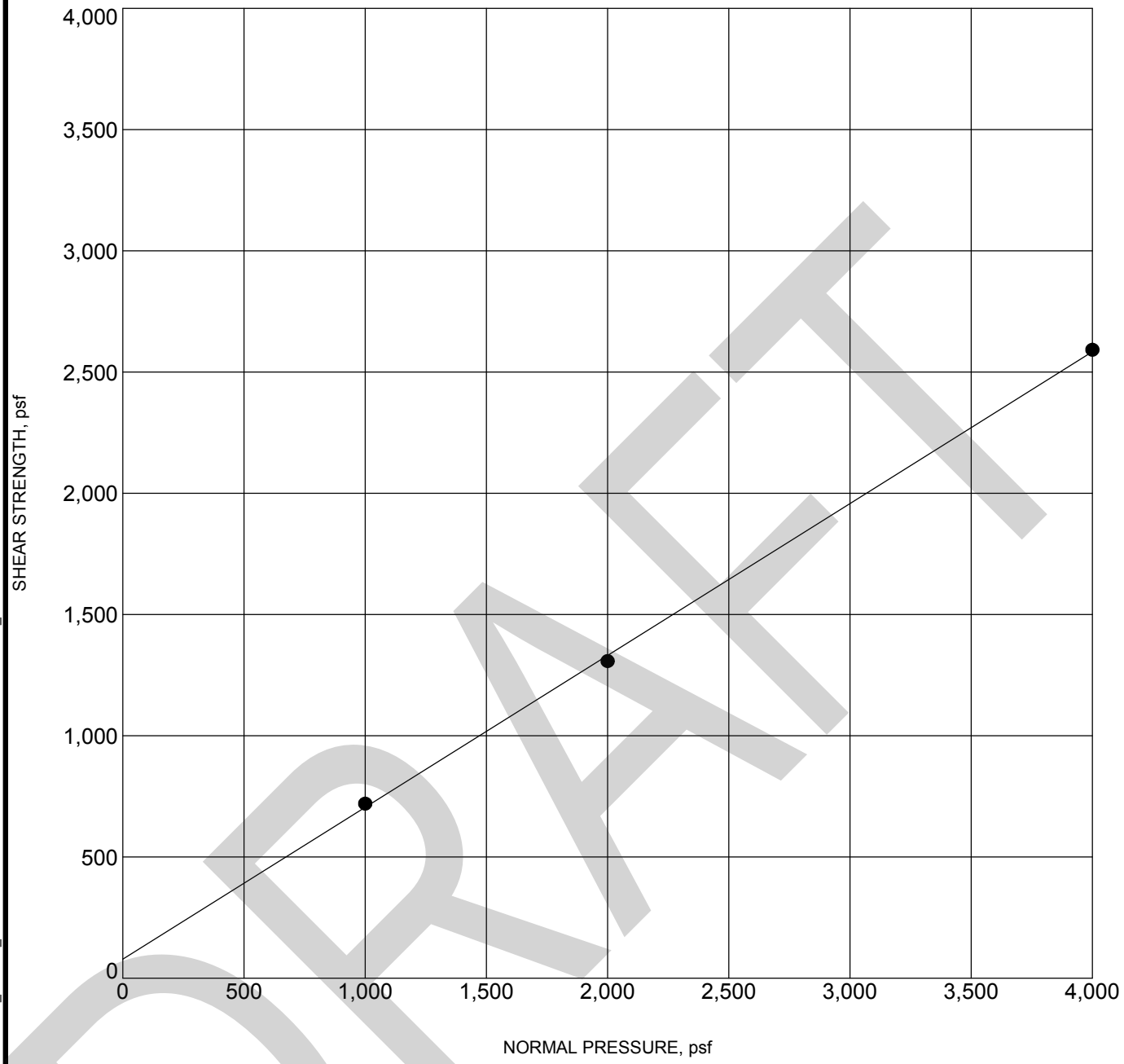
Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-07	2.5 - 4 ft	CLAYEY SAND	98	24

NOTES: Water added at 2,000 psf.

PROJECT: Oxnard Confidential Project Gaucho	Terracon 1421 Edinger Ave Ste C Tustin, CA	PROJECT NUMBER: 60185017
SITE: Highway 101 and Del Norte Boulevard		CLIENT: Seefried Industrial Properties, Inc. El Segundo, CA
		EXHIBIT: B-6

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

DIRECT SHEAR TEST ASTM D3080



	Specimen Identification		Classification	γ_d, pcf	WC,%	c, psf	ϕ^o
●	**B-01**	**7.5ft**	**POORLY GRADED SAND WITH SILT SP-SM**	**100**	**22**	**78**	**32**

PROJECT: Oxnard Confidential Project Gaucho

SITE: Highway 101 and Del Norte Boulevard

Terracon
1421 Edinger Ave Ste C
Tustin, CA

PROJECT NUMBER: 60185017

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

EXHIBIT: B-7

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_DIRECT_SHEAR 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

DRAFT

CHEMICAL LABORATORY TEST REPORT

Project Number: 60185017
Service Date: 04/30/18
Report Date: 05/04/18
Task:

Terracon
750 Pilot Road, Suite F
Las Vegas, Nevada 89119
(702) 597-9393

Client

Seefried Industrial Properties, Inc.

Project

Seefried: Industrial Warehouse; Oxnard

Sample Submitted By: Terracon (60) **Date Received:** 4/27/2018 **Lab No.: 18-0481**

Results of Corrosion Analysis

Sample Number		
Sample Location	B-1	B-5
Sample Depth (ft.)	Bulk	Bulk
pH Analysis, AWWA 4500 H	8.19	7.97
Water Soluble Sulfate (SO4), AWWA 4500 E (percent %)	0.15	0.37
Sulfides, AWWA 4500-S D, (mg/kg)	Nil	Nil
Chlorides, ASTM D 512, (mg/kg)	95	145
Red-Ox, AWWA 2580, (mV)	+661	+662
Total Salts, AWWA 2540, (mg/kg)	3786	8260
Resistivity, ASTM G 57, (ohm-cm)	970	669

Analyzed By: Trisha Campo

Trisha Campo
Chemist

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

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'R' VALUE CA 301

Client: Terracon / Gancho

Date: 5/4/18

By: LD

Client's Job No.: 60185017

Sample No.: P-22 / Bulk

GLA Reference: 2011-0104

Soil Type: Brown, Clayey Sand

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	**200**	**350**	**300**	
Initial Moisture Content	%	**10.4**	**10.4**	**10.4**	
Water Added	ml	**20**	**10**	**15**	
Moisture at Compaction	%	12.3	11.4	11.8	
Sample & Mold Weight	gms	**3173**	**3208**	**3196**	
Mold Weight	gms	**2098**	**2102**	**2104**	
Net Sample Weight	gms	1075	1106	1092	
Sample Height	in.	**2.44**	**2.49**	**2.48**	
Dry Density	pcf	118.9	120.9	119.3	
Pressure	lbs	**1905**	**6715**	**3650**	
Exudation Pressure	psi	152	535	291	
Expansion Dial	x 0.0001	**2**	**18**	**11**	
Expansion Pressure	psf	9	78	48	
Ph at 1000lbs	psi	**26**	**15**	**20**	
Ph at 2000lbs	psi	**44**	**26**	**33**	
Displacement	turns	**3.98**	**3.81**	**3.93**	
R' Value		62	77	71	
Corrected 'R' Value		**62**	**77**	**71**	

FINAL 'R' VALUE	
By Exudation Pressure (@ 300 psi):	**72**
By Epansion Pressure :	**70**
TI = 5	

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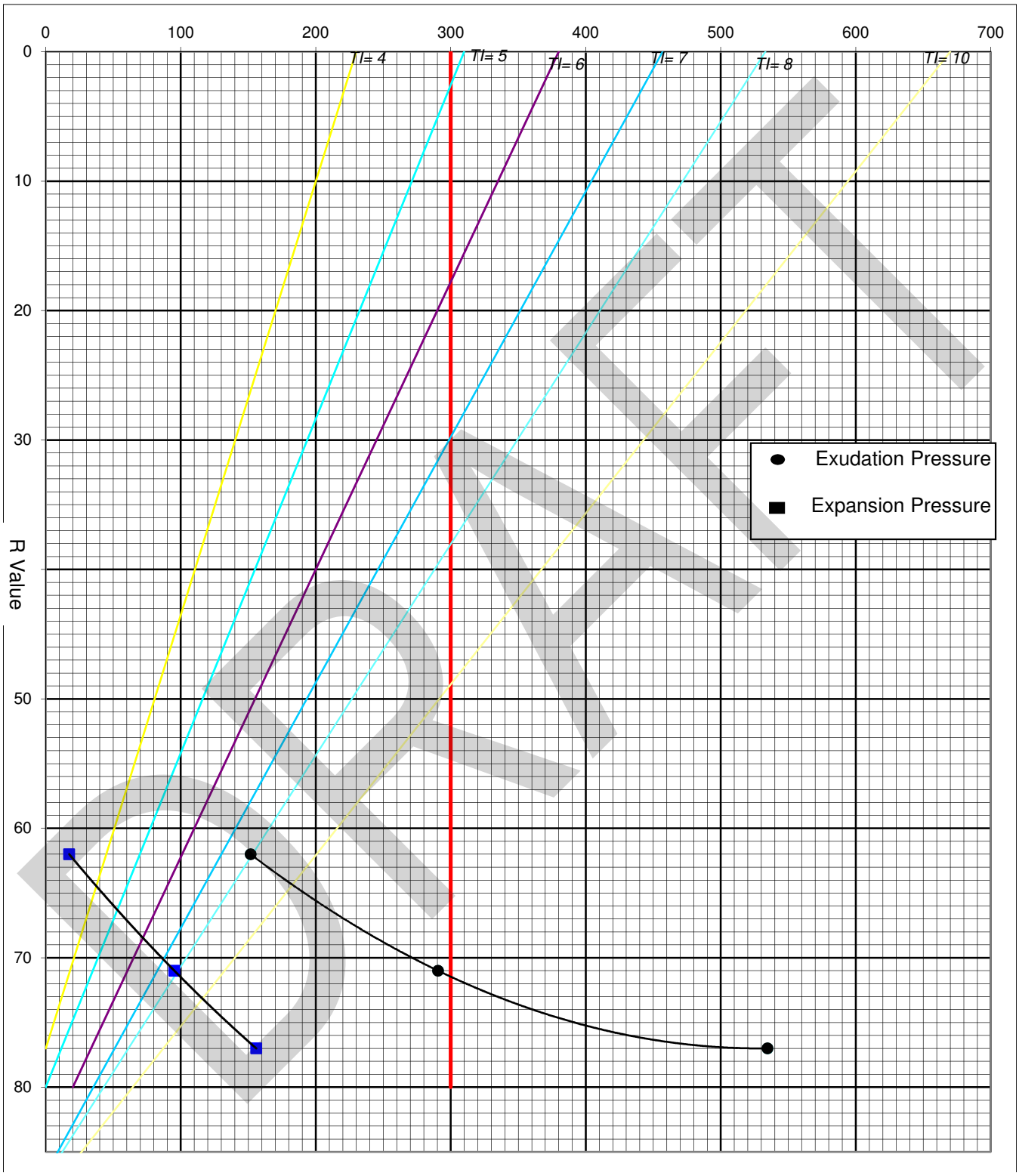
'R' VALUE CA 301

Job No. 2011-0104 Client# 60185017
Sample: P-22 / Bulk
1.104403

Exudation Pressure



Geo-Logic ASSOCIATES

'R' VALUE CA 301

Client: Terracon / Gancho

Date: 5/4/18

By: LD

Client's Job No.: 60185017

Sample No.: P-24 / Bulk

GLA Reference: 2011-0104

Soil Type: Brown, Clayey Sand

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	**250**	**350**	**300**	
Initial Moisture Content	%	**8.2**	**8.2**	**8.2**	
Water Added	ml	**40**	**30**	**35**	
Moisture at Compaction	%	11.8	10.9	11.3	
Sample & Mold Weight	gms	**3172**	**3198**	**3168**	
Mold Weight	gms	**2105**	**2101**	**2096**	
Net Sample Weight	gms	1067	1097	1072	
Sample Height	in.	**2.48**	**2.472**	**2.466**	
Dry Density	pcf	116.6	121.3	118.3	
Pressure	lbs	**2270**	**6795**	**4050**	
Exudation Pressure	psi	181	541	322	
Expansion Dial	x 0.0001	**3**	**20**	**12**	
Expansion Pressure	psf	13	87	52	
Ph at 1000lbs	psi	**22**	**15**	**18**	
Ph at 2000lbs	psi	**41**	**29**	**34**	
Displacement	turns	**3.95**	**3.9**	**3.92**	
R' Value		65	74	70	
Corrected 'R' Value		**65**	**74**	**70**	

FINAL 'R' VALUE		
By Exudation Pressure (@ 300 psi):		**69**
By Epansion Pressure	:	**69**
TI =	5	

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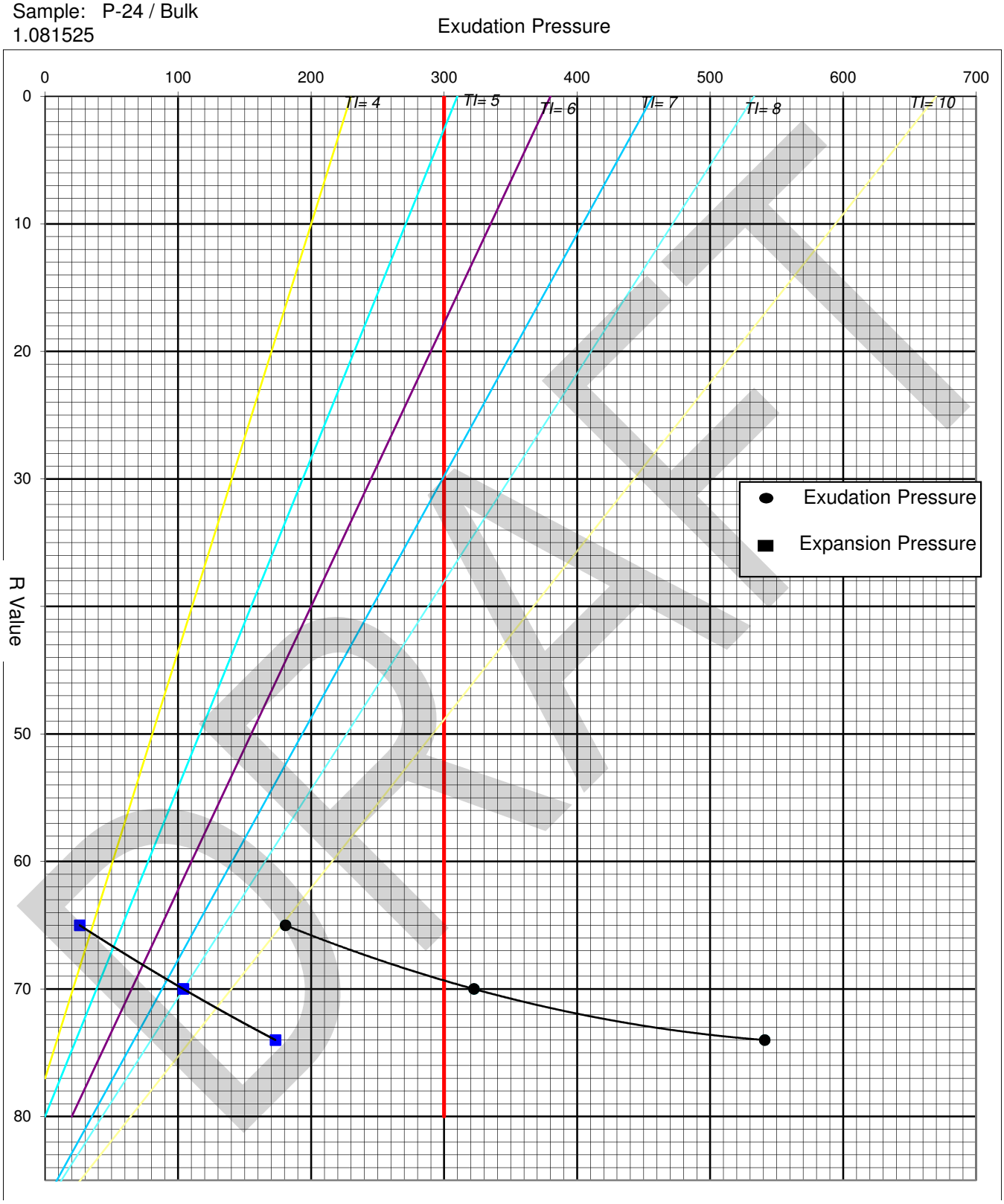
'R' VALUE CA 301

Job No. 2011-0104 Client# 60185017
Sample: P-24 / Bulk
1.081525



Geo-Logic ASSOCIATES

'R' VALUE CA 301

Client: Terracon / Gancho

Date: 5/4/18

By: LD

Client's Job No.: 60185017

Sample No.: R-2 / Bulk

GLA Reference: 2011-0104

Soil Type: Brown, Clayey Sand

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	**250**	**350**	**300**	
Initial Moisture Content	%	**8.9**	**8.9**	**8.9**	
Water Added	ml	**30**	**20**	**25**	
Moisture at Compaction	%	11.6	10.7	11.2	
Sample & Mold Weight	gms	**3173**	**3179**	**3169**	
Mold Weight	gms	**2102**	**2104**	**2099**	
Net Sample Weight	gms	1071	1075	1070	
Sample Height	in.	**2.462**	**2.435**	**2.448**	
Dry Density	pcf	118.1	120.8	119.2	
Pressure	lbs	**2860**	**7855**	**4120**	
Exudation Pressure	psi	228	625	328	
Expansion Dial	x 0.0001	**2**	**14**	**7**	
Expansion Pressure	psf	9	61	30	
Ph at 1000lbs	psi	**21**	**15**	**18**	
Ph at 2000lbs	psi	**40**	**25**	**33**	
Displacement	turns	**3.95**	**3.61**	**3.88**	
R' Value		66	79	71	
Corrected 'R' Value		**66**	**79**	**71**	

FINAL 'R' VALUE		
By Exudation Pressure (@ 300 psi):		**70**
By Epansion Pressure	:	**73**
TI =	5	

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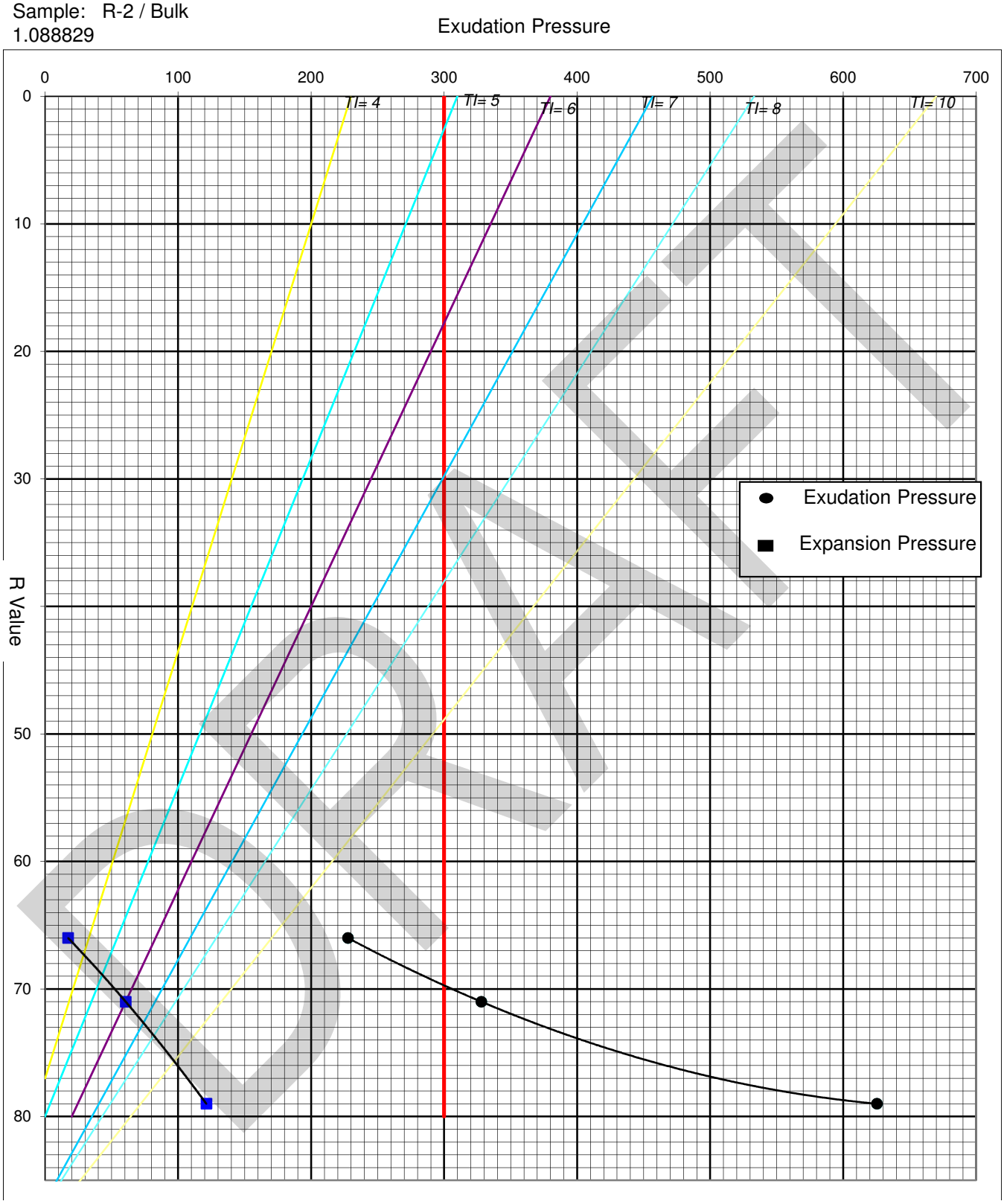
Geo-Logic ASSOCIATES

'R' VALUE CA 301

Job No. 2011-0104 Client# 60185017
Sample: R-2 / Bulk
1.088829



Geo-Logic ASSOCIATES

APPENDIX C

SUPPORTING DOCUMENTS

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GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING

Auger	Shelby Tube	Split Spoon
Rock Core	Macro Core	Modified California Ring Sampler
Grab Sample	No Recovery	Modified Dames & Moore Ring Sampler

WATER LEVEL

- Water Initially Encountered
- Water Level After a Specified Period of Time
- Water Level After a Specified Period of Time

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

(HP)	Hand Penetrometer
(T)	Torvane
(b/f)	Standard Penetration Test (blows per foot)
N	N value
(PID)	Photo-Ionization Detector
(OVA)	Organic Vapor Analyzer
(WOH)	Weight of Hammer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels and sands.			CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance Includes silts and clays.			
Descriptive Term (Density)	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.	Descriptive Term (Consistency)	Unconfined Compressive Strength, Qu, psf	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.
Very Loose	0 - 3	0 - 6	Very Soft	less than 500	0 - 1	< 3
Loose	4 - 9	7 - 18	Soft	500 to 1,000	2 - 4	3 - 4
Medium Dense	10 - 29	19 - 58	Medium-Stiff	1,000 to 2,000	4 - 8	5 - 9
Dense	30 - 50	59 - 98	Stiff	2,000 to 4,000	8 - 15	10 - 18
Very Dense	> 50	≥ 99	Very Stiff	4,000 to 8,000	15 - 30	19 - 42
			Hard	> 8,000	> 30	> 42

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

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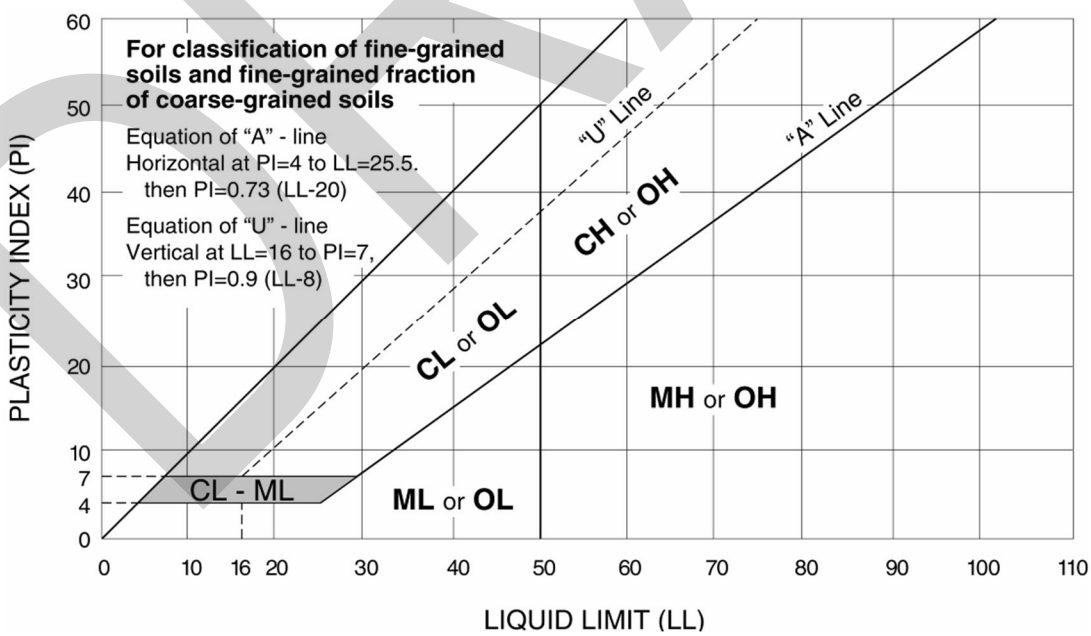
UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel [F,G,H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G,H,I]
			Fines classify as CL or CH		SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]		CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OL	Organic clay [K,L,M,N]
						Organic silt [K,L,M,O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K,L,M]
			PI plots below "A" line		MH	Elastic Silt [K,L,M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OH	Organic clay [K,L,M,P]
						Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve
[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.
[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.
[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.
[H] If fines are organic, add "with organic fines" to group name.
[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.
[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.
[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.
[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.
[N] PI ≥ 4 and plots on or above "A" line.
[O] PI < 4 or plots below "A" line.
[P] PI plots on or above "A" line.
[Q] PI plots below "A" line.



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Terracon

Exhibit C-2

USGS Design Maps Detailed Report

ASCE 7-10 Standard (34.2138°N, 119.1309°W)

Site Class E – "Soft Clay Soil", Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_S) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From Figure 22-1 [1] S_S = 2.641 g

From Figure 22-2 [2] S_1 = 0.954 g

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class E, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\bar{v}_s$	$\bar{N}$ or $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index PI > 20, • Moisture content w ≥ 40%, and • Undrained shear strength $\bar{s}_u$ < 500 psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

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Section 11.4.3 — Site Coefficients and Risk–Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4–1: Site Coefficient F_a

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at Short Period				
	$S_S \leq 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_S

For Site Class = E and S_S = 2.641 g, F_a = 0.900

Table 11.4–2: Site Coefficient F_v

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at 1–s Period				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_1

For Site Class = E and S_1 = 0.954 g, F_v = 2.400

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Equation (11.4–1): $S_{MS} = F_a S_S = 0.900 \times 2.641 = 2.377$ g

Equation (11.4–2): $S_{M1} = F_v S_1 = 2.400 \times 0.954 = 2.290$ g

Section 11.4.4 — Design Spectral Acceleration Parameters

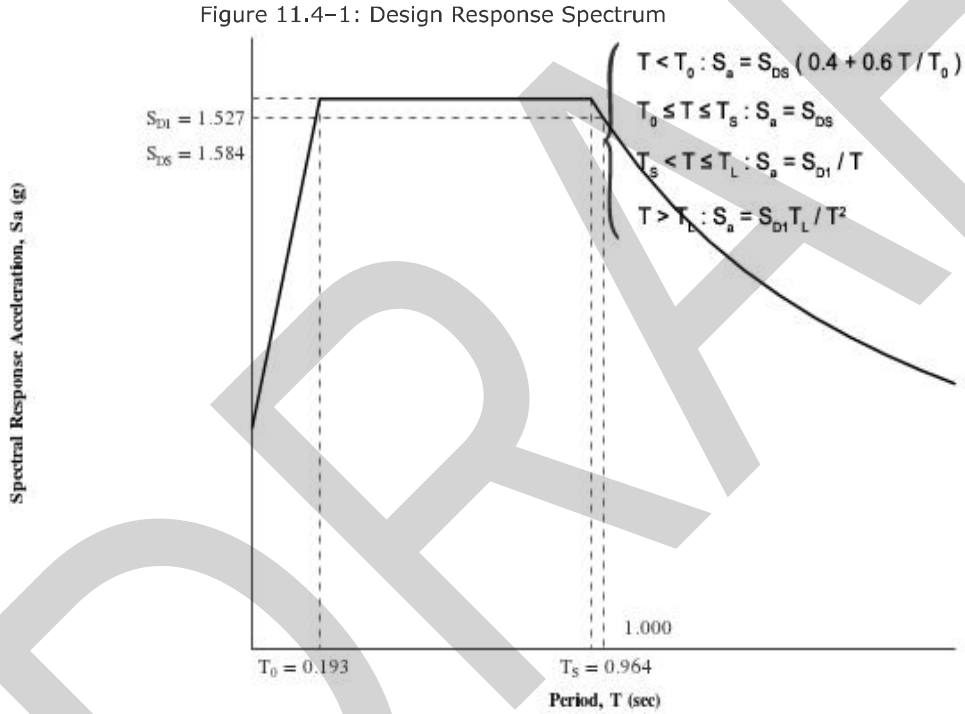
Equation (11.4–3): $S_{DS} = ⅔\ S_{MS} = ⅔ \times 2.377 = 1.584$ g

Equation (11.4–4): $S_{D1} = ⅔\ S_{M1} = ⅔ \times 2.290 = 1.527$ g

Section 11.4.5 — Design Response Spectrum

From Figure 22-12 [3] $T_L = 8$ seconds

Figure 11.4–1: Design Response Spectrum



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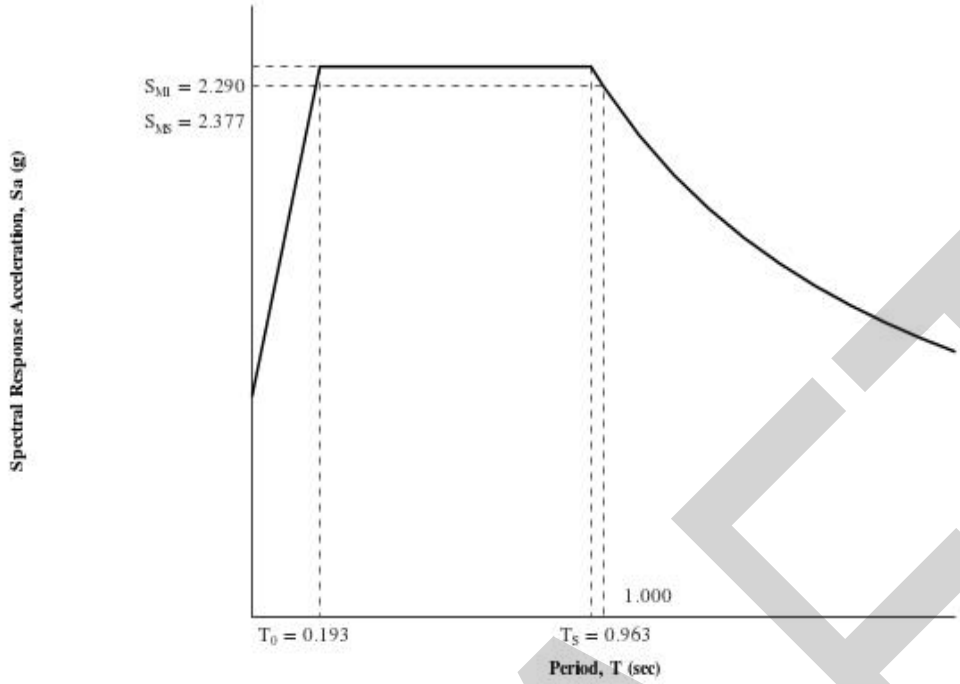
Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



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Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From Figure 22-7 [4] PGA = 1.039

Equation (11.8–1): $PGA_M = F_{PGA}PGA = 0.900 \times 1.039 = 0.935$ g

Table 11.8–1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of PGA

For Site Class = E and PGA = 1.039 g, F_{PGA} = 0.900

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From Figure 22-17 [5] C_{RS} = 0.908

From Figure 22-18 [6] C_{R1} = 0.908

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Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 1.584 g, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 1.527 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = E

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

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APPENDIX D

LIQUEFACTION ANALYSIS

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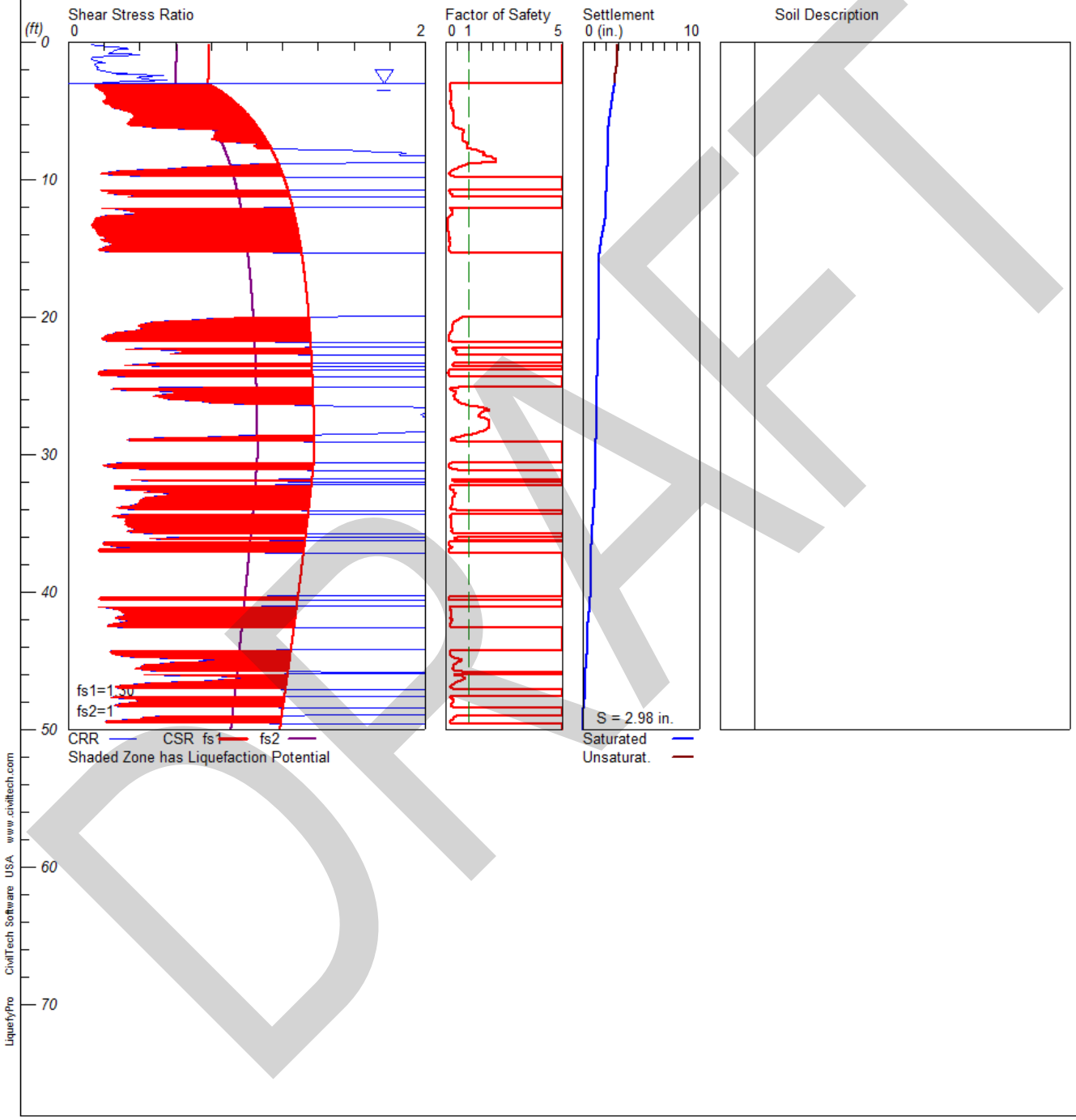
Oxnard Warehouse

Hole No.=CPT-16 Water Depth=3 ft

Magnitude=6.89
Acceleration=0.935g



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Input File Name: N:\Projects\2018\60185017\Working Files\Calculations-Analyses\CPT-16.liq
Title: Oxnard Warehouse
Subtitle: 60185017

Surface Elev.=
Hole No.=CPT-16
Depth of Hole= 50.00 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration= 0.94 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=CPT-16
Depth of Hole=50.00 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration=0.94 g
Earthquake Magnitude=6.89
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot two CSR (fs1=User, fs2=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines	D50 mm
0.16	2.60	0.03	1.15	120.00	0.00	0.50
1.15	6.80	0.07	1.03	120.00	0.00	0.50
2.13	11.00	0.22	2.00	120.00	0.00	0.50
3.12	17.10	0.22	1.29	120.00	0.00	0.50
4.10	32.80	0.39	1.19	120.00	0.00	0.50
5.09	61.20	0.25	0.41	120.00	0.00	0.50
6.07	65.20	0.29	0.44	120.00	0.00	0.50
7.05	96.50	0.68	0.70	120.00	0.00	0.50
8.04	138.60	0.41	0.30	120.00	0.00	0.50
9.02	105.10	0.67	0.64	120.00	0.00	0.50
10.00	5.80	0.22	3.79	120.00	0.00	0.50
10.99	20.00	0.41	2.05	120.00	0.00	0.50
11.97	7.10	0.09	1.27	120.00	0.00	0.50
12.95	23.90	0.31	1.30	120.00	0.00	0.50
13.94	45.20	0.33	0.73	120.00	0.00	0.50
14.92	54.60	0.46	0.84	120.00	0.00	0.50
15.91	6.80	0.13	1.91	120.00	0.00	0.50
16.89	6.40	0.11	1.72	120.00	0.00	0.50
17.88	6.80	0.10	1.47	120.00	0.00	0.50
18.86	11.30	0.22	1.95	120.00	0.00	0.50
19.84	22.30	0.88	3.95	120.00	0.00	0.50
20.83	46.50	1.42	3.05	120.00	0.00	0.50
21.81	23.10	0.69	2.99	120.00	0.00	0.50
22.80	20.90	0.67	3.21	120.00	0.00	0.50
23.78	19.10	0.65	3.40	120.00	0.00	0.50

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24.77	14.20	0.31	2.18	120.00	0.00	0.50
25.75	75.20	2.06	2.74	120.00	0.00	0.50
26.73	254.20	2.12	0.83	120.00	0.00	0.50
27.72	273.10	2.21	0.81	120.00	0.00	0.50
28.70	159.10	1.46	0.92	120.00	0.00	0.50
29.69	14.10	0.43	3.05	120.00	0.00	0.50
30.67	31.00	0.63	2.03	120.00	0.00	0.50
31.66	21.80	0.78	3.58	120.00	0.00	0.50
32.64	51.20	1.79	3.50	120.00	0.00	0.50
33.62	92.90	1.79	1.93	120.00	0.00	0.50
34.61	98.70	1.29	1.31	120.00	0.00	0.50
35.59	64.50	1.56	2.42	120.00	0.00	0.50
36.58	46.60	0.88	1.89	120.00	0.00	0.50
37.56	14.60	0.42	2.88	120.00	0.00	0.50
38.54	13.30	0.37	2.78	120.00	0.00	0.50
39.53	14.50	0.41	2.83	120.00	0.00	0.50
40.51	35.50	0.55	1.55	120.00	0.00	0.50
41.50	116.70	1.10	0.94	120.00	0.00	0.50
42.48	53.00	1.07	2.02	120.00	0.00	0.50
43.47	16.20	0.50	3.09	120.00	0.00	0.50
44.45	68.90	1.32	1.92	120.00	0.00	0.50
45.43	138.60	1.53	1.10	120.00	0.00	0.50
46.42	203.80	1.89	0.93	120.00	0.00	0.50
47.40	17.90	0.91	5.08	120.00	0.00	0.50
48.39	51.70	1.54	2.98	120.00	0.00	0.50
49.37	63.20	1.12	1.77	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=2.72 in.
Settlement of Unsaturated Sands=0.25 in.
Total Settlement of Saturated and Unsaturated Sands=2.98 in.
Differential Settlement=1.488 to 1.964 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.16	0.13	0.79	5.00	2.72	0.25	2.98
1.16	0.13	0.79	5.00	2.72	0.25	2.97
2.16	0.22	0.79	5.00	2.72	0.08	2.81
3.16	0.15	0.80	0.19*	2.69	0.00	2.69
4.16	0.20	0.91	0.22*	2.51	0.00	2.51
5.16	0.35	1.00	0.35*	2.34	0.00	2.34
6.16	0.44	1.06	0.41*	2.18	0.00	2.18
7.16	0.84	1.11	0.75*	2.12	0.00	2.12
8.16	1.85	1.15	1.61	2.11	0.00	2.11
9.16	0.60	1.19	0.51*	2.10	0.00	2.10
10.16	2.00	1.22	5.00	2.02	0.00	2.02
11.16	0.36	1.24	0.29*	1.97	0.00	1.97
12.16	0.28	1.26	0.22*	1.96	0.00	1.96
13.16	0.14	1.28	0.11*	1.84	0.00	1.84
14.16	0.20	1.29	0.15*	1.62	0.00	1.62
15.16	0.17	1.31	0.13*	1.44	0.00	1.44
16.16	2.00	1.32	5.00	1.42	0.00	1.42
17.16	2.00	1.33	5.00	1.42	0.00	1.42
18.16	2.00	1.34	5.00	1.42	0.00	1.42
19.16	2.00	1.34	5.00	1.42	0.00	1.42
20.16	0.74	1.35	0.55*	1.42	0.00	1.42
21.16	0.25	1.36	0.19*	1.39	0.00	1.39
22.16	2.00	1.36	5.00	1.29	0.00	1.29
23.16	2.00	1.36	5.00	1.28	0.00	1.28
24.16	0.17	1.37	0.12*	1.23	0.00	1.23
25.16	0.26	1.37	0.19*	1.20	0.00	1.20
26.16	0.76	1.37	0.56*	1.14	0.00	1.14
27.16	1.98	1.38	1.44	1.14	0.00	1.14
28.16	2.38	1.38	1.73	1.14	0.00	1.14
29.16	2.00	1.38	5.00	1.11	0.00	1.11
30.16	2.00	1.38	5.00	1.11	0.00	1.11

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31.16	2.00	1.37	5.00	1.06	0.00	1.06
32.16	2.00	1.36	5.00	1.05	0.00	1.05
33.16	0.42	1.35	0.31*	0.99	0.00	0.99
34.16	2.00	1.35	5.00	0.92	0.00	0.92
35.16	0.32	1.34	0.24*	0.82	0.00	0.82
36.16	0.52	1.33	0.39*	0.76	0.00	0.76
37.16	2.00	1.32	5.00	0.64	0.00	0.64
38.16	2.00	1.31	5.00	0.64	0.00	0.64
39.16	2.00	1.30	5.00	0.64	0.00	0.64
40.16	2.00	1.29	5.00	0.64	0.00	0.64
41.16	0.23	1.28	0.18*	0.58	0.00	0.58
42.16	0.31	1.27	0.24*	0.44	0.00	0.44
43.16	2.00	1.26	5.00	0.38	0.00	0.38
44.16	2.00	1.25	5.00	0.38	0.00	0.38
45.16	0.54	1.24	0.43*	0.29	0.00	0.29
46.16	0.89	1.23	0.73*	0.22	0.00	0.22
47.16	2.00	1.22	5.00	0.15	0.00	0.15
48.16	0.27	1.21	0.22*	0.08	0.00	0.08
49.16	0.40	1.19	0.34*	0.05	0.00	0.05

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

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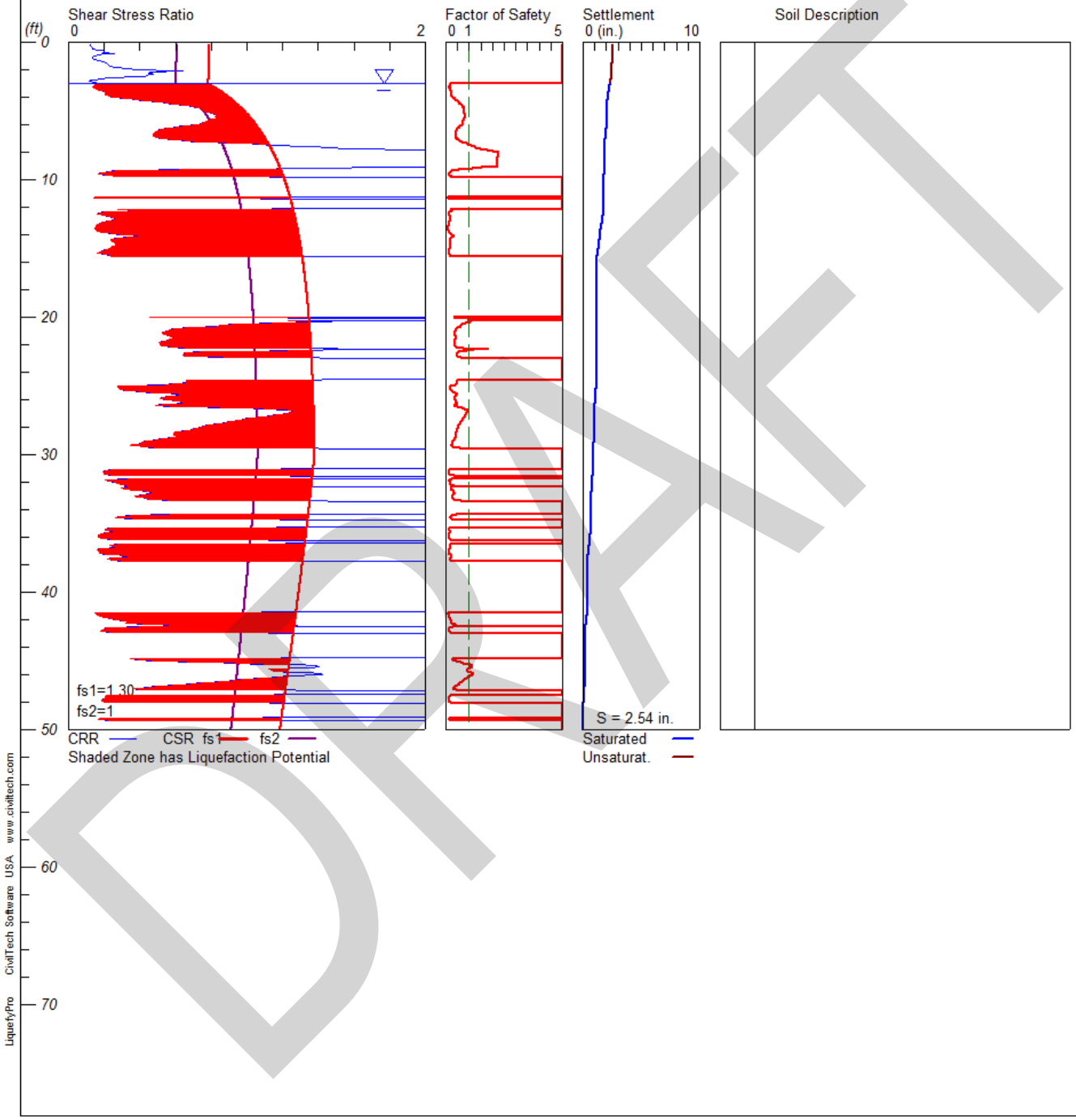
LIQUEFACTION ANALYSIS

Oxnard Warehouse

Hole No.=CPT-18 Water Depth=3 ft

Magnitude=6.89
Acceleration=0.935g



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Input File Name: N:\Projects\2018\60185017\Working Files\Calculations-Analyses\CPT-18.liq
Title: Oxnard Warehouse
Subtitle: 60185017

Surface Elev.=
Hole No.=CPT-18
Depth of Hole= 50.00 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration= 0.94 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=CPT-18
Depth of Hole=50.00 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration=0.94 g
Earthquake Magnitude=6.89
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot two CSR (fs1=User, fs2=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines mm	D50
0.16	2.00	0.02	1.00	120.00	0.00	0.50
1.15	11.50	0.10	0.87	120.00	0.00	0.50
2.13	12.10	0.39	3.22	120.00	0.00	0.50
3.12	9.10	0.12	1.32	120.00	0.00	0.50
4.10	45.60	0.58	1.27	120.00	0.00	0.50
5.09	76.40	1.01	1.32	120.00	0.00	0.50
6.07	85.90	0.30	0.35	120.00	0.00	0.50
7.05	83.90	0.25	0.30	120.00	0.00	0.50
8.04	167.50	0.60	0.36	120.00	0.00	0.50
9.02	166.50	0.42	0.25	120.00	0.00	0.50
10.00	5.90	0.11	1.86	120.00	0.00	0.50
10.99	6.30	0.08	1.27	120.00	0.00	0.50
11.97	7.70	0.14	1.82	120.00	0.00	0.50
12.95	63.40	0.44	0.69	120.00	0.00	0.50
13.94	25.80	0.62	2.40	120.00	0.00	0.50
14.92	72.30	0.30	0.41	120.00	0.00	0.50
15.91	8.70	0.15	1.72	120.00	0.00	0.50
16.89	9.30	0.22	2.37	120.00	0.00	0.50
17.88	9.30	0.19	2.04	120.00	0.00	0.50
18.86	12.90	0.24	1.86	120.00	0.00	0.50
19.84	15.50	0.33	2.13	120.00	0.00	0.50
20.83	68.60	2.21	3.22	120.00	0.00	0.50
21.81	100.40	1.59	1.58	120.00	0.00	0.50
22.80	76.30	2.39	3.13	120.00	0.00	0.50
23.78	24.50	0.94	3.84	120.00	0.00	0.50

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24.77	36.80	1.24	3.37	120.00	0.00	0.50
25.75	125.10	1.45	1.16	120.00	0.00	0.50
26.73	190.30	2.06	1.08	120.00	0.00	0.50
27.72	165.20	1.57	0.95	120.00	0.00	0.50
28.70	145.10	1.31	0.90	120.00	0.00	0.50
29.69	17.10	0.64	3.74	120.00	0.00	0.50
30.67	18.40	0.70	3.80	120.00	0.00	0.50
31.66	21.60	0.85	3.94	120.00	0.00	0.50
32.64	67.60	1.91	2.83	120.00	0.00	0.50
33.62	32.10	1.34	4.17	120.00	0.00	0.50
34.61	39.60	0.91	2.30	120.00	0.00	0.50
35.59	38.60	0.91	2.36	120.00	0.00	0.50
36.58	52.60	1.05	2.00	120.00	0.00	0.50
37.56	50.60	1.00	1.98	120.00	0.00	0.50
38.54	13.60	0.41	3.01	120.00	0.00	0.50
39.53	12.10	0.34	2.81	120.00	0.00	0.50
40.51	13.60	0.43	3.16	120.00	0.00	0.50
41.50	42.60	0.56	1.31	120.00	0.00	0.50
42.48	43.80	1.47	3.36	120.00	0.00	0.50
43.47	14.50	0.40	2.76	120.00	0.00	0.50
44.45	14.10	0.30	2.13	120.00	0.00	0.50
45.43	259.90	2.38	0.92	120.00	0.00	0.50
46.42	216.00	2.08	0.96	120.00	0.00	0.50
47.40	31.40	1.33	4.24	120.00	0.00	0.50
48.39	16.80	0.55	3.27	120.00	0.00	0.50
49.37	36.80	0.99	2.69	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=2.31 in.
Settlement of Unsaturated Sands=0.23 in.
Total Settlement of Saturated and Unsaturated Sands=2.54 in.
Differential Settlement=1.270 to 1.676 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.16	0.12	0.79	5.00	2.31	0.23	2.54
1.16	0.14	0.79	5.00	2.31	0.21	2.53
2.16	0.46	0.79	5.00	2.31	0.13	2.44
3.16	0.14	0.80	0.17*	2.29	0.00	2.29
4.16	0.37	0.91	0.41*	2.11	0.00	2.11
5.16	0.80	1.00	0.80*	2.07	0.00	2.07
6.16	0.61	1.06	0.57*	2.02	0.00	2.02
7.16	0.66	1.11	0.59*	1.89	0.00	1.89
8.16	2.58	1.15	2.24	1.87	0.00	1.87
9.16	1.36	1.19	1.15	1.87	0.00	1.87
10.16	2.00	1.22	5.00	1.78	0.00	1.78
11.16	2.00	1.24	5.00	1.78	0.00	1.78
12.16	0.28	1.26	0.22*	1.76	0.00	1.76
13.16	0.18	1.28	0.14*	1.61	0.00	1.61
14.16	0.33	1.29	0.25*	1.44	0.00	1.44
15.16	0.19	1.31	0.15*	1.28	0.00	1.28
16.16	2.00	1.32	5.00	1.21	0.00	1.21
17.16	2.00	1.33	5.00	1.21	0.00	1.21
18.16	2.00	1.34	5.00	1.21	0.00	1.21
19.16	2.00	1.34	5.00	1.21	0.00	1.21
20.16	2.00	1.35	5.00	1.21	0.00	1.21
21.16	0.52	1.36	0.39*	1.20	0.00	1.20
22.16	0.57	1.36	0.42*	1.15	0.00	1.15
23.16	2.00	1.36	5.00	1.15	0.00	1.15
24.16	2.00	1.37	5.00	1.15	0.00	1.15
25.16	0.29	1.37	0.21*	1.12	0.00	1.12
26.16	0.64	1.37	0.46*	1.03	0.00	1.03
27.16	1.13	1.38	0.82*	1.02	0.00	1.02
28.16	0.69	1.38	0.50*	1.00	0.00	1.00
29.16	0.40	1.38	0.29*	0.91	0.00	0.91
30.16	2.00	1.38	5.00	0.89	0.00	0.89

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31.16	0.20	1.37	0.15*	0.88	0.00	0.88
32.16	0.29	1.36	0.21*	0.77	0.00	0.77
33.16	0.43	1.35	0.32*	0.71	0.00	0.71
34.16	2.00	1.35	5.00	0.71	0.00	0.71
35.16	2.00	1.34	5.00	0.69	0.00	0.69
36.16	0.24	1.33	0.18*	0.56	0.00	0.56
37.16	0.18	1.32	0.13*	0.45	0.00	0.45
38.16	2.00	1.31	5.00	0.38	0.00	0.38
39.16	2.00	1.30	5.00	0.38	0.00	0.38
40.16	2.00	1.29	5.00	0.38	0.00	0.38
41.16	2.00	1.28	5.00	0.38	0.00	0.38
42.16	0.33	1.27	0.26*	0.26	0.00	0.26
43.16	2.00	1.26	5.00	0.18	0.00	0.18
44.16	2.00	1.25	5.00	0.18	0.00	0.18
45.16	0.93	1.24	0.75*	0.17	0.00	0.17
46.16	1.17	1.23	0.95*	0.17	0.00	0.17
47.16	2.00	1.22	5.00	0.13	0.00	0.13
48.16	2.00	1.21	5.00	0.03	0.00	0.03
49.16	0.18	1.19	0.15*	0.03	0.00	0.03

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

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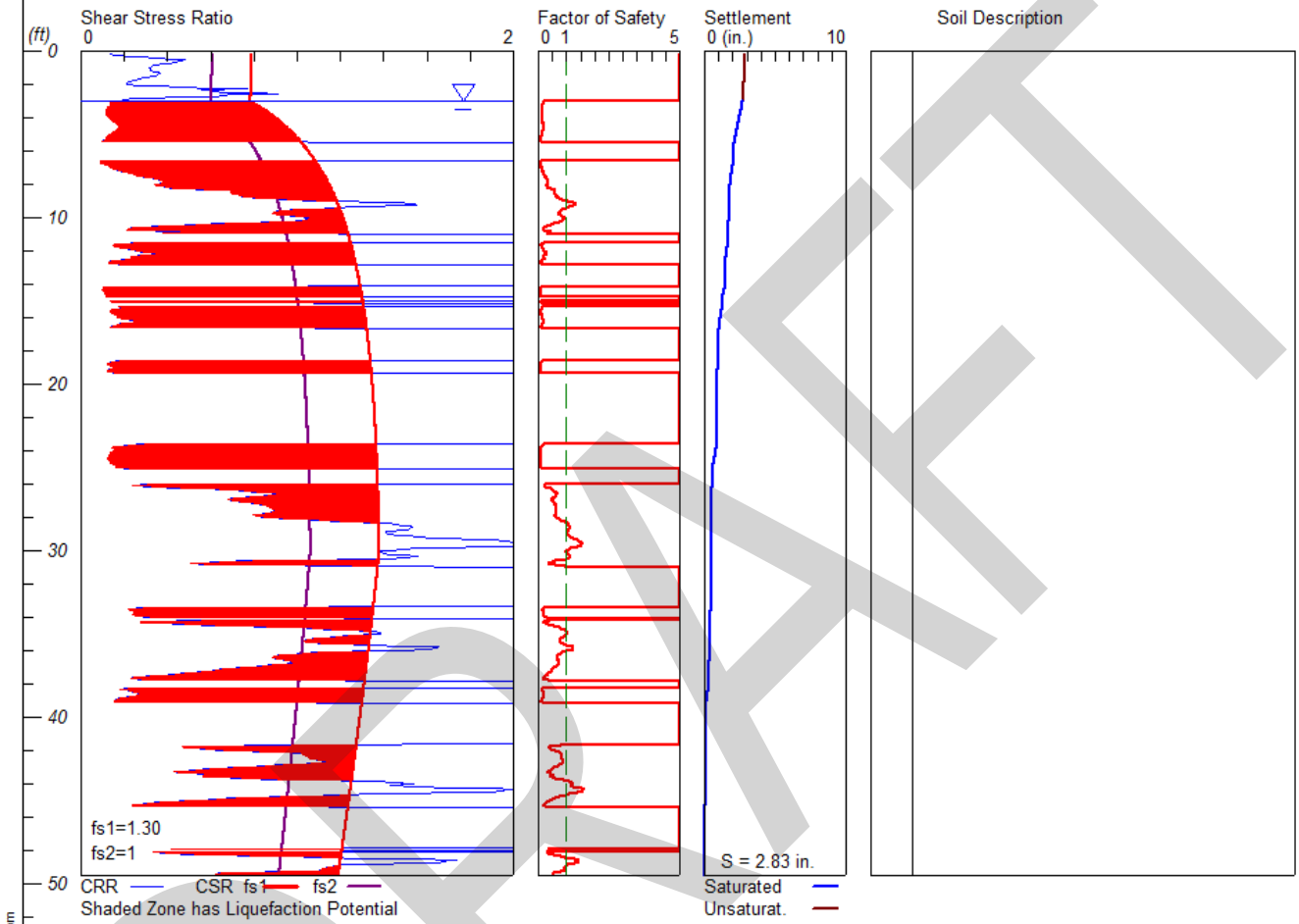
LIQUEFACTION ANALYSIS

Oxnard Warehouse

Hole No.=CPT-19 Water Depth=3 ft

Magnitude=6.89
Acceleration=0.935g



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Input File Name: N:\Projects\2018\60185017\Working Files\Calculations-Analyses\CPT-19.liq
Title: Oxnard Warehouse
Subtitle: 60185017

Surface Elev.=
Hole No.=CPT-19
Depth of Hole= 49.50 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration= 0.94 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=CPT-19
Depth of Hole=49.50 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration=0.94 g
Earthquake Magnitude=6.89
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot two CSR (fs1=User, fs2=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines	D50 mm
0.16	3.50	0.04	1.14	120.00	0.00	0.50
1.15	22.30	0.38	1.70	120.00	0.00	0.50
2.13	13.50	0.40	2.96	120.00	0.00	0.50
3.12	11.90	0.15	1.26	120.00	0.00	0.50
4.10	29.20	0.07	0.24	120.00	0.00	0.50
5.09	17.80	0.13	0.73	120.00	0.00	0.50
6.07	4.10	-0.01	-0.24	120.00	0.00	0.50
7.05	17.70	0.25	1.41	120.00	0.00	0.50
8.04	55.30	0.76	1.37	120.00	0.00	0.50
9.02	125.10	0.75	0.60	120.00	0.00	0.50
10.00	123.70	0.53	0.43	120.00	0.00	0.50
10.99	10.10	0.30	2.97	120.00	0.00	0.50
11.97	31.40	0.76	2.42	120.00	0.00	0.50
12.95	7.20	0.10	1.39	120.00	0.00	0.50
13.94	4.40	0.01	0.23	120.00	0.00	0.50
14.92	7.00	0.06	0.86	120.00	0.00	0.50
15.91	12.90	0.17	1.32	120.00	0.00	0.50
16.89	5.80	0.10	1.72	120.00	0.00	0.50
17.88	6.80	0.12	1.76	120.00	0.00	0.50
18.86	11.70	0.08	0.68	120.00	0.00	0.50
19.84	6.60	0.11	1.67	120.00	0.00	0.50
20.83	7.80	0.09	1.15	120.00	0.00	0.50
21.81	9.50	0.19	2.00	120.00	0.00	0.50
22.80	15.00	0.46	3.07	120.00	0.00	0.50
23.78	29.90	0.37	1.24	120.00	0.00	0.50

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24.77	53.20	0.30	0.56	120.00	0.00	0.50
25.75	15.30	0.47	3.07	120.00	0.00	0.50
26.73	159.10	1.50	0.94	120.00	0.00	0.50
27.72	173.00	1.18	0.68	120.00	0.00	0.50
28.70	215.10	1.65	0.77	120.00	0.00	0.50
29.69	246.00	1.68	0.68	120.00	0.00	0.50
30.67	122.00	2.27	1.86	120.00	0.00	0.50
31.66	15.00	0.56	3.73	120.00	0.00	0.50
32.64	23.00	0.57	2.48	120.00	0.00	0.50
33.62	66.80	1.16	1.74	120.00	0.00	0.50
34.61	200.40	1.73	0.86	120.00	0.00	0.50
35.59	213.40	1.81	0.85	120.00	0.00	0.50
36.58	200.00	1.75	0.88	120.00	0.00	0.50
37.56	93.90	1.21	1.29	120.00	0.00	0.50
38.54	95.30	1.21	1.27	120.00	0.00	0.50
39.53	15.70	0.44	2.80	120.00	0.00	0.50
40.51	15.50	0.45	2.90	120.00	0.00	0.50
41.50	48.40	1.87	3.86	120.00	0.00	0.50
42.48	194.50	3.18	1.63	120.00	0.00	0.50
43.47	74.10	2.76	3.72	120.00	0.00	0.50
44.45	286.10	2.55	0.89	120.00	0.00	0.50
45.43	31.40	1.02	3.25	120.00	0.00	0.50
46.42	19.10	0.74	3.87	120.00	0.00	0.50
47.40	23.00	0.77	3.35	120.00	0.00	0.50
48.39	220.20	2.80	1.27	120.00	0.00	0.50
49.37	177.00	2.08	1.18	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=2.69 in.
Settlement of Unsaturated Sands=0.14 in.
Total Settlement of Saturated and Unsaturated Sands=2.83 in.
Differential Settlement=1.415 to 1.868 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.16	0.14	0.79	5.00	2.69	0.14	2.83
1.16	0.32	0.79	5.00	2.69	0.14	2.83
2.16	0.47	0.79	5.00	2.69	0.05	2.74
3.16	0.14	0.80	0.17*	2.66	0.00	2.66
4.16	0.14	0.91	0.16*	2.41	0.00	2.41
5.16	0.12	1.00	0.12*	2.18	0.00	2.18
6.16	2.00	1.06	5.00	2.09	0.00	2.09
7.16	0.17	1.11	0.15*	1.94	0.00	1.94
8.16	0.39	1.15	0.34*	1.79	0.00	1.79
9.16	1.54	1.19	1.30	1.73	0.00	1.73
10.16	1.03	1.22	0.84*	1.71	0.00	1.71
11.16	2.00	1.24	5.00	1.64	0.00	1.64
12.16	0.34	1.26	0.27*	1.54	0.00	1.54
13.16	2.00	1.28	5.00	1.43	0.00	1.43
14.16	0.10	1.29	0.08*	1.43	0.00	1.43
15.16	2.00	1.31	5.00	1.23	0.00	1.23
16.16	0.24	1.32	0.18*	1.10	0.00	1.10
17.16	2.00	1.33	5.00	1.02	0.00	1.02
18.16	2.00	1.34	5.00	1.02	0.00	1.02
19.16	0.12	1.34	0.09*	0.91	0.00	0.91
20.16	2.00	1.35	5.00	0.87	0.00	0.87
21.16	2.00	1.36	5.00	0.87	0.00	0.87
22.16	2.00	1.36	5.00	0.87	0.00	0.87
23.16	2.00	1.36	5.00	0.87	0.00	0.87
24.16	0.13	1.37	0.10*	0.77	0.00	0.77
25.16	2.00	1.37	5.00	0.55	0.00	0.55
26.16	0.33	1.37	0.24*	0.54	0.00	0.54
27.16	0.80	1.38	0.58*	0.49	0.00	0.49
28.16	1.10	1.38	0.80*	0.46	0.00	0.46
29.16	1.56	1.38	1.13	0.46	0.00	0.46
30.16	1.39	1.38	1.01	0.46	0.00	0.46

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31.16	2.00	1.37	5.00	0.46	0.00	0.46
32.16	2.00	1.36	5.00	0.46	0.00	0.46
33.16	2.00	1.35	5.00	0.46	0.00	0.46
34.16	0.56	1.35	0.42*	0.38	0.00	0.38
35.16	1.18	1.34	0.88*	0.35	0.00	0.35
36.16	1.03	1.33	0.77*	0.35	0.00	0.35
37.16	0.62	1.32	0.47*	0.33	0.00	0.33
38.16	2.00	1.31	5.00	0.26	0.00	0.26
39.16	2.00	1.30	5.00	0.11	0.00	0.11
40.16	2.00	1.29	5.00	0.11	0.00	0.11
41.16	2.00	1.28	5.00	0.11	0.00	0.11
42.16	1.02	1.27	0.80*	0.10	0.00	0.10
43.16	0.53	1.26	0.42*	0.10	0.00	0.10
44.16	1.54	1.25	1.23	0.08	0.00	0.08
45.16	0.31	1.24	0.25*	0.06	0.00	0.06
46.16	2.00	1.23	5.00	0.02	0.00	0.02
47.16	2.00	1.22	5.00	0.02	0.00	0.02
48.16	0.39	1.21	0.32*	0.02	0.00	0.02
49.16	1.11	1.19	0.93*	0.01	0.00	0.01

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

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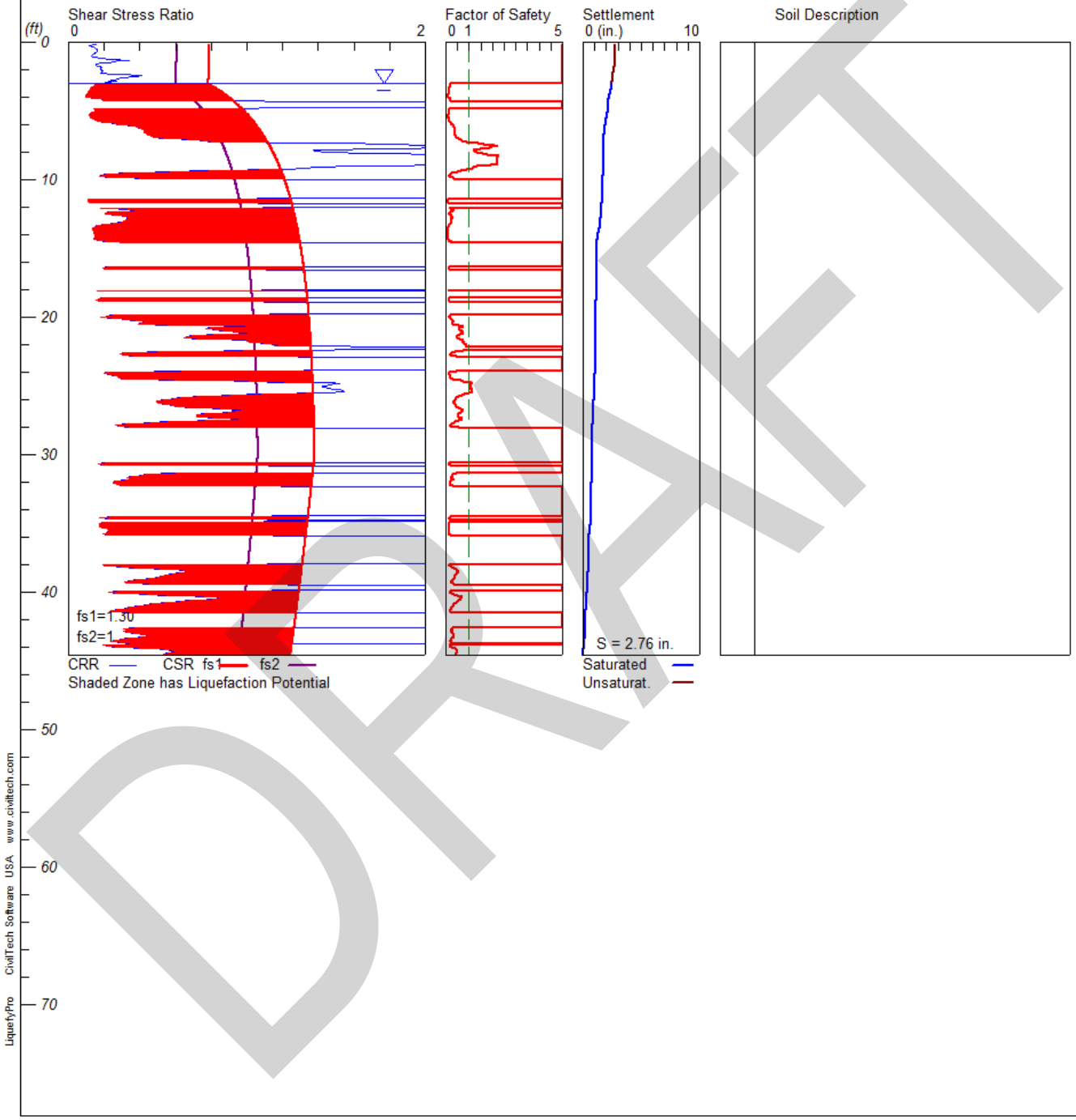
LIQUEFACTION ANALYSIS

Oxnard Warehouse

Hole No.=CPT-20 Water Depth=3 ft

Magnitude=6.89
Acceleration=0.935g



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LIQUEFACTION ANALYSIS SUMMARY
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Input File Name: N:\Projects\2018\60185017\Working Files\Calculations-Analyses\CPT-20.liq
Title: Oxnard Warehouse
Subtitle: 60185017

Surface Elev.=
Hole No.=CPT-20
Depth of Hole= 44.60 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration= 0.94 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=CPT-20
Depth of Hole=44.60 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration=0.94 g
Earthquake Magnitude=6.89
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot two CSR (fs1=User, fs2=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines mm	D50
0.16	1.70	0.02	1.18	120.00	0.00	0.50
1.15	7.60	0.13	1.71	120.00	0.00	0.50
2.13	24.70	0.26	1.05	120.00	0.00	0.50
3.12	10.30	0.14	1.36	120.00	0.00	0.50
4.10	5.90	0.07	1.19	120.00	0.00	0.50
5.09	5.40	0.05	0.93	120.00	0.00	0.50
6.07	65.50	0.20	0.31	120.00	0.00	0.50
7.05	79.40	1.01	1.27	120.00	0.00	0.50
8.04	128.80	0.57	0.44	120.00	0.00	0.50
9.02	132.30	0.37	0.28	120.00	0.00	0.50
10.00	9.30	0.28	3.01	120.00	0.00	0.50
10.99	4.30	0.03	0.70	120.00	0.00	0.50
11.97	7.00	0.08	1.14	120.00	0.00	0.50
12.95	45.90	1.05	2.29	120.00	0.00	0.50
13.94	37.00	0.28	0.76	120.00	0.00	0.50
14.92	10.20	0.23	2.25	120.00	0.00	0.50
15.91	9.40	0.18	1.91	120.00	0.00	0.50
16.89	10.20	0.17	1.67	120.00	0.00	0.50
17.88	9.70	0.11	1.13	120.00	0.00	0.50
18.86	12.40	0.15	1.21	120.00	0.00	0.50
19.84	16.00	0.28	1.75	120.00	0.00	0.50
20.83	49.50	1.91	3.86	120.00	0.00	0.50
21.81	44.10	1.81	4.10	120.00	0.00	0.50
22.80	30.70	0.79	2.57	120.00	0.00	0.50
23.78	17.00	0.75	4.41	120.00	0.00	0.50

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24.77	202.70	1.80	0.89	120.00	0.00	0.50
25.75	149.30	1.42	0.95	120.00	0.00	0.50
26.73	180.50	1.02	0.57	120.00	0.00	0.50
27.72	104.50	1.13	1.08	120.00	0.00	0.50
28.70	12.70	0.37	2.91	120.00	0.00	0.50
29.69	17.50	0.57	3.26	120.00	0.00	0.50
30.67	36.00	0.56	1.56	120.00	0.00	0.50
31.66	57.00	1.46	2.56	120.00	0.00	0.50
32.64	16.30	0.53	3.25	120.00	0.00	0.50
33.62	30.80	0.89	2.89	120.00	0.00	0.50
34.61	33.10	0.55	1.66	120.00	0.00	0.50
35.59	47.20	0.98	2.08	120.00	0.00	0.50
36.58	17.00	0.41	2.41	120.00	0.00	0.50
37.56	13.70	0.33	2.41	120.00	0.00	0.50
38.54	184.00	1.26	0.68	120.00	0.00	0.50
39.53	34.30	1.35	3.94	120.00	0.00	0.50
40.51	189.80	1.91	1.01	120.00	0.00	0.50
41.50	35.80	1.26	3.52	120.00	0.00	0.50
42.48	29.70	1.31	4.41	120.00	0.00	0.50
43.47	79.70	1.47	1.84	120.00	0.00	0.50
44.45	150.20	1.99	1.32	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=2.47 in.
Settlement of Unsaturated Sands=0.29 in.
Total Settlement of Saturated and Unsaturated Sands=2.76 in.
Differential Settlement=1.381 to 1.823 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.16	0.15	0.79	5.00	2.47	0.29	2.76
1.16	0.18	0.79	5.00	2.47	0.27	2.74
2.16	0.19	0.79	5.00	2.47	0.12	2.59
3.16	0.14	0.80	0.17*	2.45	0.00	2.45
4.16	0.19	0.91	0.21*	2.18	0.00	2.18
5.16	0.13	1.00	0.13*	2.09	0.00	2.09
6.16	0.38	1.06	0.36*	1.88	0.00	1.88
7.16	0.75	1.11	0.68*	1.76	0.00	1.76
8.16	2.05	1.15	1.78	1.75	0.00	1.75
9.16	1.33	1.19	1.12	1.75	0.00	1.75
10.16	2.00	1.22	5.00	1.67	0.00	1.67
11.16	2.00	1.24	5.00	1.67	0.00	1.67
12.16	0.34	1.26	0.27*	1.58	0.00	1.58
13.16	0.25	1.28	0.20*	1.47	0.00	1.47
14.16	0.14	1.29	0.11*	1.25	0.00	1.25
15.16	2.00	1.31	5.00	1.18	0.00	1.18
16.16	2.00	1.32	5.00	1.18	0.00	1.18
17.16	2.00	1.33	5.00	1.15	0.00	1.15
18.16	2.00	1.34	5.00	1.14	0.00	1.14
19.16	2.00	1.34	5.00	1.10	0.00	1.10
20.16	0.31	1.35	0.23*	1.06	0.00	1.06
21.16	1.01	1.36	0.74*	1.05	0.00	1.05
22.16	2.00	1.36	5.00	1.05	0.00	1.05
23.16	2.00	1.36	5.00	1.03	0.00	1.03
24.16	0.22	1.37	0.16*	1.01	0.00	1.01
25.16	1.45	1.37	1.06	0.95	0.00	0.95
26.16	0.50	1.37	0.36*	0.91	0.00	0.91
27.16	0.72	1.38	0.52*	0.85	0.00	0.85
28.16	2.00	1.38	5.00	0.79	0.00	0.79
29.16	2.00	1.38	5.00	0.79	0.00	0.79
30.16	2.00	1.38	5.00	0.79	0.00	0.79
31.16	2.00	1.37	5.00	0.76	0.00	0.76
32.16	0.27	1.36	0.20*	0.70	0.00	0.70
33.16	2.00	1.35	5.00	0.69	0.00	0.69
34.16	2.00	1.35	5.00	0.69	0.00	0.69
35.16	0.17	1.34	0.13*	0.62	0.00	0.62

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36.16	2.00	1.33	5.00	0.51	0.00	0.51
37.16	2.00	1.32	5.00	0.51	0.00	0.51
38.16	0.29	1.31	0.22*	0.48	0.00	0.48
39.16	0.34	1.30	0.26*	0.37	0.00	0.37
40.16	0.44	1.29	0.34*	0.31	0.00	0.31
41.16	0.32	1.28	0.25*	0.26	0.00	0.26
42.16	2.00	1.27	5.00	0.21	0.00	0.21
43.16	0.44	1.26	0.35*	0.16	0.00	0.16
44.16	0.54	1.25	0.43*	0.04	0.00	0.04

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

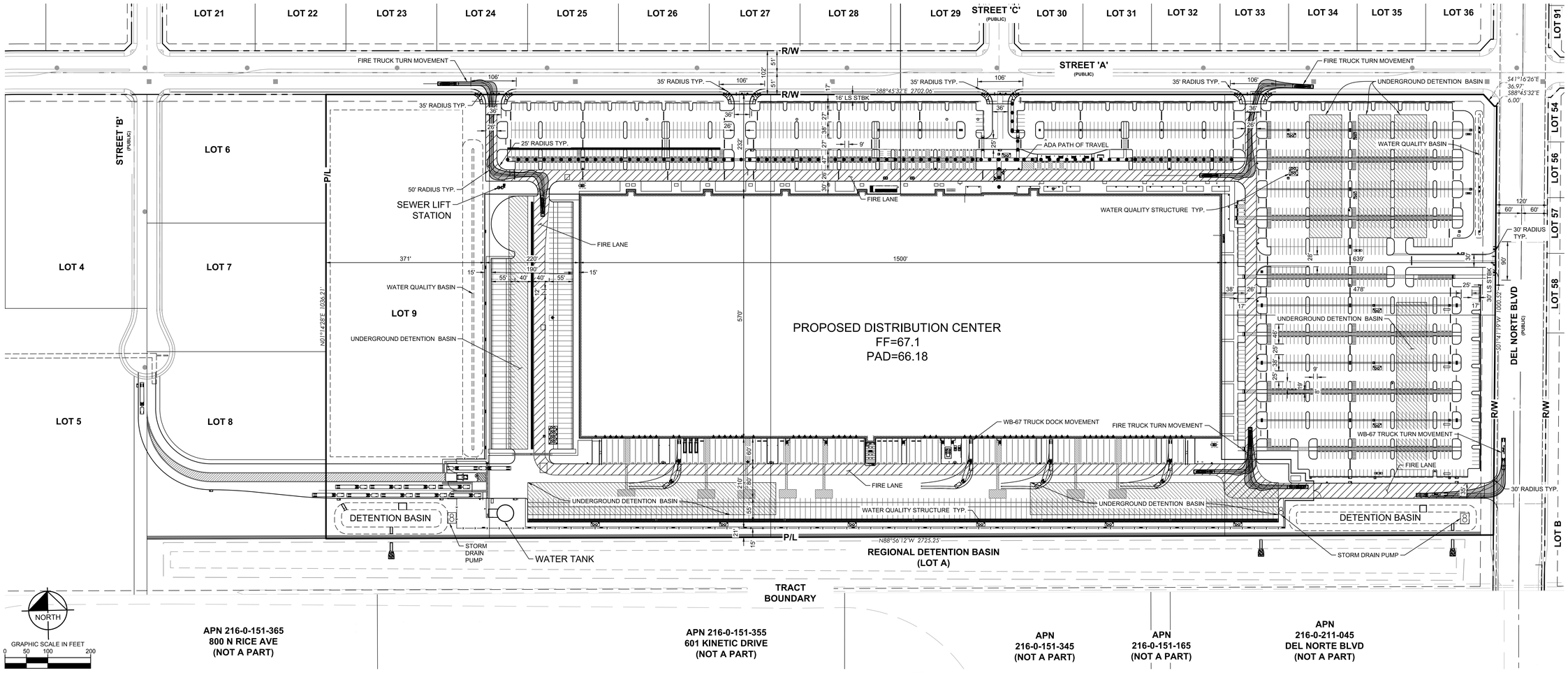
DRAFT

Appendix H Project Bruin Hydrology and Hydraulic Drainage Report

Attachment by Kimley-Horn and Associates, Inc.

Appendix I Project Bruin Civil Engineering Plans

Attachment by Kimley-Horn and Associates, Inc.



PROJECT STATISTICS

LOT SIZE (ACRES)	64.65
GROSS (SF)	2,816,200
NET (SF)	2,816,200
LAND USE	INDUSTRIAL
EXISTING ZONING	M-1
SPECIFIC PLAN	SAKIOKA FARMS

PROJECT AREA

AREA	SF	%
BUILDING AREA	857,173	30.44%
LANDSCAPE	656,820	23.32%
PAVED AREA	1,302,207	46.24%
TOTAL AREA	2,816,200	100%

LEGAL DESCRIPTION:

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF OXNARD, IN THE COUNTY OF VENTURA, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:
LOTS 8 THROUGH 12, INCLUSIVE, OF TRACT NO. 5996-1, BEING A PORTION OF PARCEL "C" IN THE CITY OF OXNARD, COUNTY OF VENTURA, STATE OF CALIFORNIA, AS PER MAP FILED IN BOOK 2, PAGE 43 OF RECORDS OF SURVEY, IN THE OFFICE OF THE COUNTY RECORDER OF VENTURA COUNTY, DESCRIBED AS A WHOLE AS FOLLOWS:
COMMENCING AT THE INTERSECTION OF THE CENTERLINE OF DEL NORTE BOULEVARD, 76.00 FEET WIDE, AS SHOWN ON THE RECORD OF SURVEY FILED IN BOOK 53, PAGES 64 THROUGH 66 INCLUSIVE OF RECORDS OF SURVEY, IN THE OFFICE OF SAID COUNTY RECORDER, WITH A LINE PARALLEL WITH AND 130.00 FEET NORTHERLY OF, MEASURED AT RIGHT ANGLES, THE SOUTHERLY LINE OF SAID PARCEL C;
THENCE ALONG SAID PARALLEL LINE SOUTH 89°47'40" WEST 60.00 FEET TO THE TRUE POINT OF BEGINNING;
THENCE CONTINUING SOUTH 89°47'40" WEST 2,725.30 FEET;
THENCE NORTH 00°01'40" WEST 1,036.28 FEET;
THENCE NORTH 89°58'20" EAST 2,708.12 FEET;
THENCE SOUTH 44°48'15" EAST 35.49 FEET;
THENCE SOUTH 89°34'49" EAST 6.00 FEET TO A LINE PARALLEL WITH AND 38.00 FEET WESTERLY OF THE CENTERLINE OF SAID DEL NORTE BOULEVARD;
THENCE ALONG SAID PARALLEL LINE, SOUTH 00°25'11" WEST 1,002.62 FEET TO THE TRUE POINT OF BEGINNING.

ABBREVIATIONS:

(X.XX)	EXISTING ELEVATION	POC	POINT OF CONNECTION
BLDG	BUILDING	PR	PROPOSED
BMP	BEST MANAGEMENT PRACTICES	RCP	REINFORCED CONCRETE PIPE
BW	BACK OF WALL	RET.	RETAINING
CL	CENTERLINE	RL	RIDGE LINE
EG	EXISTING GRADE	RW	RIGHT OF WAY
EP	EDGE OF PAVEMENT	SD	STORM DRAIN
EX	EXISTING	SF	SQUARE FEET
FF	FINISHED FLOOR ELEVATION	SDWK	SIDEWALK
		STBK	SETBACK
FG	FINISHED GRADE	STR	STRUCTURE
FH	FIRE HYDRANT	SS	SANITARY SEWER
FL	FLOW LINE	TC	TOP OF CURB
FS	FINISHED SURFACE	TG	TOP OF GRATE
FW	FIRE WATER	TP	TOP OF PAVEMENT
GB	GRADE BREAK	TW	TOP OF WALL
IE	INVERT ELEVATION	TYP	TYPICAL
LP	LOW POINT	WQ	WATER QUALITY
LS	LANDSCAPE		
MH	MANHOLE		
PL	PROPERTY LINE		

OWNER/DEVELOPER:

SEEFRIED INDUSTRIAL PROPERTIES
C/O SAKIOKA FARMS
2301 ROSECRANS AVENUE, SUITE 3165
EL SEGUNDO, CA 90245
WWW.SEEFFRIEDPROPERTIES.COM
CONTACT: SCOTT IRWIN
PH: 949.836.5678
SCOTTIRWIN@SEEFRIEDPROPERTIES.COM

ARCHITECT

WARE MALCOMB
4683 CHABOT DRIVE, SUITE 300,
PLEASANTON, CA 94588
PH: 949.244.9620 EXT 1285
CONTACT: PAUL NORCROSS

SURVEYOR:

KIMLEY-HORN AND ASSOCIATES, INC.
401 B STREET, SUITE 600,
SAN DIEGO, CA 92101
PH: 619.744.0144
CONTACT: DAVIE COWAN, P.E.

CIVIL ENGINEER:

KIMLEY-HORN AND ASSOCIATES, INC.
401 B STREET, SUITE 600,
SAN DIEGO, CA 92101
PH: 619.744.0144
CONTACT: DAVIE COWAN, P.E.

TOPOGRAPHY SOURCE

TENTATIVE TRACT NO. 5996
DELANE ENGINEERING
400 W VENTURA BLVD. SUITE 265
CAMARILLO, CA 93010
CONTACT: SCOTT UHLES

GEOTECHNICAL

TERRACON CONSULTANTS, INC.
1421 EDINGER AVENUE, SUITE C
TUSTIN, CA 92780
PROJECT NO. 60185017

UTILITY PROVIDERS:

CABLE: SPECTRUM
721 MULHARDT AVE.
OXNARD, CA 9303
PH: 805.4855.3888

WATER: CITY OF OXNARD
251 S. HAYES AVENUE
OXNARD, CA 93030
PH: 805.385.8154

WATER: CALLEGUAS MUNICIPAL WATER DISTRICT
2100 OLSEN ROAD
THOUSAND OAKS, CA 91360
PH: 805.526.9323

SEWER: CITY OF OXNARD
6001 S. PERKINS ROAD
OXNARD, CA 93030
PH: 805.488.3517

TELEPHONE: FRONTIER
201 FLYNN ROAD
CAMARILLO, CA 93012
PH: 805.445.9116
CONTACT: TOM PEARSO

ELECTRIC: SOUTHERN CALIFORNIA EDISON
10180 TELEGRAPH ROAD
VENTURA, CA. 93004
PH: 805.654.7437
CONTACT: ALISON PANCHE

GAS: SOUTHERN CALIFORNIA GAS CO.
9400 OAKDALE AVENUE
CHATSWORTH, CA 91313
PH: 805.701.3228
CONTACT: JACK RUSS

EARTHWORK

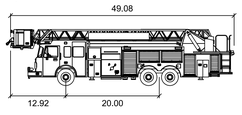
LOT SIZE (ACRES)	64.65
RAW CAD EARTHWORK	
CUT (CU. YD.)	84,606
FILL (CU. YD.)	180,028
CUT FACTOR	1
FILL FACTOR	1
NET (CU. YD.)	**(95,422.0)**

ADDITIONAL EARTHWORK

ITEM	QUANTITY	UNTI	CU. YD.
BUILDING AREA	857173	SF	18,519
BUILDING SLAB DEPTH	7.0	IN	
BUIILDING SLAB SUB-BASE	857,173	SF	10,582
Building Slab Compaction = 95%	4.0	IN	
Standard Duty Asphalt (TI=6.0, AC =3.0, AB = 6)	655,262.0	SF	18,202
Section	9.0	IN	
Heavy Duty Asphalt (TI=10, AC = 5, AB=11)	350,717.0	SF	17,319
Section	16.0	IN	
Heavy Duty Concrete (TI=10, PCC - 8"/10", AB = 4	236,138.5	SF	10,204
Section	14.0	IN	
Fire Tank (PCC = 7", AB =4")	2,500.0	SF	85
Section	11.0	IN	
Sidewalk (PCC = 4", AB =4")	137,717.3	SF	3,400
Section	8.0	IN	
Utility Spoils (FW, SS, & W)	273.1	CY	273
Storm System and Underground Detention Basins	476,495.0	CF	17,648
ADDITIONAL CUT SUM (CU. YD.)			**96233**
CUT FACTOR (SHRINKAGE)			**1.0**
NET CUT (CU. YD.)			**96,233**

ESTIMATED EARTHWORK RESULTS

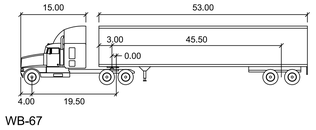
LOT SIZE (ACRES)	64.65
CUT (CU. YD.)	180,839
FILL (CU. YD.)	180,028
NET CUT (CU. YD.)	**800**



Smeal Platform RM 100ft

feet

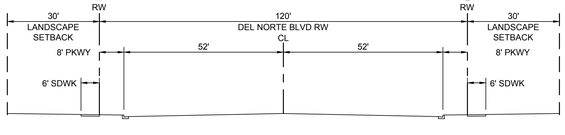
Width	: 8.33		
Track	: 7.83		
Lock to Lock Time	: 6.0		
Steering Angle	: 48.0		



WB-67

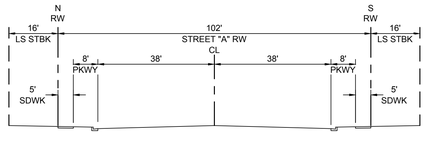
feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		



DEL NORTE BLVD

NTS



STREET "A"

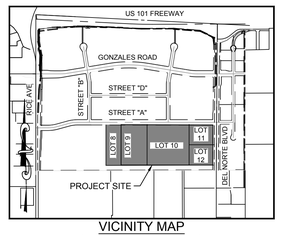
NTS

SHEET INDEX

Sheet Number	Sheet Title
1	ENGINEERING SITE PLAN
2	GRADING PLAN - 1
3	GRADING PLAN - 2
4	GRADING PLAN - 3
5	GRADING PLAN - 4
6	STORMWATER QUALITY MAP
7	UTILITY PLAN - 1
8	UTILITY PLAN - 2

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
FENCE CHAINLINK
ADA PATH OF TRAVEL
FIRE LANE
BUILDING OUTLINE
RETAINING WALL
STORM DRAIN MANHOLE
SEWER MANHOLE
STORM DRAIN CURB INLET
STORM DRAIN CLEAN OUT
GRATE INLET
STORM WATER QUALITY BMP
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION



VICINITY MAP

THOMAS GUIDE: MAP PG 523-BS-D3

NOT TO SCALE

No.	REVISIONS	DATE	BY

Kimley»Horn

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401 B STREET, SUITE 600, SAN DIEGO, CA 92101
PHONE: 619-744-0144
WWW.KIMLEY-HORN.COM

PRELIMINARY
FOR REVIEW ONLY
Prepared for Concept Plan submittal
Not for construction purposes or permit
Kimley»Horn
Engineer EUGENE D. COWAN III.
P.E. No. 86803 Date 3/5/2020

K/HA PROJECT 195170003	
DATE	3/5/2020
SCALE	AS SHOWN
DESIGNED BY	KS&DC
DRAWN BY	KS
CHECKED BY	DC

ENGINEERING SITE PLAN

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD CA

SHEET NUMBER
1 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Kha Layout:ENGINEERING SITE PLAN March 05, 2020 02:52:49pm K:\SND_LDEV\195170003 - Project Bruin\Design\PlanSheets - DDR Civil\OVERALL SITE PLAN.dwg
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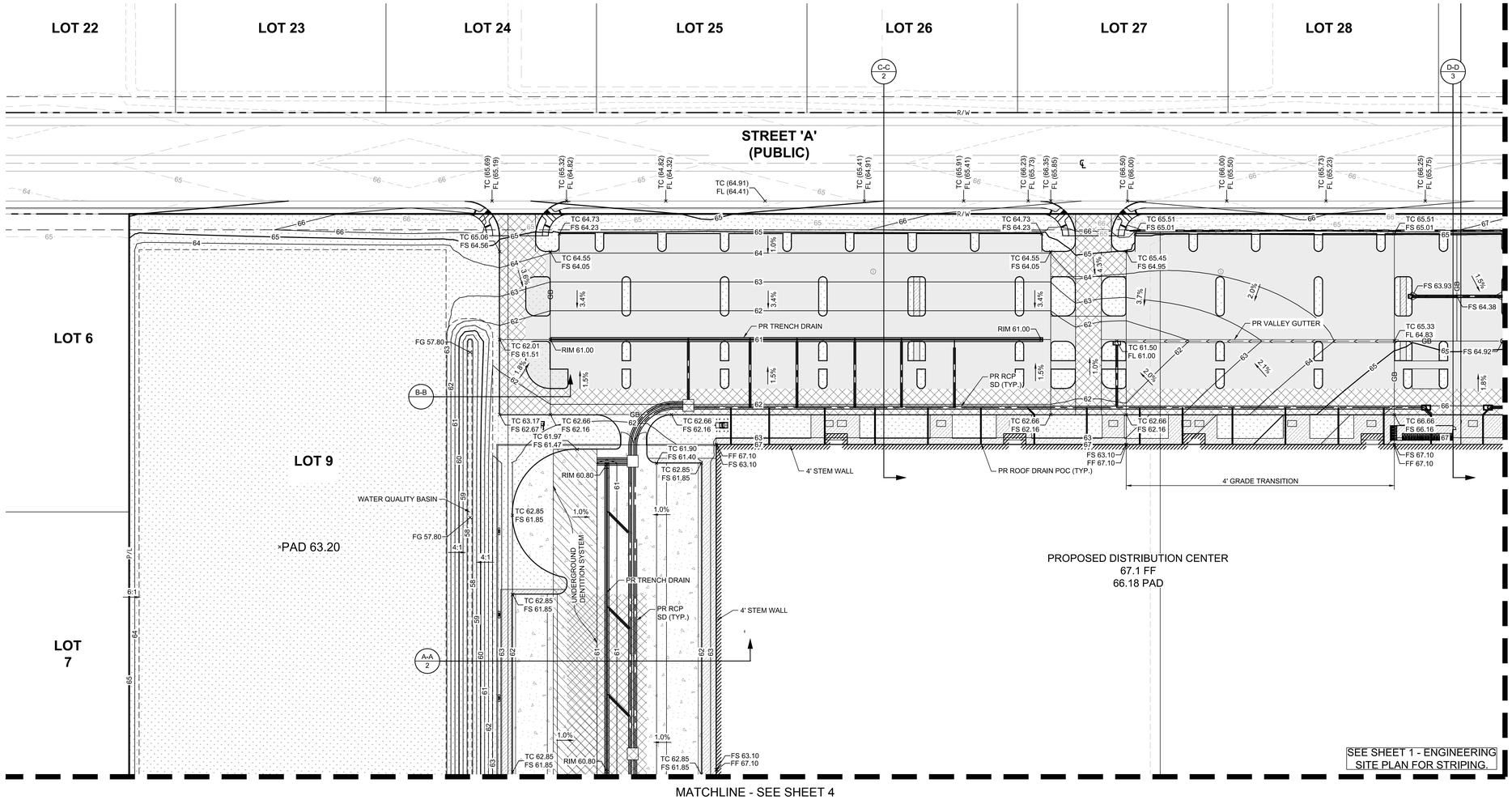

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
PROPOSED CONTOUR — 100
EXISTING CONTOUR PER TTM 5996 — 100
GRADING LIMITS
GRADE BREAK LINE — GB
RIDGE LINE — R
RETAINING WALL
SLOPE — X.XX%
SPOT ELEVATION — XX 100.00
ASPHALT PAVEMENT (3" PCC / 6" AB)
HEAVY DUTY ASPHALT PAVEMENT (5" AC / 11" AB)
CONCRETE PAVEMENT (10" PCC / 4" AB)
CONCRETE SIDEWALK (4" PCC / 4" AB)
LANDSCAPE (SEE LANDSCAPE PLANS)
FENCE CHAINLINK — X
STORM LINE — SD
SEWER LINE — S
WATER LINE — W
FIRE WATER — FW
STORM DRAIN MANHOLE
SEWER MANHOLE
STORM DRAIN CURB INLET
STORM DRAIN CLEAN OUT
GRATE INLET
STORM WATER QUALITY BMP
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION

MATCHLINE - SEE SHEET 3

NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING TOPOGRAPHY AND STRUCTURES ON THE SITE AND IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING WORK.
2. ALL ELEVATIONS SHOWN DEPICT FINISHED GRADE OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED. GENERAL CONTRACTOR TO COORDINATE WITH EXCAVATION, LANDSCAPE AND PAVING SUBCONTRACTORS REGARDING TOPSOIL THICKNESS FOR LANDSCAPE AREAS AND PAVEMENT SECTION THICKNESS FOR PAVED AREAS TO PROPERLY ENSURE ADEQUATE CUT TO ESTABLISH SUBGRADE ELEVATIONS.
3. NO EARTHEN SLOPE SHALL BE GREATER THAN 2:1, UNLESS OTHERWISE NOTED.
4. MAXIMUM SLOPE IN ACCESSIBLE PARKING SPACES AND LOADING ZONES SHALL NOT EXCEED 2.0% IN ALL DIRECTIONS.
5. MAXIMUM RUNNING SLOPE SHALL NOT EXCEED 5% AND CROSS SLOPE SHALL NOT EXCEED 2% ON ALL SIDEWALKS AND ACCESSIBLE ROUTES.
6. MATCH EXISTING ELEVATIONS AT THE PROPERTY LIMITS.
7. ALL STORM DRAIN UTILITIES ARE PRELIMINARY AND SUBJECT TO CHANGE UPON FINAL DESIGN.
6. SEE ELECTRIC FOR SITE LIGHTING

ABBREVIATIONS:

(X.XX)	EXISTING ELEVATION	POC	POINT OF CONNECTION
BLDG	BUILDING	PR	PROPOSED
BMP	BEST MANAGEMENT PRACTICES	RCP	REINFORCED CONCRETE PIPE
BW	BACK OF WALL	RET.	RETAINING
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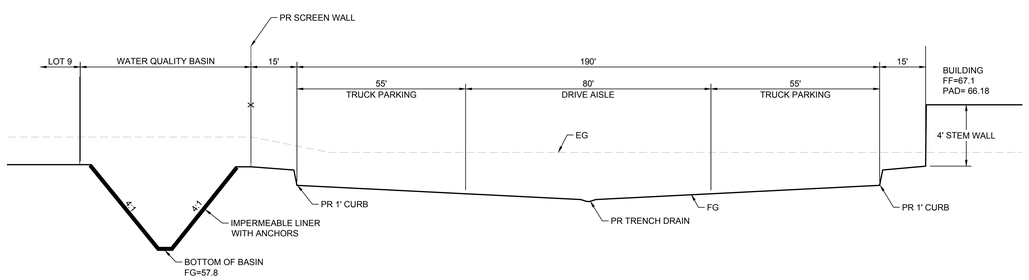
EP	EDGE OF PAVEMENT	SD	STORM DRAIN
EX	EXISTING	SF	SQUARE FEET
FF	FINISHED FLOOR ELEVATION	SDWK	SIDEWALK
		STBK	SETBACK
FG	FINISHED GRADE	STR	STRUCTURE
FH	FIRE HYDRANT	SS	SANITARY SEWER
FL	FLOW LINE	TC	TOP OF CURB
FS	FINISHED SURFACE	TG	TOP OF GRATE
FW	FIRE WATER	TP	TOP OF PAVEMENT
GB	GRADE BREAK	TW	TOP OF WALL
IE	INVERT ELEVATION	TYP	TYPICAL
LP	LOW POINT	WQ	WATER QUALITY
LS	LANDSCAPE		
MH	MANHOLE		
PL	PROPERTY LINE		



SECTION A-A
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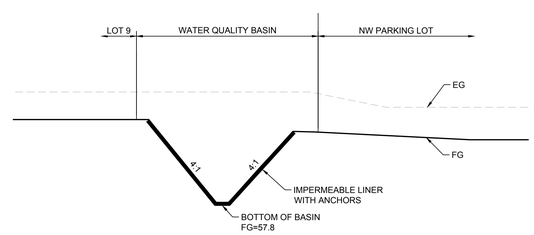
VERT: 1"=4'



SECTION B-B
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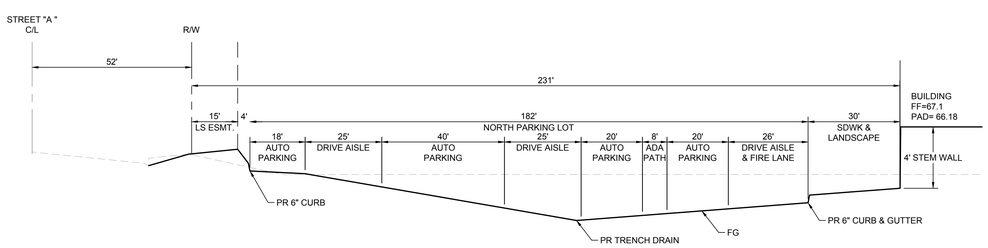
VERT: 1"=4'



SECTION C-C
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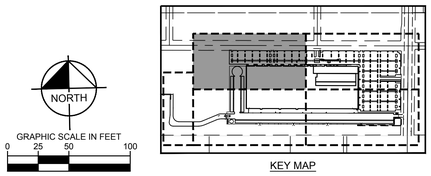
VERT: 1"=4'



KEY MAP

NORTH

GRAPHIC SCALE IN FEET
0 25 50 100

No.	REVISIONS	DATE	BY

Kimley»Horn
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401 B STREET, SUITE 600, SAN DIEGO, CA 92101
PHONE: 619-234-9411
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PRELIMINARY
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Not for construction purposes or permits.
Kimley»Horn
Engineer EUGENE D. COWAN III
P.E. No. 86803 Date 3/5/2020

KHA PROJECT 195170003
DATE 3/5/2020
SCALE AS SHOWN
DESIGNED BY KS&DC
DRAWN BY KS
CHECKED BY DC

GRADING PLAN - 1

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD, CA

SHEET NUMBER
2 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Kha_Layout:GRADING PLAN - 1 March 05, 2020 02:53:02pm K:\SND_LDEV\195170003 - Project Bruin\Design\Plan\Sheets - EDR Civil\1-2 GRADING PLAN.dwg
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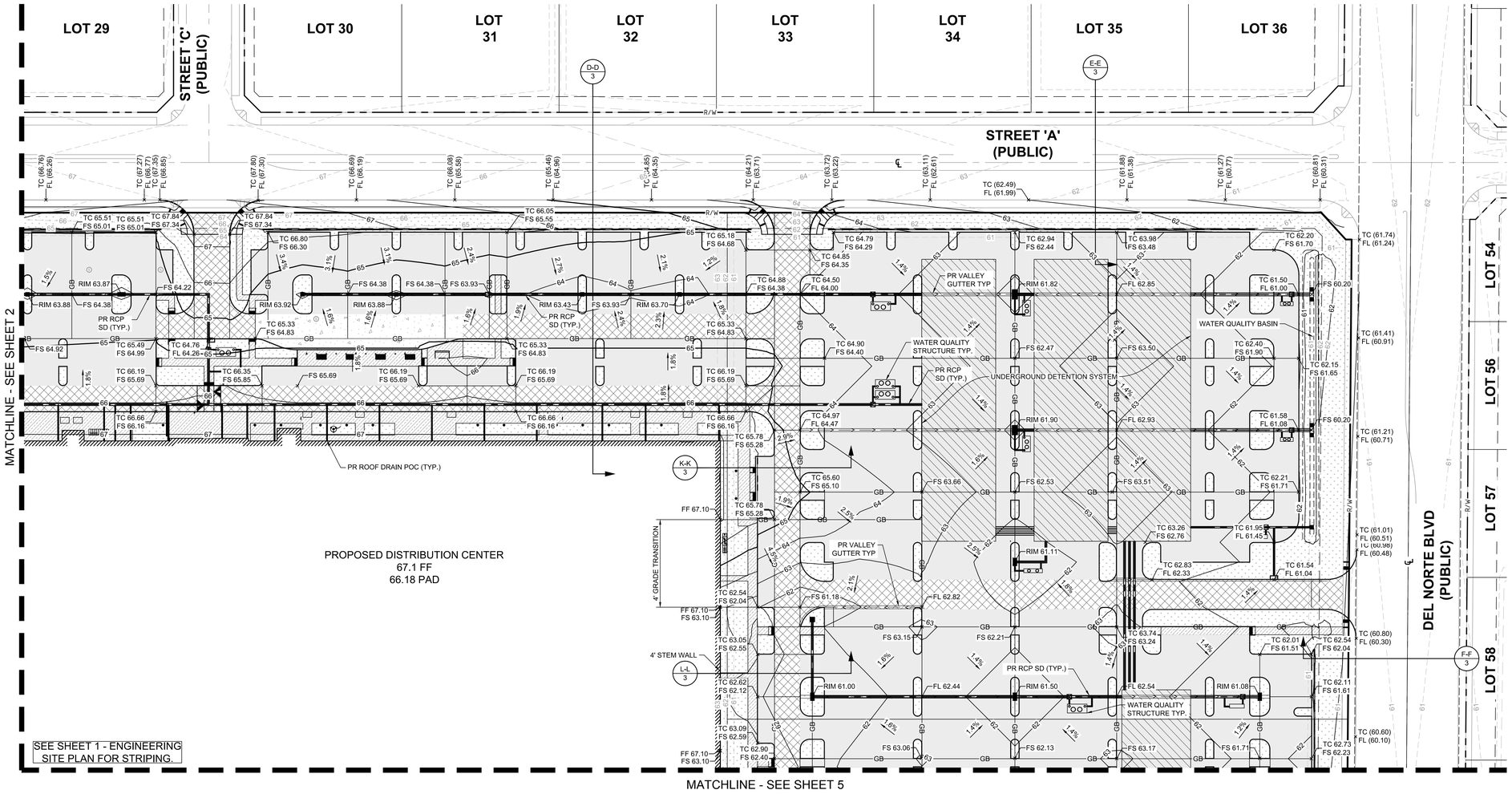

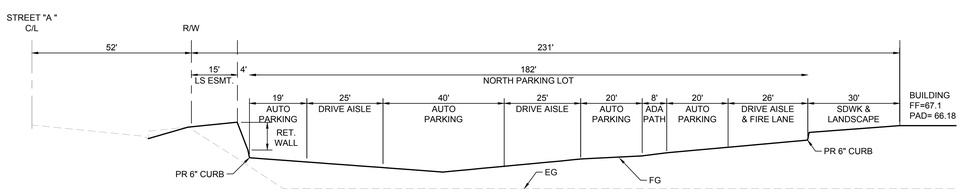

SECTION D-D
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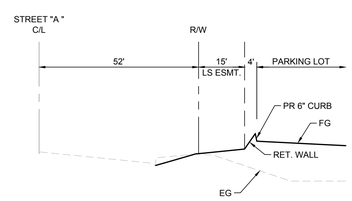
VERT: 1"=4'



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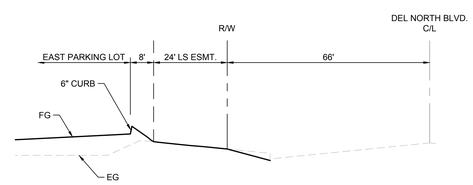

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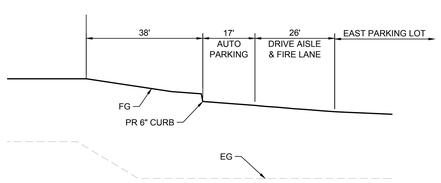

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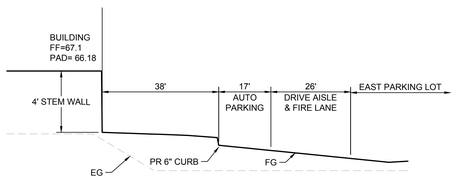
VERT: 1"=4'



SECTION L-L
HORZ: 1"=20'
VERT: 1"=4'

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
PROPOSED CONTOUR — 100
EXISTING CONTOUR PER TTM 5996 — 100
GRADING LIMITS
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STORM LINE — SD
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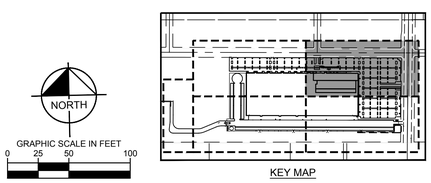
(X.XX)	EXISTING ELEVATION	POC	POINT OF CONNECTION
BLDG	BUILDING	PR	PROPOSED
BMP	BEST MANAGEMENT PRACTICES	RCP	REINFORCED CONCRETE PIPE
BW	BACK OF WALL	RET.	RETAINING
CL	CENTERLINE	RL	RIDGE LINE
EG	EXISTING GRADE	RW	RIGHT OF WAY
EP	EDGE OF PAVEMENT	SD	STORM DRAIN
EX	EXISTING	SF	SQUARE FEET
FF	FINISHED FLOOR ELEVATION	SDWK	SIDEWALK
FG	FINISHED GRADE	STBK	SETBACK
FH	FIRE HYDRANT	STR	STRUCTURE
FL	FLOW LINE	SS	SANITARY SEWER
FS	FINISHED SURFACE	TC	TOP OF CURB
FW	FIRE WATER	TG	TOP OF GRATE
GB	GRADE BREAK	TP	TOP OF PAVEMENT
IE	INVERT ELEVATION	TW	TOP OF WALL
LP	LOW POINT	TYP	TYPICAL
LS	LANDSCAPE	WQ	WATER QUALITY
MH	MANHOLE		
PL	PROPERTY LINE		



KEY MAP

No.	REVISIONS	DATE	BY

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401 B STREET, SUITE 600, SAN DIEGO, CA 92101
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Kimley»Horn
Engineer EUGENE D. COWAN III
P.E. No. 86803 Date 3/5/2020

KHA PROJECT	195170003
DATE	3/5/2020
SCALE	AS SHOWN
DESIGNED BY	KS&DC
DRAWN BY	KS
CHECKED BY	DC

GRADING PLAN - 2

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD, CA

SHEET NUMBER
3 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Kha_Layout:GRADING PLAN - 2 March 05, 2020 02:53:14pm K:\SND_LDEV\195170003 - Project Bruin\Design\Plan\Sheets - EDR Civil\1-2 GRADING PLAN.dwg
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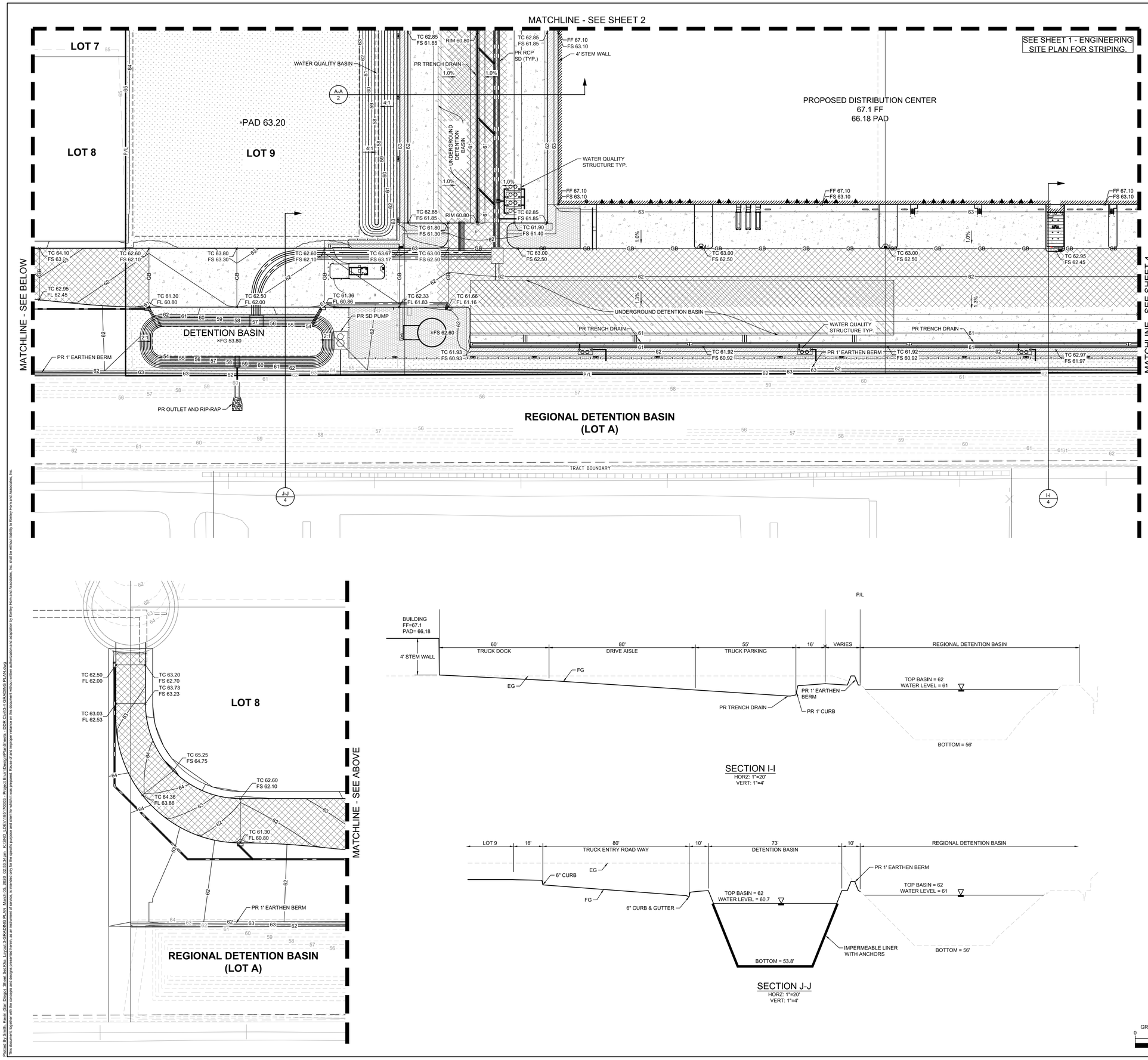

SECTION I-I
HORZ: 1"=20'
VERT: 1"=4'

SECTION J-J
HORZ: 1"=20'
VERT: 1"=4'

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
PROPOSED CONTOUR — 100
EXISTING CONTOUR PER TTM 5996 — 100
GRADING LIMITS
GRADE BREAK LINE — GB
RIDGE LINE — R
RETAINING WALL
SLOPE — X.XX%
SPOT ELEVATION — XX 100.00
ASPHALT PAVEMENT (3" PCC / 6" AB)
HEAVY DUTY ASPHALT PAVEMENT (5" AC / 11" AB)
CONCRETE PAVEMENT (10" PCC / 4" AB)
CONCRETE SIDEWALK (4" PCC / 4" AB)
LANDSCAPE (SEE LANDSCAPE PLANS)
FENCE CHAINLINK — X
STORM LINE — SD
SEWER LINE — S
WATER LINE — W
FIRE WATER — FW
STORM DRAIN MANHOLE
SEWER MANHOLE
STORM DRAIN CURB INLET
STORM DRAIN CLEAN OUT
GRATE INLET
STORM WATER QUALITY BMP
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION

NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING TOPOGRAPHY AND STRUCTURES ON THE SITE AND IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING WORK.
2. ALL ELEVATIONS SHOWN DEPICT FINISHED GRADE OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED. GENERAL CONTRACTOR TO COORDINATE WITH EXCAVATION, LANDSCAPE AND PAVING SUBCONTRACTORS REGARDING TOPSOIL THICKNESS FOR LANDSCAPE AREAS AND PAVEMENT SECTION THICKNESS FOR PAVED AREAS TO PROPERLY ENSURE ADEQUATE CUT TO ESTABLISH SUBGRADE ELEVATIONS.
3. NO EARTHEN SLOPE SHALL BE GREATER THAN 2:1, UNLESS OTHERWISE NOTED.
4. MAXIMUM SLOPE IN ACCESSIBLE PARKING SPACES AND LOADING ZONES SHALL NOT EXCEED 2.0% IN ALL DIRECTIONS.
5. MAXIMUM RUNNING SLOPE SHALL NOT EXCEED 5% AND CROSS SLOPE SHALL NOT EXCEED 2% ON ALL SIDEWALKS AND ACCESSIBLE ROUTES.
6. MATCH EXISTING ELEVATIONS AT THE PROPERTY LIMITS.
7. ALL STORM DRAIN UTILITIES ARE PRELIMINARY AND SUBJECT TO CHANGE UPON FINAL DESIGN.
6. SEE SITE LIGHTING PLAN FOR LIGHT POLE LOCATIONS.

ABBREVIATIONS:

(X.XX)	EXISTING ELEVATION	POC	POINT OF CONNECTION
BLDG	BUILDING	PR	PROPOSED
BMP	BEST MANAGEMENT PRACTICES	RCP	REINFORCED CONCRETE PIPE
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CL	CENTERLINE	RL	RIDGE LINE
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		STBK	SETBACK
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FH	FIRE HYDRANT	SS	SANITARY SEWER
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FW	FIRE WATER	TP	TOP OF PAVEMENT
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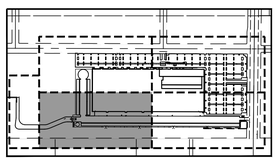
IE	INVERT ELEVATION	TYP	TYPICAL
LP	LOW POINT	WQ	WATER QUALITY
LS	LANDSCAPE		
MH	MANHOLE		
PL	PROPERTY LINE		

NORTH
GRAPHIC SCALE IN FEET
0 25 50 100



KEY MAP

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Engineer EUGENE D. COWAN III
P.E. No. 86803 Date 3/5/2020

KHA PROJECT 195170003
DATE 3/5/2020
SCALE AS SHOWN
DESIGNED BY KS&DC
DRAWN BY KS
CHECKED BY DC

GRADING PLAN - 3

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.

CITY OF OXNARD CA

SHEET NUMBER
4 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Kha Layout:3-GRADING PLAN March 05, 2020 02:53:34pm K:\SND_LDEV\195170003 - Project Bruin\Design\PlanSheets - EDR\Civil\3-4 GRADING PLAN.dwg
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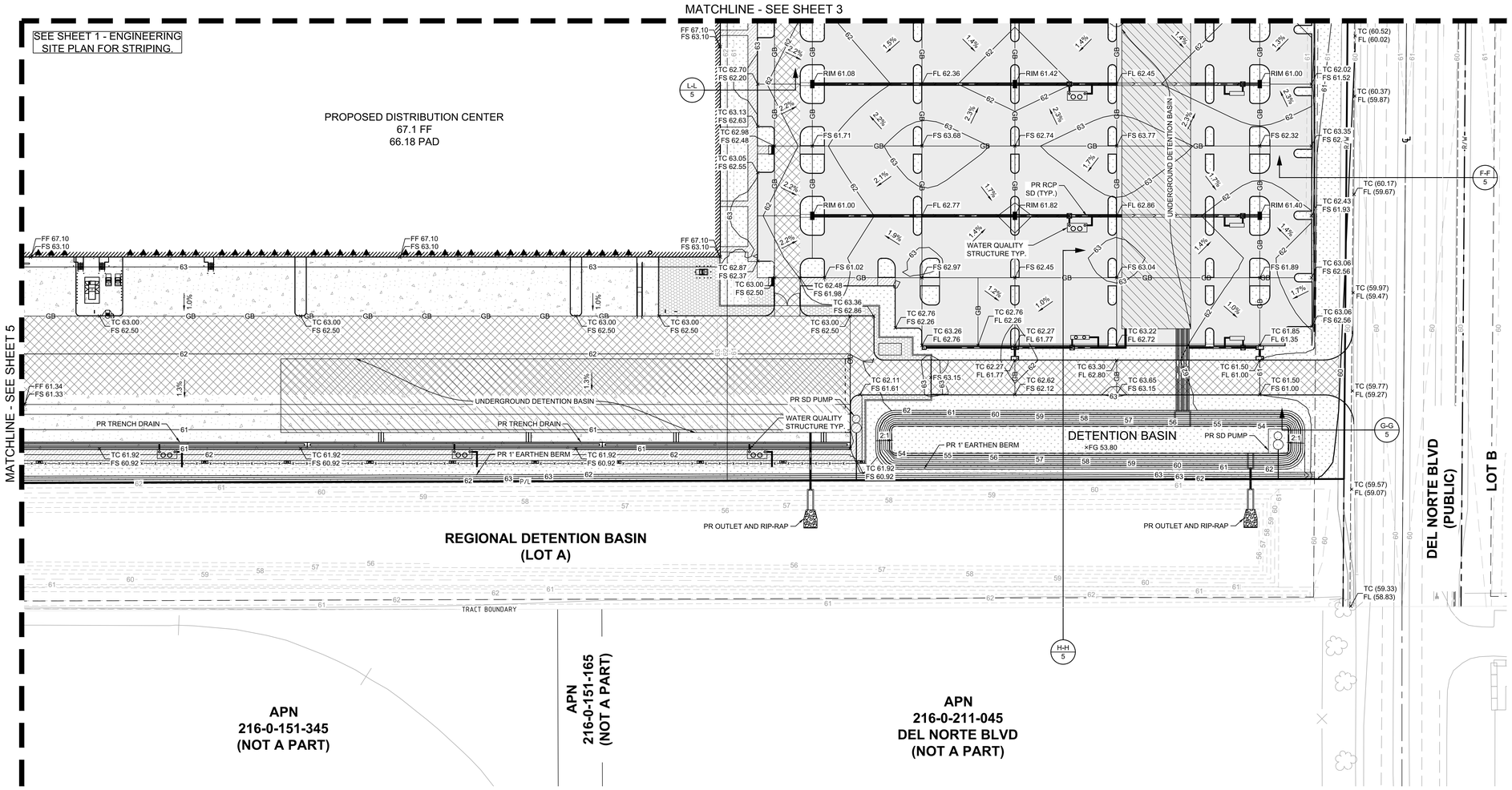
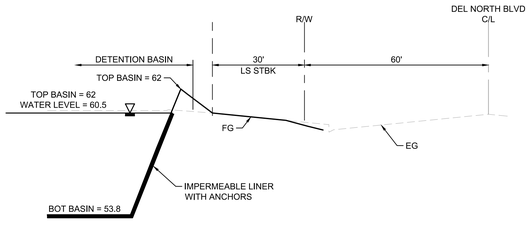
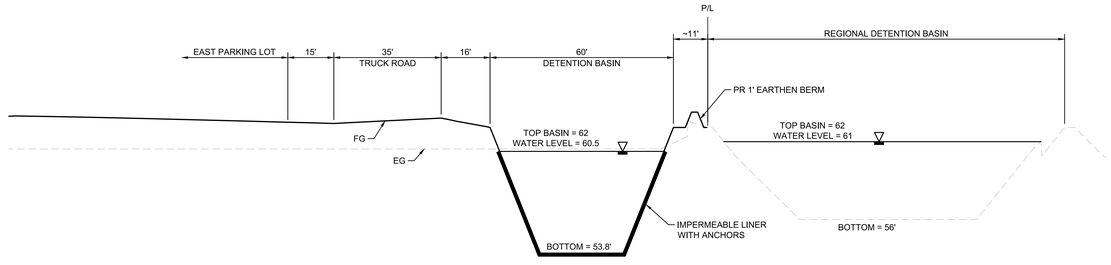




SECTION G-G
HORZ: 1"=20'
VERT: 1"=4'



SECTION H-H
HORZ: 1"=20'
VERT: 1"=4'

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
PROPOSED CONTOUR — 100
EXISTING CONTOUR PER TTM 5996 — 100
GRADING LIMITS
GRADE BREAK LINE — GB
RIDGE LINE — R
RETAINING WALL
SLOPE — X.XX%
SPOT ELEVATION — XX 100.00
ASPHALT PAVEMENT (3" PCC / 6" AB)
HEAVY DUTY ASPHALT PAVEMENT (5" AC / 11" AB)
CONCRETE PAVEMENT (10" PCC / 4" AB)
CONCRETE SIDEWALK (4" PCC / 4" AB)
LANDSCAPE (SEE LANDSCAPE PLANS)
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STORM LINE — SD
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WATER LINE — W
FIRE WATER — FW
STORM DRAIN MANHOLE
SEWER MANHOLE
STORM DRAIN CURB INLET
STORM DRAIN CLEAN OUT
GRATE INLET
STORM WATER QUALITY BMP
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION

NOTES:

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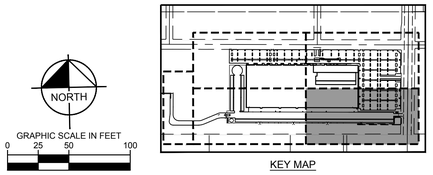
FL	FLOW LINE	TC	TOP OF CURB
FS	FINISHED SURFACE	TG	TOP OF GRATE
FW	FIRE WATER	TP	TOP OF PAVEMENT
GB	GRADE BREAK	TW	TOP OF WALL
IE	INVERT ELEVATION	TYP	TYPICAL
LP	LOW POINT	WQ	WATER QUALITY
LS	LANDSCAPE		
MH	MANHOLE		
PL	PROPERTY LINE		



KEY MAP

NORTH

GRAPHIC SCALE IN FEET
0 25 50 100

No.	REVISIONS	DATE	BY

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Kimley»Horn
Engineer EUGENE D. COWAN III.
P.E. No. 86803 Date 3/5/2020

KHA PROJECT 195170003
DATE 3/5/2020
SCALE AS SHOWN
DESIGNED BY KS&DC
DRAWN BY KS
CHECKED BY DC

GRADING PLAN - 4

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD CA

SHEET NUMBER
5 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Kha Layout:L4-GRADING PLAN March 05, 2020 02:53:46pm K:\SND_LDEV\195170003 - Project Bruin\Design\PlanSheets - DDR Civil\3-4 GRADING PLAN.dwg
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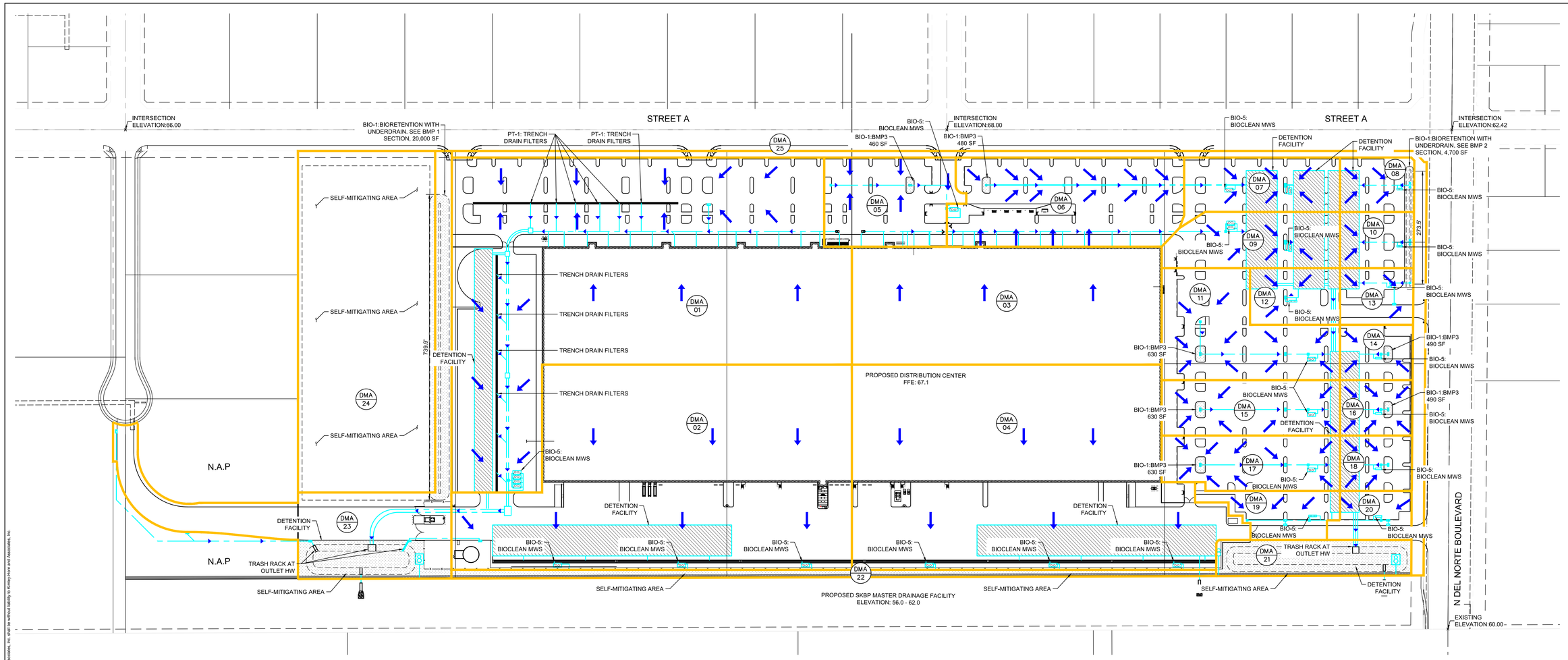
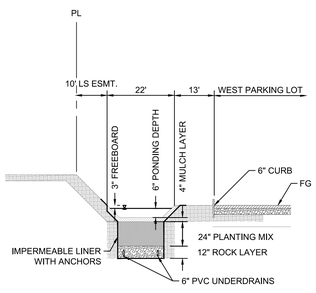
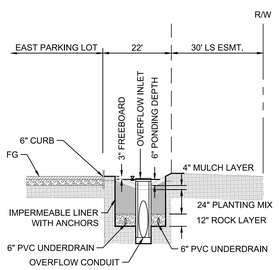
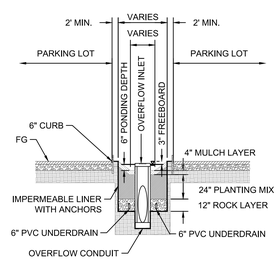




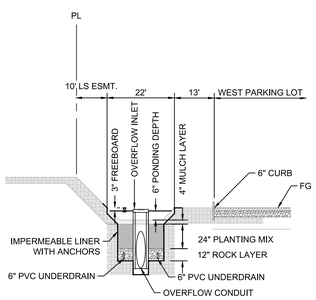
BIO-1: BMP 1
HORZ: 1"=20'
VERT: 1"=4'

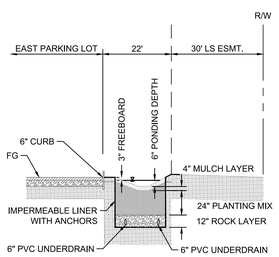


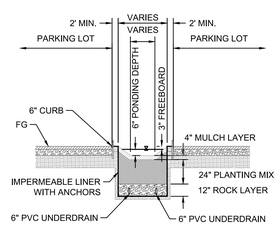
BIO-1: BMP 2
HORZ: 1"=20'
VERT: 1"=4'



BIO-1: TYP. PARKING LOT BMP 3
HORZ: 1"=20'
VERT: 1"=4'







SQDF TREATMENT FLOW SUMMARY TABLE

DMA ID	AREA (ac)	IMPERVIOUS AREA (ac)	C, WEIGHTED RUNOFF COEFFICIENT	SQDF (cfs)
1	12.40	11.55	0.89	3.86
2	9.49	9.49	0.95	3.16
3	4.91	4.91	0.95	1.63
4	9.26	9.23	0.95	3.07
5	1.55	1.45	0.89	0.48
6	2.73	2.47	0.86	0.83
7	1.16	1.05	0.86	0.35
8	0.54	0.39	0.71	0.13
9	1.26	1.14	0.86	0.38
10	0.56	0.44	0.75	0.15
11	2.00	1.68	0.81	0.57
12	0.69	0.65	0.89	0.22
13	0.56	0.34	0.60	0.12
14	0.54	0.45	0.81	0.15
15	1.33	1.16	0.84	0.39
16	0.54	0.47	0.84	0.16
17	1.28	1.14	0.85	0.38
18	0.54	0.44	0.78	0.15
19	0.70	0.56	0.77	0.19
20	0.51	0.39	0.74	0.13
21	0.94	0.00	0.05	SELF MITIGATING
22	0.77	0.00	0.05	SELF MITIGATING
23	3.45	1.87	0.54	0.65
24	6.31	0.00	0.05	SELF MITIGATING
25	1.55	0.00	0.05	SELF MITIGATING

BIO-5: BIOCLEAN MWS
NTS

LEGEND

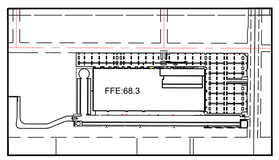
- DMA ID (XX / XX) — DMA ID NUMBER
- DMA BOUNDARY
- FLOW DIRECTION
- PROPERTY LINE
- PROPOSED STORM DRAIN LINE
- FLOWLINE

NOTES

1. PROJECT PROPOSES TO INSTALL CURB INLET INSERTS, TRENCH DRAIN FILTERS, AND TRASH RACKS AT DETENTION BASIN OUTLETS AS MEANS OF PRETREATMENT
2. DMAS COMPRISED OF 100% PERVIOUS AREA ARE CONSIDERING SELF MITIGATING AND DO NOT REQUIRE FURTHER WATER QUALITY MEASURES.

NORTH

GRAPHIC SCALE IN FEET
0 50 100 200



KEY MAP

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P.E. No. 86803 Date 3/5/2020

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DATE	3/5/2020
SCALE	AS SHOWN
DESIGNED BY	KS&DC
DRAWN BY	KS
CHECKED BY	DC

STORM WATER QUALITY MAP

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.

CITY OF OXNARD CA

SHEET NUMBER
7 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Khq Layout:STORM WATER QUALITY MAP March 05, 2020 02:54:56pm \\acdfp01\projects\SND_LDEV\195170003 - Project Bruin\Stormwater\Exhibit\STORM WATER QUALITY MAP.dwg
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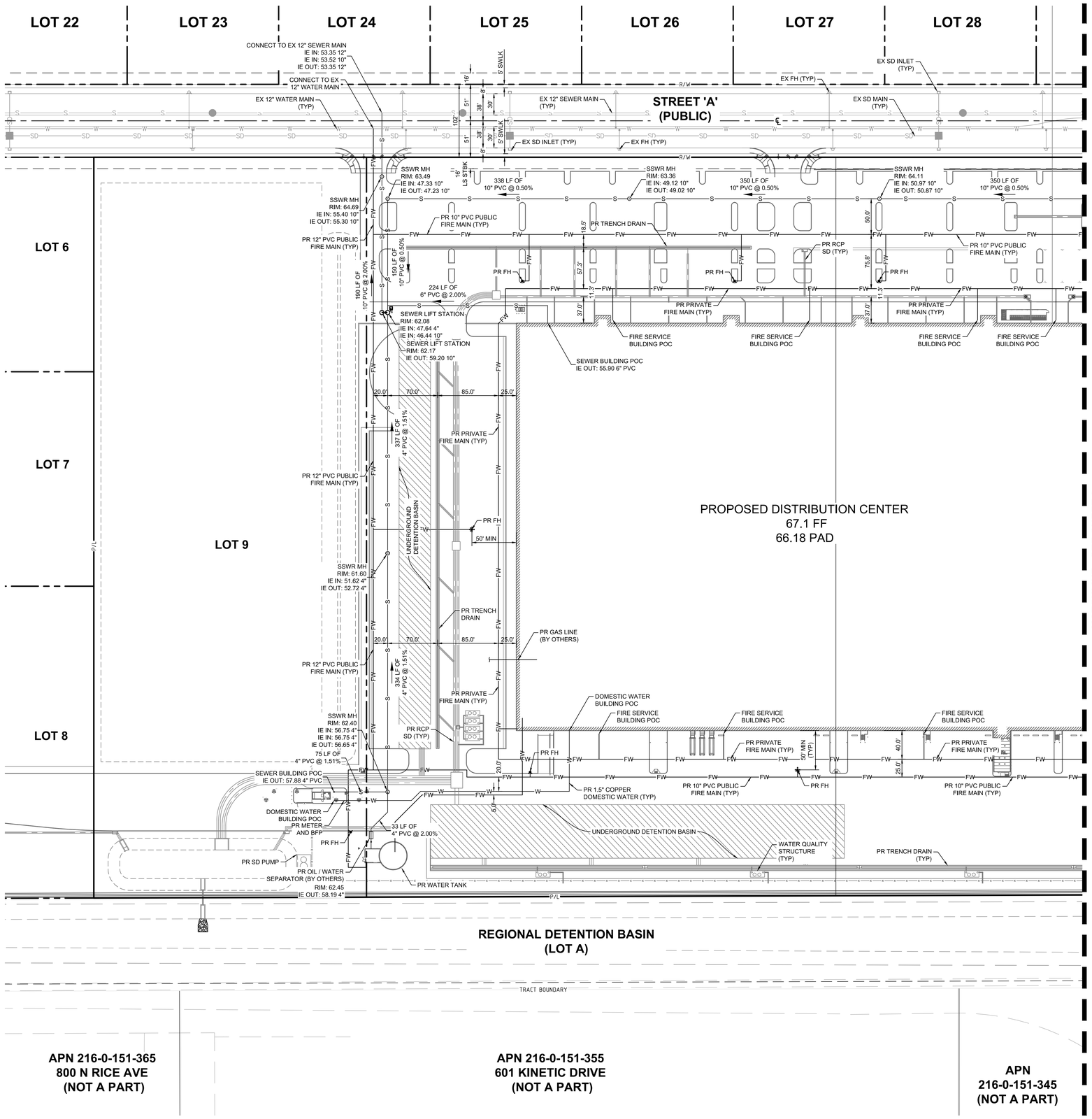

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
GAS LINE
STORM LINE
SEWER LINE
WATER LINE
FIRE WATER LINE
STORM DRAIN CLEAN OUT
STORM DRAIN CURB INLET
GRATE INLET
STORM WATER QUALITY BMP
SEWER MANHOLE
SEWER CLEANOUT
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION
METER
POINT OF CONNECTION

NOTES:

1. ALL UTILITY PIPE LENGTHS ON PLANS ARE SHOWN FOR REFERENCE AND COORDINATION. PIPE LENGTHS ARE NOT SHOWN FOR BIDDING OR ESTIMATING PURPOSES.
2. THE EXISTING UTILITIES SHOWN ARE BASED ON AVAILABLE RECORDS. THE CONTRACTOR MUST FIELD DETERMINE THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO ANY CONSTRUCTION. REPORT DISCREPANCIES AND POTENTIAL CONFLICTS WITH PROPOSED UTILITIES TO ENGINEER PRIOR TO INSTALLATION OF ANY PIPING.
3. ALL DIMENSIONS ARE SHOWN FROM CENTER OF PIPE TO CENTER OF PIPE UNLESS OTHER WISE NOTED.
4. ALL FIRE, WATER, AND SANITARY SEWER SIZES ARE PRELIMINARY AND SUBJECT TO CHANGE UPON FINAL DESIGN.
5. PROPOSED STORM DRAIN IS SHOWN FOR REFERENCE. REFER TO GRADING PLAN SHEETS FOR FURTHER INFORMATION.

ABBREVIATIONS:

(X.XX)	EXISTING ELEVATION	POC	POINT OF CONNECTION
BLDG	BUILDING	PR	PROPOSED
BMP	BEST MANAGEMENT PRACTICES	RCP	REINFORCED CONCRETE PIPE
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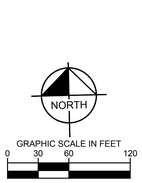

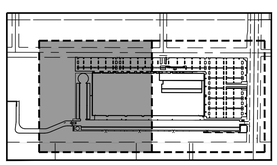

KEY MAP

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Engineer EUGENE D. COWAN III.
P.E. No. 86803 Date 3/5/2020

KHA PROJECT 189170003
DATE 3/5/2020
SCALE AS SHOWN
DESIGNED BY KSADC
DRAWN BY KS
CHECKED BY DC

UTILITY PLAN - 1

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD, CA

SHEET NUMBER
7 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Kha Layout:UTILITY PLAN - 1 March 05, 2020 02:54:23pm K:\SND_LDEV\189170003 - Project Bruin\Design\Plan\Sheets - DDR Civil\12-UTILITY PLAN.dwg
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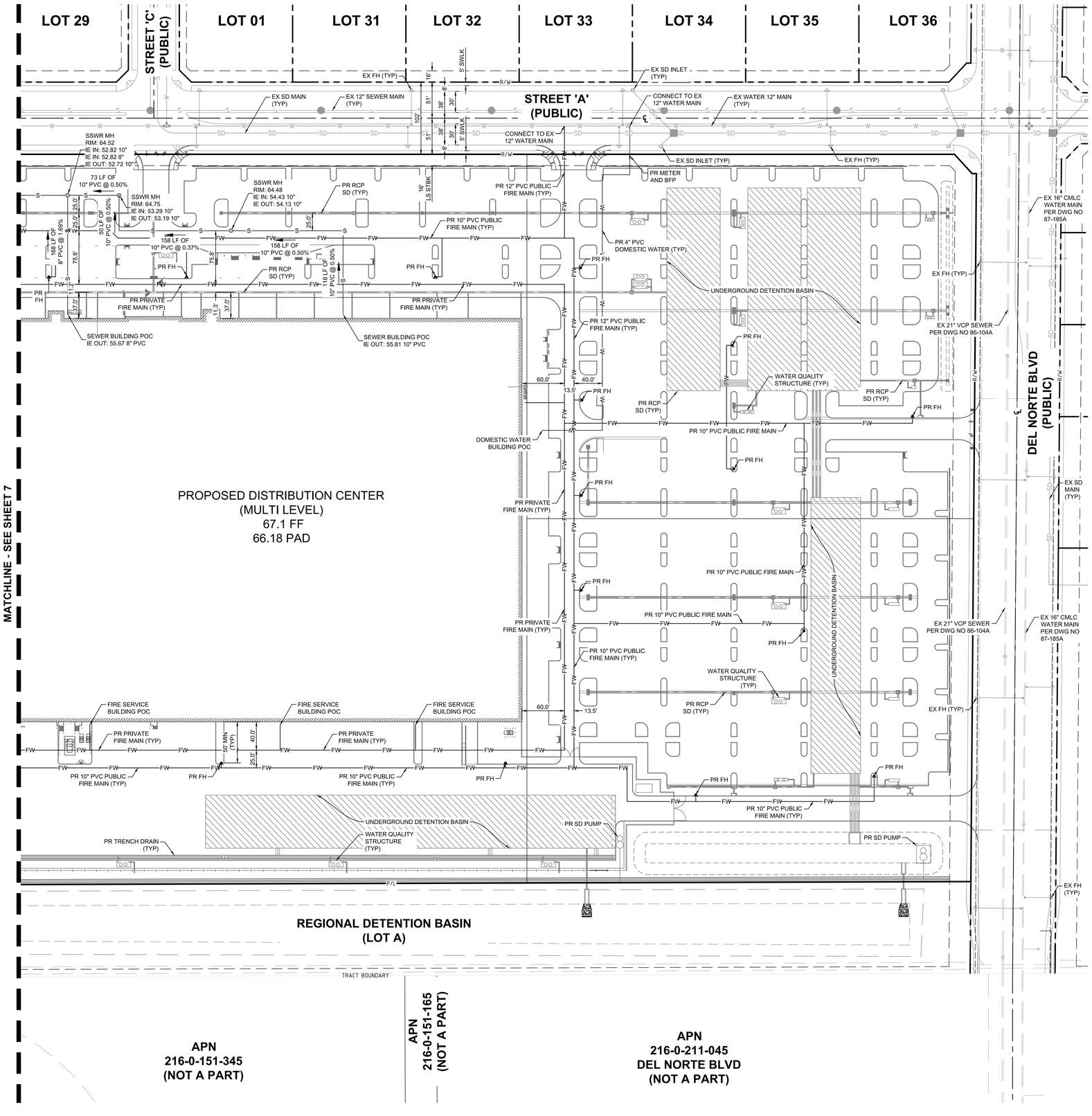

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
GAS LINE
STORM LINE
SEWER LINE
WATER LINE
FIRE WATER LINE
STORM DRAIN CLEAN OUT
STORM DRAIN CURB INLET
GRATE INLET
STORM WATER QUALITY BMP
SEWER MANHOLE
SEWER CLEANOUT
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION
METER
POINT OF CONNECTION

NOTES:

1. ALL UTILITY PIPE LENGTHS ON PLANS ARE SHOWN FOR REFERENCE AND COORDINATION. PIPE LENGTHS ARE NOT SHOWN FOR BIDDING OR ESTIMATING PURPOSES.
2. THE EXISTING UTILITIES SHOWN ARE BASED ON AVAILABLE RECORDS. THE CONTRACTOR MUST FIELD DETERMINE THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO ANY CONSTRUCTION. REPORT DISCREPANCIES AND POTENTIAL CONFLICTS WITH PROPOSED UTILITIES TO ENGINEER PRIOR TO INSTALLATION OF ANY PIPING.
3. ALL DIMENSIONS ARE SHOWN FROM CENTER OF PIPE TO CENTER OF PIPE UNLESS OTHER WISE NOTED.
4. ALL FIRE, WATER, AND SANITARY SEWER SIZES ARE PRELIMINARY AND SUBJECT TO CHANGE UPON FINAL DESIGN.
5. PROPOSED STORM DRAIN IS SHOWN FOR REFERENCE. REFER TO GRADING PLAN SHEETS FOR FURTHER INFORMATION.

ABBREVIATIONS:

(X.XX)	EXISTING ELEVATION	POC	POINT OF CONNECTION
BLDG	BUILDING	PR	PROPOSED
BMP	BEST MANAGEMENT PRACTICES	RCP	REINFORCED CONCRETE PIPE
BW	BACK OF WALL	RET.	RETAINING
CL	CENTERLINE	RL	RIDGE LINE
EG	EXISTING GRADE	RW	RIGHT OF WAY
EP	EDGE OF PAVEMENT	SD	STORM DRAIN
EX	EXISTING	SF	SQUARE FEET
FF	FINISHED FLOOR ELEVATION	SDWK	SIDEWALK
		STBK	SETBACK
FG	FINISHED GRADE	STR	STRUCTURE
FH	FIRE HYDRANT	SS	SANITARY SEWER
FL	FLOW LINE	TC	TOP OF CURB
FS	FINISHED SURFACE	TG	TOP OF GRATE
FW	FIRE WATER	TP	TOP OF PAVEMENT
GB	GRADE BREAK	TW	TOP OF WALL
IE	INVERT ELEVATION	TYP	TYPICAL
LP	LOW POINT	WQ	WATER QUALITY
LS	LANDSCAPE		
MH	MANHOLE		
PL	PROPERTY LINE		

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PRELIMINARY
FOR REVIEW ONLY
Prepared for Concept Plan submittal
Not for construction purposes or permits.
Kimley»Horn
Engineer EUGENE D. COWAN III.
P.E. No. 86803 Date 3/5/2020

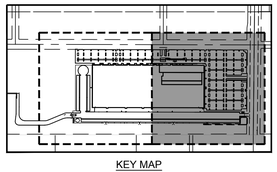
No.	REVISIONS	DATE	BY

KHA PROJECT 195170003
DATE 3/5/2020
SCALE AS SHOWN
DESIGNED BY KS&DC
DRAWN BY KS
CHECKED BY DC

UTILITY PLAN - 2

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD, CA

NORTH
GRAPHIC SCALE IN FEET
0 30 60 120



KEY MAP

SHEET NUMBER
8 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Kha Layout:UTILITY PLAN - 2 March 05, 2020 02:54:32pm K:\SND_LDEV\195170003 - Project Bruin\Design\Plan\Sheets - DDR Civil\1-2 UTILITY PLAN.dwg
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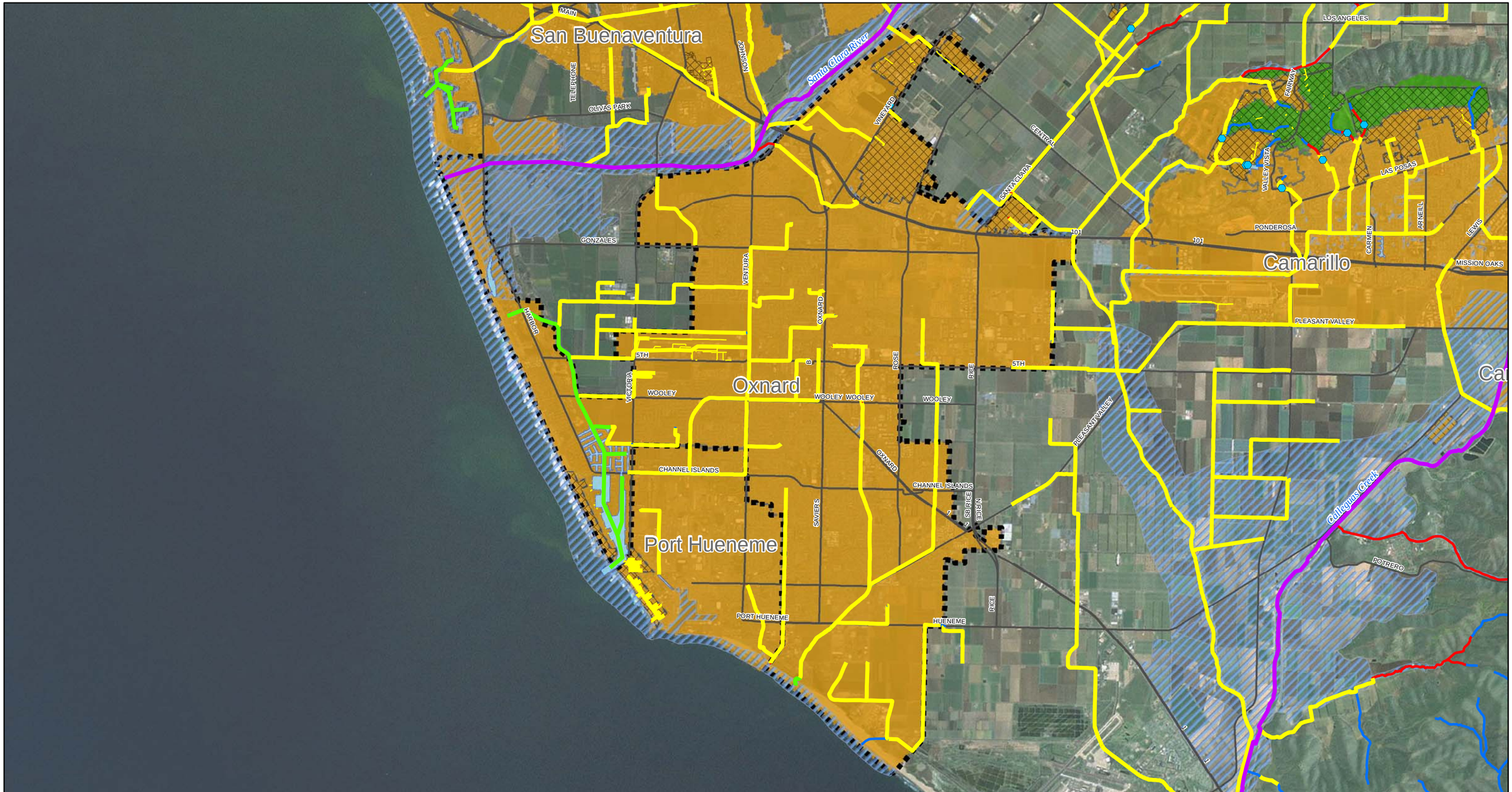
Appendix J Sakioka Farms Business Park Master Drainage Report

Attachment by Delane Engineering

APPENDIX H

HYDROMODIFICATION CONTROL PLAN APPLICABILITY MAP



Legend

- Large Channel (Q100>25,000 cfs) - Not Susceptible
- Modified Channel - Not Susceptible
- Storm Drain - Not Susceptible
- Tidal Channel - Not Susceptible
- Natural Redline Channel - Susceptible
- Natural Blueline Channel - Susceptible
- Lakes
- 100 Year Floodplain
- Urban County
- Street
- Basins

Hydromod Applicability
- Applicable
- Exempt
- Undetermined

Note: Applicability maps are provided for illustrative purposes. Determination of applicability is based on the requirements of the MS4 Permit and will be made by the land development permitting agency.

N

0 3,250 6,500 13,000 Feet

Basemap Source: ESRI

Hydromodification Control Applicability Map

Oxnard, CA

Geosyntec consultants

WW1717 | September 2013

Figure 3-6

P:\GIS\Ventura_County_HCP\Projects\Cities\Figure3-6Oxnard.mxd

APPENDIX I

STORM WATER MANAGEMENT MODEL (SWMM) OUTPUT DATA

Name	Description	Runoff Method	Outlet	Area (ac)	Imperv. (%)	TC Method	Time of Concentration (min)	SCS Curve Number	Return Period (y)	Version	Rainfall Zone	Soil Type	Hydrograph Fattening	Runoff Depth (in)	Total Rainfall (in)	Precipitation (in)	Infiltration (in)	Runoff Depth (in)	Runoff Volume (MG)	Peak Runoff (cfs)	Runoff Coefficient
DMA01	Parking Lot Runoff	Ventura County Rational	DMA01	1.581	88	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.814	0.25	5.819	0.956
DMA02A	Parking Lot Runoff	Ventura County Rational	DMA02A	0.632	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.801	0.1	2.366	0.954
DMA02B	Parking Lot Runoff	Ventura County Rational	DMA02B	0.36	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	6.122	0.06	1.348	1.007
DMA02C	Parking Lot Runoff	Ventura County Rational	DMA02C	0.256	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	6.494	0.045	0.958	1.068
DMA02D	Parking Lot Runoff	Ventura County Rational	DMA02D	0.249	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	6.531	0.044	0.932	1.074
DMA02E	Parking Lot Runoff	Ventura County Rational	DMA02E	0.413	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	10.845	0.122	1.546	1.783
DMA02F	Parking Lot Runoff	Ventura County Rational	DMA02F	0.82	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.808	0.129	3.07	0.955
DMA03A	Parking Lot Runoff	Ventura County Rational	DMA03A	0.801	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.809	0.126	2.998	0.955
DMA03B	Parking Lot Runoff	Ventura County Rational	DMA03B	0.466	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.917	0.075	1.744	0.973
DMA03C	Parking Lot Runoff	Ventura County Rational	DMA03C	0.486	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.884	0.078	1.819	0.968
DMA03D	Parking Lot Runoff	Ventura County Rational	DMA03D	0.505	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	9.819	0.135	1.89	1.615
DMA03E	Parking Lot Runoff	Ventura County Rational	DMA03E	0.485	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	10.008	0.132	1.816	1.646
DMA03F	Parking Lot Runoff	Ventura County Rational	DMA03F	0.412	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	10.858	0.121	1.542	1.786
DMA04A	Parking Lot Runoff	Ventura County Rational	DMA04A	0.68	100	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	9.082	0.168	2.673	1.494
DMA04B	Parking Lot Runoff	Ventura County Rational	DMA04B	1.176	100	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	7.646	0.244	4.623	1.257
DMA04C	Parking Lot Runoff	Ventura County Rational	DMA04C	1.448	100	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.899	0.232	5.692	0.97
DMA04D	Parking Lot Runoff	Ventura County Rational	DMA04D	1.272	100	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.932	0.205	5	0.975
DMA05A	Parking Lot Runoff	Ventura County Rational	DMA05A	1.642	99	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.821	0.26	6.421	0.957
DMA05B	Parking Lot Runoff	Ventura County Rational	DMA05B	1.46	99	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.847	0.232	5.709	0.962
DMA05C	Parking Lot Runoff	Ventura County Rational	DMA05C	1.26	99	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.883	0.201	4.927	0.967
DMA06	Parking Lot Runoff	Ventura County Rational	DMA06	0.312	95	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	6.468	0.055	1.194	1.064
DMA07	Parking Lot Runoff	Ventura County Rational	DMA07	0.466	94	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	10.351	0.131	1.774	1.702
DMA08	Parking Lot Runoff	Ventura County Rational	DMA08	0.63	90	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.802	0.099	2.345	0.954
DMA09	Parking Lot Runoff	Ventura County Rational	DMA09	0.128	100	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.234	0.029	0.503	1.354
DMA10	Parking Lot Runoff	Ventura County Rational	DMA10	0.618	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.804	0.097	2.313	0.954
DMA11	Parking Lot Runoff	Ventura County Rational	DMA11	0.491	94	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	6.031	0.08	1.869	0.992
DMA12	Parking Lot Runoff	Ventura County Rational	DMA12	0.312	94	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	6.417	0.054	1.187	1.055
DMA13	Parking Lot Runoff	Ventura County Rational	DI13	0.625	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.934	0.152	2.34	1.469
DMA14	Parking Lot Runoff	Ventura County Rational	DMA14	0.685	85	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.803	0.108	2.479	0.954
DMA15	Parking Lot Runoff	Ventura County Rational	DMA15	1.186	90	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.811	0.187	4.415	0.956
DMA16	Parking Lot Runoff	Ventura County Rational	DMA16	0.543	73	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.799	0.086	1.829	0.954
DMA17	Parking Lot Runoff	Ventura County Rational	DMA17	1.238	90	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.812	0.195	4.609	0.956
DMA18	Parking Lot Runoff	Ventura County Rational	DMA18	0.557	78	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.801	0.088	1.934	0.954
DMA19	Parking Lot Runoff	Ventura County Rational	DMA19	0.673	79	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.072	0.148	2.351	1.327
DMA20	Parking Lot Runoff	Ventura County Rational	DMA20	0.686	93	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.702	0.162	2.597	1.431
DMA21	Parking Lot Runoff	Ventura County Rational	DMA21	0.359	59	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	10.175	0.099	1.104	1.673
DMA22	Parking Lot Runoff	Ventura County Rational	DMA22	0.199	65	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	15.753	0.085	0.815	2.591
DMA23	Parking Lot Runoff	Ventura County Rational	DMA23	0.658	78	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.101	0.145	2.285	1.332
DMA24	Parking Lot Runoff	Ventura County Rational	DMA24	0.671	95	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.88	0.162	2.568	1.46
DMA25	Parking Lot Runoff	Ventura County Rational	DMA25	0.542	84	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	9.159	0.135	1.95	1.506
DMA26	Parking Lot Runoff	Ventura County Rational	DMA26	0.658	79	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.151	0.146	2.298	1.34
DMA27	Parking Lot Runoff	Ventura County Rational	DMA27	0.671	96	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.929	0.163	2.582	1.468
DMA28	Parking Lot Runoff	Ventura County Rational	DMA28	0.539	88	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	9.383	0.137	1.984	1.543
DMA29	Parking Lot Runoff	Ventura County Rational	DMA29	0.607	81	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.55	0.141	2.146	1.406
DMA30	Parking Lot Runoff	Ventura County Rational	DMA30	0.671	96	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.929	0.163	2.582	1.468
DMA31	Parking Lot Runoff	Ventura County Rational	DMA31	0.536	78	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.912	0.13	1.861	1.466
DMA32	Parking Lot Runoff	Ventura County Rational	DMA32	0.498	81	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	9.393	0.127	1.76	1.545
DMA33	Parking Lot Runoff	Ventura County Rational	DMA33	0.283	80	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	12.917	0.099	0.994	2.124
DMA34	Detention/Driveway	Ventura County Rational	SE_SDB	1.371	26	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.815	0.216	3.273	0.956
DMA35	Pervious Area	Ventura County Rational	S_DB_OF	0.773	0	SCS	5	80	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.809	0.122	1.462	0.955
DMA36	Pervious Area	Ventura County Rational	SW_SDB	6.305	0	SCS	30	80	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	3.835	6.06	5.98	0	3.835	0.657	5.965	0.641

DMA37A	Driveway	Ventura County Rational	DMA37A	0.251	54	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	12.808	0.087	0.849	2.106
DMA37B	Driveway	Ventura County Rational	DMA37B	0.447	54	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.634	0.105	1.328	1.42
DMA37C	Detention/Driveway	Ventura County Rational	DMA37C	0.962	54	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.81	0.152	2.859	0.955
DMA37D	Detention/Driveway	Ventura County Rational	DMA37D	1.786	54	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.816	0.282	5.307	0.956
DMA38	Roof Runoff	Ventura County Rational	PC01	4.935	100	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	6.146	0.824	19.4	1.011
DMA39	Roof Runoff	Ventura County Rational	J62	4.928	100	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	6.143	0.822	19.373	1.01
DMA40	Roof Runoff	Ventura County Rational	SW_UDB19	4.918	100	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.82	0.777	19.333	0.957
DMA41	Roof Runoff	Ventura County Rational	S_UDB09	4.903	100	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.821	0.775	19.274	0.957

Name	Inflows	Treatment	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Initial Depth (ft)	Surcharge Depth (ft)	Avg. Depth (ft)	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Rep. Max. Depth (ft)	Max. Lat. Inflow (cfs)	Max. Total Inflow (cfs)	Total Lat. Inflow (MG)	Total Inflow (MG)	Flow Error (%)	Hours Surcharged (h)	Max. Surcharge (ft)	Min. Freeboard (ft)	Hours Flooded (h)	Max. Flood Rate (cfs)	Total Flood Vol. (MG)	Max. Ponded Depth (ft)
DI01	NO	NO	58.15	61.02	2.87	0	0.5	0.18	3.29	61.44	2/11/2020 19:29	2.19	0	4.45	0	0.255	0.005	0.5	1.286	0	0	0	0	0
DI02A	NO	NO	57	61.02	4.02	0	0.5	0.46	4.52	61.52	2/11/2020 18:45	3.39	0	3.9	0	0.106	-0.153	1.59	2.52	0	0.01	3.16	0	0.5
DI02B	NO	NO	57	61.02	4.02	0	0.5	0.42	4.52	61.52	2/11/2020 18:49	3.97	0	3.5	0	0.067	-0.123	1.59	2.52	0	0.01	2.73	0	0.5
DI02C	NO	NO	57	61	4	0	0.5	0.38	4.1	61.1	2/11/2020 19:29	3.43	0	2.99	0	0.053	0.02	1.59	2.103	0	0	0	0	0
DI02D	NO	NO	57	61.02	4.02	0	0.5	0.34	4.02	61.02	2/11/2020 18:58	3.44	0	3.09	0	0.052	0.09	1.58	2.024	0	0	0	0	0
DI02E	NO	NO	57	61.02	4.02	0	0.5	0.33	3.93	60.93	2/11/2020 19:30	3.44	0	3.3	0	0.126	0.023	1.58	1.932	0.088	0	0	0	0
DI02F	NO	NO	57	61	4	0	0.5	0.32	4.5	61.5	2/11/2020 18:50	3.45	0	4.69	0	0.138	-0.019	1.58	2.5	0	0.01	3.6	0	0.5
DI03A	NO	NO	57	60.8	3.8	0	0.5	0.31	3.75	60.75	2/11/2020 19:29	3.45	0	2.28	0	0.128	0.017	1.58	1.748	0.052	0	0	0	0
DI03B	NO	NO	57	60.8	3.8	0	0.5	0.3	3.72	60.72	2/11/2020 19:29	3.45	0	1.33	0	0.076	0.007	1.59	1.72	0.08	0	0	0	0
DI03C	NO	NO	57	60.8	3.8	0	0.5	0.3	3.69	60.69	2/11/2020 19:29	3.45	0	1.39	0	0.079	-0.004	1.58	1.688	0.112	0	0	0	0
DI03D	NO	NO	57	60.8	3.8	0	0.5	0.31	3.65	60.65	2/11/2020 19:29	3.44	0	1.65	0	0.135	-0.007	1.57	1.651	0.149	0	0	0	0
DI03E	NO	NO	57	60.8	3.8	0	0.5	0.31	3.63	60.63	2/11/2020 19:29	3.42	0	1.59	0	0.132	-0.008	1.57	1.634	0.166	0	0	0	0
DI03F	NO	NO	57	60.8	3.8	0	0.5	0.31	3.67	60.67	2/11/2020 19:29	3.42	0	1.39	0	0.122	-0.006	1.56	1.668	0.132	0	0	0	0
DI04A	NO	NO	55.3	61.16	5.86	0	0.5	0.87	5.24	60.54	2/11/2020 19:29	5.2	0	2.23	0	0.169	-0.049	2.6	2.245	0.615	0	0	0	0
DI04B	NO	NO	59.97	60.8	0.83	0	0.5	0.07	0.76	60.73	2/11/2020 19:33	0.7	0	11.4	0	0.695	0.01	0	0	1.24	0	0	0	0
DI04C	NO	NO	60.07	60.8	0.73	0	0.5	0.23	1.17	61.24	2/11/2020 19:15	1.16	0	7.91	0	0.444	0.002	0	0	0.83	0	0	0	0
DI04D	NO	NO	60.17	60.8	0.63	0	0.5	0.2	1.18	61.35	2/11/2020 19:15	1.18	0	3.76	0	0.208	-0.009	0	0	0.82	0	0	0	0
DI05A	NO	NO	54.8	61.06	6.26	0	0.5	1.13	4.06	58.86	2/11/2020 19:31	4.05	0	4.82	0	0.264	-0.008	0	0	2.2	0	0	0	0
DI05B	NO	NO	54.8	61.06	6.26	0	0.5	1.13	4.06	58.86	2/11/2020 19:31	4.05	0	11.6	0	0.705	0.005	0	0	2.2	0	0	0	0
DI05C	NO	NO	54.8	61.06	6.26	0	0.5	1.13	4.06	58.86	2/11/2020 19:31	4.05	0	3.71	0	0.205	-0.005	0	0	2.2	0	0	0	0
DI06	NO	NO	62.28	64.85	2.57	0	0.5	0.05	0.27	62.55	2/11/2020 19:15	0.27	0	0.92	0	0.056	-0.003	0	0	2.3	0	0	0	0
DI07	NO	NO	61.7	65.17	3.47	0	0.5	0.09	0.45	62.15	2/11/2020 19:15	0.45	0	2.48	0	0.187	0.001	0	0	3.02	0	0	0	0
DI08	NO	NO	61.13	65.07	3.94	0	0.5	0.11	0.58	61.71	2/11/2020 19:15	0.58	0	4.24	0	0.288	-0.002	0	0	3.36	0	0	0	0
DI09	NO	NO	60.31	65.66	5.35	0	0.5	0.12	1.4	61.71	2/11/2020 19:16	1.28	0	4.63	0	0.317	0.003	0	0	3.95	0	0	0	0
DI10	NO	NO	59.62	63.92	4.3	0	0.5	0.13	1.08	60.7	2/11/2020 19:59	1.03	0	1.76	0	0.099	-0.01	0	0	3.22	0	0	0	0
DI11	NO	NO	59.33	63.88	4.55	0	0.5	0.18	1.37	60.7	2/11/2020 20:06	1.33	0	3.17	0	0.181	-0.003	0	0	3.18	0	0	0	0
DI12	NO	NO	59.04	63.96	4.92	0	0.5	0.23	1.64	60.68	2/11/2020 20:10	1.61	0	4.06	0	0.236	0.001	0	0	3.28	0	0	0	0
DI13	NO	NO	58.77	63.43	4.66	0	0.5	0.3	1.92	60.69	2/11/2020 20:07	1.89	1.98	5.96	0.153	0.389	-0.005	0	0	2.74	0	0	0	0
DI14	NO	NO	58.47	63.7	5.23	0	0.5	0.34	2.21	60.68	2/11/2020 20:07	2.19	0	7.7	0	0.498	-0.018	0.93	0.21	3.02	0	0	0	0
DI15	NO	NO	55.5	62.04	6.54	0	0.5	1.85	5.2	60.7	2/11/2020 19:49	5.14	0	3.36	0	0.19	0.015	10.81	3.197	1.343	0	0	0	0
DI16	NO	NO	56.4	61	4.6	0	0.5	1.08	4.27	60.67	2/11/2020 19:50	4.25	0	1.44	0	0.087	-0.023	6.91	2.265	0.335	0	0	0	0
DI17	NO	NO	57.5	61.9	4.4	0	0.5	0.57	3.18	60.68	2/11/2020 19:50	3.14	0	6.22	0	0.222	0.24	3.44	1.182	1.218	0	0	0	0
DI18	NO	NO	56.4	61.08	4.68	0	0.5	1.08	4.31	60.71	2/11/2020 19:49	4.25	0	1.51	0	0.089	-0.022	6.91	2.309	0.371	0	0	0	0
DI19	NO	NO	58.53	61.41	2.88	0	0.5	0.3	2.48	61.01	2/11/2020 19:50	2.12	0	1.99	0	0.149	-0.013	0.74	0.483	0.397	0	0	0	0
DI20	NO	NO	58.23	61.11	2.88	0	0.5	0.35	2.43	60.66	2/11/2020 20:04	2.41	0	5.23	0	0.171	-0.027	1.59	0.434	0.446	0	0	0	0
DI21	NO	NO	56.4	61.38	4.98	0	0.5	1.08	4.29	60.69	2/11/2020 19:49	4.25	0	1.06	0	0.106	0.009	6.91	2.291	0.689	0	0	0	0
DI22	NO	NO	58.2	61.11	2.91	0	0.5	0.35	2.54	60.74	2/11/2020 19:49	2.45	0	0.92	0	0.085	-0.026	1.66	0.537	0.373	0	0	0	0
DI23	NO	NO	58.13	61	2.87	0	0.5	0.41	2.81	60.94	2/11/2020 19:50	2.52	0	3.98	0	0.294	-0.035	1.89	0.809	0.061	0	0	0	0
DI24	NO	NO	57.1	61.5	4.4	0	0.5	0.74	3.65	60.75	2/11/2020 19:50	3.55	0	6.57	0	0.478	0.02	4.6	1.65	0.75	0	0	0	0
DI25	NO	NO	55.69	62.28	6.59	0	0.5	1.66	4.99	60.68	2/11/2020 19:50	4.96	0	1.69	0	0.145	0.033	9.78	2.992	1.598	0	0	0	0
DI26	NO	NO	56	61.08	5.08	0	0.5	1.38	5.58	61.58	2/11/2020 17:30	4.65	0	1.99	0	0.15	-0.065	8.41	3.58	0	0.01	0.6	0	0.5
DI27	NO	NO	55.68	61.42	5.74	0	0.5	1.67	5.07	60.75	2/11/2020 19:49	4.97	0	4.11	0	0.317	0.021	9.78	3.07	0.67	0	0	0	0
DI28	NO	NO	56.5	61	4.5	0	0.5	1.02	4.24	60.74	2/11/2020 19:50	4.15	0	2.03	0	0.176	0.082	6.57	2.244	0.256	0	0	0	0
DI29	NO	NO	57.91	61	3.09	0	0.5	0.47	3.59	61.5	2/11/2020 19:21	2.74	0	1.83	0	0.142	-0.024	2.42	1.59	0	0.01	0.42	0	0.5
DI30	NO	NO	57.61	61.82	4.21	0	0.5	0.54	3.15	60.76	2/11/2020 19:49	3.04	0	4.32	0	0.31	-0.004	3.15	1.153	1.057	0	0	0	0

DI31	NO	NO	56.3	61.41	5.11	0	0.5	1.15	4.46	60.76	2/11/2020 19:49	4.35	0	1.62	0	0.146	0.006	7.25	2.462	0.648	0	0	0	0
DI32	NO	NO	56.33	62.79	6.46	0	0.5	1.13	4.34	60.67	2/11/2020 19:50	4.32	0	2.28	0	0.167	0.165	7.16	2.338	2.122	0	0	0	0
DI33	NO	NO	56.2	61.3	5.1	0	0.5	1.22	4.46	60.66	2/11/2020 20:08	4.45	0	1.53	0	0.125	0.005	7.62	2.458	0.642	0	0	0	0
DI37A	NO	NO	58.3	62.78	4.48	0	0.5	0.15	3.3	61.6	2/11/2020 19:23	2.14	0	0.8	0	0.087	-0.033	0.31	1.303	1.177	0	0	0	0
DI37B	NO	NO	57.57	61.37	3.8	0	0.5	0.24	3.34	60.91	2/11/2020 19:23	2.91	0	1.23	0	0.105	-0.006	0.98	1.337	0.463	0	0	0	0
DI37C	NO	NO	55.15	61.23	6.08	0	0.5	0.93	5.39	60.54	2/11/2020 19:25	5.35	0	4.42	0	0.354	0.005	2.88	2.394	0.686	0	0	0	0
DI37D	NO	NO	55.09	61.12	6.03	0	0.5	0.96	5.44	60.53	2/11/2020 19:29	5.41	0	6.6	0	0.454	-0.024	2.12	1.943	0.587	0	0	0	0
J1	NO	NO	55.34	62.9	7.56	0	0.5	1.99	5.32	60.66	2/11/2020 20:08	5.31	0	2.73	0	0.184	0.124	11.8	3.318	2.242	0	0	0	0
J2	NO	NO	55.54	61.19	5.65	0	0.5	0.86	5.2	60.74	2/11/2020 19:29	4.88	0	42.68	0	2.13	-0.01	1.02	1.202	0.448	0	0	0	0
J210	NO	NO	55.87	61.79	5.92	0	0.5	1.48	4.8	60.67	2/11/2020 19:50	4.78	0	10.06	0	0.44	0.133	8.93	2.797	1.123	0	0	0	0
J3	NO	NO	55.54	61.19	5.65	0	0.5	0.86	5.2	60.74	2/11/2020 19:29	4.88	0	37.18	0	1.7	-0.01	1.02	1.197	0.453	0	0	0	0
J30	NO	NO	55.9	61.6	5.7	0	0.5	1.46	4.79	60.69	2/11/2020 19:49	4.75	0	2.36	0	0.195	-0.003	8.8	2.789	0.911	0	0	0	0
J4	NO	NO	55.54	61.19	5.65	0	0.5	0.86	5.2	60.74	2/11/2020 19:29	4.88	0	30	0	1.3	-0.006	1.02	1.199	0.451	0	0	0	0
J5	NO	NO	55.54	61.19	5.65	0	0.5	0.86	5.19	60.73	2/11/2020 19:29	4.87	0	22.01	0	0.848	-0.041	1.02	1.195	0.455	0	0	0	0
J6	NO	NO	55.54	61.18	5.64	0	0.5	0.85	5.13	60.67	2/11/2020 19:29	4.87	0	31.15	0	2.07	0.016	1.02	1.131	0.509	0	0	0	0
J62	NO	NO	59.9	67.29	7.39	0	0.5	0.25	1.8	61.7	2/11/2020 19:16	1.7	14.68	18.89	0.836	1.15	-0.046	0	0	5.59	0	0	0	0
J68	NO	NO	57.02	66.16	9.14	0	0.5	0.79	3.66	60.68	2/11/2020 19:49	3.63	0	18.12	0	1.18	0.03	4.88	1.663	5.477	0	0	0	0
J7	NO	NO	55.54	61.18	5.64	0	0.5	0.85	5.12	60.66	2/11/2020 19:29	4.87	0	21.66	0	1.21	-0.011	1.02	1.12	0.52	0	0	0	0
J73	NO	NO	56.3	63.3	7	0	0.5	0.22	2.5	58.8	2/11/2020 19:25	2.32	0	9.2	0	0.591	0	1.51	1.255	4.495	0	0	0	0
J8	NO	NO	55.54	61.18	5.64	0	0.5	0.85	5.12	60.66	2/11/2020 19:29	4.86	0	29.17	0	1.62	0	1.02	1.12	0.52	0	0	0	0
J9	NO	NO	55.54	61.18	5.64	0	0.5	0.85	5.15	60.69	2/11/2020 19:29	4.86	0	20.02	0	0.803	-0.043	1.02	1.15	0.49	0	0	0	0
MH01	NO	NO	56.57	62.05	5.48	0	0.5	0.48	4.22	60.79	2/11/2020 19:30	3.89	0	27.31	0	1.62	-0.011	0.99	1.217	1.263	0	0	0	0
MH02	NO	NO	56.46	61.5	5.04	0	0.5	0.51	4.26	60.72	2/11/2020 19:30	3.97	0	27.24	0	1.63	-0.002	1.09	1.259	0.781	0	0	0	0
MH03	NO	NO	55.43	62.33	6.9	0	0.5	0.89	5.24	60.67	2/11/2020 19:29	5.02	0	39.67	0	3.89	-0.007	0.14	0.238	1.662	0	0	0	0
MH04	NO	NO	55	62.21	7.21	0	0.5	1.04	5.6	60.6	2/11/2020 19:29	5.49	0	38.15	0	3.81	0.006	0.6	0.605	1.605	0	0	0	0
MH05	NO	NO	54.82	61.86	7.04	0	0.5	1.14	5.76	60.58	2/11/2020 19:29	5.67	0	37.87	0	3.82	0	0.76	0.763	1.277	0	0	0	0
PC01	NO	NO	57.34	62.09	4.75	0	0.5	0.38	4.09	61.43	2/11/2020 19:29	2.98	14.7	19.36	0.837	1.09	0.008	0.26	1.087	0.663	0	0	0	0
PC02	NO	NO	57.14	62.05	4.91	0.5	0.5	0.42	4.11	61.25	2/11/2020 19:29	3.21	0	19.38	0	1.09	-0.038	0.52	1.111	0.799	0	0	0	0
PC03	NO	NO	57.02	62.05	5.03	0	0.5	0.44	4.19	61.21	2/11/2020 19:41	3.37	0	21.12	0	1.2	0.003	0.65	1.187	0.843	0	0	0	0
PC04	NO	NO	56.93	62.05	5.12	0	0.5	0.46	4.22	61.15	2/11/2020 19:41	3.49	0	22.33	0	1.26	0.002	0.72	1.224	0.896	0	0	0	0
PC05	NO	NO	56.86	62.05	5.19	0	0.5	0.47	4.23	61.09	2/11/2020 19:29	3.57	0	23.01	0	1.31	-0.005	0.76	1.233	0.957	0	0	0	0
PC06	NO	NO	56.76	62.05	5.29	0	0.5	0.48	4.25	61.01	2/11/2020 19:29	3.68	0	23.77	0	1.36	-0.007	0.84	1.251	1.039	0	0	0	0
PC07	NO	NO	56.66	62.05	5.39	0	0.5	0.51	4.27	60.93	2/11/2020 19:30	3.77	0	25.05	0	1.48	0.005	0.92	1.267	1.123	0	0	0	0
PC08	NO	NO	56.31	61.19	4.88	0	0.5	0.51	4.44	60.75	2/11/2020 19:29	4.13	0	41.95	0	2.45	-0.021	0.29	0.436	0.444	0	0	0	0
PC09	NO	NO	56.16	61.19	5.03	0	0.5	0.57	4.55	60.71	2/11/2020 19:29	4.28	0	15.99	0	1.07	0.015	1.39	1.555	0.475	0	0	0	0
PC10	NO	NO	56.01	61.19	5.18	0	0.5	0.62	4.68	60.69	2/11/2020 19:29	4.44	0	19.89	0	1.09	0.012	1.57	1.678	0.502	0	0	0	0
PC11	NO	NO	55.85	61.19	5.34	0	0.5	0.68	5.65	61.5	2/11/2020 18:54	4.58	0	23.75	0	1.18	-0.017	1.77	2.65	0	0	0	0	0
PC12	NO	NO	55.69	61.18	5.49	0	0.5	0.74	5.96	61.65	2/11/2020 18:54	4.74	0	26.28	0	1.26	-0.024	1.97	2.963	0	0	0	0	0
PC13	NO	NO	55.54	61.18	5.64	0	0.5	0.83	5.13	60.67	2/11/2020 19:29	4.89	0	36.75	0	2.85	-0.029	1.02	1.13	0.51	0	0	0	0
PC14	NO	NO	57.51	61.59	4.08	0	0.5	0.24	3.38	60.89	2/11/2020 19:23	2.95	0	2.17	0	0.192	-0.067	1.03	1.383	0.697	0	0	0	0
PC15	NO	NO	57.61	62.44	4.83	0	0	0.23	3.31	60.92	2/11/2020 19:23	2.86	0	0.99	0	0.087	-0.022	0.94	1.307	1.523	0	0	0	0
PC16	NO	NO	57.71	64	6.29	0	0	0.23	3.45	61.16	2/11/2020 19:23	2.74	0	0.98	0	0.087	-0.035	0.86	1.455	2.835	0	0	0	0
S_UDB01	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:29	4.05	0	5.52	0	0.306	0.008	0	0	2.2	0	0	0	0
S_UDB02	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:29	4.05	0	5.13	0	0.309	-0.035	0	0	2.2	0	0	0	0
S_UDB03	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:29	4.05	0	2.65	0	0.247	-0.012	0	0	2.2	0	0	0	0
S_UDB04	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:29	4.05	0	2.61	0	0.212	-0.043	0	0	2.2	0	0	0	0
S_UDB05	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:29	4.06	0	4.63	0	0.281	-0.028	0	0	2.2	0	0	0	0
S_UDB06	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:29	4.06	0	6.66	0	0.392	-0.006	0	0	2.2	0	0	0	0
S_UDB07	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:29	4.06	0	8.9	0	0.51	-0.006	0	0	2.2	0	0	0	0

S_UDB08	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:29	4.06	0	11.48	0	0.655	-0.005	0	0	2.2	0	0	0	0
S_UDB09	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:29	4.06	14.44	14.44	0.789	0.789	-0.017	0	0	2.2	0	0	0	0
S_UDB10	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:30	4.06	0	1.84	0	0.139	0.102	0	0	2.2	0	0	0	0
S_UDB11	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:30	4.06	0	1.89	0	0.285	0.014	0	0	2.2	0	0	0	0
S_UDB12	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:30	4.06	0	2.63	0	0.399	0.008	0	0	2.2	0	0	0	0
S_UDB13	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:30	4.06	0	3.43	0	0.51	0.006	0	0	2.2	0	0	0	0
S_UDB14	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:30	4.06	0	4.02	0	0.594	0.016	0	0	2.2	0	0	0	0
S_UDB15	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:30	4.06	0	4.99	0	0.698	0.015	0	0	2.2	0	0	0	0
S_UDB16	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:30	4.06	0	6.5	0	0.889	0.004	0	0	2.2	0	0	0	0
S_UDB17	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:30	4.06	0	7.3	0	1.04	0.016	0	0	2.2	0	0	0	0
S_UDB18	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:30	4.06	0	7.79	0	1.05	-0.034	0	0	2.2	0	0	0	0
S_UDB19	NO	NO	54.8	61.06	6.26	0	0.5	1.08	4.05	58.85	2/11/2020 19:30	4.05	0	9.99	0	1.5	0.008	0	0	2.21	0	0	0	0
S_UDB20	NO	NO	54.8	61.06	6.26	0	0.5	1.13	4.06	58.86	2/11/2020 19:30	4.05	0	10.32	0	0.741	-0.006	0	0	2.2	0	0	0	0
SE_UDB01	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 19:50	5.24	0	15.69	0	1.07	0.009	1.11	0.266	1.154	0	0	0	0
SE_UDB02	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:05	5.24	0	15.6	0	1.08	0.07	1.11	0.265	1.155	0	0	0	0
SE_UDB03	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:05	5.24	0	13.94	0	0.94	0.083	1.11	0.265	1.155	0	0	0	0
SE_UDB04	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:05	5.24	0	12.72	0	0.898	0.089	1.11	0.265	1.155	0	0	0	0
SE_UDB05	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:01	5.24	0	11.67	0	0.89	0.089	1.11	0.265	1.155	0	0	0	0
SE_UDB06	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:01	5.24	0	10.29	0	0.86	0.098	1.11	0.266	1.154	0	0	0	0
SE_UDB07	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:01	5.24	0	8.65	0	0.779	0.108	1.11	0.266	1.154	0	0	0	0
SE_UDB08	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:01	5.24	0	6.44	0	0.613	0.143	1.11	0.266	1.154	0	0	0	0
SE_UDB09	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:01	5.24	0	5.35	0	0.353	0.238	1.11	0.266	1.154	0	0	0	0
SE_UDB10	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:04	5.24	0	21.9	0	1.84	0.057	1.11	0.265	1.155	0	0	0	0
SE_UDB11	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:04	5.24	0	18.48	0	1.47	0.054	1.11	0.265	1.155	0	0	0	0
SE_UDB12	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:04	5.24	0	18.04	0	1.17	0.069	1.11	0.265	1.155	0	0	0	0
SE_UDB13	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:04	5.24	0	15.9	0	0.969	0.084	1.11	0.265	1.155	0	0	0	0
SE_UDB14	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:05	5.24	0	16.18	0	0.866	0.092	1.11	0.266	1.154	0	0	0	0
SE_UDB15	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:05	5.24	0	15.22	0	0.822	0.101	1.11	0.266	1.154	0	0	0	0
SE_UDB16	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:05	5.24	0	13.62	0	0.785	0.108	1.11	0.266	1.154	0	0	0	0
SE_UDB17	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 19:50	5.24	0	11.58	0	0.732	0.118	1.11	0.272	1.148	0	0	0	0
SE_UDB18	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 19:50	5.24	0	10.35	0	0.602	0.067	1.11	0.273	1.147	0	0	0	0
SE_UDB19	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.28	60.68	2/11/2020 19:49	5.24	0	18.12	0	1.21	0.1	1.11	0.276	1.144	0	0	0	0
SE_UDB20	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.29	60.69	2/11/2020 19:50	5.24	0	15.99	0	1.09	0.078	1.1	0.287	1.133	0	0	0	0
SE_UDB21	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 19:49	5.24	0	6.64	0	0.589	0.021	1.11	0.273	1.147	0	0	0	0
SE_UDB22	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 19:49	5.24	0	8.18	0	0.881	0.097	1.11	0.266	1.154	0	0	0	0
SE_UDB23	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:05	5.24	0	8.87	0	1.04	0.082	1.11	0.263	1.157	0	0	0	0
SE_UDB24	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:05	5.24	0	8.88	0	1.1	0.077	1.11	0.263	1.157	0	0	0	0
SE_UDB25	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:08	5.24	0	8.66	0	1.1	0.076	1.11	0.263	1.157	0	0	0	0
SE_UDB26	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:08	5.24	0	7.76	0	1.05	0.078	1.11	0.263	1.157	0	0	0	0
SE_UDB27	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:08	5.24	0	6.94	0	0.922	0.087	1.11	0.263	1.157	0	0	0	0
SE_UDB28	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:08	5.24	0	5.15	0	0.713	0.108	1.11	0.263	1.157	0	0	0	0
SE_UDB29	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 19:49	5.24	0	3.23	0	0.416	0.177	1.11	0.266	1.154	0	0	0	0
SE_UDB30	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.24	0	21.03	0	2.3	0.048	1.11	0.263	1.157	0	0	0	0
SE_UDB31	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:08	5.24	0	19.42	0	1.85	0.045	1.11	0.263	1.157	0	0	0	0
SE_UDB32	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:08	5.24	0	18.18	0	1.52	0.055	1.11	0.263	1.157	0	0	0	0
SE_UDB33	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:08	5.24	0	16.15	0	1.3	0.065	1.11	0.263	1.157	0	0	0	0
SE_UDB34	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:08	5.24	0	17.06	0	1.18	0.069	1.11	0.263	1.157	0	0	0	0
SE_UDB35	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:04	5.24	0	17	0	1.21	0.067	1.11	0.263	1.157	0	0	0	0
SE_UDB36	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:04	5.24	0	18.58	0	1.41	0.057	1.11	0.263	1.157	0	0	0	0

SE_UDB37	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:04	5.24	0	20.64	0	1.74	0.048	1.11	0.264	1.156	0	0	0	0
SE_UDB38	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:04	5.24	0	22.09	0	1.86	0.031	1.11	0.264	1.156	0	0	0	0
SE_UDB39	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.28	60.68	2/11/2020 19:50	5.24	0	9.3	0	0.476	0.024	1.11	0.276	1.144	0	0	0	0
SE_UDB40	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.29	60.69	2/11/2020 19:49	5.24	0	6.59	0	0.602	0.091	1.11	0.291	1.129	0	0	0	0
SE_UDB41	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	2.88	0	0.299	0.292	1.11	0.265	1.155	0	0	0	0
SE_UDB42	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	3.71	0	0.327	0.262	1.11	0.265	1.155	0	0	0	0
SE_UDB43	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	4.17	0	0.223	0.382	1.11	0.265	1.155	0	0	0	0
SE_UDB44	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	4.43	0	0.178	0.479	1.11	0.265	1.155	0	0	0	0
SE_UDB45	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	4.08	0	0.185	0.452	1.11	0.265	1.155	0	0	0	0
SE_UDB46	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	3.6	0	0.201	0.423	1.11	0.265	1.155	0	0	0	0
SE_UDB47	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	3.13	0	0.193	0.44	1.11	0.265	1.155	0	0	0	0
SE_UDB48	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	3.32	0	0.167	0.498	1.11	0.265	1.155	0	0	0	0
SE_UDB49	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	3.01	0	0.128	0.091	1.11	0.265	1.155	0	0	0	0
SE_UDB50	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	2.4	0	0.131	0.575	1.11	0.265	1.155	0	0	0	0
SE_UDB51	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.3	60.7	2/11/2020 19:50	5.25	0	2.92	0	0.122	0.692	1.1	0.302	1.118	0	0	0	0
SE_UDB52	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:12	5.25	0	3.93	0	0.279	0.128	1.11	0.264	1.156	0	0	0	0
SE_UDB53	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:12	5.25	0	4	0	0.294	0.246	1.11	0.264	1.156	0	0	0	0
SE_UDB54	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:12	5.25	0	5.64	0	0.338	0.219	1.11	0.264	1.156	0	0	0	0
SE_UDB55	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:12	5.25	0	7.13	0	0.42	0.179	1.11	0.263	1.157	0	0	0	0
SE_UDB56	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	8.45	0	0.519	0.144	1.11	0.263	1.157	0	0	0	0
SE_UDB57	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	10.12	0	0.64	0.12	1.11	0.263	1.157	0	0	0	0
SE_UDB58	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	11.62	0	0.783	0.102	1.11	0.263	1.157	0	0	0	0
SE_UDB59	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	19.51	0	2.75	0.092	1.11	0.263	1.157	0	0	0	0
SE_UDB60	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.24	0	19.8	0	2.31	0.036	1.11	0.263	1.157	0	0	0	0
SE_UDB61	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	22.78	0	3.06	0.136	1.68	0.462	1.808	0	0	0	0
SE_UDB62	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	18.63	0	2.48	0.081	1.68	0.462	1.808	0	0	0	0
SE_UDB63	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	16.11	0	2.2	0.094	1.68	0.462	1.808	0	0	0	0
SE_UDB64	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	14.8	0	2.01	0.104	1.68	0.462	1.808	0	0	0	0
SE_UDB65	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.46	60.66	2/11/2020 20:08	5.45	0	12.47	0	1.87	0.108	1.68	0.462	1.808	0	0	0	0
SE_UDB66	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.46	60.66	2/11/2020 20:08	5.45	0	10.46	0	1.7	0.113	1.67	0.461	1.809	0	0	0	0
SE_UDB67	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.46	60.66	2/11/2020 20:08	5.45	0	9.1	0	1.41	0.136	1.67	0.461	1.809	0	0	0	0
SE_UDB68	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.46	60.66	2/11/2020 20:08	5.45	0	6.88	0	0.897	0.221	1.67	0.461	1.809	0	0	0	0
SE_UDB69	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.46	60.66	2/11/2020 19:50	5.45	0	4.87	0	0.432	0.008	1.68	0.463	1.807	0	0	0	0
SE_UDB70	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.47	60.67	2/11/2020 19:50	5.45	0	5.01	0	0.478	0.184	1.67	0.469	1.801	0	0	0	0
SE_UDB71	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.53	60.73	2/11/2020 19:50	5.45	0	5.01	0	0.511	0.24	1.67	0.532	1.738	0	0	0	0
SE_UDB72	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.55	60.75	2/11/2020 19:49	5.45	0	4.94	0	0.604	0.226	1.67	0.553	1.717	0	0	0	0
SE_UDB73	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.46	60.66	2/11/2020 20:08	5.45	0	5.92	0	0.786	0.07	1.68	0.458	1.812	0	0	0	0
SE_UDB74	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.46	60.66	2/11/2020 20:08	5.45	0	11.92	0	1.38	0.152	1.68	0.458	1.812	0	0	0	0
SE_UDB75	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.46	60.66	2/11/2020 20:08	5.45	0	23.78	0	4.65	0.067	1.68	0.458	1.812	0	0	0	0
SE_UDB76	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.46	60.66	2/11/2020 20:08	5.45	0	17.31	0	2.96	0.061	1.68	0.459	1.811	0	0	0	0
SE_UDB77	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.46	60.66	2/11/2020 20:08	5.45	0	15.97	0	2.5	0.082	1.68	0.459	1.811	0	0	0	0
SE_UDB78	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	14.7	0	2.26	0.091	1.68	0.46	1.81	0	0	0	0
SE_UDB79	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	13.27	0	2.18	0.09	1.68	0.46	1.81	0	0	0	0
SE_UDB80	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	12.55	0	2.04	0.094	1.68	0.46	1.81	0	0	0	0
SE_UDB81	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	12.18	0	1.79	0.116	1.67	0.461	1.809	0	0	0	0
SE_UDB82	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	10.84	0	1.48	0.139	1.67	0.461	1.809	0	0	0	0
SE_UDB83	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	10.9	0	1.22	-0.012	1.68	0.461	1.809	0	0	0	0
SE_UDB84	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.55	60.75	2/11/2020 19:49	5.45	0	7.26	0	0.598	0.26	1.67	0.553	1.717	0	0	0	0
SE_UDB85	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.54	60.74	2/11/2020 19:49	5.45	0	4.46	0	0.452	0.369	1.67	0.541	1.729	0	0	0	0

SE_UDB86	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.47	60.67	2/11/2020 19:49	5.45	0	9.18	0	0.732	0.14	1.67	0.467	1.803	0	0	0	0
SE_UDB87	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	9.57	0	0.685	0.004	1.68	0.462	1.808	0	0	0	0
SE_UDB88	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	9.69	0	0.877	0.243	1.67	0.462	1.808	0	0	0	0
SW_UDB01	NO	NO	55.53	61.06	5.53	0	0.5	0.85	5.08	60.61	2/11/2020 19:29	4.96	0	15.32	0	1.36	0.003	0.01	0.081	0.449	0	0	0	0
SW_UDB02	NO	NO	55.53	61.06	5.53	0	0.5	0.85	5.09	60.62	2/11/2020 19:29	4.97	0	18.79	0	1.34	0.004	0.01	0.085	0.445	0	0	0	0
SW_UDB03	NO	NO	55.53	61.06	5.53	0	0.5	0.85	5.05	60.58	2/11/2020 19:29	4.95	0	19.68	0	1.12	0.008	0.01	0.046	0.484	0	0	0	0
SW_UDB04	NO	NO	55.53	61.06	5.53	0	0.5	0.85	5.07	60.6	2/11/2020 19:29	4.93	0	17.91	0	0.973	0.006	0.01	0.074	0.456	0	0	0	0
SW_UDB05	NO	NO	55.53	61.06	5.53	0	0.5	0.85	5.05	60.58	2/11/2020 19:33	4.93	0	16.39	0	0.86	0.007	0.01	0.048	0.482	0	0	0	0
SW_UDB06	NO	NO	55.53	61.06	5.53	0	0.5	0.85	5.05	60.58	2/11/2020 19:28	4.93	0	15.88	0	0.742	0.003	0.01	0.046	0.484	0	0	0	0
SW_UDB07	NO	NO	55.53	61.06	5.53	0	0.5	0.85	5.03	60.56	2/11/2020 19:28	4.94	0	15.46	0	0.6	0.001	0.01	0.03	0.5	0	0	0	0
SW_UDB08	NO	NO	55.53	61.06	5.53	0	0.5	0.86	5.05	60.58	2/11/2020 19:28	4.94	0	15.45	0	0.464	0.004	0.01	0.045	0.485	0	0	0	0
SW_UDB09	NO	NO	55.53	61.06	5.53	0	0.5	0.86	5.1	60.63	2/11/2020 19:28	4.94	0	12.21	0	0.396	0	0.01	0.097	0.433	0	0	0	0
SW_UDB10	NO	NO	55.53	61.06	5.53	0	0.5	0.86	6.03	61.56	2/11/2020 19:28	4.98	0	13.7	0	0.734	-0.032	0.03	1.03	0	0.01	5.73	0	0.5
SW_UDB11	NO	NO	55.53	61.06	5.53	0	0.5	0.86	5.03	60.56	2/11/2020 19:27	4.96	0	7.24	0	0.371	0.019	0.01	0.032	0.498	0	0	0	0
SW_UDB12	NO	NO	55.53	61.06	5.53	0	0.5	0.86	5.03	60.56	2/11/2020 19:27	4.96	0	9.45	0	0.405	0.004	0.01	0.025	0.505	0	0	0	0
SW_UDB13	NO	NO	55.53	61.06	5.53	0	0.5	0.85	5.02	60.55	2/11/2020 19:27	4.95	0	10.15	0	0.405	0.002	0.01	0.022	0.508	0	0	0	0
SW_UDB14	NO	NO	55.53	61.06	5.53	0	0.5	0.85	5.02	60.55	2/11/2020 19:29	4.95	0	10.85	0	0.381	-0.01	0.01	0.02	0.51	0	0	0	0
SW_UDB15	NO	NO	55.53	61.06	5.53	0	0.5	0.85	5.01	60.54	2/11/2020 19:27	4.95	0	11.08	0	0.381	-0.015	0.01	0.012	0.518	0	0	0	0
SW_UDB16	NO	NO	55.53	61.06	5.53	0	0.5	0.86	5.02	60.55	2/11/2020 19:27	4.95	0	10.68	0	0.427	-0.019	0.01	0.022	0.508	0	0	0	0
SW_UDB17	NO	NO	55.53	61.06	5.53	0	0.5	0.86	5.03	60.56	2/11/2020 19:27	4.94	0	11.54	0	0.516	-0.017	0.01	0.028	0.502	0	0	0	0
SW_UDB18	NO	NO	55.53	61.06	5.53	0	0.5	0.86	5.02	60.55	2/11/2020 19:27	4.95	0	13.43	0	0.625	-0.012	0.01	0.024	0.506	0	0	0	0
SW_UDB19	NO	NO	55.53	61.06	5.53	0	0.5	0.86	5.04	60.57	2/11/2020 19:27	4.94	14.49	14.49	0.791	0.861	-0.007	0.01	0.039	0.491	0	0	0	0
SW_UDB20	NO	NO	55.53	61.06	5.53	0	0.5	0.82	5.12	60.65	2/11/2020 19:29	4.93	0	17.37	0	1.74	0.002	0.01	0.119	0.411	0	0	0	0

Name	Inflows	Treatment	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Surcharge Depth (ft)	Ponded Area (ft²)	Diverted Link	Type	Curve Name	Avg. Depth (ft)	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Lat. Inflow (cfs)	Max. Total Inflow (cfs)	Total Lat. Inflow (MG)	Total Inflow (MG)	Hours Surcharged (h)	Max. Surcharge (ft)	Min. Freeboard (ft)
DMA01	NO	NO	61.02	61.52	0.5	0	0	DC01	TABULAR	CurbInlet	0	0	61.02	2/11/2020 0:00	4.45	4.45	0.254	0.254	48	0	0.5
DMA02A	NO	NO	61.02	61.52	0.5	0	0	DC02A	TABULAR	GrateInlet	0	0	61.02	2/11/2020 0:00	1.8	1.8	0.101	0.101	48	0	0.5
DMA02B	NO	NO	61.02	61.52	0.5	0	0	DC02B	TABULAR	GrateInlet	0	0	61.02	2/11/2020 0:00	1.04	1.04	0.061	0.061	48	0	0.5
DMA02C	NO	NO	61	61.5	0.5	0	0	DC02C	TABULAR	GrateInlet	0	0	61	2/11/2020 0:00	0.75	0.75	0.046	0.046	48	0	0.5
DMA02D	NO	NO	61.02	61.52	0.5	0	0	DC02D	TABULAR	GrateInlet	0	0	61.02	2/11/2020 0:00	0.73	0.73	0.045	0.045	48	0	0.5
DMA02E	NO	NO	61.02	61.52	0.5	0	0	DC02E	TABULAR	GrateInlet	0	0	61.02	2/11/2020 0:00	1.39	1.39	0.122	0.122	48	0	0.5
DMA02F	NO	NO	61	61.5	0.5	0	0	DC02F	TABULAR	GrateInlet	0	0	61	2/11/2020 0:00	2.33	2.33	0.131	0.131	48	0	0.5
DMA03A	NO	NO	60.8	61.3	0.5	0.5	0	DC03A	TABULAR	GrateInlet	0	0	60.8	2/11/2020 0:00	2.28	2.28	0.128	0.128	48	0	0.5
DMA03B	NO	NO	60.8	61.3	0.5	0.5	0	DC03B	TABULAR	GrateInlet	0	0	60.8	2/11/2020 0:00	1.33	1.33	0.076	0.076	48	0	0.5
DMA03C	NO	NO	60.8	61.3	0.5	0	0	DC03C	TABULAR	GrateInlet	0	0	60.8	2/11/2020 0:00	1.39	1.39	0.079	0.079	48	0	0.5
DMA03D	NO	NO	60.8	61.3	0.5	0	0	DC03D	TABULAR	GrateInlet	0	0	60.8	2/11/2020 0:00	1.65	1.65	0.135	0.135	48	0	0.5
DMA03E	NO	NO	60.8	61.3	0.5	0	0	DC03E	TABULAR	GrateInlet	0	0	60.8	2/11/2020 0:00	1.59	1.59	0.132	0.132	48	0	0.5
DMA03F	NO	NO	60.8	61.3	0.5	0	0	DC03F	TABULAR	GrateInlet	0	0	60.8	2/11/2020 0:00	1.39	1.39	0.122	0.122	48	0	0.5
DMA04A	NO	NO	61.16	61.66	0.5	0	0	DC04A	TABULAR	CurbInlet	0	0	61.16	2/11/2020 0:00	2.23	2.23	0.169	0.169	48	0	0.5
DMA04B	NO	NO	60.8	61.3	0.5	0	0	DC04B	TABULAR	GrateInlet	0	0	60.8	2/11/2020 0:00	3.69	3.69	0.247	0.247	48	0	0.5
DMA04C	NO	NO	60.8	61.3	0.5	0	0	DC04C	TABULAR	GrateInlet	0	0	60.8	2/11/2020 0:00	4.28	4.28	0.236	0.236	48	0	0.5
DMA04D	NO	NO	60.8	61.3	0.5	0	0	DC04D	TABULAR	GrateInlet	0	0	60.8	2/11/2020 0:00	3.76	3.76	0.208	0.208	48	0	0.5
DMA05A	NO	NO	61.06	61.56	0.5	0	0	DC05A	TABULAR	GrateInlet	0	0	61.06	2/11/2020 0:00	4.82	4.82	0.264	0.264	48	0	0.5
DMA05B	NO	NO	61.06	61.56	0.5	0	0	DI05B	TABULAR	GrateInlet	0	0	61.06	2/11/2020 0:00	4.29	4.29	0.236	0.236	48	0	0.5
DMA05C	NO	NO	61.06	61.56	0.5	0	0	DC05C	TABULAR	GrateInlet	0	0	61.06	2/11/2020 0:00	3.71	3.71	0.205	0.205	48	0	0.5
DMA06	NO	NO	65.14	65.64	0.5	0	0	DC06	TABULAR	CurbInlet	0	0	65.14	2/11/2020 0:00	0.92	0.92	0.056	0.056	48	0	0.5
DMA07	NO	NO	0	0	0	0	0	DC07	TABULAR	GrateInlet	0	0	0	2/11/2020 0:00	1.56	1.56	0.132	0.132	48	0	0
DMA08	NO	NO	63.56	64.06	0.5	0	0	DC08	TABULAR	GrateInlet	0	0	63.56	2/11/2020 0:00	1.79	1.79	0.101	0.101	48	0	0.5
DMA09	NO	NO	65.66	66.16	0.5	0	0	DC09	TABULAR	CurbInlet	0	0	65.66	2/11/2020 0:00	0.41	0.41	0.029	0.029	48	0	0.5
DMA10	NO	NO	63.92	64.42	0.5	0	0	DC10	TABULAR	CurbInlet	0	0	63.92	2/11/2020 0:00	1.76	1.76	0.099	0.099	48	0	0.5
DMA11	NO	NO	63.88	64.38	0.5	0	0	DC11	TABULAR	CurbInlet	0	0	63.88	2/11/2020 0:00	1.43	1.43	0.082	0.082	48	0	0.5
DMA12	NO	NO	63.96	64.46	0.5	0	0	DC12	TABULAR	CurbInlet	0	0	63.96	2/11/2020 0:00	0.92	0.92	0.055	0.055	48	0	0.5
DMA13	NO	NO	63.43	63.93	0.5	0	0	DC13	TABULAR	CurbInlet	0	0	63.43	2/11/2020 0:00	0	0	0	0	48	0	0.5
DMA14	NO	NO	63.7	64.2	0.5	0	0	DC14	TABULAR	CurbInlet	0	0	63.7	2/11/2020 0:00	1.91	1.91	0.11	0.11	48	0	0.5
DMA15	NO	NO	62.04	62.54	0.5	0	0	DC15	TABULAR	CurbInlet	0	0	62.04	2/11/2020 0:00	3.36	3.36	0.19	0.19	48	0	0.5
DMA16	NO	NO	61	61.5	0.5	0	0	DC16	TABULAR	GrateInlet	0	0	61	2/11/2020 0:00	1.44	1.44	0.087	0.087	48	0	0.5
DMA17	NO	NO	61.9	62.4	0.5	0	0	DC17	TABULAR	CurbInlet	0	0	61.9	2/11/2020 0:00	3.51	3.51	0.199	0.199	48	0	0.5
DMA18	NO	NO	61.08	61.58	0.5	0	0	DC18	TABULAR	CurbInlet	0	0	61.08	2/11/2020 0:00	1.51	1.51	0.089	0.089	48	0	0.5
DMA19	NO	NO	61.41	61.91	0.5	0	0	DC19	TABULAR	GrateInlet	0	0	61.41	2/11/2020 0:00	1.99	1.99	0.149	0.149	48	0	0.5
DMA20	NO	NO	61.11	61.61	0.5	0	0	DC20	TABULAR	CurbInlet	0	0	61.11	2/11/2020 0:00	2.17	2.17	0.163	0.163	48	0	0.5
DMA21	NO	NO	60	60.5	0.5	0	0	DC21	TABULAR	CurbInlet	0	0	60	2/11/2020 0:00	1.06	1.06	0.099	0.099	48	0	0.5
DMA22	NO	NO	61.11	61.61	0.5	0	0	DC22	TABULAR	CurbInlet	0	0	61.11	2/11/2020 0:00	0.73	0.73	0.085	0.085	48	0	0.5
DMA23	NO	NO	61	61.5	0.5	0	0	DC23	TABULAR	GrateInlet	0	0	61	2/11/2020 0:00	1.94	1.94	0.146	0.146	48	0	0.5
DMA24	NO	NO	61.5	62	0.5	0	0	DC24	TABULAR	GrateInlet	0	0	61.5	2/11/2020 0:00	2.15	2.15	0.163	0.163	48	0	0.5
DMA25	NO	NO	60.33	60.83	0.5	0	0	DC25	TABULAR	CurbInlet	0	0	60.33	2/11/2020 0:00	1.69	1.69	0.136	0.136	48	0	0.5
DMA26	NO	NO	62.28	62.78	0.5	0	0	DC26	TABULAR	GrateInlet	0	0	62.28	2/11/2020 0:00	1.95	1.95	0.147	0.147	48	0	0.5
DMA27	NO	NO	62.2	62.7	0.5	0	0	DC27	TABULAR	GrateInlet	0	0	62.2	2/11/2020 0:00	2.16	2.16	0.164	0.164	48	0	0.5

DMA28	NO	NO	61	61.5	0.5	0	0	DC28	TABULAR	GrateInlet	0	0	61	2/11/2020 0:00	1.72	1.72	0.138	0.138	48	0	0.5
DMA29	NO	NO	61	61.5	0.5	0	0	DC29	TABULAR	GrateInlet	0	0	61	2/11/2020 0:00	1.83	1.83	0.142	0.142	48	0	0.5
DMA30	NO	NO	56.91	59.46	2.55	0	0	DC30	TABULAR	GrateInlet	0	0	56.91	2/11/2020 0:00	2.16	2.16	0.164	0.164	48	0	2.55
DMA31	NO	NO	61.41	61.91	0.5	0	0	DC31	TABULAR	GrateInlet	0	0	61.41	2/11/2020 0:00	1.62	1.62	0.13	0.13	48	0	0.5
DMA32	NO	NO	62.79	63.29	0.5	0	0	DC32	TABULAR	CurbInlet	0	0	62.79	2/11/2020 0:00	1.55	1.55	0.128	0.128	48	0	0.5
DMA33	NO	NO	60.34	60.84	0.5	0	0	DC33	TABULAR	CurbInlet	0	0	60.34	2/11/2020 0:00	0.98	0.98	0.099	0.099	48	0	0.5
DMA37A	NO	NO	62.78	63.28	0.5	0	0	DC37A	TABULAR	CurbInlet	0	0	62.78	2/11/2020 0:00	0.8	0.8	0.087	0.087	48	0	0.5
DMA37B	NO	NO	61.37	61.87	0.5	0	0	DC37B	TABULAR	CurbInlet	0	0	61.37	2/11/2020 0:00	1.23	1.23	0.105	0.105	48	0	0.5
DMA37C	NO	NO	61.21	61.71	0.5	0	0	DC37C	TABULAR	CurbInlet	0	0	61.21	2/11/2020 0:00	2.36	2.36	0.153	0.153	48	0	0.5
DMA37D	NO	NO	60.82	61.32	0.5	0	0	DC37D	TABULAR	CurbInlet	0	0	60.82	2/11/2020 0:00	4.37	4.37	0.285	0.285	48	0	0.5

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Storage Curve	Curve Name	Avg. Depth (ft)	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Rep. Max. Depth (ft)	Max. Lat. Inflow (cfs)	Max. Total Inflow (cfs)	Total Lat. Inflow (MG)	Total Inflow (MG)	Flow Error (%)	Hours Surcharged (h)	Max. Surcharge (ft)	Min. Freeboard (ft)	Avg. Volume (1000 ft³)	Avg. Percent Full (%)	Max. Volume (1000 ft³)	Max. Percent Full (%)	Max. Outflow (cfs)
SW_SDB	54.8	62	7.2	TABULAR	SouthwestBasin	1.04	5.7	60.5	2/11/2020 19:29	5.7	5.82	52.24	0.657	5.23	0.002	0	0	1.5	12.905	12	79.005	74	35.04
SE_SDB	54.8	62	7.2	TABULAR	SoutheastBasin	2.52	5.85	60.65	2/11/2020 20:10	5.85	2.95	26.64	0.218	4.39	0.057	9.24	2.85	1.35	35.472	28	95.647	76	15.3

Name	Inflows	Treatment	Invert Elev. (ft)	Rim Elev. (ft)	Tide Gate	Route To	Type	Series Name	Avg. Depth (ft)	Max. Depth (ft)	Time Max. HGL (M/D/Y)	Rep. Max. Depth (ft)	Max. Total Inflow (cfs)	Total Lat. Inflow (MG)	Total Inflow (MG)	Flow Error (%)	Flow Frequency	Avg. Flow (cfs)	Max. Flow (cfs)	Total Flow (MG)
S_DB_OF	NO	NO	56	63	NO		TIMESERIES	Tailwater	0.53	5	2/11/2020 19:00	5	9.77	0.122	0.713	0	63.05	1.46	9.77	0.713
SW_DB_OF	NO	NO	56	63	NO		TIMESERIES	Tailwater	0.63	5	2/11/2020 19:00	5	30.04	0	2.16	0	23.52	12.07	30.04	2.164
SE_DB_OF	NO	NO	56	63	NO		TIMESERIES	Tailwater	0.78	5	2/11/2020 19:00	5	14.8	0	3.65	0	74.94	5.44	14.8	3.654
SE_PUMP_OF	NO	NO	56	63	NO		TIMESERIES	Tailwater	0.52	5	2/11/2020 19:00	5	0.5	0	0.64	0	100	0.5	0.5	0.64
S_PUMP_OF	NO	NO	56	63	NO		TIMESERIES	Tailwater	0.52	5	2/11/2020 19:00	5	1.03	0	0.903	0	99.74	0.8	1.03	0.903
SW_PUMP_OF	NO	NO	56	63	NO		TIMESERIES	Tailwater	0.52	5	2/11/2020 19:00	5	5	0	3.05	0	88	3.35	5	3.047

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Entry Loss Coeff.	Exit Loss Coeff.	Avg. Loss Coeff.	Flap Gate	Cross-Section	Geom1 (ft)	Barrels	Slope (ft/ft)	Max. |Flow| (cfs)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max/Full Flow	Max/Full Depth	Full Both Ends (h)	Full Upstream (h)	Full Downstream (h)	Above Full Normal (h)	Dry (fraction)	Subcritical (fraction)	Supercritical (fraction)	Normal Limited (fraction)
C1	DI01	PC01	94.002	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00862	6.41	2/11/2020 19:06	3.82	0.23	1	0.5	0.5	1.24	0.01	0	1	0	0.95
C10	MH02	PC08	104.495	0.01	0	0	0	0	0	NO	CIRCULAR	3	2	0.00144	27.29	2/11/2020 19:15	3.99	0.42	1	1.09	1.09	1.24	0.01	0	0.68	0.32	0.02
C100	DI18	SE_UDB51	124.637	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00802	1.51	2/11/2020 19:15	1.19	0.06	1	6.91	6.91	11.41	0.01	0	0.81	0	0.5
C101	DI16	SE_UDB50	124.037	0.01	0	0	0	0	0	YES	CIRCULAR	2	1	0.00806	1.44	2/11/2020 19:15	1.15	0.05	1	6.91	6.91	11.41	0.01	0	0.81	0	0.5
C105	SE_UDB15	SE_UDB14	7.463	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	15.43	2/11/2020 19:12	1.42	0.39	1	1.11	1.11	1.11	0.01	0	1	0	0
C106	DI08	DI09	135.807	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00604	4.23	2/11/2020 19:15	4.56	0.19	0.49	0	0	0	0	0	0.41	0.59	0.99
C107	DI09	J62	64.4	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00637	4.74	2/11/2020 19:16	2.86	0.2	0.8	0	0	0	0	0.29	0.61	0	0.98
C108	J62	J68	592.103	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00486	18.12	2/11/2020 19:15	5.9	0.88	0.95	0.01	0.01	4.88	0.01	0.27	0.37	0.34	0.61
C109	S_UDB01	S_UDB20	167.366	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	5.52	2/11/2020 19:14	0.84	0.67	0.81	0	0	0	0	0	1	0	0
C11	PC08	PC09	95.757	0.01	0	0	0	0	0	NO	CIRCULAR	3	2	0.00157	22.24	2/11/2020 18:49	2.51	0.32	1	1.24	1.24	1.39	0.01	0.37	0.63	0	0.8
C113	SE_SDB	SE_DB_OF	52.237	0.01	0	0	0	0	0	YES	CIRCULAR	1.083	1	-0.02298	14.8	2/11/2020 20:29	16.07	1.7	1	4.23	4.23	43.2	7.13	0	0.83	0.11	0
C114	S_UDB20	S_UDB19	361.342	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.63	2/11/2020 19:15	0.93	0.65	0.81	0	0	0	0	0	1	0	0
C115	DI05B	S_UDB20	19.292	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	10.32	2/11/2020 19:15	1.01	0.42	0.81	0	0	0	0	0	1	0	0
C116	S_UDB08	S_UDB07	7.384	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	8.9	2/11/2020 19:15	1.8	0.23	0.81	0	0	0	0	0	1	0	0
C117	S_UDB11	S_UDB12	7.502	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.02	2/11/2020 20:20	0.48	0.05	0.81	0	0	0	0	0	1	0	0
C118	S_UDB09	S_UDB10	811.568	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.18	2/11/2020 19:15	0.36	0.31	0.81	0	0	0	0	0	1	0	0
C119	S_UDB08	S_UDB11	300.036	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.89	2/11/2020 19:15	0.5	0.31	0.81	0	0	0	0	0	1	0	0
C12	PC09	PC10	88.158	0.01	0	0	0	0	0	NO	CIRCULAR	3	2	0.0017	15.83	2/11/2020 18:25	2.03	0.22	1	1.39	1.39	1.57	0.01	0.36	0.63	0	0.79
C120	S_UDB07	S_UDB12	299.938	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.55	2/11/2020 19:15	0.44	0.25	0.81	0	0	0	0	0	1	0	0
C121	S_UDB06	S_UDB13	299.958	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.34	2/11/2020 19:15	0.39	0.22	0.81	0	0	0	0	0	1	0	0
C122	S_UDB05	S_UDB14	876.986	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	0.6	2/11/2020 19:15	0.25	0.17	0.81	0	0	0	0	0	1	0	0
C123	S_UDB04	S_UDB15	876.682	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	0.6	2/11/2020 19:15	0.27	0.17	0.81	0	0	0	0	0	1	0	0
C124	S_UDB03	S_UDB16	300.035	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.25	2/11/2020 19:15	0.47	0.2	0.81	0	0	0	0	0	1	0	0
C125	S_UDB02	S_UDB17	876.751	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	0.65	2/11/2020 20:15	0.31	0.18	0.81	0	0	0	0	0	1	0	0
C126	SE_UDB69	SE_UDB68	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	4.93	2/11/2020 17:27	0.96	0.13	1	1.67	1.67	1.67	0.01	0	1	0	0
C127	SE_UDB68	SE_UDB67	7.43	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	6.88	2/11/2020 17:28	1.08	0.18	1	1.67	1.67	1.67	0.01	0	1	0	0
C128	SE_UDB67	SE_UDB66	7.572	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	9.1	2/11/2020 15:25	1.57	0.23	1	1.67	1.67	1.67	0.01	0	1	0	0
C129	SE_UDB66	SE_UDB65	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	10.46	2/11/2020 19:18	1.53	0.27	1	1.67	1.67	1.68	0.01	0	1	0	0
C13	PC10	PC11	104.027	0.01	0	0	0	0	0	NO	CIRCULAR	3	2	0.00154	19.89	2/11/2020 18:36	1.91	0.29	1	1.57	1.57	1.77	0.01	0.36	0.64	0	0.78
C130	SE_UDB65	SE_UDB64	7.476	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	12.47	2/11/2020 19:19	1.5	0.32	1	1.67	1.68	1.68	0.01	0	1	0	0
C131	S_UDB09	S_UDB08	8.147	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	11.48	2/11/2020 19:15	1.87	0.31	0.81	0	0	0	0	0	1	0	0
C132	S_UDB02	S_UDB01	7.437	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	5.13	2/11/2020 19:15	1.1	0.13	0.81	0	0	0	0	0	1	0	0
C133	S_UDB03	S_UDB02	5.175	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.65	2/11/2020 19:15	0.72	0.06	0.81	0	0	0	0	0	1	0	0
C134	S_UDB04	S_UDB03	7.089	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	0.92	2/11/2020 20:48	0.89	0.02	0.81	0	0	0	0	0	1	0	0
C135	S_UDB05	S_UDB04	7.034	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.12	2/11/2020 19:17	1.55	0.05	0.81	0	0	0	0	0	1	0	0
C136	S_UDB06	S_UDB05	7.124	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	4.63	2/11/2020 19:15	1.82	0.12	0.81	0	0	0	0	0	1	0	0
C137	S_UDB07	S_UDB06	7.378	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	6.66	2/11/2020 19:15	1.76	0.17	0.81	0	0	0	0	0	1	0	0
C138	S_UDB17	S_UDB18	7.437	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	7.79	2/11/2020 20:20	2.62	0.2	0.81	0	0	0	0	0	1	0	0
C139	S_UDB16	S_UDB17	7.553	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	6.67	2/11/2020 20:20	1.71	0.17	0.81	0	0	0	0	0	1	0	0
C14	PC11	PC12	95.97	0.01	0	0	0	0	0	NO	CIRCULAR	3	2	0.00167	23.18	2/11/2020 18:47	1.91	0.33	1	1.77	1.77	1.97	0.01	0.34	0.64	0	0.77
C140	S_UDB15	S_UDB16	7.437	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	5.49	2/11/2020 20:20	1.23	0.14	0.81	0	0	0	0	0	1	0	0
C141	S_UDB14	S_UDB15	7.547	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	4.53	2/11/2020 20:20	1.26	0.12	0.81	0	0	0	0	0	1	0	0
C142	S_UDB13	S_UDB14	7.547	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.62	2/11/2020 20:20	1.44	0.09	0.81	0	0	0	0	0	1	0	0
C143	S_UDB12	S_UDB13	7.437	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.83	2/11/2020 20:20	0.89	0.07	0.81	0	0	0	0	0	1	0	0
C144	SE_UDB64	SE_UDB63	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	14.8	2/11/2020 19:19	1.51	0.38	1	1.68	1.68	1.68	0.01	0	1	0	0
C145	SE_UDB63	SE_UDB62	7.534	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	16.11	2/11/2020 19:18	1.57	0.41	1	1.68	1.68	1.68	0.01	0	1	0	0
C146	SE_UDB62	SE_UDB61	7.527	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	18.63	2/11/2020 19:19	1.72	0.48	1	1.68	1.68	1.68	0.01	0	1	0	0
C147	SE_UDB88	SE_UDB61	7.482	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	9.97	2/11/2020 17:44	1.65	0.25	1	1.67	1.67	1.68	0.01	0	1	0	0
C148	SE_UDB87	SE_UDB88	7.592	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	9.69	2/11/2020 17:44	1.65	0.25	1	1.67	1.68	1.67	0.01	0	1	0	0
C149	S_UDB10	S_UDB11	7.469	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.17	2/11/2020 19:56	0.6	0.03	0.81	0	0	0	0	0	1	0	0
C15	PC12	PC13	95.994	0.01	0	0	0	0	0	NO	CIRCULAR	3	2	0.00156	25.72	2/11/2020 18:48	1.89	0.38	1	1.97	1.97	2.2	0.01	0	0.66	0	0.72
C150	SE_UDB73	SE_UDB74	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	6.47	2/11/2020 17:23	1.11	0.17	1	1.67	1.68	1.68	0.01	0	1	0	0
C151	SE_UDB14	SE_UDB13	7.502	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	14.88	2/11/2020 19:10	1.36	0.38	1	1.11	1.11	1.11	0.01	0	1	0	0
C152	SE_UDB13	SE_UDB12	7.502	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	16.46	2/11/2020 19:12	1.26	0.42	1	1.11	1.11	1.11	0.01	0	1	0	0
C153	SE_UDB12	SE_UDB11	7.502	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	15.84	2/11/2020 19:12	1.57	0.41	1	1.11	1.11	1.11	0.01	0	1	0	0
C154	SE_UDB11	SE_UDB10	7.502	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	18.74	2/11/2020 17:55	1.89	0.48	1	1.11	1.11	1.11	0.01	0	1	0	0

C155	SE_UDB10	SE_UDB38	38.972	0.01	0	0	0	0	0	NO	CIRCULAR	5	3	0	22.09	2/11/2020 17:58	0.73	0.43	1	1.11	1.11	1.11	0.01	0	1	0	0
C156	SE_UDB30	SE_UDB60	29.974	0.01	0	0	0	0	0	NO	CIRCULAR	5	3	0	19.8	2/11/2020 19:19	0.94	0.34	1	1.11	1.11	1.11	0.01	0	1	0	0
C157	SW_SDB	SW_DB_OF	46.854	0.01	1.2	0	0	0	0	YES	CIRCULAR	1.5	1	0	30.04	2/11/2020 19:48	17	47.62	1	3.38	4.39	4.13	6.02	0.37	0.35	0	0
C159	DI37A	PC16	166.055	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00355	0.98	2/11/2020 19:22	1.84	0.06	1	0.31	0.31	0.86	0.01	0	0.61	0	0.95
C16	PC13	MH03	44.738	0.01	0	0	0	0	0	NO	CIRCULAR	3	2	0.00246	36.92	2/11/2020 19:15	2.7	0.43	1	2.2	2.2	2.38	0.01	0	1	0	0.4
C160	PC16	PC15	142.677	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.0007	0.99	2/11/2020 19:15	1.5	0.13	1	0.86	0.86	0.94	0.01	0	1	0	0.48
C161	PC15	PC14	87.322	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00115	0.98	2/11/2020 19:15	1.74	0.1	1	0.94	0.94	1.03	0.01	0.34	0.63	0	0.48
C162	SE_UDB59	SE_UDB61	154.37	0.01	0	0	0	0	0	NO	CIRCULAR	5	3	0.0013	15.82	2/11/2020 19:18	0.96	0.04	1	1.11	1.11	1.68	0.01	0	1	0	0.04
C163	DI20	SE_UDB37	61.941	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.04574	6.62	2/11/2020 19:08	2.59	0.11	1	1.59	1.59	31.28	0.01	0	0.62	0	0.85
C165	SE_UDB38	SE_UDB37	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	19.06	2/11/2020 19:18	1.74	0.49	1	1.11	1.11	1.11	0.01	0	1	0	0
C166	SE_UDB37	SE_UDB36	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	18.58	2/11/2020 19:12	1.54	0.48	1	1.11	1.11	1.11	0.01	0	1	0	0
C167	SE_UDB36	SE_UDB35	7.553	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	17	2/11/2020 19:19	1.4	0.44	1	1.11	1.11	1.11	0.01	0	1	0	0
C168	SE_UDB35	SE_UDB34	7.508	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	16.69	2/11/2020 19:12	1.29	0.43	1	1.11	1.11	1.11	0.01	0	1	0	0
C169	SE_UDB34	SE_UDB33	7.463	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	15.3	2/11/2020 19:18	1.22	0.39	1	1.11	1.11	1.11	0.01	0	1	0	0
C17	SW_UDB20	MH03	60.765	0.01	0	0	0	0	0	NO	CIRCULAR	5	2	0.00165	16.15	2/11/2020 19:35	1.37	0.06	1	0.01	0.01	0.14	0.01	0	1	0	0.44
C170	SE_UDB33	SE_UDB32	7.45	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	17.25	2/11/2020 19:12	1.37	0.44	1	1.11	1.11	1.11	0.01	0	1	0	0
C171	SE_UDB32	SE_UDB31	7.553	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	18.05	2/11/2020 19:13	1.63	0.46	1	1.11	1.11	1.11	0.01	0	1	0	0
C172	SE_UDB31	SE_UDB30	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	18.89	2/11/2020 19:18	2.09	0.48	1	1.11	1.11	1.11	0.01	0	1	0	0
C174	DI17	SE_UDB39	26.927	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.07823	6.84	2/11/2020 18:36	2.85	0.08	1	3.44	3.44	31.28	0.01	0	0.67	0	0.78
C175	J30	SE_UDB52	64.277	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00778	2.37	2/11/2020 18:53	1.18	0.09	1	8.8	8.8	11.4	0.01	0	0.98	0	0.15
C176	DI22	J30	83.273	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.02763	1.57	2/11/2020 18:53	1.11	0.03	1	1.66	1.66	30.13	0.01	0.02	0.55	0.08	0.84
C177	S_UDB19	J73	19.84	0.01	0	0	0	0	0	NO	CIRCULAR	1	1	-0.07582	9.2	2/11/2020 20:20	11.71	0.72	1	2.07	2.07	31.67	0.01	0.25	0.28	0.06	0.45
C18	MH03	MH04	231.707	0.01	0	0	0	0	0	NO	CIRCULAR	5	2	0.00186	38.15	2/11/2020 19:18	2.98	0.13	1	0.14	0.14	0.6	0.01	0	1	0	0.03
C181	SE_UDB21	SE_UDB40	38.875	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	6.64	2/11/2020 19:12	0.81	0.39	1	1.11	1.11	1.11	0.01	0	1	0	0
C182	SE_UDB40	SE_UDB39	138.072	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	4.23	2/11/2020 17:55	0.42	0.46	1	1.1	1.11	1.11	0.01	0	1	0	0
C183	SE_UDB39	SE_UDB38	102.535	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	4.63	2/11/2020 17:58	0.66	0.44	1	1.1	1.11	1.11	0.01	0	1	0	0
C184	SE_UDB22	SE_UDB37	279.645	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.5	2/11/2020 17:55	0.35	0.55	1	1.11	1.11	1.11	0.01	0	1	0	0
C185	SE_UDB23	SE_UDB36	279.542	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3	2/11/2020 17:55	0.3	0.47	1	1.11	1.11	1.11	0.01	0	1	0	0
C186	SE_UDB24	SE_UDB35	279.654	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.7	2/11/2020 17:58	0.27	0.42	1	1.11	1.11	1.11	0.01	0	1	0	0
C187	SE_UDB25	SE_UDB34	279.51	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.78	2/11/2020 18:00	0.28	0.43	1	1.11	1.11	1.11	0.01	0	1	0	0
C188	SE_UDB26	SE_UDB33	279.442	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.93	2/11/2020 18:00	0.29	0.46	1	1.11	1.11	1.11	0.01	0	1	0	0
C189	SE_UDB27	SE_UDB32	279.474	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.15	2/11/2020 18:00	0.31	0.49	1	1.11	1.11	1.11	0.01	0	1	0	0
C19	MH04	MH05	59.808	0.01	0	0	0	0	0	NO	CIRCULAR	5	2	0.00301	37.87	2/11/2020 19:18	2.82	0.1	1	0.6	0.6	0.76	0.01	0	0.99	0	0.45
C190	SE_UDB28	SE_UDB31	279.536	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.41	2/11/2020 17:50	0.35	0.53	1	1.11	1.11	1.11	0.01	0	1	0	0
C191	SE_UDB29	SE_UDB30	279.377	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.89	2/11/2020 17:50	0.5	0.61	1	1.11	1.11	1.11	0.01	0	1	0	0
C192	SE_UDB21	SE_UDB22	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	6.71	2/11/2020 19:12	1.06	0.17	1	1.11	1.11	1.11	0.01	0	1	0	0
C193	SE_UDB22	SE_UDB23	7.527	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	8.33	2/11/2020 19:12	0.99	0.21	1	1.11	1.11	1.11	0.01	0	1	0	0
C194	SE_UDB23	SE_UDB24	7.45	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	8.59	2/11/2020 19:16	1.12	0.22	1	1.11	1.11	1.11	0.01	0	1	0	0
C195	SE_UDB24	SE_UDB25	7.527	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	8.66	2/11/2020 19:16	1.18	0.22	1	1.11	1.11	1.11	0.01	0	1	0	0
C196	SE_UDB25	SE_UDB26	7.527	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	7.76	2/11/2020 19:14	1.17	0.2	1	1.11	1.11	1.11	0.01	0	1	0	0
C197	SE_UDB26	SE_UDB27	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	6.94	2/11/2020 19:16	1.09	0.18	1	1.11	1.11	1.11	0.01	0	1	0	0
C198	SE_UDB27	SE_UDB28	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	5.15	2/11/2020 19:16	0.9	0.13	1	1.11	1.11	1.11	0.01	0	1	0	0
C199	SE_UDB28	SE_UDB29	7.527	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.12	2/11/2020 19:19	0.51	0.08	1	1.11	1.11	1.11	0.01	0	1	0	0
C2	PC01	PC02	90.277	0.01	0	0	0	0	0	NO	CIRCULAR	3	1	0.00222	19.38	2/11/2020 19:15	4.12	0.47	1	0.26	0.26	0.52	0.01	0.39	0.61	0	0.72
C20	Di37C	SW_SDB	128.308	0.01	0	0	0	0	0	NO	CIRCULAR	3	1	0.00273	4.42	2/11/2020 19:15	3.98	0.1	1	2.88	2.88	3.6	0.01	0	0.76	0.24	0.02
C200	SE_UDB52	SE_UDB53	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.86	2/11/2020 19:32	0.86	0.1	1	1.1	1.11	1.11	0.01	0	1	0	0
C201	SE_UDB53	SE_UDB54	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	5.12	2/11/2020 19:32	0.78	0.13	1	1.1	1.11	1.11	0.01	0	1	0	0
C202	SE_UDB54	SE_UDB55	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	6.13	2/11/2020 18:13	0.72	0.16	1	1.11	1.11	1.11	0.01	0	1	0	0
C203	SE_UDB55	SE_UDB56	7.534	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	7.25	2/11/2020 18:13	0.74	0.19	1	1.1	1.11	1.11	0.01	0	1	0	0
C204	SE_UDB56	SE_UDB57	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	8.55	2/11/2020 17:55	0.88	0.22	1	1.11	1.11	1.11	0.01	0	1	0	0
C205	SE_UDB57	SE_UDB58	7.508	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	10.12	2/11/2020 17:53	1.03	0.26	1	1.11	1.11	1.11	0.01	0	1	0	0
C206	SE_UDB58	SE_UDB59	7.527	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	11.62	2/11/2020 17:53	1.26	0.3	1	1.11	1.11	1.11	0.01	0	1	0	0
C207	SE_UDB60	SE_UDB59	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	19.12	2/11/2020 19:19	3.57	0.49	1	1.11	1.11	1.11	0.01	0	0.98	0.02	0.01
C21	MH05	SW_SDB	126.069	0.01	0	0	0	0	0	NO	CIRCULAR	5	2	0.00016	38.59	2/11/2020 19:18	6.46	0.45	1	0.76	0.76	0.78	0.01	0	0.72	0.28	0
C210	SE_UDB49	SE_UDB50	37.816	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.01	2/11/2020 19:10	0.53	0.17	1	1.1	1.11	1.1	0.01	0	1	0	0
C211	SE_UDB50	SE_UDB51	138.362	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.29	2/11/2020 18:26	0.11	0.14	1	1.09	1.1	1.1	0.01	0	1	0	0
C212	SE_UDB51	SE_UDB52	103.429	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.34	2/11/2020 19:11	0.27	0.22	1	1.09	1.1	1.11	0.01	0	1	0	0
C213	SE_UDB48	SE_UDB53	279.562	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.28	2/11/2020 17:57	0.13	0.2	1	1.1	1.11	1.11	0.01	0	1	0	0
C214	SE_UDB47	SE_UDB54	279.566	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.29	2/11/2020 17:57	0.13	0.2	1	1.1	1.11	1.11	0.01	0	1	0	0
C215	SE_UDB46	SE_UDB55	279.6	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.34	2/11/2020 17:56	0.13	0.21	1	1.1	1.11	1.11	0.01	0	1	0	0
C216	SE_UDB45	SE_UDB56	279.683	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.45	2/11/2020 17:56	0.15	0.23	1	1.1	1.11	1.11	0.01	0	1	0	0

C217	SE_UDB44	SE_UDB57	279.571	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.6	2/11/2020 17:56	0.2	0.25	1	1.1	1.11	1.11	0.01	0	1	0	0
C218	SE_UDB43	SE_UDB58	279.554	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.79	2/11/2020 17:56	0.27	0.28	1	1.1	1.11	1.11	0.01	0	1	0	0
C219	SE_UDB42	SE_UDB59	279.601	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.04	2/11/2020 17:56	0.38	0.32	1	1.1	1.11	1.11	0.01	0	1	0	0
C22	DI37D	SW_SDB	126.118	0.01	0	0	0	0	0	NO	CIRCULAR	3.5	1	0.0023	6.61	2/11/2020 19:15	4.35	0.11	1	2.12	2.12	2.61	0.01	0	0.76	0.24	0.02
C220	SE_UDB41	SE_UDB60	279.56	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.88	2/11/2020 17:56	0.84	0.45	1	1.1	1.11	1.11	0.01	0	1	0	0
C222	SE_UDB74	SE_UDB75	7.502	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	14.26	2/11/2020 16:22	2.13	0.36	1	1.67	1.68	1.68	0.01	0	1	0	0
C223	SE_UDB83	SE_UDB82	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	10.59	2/11/2020 15:12	1.61	0.27	1	1.67	1.67	1.67	0.01	0	1	0	0
C225	SE_UDB49	SE_UDB48	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.96	2/11/2020 19:10	0.64	0.08	1	1.11	1.11	1.11	0.01	0	1	0	0
C226	SE_UDB48	SE_UDB47	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.08	2/11/2020 18:39	0.67	0.08	1	1.11	1.11	1.11	0.01	0	1	0	0
C227	SE_UDB47	SE_UDB46	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.27	2/11/2020 18:39	0.68	0.08	1	1.11	1.11	1.11	0.01	0	1	0	0
C228	SE_UDB46	SE_UDB45	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.37	2/11/2020 18:39	0.67	0.09	1	1.11	1.11	1.11	0.01	0	1	0	0
C229	SE_UDB45	SE_UDB44	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.86	2/11/2020 18:39	0.66	0.07	1	1.11	1.11	1.11	0.01	0	1	0	0
C23	DI15	SE_UDB40	26.734	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00374	3.37	2/11/2020 19:15	1.26	0.19	1	10.81	10.81	11.41	0.01	0	1	0	0.01
C230	SE_UDB44	SE_UDB43	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.97	2/11/2020 17:57	0.62	0.08	1	1.11	1.11	1.11	0.01	0	1	0	0
C231	SE_UDB43	SE_UDB42	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.51	2/11/2020 17:57	0.73	0.06	1	1.11	1.11	1.11	0.01	0	1	0	0
C232	SE_UDB42	SE_UDB41	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.08	2/11/2020 19:16	1.06	0.05	1	1.11	1.11	1.11	0.01	0	1	0	0
C234	DI37B	PC14	27.836	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00216	1.25	2/11/2020 19:12	2.2	0.09	1	0.98	0.98	1.03	0.01	0.34	0.61	0	0.5
C235	PC14	Di37C	282.683	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00835	2.12	2/11/2020 19:15	1.77	0.08	1	1.03	1.03	5.5	0.01	0	0.66	0	0.92
C237	DI04A	DI37D	180.87	0.01	0	0	0	0	0	NO	CIRCULAR	3	1	0.00116	2.23	2/11/2020 19:15	1.01	0.08	1	2.6	2.6	3.01	0.01	0	0.66	0	0.74
C24	DI02A	PC03	68.484	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	-0.00029	4.18	2/11/2020 18:41	1.71	0.83	1	1.57	1.58	1.59	0.01	0	1	0	0
C246	DI04D	DI04C	300.554	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00033	3.68	2/11/2020 19:15	1.92	0.69	0.59	0	0	0	0	0	0.66	0	0.49
C247	DI04C	DI04B	299.329	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00033	7.83	2/11/2020 19:15	6.83	1.46	0.4	0.01	0.01	0.01	0.24	0	0.44	0.56	0
C248	DI05A	DI05B	300.207	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	4.24	2/11/2020 19:15	0.44	0.69	0.81	0	0	0	0	0	1	0	0
C249	DI05C	DI05B	299.636	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.12	2/11/2020 19:15	0.3	0.5	0.81	0	0	0	0	0	1	0	0
C25	DI02B	PC04	68.447	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00102	3.53	2/11/2020 18:40	1.48	0.38	1	1.59	1.59	1.69	0.01	0	0.62	0	0.48
C250	SW_UDB09	SW_UDB08	7.534	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	14.11	2/11/2020 19:34	1.72	0.36	1	0.01	0.01	0.01	0.01	0	1	0	0
C251	SW_UDB08	SW_UDB07	7.521	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	15.45	2/11/2020 19:32	1.48	0.4	1	0.01	0.01	0.01	0.01	0	1	0	0
C252	SW_UDB07	SW_UDB06	7.305	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	15.6	2/11/2020 18:49	1.36	0.39	1	0.01	0.01	0.01	0.01	0	1	0	0
C253	SW_UDB06	SW_UDB05	7.687	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	15.53	2/11/2020 18:42	1.42	0.4	1	0.01	0.01	0.01	0.01	0	1	0	0
C254	SW_UDB05	SW_UDB04	7.502	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	16.51	2/11/2020 19:29	1.59	0.42	1	0.01	0.01	0.01	0.01	0	1	0	0
C255	SW_UDB04	SW_UDB03	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	18.02	2/11/2020 19:29	1.67	0.46	1	0.01	0.01	0.01	0.01	0	1	0	0
C256	SW_UDB03	SW_UDB02	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	16.82	2/11/2020 19:29	1.63	0.43	1	0.01	0.01	0.01	0.01	0	1	0	0
C257	SW_UDB02	SW_UDB01	7.482	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	15.32	2/11/2020 19:29	2.01	0.39	1	0.01	0.01	0.01	0.01	0	1	0	0
C258	SW_UDB11	SW_UDB12	7.527	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	9.45	2/11/2020 19:32	0.64	0.24	1	0.01	0.01	0.01	0.01	0	1	0	0
C259	SW_UDB12	SW_UDB13	7.482	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	10.15	2/11/2020 19:32	0.52	0.26	1	0.01	0.01	0.01	0.01	0	1	0	0
C26	DI02C	pc05	68.511	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00204	2.75	2/11/2020 18:40	1.34	0.21	1	1.59	1.59	1.76	0.01	0	0.61	0	0.5
C260	SW_UDB13	SW_UDB14	7.508	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	10.85	2/11/2020 19:39	1.19	0.28	1	0.01	0.01	0.01	0.01	0	1	0	0
C261	SW_UDB14	SW_UDB15	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	11.08	2/11/2020 19:40	1.37	0.28	1	0.01	0.01	0.01	0.01	0	1	0	0
C262	SW_UDB15	SW_UDB16	7.54	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	10.68	2/11/2020 19:42	1.47	0.27	1	0.01	0.01	0.01	0.01	0	1	0	0
C263	SW_UDB16	SW_UDB17	7.463	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	9.39	2/11/2020 19:13	1.57	0.24	1	0.01	0.01	0.01	0.01	0	1	0	0
C264	SW_UDB17	SW_UDB18	7.54	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	11.54	2/11/2020 19:14	1.69	0.3	1	0.01	0.01	0.01	0.01	0	1	0	0
C265	SW_UDB18	SW_UDB19	7.411	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	13.43	2/11/2020 19:15	1.81	0.34	1	0.01	0.01	0.01	0.01	0	1	0	0
C266	SW_UDB11	SW_UDB10	424.462	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	7.24	2/11/2020 19:36	0.64	1.39	1	0.01	0.01	0.03	0.04	0	1	0	0
C267	SW_UDB10	SW_UDB09	139.325	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	12.21	2/11/2020 19:34	0.98	1.35	1	0.01	0.03	0.01	0.03	0	1	0	0
C268	DI04B	SW_UDB10	19.039	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.23982	12.18	2/11/2020 19:35	5.79	0.08	0.69	0.01	0.01	4.3	0.01	0	0.4	0.29	1
C269	SW_UDB12	SW_UDB08	563.76	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.11	2/11/2020 18:40	0.14	0.25	1	0.01	0.01	0.01	0.01	0	1	0	0
C27	DI02D	PC06	68.468	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00351	2.8	2/11/2020 18:46	1.42	0.16	1	1.58	1.58	1.89	0.01	0.38	0.61	0	0.5
C270	SW_UDB13	SW_UDB07	563.676	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.61	2/11/2020 19:34	0.17	0.36	1	0.01	0.01	0.01	0.01	0	1	0	0
C271	SW_UDB14	SW_UDB06	563.723	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.75	2/11/2020 19:34	0.22	0.39	1	0.01	0.01	0.01	0.01	0	1	0	0
C272	SW_UDB15	SW_UDB05	563.786	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.86	2/11/2020 19:34	0.28	0.41	1	0.01	0.01	0.01	0.01	0	1	0	0
C273	SW_UDB16	SW_UDB04	563.784	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2	2/11/2020 19:34	0.33	0.44	1	0.01	0.01	0.01	0.01	0	1	0	0
C274	SW_UDB17	SW_UDB03	563.796	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.19	2/11/2020 19:34	0.38	0.49	1	0.01	0.01	0.01	0.01	0	1	0	0
C275	SW_UDB18	SW_UDB02	563.794	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.46	2/11/2020 19:34	0.43	0.55	1	0.01	0.01	0.01	0.01	0	1	0	0
C276	SW_UDB19	SW_UDB20	535.026	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.02	2/11/2020 19:34	0.73	0.65	1	0.01	0.01	0.01	0.01	0	1	0	0
C277	SW_UDB01	SW_UDB20	28.671	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	14.94	2/11/2020 19:29	2.17	0.75	1	0.01	0.01	0.01	0.01	0	1	0	0
C278	SE_UDB82	SE_UDB81	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	11.67	2/11/2020 15:12	1.77	0.3	1	1.67	1.67	1.67	0.01	0	1	0	0
C279	SE_UDB81	SE_UDB80	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	12.55	2/11/2020 16:29	1.61	0.32	1	1.67	1.67	1.68	0.01	0	1	0	0
C28	DI02E	PC07	68.485	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00496	2.72	2/11/2020 18:52	1.26	0.13	1	1.58	1.58	2.03	0.01	0	0.61	0	0.83
C280	SE_UDB79	SE_UDB78	7.54	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	14.34	2/11/2020 19:18	1.62	0.37	1	1.67	1.68	1.68	0.01	0	1	0	0
C281	SE_UDB80	SE_UDB79	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	12.8	2/11/2020 19:18	1.69	0.33	1	1.67	1.68	1.68	0.01	0	1	0	0
C282	SE_UDB78	SE_UDB77	7.463	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	15.33	2/11/2020 19:18	1.81	0.39	1	1.68	1.68	1.68	0.01	0	1	0	0

C283	SE_UDB77	SE_UDB76	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	16.28	2/11/2020 19:19	2.1	0.42	1	1.68	1.68	1.68	0.01	0	1	0	0
C284	SE_UDB76	SE_UDB75	7.521	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	18.03	2/11/2020 19:19	3.54	0.46	1	1.68	1.68	1.68	0.01	0	0.99	0.01	0.01
C289	SE_UDB87	SE_UDB86	12.869	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	9.57	2/11/2020 17:44	1.3	0.32	1	1.67	1.68	1.67	0.01	0	1	0	0
C29	DI02F	MH01	68.414	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00629	3.81	2/11/2020 18:52	1.87	0.16	1	1.58	1.58	2.16	0.01	0	0.61	0	0.89
C290	SE_UDB88	SE_UDB82	394.48	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.82	2/11/2020 19:18	0.28	0.52	1	1.66	1.67	1.67	0.01	0	1	0	0
C291	SE_UDB61	SE_UDB81	394.657	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.99	2/11/2020 19:18	0.3	0.56	1	1.66	1.68	1.67	0.01	0	1	0	0
C292	SE_UDB62	SE_UDB80	394.724	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.6	2/11/2020 19:18	0.2	0.48	1	1.66	1.68	1.68	0.01	0	1	0	0
C293	SE_UDB63	SE_UDB79	394.604	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.38	2/11/2020 19:18	0.13	0.44	1	1.66	1.68	1.68	0.01	0	1	0	0
C294	SE_UDB64	SE_UDB78	394.608	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.45	2/11/2020 19:18	0.13	0.46	1	1.66	1.68	1.68	0.01	0	1	0	0
C295	SE_UDB65	SE_UDB77	394.753	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.68	2/11/2020 19:18	0.18	0.5	1	1.66	1.68	1.68	0.01	0	1	0	0
C296	SE_UDB66	SE_UDB76	394.726	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.03	2/11/2020 19:18	0.28	0.56	1	1.66	1.67	1.68	0.01	0	1	0	0
C297	SE_UDB67	SE_UDB75	394.715	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.54	2/11/2020 19:18	0.78	0.66	1	1.66	1.67	1.68	0.01	0	1	0	0
C298	SE_UDB68	SE_UDB74	394.686	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.22	2/11/2020 19:18	0.72	0.6	1	1.66	1.67	1.68	0.01	0	1	0	0
C299	SE_UDB86	SE_UDB85	133.899	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	4.45	2/11/2020 19:04	0.36	0.48	1	1.66	1.67	1.67	0.01	0	1	0	0
C3	PC02	PC03	73.238	0.01	0	0	0	0	0	NO	CIRCULAR	3	1	0.00164	19.41	2/11/2020 19:13	4.39	0.55	1	0.52	0.52	0.65	0.01	0	0.61	0	0.5
C30	DI03A	PC08	40.306	0.01	0	0	0	0	0	YES	CIRCULAR	2	1	0.01712	2.28	2/11/2020 19:15	2.07	0.06	1	1.58	1.58	2.57	0.01	0.37	0.6	0	0.89
C300	SE_UDB85	SE_UDB84	134.069	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.52	2/11/2020 18:19	0.29	0.38	1	1.66	1.67	1.67	0.01	0	1	0	0
C301	SE_UDB84	SE_UDB83	113.562	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	6.02	2/11/2020 19:16	0.68	0.6	1	1.66	1.67	1.67	0.01	0	1	0	0
C302	SE_UDB69	SE_UDB70	13.186	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	4.87	2/11/2020 17:25	0.77	0.17	1	1.67	1.67	1.67	0.01	0	1	0	0
C303	SE_UDB70	SE_UDB71	133.938	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	4.36	2/11/2020 17:25	0.51	0.47	1	1.66	1.67	1.67	0.01	0	1	0	0
C304	SE_UDB71	SE_UDB72	133.932	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.46	2/11/2020 19:17	0.67	0.37	1	1.65	1.67	1.67	0.01	0	1	0	0
C305	SE_UDB72	SE_UDB73	113.585	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	5.15	2/11/2020 17:29	0.9	0.51	1	1.66	1.67	1.68	0.01	0	1	0	0
C307	DI32	J210	203.326	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00226	2.61	2/11/2020 17:39	1.88	0.19	1	7.16	7.16	8.93	0.01	0.01	0.77	0.08	0.36
C308	J210	SE_UDB83	20.634	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.03249	10.64	2/11/2020 16:26	4.39	0.2	1	8.93	8.93	12.93	0.01	0	0.99	0	0.13
C31	DI03B	PC09	40.082	0.01	0	0	0	0	0	YES	CIRCULAR	2	1	0.02096	2	2/11/2020 18:54	1.53	0.05	1	1.59	1.59	2.83	0.01	0.37	0.6	0	0.88
C310	DI23	DI24	201.197	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00512	3.74	2/11/2020 19:15	3.15	0.18	1	1.89	1.89	4.6	0.01	0.28	0.35	0.32	0.5
C311	DI24	SE_UDB86	110.845	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.01714	7.71	2/11/2020 18:06	3.22	0.2	1	4.6	4.6	12.92	0.01	0	0.71	0	0.74
C312	DI25	SE_UDB70	63.313	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00774	1.69	2/11/2020 19:14	1.16	0.07	1	9.78	9.78	12.94	0.01	0	1	0	0.08
C313	DI28	SE_UDB71	63.308	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.02054	2.3	2/11/2020 15:51	1.51	0.05	1	6.57	6.57	12.91	0.01	0	0.78	0	0.54
C314	DI27	SE_UDB85	110.744	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00433	4.11	2/11/2020 19:15	1.31	0.21	1	9.78	9.78	12.92	0.01	0	1	0	0.08
C315	DI29	DI30	202.852	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00148	2.32	2/11/2020 19:02	2.34	0.21	1	2.42	2.42	3.15	0.01	0.32	0.67	0	0.45
C316	DI30	SE_UDB84	111.167	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.02168	4.5	2/11/2020 18:25	2.11	0.1	1	3.15	3.15	32.1	0.01	0	0.68	0	0.8
C317	DI31	SE_UDB72	100.153	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.01098	1.62	2/11/2020 19:15	1.26	0.05	1	7.25	7.25	12.92	0.01	0	0.83	0	0.45
C32	DI03C	PC10	40.285	0.01	0	0	0	0	0	YES	CIRCULAR	2	1	0.02458	1.8	2/11/2020 18:50	1.57	0.04	1	1.58	1.58	3.11	0.01	0.36	0.6	0	0.88
C33	DI03D	PC11	40.257	0.01	0	0	0	0	0	YES	CIRCULAR	2	1	0.02858	2.47	2/11/2020 18:54	1.72	0.05	1	1.57	1.57	3.47	0.01	0.36	0.6	0	0.88
C34	DI03E	PC12	40.251	0.01	0	0	0	0	0	YES	CIRCULAR	2	1	0.03256	2.6	2/11/2020 18:48	1.72	0.05	1	1.57	1.57	3.86	0.01	0.34	0.6	0	0.88
C35	DI03F	PC13	40.256	0.01	0	0	0	0	0	YES	CIRCULAR	2	1	0.03629	2.13	2/11/2020 19:00	1.57	0.04	1	1.56	1.56	4.28	0.01	0	0.6	0	0.88
C36	DI33	J1	85.89	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.01001	1.89	2/11/2020 15:14	1.4	0.06	1	7.62	7.62	11.8	0.01	0	0.84	0.02	0.39
C37	J1	SE_UDB73	22.24	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.0063	2.39	2/11/2020 11:51	1.04	0.1	1	11.8	11.8	12.91	0.01	0	1	0	0.02
C38	SE_UDB75	SE_SDB	102.967	0.01	0	0	0	0	0	NO	CIRCULAR	3	3	0.00388	24.06	2/11/2020 19:19	4.14	0.15	1	7.63	7.63	9.24	0.01	0	0.98	0.02	0.02
C39	J5	J9	480.974	0.01	0	0	0	0	0	NO	CIRCULAR	4	2	0	11.84	2/11/2020 18:43	0.69	2.2	1	1.02	1.02	1.02	1.04	0	1	0	0
C4	PC03	PC04	53.323	0.01	0	0	0	0	0	NO	CIRCULAR	3	1	0.00169	21.32	2/11/2020 19:15	3.94	0.6	1	0.65	0.65	0.72	0.01	0	1	0	0.5
C40	J4	J7	480.725	0.01	0	0	0	0	0	NO	CIRCULAR	4	1	0	6.49	2/11/2020 18:36	0.74	2.41	1	1.02	1.02	1.02	0.74	0	1	0	0
C41	J3	J8	480.816	0.01	0	0	0	0	0	NO	CIRCULAR	4	1	0	7.54	2/11/2020 18:19	1.02	2.8	1	1.02	1.02	1.02	1.16	0	1	0	0
C42	J2	J6	480.975	0.01	0	0	0	0	0	NO	CIRCULAR	4	1	0	7.96	2/11/2020 18:30	1.06	2.96	1	1.02	1.02	1.02	1.28	0	1	0	0
C43	J9	J7	8.063	0.01	0	0	0	0	0	NO	CIRCULAR	4	1	0	18.63	2/11/2020 18:57	1.89	0.9	1	1.02	1.02	1.02	0.01	0	1	0	0
C44	J7	J8	6.681	0.01	0	0	0	0	0	NO	CIRCULAR	4	1	0	24.14	2/11/2020 18:53	2.64	1.06	1	1.02	1.02	1.02	0.01	0	1	0	0
C45	J6	PC13	36.618	0.01	0	0	0	0	0	NO	CIRCULAR	4	1	0	31.74	2/11/2020 18:41	3.76	3.25	1	1.02	1.02	1.02	1.82	0	1	0	0
C46	J8	J6	6.353	0.01	0	0	0	0	0	NO	CIRCULAR	4	1	0	28.76	2/11/2020 18:41	3.16	1.23	1	1.02	1.02	1.02	0.03	0	1	0	0
C47	J5	J4	7.096	0.01	0	0	0	0	0	NO	CIRCULAR	4	1	0	22.01	2/11/2020 18:42	2.62	0.99	1	1.02	1.02	1.02	0.01	0	1	0	0
C48	J4	J3	5.869	0.01	0	0	0	0	0	NO	CIRCULAR	4	1	0	30	2/11/2020 18:50	3.28	1.23	1	1.02	1.02	1.02	0.05	0	1	0	0
C49	J3	J2	6.839	0.01	0	0	0	0	0	NO	CIRCULAR	4	1	0	37.18	2/11/2020 18:50	3.81	1.65	1	1.02	1.02	1.02	0.17	0	1	0	0
C5	PC04	pc05	51.947	0.01	0	0	0	0	0	NO	CIRCULAR	3	1	0.00135	22.29	2/11/2020 19:15	4.03	0.7	1	0.71	0.72	0.76	0.01	0	1	0	0.48
C50	J2	PC08	44.364	0.01	0	0	0	0	0	NO	CIRCULAR	4	1	-0.01736	42.68	2/11/2020 18:52	5.46	0.17	1	0.29	0.29	1.02	0.01	0	0.55	0.08	0.84
C6	pc05	PC06	53.286	0.01	0	0	0	0	0	NO	CIRCULAR	3	1	0.00188	23.06	2/11/2020 19:15	4.08	0.61	1	0.76	0.76	0.84	0.01	0	1	0	0.5
C66	DI06	DI07	96.089	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00604	0.92	2/11/2020 19:15	2.35	0.04	0.18	0	0	0	0	0	1	0	1
C67	DI07	DI08	95.868	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00595	2.47	2/11/2020 19:15	3.83	0.11	0.26	0	0	0	0	0	0.57	0.43	0.99
C68	DI11	DI12	96.731	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.003	3.16	2/11/2020 19:15	3.25	0.2	0.75	0	0	0	0	0	1	0	0.91
C69	DI10	DI11	92.161	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00315	1.75	2/11/2020 19:15	2.59	0.11	0.61	0	0	0	0	0	1	0	0.94
C7	PC06	PC07	47.261	0.01	0	0	0	0	0	NO	CIRCULAR	3	1	0.00212	23.69	2/11/2020 19:15	3.93	0.59	1	0.84	0.84	0.92	0.01	0	0.62	0	0.5
C70	DI12	DI13	92.467	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00292	4.01	2/11/2020 19:15	3.14	0.25	0.89	0	0	0	0	0	1	0	0.9

C71	DI13	DI14	99.095	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00303	5.84	2/11/2020 19:15	4.43	0.36	0.98	0.01	0.01	0.93	0.01	0.34	0.23	0.39	0.61
C72	DI14	SE_UDB20	268.967	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.01141	7.44	2/11/2020 19:15	2.7	0.24	1	0.93	0.93	31.27	0.01	0	0.65	0	0.87
C73	SE_UDB01	SE_UDB20	39.007	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	15.69	2/11/2020 19:16	1.42	0.92	1	1.1	1.11	1.1	0.01	0	1	0	0
C74	J68	SE_UDB19	153.527	0.01	0	0	0	0	0	NO	CIRCULAR	2	2	0.01055	18.12	2/11/2020 19:15	2.88	0.3	1	4.88	4.88	11.41	0.01	0	0.73	0	0.73
C75	SE_UDB20	SE_UDB19	111.87	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	8.57	2/11/2020 19:16	0.75	0.85	1	1.1	1.1	1.11	0.01	0	1	0	0
C76	SE_UDB19	SE_UDB18	128.646	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	10.35	2/11/2020 19:10	1.03	1.1	1	1.1	1.11	1.11	0.04	0	1	0	0
C77	S_UDB18	S_UDB19	30.44	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	7.82	2/11/2020 20:20	7.33	0.4	0.81	0	0	0	0	0	0.86	0.14	0
C78	DI19	DI23	83.273	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.0048	2.09	2/11/2020 19:15	2.55	0.1	1	0.74	0.74	1.89	0.01	0.33	0.61	0	0.87
C79	SE_UDB02	SE_UDB17	279.447	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.86	2/11/2020 17:49	0.2	0.29	1	1.11	1.11	1.11	0.01	0	1	0	0
C8	PC07	MH01	71.036	0.01	0	0	0	0	0	NO	CIRCULAR	3	1	0.00127	25.05	2/11/2020 19:15	4.88	0.81	1	0.92	0.92	0.99	0.01	0	0.64	0.36	0
C80	DI26	DI27	202.976	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00158	2.03	2/11/2020 17:29	0.9	0.17	1	8.41	8.41	9.78	0.01	0	0.95	0	0.26
C81	SE_UDB03	SE_UDB16	279.588	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.76	2/11/2020 17:49	0.18	0.27	1	1.11	1.11	1.11	0.01	0	1	0	0
C82	SE_UDB04	SE_UDB15	279.743	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.76	2/11/2020 18:01	0.18	0.28	1	1.11	1.11	1.11	0.01	0	1	0	0
C83	SE_UDB05	SE_UDB14	279.531	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.91	2/11/2020 18:01	0.19	0.3	1	1.11	1.11	1.11	0.01	0	1	0	0
C84	SE_UDB06	SE_UDB13	279.662	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.2	2/11/2020 18:01	0.22	0.34	1	1.11	1.11	1.11	0.01	0	1	0	0
C85	SE_UDB07	SE_UDB12	279.629	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.6	2/11/2020 18:01	0.25	0.41	1	1.11	1.11	1.11	0.01	0	1	0	0
C86	SE_UDB08	SE_UDB11	279.578	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.15	2/11/2020 18:01	0.3	0.49	1	1.11	1.11	1.11	0.01	0	1	0	0
C87	SE_UDB09	SE_UDB10	279.52	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.57	2/11/2020 17:49	0.37	0.56	1	1.11	1.11	1.11	0.01	0	1	0	0
C88	SE_UDB01	SE_UDB02	7.45	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	15.6	2/11/2020 19:16	1.94	0.4	1	1.11	1.11	1.11	0.01	0	1	0	0
C89	SE_UDB02	SE_UDB03	7.45	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	13.94	2/11/2020 19:14	1.82	0.36	1	1.11	1.11	1.11	0.01	0	1	0	0
C9	MH01	MH02	55.167	0.01	0	0	0	0	0	NO	CIRCULAR	3	2	0.00199	27.24	2/11/2020 19:15	3.13	0.35	1	0.99	0.99	1.09	0.01	0	1	0	0.5
C90	SE_UDB03	SE_UDB04	7.521	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	12.72	2/11/2020 19:13	1.71	0.33	1	1.11	1.11	1.11	0.01	0	1	0	0
C91	SE_UDB05	SE_UDB06	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	10.29	2/11/2020 19:13	1.4	0.26	1	1.11	1.11	1.11	0.01	0	1	0	0
C92	SE_UDB04	SE_UDB05	7.521	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	11.67	2/11/2020 19:13	1.55	0.3	1	1.11	1.11	1.11	0.01	0	1	0	0
C93	SE_UDB06	SE_UDB07	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	8.65	2/11/2020 19:15	1.23	0.22	1	1.11	1.11	1.11	0.01	0	1	0	0
C94	SE_UDB07	SE_UDB08	7.45	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	6.44	2/11/2020 19:15	1.04	0.16	1	1.11	1.11	1.11	0.01	0	1	0	0
C95	SE_UDB08	SE_UDB09	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	5.35	2/11/2020 19:39	0.63	0.14	1	1.11	1.11	1.11	0.01	0	1	0	0
C96	SE_UDB18	SE_UDB17	7.502	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	10.47	2/11/2020 19:14	1.44	0.27	1	1.11	1.11	1.11	0.01	0	1	0	0
C97	SE_UDB16	SE_UDB15	7.54	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	14.69	2/11/2020 19:12	1.49	0.38	1	1.11	1.11	1.11	0.01	0	1	0	0
C98	SE_UDB17	SE_UDB16	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	12.89	2/11/2020 19:10	1.48	0.33	1	1.11	1.11	1.11	0.01	0	1	0	0
C99	DI21	J30	60.451	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00827	1.07	2/11/2020 19:15	1.18	0.04	1	6.91	6.91	8.8	0.01	0.02	0.72	0.08	0.5
DC01	DMA01	DI01	11.188	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.26541	4.45	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC02A	DMA02A	DI02A	14.086	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.29777	1.8	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC02B	DMA02B	DI02B	11.407	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.37657	1.04	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC02C	DMA02C	DI02C	11.144	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.38456	0.75	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC02D	DMA02D	DI02D	10.475	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.41559	0.73	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC02E	DMA02E	DI02E	10.673	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.4066	1.39	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC02F	DMA02F	DI02F	9.656	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.45514	2.33	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC03A	DMA03A	DI03A	17.665	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.22027	2.28	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC03B	DMA03B	DI03B	13.962	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.28284	1.33	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC03C	DMA03C	DI03C	15.474	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.25333	1.39	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC03D	DMA03D	DI03D	15.913	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.24591	1.65	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC03E	DMA03E	DI03E	17.543	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.22188	1.59	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC03F	DMA03F	DI03F	16.352	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.23893	1.39	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC04A	DMA04A	DI04A	14.376	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.44639	2.23	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC04B	DMA04B	DI04B	16.646	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.04992	3.69	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC04C	DMA04C	DI04C	13.448	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.05436	4.28	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC04D	DMA04D	DI04D	13.801	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.0457	3.76	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC05A	DMA05A	DI05A	13.741	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.51176	4.82	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC05C	DMA05C	DI05C	10.682	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.72324	3.71	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC06	DMA06	DI06	16.287	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.17837	0.92	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC07	DMA07	DI07	11.886	0.01	0	0	0	0	0	NO	DUMMY	0	1	-999	1.56	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC08	DMA08	DI08	13.127	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.18837	1.79	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC09	DMA09	DI09	6.81	0.01	0	0	0	0	0	NO	DUMMY	0	1	1.26973	0.41	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC10	DMA10	DI10	12.295	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.37331	1.76	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC11	DMA11	DI11	12.626	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.38632	1.43	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC12	DMA12	DI12	8.002	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.77962	0.92	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC13	DMA13	DI13	13.881	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.35639	0	2/11/2020 0:00	0	0	0	0	0	0	0	0	0	0	0
DC14	DMA14	DI14	11.149	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.53117	1.91	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC15	DMA15	DI15	37.884	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.17526	3.36	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC16	DMA16	DI16	7.706	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.74404	1.44	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0

DC17	DMA17	DI17	17.921	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.25327	3.51	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC18	DMA18	DI18	45.1	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.10433	1.51	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC19	DMA19	DI19	18.947	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.15379	1.99	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC20	DMA20	DI20	17.524	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.16661	2.17	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC21	DMA21	DI21	8.705	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.45422	1.06	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC22	DMA22	DI22	12.993	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.2298	0.73	2/11/2020 19:00	0	0	0	0	0	0	0	0	0	0	0
DC23	DMA23	DI23	30.536	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.09441	1.94	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC24	DMA24	DI24	38.511	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.11501	2.15	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC25	DMA25	DI25	12.413	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.40302	1.69	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC26	DMA26	DI26	8.92	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.99137	1.95	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC27	DMA27	DI27	11.721	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.66939	2.16	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC28	DMA28	DI28	13.885	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.34258	1.72	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC29	DMA29	DI29	13.595	0.01	0	0	0	0	0	NO	DUMMY	1	1	0.2334	1.83	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC30	DMA30	DI30	8.576	0.01	0	0	0	0	0	NO	DUMMY	1	1	-0.0819	2.16	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC31	DMA31	DI31	10.517	0.01	0	0	0	0	0	NO	DUMMY	1	1	0.55591	1.62	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC32	DMA32	DI32	9.209	0.01	0	0	0	0	0	NO	DUMMY	1	1	0.98429	1.55	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC33	DMA33	DI33	6.489	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.82854	0.98	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC37A	DMA37A	DI37A	10.736	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.45918	0.8	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC37B	DMA37B	DI37B	11.918	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.3364	1.23	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC37C	DMA37C	Di37C	11.105	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.65121	2.36	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC37D	DMA37D	DI37D	18.317	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.32935	4.37	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DI05B	DMA05B	DI05B	11.886	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.61956	4.29	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
OL1	J73	S_DB_OF	24.983	0.01	0	0	0	0	0	YES	CIRCULAR	1.25	1	0.01201	9.2	2/11/2020 20:20	8.52	1	1	1.51	1.51	3.71	0.01	0.36	0.39	0.2	0.03

Name	Inlet Node	Outlet Node	Pump Curve	Initial Status	Startup Depth (ft)	Shutoff Depth (ft)	Control Rules	Max. |Flow| (cfs)	Time Max. Flow (M/D/Y)	Max/Full Flow	Utilized (%)	Start-Ups (num)	Min. Flow (cfs)	Avg. Flow (cfs)	Total Vol. (MG)	Power Usage
SW_Pump	SW_SDB	SW_PUMP_OF	SouthwestPump	ON	0	0	NO	5	2/11/2020 12:02	1	81.44	1	0	3.35	3.047	11.78
S_Pump	S_UDB19	S_PUMP_OF	SouthPump	ON	0	0	NO	1.03	2/11/2020 4:12	1.03	99.47	1	0	0.8	0.903	2.55
SE_Pump	SE_SDB	SE_PUMP_OF	SoutheastPump	ON	0	0	NO	0.5	2/11/2020 0:39	1	99.99	1	0	0.5	0.64	1.53

Grate Inlet Diversion Curve	
Inflow (cfs)	**Outflow (cfs)**
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	11
13	11
14	11
15	11
20	11

Curb Inlet Diversion Curve	
Inflow (cfs)	**Outflow (cfs)**
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
8.6	8.6
9	8.6
10	8.6
15	8.6

Southwest Detention Basin	
Stage Storage Curve	
Depth (ft)	Area (ft2)
0	10453
0.2	10665
1	11756
2	12872
3	14014
4	15180
5	16372
6	17588
7	18830

Southeast Detention Basin	
Stage Storage Curve	
Depth (ft)	Area (ft2)
0	10882
0.2	11225
1	12951
2	14703
3	16480
4	18282
5	20110
6	21962
7	23840

Southwest Pump	
Depth (ft)	**Flow (cfs)**
0	5
1	5
2	5
3	5
4	5
5	5
6	5
7	5

South Pump	
Depth (ft)	**Flow (cfs)**
0	1
1	1
2	1
3	1
4	1
5	1
6	1
7	1

Southeast Pump	
Depth (ft)	**Flow (cfs)**
0	0.5
1	0.5
2	0.5
3	0.5
4	0.5
5	0.5
6	0.5
7	0.5

Tailwater Time Series								
Date (M/D/Y)	Time (H:M)	Value	Date (M/D/Y)	Time (H:M)	Value	Date (M/D/Y)	Time (H:M)	Value
2/11/2020	0:00:00	56.041	2/11/2020	11:00:00	56.524	2/11/2020	22:00:00	56.537
2/11/2020	0:15:00	56.109	2/11/2020	11:15:00	56.529	2/11/2020	22:15:00	56.502
2/11/2020	0:30:00	56.153	2/11/2020	11:30:00	56.532	2/11/2020	22:30:00	56.473
2/11/2020	0:45:00	56.222	2/11/2020	11:45:00	56.536	2/11/2020	22:45:00	56.449
2/11/2020	1:00:00	56.256	2/11/2020	12:00:00	56.539	2/11/2020	23:00:00	56.445
2/11/2020	1:15:00	56.275	2/11/2020	12:15:00	56.542	2/11/2020	23:15:00	56.428
2/11/2020	1:30:00	56.286	2/11/2020	12:30:00	56.546	2/11/2020	23:30:00	56.415
2/11/2020	1:45:00	56.292	2/11/2020	12:45:00	56.549	2/11/2020	23:45:00	56.406
2/11/2020	2:00:00	56.295	2/11/2020	13:00:00	56.553	2/12/2020	0:00	56.000
2/11/2020	2:15:00	56.297	2/11/2020	13:15:00	56.600			
2/11/2020	2:30:00	56.299	2/11/2020	13:30:00	56.665			
2/11/2020	2:45:00	56.300	2/11/2020	13:45:00	56.695			
2/11/2020	3:00:00	56.300	2/11/2020	14:00:00	56.712			
2/11/2020	3:15:00	56.301	2/11/2020	14:15:00	56.723			
2/11/2020	3:30:00	56.301	2/11/2020	14:30:00	56.732			
2/11/2020	3:45:00	56.302	2/11/2020	14:45:00	56.742			
2/11/2020	4:00:00	56.302	2/11/2020	15:00:00	56.830			
2/11/2020	4:15:00	56.302	2/11/2020	15:15:00	56.941			
2/11/2020	4:30:00	56.303	2/11/2020	15:30:00	56.984			
2/11/2020	4:45:00	56.303	2/11/2020	15:45:00	57.028			
2/11/2020	5:00:00	56.304	2/11/2020	16:00:00	57.051			
2/11/2020	5:15:00	56.304	2/11/2020	16:15:00	57.078			
2/11/2020	5:30:00	56.305	2/11/2020	16:30:00	57.190			
2/11/2020	5:45:00	56.306	2/11/2020	16:45:00	57.320			
2/11/2020	6:00:00	56.306	2/11/2020	17:00:00	57.404			
2/11/2020	6:15:00	56.307	2/11/2020	17:15:00	57.455			
2/11/2020	6:30:00	56.308	2/11/2020	17:30:00	57.618			
2/11/2020	6:45:00	56.308	2/11/2020	17:45:00	57.830			
2/11/2020	7:00:00	56.309	2/11/2020	18:00:00	57.949			
2/11/2020	7:15:00	56.310	2/11/2020	18:15:00	58.301			
2/11/2020	7:30:00	56.311	2/11/2020	18:30:00	58.907			
2/11/2020	7:45:00	56.312	2/11/2020	18:45:00	59.488			
2/11/2020	8:00:00	56.313	2/11/2020	19:00:00	61.000			
2/11/2020	8:15:00	56.326	2/11/2020	19:15:00	59.519			
2/11/2020	8:30:00	56.345	2/11/2020	19:30:00	58.524			
2/11/2020	8:45:00	56.354	2/11/2020	19:45:00	57.941			
2/11/2020	9:00:00	56.360	2/11/2020	20:00:00	57.631			
2/11/2020	9:15:00	56.363	2/11/2020	20:15:00	57.329			
2/11/2020	9:30:00	56.366	2/11/2020	20:30:00	57.069			
2/11/2020	9:45:00	56.368	2/11/2020	20:45:00	56.946			
2/11/2020	10:00:00	56.410	2/11/2020	21:00:00	56.874			
2/11/2020	10:15:00	56.472	2/11/2020	21:15:00	56.807			
2/11/2020	10:30:00	56.501	2/11/2020	21:30:00	56.712			
2/11/2020	10:45:00	56.516	2/11/2020	21:45:00	56.596			

APPENDIX J

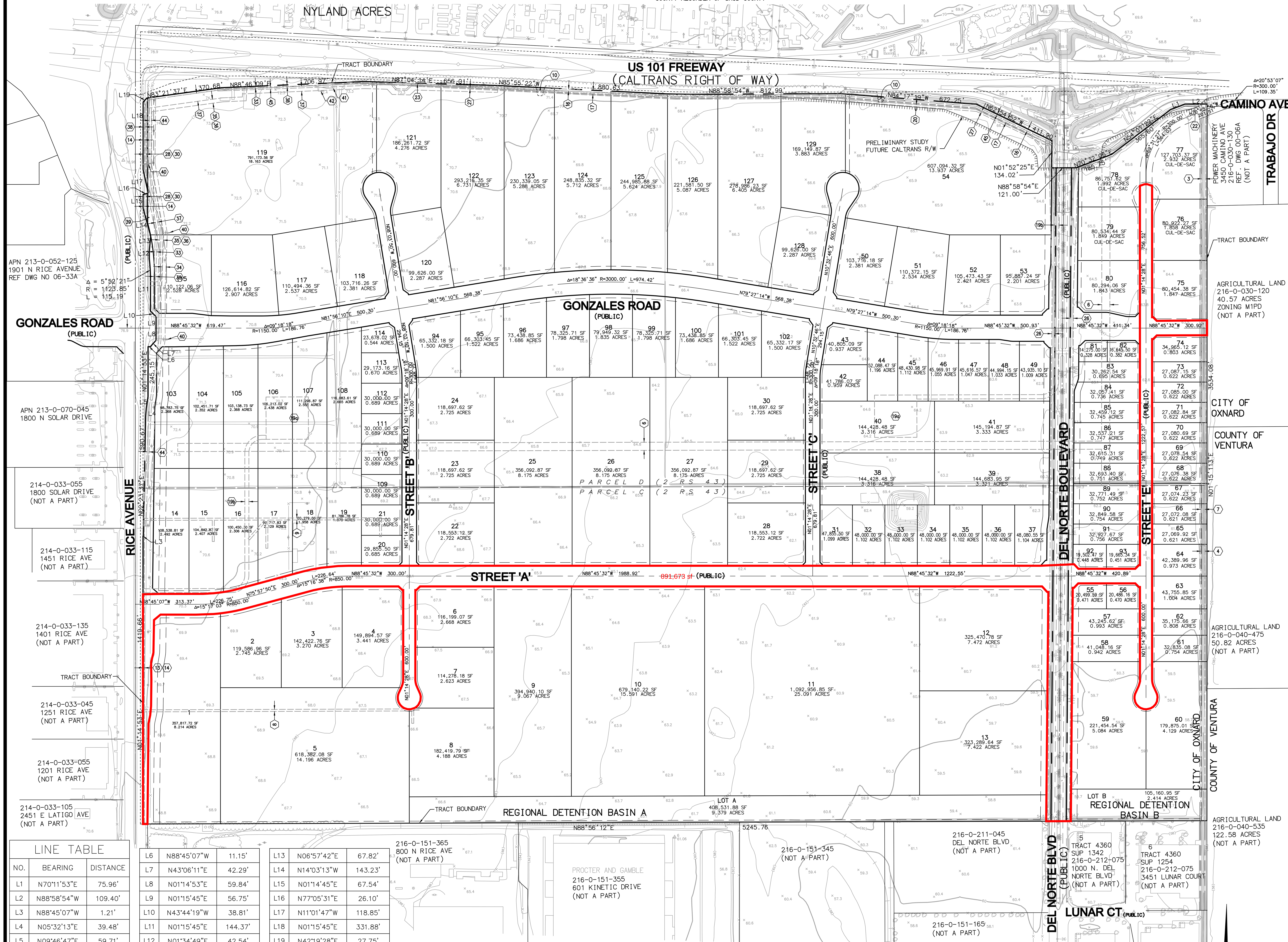
SAKIOKA FARMS BUSINESS PARK MASTER DRAINAGE REPORT

APPENDIX K

SAKIOKA FARMS TENTATIVE TRACT MAP NO. 5996

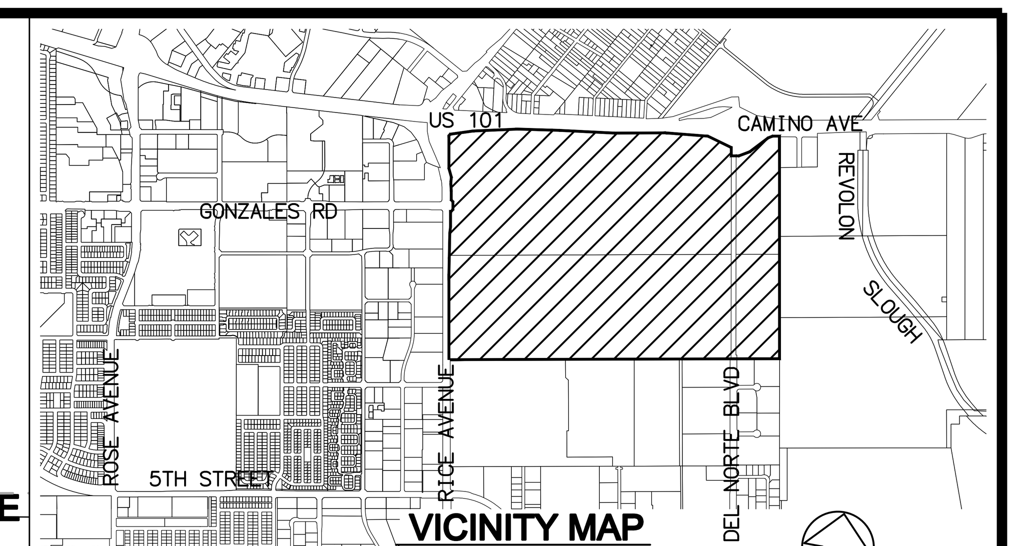
TENTATIVE TRACT MAP NO. 5996

PARCELS 2 AND 3 OF PARCEL MAP NO. LD-S-303, IN THE CITY OF SIMI VALLEY, COUNTY OF VENTURA, STATE OF CALIFORNIA, AS SHOWN ON A MAP FILED IN BOOK 42, PAGES 35 AND 36 OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY



LINE TABLE

NO.	BEARING	DISTANCE
L1	N70°11'53"E	75.96'
L2	N88°58'54"W	109.40'
L3	N88°45'07"W	1.21'
L4	N05°32'13"E	39.48'
L5	N09°46'47"E	59.71'
L6	N88°45'07"W	11.15'
L7	N43°06'11"E	42.29'
L8	N01°14'53"E	59.84'
L9	N01°15'45"E	56.75'
L10	N43°44'19"W	38.81'
L11	N01°15'45"E	144.37'
L12	N01°34'49"E	42.54'
L13	N06°57'42"E	67.82'
L14	N14°03'13"W	143.23'
L15	N01°14'45"E	67.54'
L16	N77°05'31"E	26.10'
L17	N11°01'47"W	118.85'
L18	N01°15'45"E	331.88'
L19	N42°19'28"E	27.75'



VICINITY MAP

SCALE: 1"=2000'

EXISTING EASEMENTS (#)

(3) 20' WIDE EASEMENT FOR PIPELINES FOR THE TRANSPORTATION OF OIL, PETROLEUM, GAS, GASOLINE, WATER OR OTHER SUBSTANCES, GRANTED TO STANDARD OIL COMPANY OF CALIFORNIA, AND STANDARD GASOLINE COMPANY PER DOCUMENTS RECORDED DECEMBER 20, 1954, AS INSTRUMENT No. 39968 IN BOOK 1252, PAGE 288 AND MARCH 29, 1955, AS INSTRUMENT No. 11039 IN BOOK 1277, PAGE 76, BOTH OF OFFICIAL RECORDS OF VENTURA COUNTY.

(4) 20' WIDE EASEMENT FOR PIPELINES PURPOSES, GRANTED TO STANDARD OIL COMPANY OF CALIFORNIA, AND STANDARD GASOLINE COMPANY PER DOCUMENT RECORDED APRIL 5, 1955, AS INSTRUMENT No. 12021 IN BOOK 1279, PAGE 194 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(6) 40' WIDE EASEMENT FOR CONDUITS, DITCHES AND DRAINAGE PURPOSES, GRANTED TO OXNARD DRAINAGE DISTRICT No. 2 PER DOCUMENT RECORDED JUNE 7, 1956, AS INSTRUMENT No. 24449 IN BOOK 1412, PAGE 492 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(7) 20' WIDE EASEMENT FOR PIPELINES PURPOSES, GRANTED TO STANDARD OIL COMPANY OF CALIFORNIA, AND STANDARD GASOLINE COMPANY PER DOCUMENT RECORDED JANUARY 14, 1957, AS INSTRUMENT No. 1725 IN BOOK 1474, PAGE 195 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(8) 10' AND 2' WIDE EASEMENT FOR ELECTRIC LINE, CONSISTING OF POLES, NECESSARY GUYS AND ANCHORS, CROSSARMS, WIRES AND OTHER FIXTURES AND APPLIANCES, GRANTED TO SOUTHERN CALIFORNIA EDISON COMPANY PER GRANT OF EASEMENT RECORDED AUGUST 20, 1957, AS INSTRUMENT No. 36580 IN BOOK 1543, PAGE 456 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(9) 10' AND 2' WIDE EASEMENT FOR ELECTRIC LINE, CONSISTING OF POLES, NECESSARY GUYS AND ANCHORS, CROSSARMS, WIRES AND OTHER FIXTURES AND APPLIANCES, GRANTED TO SOUTHERN CALIFORNIA EDISON COMPANY PER GRANT OF EASEMENT RECORDED NOVEMBER 21, 1958, AS INSTRUMENT No. 50689 IN BOOK 1675, PAGE 199 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(10) 10' WIDE EASEMENT FOR UTILITIES PURPOSES, RESERVED BY THE STATE OF CALIFORNIA PER DIRECTOR'S DEED RECORDED OCTOBER 10, 1963, AS INSTRUMENT No. 59658 IN BOOK 2407, PAGE 59 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(13) EASEMENT FOR PUBLIC UTILITIES PURPOSES, GRANTED TO SOUTHERN CALIFORNIA EDISON COMPANY PER GRANT OF EASEMENT RECORDED JULY 31, 1964, AS INSTRUMENT No. 52910 IN BOOK 2594, PAGE 209 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(14) EASEMENT FOR PUBLIC UTILITIES PURPOSES, GRANTED TO SOUTHERN CALIFORNIA EDISON COMPANY PER GRANT OF EASEMENT RECORDED AUGUST 5, 1964, AS INSTRUMENT No. 53967 IN BOOK 2596, PAGE 568 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(16) 10' WIDE EASEMENT FOR POLE LINES PURPOSES, GRANTED TO THE STATE OF CALIFORNIA PER EASEMENT DEED RECORDED OCTOBER 21, 1964, AS INSTRUMENT No. 76051 IN BOOK 2654, PAGE 31 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(17) 20' WIDE EASEMENT FOR WATER PIPELINES AND SEWER PIPELINE PURPOSES, GRANTED TO THE CITY OF OXNARD PER CONTRACT AND GRANT OF EASEMENT RECORDED JULY 27, 1966, AS INSTRUMENT No. 38364 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(19a) 1 ACRE DRILL SITE EASEMENTS, AS RESERVED PER THE DOCUMENTS RECORDED DECEMBER 22, 1969, AS INSTRUMENT No. 66767 IN BOOK 3596, PAGE 320, INSTRUMENT No. 66768 IN BOOK 3596, PAGE 354, INSTRUMENT No. 66769 IN BOOK 3596, PAGE 380, INSTRUMENT No. 66770 IN BOOK 3596, PAGE 413, INSTRUMENT No. 66771 IN BOOK 3596, PAGE 447, AND INSTRUMENT No. 66772 IN BOOK 3596, PAGE 483, ALL OF OFFICIAL RECORDS OF VENTURA COUNTY.

(19b) 20' WIDE EASEMENTS FOR INGRESS AND EGRESS AND FOR UTILITY AND PIPELINE PURPOSES, AS RE- SERVED PER THE DOCUMENTS RECORDED DECEMBER 22, 1969, AS INSTRUMENT No. 66767 IN BOOK 3596, PAGE 320, INSTRUMENT No. 66768 IN BOOK 3596, PAGE 354, INSTRUMENT No. 66769 IN BOOK 3596, PAGE 380, INSTRUMENT No. 66770 IN BOOK 3596, PAGE 413, INSTRUMENT No. 66771 IN BOOK 3596, PAGE 447, AND INSTRUMENT No. 66772 IN BOOK 3596, PAGE 483, ALL OF OFFICIAL RECORDS OF VENTURA COUNTY.

(20) 20' AND 10' WIDE EASEMENT FOR OVERHEAD AND/OR UNDERGROUND ELECTRICAL SUPPLY SYSTEMS AND COMMUNICATION SYSTEMS, GRANTED TO GENERAL TELEPHONE COMPANY PER THE GRANT OF EASEMENT RECORDED JANUARY 2, 1976, AS INSTRUMENT No. 143 IN BOOK 4518, PAGE 619 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(22) EASEMENT FOR SUBSURFACE WATER PIPELINES AND RELATED PURPOSES, GRANTED TO UNITED WATER CONSERVATION DISTRICT PER THE EASEMENT DEED RECORDED SEPTEMBER 9, 1982, AS INSTRUMENT No. 82-083853 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(23) EASEMENT FOR PUBLIC UTILITIES PURPOSES, GRANTED TO SOUTHERN CALIFORNIA EDISON COMPANY PER THE GRANT OF EASEMENT RECORDED DECEMBER 3, 1982, AS INSTRUMENT No. 82-113697 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(26) EASEMENT FOR SLOPES PURPOSES, GRANTED TO THE CITY OF OXNARD PER GRANT DEED RECORDED APRIL 29, 1988, AS INSTRUMENT No. 88-058919 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(27) 7' WIDE EASEMENT FOR WATER PIPELINES PURPOSES, GRANTED TO THE CITY OF OXNARD PER GRANT DEED RECORDED APRIL 29, 1988, AS INSTRUMENT No. 88-058919 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(28) 15' WIDE EASEMENT FOR PUBLIC UTILITIES PURPOSES, GRANTED TO GTE CALIFORNIA INCORPORATED PER GRANT OF EASEMENT RECORDED FEBRUARY 9, 1989, AS INSTRUMENT No. 89-021551 OF OFFICIAL RE- CORDS OF VENTURA COUNTY.

(30) 15' WIDE EASEMENT FOR PUBLIC UTILITIES PURPOSES, GRANTED TO SOUTHERN CALIFORNIA EDISON COMPANY PER GRANT OF EASEMENT RECORDED FEBRUARY 9, 1989, AS INSTRUMENT No. 89-021551 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(33) 9.84' WIDE EASEMENT FOR UTILITY PURPOSES, PER PARCEL 6 OF THE FINAL ORDER OF CONDEMNATION RECORDED MARCH 2, 2011, AS INSTRUMENT No. 20110302-00036886 OF OFFICIAL RECORDS OF VENTURA COUNTY. (CONVEYED TO SOUTHERN CALIFORNIA EDISON COMPANY PER ASSIGNMENT OF EASEMENT RE- CORDED JULY 12, 2011, AS INSTRUMENT No. 20110712-00101329 OF OFFICIAL RECORDS OF VENTURA COUNTY.)

(34) 20' AND 3' WIDE EASEMENT FOR UTILITY PURPOSES, PER PARCEL 7 OF THE FINAL ORDER OF CONDEM- 20' AND 3' WIDE EASEMENT FOR UTILITY PURPOSES, PER PARCEL 7 OF THE FINAL ORDER OF CONDEM- NATION RECORDED MARCH 2, 2011, AS INSTRUMENT No. 20110302-00036886 OF OFFICIAL RECORDS OF NATION RECORDED MARCH 2, 2011, AS INSTRUMENT No. 20110302-00036886 OF OFFICIAL RECORDS OF VENTURA COUNTY. (CONVEYED TO SOUTHERN CALIFORNIA EDISON COMPANY PER ASSIGNMENT OF EASE- MENT RECORDED JULY 12, 2011, AS INSTRUMENT No. 20110712-00101329 OF OFFICIAL RECORDS OF VENTURA COUNTY.)

(35) 19.69' WIDE EASEMENT FOR UTILITY PURPOSES, PER PARCEL 8 OF THE FINAL ORDER OF CONDEMNATION RECORDED MARCH 2, 2011, AS INSTRUMENT No. 20110302-00036886 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(36) 19.69' WIDE EASEMENT FOR GAS LINE PURPOSES, GRANTED TO SOUTHERN CALIFORNIA GAS COMPANY PER TRANSFER DEED RECORDED DECEMBER 16, 2011, AS INSTRUMENT No. 20111216-00192509 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(37) EASEMENT FOR UTILITY PURPOSES, PER PARCEL 9 OF THE FINAL ORDER OF CONDEMNATION RECORDED MARCH 2, 2011, AS INSTRUMENT No. 20110302-00036886 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(38) EASEMENT FOR UTILITY PURPOSES, PER PARCEL 10 OF THE FINAL ORDER OF CONDEMNATION RECORDED MARCH 2, 2011, AS INSTRUMENT No. 20110302-00036886 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(39) EASEMENT FOR SLOPE PURPOSES, PER PARCEL 11 OF THE FINAL ORDER OF CONDEMNATION RECORDED MARCH 2, 2011, AS INSTRUMENT No. 20110302-00036886 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(40) 3' WIDE EASEMENTS FOR UTILITY PURPOSES, PER PARCEL 13 OF THE FINAL ORDER OF CONDEMNATION RECORDED MARCH 2, 2011, AS INSTRUMENT No. 20110302-00036886 OF OFFICIAL RECORDS OF VENTURA COUNTY. (CONVEYED TO SOUTHERN CALIFORNIA EDISON COMPANY PER ASSIGNMENT OF EASEMENT RE- CORDED JULY 12, 2011, AS INSTRUMENT No. 20110712-00101329 OF OFFICIAL RECORDS OF VENTURA COUNTY.)

(41) EASEMENT FOR UTILITY PURPOSES, PER PARCEL 15 OF THE FINAL ORDER OF CONDEMNATION RECORDED MARCH 2, 2011, AS INSTRUMENT No. 20110302-00036886 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(42) EASEMENT FOR UTILITY PURPOSES, PER PARCEL 16 OF THE FINAL ORDER OF CONDEMNATION RECORDED MARCH 2, 2011, AS INSTRUMENT No. 20110302-00036886 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(44) 10' WIDE EASEMENT FOR PROPOSED ROADWAY PURPOSES, GRANTED TO SOUTHERN CALIFORNIA EDISON COMPANY PER ROAD EASEMENT RECORDED DECEMBER 24, 2013, AS INSTRUMENT No. 20131224-00204605 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(45) 10' WIDE AND VARIABLE WIDTH EASEMENT FOR OVERHEAD ELECTRICAL SUPPLY SYSTEMS AND COMMUNICATION SYSTEMS, GRANTED TO SOUTHERN CALIFORNIA EDISON COMPANY PER GRANT OF EASEMENT RE- CORDED APRIL 22, 2016, AS INSTRUMENT No. 20160422-00054912 OF OFFICIAL RECORDS OF VENTURA COUNTY.

LEGAL DESCRIPTION

THE LAND REFERRED TO IN THIS COMMITMENT IS SITUATED IN THE CITY OF OXNARD, COUNTY OF VENTURA, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

PARCEL "C", AND THAT PORTION OF PARCEL "D" OF THE RESUBDIVISION OF THE SUBDIVISIONS 45, 46 AND PART OF 49, RANCHO EL RIO DE SANTA CLARA O' LA COLONIA, IN THE CITY OF OXNARD, COUNTY OF VENTURA, STATE OF CALIFORNIA, AS PER MAP FILED IN BOOK 2, PAGE 43 OF RECORD OF SURVEYS IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY, DESCRIBED AS A WHOLE AS FOLLOWS:

BEGINNING AT A POINT IN THE EASTERLY LINE OF RICE ROAD, 50 FEET WIDE, AS SHOWN ON SAID MAP AT THE SOUTHWESTERLY TERMINUS OF THAT CERTAIN COURSE IN THE SOUTHERLY BOUNDARY OF THE STATE HIGHWAY RECITED AS "N. 70° 33' 43" E., 157.48 FEET", IN THE DEED TO THE STATE OF CALIFORNIA, RECORDED DECEMBER 23, 1963 IN BOOK 2450, PAGE 16 OF OFFICIAL RECORDS AS DOCUMENT NO. 76087, IN SAID OFFICE OF THE COUNTY RECORDER
EXCEPT THAT PORTION CONVEYED TO THE CITY OF OXNARD IN DEED RECORDED APRIL 29, 1988 AS DOCUMENT NO. 88-58919, OF OFFICIAL RECORDS.

ALSO EXCEPTING THAT PORTION CONVEYED TO THE CITY OF OXNARD, A MUNICIPAL CORPORATION IN FINAL ORDER OF CONDEMNATION RECORDED MARCH 02, 2011 AS INSTRUMENT NO. 2011-00036886, OF OFFICIAL RECORDS.

ALSO EXCEPT ALL OIL, GAS, PETROLEUM, HYDROCARBONS AND MINERAL SUBSTANCES LYING IN, ON, OR UNDER SAID LAND, BUT WITHOUT THE RIGHT TO ENTER UPON AND USE THE SURFACE AND THE SUBSURFACE OF SAID LAND TO A DEPTH OF 500 FEET BELOW THE SURFACE EXCEPT UPON THOSE CERTAIN DRILL SITE EASEMENTS AND EASEMENTS FOR INGRESS AND EGRESS AND FOR UTILITY AND PIPELINE PURPOSES AS PARTICULARLY DESCRIBED IN THOSE CERTAIN AGREEMENTS EXECUTED BY FRANCES M. CONWAY, ET AL., AND BY XEROX CORPORATION RECORDED DECEMBER 22, 1969 AS DOCUMENT NOS. 66767, 66768, 66769, 66770, 66771 AND 66772, ALL OF OFFICIAL RECORDS.

APN(S): 216-0-030-145, 216-0-030-155, 216-0-030-075 AND 216-0-030-105

PROJECT INFORMATION

PROJECT NAME	SAKIOKA BUSINESS PARK
OWNER/SUBDIVIDER	SAKIOKA FARMS RICE AVE, TIC 1451 N. RICE AVE, OXNARD, CA 93030 CRAIG KAIHARA CRAIG@AMSCRAIGLLC.COM (805) 278-1703
THOMAS GUIDE	MAP PG 523 GRID C3,C4 - D3,D4
FLOOD ZONE	ZONE X, MAP NUMBER 06111C0910E
ZONING	M-1-PD - LIGHT MANUFACTURING - PLANNED DEVELOPMENT BRP - BUSINESS RESEARCH PARK SAKIOKA SPECIFIC PLAN (14,235)

BENCHMARK

COUNTY OF VENTURA BENCHMARK : 7-79 RM2

DESCRIPTION = CITY OF OXNARD DISK ON TOP OF CURB AT THE SOUTHWEST CORNER OF RICE AVE AND GONZALES RD

ELEVATION = 74.03'

BASIS OF BEARING

THE BASIS OF BEARINGS FOR THIS SURVEY IS

CENTERLINE OF RICE AVE BEARING N 1°14'52" E

EARTHWORK

CUT: 436,042 CY
FILL: 1,774,353 CY

IMPORT: 1,338,311 CY

SHEET INDEX

1	TITLE SHEET
2	TYPICAL SECTIONS AND PHASING
3-6	ENGINEERING SITE PLAN
7	SECTIONS AND DETAILS
8	PAVEMENT DELINEATION
9	INTERSECTION DETAILS
10	UTILITY SITE PLAN

200 100 0 200 400 600

SCALE: 1"=200'

PREPARED BY

DELANE ENGINEERING
400 W VENTURA BLVD, SUITE 265
CAMARILLO, CA 93010
PHONE: 310.546.5711-DELANEENGINEERING.COM

SCOTT D. UHLES RCE No. 72391 DATE

TENTATIVE TRACT No 5996

SAKIOKA BUSINESS PARK
TITLE SHEET

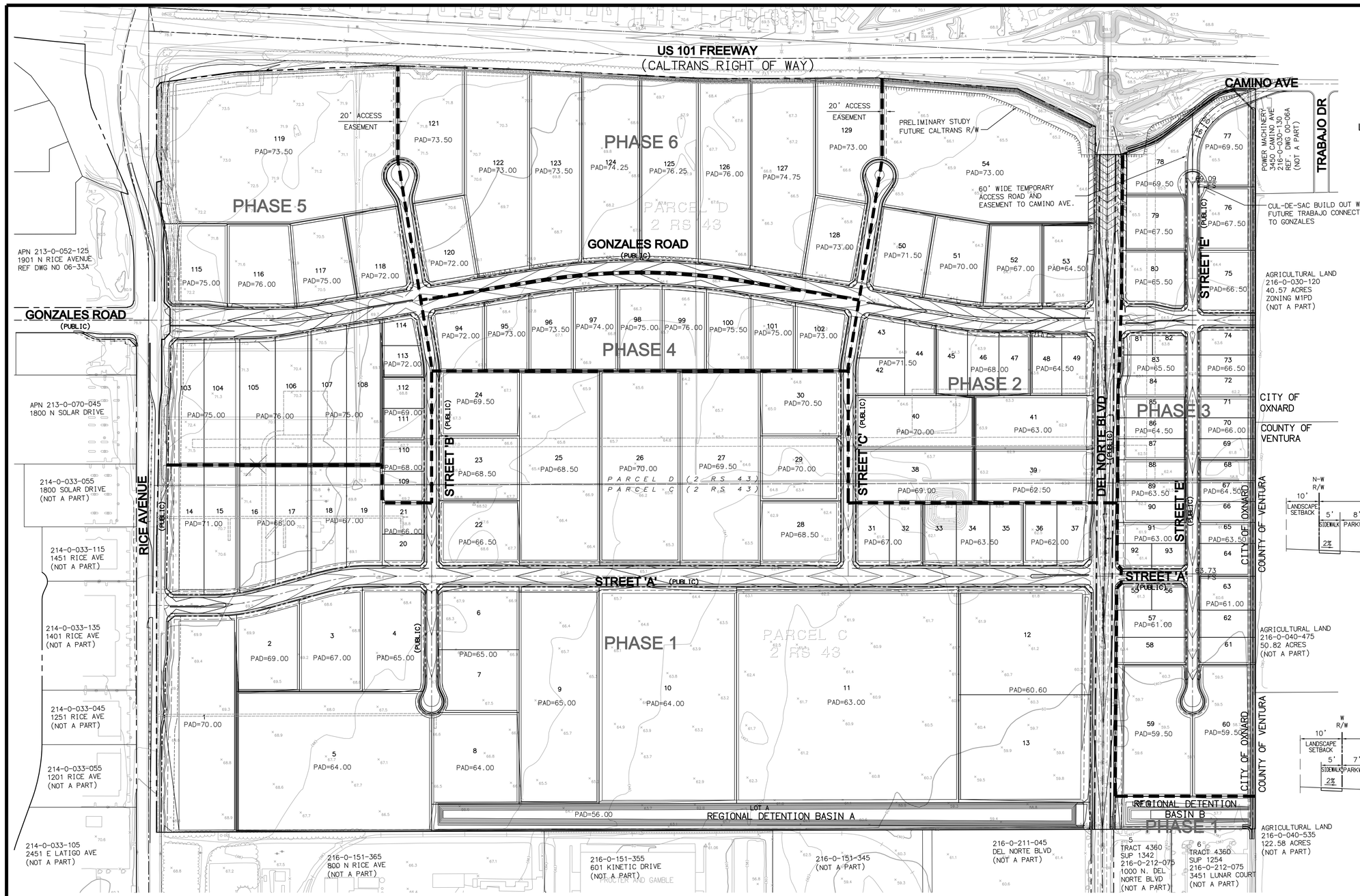
SHEET 1 OF 10 SHEETS

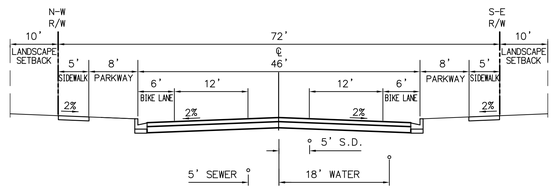
PLOT DATE: 2/7/20 11:09 AM FILE NAME: H:\HROOT\PDATA\0110033\CAD\LAND\DLV\TTM\033-TTM-001.DWG

SAVE DATE: 2/6/20 STEVEDOWNS

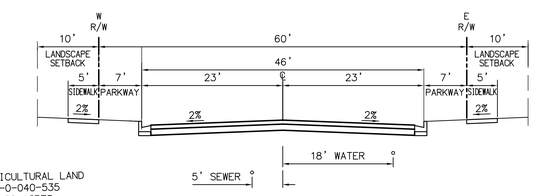
EXISTING SITE			
LOT	AREA (AC)	AREA (SF)	LAND USE
216-0-030-145	199.24	8,679.079.69	BRP
216-0-030-155	170.46	7,425,105.24	M-1-PD
216-0-030-075	26.80	1,167,237.70	BRP
216-0-030-105	26.10	1,137,048.84	M-1-PD
TOTAL	422.60	18,408,471.47	

LANDSCAPE NOTE:
ENHANCED LANDSCAPING SHALL BE INSTALLED AT ALL INTERSECTIONS PER THE DESIGN GUIDELINES IN THE SAKIOKA FARMS SPECIFIC PLAN.

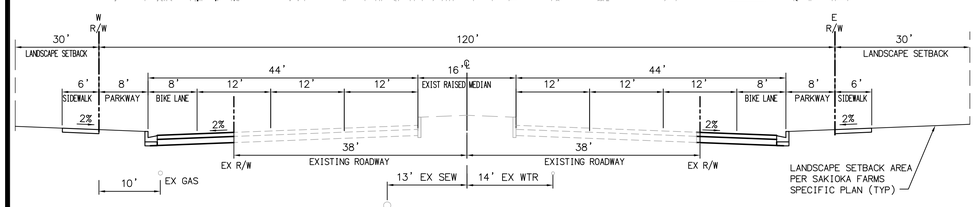




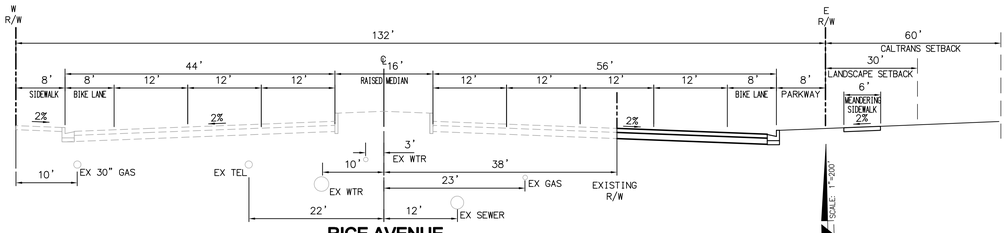
STREET 'B' AND 'C'
NTS
(PUBLIC)



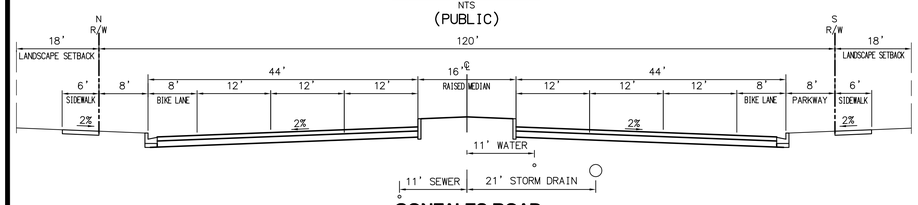
STREET 'B' (SOUTH OF STREET 'A') AND STREET 'E'
NTS
(PUBLIC)



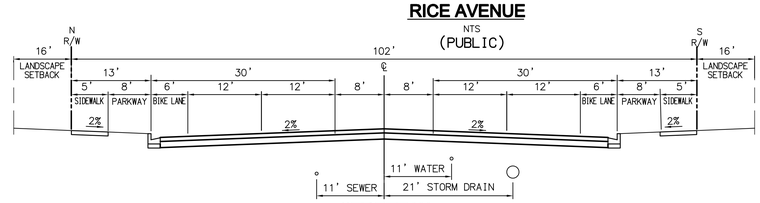
DEL NORTE BLVD
NTS
(PUBLIC)



RICE AVENUE
NTS
(PUBLIC)



GONZALES ROAD
NTS
(PUBLIC)



STREET 'A'
NTS
(PUBLIC)

SCALE: 1"=200'

PREPARED BY
DELANE ENGINEERING
400 W VENTURA BLVD, SUITE 265
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PHONE: 310.546.5711-DELANEENGINEERING.COM
SCOTT D. UHLES RCE No. 72391 DATE

TENTATIVE TRACT No 5996

SAKIOKA BUSINESS PARK
TYPICAL SECTIONS
AND PHASING

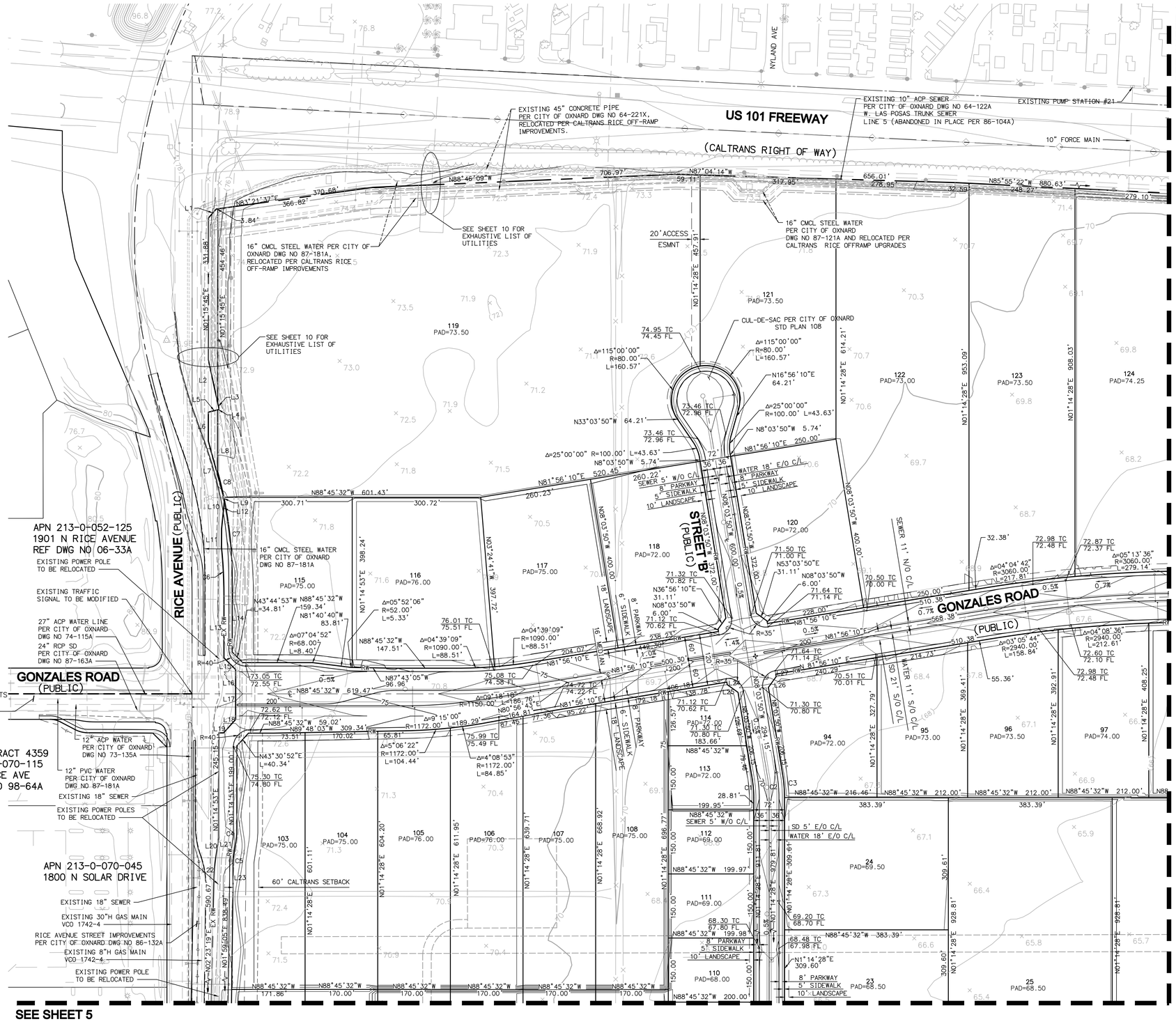
SHEET 2 OF 10 SHEETS

PLOT DATE: 2/7/20 11:44 AM FILE NAME: H:\VRDOT\DATA\2010033\CAD\LAND\U\A\TTM\033-TTM-002.DWG

SAVE DATE: 2/7/20 DEBBIE TALAM

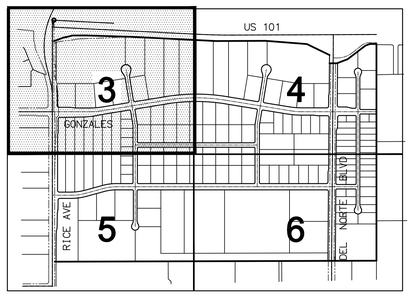
GENERAL NOTES:

1. ALL OVERHEAD UTILITY LINES ON AND ADJACENT TO THE PROPOSED PROJECT THAT CONDUCT LESS THAN 66KV SHALL BE PLACED UNDERGROUND.



CURVE TABLE				
NO.	DELTA	RADIUS	LENGTH	TANGENT
C1	9°18'18"	264.00'	42.87'	21.48'
C2	9°18'18"	300.00'	48.72'	24.41'
C3	9°18'18"	336.00'	54.57'	27.34'
C4	8°31'50"	128.00'	19.06	9.55'
C5	8°31'50"	112.00'	16.68'	8.35'
C6	5°52'21"	1123.85'	115.19'	57.64'
C7	11°41'49"	938.00'	191.49'	96.07'
C8	3°46'36"	938.00'	61.83''	30.93'

LINE TABLE		
NO.	BEARING	DISTANCE
L1	N43°44'19"W	38.81'
L2	N43°06'11"E	42.29'
L3	N88°45'07"W	11.15'
L4	N09°46'47"E	59.71'
L5	N09°46'42"E	51.64'
L6	N05°32'13"E	39.48'
L7	N14°03'13"W	143.23'
L8	N01°15'45"E	153.60'
L9	N14°03'13"W	6.69'
L10	N06°52'42"E	67.82'
L11	N01°34'49"E	42.54'
L12	N06°57'42"E	37.31'
L13	N01°15'45"E	144.37'
L14	N01°15'45"E	172.21'
L15	N43°44'19"W	38.81'
L16	N01°15'45"E	56.75'
L17	N01°14'53"E	59.84'
L18	N43°06'11"E	42.29'
L19	N88°45'07"W	11.15'
L20	N08°09'55"E	94.97'
L21	N09°46'42"E	42.77'
L22	N05°32'13"E	39.48'
L23	N01°14'53"E	48.71'
L24	N08°03'50"W	6.00'
L25	N53°03'50"W	31.11'
L26	N36°56'11"E	31.11'
L27	N08°03'50"W	6.00'



SHEET INDEX MAP
NTS

SCALE: 1"=100'

REFERENCE PAGES

SEE SHEETS FOR:

SECTIONS AND DETAILS	SHEET	7
PAVEMENT DELINEATION	SHEET	8
INTERSECTION DETAILS	SHEET	9
UTILITY SITE PLAN	SHEET	10

PREPARED BY
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SCOTT D. UHLES RCE No. 72391 DATE

TENTATIVE TRACT No 5996

SAKIOKA BUSINESS PARK
ENGINEERING SITE
PLAN

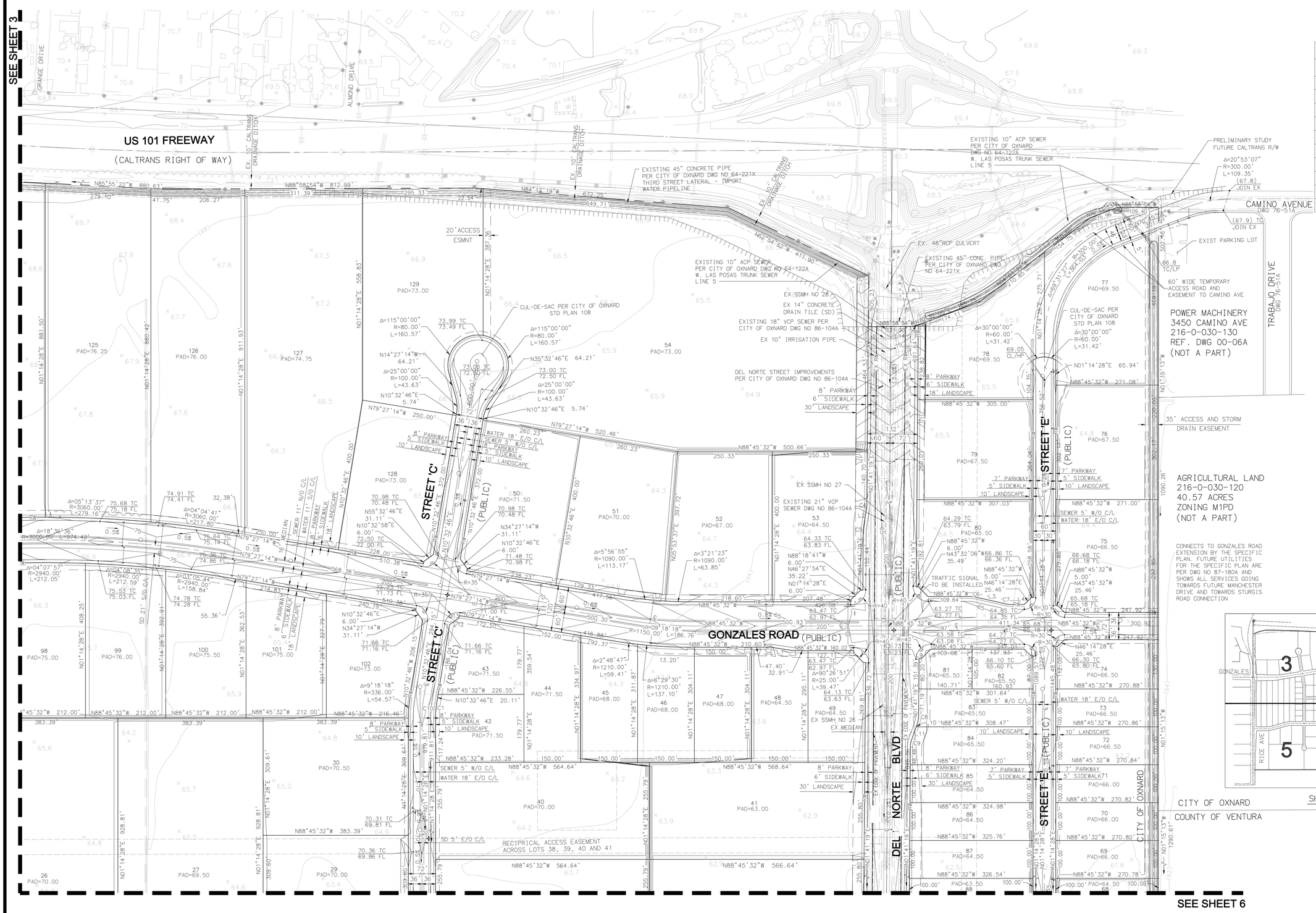
SHEET 3 OF 10 SHEETS

PLOT DATE: 2/7/20 11:09 AM FILE NAME: H:\VROOT\PDATA\D110031\CAD\LAND\DLA\TTM\033-TTM-003-006.DWG

SAVE DATE: 2/7/20 DEBBIE TALAMAN

GENERAL NOTES:

1. ALL OVERHEAD UTILITY LINES ON AND ADJACENT TO THE PROPOSED PROJECT THAT CONDUCT LESS THAN 66KV SHALL BE PLACED UNDERGROUND.



CURVE TABLE				
NO.	DELTA	RADIUS	LENGTH	TANGENT
C1	9°18'18"	264.00'	42.87'	21.48'
C2	8°31'51"	52.00'	7.74'	3.88'
C3	8°31'51"	68.00'	10.13'	5.07'
C4	8°29'35"	52.00'	7.71'	3.86'
C5	8°29'35"	68.00'	10.08'	5.05'
C6	12°30'19"	73.00'	15.93'	8.00'
C7	12°30'19"	47.00'	10.26'	5.15'
C8	19°14'27"	68.00'	22.84'	11.53'
C9	19°14'27"	52.00'	17.46'	8.81'
C10	9°18'18"	300.00'	48.72'	24.41'

LINE TABLE		
NO.	BEARING	DISTANCE
L1	N80°13'41"W	52.47'
L2	N10°10'54"E	52.03'
L3	N76°15'13"W	83.84'
L4	N88°45'32"W	37.06'
L5	N88°45'32"W	5.00'
L6	N88°45'32"W	5.00'
L7	N43°45'32"W	25.46'
L8	N46°27'54"E	35.22'
L9	N88°45'32"W	6.00'
L10	N20°55'46"E	6.83'
L11	N20°55'46"E	36.55'
L12	N55°32'46"E	30.11'
L13	N10°32'46"E	6.00'
L14	N70°32'05"E	11.65'

SHEET INDEX MAP
NTS

CITY OF OXNARD
COUNTY OF VENTURA

REFERENCE PAGES

SEE SHEETS FOR:

SECTIONS AND DETAILS	SHEET	7
PAVEMENT DELINEATION	SHEET	8
INTERSECTION DETAILS	SHEET	9
UTILITY SITE PLAN	SHEET	10

SCALE: 1"=200'

100 50 0 100 200 300
SCALE: 1"=100'

PREPARED BY
DELANE ENGINEERING
400 W VENTURA BLVD, SUITE 265
CAMARILLO, CA 93010
PHONE: 310.546.5711-DELANEENGINEERING.COM
SCOTT D. UHLES RCE No. 72391 DATE

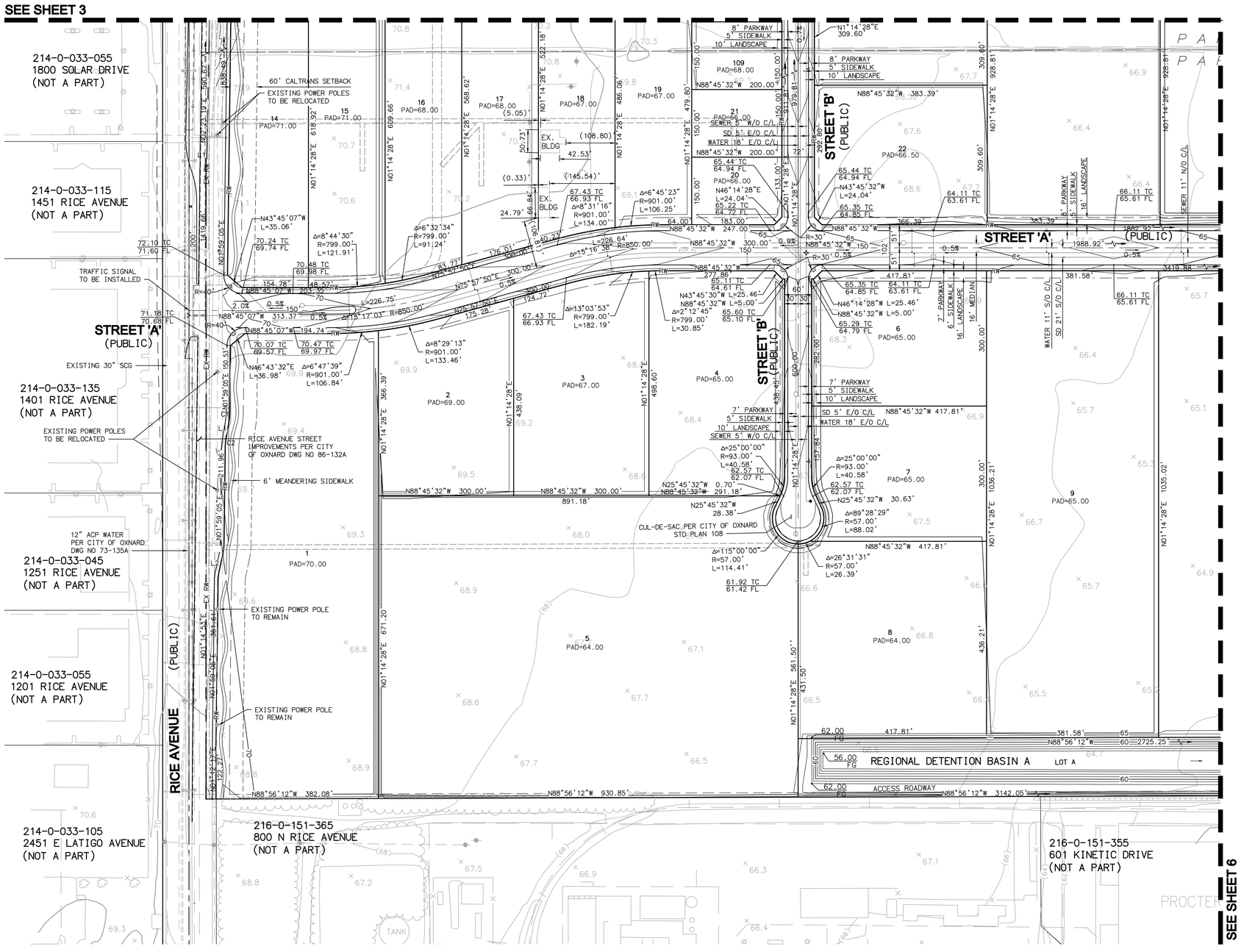
TENTATIVE TRACT No 5996

SAKIOKA BUSINESS PARK
ENGINEERING SITE
PLAN

SHEET 4 OF 10 SHEETS

PLOT DATE: 2/7/20 11:09 AM FILE NAME: H:\#9001\PDATA\D110133\CAD\LAND\DLA\TM\U33-TTM-003-006.DWG

SAVE DATE: 2/7/20 DEBBIE TALAMAN

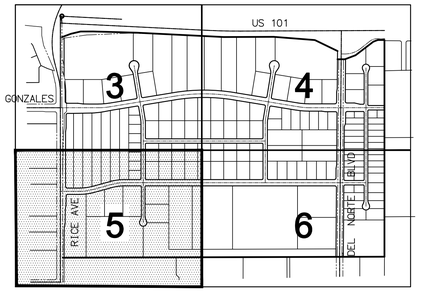


GENERAL NOTES:

1. ALL OVERHEAD UTILITY LINES ON AND ADJACENT TO THE PROPOSED PROJECT THAT CONDUCT LESS THAN 66KV SHALL BE PLACED UNDERGROUND.

CURVE TABLE				
NO.	DELTA	RADIUS	LENGTH	TANGENT
C1	8°43'36"	128.00'	19.50'	9.77'
C2	8°43'36"	112.00'	17.06'	8.55'
C3	11°23'07"	128.00'	25.44'	12.76'
C4	11°23'07"	112.00'	22.26'	11.16'

LINE TABLE		
NO.	BEARING	DISTANCE
L1	N10°42'41"E	41.01'
L2	N13°22'12"E	36.87'



SHEET INDEX MAP

NTS

SCALE 1"=100'

100 50 0 100 200 300

SCALE: 1"=100'

REFERENCE PAGES

SEE SHEETS FOR:

SECTIONS AND DETAILS	SHEET	7
PAVEMENT DELINEATION	SHEET	8
INTERSECTION DETAILS	SHEET	9
UTILITY SITE PLAN	SHEET	10

PREPARED BY

DELANE ENGINEERING
400 W VENTURA BLVD, SUITE 265
CAMARILLO, CA 93010
PHONE: 310.546.5711-DELANEENGINEERING.COM

SCOTT D. UHLES RCE No. 72391 DATE

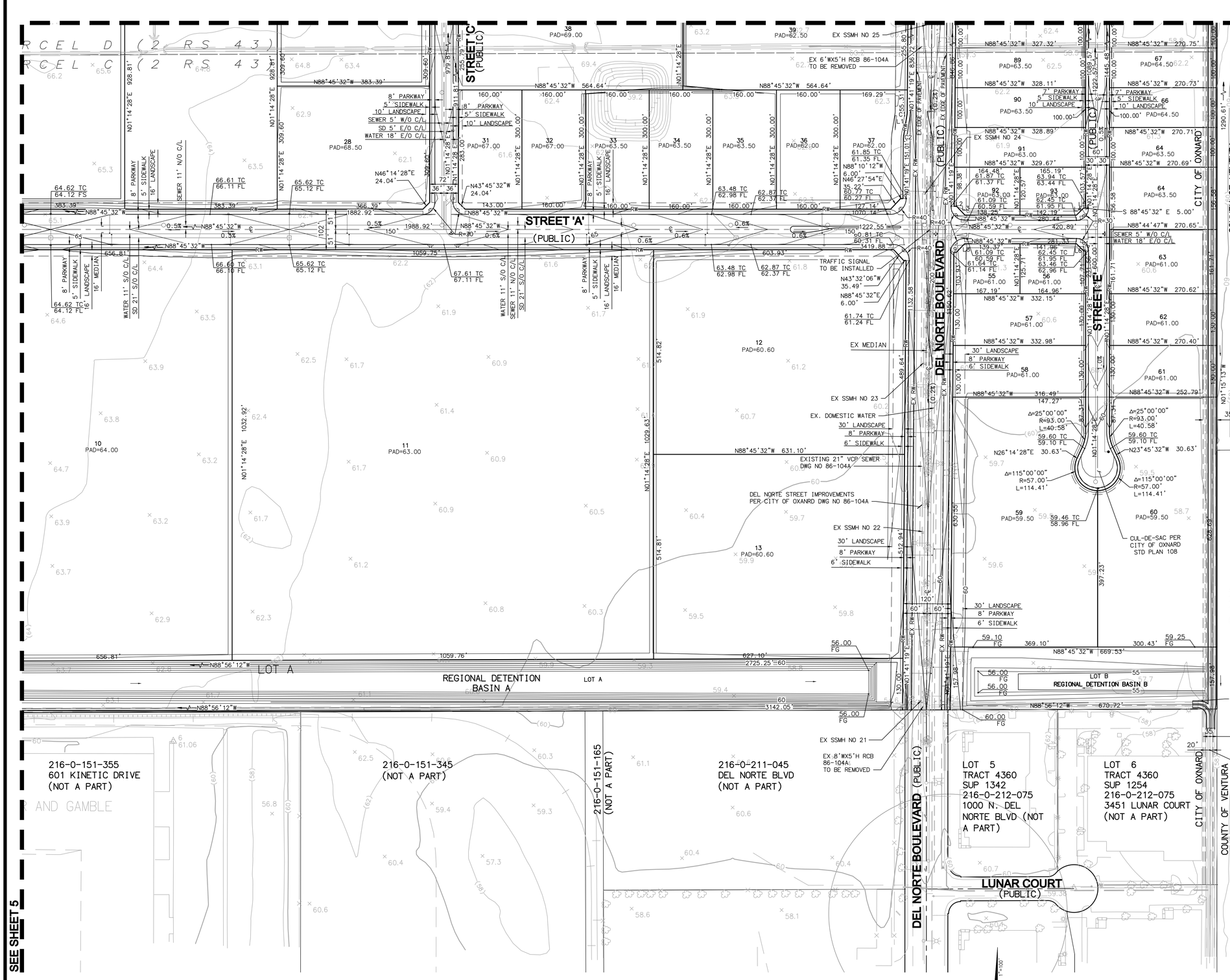
TENTATIVE TRACT No 5996

SAKIOKA BUSINESS PARK
ENGINEERING SITE
PLAN

SHEET 5 OF 10 SHEETS

PLOT DATE: 2/7/20 11:09 AM FILE NAME: H:\VPROOT\PDATA\01\0033\CAD\LAND\DLV\TM\033-TTM-003-006.DWG

SAVE DATE: 2/7/20 DEBBIE TALAMAN

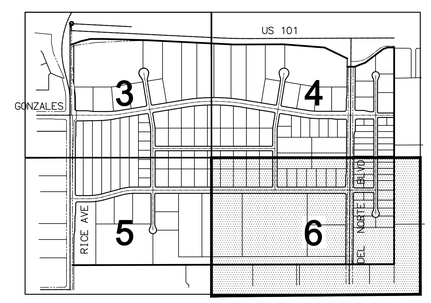


GENERAL NOTES:

1. ALL OVERHEAD UTILITY LINES ON AND ADJACENT TO THE PROPOSED PROJECT THAT CONDUCT LESS THAN 66KV SHALL BE PLACED UNDERGROUND.

CURVE TABLE				
NO.	DELTA	RADIUS	LENGTH	TANGENT
C1	8°31'51"	52.00'	7.74'	3.88'
C2	8°31'51"	68.00'	10.13'	5.07'

LINE TABLE		
NO.	BEARING	DISTANCE
L1	N10°13'10"E	51.72'
L2	N88°45'32"W	6.00'
L3	N42°09'08"W	30.57'
L4	N46°14'28"E	25.46'
L5	N88°45'32"W	5.00'
L6	N43°45'32"W	25.46'
L7	N88°45'32"W	5.00'
L8	N45°11'38"E	30.27'
L9	N88°45'32"W	6.00'



SHEET INDEX MAP
NTS

REFERENCE PAGES

SEE SHEETS FOR:

SECTIONS AND DETAILS	SHEET	7
PAVEMENT DELINEATION	SHEET	8
INTERSECTION DETAILS	SHEET	9
UTILITY SITE PLAN	SHEET	10

100 50 0 100 200 300
SCALE: 1"=100'

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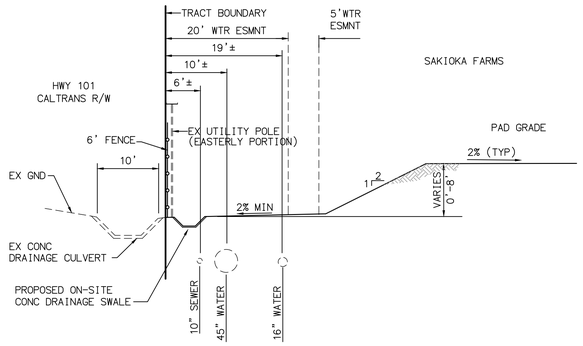
CAMARILLO, CA 93010
PHONE: 310.546.5711•DELANEENGINEERING.COM
SCOTT D. UHLES RCE No. 72391 DATE

TENTATIVE TRACT No 5996

SAKIOKA BUSINESS PARK ENGINEERING SITE PLAN

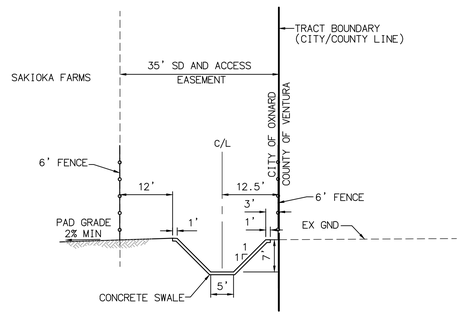
SHEET 6 OF 10 SHEETS

PLOT DATE: 2/7/20 11:10 AM FILE NAME: H:\PROJ\TV\DATA\J110033\CAD\LAND\DLA\TTM\U33-TTM-003-006.DWG
SAVE DATE: 2/7/20 DEBBIE TALAMAN



EASTERLY NORTH TRACT BOUNDARY

NTS



EAST TRACT BOUNDARY

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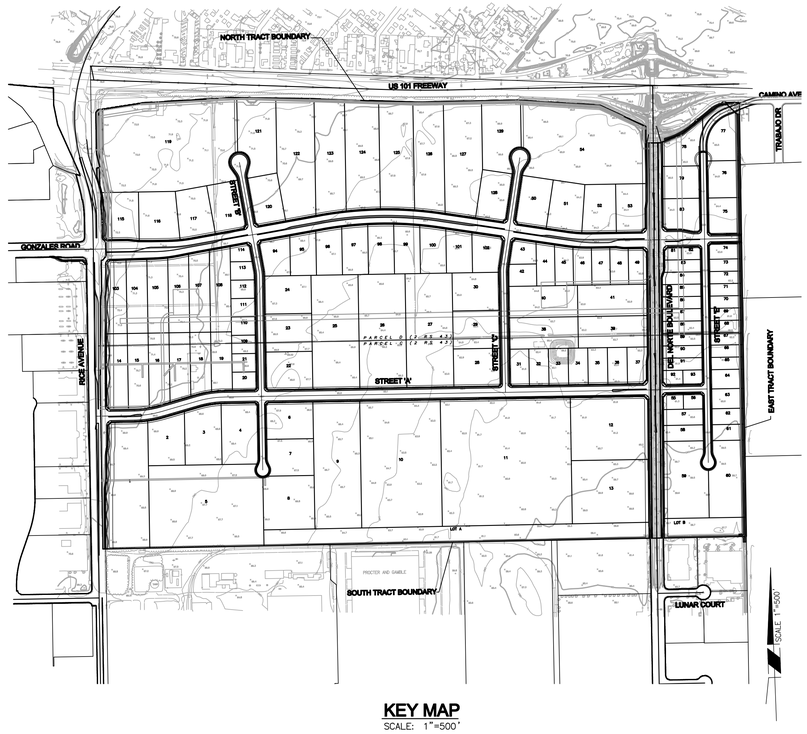
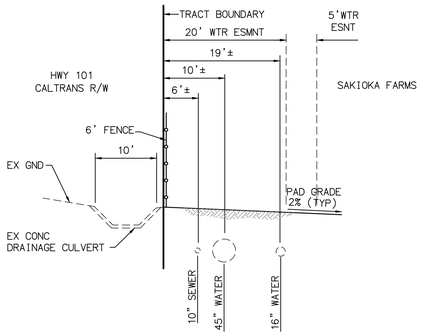


KEY MAP

SCALE: 1"=500'



WESTERLY NORTH TRACT BOUNDARY

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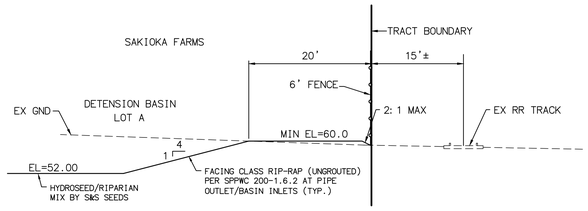

SOUTH TRACT BOUNDARY

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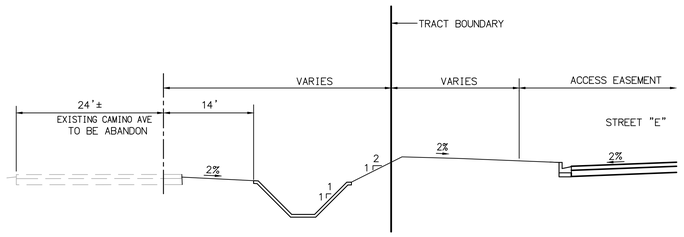
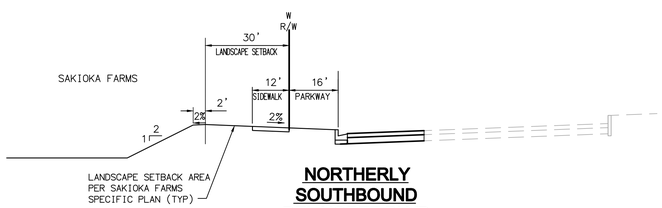


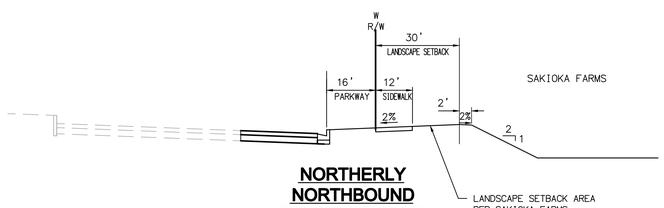
NORTH TRACT BOUNDARY AT CAMINO AVE

NTS



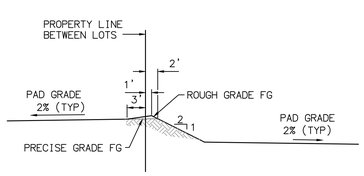
NORTHERLY SOUTHBOUND DEL NORTE BLVD

NTS



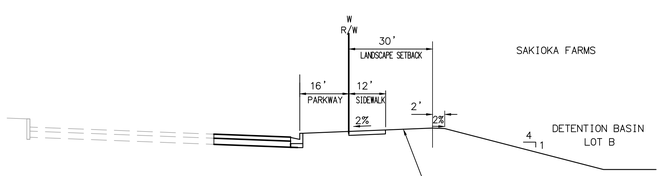
NORTHERLY NORTHBOUND DEL NORTE BLVD

NTS



TYPICAL SLOPE AT PROPERTY LINE

NTS



SOUTHERLY NORTHBOUND DEL NORTE BLVD

NTS

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CAMARILLO, CA 93010
PHONE: 310.546.5711-DELANEENGINEERING.COM

SCOTT D. UHLES RCE No. 72391 DATE

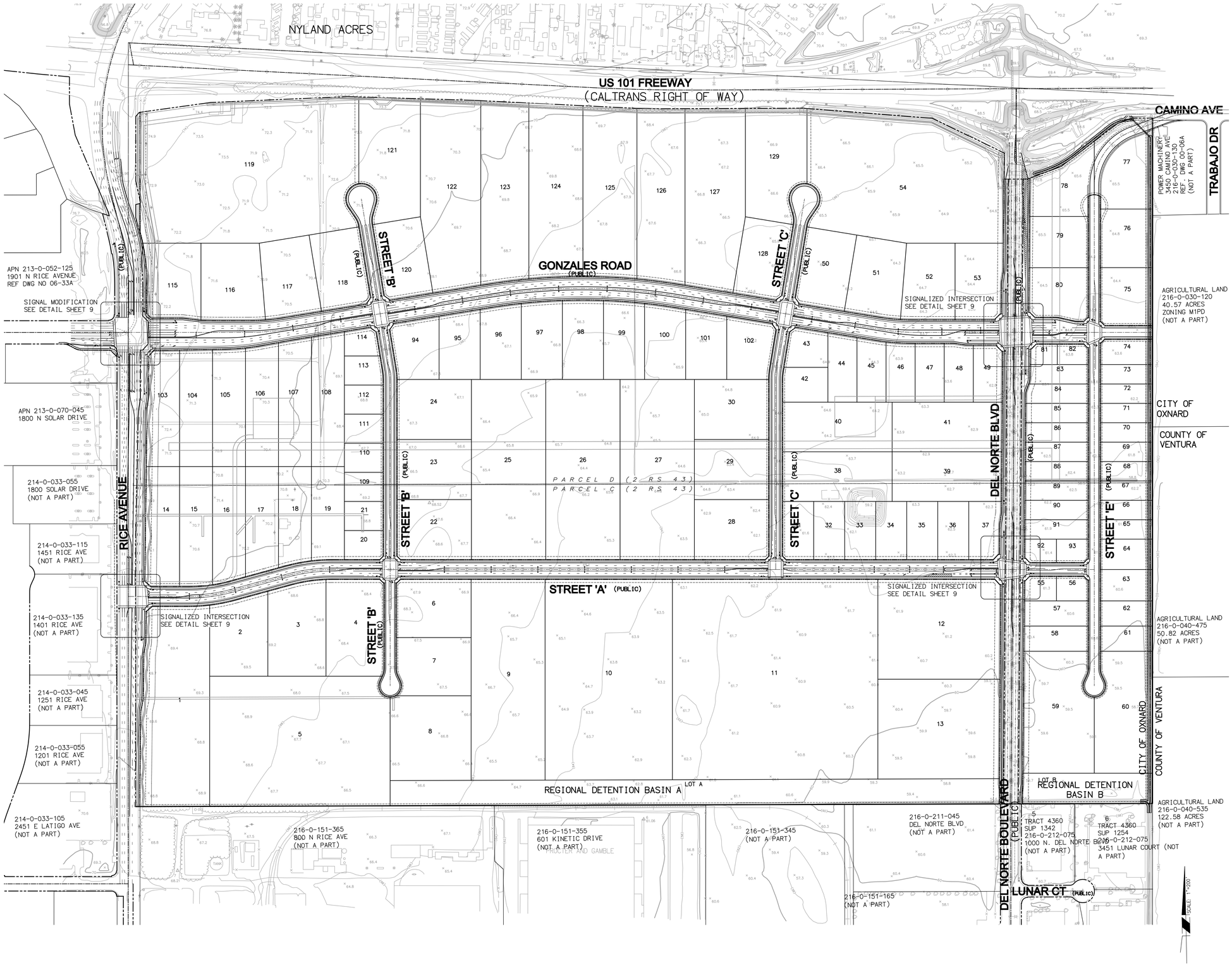
TENTATIVE TRACT No 5996

SAKIOKA BUSINESS PARK SECTIONS AND DETAILS

SHEET 7 OF 10 SHEETS

PLOT DATE: 2/7/20 11:10 AM FILE NAME: H:\PROJ\PDATA\01003\CAD\LAND\DLV\TTM\03-TTM-007.DWG

SAVE DATE: 2/7/20 DEBBIE TALAMAN



200 100 0 200 400 600

SCALE: 1"=200'

PREPARED BY

DELANE ENGINEERING
400 W VENTURA BLVD, SUITE 265
CAMARILLO, CA 93010
PHONE: 310.546.5711-DELANEENGINEERING.COM

SCOTT D. UHLES RCE No. 72391 DATE

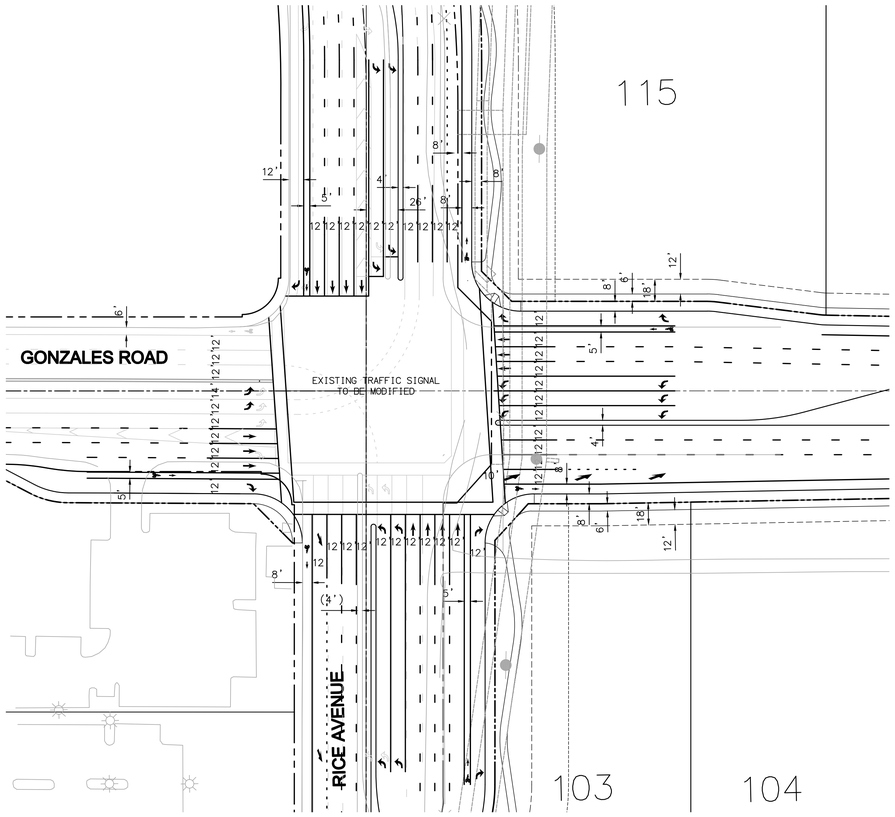
TENTATIVE TRACT No 5996

SAKIOKA BUSINESS PARK PAVEMENT DELINEATION

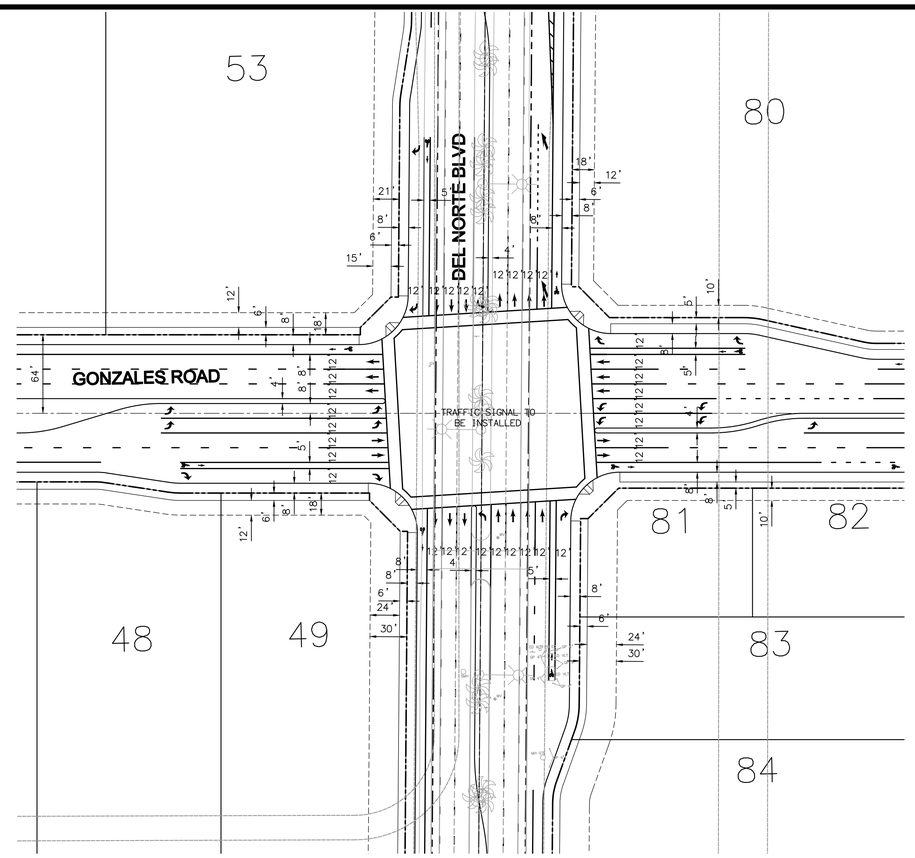
SHEET 8 OF 10 SHEETS

PLOT DATE:2/7/20 11:10 AM FILE NAME: H:\PROOT\PDATA\D100331\CAD\LAND\DLX\TTM\D33-TTM-008.DWG

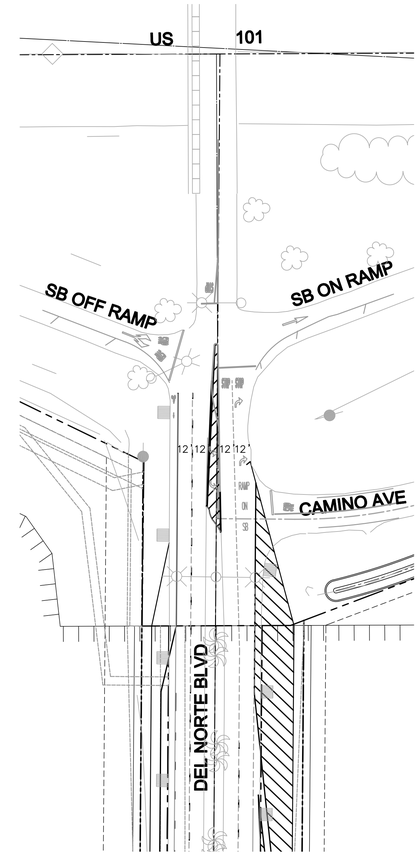
SAVE DATE:2/7/20 DEBBIE TALAMAN



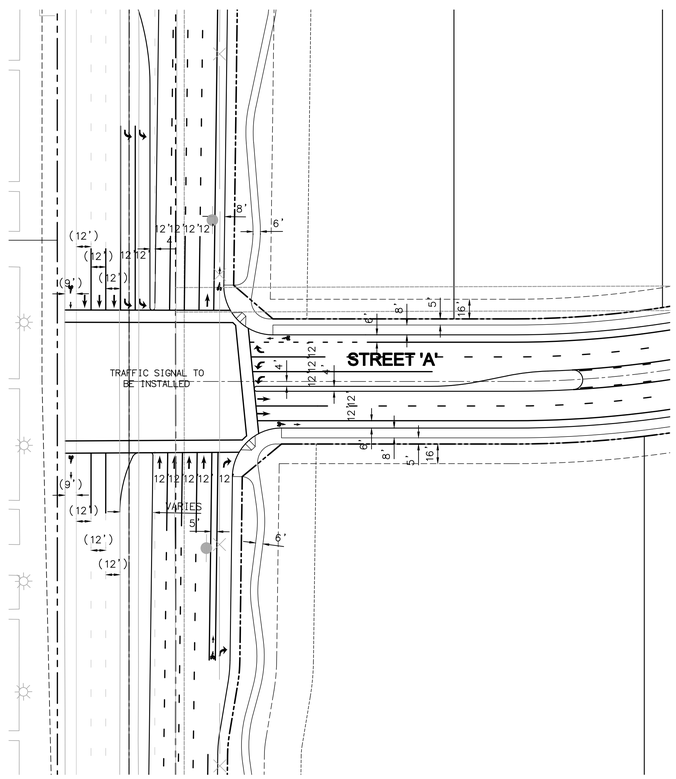
GONZALES AND RICE INTERSECTION



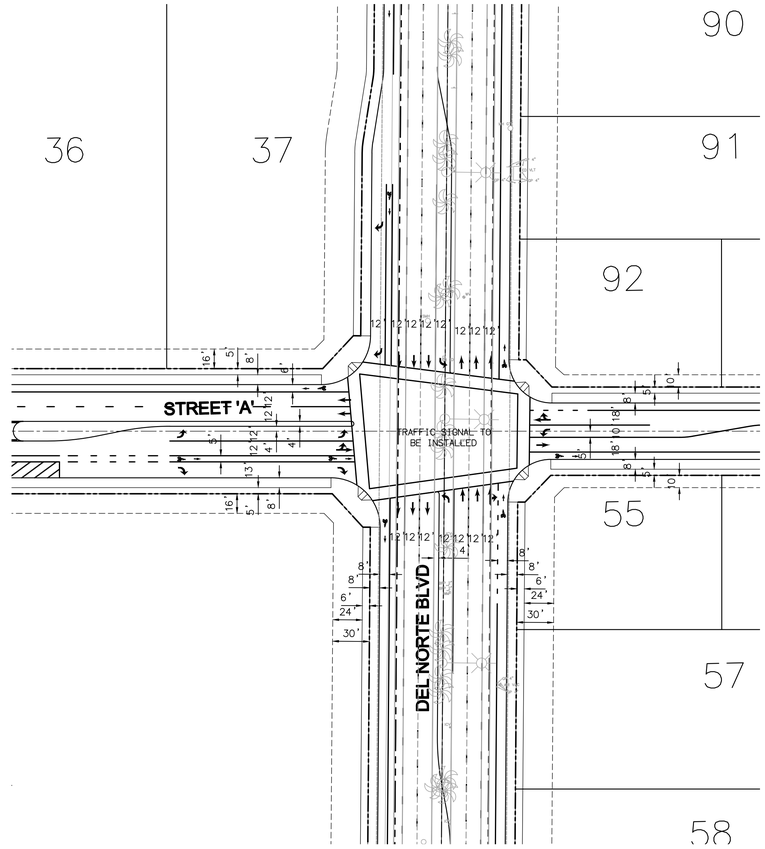
DEL NORTE AND GONZALES INTERSECTION



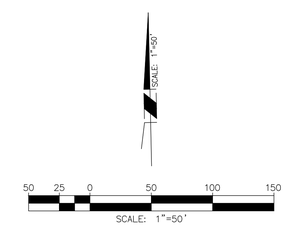
DEL NORTE BRIDGE AT US 101



RICE AND STREET 'A' INTERSECTION



DEL NORTE AND STREET 'A' INTERSECTION



PREPARED BY

DELANE ENGINEERING
400 W VENTURA BLVD, SUITE 265
CAMARILLO, CA 93010
PHONE: 310.546.5711-DELANEENGINEERING.COM

SCOTT D. UHLES RCE No. 72391 DATE

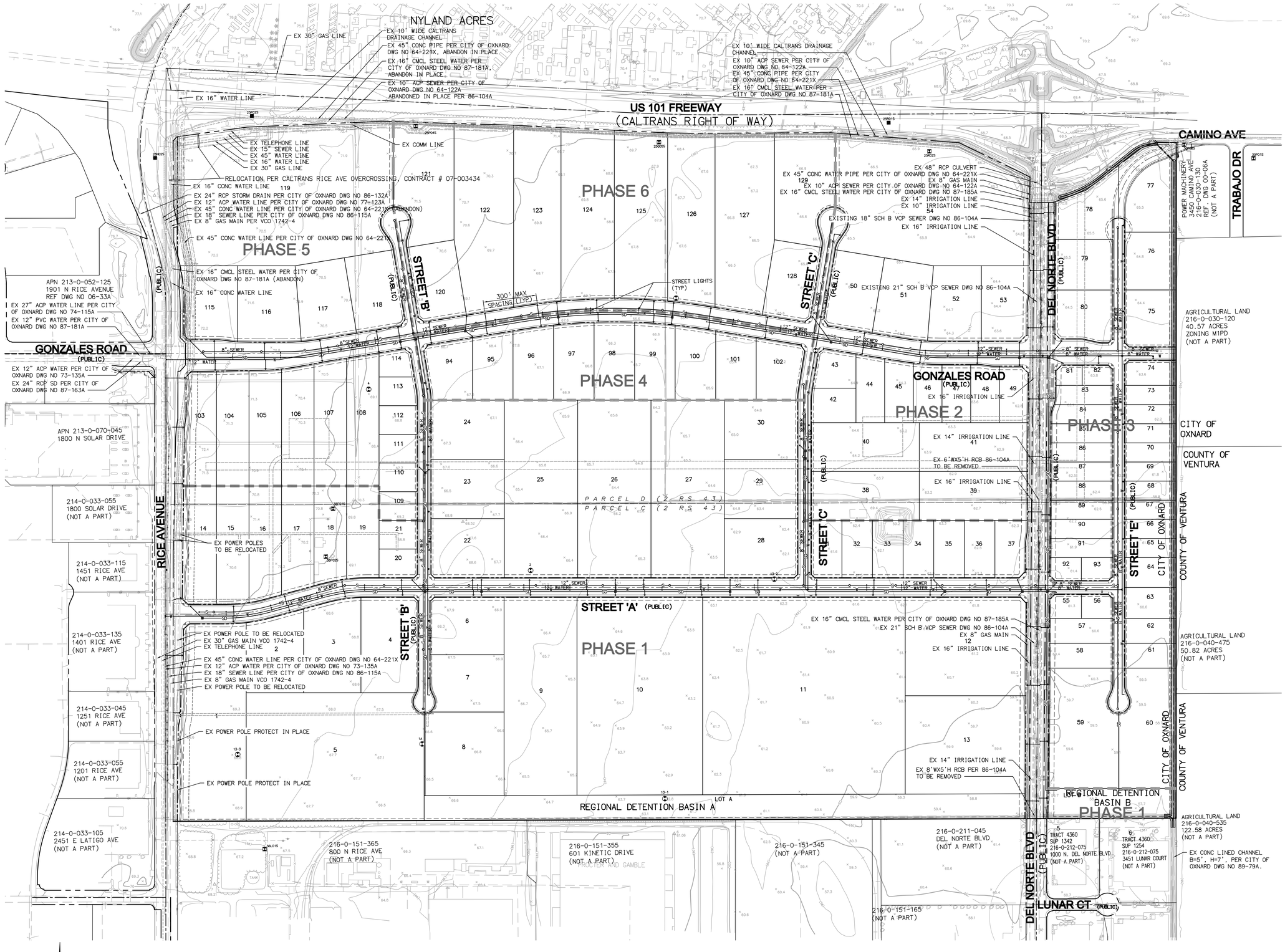
TENTATIVE TRACT No 5996

SAKIOKA BUSINESS PARK
INTERSECTION
DETAILS

SHEET 9 OF 10 SHEETS

PLOT DATE: 2/7/20 11:10 AM FILE NAME: H:\PROJ01\DATA\2010033\CAD\LAND\DA\TM\033-TM-009.DWG

SAVE DATE: 2/7/20 DEBBIE TALAMAN



LEGEND:

- ABANDONED OIL WELL
- ACTIVE WATER WELL
- DESTROYED WATER WELL

PREPARED BY

DELANE ENGINEERING
400 W VENTURA BLVD, SUITE 265
CAMARILLO, CA 93010
PHONE: 310.546.5711-DELANEENGINEERING.COM

SCOTT D. UHLES RCE No. 72391 DATE

TENTATIVE TRACT No 5996

SAKIOKA BUSINESS PARK
UTILITY SITE PLAN

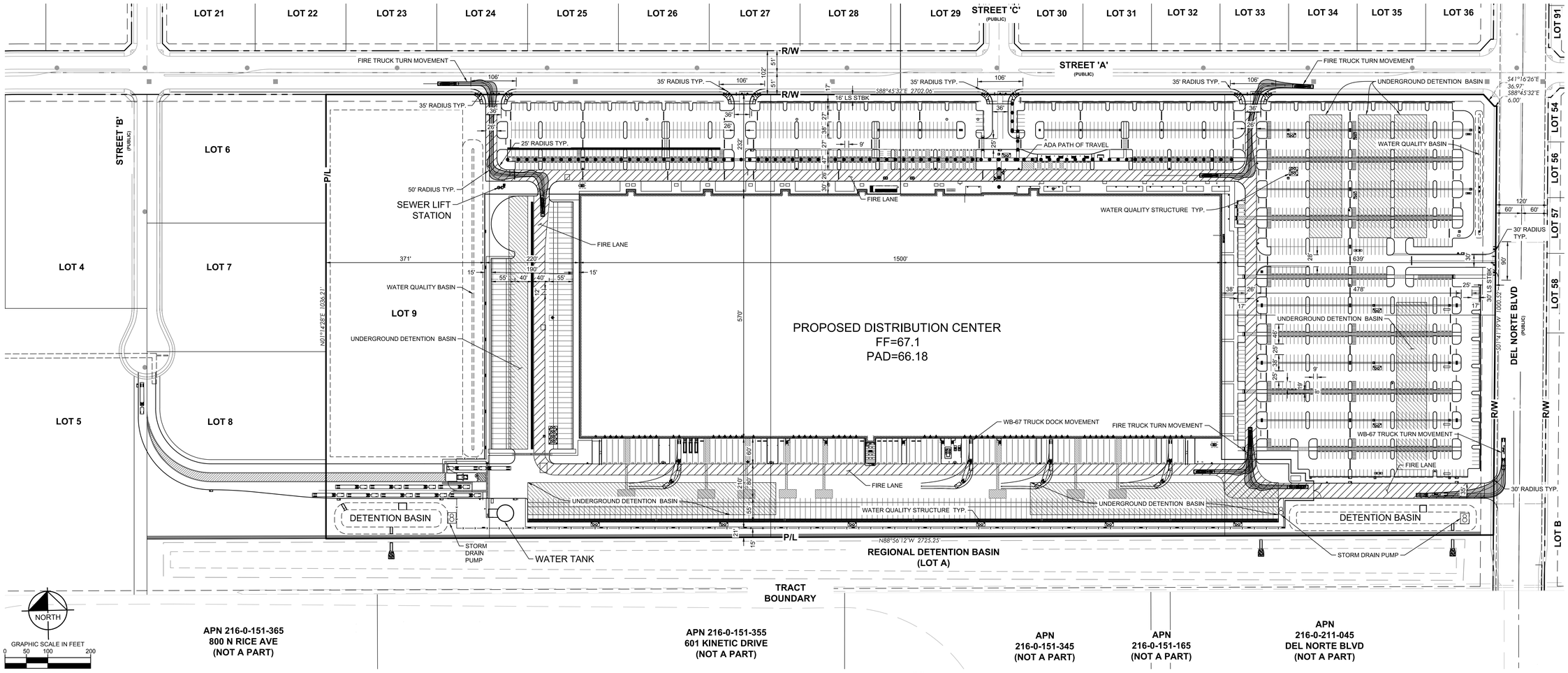
SHEET 10 OF 10 SHEETS

PLOT DATE: 2/7/20 11:31 AM FILE NAME: H:\PROJ\DATA\P210033\CAD\LAND\SJ\TTM\033-TTM-010.DWG

SAVE DATE: 2/7/20 DEBBIE TALAMAN

APPENDIX L

PROJECT BRUIN CIVIL ENGINEERING PLANS



PROJECT STATISTICS

LOT SIZE (ACRES)	64.65
GROSS (SF)	2,816,200
NET (SF)	2,816,200
LAND USE	INDUSTRIAL
EXISTING ZONING	M-1
SPECIFIC PLAN	SAKIOKA FARMS

PROJECT AREA

AREA	SF	%
BUILDING AREA	857,173	30.44%
LANDSCAPE	656,820	23.32%
PAVED AREA	1,302,207	46.24%
TOTAL AREA	2,816,200	100%

LEGAL DESCRIPTION:

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF OXNARD, IN THE COUNTY OF VENTURA, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:
LOTS 8 THROUGH 12, INCLUSIVE, OF TRACT NO. 5996-1, BEING A PORTION OF PARCEL "C" IN THE CITY OF OXNARD, COUNTY OF VENTURA, STATE OF CALIFORNIA, AS PER MAP FILED IN BOOK 2, PAGE 43 OF RECORDS OF SURVEY, IN THE OFFICE OF THE COUNTY RECORDER OF VENTURA COUNTY, DESCRIBED AS A WHOLE AS FOLLOWS:
COMMENCING AT THE INTERSECTION OF THE CENTERLINE OF DEL NORTE BOULEVARD, 76.00 FEET WIDE, AS SHOWN ON THE RECORD OF SURVEY FILED IN BOOK 53, PAGES 64 THROUGH 66 INCLUSIVE OF RECORDS OF SURVEY, IN THE OFFICE OF SAID COUNTY RECORDER, WITH A LINE PARALLEL WITH AND 130.00 FEET NORTHERLY OF, MEASURED AT RIGHT ANGLES, THE SOUTHERLY LINE OF SAID PARCEL C;
THENCE ALONG SAID PARALLEL LINE SOUTH 89°47'40" WEST 60.00 FEET TO THE TRUE POINT OF BEGINNING;
THENCE CONTINUING SOUTH 89°47'40" WEST 2,725.30 FEET;
THENCE NORTH 00°01'40" WEST 1,036.28 FEET;
THENCE NORTH 89°58'20" EAST 2,708.12 FEET;
THENCE SOUTH 44°48'15" EAST 35.49 FEET;
THENCE SOUTH 89°34'49" EAST 6.00 FEET TO A LINE PARALLEL WITH AND 38.00 FEET WESTERLY OF THE CENTERLINE OF SAID DEL NORTE BOULEVARD;
THENCE ALONG SAID PARALLEL LINE, SOUTH 00°25'11" WEST 1,002.62 FEET TO THE TRUE POINT OF BEGINNING.

ABBREVIATIONS:

(X.XX)	EXISTING ELEVATION	POC	POINT OF CONNECTION
BLDG	BUILDING	PR	PROPOSED
BMP	BEST MANAGEMENT PRACTICES	RCP	REINFORCED CONCRETE PIPE
BW	BACK OF WALL	RET.	RETAINING
CL	CENTERLINE	RL	RIDGE LINE
EG	EXISTING GRADE	RW	RIGHT OF WAY
EP	EDGE OF PAVEMENT	SD	STORM DRAIN
EX	EXISTING	SF	SQUARE FEET
FF	FINISHED FLOOR ELEVATION	SDWK	SIDEWALK
		STBK	SETBACK
FG	FINISHED GRADE	STR	STRUCTURE
FH	FIRE HYDRANT	SS	SANITARY SEWER
FL	FLOW LINE	TC	TOP OF CURB
FS	FINISHED SURFACE	TG	TOP OF GRATE
FW	FIRE WATER	TP	TOP OF PAVEMENT
GB	GRADE BREAK	TW	TOP OF WALL
IE	INVERT ELEVATION	TYP	TYPICAL
LP	LOW POINT	WQ	WATER QUALITY
LS	LANDSCAPE		
MH	MANHOLE		
PL	PROPERTY LINE		

OWNER/DEVELOPER:

SEEFRIED INDUSTRIAL PROPERTIES
C/O SAKIOKA FARMS
2301 ROSECRANS AVENUE, SUITE 3165
EL SEGUNDO, CA 90245
WWW.SEEFFRIEDPROPERTIES.COM
CONTACT: SCOTT IRWIN
PH: 949.836.5678
SCOTTIRWIN@SEEFRIEDPROPERTIES.COM

ARCHITECT

WARE MALCOMB
4683 CHABOT DRIVE, SUITE 300,
PLEASANTON, CA 94588
PH: 949.244.9620 EXT 1285
CONTACT: PAUL NORCROSS

SURVEYOR:

KIMLEY-HORN AND ASSOCIATES, INC.
401 B STREET, SUITE 600,
SAN DIEGO, CA 92101
PH: 619.744.0144
CONTACT: DAVIE COWAN, P.E.

CIVIL ENGINEER:

KIMLEY-HORN AND ASSOCIATES, INC.
401 B STREET, SUITE 600,
SAN DIEGO, CA 92101
PH: 619.744.0144
CONTACT: DAVIE COWAN, P.E.

TOPOGRAPHY SOURCE

TENTATIVE TRACT NO. 5996
DELANE ENGINEERING
400 W VENTURA BLVD. SUITE 265
CAMARILLO, CA 93010
CONTACT: SCOTT UHLES

GEOTECHNICAL

TERRACON CONSULTANTS, INC.
1421 EDINGER AVENUE, SUITE C
TUSTIN, CA 92780
PROJECT NO. 60185017

UTILITY PROVIDERS:

CABLE: SPECTRUM
721 MULHARDT AVE.
OXNARD, CA 9303
PH: 805.4855.3888

WATER: CITY OF OXNARD
251 S. HAYES AVENUE
OXNARD, CA 93030
PH: 805.385.8154

WATER: CALLEGUAS MUNICIPAL WATER DISTRICT
2100 OLSEN ROAD
THOUSAND OAKS, CA 91360
PH: 805.526.9323

SEWER: CITY OF OXNARD
6001 S. PERKINS ROAD
OXNARD, CA 93030
PH: 805.488.3517

TELEPHONE: FRONTIER
201 FLYNN ROAD
CAMARILLO, CA 93012
PH: 805.445.9116
CONTACT: TOM PEARSO

ELECTRIC: SOUTHERN CALIFORNIA EDISON
10180 TELEGRAPH ROAD
VENTURA, CA. 93004
PH: 805.654.7437
CONTACT: ALISON PANCHE

GAS: SOUTHERN CALIFORNIA GAS CO.
9400 OAKDALE AVENUE
CHATSWORTH, CA 91313
PH: 805.701.3228
CONTACT: JACK RUSS

EARTHWORK

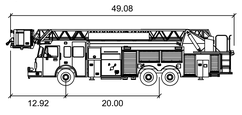
LOT SIZE (ACRES)	64.65
RAW CAD EARTHWORK	
CUT (CU. YD.)	84,606
FILL (CU. YD.)	180,028
CUT FACTOR	1
FILL FACTOR	1
NET (CU. YD.)	**(95,422.0)**

ADDITIONAL EARTHWORK

ITEM	QUANTITY	UNTI	CU. YD.
BUILDING AREA	857173	SF	18,519
BUILDING SLAB DEPTH	7.0	IN	
BUIILDING SLAB SUB-BASE	857,173	SF	10,582
Building Slab Compaction = 95%	4.0	IN	
Standard Duty Asphalt (TI=6.0, AC =3.0, AB = 6)	655,262.0	SF	18,202
Section	9.0	IN	
Heavy Duty Asphalt (TI=10, AC = 5, AB=11)	350,717.0	SF	17,319
Section	16.0	IN	
Heavy Duty Concrete (TI=10, PCC - 8"/10", AB = 4	236,138.5	SF	10,204
Section	14.0	IN	
Fire Tank (PCC = 7", AB =4")	2,500.0	SF	85
Section	11.0	IN	
Sidewalk (PCC = 4", AB =4")	137,717.3	SF	3,400
Section	8.0	IN	
Utility Spoils (FW, SS, & W)	273.1	CY	273
Storm System and Underground Detention Basins	476,495.0	CF	17,648
ADDITIONAL CUT SUM (CU. YD.)			**96233**
CUT FACTOR (SHRINKAGE)			**1.0**
NET CUT (CU. YD.)			**96,233**

ESTIMATED EARTHWORK RESULTS

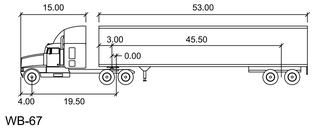
LOT SIZE (ACRES)	64.65
CUT (CU. YD.)	180,839
FILL (CU. YD.)	180,028
NET CUT (CU. YD.)	**800**



Smeal Platform RM 100ft

feet

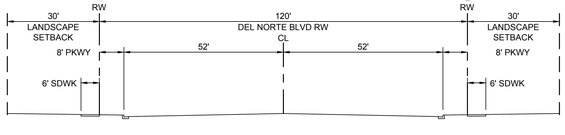
Width	: 8.33		
Track	: 7.83		
Lock to Lock Time	: 6.0		
Steering Angle	: 48.0		



WB-67

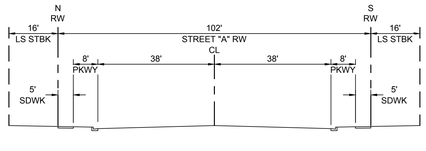
feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		



DEL NORTE BLVD

NTS



STREET "A"

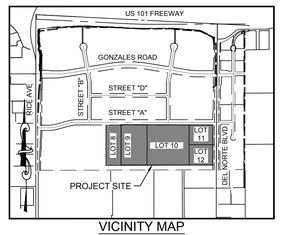
NTS

SHEET INDEX

Sheet Number	Sheet Title
1	ENGINEERING SITE PLAN
2	GRADING PLAN - 1
3	GRADING PLAN - 2
4	GRADING PLAN - 3
5	GRADING PLAN - 4
6	STORMWATER QUALITY MAP
7	UTILITY PLAN - 1
8	UTILITY PLAN - 2

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
FENCE CHAINLINK
ADA PATH OF TRAVEL
FIRE LANE
BUILDING OUTLINE
RETAINING WALL
STORM DRAIN MANHOLE
SEWER MANHOLE
STORM DRAIN CURB INLET
STORM DRAIN CLEAN OUT
GRATE INLET
STORM WATER QUALITY BMP
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION



VICINITY MAP

THOMAS GUIDE: MAP PG 523-BS-D3

NOT TO SCALE

No.	REVISIONS	DATE	BY

Kimley»Horn

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Kimley»Horn
Engineer EUGENE D. COWAN III.
P.E. No. 86803 Date 3/5/2020

K/HA PROJECT 195170003	
DATE	3/5/2020
SCALE	AS SHOWN
DESIGNED BY	KS&DC
DRAWN BY	KS
CHECKED BY	DC

ENGINEERING SITE PLAN

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD CA

SHEET NUMBER
1 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Kha Layout:ENGINEERING SITE PLAN March 05, 2020 02:52:49pm K:\SND_LDEV\195170003 - Project Bruin\Design\PlanSheets - DDR Civil\OVERALL SITE PLAN.dwg
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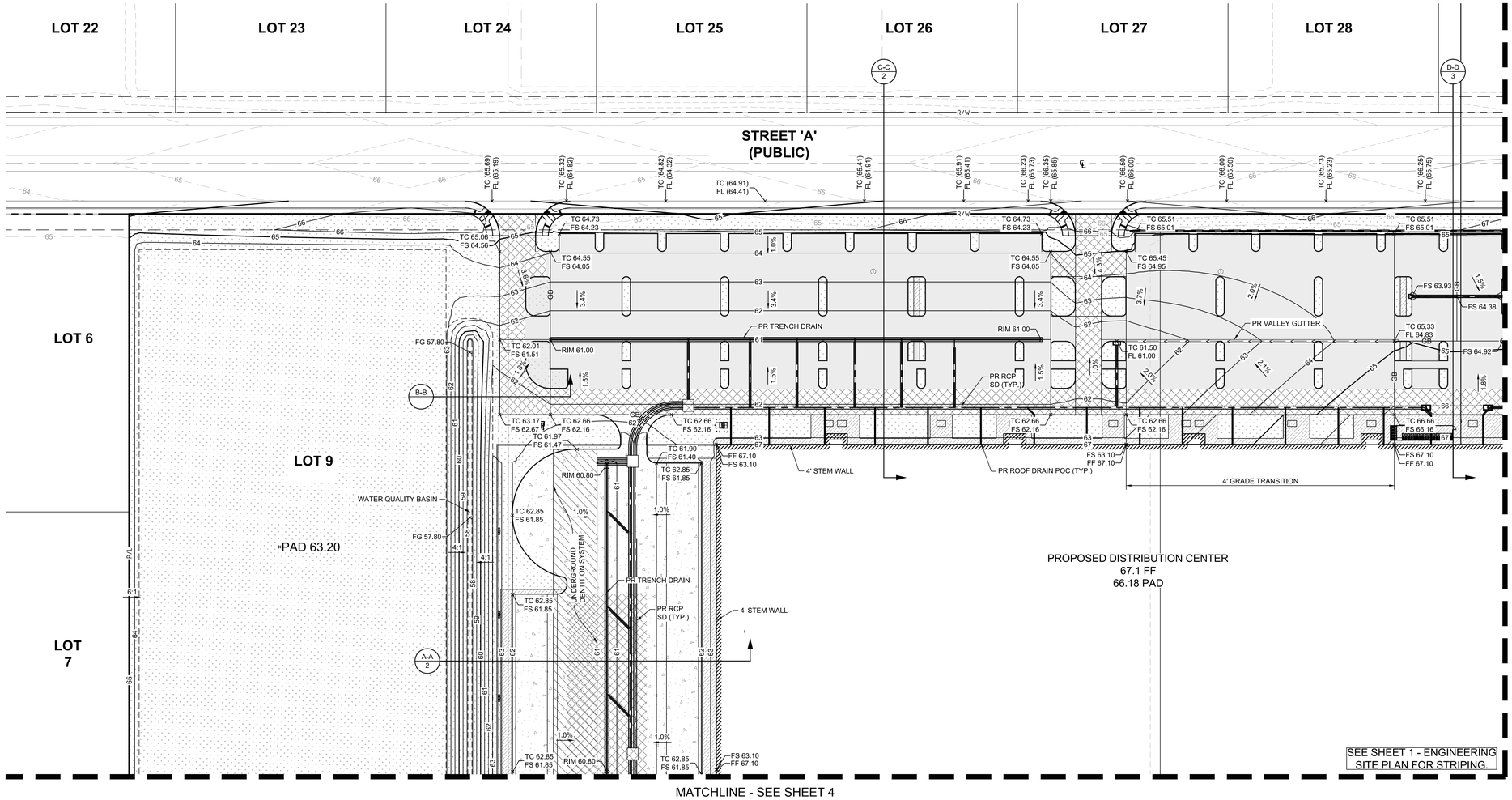

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
PROPOSED CONTOUR — 100
EXISTING CONTOUR PER TTM 5996 — 100
GRADING LIMITS
GRADE BREAK LINE — GB
RIDGE LINE — R
RETAINING WALL
SLOPE — X.XX%
SPOT ELEVATION — XX 100.00
ASPHALT PAVEMENT (3" PCC / 6" AB)
HEAVY DUTY ASPHALT PAVEMENT (5" AC / 11" AB)
CONCRETE PAVEMENT (10" PCC / 4" AB)
CONCRETE SIDEWALK (4" PCC / 4" AB)
LANDSCAPE (SEE LANDSCAPE PLANS)
FENCE CHAINLINK — X
STORM LINE — SD
SEWER LINE — S
WATER LINE — W
FIRE WATER — FW
STORM DRAIN MANHOLE
SEWER MANHOLE
STORM DRAIN CURB INLET
STORM DRAIN CLEAN OUT
GRATE INLET
STORM WATER QUALITY BMP
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION

MATCHLINE - SEE SHEET 3

NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING TOPOGRAPHY AND STRUCTURES ON THE SITE AND IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING WORK.
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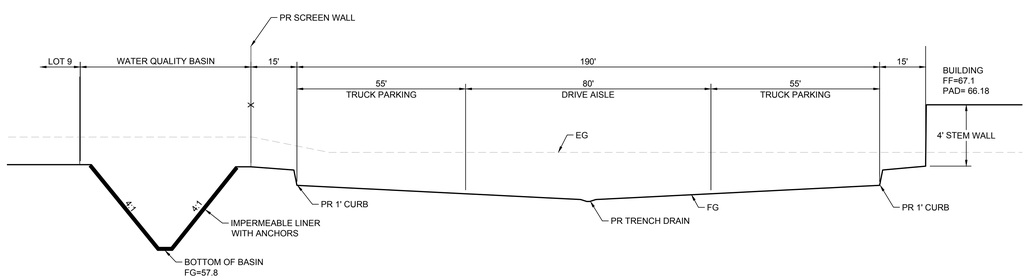
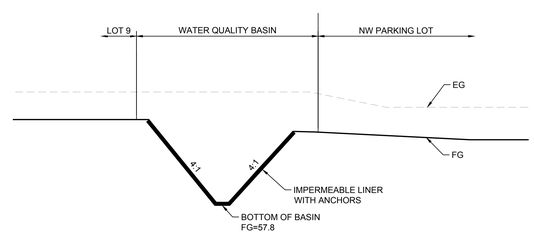
6. MATCH EXISTING ELEVATIONS AT THE PROPERTY LIMITS.
7. ALL STORM DRAIN UTILITIES ARE PRELIMINARY AND SUBJECT TO CHANGE UPON FINAL DESIGN.
6. SEE ELECTRIC FOR SITE LIGHTING

ABBREVIATIONS:

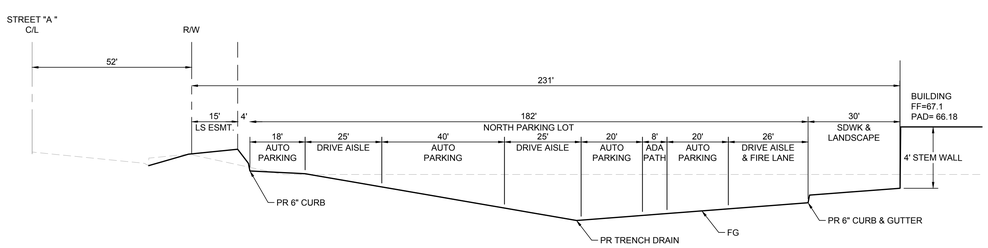
(X.XX)	EXISTING ELEVATION	POC	POINT OF CONNECTION
BLDG	BUILDING	PR	PROPOSED
BMP	BEST MANAGEMENT PRACTICES	RCP	REINFORCED CONCRETE PIPE
BW	BACK OF WALL	RET.	RETAINING
CL	CENTERLINE	RL	RIDGE LINE
EG	EXISTING GRADE	RW	RIGHT OF WAY
EP	EDGE OF PAVEMENT	SD	STORM DRAIN
EX	EXISTING	SF	SQUARE FEET
FF	FINISHED FLOOR ELEVATION	SDWK	SIDEWALK
		STBK	SETBACK
FG	FINISHED GRADE	STR	STRUCTURE
FH	FIRE HYDRANT	SS	SANITARY SEWER
FL	FLOW LINE	TC	TOP OF CURB
FS	FINISHED SURFACE	TG	TOP OF GRATE
FW	FIRE WATER	TP	TOP OF PAVEMENT
GB	GRADE BREAK	TW	TOP OF WALL
IE	INVERT ELEVATION	TYP	TYPICAL
LP	LOW POINT	WQ	WATER QUALITY
LS	LANDSCAPE		
MH	MANHOLE		
PL	PROPERTY LINE		



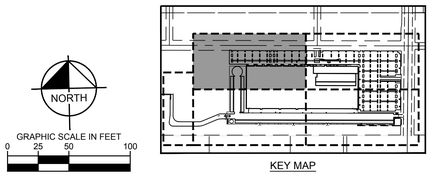
SECTION A-A
HORZ: 1"=20'
VERT: 1"=4'



SECTION B-B
HORZ: 1"=20'
VERT: 1"=4'



SECTION C-C
HORZ: 1"=20'
VERT: 1"=4'



KEY MAP

NORTH

GRAPHIC SCALE IN FEET
0 25 50 100

No.	REVISIONS	DATE	BY

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Kimley»Horn
Engineer EUGENE D. COWAN III
P.E. No. 86803 Date 3/5/2020

KHA PROJECT 195170003
DATE 3/5/2020
SCALE AS SHOWN
DESIGNED BY KS&DC
DRAWN BY KS
CHECKED BY DC

GRADING PLAN - 1

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD, CA

SHEET NUMBER
2 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Kha_Layout:GRADING PLAN - 1 March 05, 2020 02:53:02pm K:\SND_LDEV\195170003 - Project Bruin\Design\Plan\Sheets - EDR Civil\1-2 GRADING PLAN.dwg
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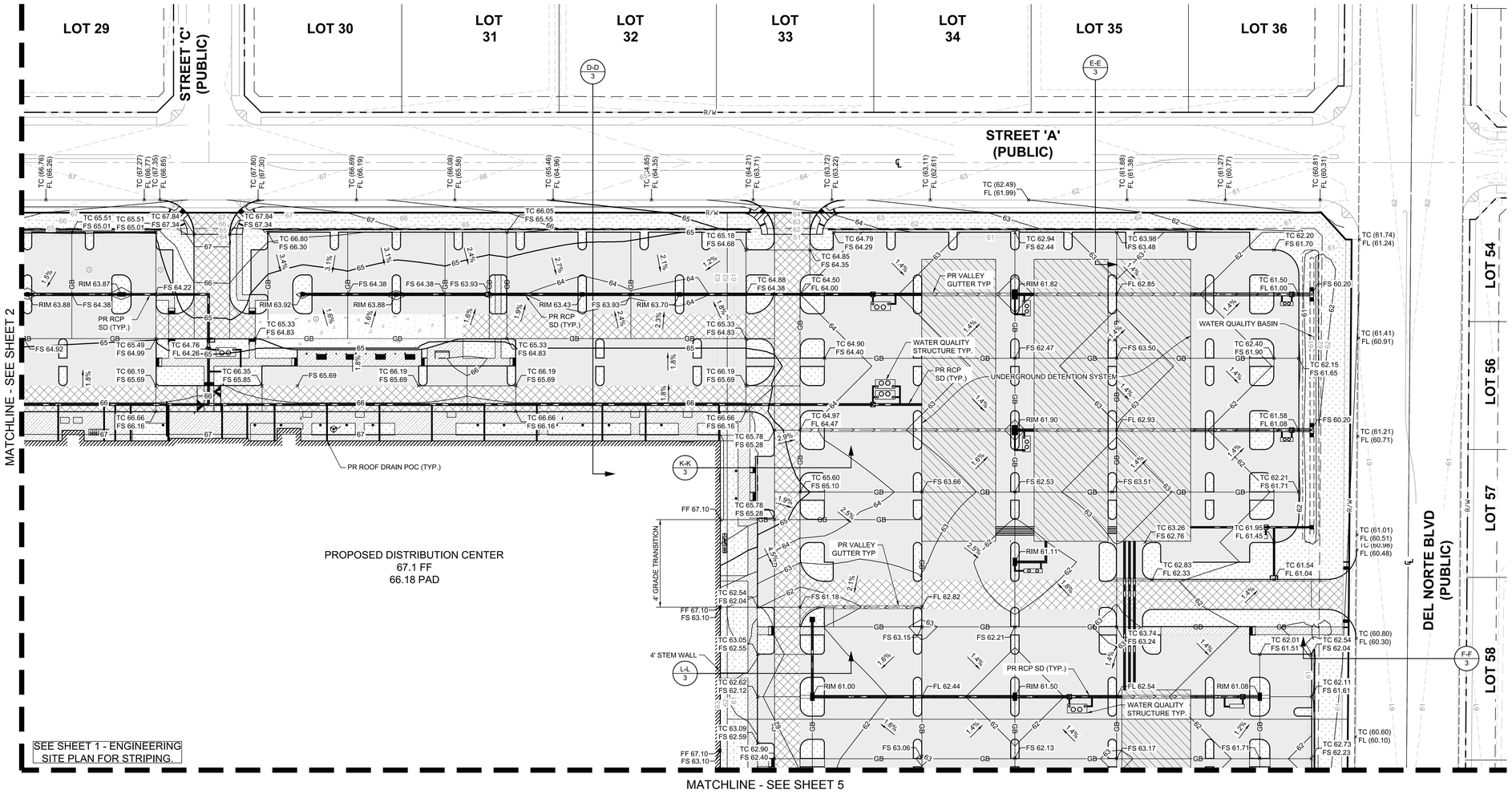
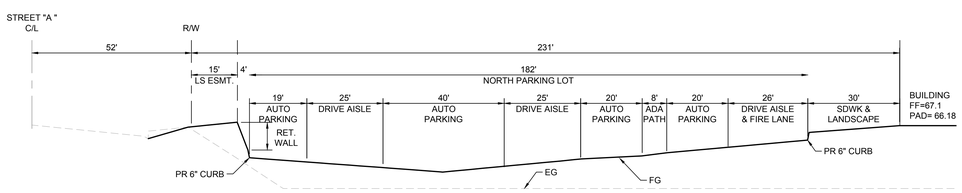
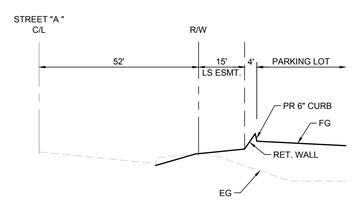




SECTION D-D
HORZ: 1"=20'
VERT: 1"=4'



SECTION E-E
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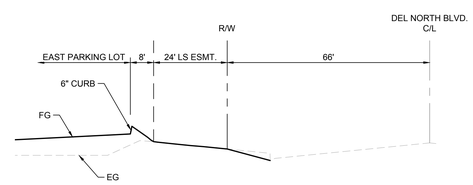
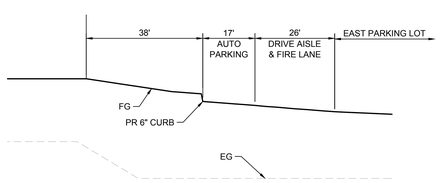
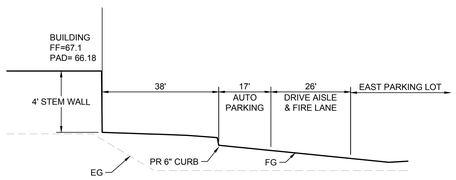
VERT: 1"=4'



SECTION F-F
HORZ: 1"=20'
VERT: 1"=4'



SECTION K-K
HORZ: 1"=20'
VERT: 1"=4'



SECTION L-L
HORZ: 1"=20'
VERT: 1"=4'

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
PROPOSED CONTOUR — 100
EXISTING CONTOUR PER TTM 5996 — 100
GRADING LIMITS
GRADE BREAK LINE — GB
RIDGE LINE — R
RETAINING WALL
SLOPE — X.XX%
SPOT ELEVATION — XX 100.00
ASPHALT PAVEMENT (3" PCC / 6" AB)
HEAVY DUTY ASPHALT PAVEMENT (5" AC / 11" AB)
CONCRETE PAVEMENT (10" PCC / 4" AB)
CONCRETE SIDEWALK (4" PCC / 4" AB)
LANDSCAPE (SEE LANDSCAPE PLANS)
FENCE CHAINLINK — X
STORM LINE — SD
SEWER LINE — S
WATER LINE — W
FIRE WATER — FW
STORM DRAIN MANHOLE
SEWER MANHOLE
STORM DRAIN CURB INLET
STORM DRAIN CLEAN OUT
GRATE INLET
STORM WATER QUALITY BMP
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION

NOTES:

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FG	FINISHED GRADE	STBK	SETBACK
FH	FIRE HYDRANT	STR	STRUCTURE
FL	FLOW LINE	SS	SANITARY SEWER
FS	FINISHED SURFACE	TC	TOP OF CURB
FW	FIRE WATER	TG	TOP OF GRATE
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LP	LOW POINT	TYP	TYPICAL
LS	LANDSCAPE	WQ	WATER QUALITY
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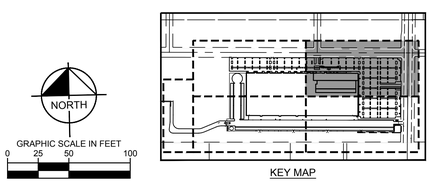
PL	PROPERTY LINE		



KEY MAP

No.	REVISIONS	DATE	BY

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Kimley»Horn
Engineer EUGENE D. COWAN III
P.E. No. 86803 Date 3/5/2020

KHA PROJECT	195170003
DATE	3/5/2020
SCALE	AS SHOWN
DESIGNED BY	KS&DC
DRAWN BY	KS
CHECKED BY	DC

GRADING PLAN - 2

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD, CA

SHEET NUMBER
3 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Kha_Layout:GRADING PLAN - 2 March 05, 2020 02:53:14pm K:\SND_LDEV\195170003 - Project Bruin\Design\Plan\Sheets - EDR Civil\1-2 GRADING PLAN.dwg
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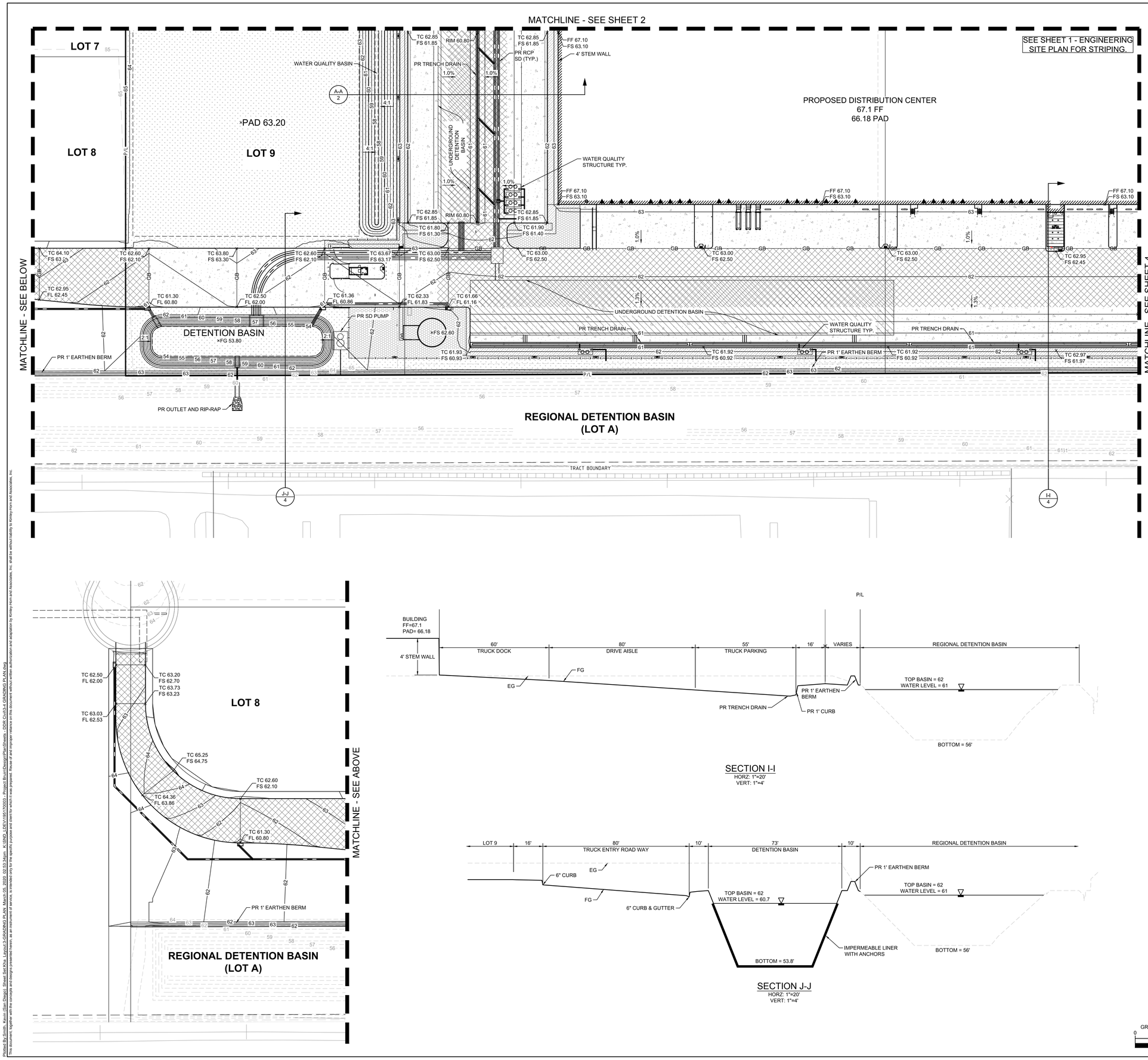

SECTION I-I
HORZ: 1"=20'
VERT: 1"=4'

SECTION J-J
HORZ: 1"=20'
VERT: 1"=4'

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
PROPOSED CONTOUR — 100
EXISTING CONTOUR PER TTM 5996 — 100
GRADING LIMITS
GRADE BREAK LINE — GB
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FENCE CHAINLINK — X
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FIRE HYDRANT
FIRE DEPARTMENT CONNECTION

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6. SEE SITE LIGHTING PLAN FOR LIGHT POLE LOCATIONS.

ABBREVIATIONS:

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BMP	BEST MANAGEMENT PRACTICES	RCP	REINFORCED CONCRETE PIPE
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EP	EDGE OF PAVEMENT	SD	STORM DRAIN
EX	EXISTING	SF	SQUARE FEET
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FG	FINISHED GRADE	STR	STRUCTURE
FH	FIRE HYDRANT	SS	SANITARY SEWER
FL	FLOW LINE	TC	TOP OF CURB
FS	FINISHED SURFACE	TG	TOP OF GRATE
FW	FIRE WATER	TP	TOP OF PAVEMENT
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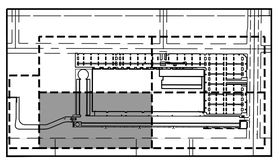
IE	INVERT ELEVATION	TYP	TYPICAL
LP	LOW POINT	WQ	WATER QUALITY
LS	LANDSCAPE		
MH	MANHOLE		
PL	PROPERTY LINE		

NORTH
GRAPHIC SCALE IN FEET
0 25 50 100



KEY MAP

No.	REVISIONS	DATE	BY

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DATE 3/5/2020
SCALE AS SHOWN
DESIGNED BY KS&DC
DRAWN BY KS
CHECKED BY DC

GRADING PLAN - 3

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.

CITY OF OXNARD CA

SHEET NUMBER
4 OF 8

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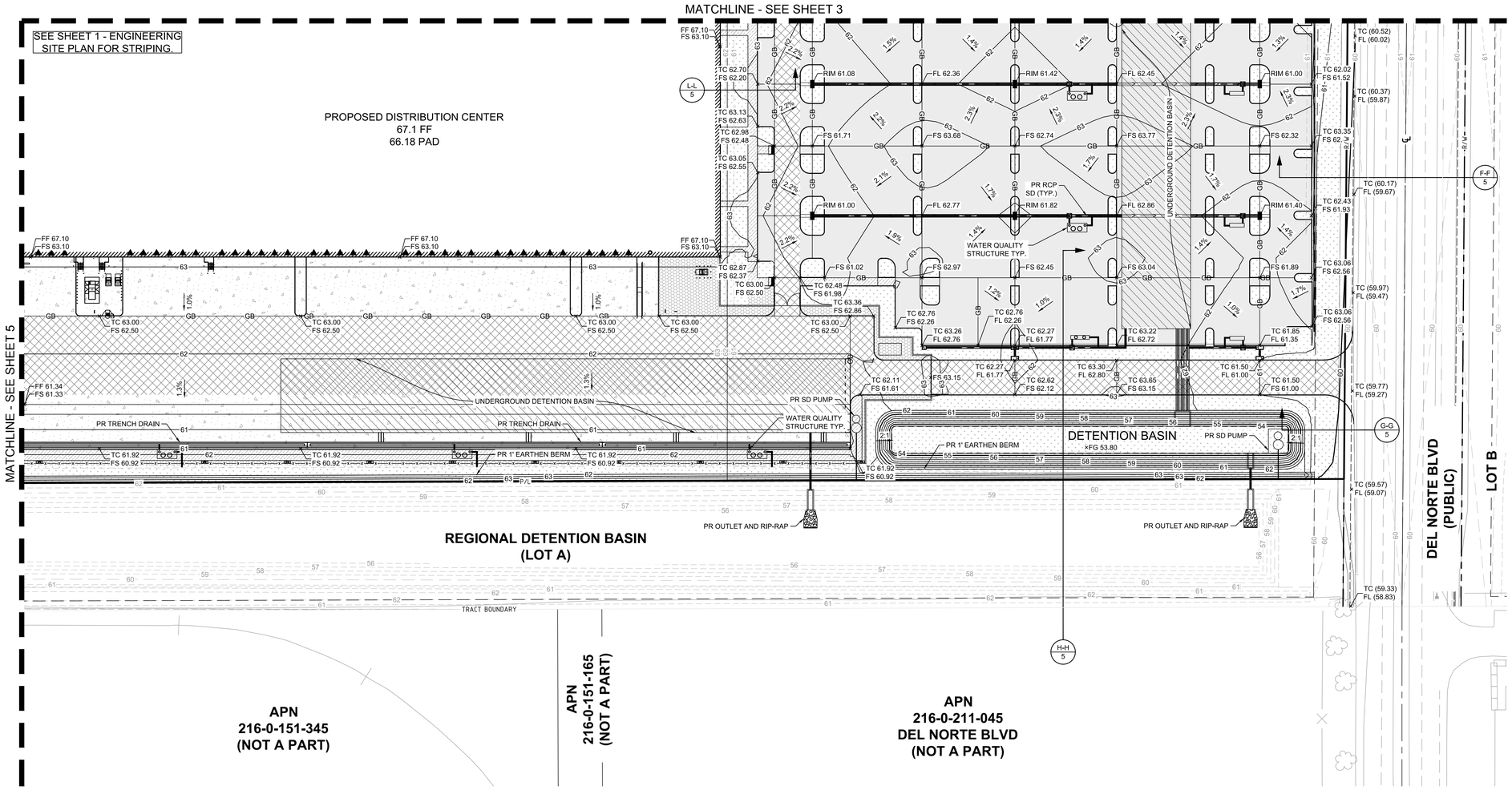
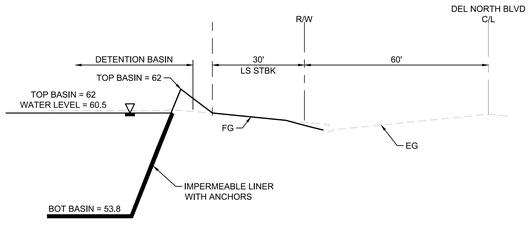
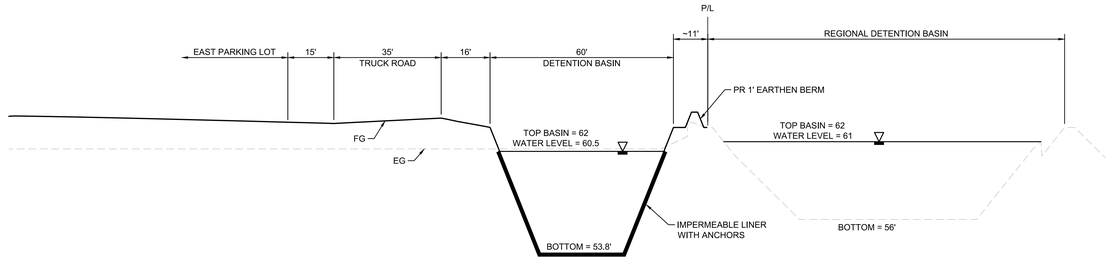




SECTION G-G
HORZ: 1"=20'
VERT: 1"=4'



SECTION H-H
HORZ: 1"=20'
VERT: 1"=4'

LEGEND

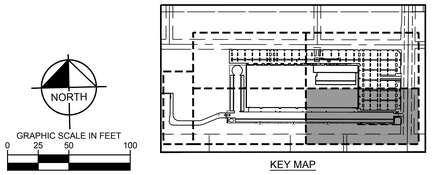
PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
PROPOSED CONTOUR — 100
EXISTING CONTOUR PER TTM 5996 — 100
GRADING LIMITS
GRADE BREAK LINE — GB
RIDGE LINE — R
RETAINING WALL
SLOPE — X.XX%
SPOT ELEVATION — XX 100.00
ASPHALT PAVEMENT (3" PCC / 6" AB)
HEAVY DUTY ASPHALT PAVEMENT (5" AC / 11" AB)
CONCRETE PAVEMENT (10" PCC / 4" AB)
CONCRETE SIDEWALK (4" PCC / 4" AB)
LANDSCAPE (SEE LANDSCAPE PLANS)
FENCE CHAINLINK — X
STORM LINE — SD
SEWER LINE — S
WATER LINE — W
FIRE WATER — FW
STORM DRAIN MANHOLE
SEWER MANHOLE
STORM DRAIN CURB INLET
STORM DRAIN CLEAN OUT
GRATE INLET
STORM WATER QUALITY BMP
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION

NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING TOPOGRAPHY AND STRUCTURES ON THE SITE AND IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING WORK.
2. ALL ELEVATIONS SHOWN DEPICT FINISHED GRADE OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED. GENERAL CONTRACTOR TO COORDINATE WITH EXCAVATION, LANDSCAPE AND PAVING SUBCONTRACTORS REGARDING TOPSOIL THICKNESS FOR LANDSCAPE AREAS AND PAVEMENT SECTION THICKNESS FOR PAVED AREAS TO PROPERLY ENSURE ADEQUATE CUT TO ESTABLISH SUBGRADE ELEVATIONS.
3. NO EARTHEN SLOPE SHALL BE GREATER THAN 2:1, UNLESS OTHERWISE NOTED.
4. MAXIMUM SLOPE IN ACCESSIBLE PARKING SPACES AND LOADING ZONES SHALL NOT EXCEED 2.0% IN ALL DIRECTIONS.
5. MAXIMUM RUNNING SLOPE SHALL NOT EXCEED 5% AND CROSS SLOPE SHALL NOT EXCEED 2% ON ALL SIDEWALKS AND ACCESSIBLE ROUTES.
6. MATCH EXISTING ELEVATIONS AT THE PROPERTY LIMITS.
7. ALL STORM DRAIN UTILITIES ARE PRELIMINARY AND SUBJECT TO CHANGE UPON FINAL DESIGN.
6. SEE SITE LIGHTING PLAN FOR LIGHT POLE LOCATIONS.

ABBREVIATIONS:

(X.XX)	EXISTING ELEVATION	POC	POINT OF CONNECTION
BLDG	BUILDING	PR	PROPOSED
BMP	BEST MANAGEMENT PRACTICES	RCP	REINFORCED CONCRETE PIPE
BW	BACK OF WALL	RET.	RETAINING
CL	CENTERLINE	RL	RIDGE LINE
EG	EXISTING GRADE	RW	RIGHT OF WAY
EP	EDGE OF PAVEMENT	SD	STORM DRAIN
EX	EXISTING	SF	SQUARE FEET
FF	FINISHED FLOOR ELEVATION	SDWK	SIDEWALK
		STBK	SETBACK
FG	FINISHED GRADE	STR	STRUCTURE
FH	FIRE HYDRANT	SS	SANITARY SEWER
FL	FLOW LINE	TC	TOP OF CURB
FS	FINISHED SURFACE	TG	TOP OF GRATE
FW	FIRE WATER	TP	TOP OF PAVEMENT
GB	GRADE BREAK	TW	TOP OF WALL
IE	INVERT ELEVATION	TYP	TYPICAL
LP	LOW POINT	WQ	WATER QUALITY
LS	LANDSCAPE		
MH	MANHOLE		
PL	PROPERTY LINE		



KEY MAP

NORTH

GRAPHIC SCALE IN FEET
0 25 50 100

No.	REVISIONS	DATE	BY

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Kimley»Horn
Engineer EUGENE D. COWAN III.
P.E. No. 86803 Date 3/5/2020

KHA PROJECT 195170003
DATE 3/5/2020
SCALE AS SHOWN
DESIGNED BY KS&DC
DRAWN BY KS
CHECKED BY DC

GRADING PLAN - 4

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD CA

SHEET NUMBER
5 OF 8

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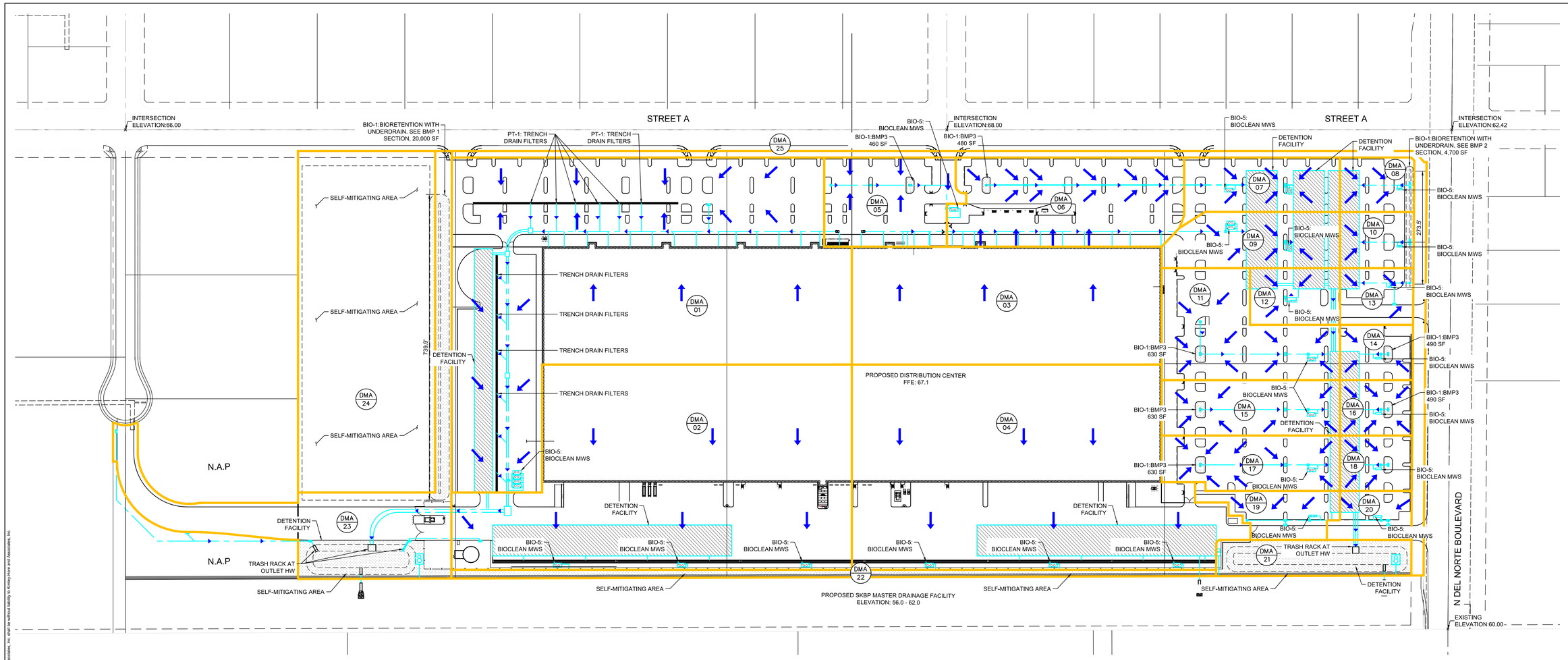

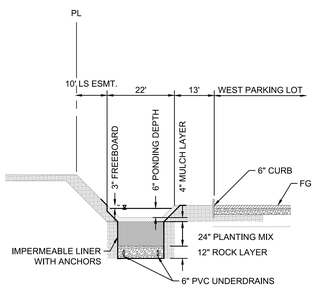

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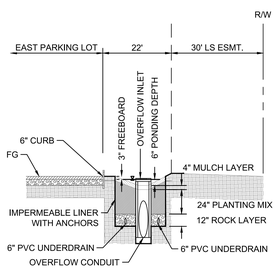
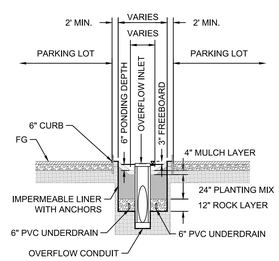
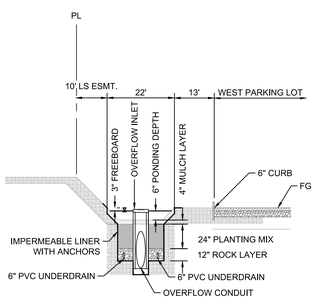
VERT: 1"=4'

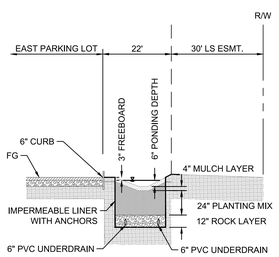


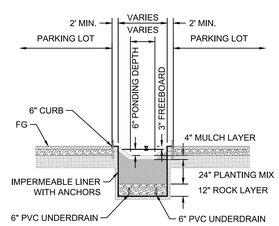
BIO-1: BMP 2
HORZ: 1"=20'
VERT: 1"=4'



BIO-1: TYP. PARKING LOT BMP 3
HORZ: 1"=20'
VERT: 1"=4'







SQDF TREATMENT FLOW SUMMARY TABLE

DMA ID	AREA (ac)	IMPERVIOUS AREA (ac)	C, WEIGHTED RUNOFF COEFFICIENT	SQDF (cfs)
1	12.40	11.55	0.89	3.86
2	9.49	9.49	0.95	3.16
3	4.91	4.91	0.95	1.63
4	9.26	9.23	0.95	3.07
5	1.55	1.45	0.89	0.48
6	2.73	2.47	0.86	0.83
7	1.16	1.05	0.86	0.35
8	0.54	0.39	0.71	0.13
9	1.26	1.14	0.86	0.38
10	0.56	0.44	0.75	0.15
11	2.00	1.68	0.81	0.57
12	0.69	0.65	0.89	0.22
13	0.56	0.34	0.60	0.12
14	0.54	0.45	0.81	0.15
15	1.33	1.16	0.84	0.39
16	0.54	0.47	0.84	0.16
17	1.28	1.14	0.85	0.38
18	0.54	0.44	0.78	0.15
19	0.70	0.56	0.77	0.19
20	0.51	0.39	0.74	0.13
21	0.94	0.00	0.05	SELF MITIGATING
22	0.77	0.00	0.05	SELF MITIGATING
23	3.45	1.87	0.54	0.65
24	6.31	0.00	0.05	SELF MITIGATING
25	1.55	0.00	0.05	SELF MITIGATING

BIO-5: BIOCLEAN MWS
NTS

LEGEND

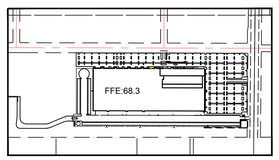
- DMA ID (XX / XX) — DMA ID NUMBER
- DMA BOUNDARY
- FLOW DIRECTION
- PROPERTY LINE
- PROPOSED STORM DRAIN LINE
- FLOWLINE

NOTES

1. PROJECT PROPOSES TO INSTALL CURB INLET INSERTS, TRENCH DRAIN FILTERS, AND TRASH RACKS AT DETENTION BASIN OUTLETS AS MEANS OF PRETREATMENT
2. DMAS COMPRISED OF 100% PERVIOUS AREA ARE CONSIDERING SELF MITIGATING AND DO NOT REQUIRE FURTHER WATER QUALITY MEASURES.

NORTH

GRAPHIC SCALE IN FEET
0 50 100 200



KEY MAP

No.	REVISIONS	DATE	BY

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Kimley»Horn
Engineer EUGENE D. COWAN III
P.E. No. 86803 Date 3/5/2020

KHA PROJECT	195170003
DATE	3/5/2020
SCALE	AS SHOWN
DESIGNED BY	KS&DC
DRAWN BY	KS
CHECKED BY	DC

STORM WATER QUALITY MAP

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.

CITY OF OXNARD CA

SHEET NUMBER
7 OF 8

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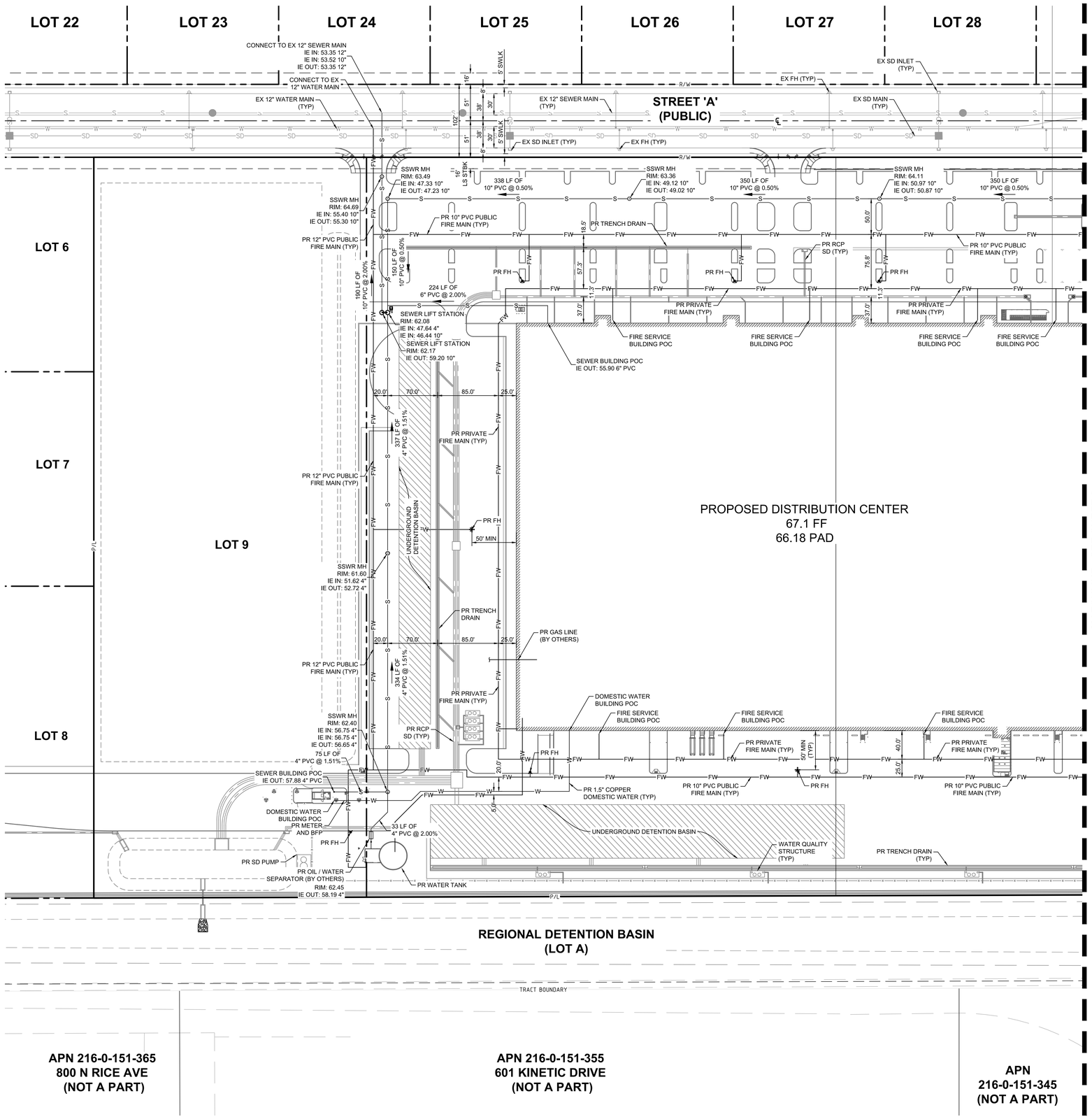

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
GAS LINE
STORM LINE
SEWER LINE
WATER LINE
FIRE WATER LINE
STORM DRAIN CLEAN OUT
STORM DRAIN CURB INLET
GRATE INLET
STORM WATER QUALITY BMP
SEWER MANHOLE
SEWER CLEANOUT
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION
METER
POINT OF CONNECTION

NOTES:

1. ALL UTILITY PIPE LENGTHS ON PLANS ARE SHOWN FOR REFERENCE AND COORDINATION. PIPE LENGTHS ARE NOT SHOWN FOR BIDDING OR ESTIMATING PURPOSES.
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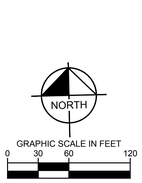

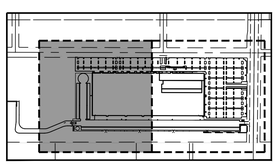

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Engineer EUGENE D. COWAN III.
P.E. No. 86803 Date 3/5/2020

KHA PROJECT 189170003
DATE 3/5/2020
SCALE AS SHOWN
DESIGNED BY KSADC
DRAWN BY KS
CHECKED BY DC

UTILITY PLAN - 1

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD, CA

SHEET NUMBER
7 OF 8

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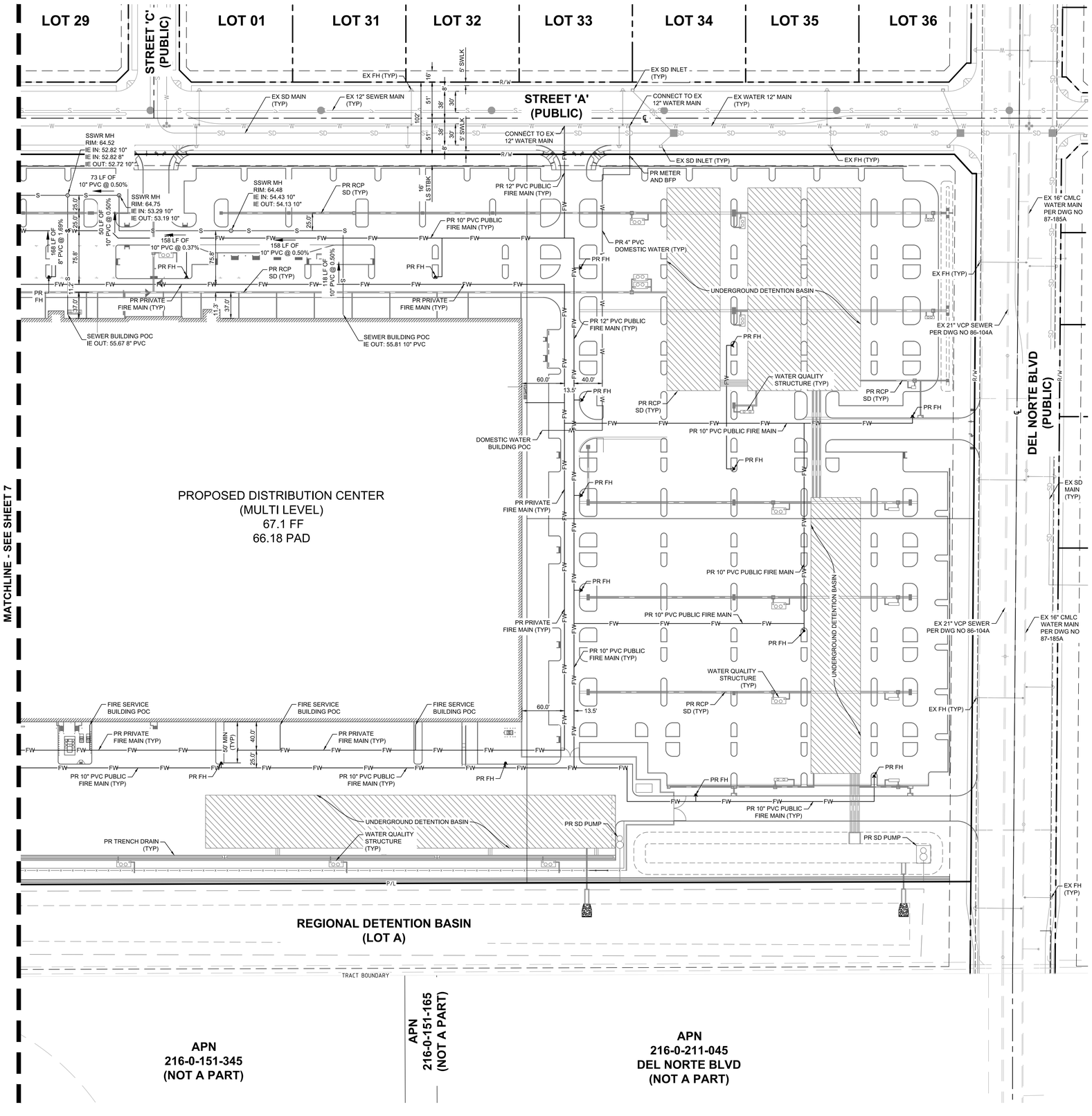

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
GAS LINE
STORM LINE
SEWER LINE
WATER LINE
FIRE WATER LINE
STORM DRAIN CLEAN OUT
STORM DRAIN CURB INLET
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SEWER MANHOLE
SEWER CLEANOUT
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION
METER
POINT OF CONNECTION

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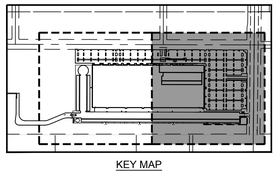
DATE 3/5/2020
SCALE AS SHOWN
DESIGNED BY KS&DC
DRAWN BY KS
CHECKED BY DC

UTILITY PLAN - 2

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD, CA

NORTH
GRAPHIC SCALE IN FEET
0 30 60 120



KEY MAP

SHEET NUMBER
8 OF 8

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APPENDIX M

SAKIOKA FARMS BUSINESS PARK SPECIFIC PLAN

SAKIOKA FARMS
BUSINESS PARK

OXNARD, CALIFORNIA

SPECIFIC PLAN
JUNE 2012

LANGDON WILSON ARCHITECTURE PLANNING INTERIORS

SAKIOKA FARMS
BUSINESS PARK SPECIFIC PLAN
OXNARD, CALIFORNIA

RESOLUTION NO. 14,235

ADOPTED: June 12, 2012

EFFECTIVE DATE: July 14, 2012

SAKIOKA FARMS
BUSINESS PARK SPECIFIC PLAN
OXNARD, CALIFORNIA

Prepared for:
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Chief Operating Officer
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Costa Mesa, California 92626-4611
Tel: 714.434.9318 Fax: 714.434.9054

For Presentation and Consideration by:
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305 West Third Street
Oxnard, California 93030

Prepared by:
Langdon Wilson International
Architecture Planning Interiors
3901 Westerly Place, Suite 111
Newport Beach, California 92660
Tel: 949.833.9193 Fax: 949.833.3098

Consultants:
RBF - Civil Engineers
LSA - Traffic Engineers
SLA Studio Land - Landscape Architect
TBD - Signage Consultant

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The Sakioka Farms Specific Plan is intended to encourage and guide future projects within this important gateway to the City of Oxnard. The Specific Plan presents a Master Plan for orderly development with new guidelines and regulations, intended to implement the objectives of the Specific Plan. The following is a summary of the major objectives of the Sakioka Farms Specific Plan.

SUMMARY OF OBJECTIVES

Purpose and Intent

- To establish the planning concept, design theme, development regulations and administrative procedures necessary to achieve an orderly and compatible development of the project area.
- To implement the goals, policies and objectives of the Oxnard 2030 General Plan.
- To provide the framework and guidelines for a well planned phased business park development and achieve a high level of quality design.

Development Concept

- To prepare a development concept which provides for a large master planned industrial/business park complex.
- To establish the general type, location, parameters and character of all development within the site boundaries, while allowing for creative design ideas on individual projects consistent with an overall concept.
- To achieve flexibility in future project development and maintain consistency with the General Plan
- To allow for development in a manner that is both flexible and compatible with the surrounding neighborhood. The development concept approach recognizes that the area will be incrementally developed in phases over an extended period of time and provide an opportunity for a variety of quality uses.

Planning Areas

- To divide the site into seven Planning Areas. The purpose of identifying separate Planning Areas is to create distinct clusters of activities and allow for individual project development to occur in a manner consistent with the overall Master Plan Concept.

Master Plan

- To prepare a Master Plan that establishes the direction under which the Specific Plan will be developed. While land use flexibility is permitted, only one Circulation Plan is proposed. The Circulation Plan will be one of the primary controlling factors in the ultimate development of the project area.

- To prepare a Master Plan that permits a great number of options regulated through the comprehensive Specific Plan guidelines and standards.
- To prepare a Master Plan that recognizes the area adjacent to the Ventura Freeway as a gateway to the City and suggests a series of high profile, high quality office buildings.
- To implement the goals and policies of the Oxnard General Plan by defining the physical development of the Sakioka Farms Business Park site.
- To identify sufficient infrastructure and public facilities to adequately and efficiently support anticipated land uses and activities.

Circulation Plan

- To accommodate a number of different development scenarios. The overall circulation concept relies on a hierarchy of circulation features ranging from major arterials to local streets. The system is designed to accommodate traffic to the project area and around the project area while discouraging through traffic intrusion into individual Planning Areas.
- To provide for a phasing of street improvements to correspond to the phased development in each Planning Area.

Landscape Concept

- To create a unique character and identity for the project and community which reinforces the planning and architectural concepts.
- To create a hierarchy and organization of the landscape which assists in way-finding and imaging of the project while providing a visual asset to the community.
- To create a project area that:
    - Reflects the "macro-image" of the site through all levels of the project and acts as a unifying element that ties the individual plans together and weaves through the architecture and infrastructure.
    - Develops a pleasant "walkable" streetscape.
    - Creates a memorable vision of the project area and meets or exceeds the expectations of tenants and visitors.
    - Develops a hierarchy of spaces to assist in visitor and tenant way-finding and identification.
    - Ensures the long-term sustainability of the landscape through water conservation irrigation practices, use of drought -tolerant and low water usage materials, and through the limiting of turf use.
    - Ensures that individual project landscape proposals are feasible and compliment the public landscape areas.

- Considers long-term maintenance viability
- Provides shade and wind screening for pedestrian use areas
- Reduces the scale of buildings
- Becomes a visual asset to the community

- To establish a "California" theme, that includes an eclectic mix of indigenous plant and local materials which reflect the historical and cultural background of the area.

Public Facilities

- To identify existing and proposed infrastructure, including water, sewer, storm drain system and facility improvements to serve development within the Specific Plan area.

Phasing Plan

- To accommodate the anticipated intermittent development patterns, all required circulation, infrastructure and community improvements to accommodate each new development of the Specific Plan shall be completed prior to, or simultaneous with, individual projects.

Project Area Character

- To create Design Guidelines which establish the character and style for the development of a business park complex with buildings and streetscapes that have a distinct visual identity.
- To accommodate individual development identities and promote interrelationships between complementary land uses and community features
- To promote a high level of design quality while encouraging creativity on the part of individual project designers.

Site Planning Guidelines

- To create the measure by which basic concepts for coordinated site planning can be realized.
- To establish a strong outline and framework for guiding future individual development projects and to create a unique high quality business park.

Architectural Guidelines

- To establish a comparable character, style and quality for all development projects within the Sakioka Farms Business Park.
- To establish an architectural theme that reflects a contemporary research and development complex..

- To establish policies that create:
  - A unifying theme or common denominator that will be used in the various components of design.
  - Harmonious design elements that complement each other and are common to all projects.
  - Building designs shall reflect an industrial/business office park theme.
  - Building scale, location massing and orientation on the individual sites, shall provided a balance in form and composition
  - Building proportions and inner relationships shall be designed with consideration to adjust projects and activities. Special attention shall be given to maintain the highest quality design harmony and compatibility, especially between new proposals and existing activities.
  - Rhythm and balance in building design shall be obtained through site layout and clustering of activities.
  - Building material chosen should be consistent with the architectural style and theme for the area, and may be a combination of materials.
  - Building finishes and colors shall be chosen form a palette of subtle tones; projects are encouraged to use color accents. The selected finishes should respect the architectural style of the building and surrounding development.
  - Pedestrian sensitivity needs to be carefully considered when designing street level activities.
  - Mechanical equipment shall be screened from view of adjacent property. Mechanical equipment shall not be exposed on the wall surface or roof of a building.
  - Sustainable green building design, construction and operation of developments within the Specific Plan are encouraged.
  - Public art shall be included as part of all large projects within the Specific Plan area, smaller projects may contribute to the establishment and maintenance of a public art program within the common areas.

Landscape Guidelines

- To provide uniformity to the site and establish a "Sense of Place" with both aesthetic and functional considerations. The Landscape Guidelines establish the design and visual qualities for individual development in the project areas.
- To accommodate individual development identities and promote inter-relationship between complementary land uses and community features.
- To promote a high level of design quality while encouraging creativity on the part of individual project designers.
- To propose a continuation of the landscape and streetscape patterns currently surrounding the individual project areas. To develop a consistent and continuous streetscape design where all streets are improved and there are no gaps or areas without landscape improvements.

Signage Guidelines

- To provide a framework for the design and implementation of all exterior signage within the project. The Signage Guidelines contribute to the overall project design theme by requiring consistent solutions to the various categories of signage.
- To create and promote a quality visual environment by allowing only signs which are compatible with their surroundings and which effectively communicate their message.

Purpose and Intent

- To provide specific development regulations and standards that will be applied to individual development projects in each Planning Area of the Specific Plan. The Sakioka Farms Business Park will be the zoning for the project area.

Development Standards

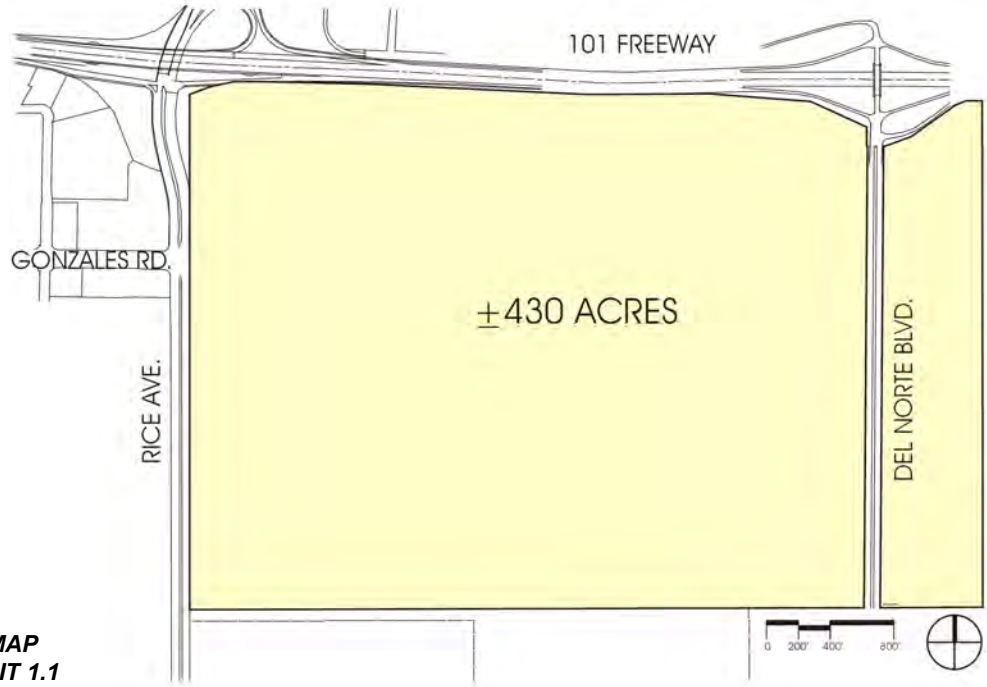
- To establish an orderly framework of land uses, amenities and building design criteria within the Specific Plan. The Development Standards are structured to allow a variety of compatible land uses, operations and activities that will create a desirable environment and effect a harmonious relationship with surrounding properties and the community in general.

Performance Standards

- To identify maximum permitted levels of operational characteristics resulting from any activity shall be called performance standards. Continued compliance with the performance standards as outlined in the Specific Plan shall be required of all permitted uses.

1

SECTION ONE



SITE MAP
EXHIBIT 1.1

1.0 PURPOSE AND INTENT

The Sakioka Farms Business Park Specific Plan establishes the planning concept, design theme, development regulations and administrative procedures necessary to achieve an orderly and compatible development of the project area; and to implement the goals, policies, and objectives of the Oxnard 2030 General Plan. The intent is to provide the framework and guidelines for a well planned phased business park development and achieve a high level of quality design.

The Sakioka Farms Business Park Specific Plan identifies the location, character and intensities of the planned development activities. The Specific Plan establishes the alignment and design of a circulation system, and all public facilities and infrastructure necessary to implement a master planned development over time. The Specific Plan creates a compatible design theme for the project area and defines the appropriate development regulations to accomplish the identified objectives.

The Specific Plan is regulatory in nature and serves as zoning for the Sakioka Farms Business Park area. Subsequent development plans, subdivisions and other entitlement requests for the project area must be consistent with both the Specific Plan and the Oxnard General Plan. An Environmental Impact Report, with identified mitigation measures, has been prepared as a companion report to the Specific Plan.

1.1 AUTHORITY AND PROCEDURE

California State law authorizes cities with complete General Plans to prepare and adopt Specific Plans (Government Code Sections 65450 et. seq.). Specific Plans are intended to be a bridge between the local General Plan and individual development proposals. Specific Plans contain both planning policies and regulations, and may combine zoning regulations, capital improvement programs, development standards and other regulatory methods into one document which can be tailored to meet the needs of a specific area.

Local planning agencies or their legislative bodies may designate areas within their jurisdiction as ones for which a Specific Plan is "necessary or convenient" (Government Code Section 65451). A Specific Plan may either be adopted by ordinance or resolution (Government Code Section 65507). Adoption by ordinance is common when the Specific Plan amends a development code, zoning ordinance, or other code, when specific regulatory measures are included and when local charters require adoption by ordinance. Resolutions are commonly used when the plan is more of a policy document. Should the legislative body wish to change a proposed Specific Plan recommended by the Planing Commission, the change must first be referred back to the Commission for consideration, if not previously considered (Government Code Section 65504).

Adoption or amendment of a Specific Plan constitutes a project under the California Environmental Quality Act (CEQA) and the State's Environmental Impact Report (EIR) guidelines. If the initial environmental review shows that the proposed or amended plan could significantly affect the environment, the jurisdiction must prepare an EIR and submit it in draft form for public review. The need for an EIR in a particular case is determined by the local government.

The preparation, adoption and implementation of the Sakioka Farms Business Park Specific Plan by the City of Oxnard is authorized by the California Government Code, Title 7, Division 1, Chapter 3, Article 8, Section 65450 through 65457.

The City of Oxnard 2030 General Plan was adopted by the City Council in October 2011. The General Plan designates the project area for industrial activities with a mixed-use overlay. The Sakioka Farms Business Park Specific Plan is consistent with the goals and policies of the Oxnard General Plan.

1.2 SCOPE AND FORMAT

The Sakioka Farms Business Park Specific Plan is divided into seven sequential sections.

Section One is the Introduction and describes the purpose and intent of the document along with a brief explanation of Specific Plan procedures and authorization.

Section Two is the Project Area Description and outlines the reasons why the Specific Plan process is logical and necessary for this portion of the City. This section presents a general description of the Specific Plan area including designated land uses, existing zoning and current activities.

Section Three is Implementation and discusses the process by which individual projects will be reviewed and approved. This section outlines the division of land and project entitlement procedures. This section also describes the methods by which the Specific Plan can be modified or amended.

Section Four describes the Master Plan Concept. The Master Plan evolves from the objectives outlined in Section One and the existing conditions discussed in Section Two, along with input from numerous meetings and special studies conducted by the property owner and the City. This section presents the development options proposed for various sites and the circulation, public facilities, infrastructure and landscaping which will support the Master Plan concept and reinforce the design theme. In addition, a Phasing Plan has been prepared as part of this section.

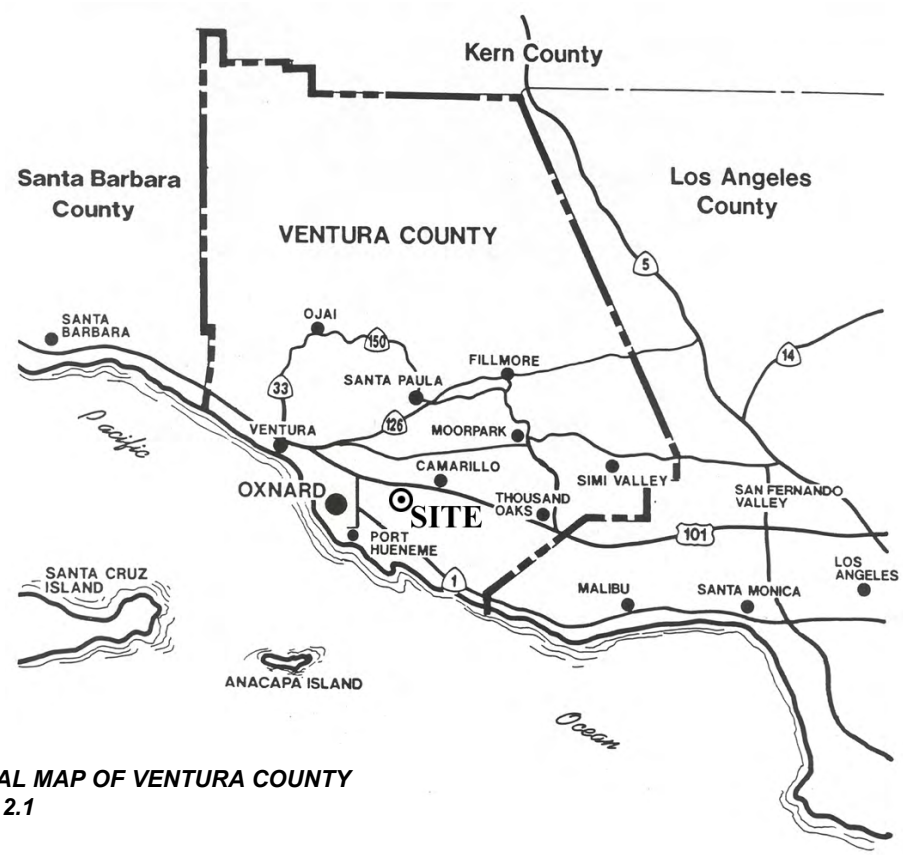
Section Five establishes Design Guidelines for the entire project area and for individual project development. This section identifies and describes the intended character for the area and provides a framework for project implementation.

Section Six presents a detailed description of the Development Regulations which are necessary to guide and control new projects and carry out the goals and policies of the Specific Plan and the City's General Plan.

Section Seven incorporates by reference the Apdaptive Mitigation and Monitoring Plan.

An **Appendix** will be compiled that will contain special studies and reports which have contributed to the formation of the Specific Plan. The Appendix will also include the Legal Description of the site, a General Plan Consistency Analysis and any Mitigation Measures identified in the Environmental Impact Report.

SECTION TWO 2



REGIONAL MAP OF VENTURA COUNTY
EXHIBIT 2.1

2.0 LOCATION

The City of Oxnard, California is located midway between Santa Barbara and Los Angeles, in the southern portion of Ventura County on a coastal plain of alluvial deposits, fronting the Pacific Ocean. The mild year-round temperature, clear air and open spaces provide the 200,000 residents with a relaxed seaside atmosphere and active business community environment. The City's economic base is very healthy, as demonstrated by a strong growth rate and a rapidly developing industrial community.

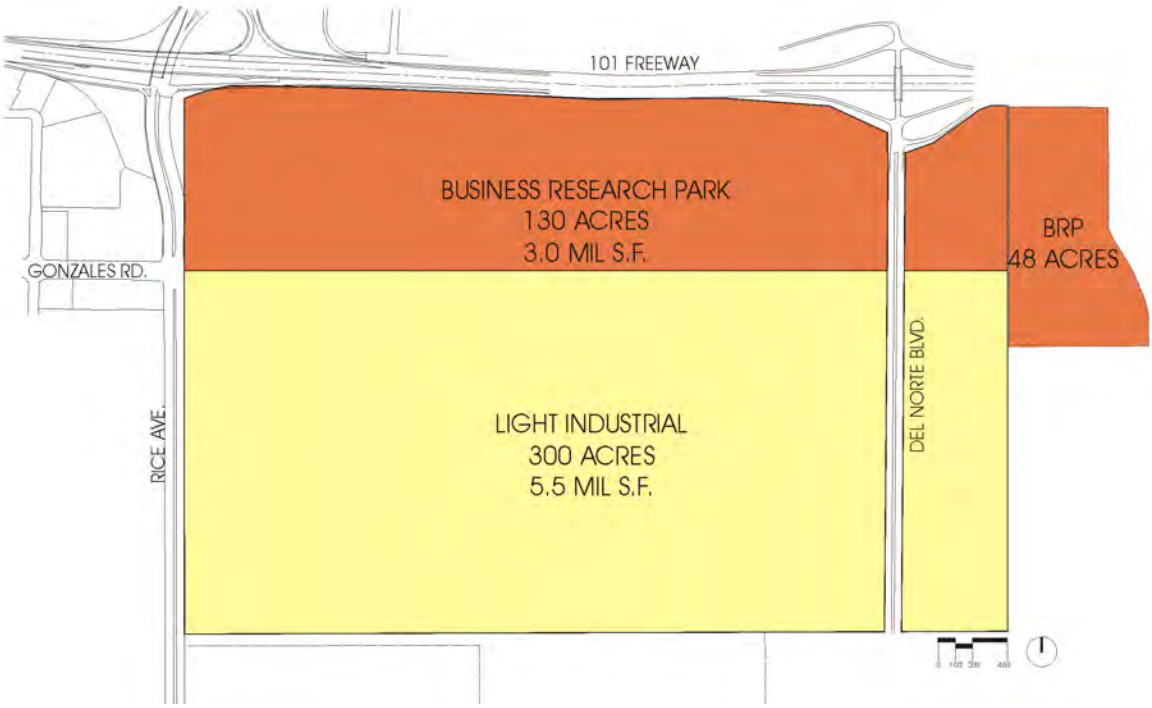
The Sakioka Farms site covers approximately 430 acres located in the northeastern portion of the City of Oxnard. The site is bounded on the north by the Ventura Freeway (U.S. Route 101); on the east by the Oxnard-Camarillo Greenbelt (agricultural preserve); on the south by the existing Procter & Gamble plant and portions of the McInnes Ranch Business Park, and on the west by Rice Avenue.

CITY SPECIFIC PLAN MAP
EXHIBIT 2.2

2.1 GENERAL PLAN DESIGNATION

In 2011, the City adopted the 2030 General Plan. The General Plan was carefully formulated over several years to reflect the City's vision to enhance the quality of life and build a strong financial base for the future. The General Plan was developed to assure the residents that the quality of services, public facilities and amenities, state of the economy, living environment and overall City image will remain strong. The General Plan is intended to guide each development project to assure that they contribute to the City's desires and become a source of pride for the community.

The General Plan sets in motion a logical sequence of specific actions to implement identified goals, policies and programs. Specific Plans augment The General Plan and are incorporated by reference to The General Plan.



2030 GENERAL PLAN LAND USES
EXHIBIT 2.3

The Sakioka Farms site is primarily surrounded by existing industrial/industrial-related uses and is designated for future Business and Research Park and Light Industrial use; an easterly extension of Gonzales Road divides the two designations in the City's General Plan.

The Sakioka site consists of approximately 430 acres of land, 300 acres are designated for Light Industrial activities and 130 acres for Business Research Park, all under a single ownership. Adjacent to the northeastern corner of the Sakioka Farms property is a forty-eight (48) acre area, owned by others, designated for Business Research Park (BRP) uses and is partially developed in that fashion. This property is not considered part of the area regulated by the Specific Plan.

The overall development intensity for the project area has been established in the General Plan. A total of 8,500,000 square feet of overall development activities is anticipated; 5,500,000 square feet of industrial uses and 3,000,000 square feet of business and research uses.

The Light Industrial designation will accommodate a range of general manufacturing and related service uses. In addition to traditional industrial uses, the area may develop industrial service centers; this concept recognizes that there may be a need for commercial services within industrial areas. The intent of providing commercial services is to meet the daily needs of employees within the industrial areas during their journey to and from work, while on breaks, and during lunch periods.

The Business and Research Park designation provides for a variety of business and employment opportunities such as professional, administrative, research and manufacturing uses along with limited commercial activities. This destination allows for a higher intensity of land use activities, relative to the overall project area.

The Specific Plan, as presented with industrial, office and support commercial uses, is intended to be consistent with the City's adopted General Plan.

2.2 ZONING REGULATIONS

The Sakioka Farms site is presently zoned Business Research Park (BRP) and Light Industrial (M-1); 130 acres and 300 acres respectively. The Specific Plan will supersede the existing zoning and establish a new set of development regulations. These regulations have been prepared consistent with the City's adopted guidelines and regulations, and tailored for this specific site.

2.3 2012 LAND USES

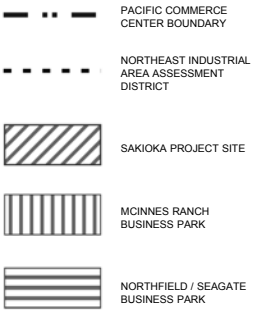
As of early 2012, The Sakioka Farms site consists of 430 acres of agricultural activities. There are no existing developments, the entire site is vacant, with the exception of a few farming related structures. No subdivision of the project area land has occurred. Although the City's General Plan contains policies to preserve agricultural lands it also recognizes the role these areas will play to enable Oxnard to achieve a better balance of community activities. New private developments have occurred over time on sites surrounding the project area, replacing the agricultural operations of the past.

THE NORTHEAST INDUSTRIAL AREA MAP
EXHIBIT 2.4

THE NORTHEAST INDUSTRIAL AREA

- 1,389 total acres
- 806 acres light industrial (zoned – M.1)
- 300 acres limited industrial (zoned – M.L.(245 ac.) and zoned – BRP (45 ac.)
- 280 acres business and research park (zoned – BRP)
- Anticipated Total Development:
  18.2 million sq. ft. of industrial uses
- 6.2 million sq. ft. of business & research uses

LEGEND



The project area is surrounded by development which is regulated by, the Northfield/Seagate Business Park Specific Plan and the McInnes Ranch Business Park Specific Plan.

The Northfield/Seagate Business Park Specific Plan (252 acres) is an industrial development; meeting adopted standards of site design, circulation, intensity of use and community character.

The McInnes Ranch Business Park Specific Plan (236 acres) provides a comprehensive set of plans, regulations, conditions, and programs for guiding the orderly development of a coordinated industrial / business park. Uses include a variety of manufacturing, research and development, professional and limited commercial uses integrated by planned vehicular circulation, landscaping, pedestrian walkways, and leisure spaces.

2.4 PLANNING HISTORY

During the late 1980's, the City embarked upon a planning program, which encouraged the preparation of numerous area plans, assessment districts, master plans and specific plans to provide guidelines for the orderly development of large project areas. The Sakioka Farms site is within one of these planning study areas, The Northeast Industrial Area Plan.

The Northeast Industrial Area consists of approximately 1,400 acres of property designated for Limited Industrial, Light Industrial and Business and Research Park uses. Originally part of a larger area referred to as the Pacific Commerce Center. The Northeast Industrial Area began development in 1985.

An Assessment District has been formed which provides for the major infrastructure improvements necessary to serve this area. In addition, the project area has been part of many formal agreements and studies directed by the City (i.e. the Xerox Annexation Agreement of 1969 and the Participation Agreement for inclusion in the Northeast Industrial Area Assessment District, 1986). The Northeast Industrial Area is one of four major industrial areas in the City that has been approved for development.

Large development projects within the Northeast Industrial Area are required to prepare Specific Plans to guide future development. The City currently has a number of active Specific Plans, two of which are within the Northeast Industrial Area. Along with the required Specific Plan, Sakioka Farms may enter into a Development Agreement with the City; however, neither the City nor the property owner are obligated to consider a Development Agreement.

2.5 STATE MANDATED REQUIREMENTS

To comply with the State of California legislated mandates, the City of Oxnard has adopted several plans to deal with regional issues including Air Quality, Congestion Management, Growth Management, Regional Housing and Transportation Demand Management.

SECTION THREE 3

3.0 ADMINISTRATION

The City's Development Services Director or designee shall administer the provisions of the Sakioka Farms Business Park Specific Plan in accordance with the State of California Government Code, Subdivision Map Act, the City of Oxnard Municipal Code, and the City's General Plan.

The Specific Plan development procedures, regulations, standards and specifications shall supersede the relevant provisions of the City's Zoning Code, as they currently exist or may be amended in the future. The Specific Plan shall be adopted by resolution. Any development regulation and building requirement not addressed in the Specific Plan shall be subject to the City's adopted regulations in place at the time of an individual request.

The Development Services Director or designee shall have the discretion to determine if requests for modifications to the Specific Plan are minor or major. Minor modifications or amendments may be accomplished administratively by the Development Services Director or designee. Major amendments to the Specific Plan will require the processing of a Specific Plan Amendment, subject to the City's processing regulations in place at the time of the request. Minor modifications to the Specific Plan include, but are not limited to:

- The addition of information to the exhibits or text which serve to clarify, but do not change the meaning or intent.
- Changes to the infrastructure (i.e., storm drain, water and sewer systems), as recommended by the City.
- The adjustment, addition and/or lot consolidation as addressed in this section of the Specific Plan.
- Modifications to the alignment of the Planning Area boundaries to coincide with specific development plans, as recommended by the City.

All modifications must be reviewed for compliance with the goals and policies of the City's General Plan, intent of the Sakioka Farms Business Park Specific Plan and consistency with the Environmental Impact Report.

3.1 DEVELOPMENT PHASING

The Sakioka Farms Business Park Specific Plan area is designed for maximum flexibility and anticipates that individual development projects will be constructed over a period of years, with no specific target date for completion. Development starts and occupancy will be dictated by market forces and phased accordingly.

A development Phasing Plan has been prepared identifying a program of the relative timing of development within each of the Planning Areas. The Phasing Plan provides a general guideline for the construction of community infrastructure and public improvements to adequately service new projects within the Specific Plan area.

3.2 METHODS AND PROCEDURES

The methods and procedures for implementation of the Specific Plan shall be on a project by project basis. The adoption of the Specific Plan alone will not require infrastructure improvements to the project area. Physical improvements will only coincide with the recordation of a Tract Map or Parcel Map and/or individual project development. The Specific Plan is a regulatory document and is not intended to be a Development Agreement.

3.3 MASTER PLAN

A Master Plan Concept for the project area identifying primary and alternative land uses, circulation system, infrastructure layout, public facilities and landscape scheme has been included within the Specific Plan. All proposed development projects shall be consistent with the intent of the Master Plan .

3.4 SUBDIVISION

The project area will be subdivided through a series of Tract and Parcel Maps. All Maps shall be prepared consistent with the Master Plan and in conformance with the City's adopted procedures and codes.

3.5 PROJECT PLAN REVIEW

Individual development projects within the Sakioka Farms Business Park Specific Plan area shall be implemented through a Development Design Review (DDR) permit approved by the Development Services Director or designee.

Prior to submitting the DDR application to the City, all proposed development projects shall be submitted to the project area's Architectural Review Committee. A special committee shall be established by the property owner for review of all proposed new and expanded developments to determine consistency with the established guidelines and intent of the Specific Plan. Following review and approval by the Architectural Review Committee, the project request may be submitted to the City for DDR review and permitting.

A Development Design Review Permit shall be required for all new development activity. Exceptions to this provision include interior improvements, general maintenance and repair or other minor construction activities that do not result in an intensification of the use. These exceptions may be subject to other Planning, Building and Public Works permits and approvals prior to commencement.

The Development Services Director or designee has the authority to approve, conditionally approve, or deny a Development Design Review Permit. The application may also require analysis and comments from various other departments of the City. Project denial shall be limited to finding of inconsistency with the Specific Plan. Applicants have the right of appeal through the normal City process.

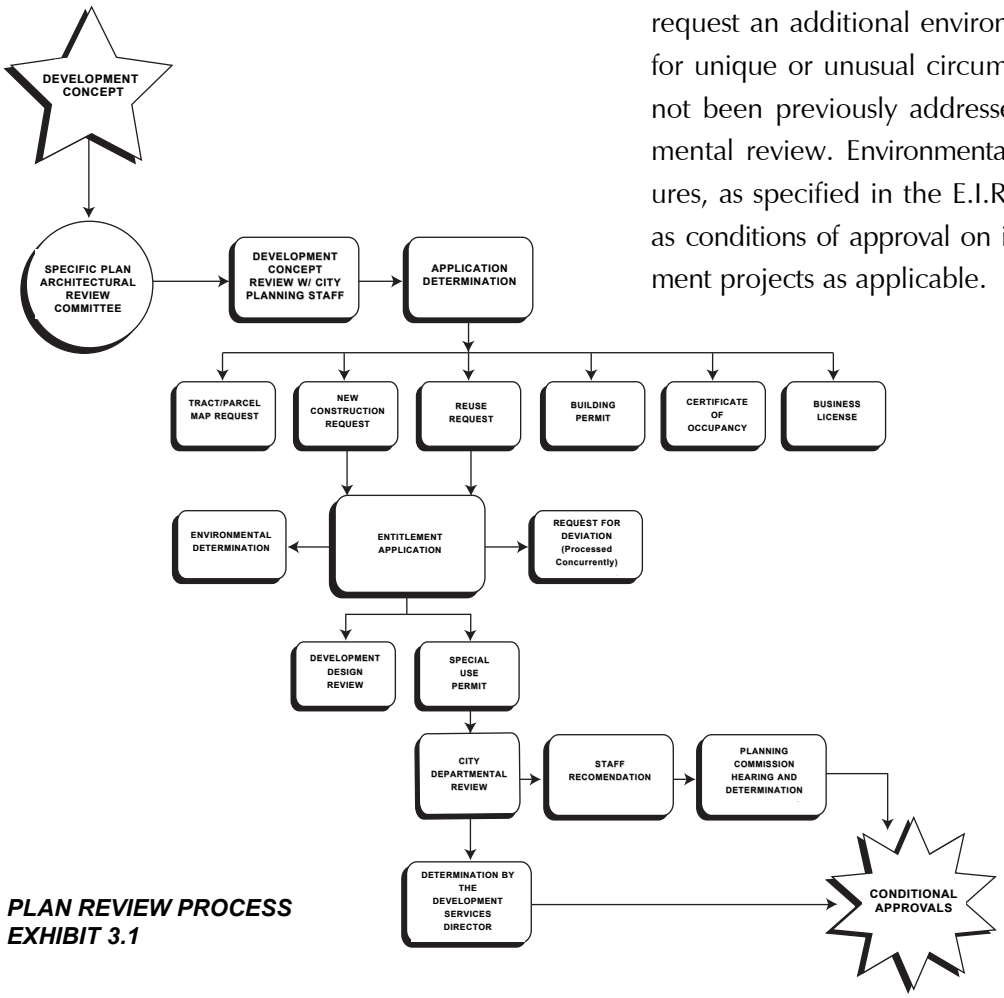
3.6 REUSE / CHANGE OF USE REVIEW

Any proposal to reuse and/or change the use of a previously approved and constructed development, within the project area, will be subject to additional review by the Development Services Department. In addition, any proposed physical modifications to the existing structures and/or site shall be subject to additional review and approval of the Development Services Director or designee prior to the issuance of building permits.

3.7 ENVIRONMENTAL DETERMINATION

The extent and intensity of all anticipated development activity for the Sakioka Farms Business Park area have been identified in the Specific Plan and analyzed in the Environmental Impact Report.

Development project requests consistent with the Specific Plan shall not be subject to additional environmental review unless otherwise required by C.E.Q.A. However, the Development Services Director or designee may request an additional environmental assessment for unique or unusual circumstances, that have not been previously addressed in the environmental review. Environmental mitigation measures, as specified in the E.I.R., will be imposed as conditions of approval on individual development projects as applicable.



PLAN REVIEW PROCESS
EXHIBIT 3.1

3.8 REQUEST FOR MODIFICATION

The Sakioka Farms Business Park Specific Plan Development Regulations are intended to encourage projects which create an aesthetically pleasing appearance, enhance the environment, and facilitate innovative quality architectural design.

Requests for Modification from the Development Regulations of the Specific Plan, which have been approved by the project's Architectural Review Committee, may be granted at the time of the Special Use Permit or Development Design Review request, for special circumstances and/or unique architectural features. Requests for Modification may include but are not limited to parcel size, building height, site coverage, setbacks, open space, parking, and landscaping.

All Modification requests will be considered by the Development Services Director or designee. Modification to the Master Plan Concept may require a Specific Plan Amendment, subject to the procedures outlined in the City's Zoning and Subdivision Ordinance.

Requests for Modification may be allowed when significantly greater benefits from the project can be provided than would occur if all the minimum requirements were met. Additional benefits which may make a project eligible for consideration include greater open space, greater setbacks, unique or innovative designs, public open space, and the use of energy conservation or innovative technology.

The Development Services Director or designee may approve the Request for Modification in whole or in part upon making the following findings:

- To promote better design, environmental and land planning techniques and contribute to the economic viability of the community, through aesthetically pleasing architecture, landscaping and site layout; and
- Will not be detrimental to the general health, welfare, safety and convenience of the neighborhood or City in general, nor detrimental or injurious to the value of property or improvements of the neighborhood or of the City in general; and
- To be consistent with objectives of the Specific Plan in achieving a project adapted to the area and compatible with the surrounding environment; and
- To be consistent with the goals and policies of the City's General Plan, and comply with State and Federal Law.

3.9 MINOR EXPANSIONS

Minor Expansions of use shall be considered up to ten (10) percent of an existing structure for a legally established use, and that the use of operation after expansion or modification is in compliance with the Specific Plan. Minor expansions may be permitted and require a Request for Modification and they are subject to review and approval by the Development Services Director or designee.

3.10 SPECIFIC PLAN AMENDMENTS

Specific Plan Amendments, other than a minor modification as previously described, shall be subject to consideration and approval of the Planning Commission and City Council in accordance with the provisions of the City's Zoning and Subdivision Ordinance. Amendments may include changes to the Master Plan Concept, Design Guidelines policies and the introduction of alternative Development Regulations.

3.11 CERTIFICATE OF OCCUPANCY

Application for a Certificate of Occupancy shall be made for any new use, or expansion of any permitted use. The Building Department may issue the Certificate only after approval of the new buildings and uses by the Planning Department. Any subsequent modification, change or changes in the use permitted by a Certificate of Occupancy shall occur only after the holder of such certificate has obtained an amendment from the Development Services Department allowing such change or changes. A Certificate of Occupancy may be revoked by the City Council, after a public hearing, if the Council finds that the holder of the Certificate has failed to comply with the conditions of approval.

3.12 SEVERABILITY

If any section, subsection, sentence, clause, phrase, or portion of this Specific Plan, or any future amendments or additions hereto, is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Specific Plan, or any future amendments or additions hereto. The City hereby declares that it would have adopted these titles and each sentence, subsection, clause, phrase, or portion or any future amendments or additions thereto, irrespective of the fact that any one or more sections, subsections, clauses, phrases, portions or any future amendments or additions thereto may be declared invalid or unconstitutional.

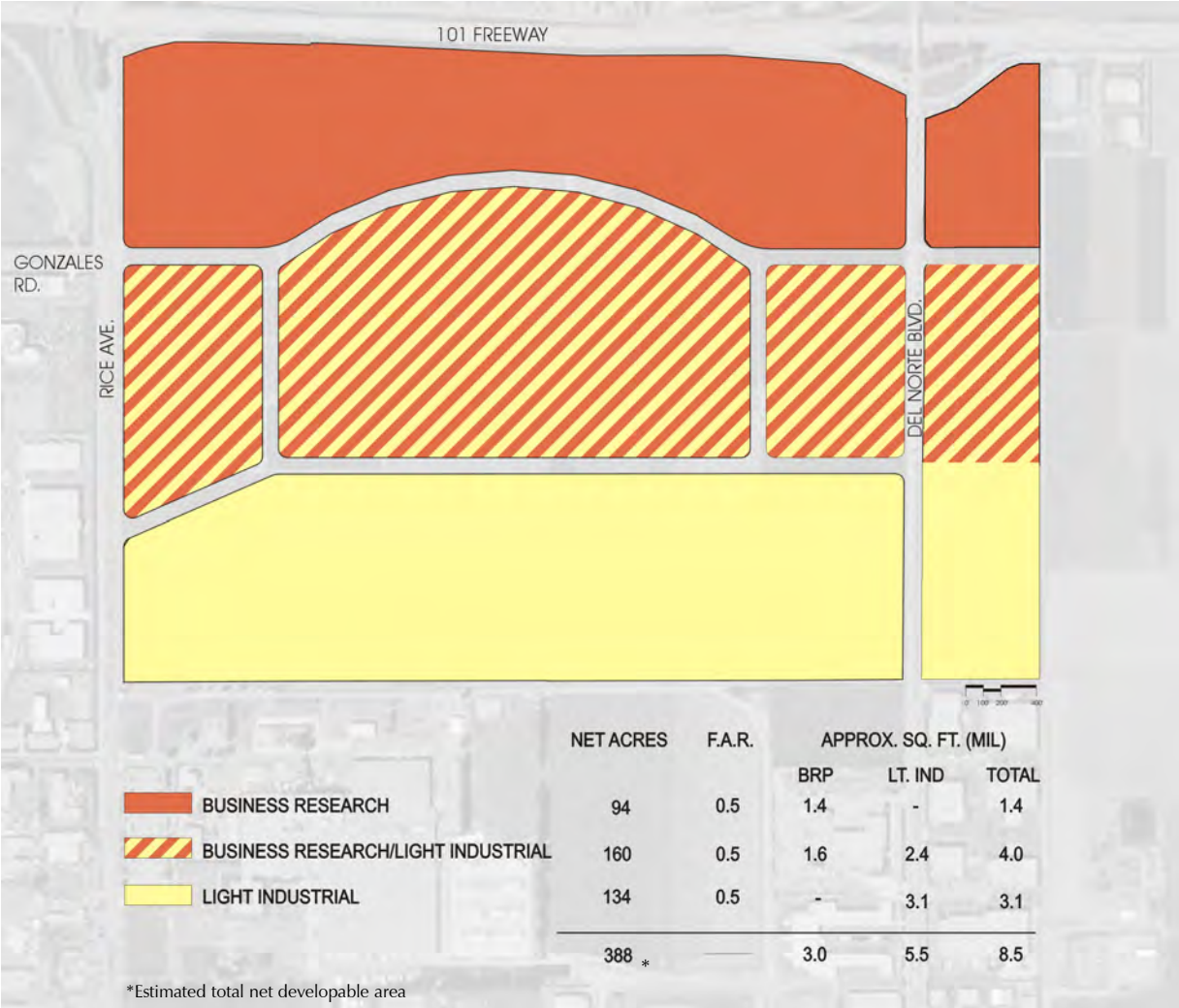
3.13 COMMUNITY FACILITIES DISTRICT / PROPERTY OWNERS ASSOCIATION

A Community Facilities District and/or Property Owners Association may be established to ensure appropriate maintenance and/or replacement as needed of common facilities such as, but not limited to, private streets, storm water retention and treatment facilities, and common area landscaping.

If a Community Facilities District and/or Property Owners Association is established, all property owners, individual project developers and tenants within the Specific Plan area shall participate, to the extent specified by the City with any subsequent approval.

4

SECTION FOUR



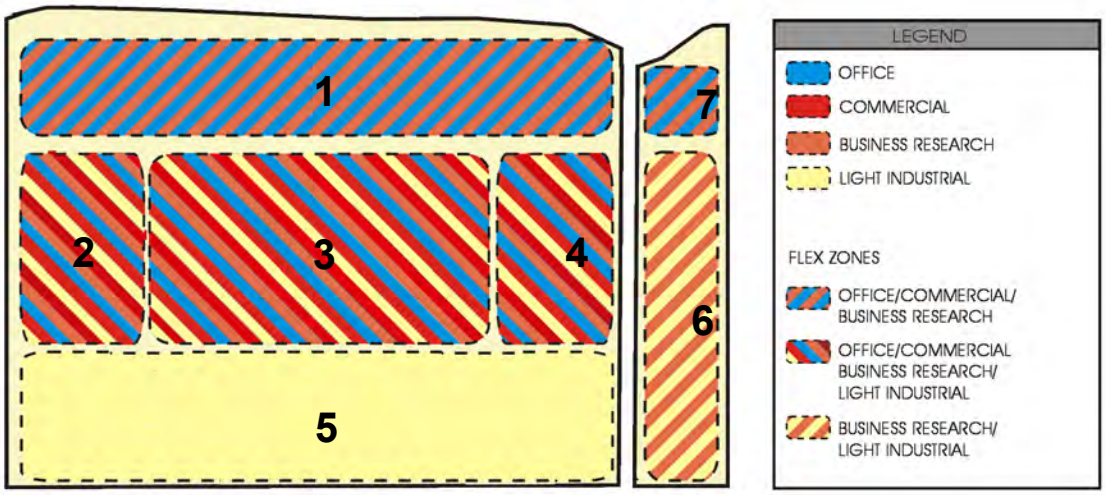
	NET ACRES	F.A.R.	APPROX. SQ. FT. (MIL)		
			BRP	LT. IND	TOTAL
BUSINESS RESEARCH	94	0.5	1.4	-	1.4
BUSINESS RESEARCH/LIGHT INDUSTRIAL	160	0.5	1.6	2.4	4.0
LIGHT INDUSTRIAL	134	0.5	-	3.1	3.1
	388 *		3.0	5.5	8.5

FLEX LAND USE PLAN
EXHIBIT 4.1

4.0 DEVELOPMENT CONCEPT

The Sakioka Farms Business Park Specific Plan development concept provides for a large master planned industrial/business park complex. The Specific Plan establishes the general type, location, parameters and character of all development within the sites boundaries, while allowing for creative design ideas on individual projects consistent with an overall concept.

In order to achieve flexibility in future project development and maintain consistency with the General Plan, a flexible land use plan has been prepared. The plan has its roots in the land use designations of the General Plan, and incorporates a recognition that ultimate development will likely be a blend of both traditional light industrial and business research facilities.



CONCEPT PLAN APPROACH
EXHIBIT 4.2

The development concept establishes the vision for the Specific Plan, and is designed to allow for development in a manner that is both flexible and compatible with the surrounding neighborhood. The development concept approach recognizes that the area will be incrementally developed in phases over an extended period of time and provide an opportunity for a variety of quality uses.

In order to provide for this flexibility and be able to propose a quantifiable plan for analysis, four primary uses have been identified. Each category of use has been limited to select portions of the Specific Plan area, with a maximum intensity of development identified. This will allow for the proper analysis of potential development impacts over an extended period of time. The flexibility is obtained through the identified overlapping of uses in the concept plans. Within the limits of total intensity, Flex Zones allow a use or activity the opportunity of being developed at a number of potential locations in response to market and development trends of the future.

The sites natural features and proximity to regional transportation systems make the area ideal for a variety of compatible business land uses and activities. The development concept is designed to address the area's surrounding industrial activities and the community need for a strong self-sufficient economy.

The Specific Plan will provide for a range of employment opportunities in the professional, retail, service and industrial fields; and will widen the employment base of the community.

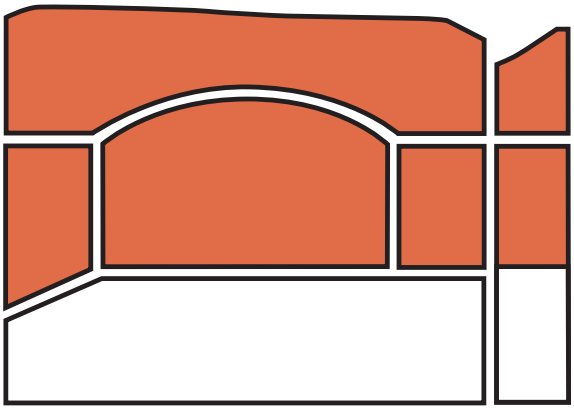
Approximately 42 acres are planned for the extension of Gonzales Road and interior streets.

CONCEPT LAND USE SUMMARY
EXHIBIT 4.3

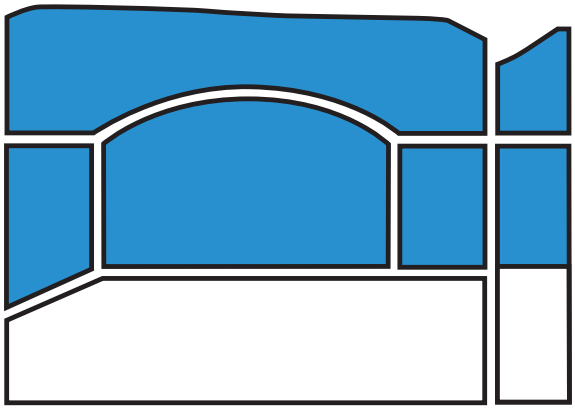
BUSINESS/ RESEARCH		OFFICE		INDUSTRIAL		COMMERCIAL		TOTAL	
SQ. FT.	AC	SQ. FT.	AC	SQ. FT.	AC	SQ. FT.	AC	SQ. FT.	AC
2.5 million	254	0.4 million	254	5.5 million	294	0.1 million	171	8.5 million	388*

*Estimated total net developable area

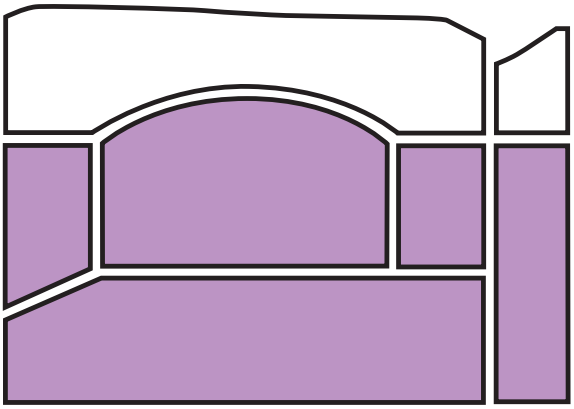
LAND USE AREA MAPS
EXHIBIT 4.4



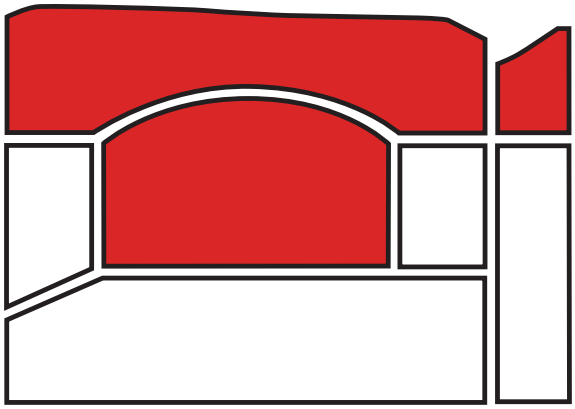
BUSINESS RESEARCH



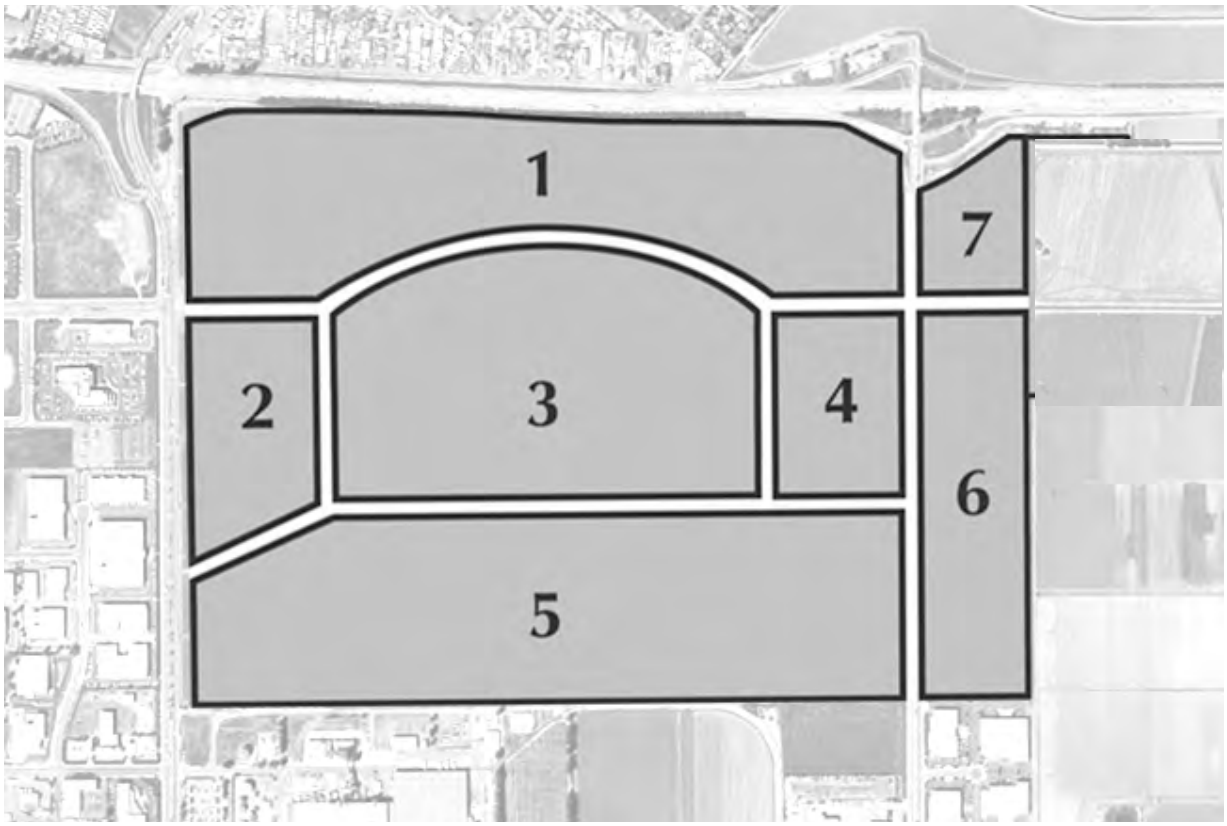
OFFICE



INDUSTRIAL



COMMERCIAL

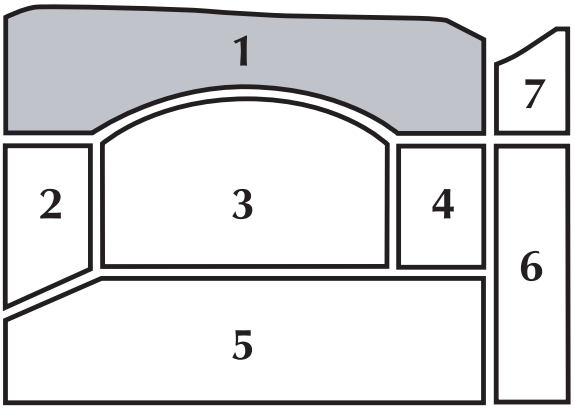


SPECIFIC PLAN PLANNING AREAS
EXHIBIT 4.5

4.1 PLANNING AREAS

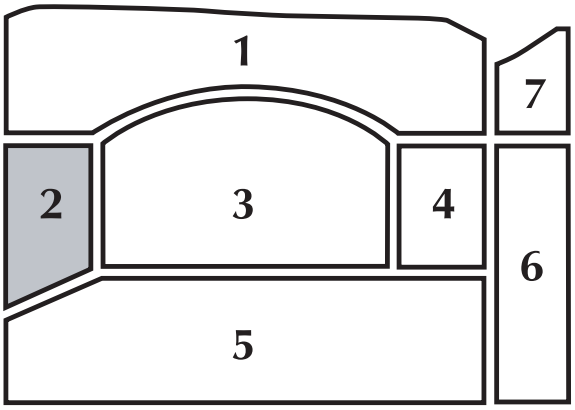
The Specific Plan divides the site into seven Planning Areas. The purpose of identifying separate Planning Areas is to create distinct clusters of activities and allow for individual project development to occur in a manner consistent with the overall Master Plan Concept. This approach recognizes development phasing patterns, market conditions and establishes sufficient flexibility to provide for the opportunity of a variety of activities within each Planning Area.

The Planning Areas are the logical result of the Circulation Plan and adjacent land use and development patterns. Ultimate development of the site will be controlled to a great extent by the amount of anticipated vehicular traffic created by the proposed activities. The Specific Plan area can accommodate a total development of 8,500,000 square feet, or as limited by the proposed circulation improvements and accounted for through a "Trip Generation Budget" (Exhibit 4.10).



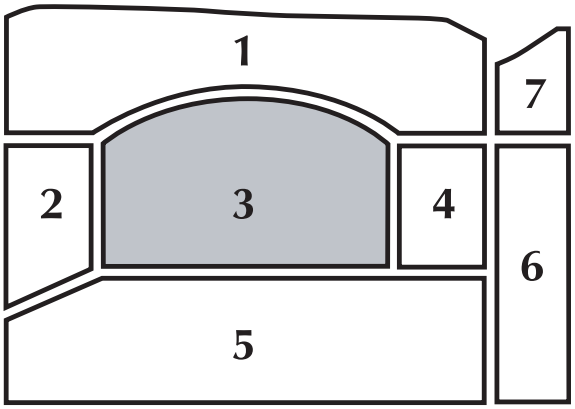
AREA 1

PLANNING AREA 1 is the highest profile portion of the project area located adjacent to the Ventura Freeway. Defined by an extension of Gonzales Road, this area will not only serve as the visual focus for the project, but also as a major eastern gateway to the City of Oxnard. High profile office and commercial development is anticipated for this portion of the project. The area consists of approximately 80 acres and can accommodate a high concentration of uses. Due to the Planning Area's location, it will establish the primary design image of the Specific Plan.



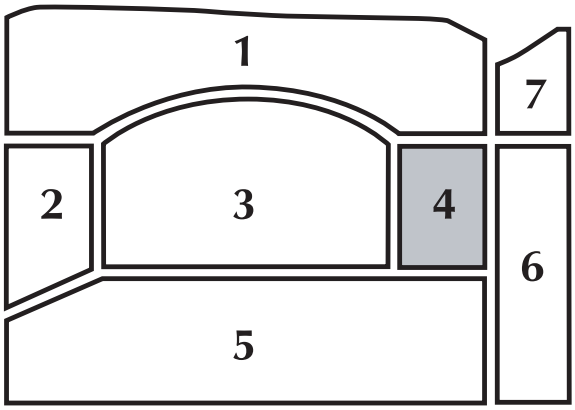
AREA 2

PLANNING AREA 2 fronts Rice Avenue, the westerly edge of the project. This Planning Area will provide opportunities for new office, business research, industrial and related development projects. The area comprises approximately 35 acres and will maintain the design theme established in Area 1 and transition into the more traditional industrial activities anticipated for Planning Area 5.



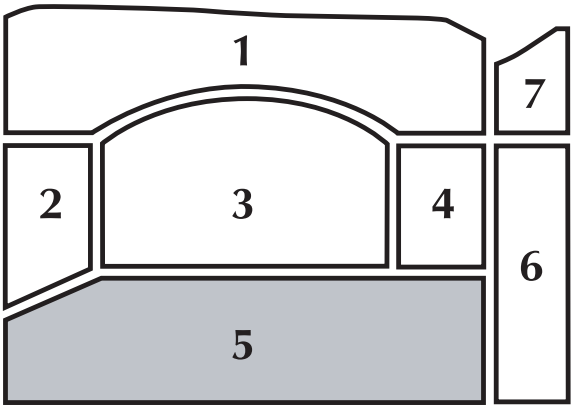
AREA 3

PLANNING AREA 3 is the central portion of the project area and as such a number of alternatives may be considered. One option proposes a high intensity core with larger office buildings, residential uses and integrated community facilities and commercial opportunities. This Planning Area may also become a continuation of the traditional industrial development to the south. A large undeveloped site is very desirable to major industrial tenants and this location, with convenient access to the freeway from two locations, may prove to be ideal. This area is approximately 77 acres in size and can accommodate a range of development options.



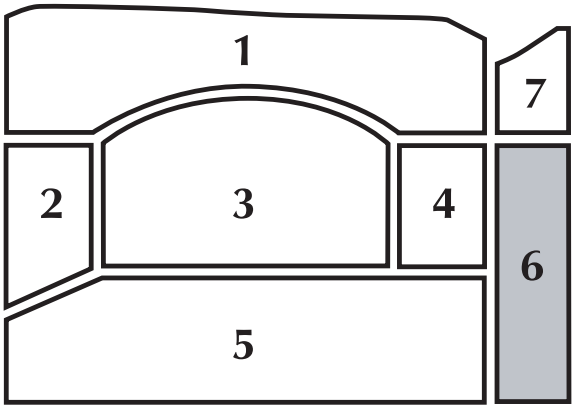
AREA 4

PLANNING AREA 4 is located along Del Norte Boulevard. This area may develop in a pattern very similar to Area 2, with an emphasis on new office, and business research facilities. The area may also develop in a manner similar to other industrial projects to the south and cater to smaller traditional industrial projects. Area 4 consists of 30 acres and will assist in establishing the project theme for the eastern portion of the project area.



AREA 5

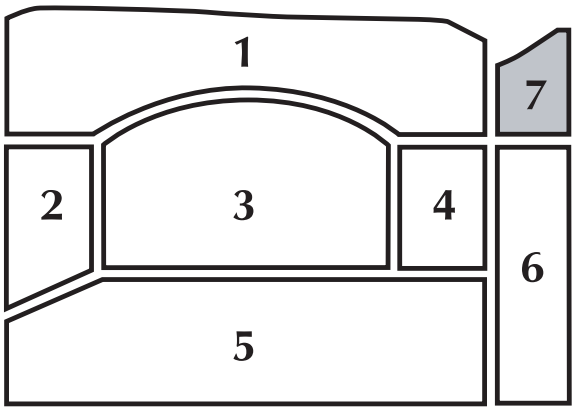
PLANNING AREA 5 is designated as the primary light industrial site. This area will cater to major industrial tenants desiring to relocate to the Oxnard area. Area 5 consists of 116 acres and will accommodate new industrial development that will maintain and reinforce the Master Plan concept for the Specific Plan area.



AREA 6

PLANNING AREA 6 is the eastern boundary of the project, with a significant amount of frontage on Del Norte Boulevard. This area consists of 36 acres and may be developed a number of different ways.

Future activities for the area will depend on market conditions and may include a combination of light industrial and research development uses. Future development activities may reflect an expansion of the existing activities to the south and west or present opportunities for independent new projects.



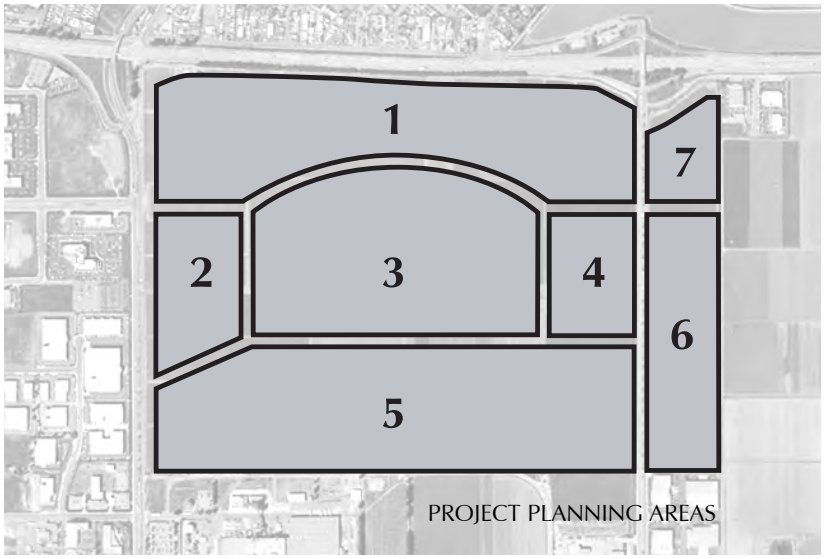
AREA 7

PLANNING AREA 7 is in the northeastern portion of the project. Although the smallest of all the Planning Areas, 14 acres in size, it may become one of the highest profile sites and is well situated for office and convenience commercial activities. This area will also include opportunities to enhance future planning and development activities on the adjacent property to the east of the project.

LAND USE / ZONING EQUIVALENCY

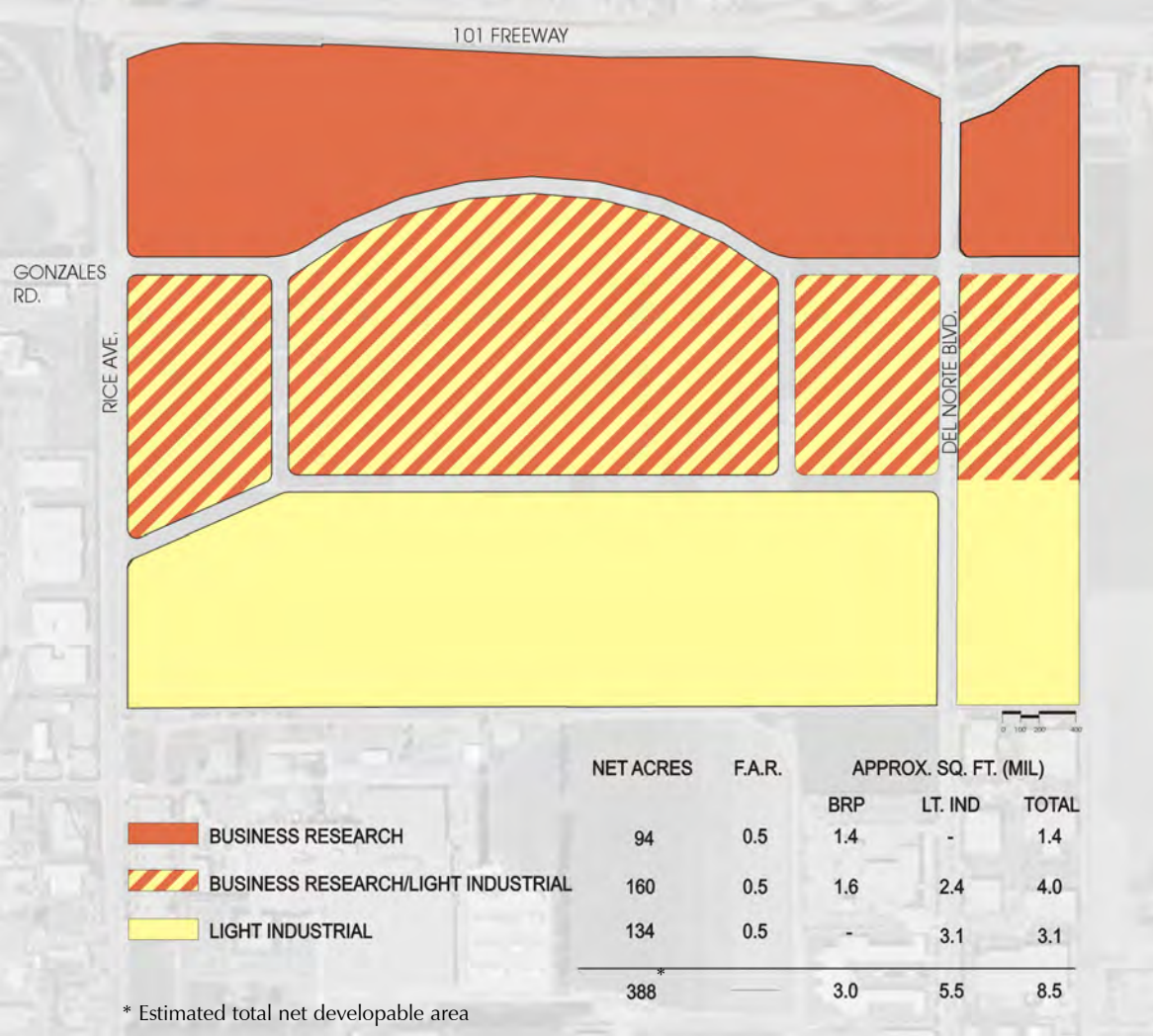
EXHIBIT 4.6

LAND USE	ZONE EQUIVALENT	PLANNING AREA						
		1	2	3	4	5	6	7
Light Industrial	M-1		●	●	●	●	●	
Business / Research	BRP	●	●	●	●		●	●
Commercial	C-2	●		●				●
Office	C-O & BRP	●	●	●	●			●
Public Facility (Fire Station)			●	●				
Transitional Agriculture		●	●	●	●	●	●	●
TOTAL NET ACRES	**388**	80	35	77	30	116	36	14



PROJECT PLANNING AREAS

MASTER PLAN
EXHIBIT 4.7



	NET ACRES	F.A.R.	APPROX. SQ. FT. (MIL)		
			BRP	LT. IND	TOTAL
BUSINESS RESEARCH	94	0.5	1.4	-	1.4
BUSINESS RESEARCH/LIGHT INDUSTRIAL	160	0.5	1.6	2.4	4.0
LIGHT INDUSTRIAL	134	0.5	-	3.1	3.1
	388*	——	3.0	5.5	8.5

4.2 MASTER PLAN

A Master Plan has been prepared that establishes the direction under which the Specific Plan will be developed. While land use flexibility is permitted, only one Circulation Plan is proposed. The Circulation Plan will be one of the primary controlling factors in the ultimate development of the project area. A number of conceptual circulation and land use configurations were evaluated for the site. From these studies, a single Master Plan and project description has been developed.

The Master Plan's flexibility will allow for the greatest variety of activities and accommodate different development phasing patterns and schedules. This flexibility in design will also allow for the creation of unique parcelization patterns with the ability to custom-fit a wide range of development scenarios within the project area.

The Master Plan permits a great number of options regulated through the comprehensive, Specific Plan guidelines and standards.

The Master Plan recognizes the area adjacent to the Ventura Freeway as a gateway to the City and suggests a series of high profile, high quality office buildings. The concept anticipates a core of high-rise office buildings, surrounded by lower profile office and office/business research uses. The dynamics of this approach may result in a greater demand for business and research activities over the project area. The central portion of the site allows for business research, light industrial or office activities. The areas south of the extension of Gonzales Rd. and immediately adjacent to Rice Ave. and Del Norte Blvd. is a flexible zone for business research and light industrial activities.

Retail activities are permitted in the northern portion of the site. This freeway adjacent location will allow for a variety of retail uses in a portion of the community currently with few services.

Traditional industrial uses will be accommodated in the central and southern portions of the project area. Large, medium and small parcels are anticipated for a variety of industrial users.

The objective of the Specific Plan is to implement the goals and policies of the Oxnard General Plan by defining the physical development of the Sakioka Farms Business Park site. Included in this approach are the establishment of land use, circulation, landscape, infrastructure, and architectural design characteristics for the project area. The Specific Plan consists of five major components which guide the development process: the Land Use Plan, Circulation Plan, Public Facilities Plan, Design Guidelines, and detailed Development Regulations.

The Specific Plan identifies and requires sufficient infrastructure and public facilities to adequately and efficiently support anticipated land uses and activities. These improvements will be phased to coincide with or precede individual development projects. This up-front effort will allow future development projects to obtain City approval in an expedited manner, providing the individual projects are consistent with the Specific Plan and the Environmental Impact Report.

REPRESENTATIVE LAND USE SCENARIO
EXHIBIT 4.8

	Business/ Research		Office		Light Industrial		Commercial		Fire	TOTAL	
	SQ. FT.	AC	SQ. FT.	AC	SQ. FT.	AC	SQ. FT.	AC	AC	SQ. FT.	AC
1	1,300,000	45	400,000	20			80,000	15		1,780,000	80
2	200,000	14			600,000	21				800,000	35
3	600,000	35			1,200,000	40.5			1.5	1,800,000	77
4	200,000	14			500,000	16				700,000	30
5					2,500,000	116				2,500,000	116
6	100,000	4			700,000	32				800,000	36
7	100000	4					20,000	10		120,000	14
TOTAL **	2,500,000	116	400,000	20	5,500,000	225.5	100,000	25	1.5	8,500,000	388*

* Estimated total net developable area
** Ultimate development governed by "Trip Generation Budget"

4.3 REPRESENTATIVE LAND USE PLAN

This representative Land Use Summary table has been prepared to reflect an anticipated build-out scenario. The table has been included in order to facilitate analysis of the potential impacts associated with the ultimate development of the project. The figures presented only reflect a potential development pattern. The intensity of development may shift from one Planning Area to another; the numbers represented in the table do not reflect a maximum for any individual Planning Area. The project area as a whole will be regulated by the Circulation Plan and the associated "Trip Generation Budget". Ultimate development must remain consistent with the City's 2030 General Plan anticipating a total of 8,500,000 square feet of industrial and business research park users and related activities. The Specific Plan identifies sufficient infrastructure and public facilities to adequately and efficiently support any and all anticipated land uses and activities permitted under the Specific Plan. These improvements will be phased to coincide with or precede individual development projects. The maximum permitted total floor area for all industrial, office and commercial developments within the Specific Plan Area shall not exceed the General Plan overall floor area allocations. The cumulative square footage of floor area for each of the allowed uses within the Specific Plan have been estimated for each Planning Area; however, these numbers may be modified and transferred as market conditions and / or development concepts dictate. Any modifications and/or adjustment to land use square footage ratios must comply with the "Trip Generation Budget" and other provisions identified in the E.I.R. and City's General Plan.

CIRCULATION PLAN
EXHIBIT 4.9

4.4 CIRCULATION PLAN

The Circulation Plan is designed to accommodate a number of different development scenarios. The overall circulation concept relies on a hierarchy of circulation features ranging from major arterials to local streets. The system is designed to accommodate traffic to the project area and around the area while discouraging through traffic intrusion into individual Planning Areas.

The Circulation Plan provides for a phasing of street improvements to correspond to the phased development in each Planning Area. All streets shown on the Circulation Plan are public streets unless otherwise indicated.

In order to efficiently facilitate new development parcels, the primary access will be from interior streets. Direct access from adjacent arterials will

be subject to review and approval by the City. Primary access locations into the project area have been located and designed to provide full turning movements. The locations relate to existing driveways and median designs, and are anticipated to adequately serve the projected traffic volumes for the project. Specific future development proposals may require modifications to these anticipated access locations.

The circulation system shall be master planned to accommodate the build-out of the Specific Plan. Incremental phased roadway construction shall be completed prior to occupancy of the facility(s) being served. The City shall approve phasing plans for street improvements, consistent with development construction phasing. Implementation will be through the Subdivision Mapping process.

Due to the variety of land use options, and types of development activity, the overall development intensity shall be regulated by a "Trip Generation Budget" (Exhibit 4.10) for the project with each land use assigned a trip generation factor. Therefore, development will be limited to the parameters analyzed by the current Specific Plan Environmental Impact Report.

The Trip Generation Budget in Exhibit 4.10 documents the maximum a.m. and p.m. peak hour trip generation approved for the overall Specific Plan as well as for each Planning Area. Subsequent traffic studies will not be required if the cumulative development, regardless of specific land use mixes, within each Planning Area does not exceed the peak hour directional maximums noted in Exhibit 4.10. If development is proposed that exceeds any Planning Area maximum but the overall Specific Plan is not exceeded then a focused traffic study approved by the Development Services Director shall be required that demonstrates no additional off-site mitigation measures are required. The intent of this provision is to allow future flexibility (to move trips from one Planning Area to another) in the evolving development of the Specific Plan. If additional off-site mitigation measures are required and/or if proposed development exceeds the overall Specific Plan trip generation budget, then formal traffic studies and CEQA requirements will be triggered.

The Circulation Plan illustrates the general alignments, classifications and location of major public streets within the project. The Circulation Plan is consistent with the Oxnard 2030 General Plan's Circulation Element.

Access to the City of Oxnard and the Sakioka Farms Business Park is provided by Interstate 101, the Ventura Freeway. The City's General Plan designates the intersection of Gonzales Road and Rice Avenue as a primary entry node to the City. Access to the project is provided by a system of arterial highways including:

- Rice Avenue, a north-south major arterial highway (6 travel lanes) designated as a truck route, business route, scenic highway and City Image Corridor. Based on a Memorandum of Understanding between the City and Caltrans, Rice Avenue is planned to be under the jurisdiction of Caltrans and subject to their regulations.

- Del Norte Boulevard, a north-south primary arterial highway (6 travel lanes) designated as a truck route and scenic highway.
- Gonzales Road, an east-west primary arterial highway (6 travel lanes) designated as a truck route, business route and scenic highway.

The Circulation Plan will require an extension of Gonzales Rd. into and through the project area. This will also necessitate the creation of a full, at grade, four-way intersection at Gonzales Road and Rice Avenue. The roadway design should include a moderate radius to not only add street character but to provide more acreage for development in the central core area of the project. A second west to east major arterial is proposed approximately 1200 feet to the south. This arterial intersecting Rice Ave. and Del Norte Blvd. is critical to relieving traffic demand at the Gonzales Road intersections. This roadway would better facilitate the large truck traffic associated with major industrial uses and create a clear division of business research and mixed use activities from more traditional industrial uses. The new roadway should be designed to intersect, at grade, with Rice Avenue midway between the two existing traffic signals. Secondary roadways are proposed to connect these west/east corridors and should be located to achieve the best parcelization patterns. Two major project entry nodes will occur where Gonzales Road meets Rice Avenue and Del Norte Boulevard. Two secondary entry nodes are planned for the new intersections of Rice Avenue and Del Norte Boulevard with the new east/west arterial.

Additional internal project circulation will be provided by a network of public and private streets serving as access to individual parcels within the project area. Circulation is further enhanced by a number of entry drives and public transportation facilities. There are currently signalized intersections at Rice Avenue and Gonzales Road, and Rice Avenue at the entrance to the Procter and Gamble facility, south of the project. Alternative forms of transportation should also receive careful consideration. The current bus route passes the project area on Rice Avenue with continuation west along Gonzales Road. The project Circulation Plan identifies existing and proposed bus turnout locations along the adjacent arterials. As a supplement to vehicular access to the project area, potential future access may be available from the rail line to the south of the project area.

In addition, the Master Plan Concept incorporates a public pedestrian walkway system. As a means of achieving a strong landscape image, landscape parkways and pedestrian walkways are required on both sides of the street and shall be provided in the street right-of-way adjacent to new development projects.

TRIP GENERATION BUDGET
EXHIBIT 4.10

Estimated Project Traffic Generation

TRIP RATES Land Use	Units	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	ADT
General Commercial	TSF	0.51	0.33	0.84	1.46	1.59	3.05	35.00
Office	TSF	1.66	0.23	1.89	0.31	1.51	1.82	13.50
Business Park/R&D Center	TSF	1.12	0.22	1.34	0.23	0.96	1.19	10.44
Light/General Industrial	TSF	0.58	0.18	0.76	0.25	0.61	0.85	6.50

AREA	LAND USE	Size	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	ADT
1	Office	400 TSF	664	92	756	124	604	728	5,400
	Business Park/R&D Center	1,300 TSF	1,456	286	1,742	299	1,248	1,547	13,572
	General Commercial	80 TSF	41	26	67	117	127	244	2,800
	SUBTOTAL		2,161	404	2,565	540	1,979	2,519	21,772
2	Business Park/R&D Center	200 TSF	224	44	268	46	192	238	2,088
	Light/General Industrial	600 TSF	348	108	456	150	366	516	3,900
	SUBTOTAL		572	152	724	196	558	754	5,988
3	Business Park/R&D Center	600 TSF	672	132	804	138	576	714	6,264
	Light/General Industrial	1,200 TSF	696	216	912	300	732	1,032	7,800
	SUBTOTAL		1,368	348	1,716	438	1,308	1,746	14,064
4	Business Park/R&D Center	200 TSF	224	44	268	46	192	238	2,088
	Light/General Industrial	500 TSF	290	90	380	125	305	430	3,250
	SUBTOTAL		514	134	648	171	497	668	5,338
5	Light/General Industrial	2.500 TSF	1,450	450	1,900	625	1,525	2,150	16,250
	SUBTOTAL		1,450	450	1,900	625	1,525	2,150	16,250
6	Business Park/R&D Center	100 TSF	112	22	134	23	96	119	1,044
	Light/General Industrial	700 TSF	406	126	532	175	427	602	4,550
	SUBTOTAL		518	148	666	198	523	721	5,594
7	Business Park/R&D Center	100 TSF	112	22	134	23	96	119	1,044
	General Commercial	20 TSF	10	7	17	29	32	61	700
	SUBTOTAL		122	29	151	52	128	180	1,744
		TOTAL	**6,705**	**1,665**	**8,370**	**2,220**	**6,518**	**8,738**	**70,750**
	Existing Sakioka Farms Trip Totals		**10**	**8**	**18**	**7**	**11**	**18**	**190**

Source: Austin-Foust and Associates, 2010.

4.4.0 CIRCULATION POLICIES

4.4.1 Gonzales Road shall be designed as an east/west primary arterial. Gonzales Road shall be improved and dedicated as a public street with an 120 foot right-of-way from Rice Avenue east to the new intersection with Del Norte Boulevard. Gonzales Road shall extend from Del Norte Boulevard to the east property line with a 72 foot right-of-way.

4.4.2 A new east/west secondary arterial, Street "A" shall be improved and dedicated as a public street with an 102 foot right-of-way from Rice Avenue east to a new intersection with Del Norte Boulevard. This new street will be located approximately 1200 feet south of the extension of Gonzales Road.

4.4.3 Two new north/south local arterials, Street "B" and "C" are proposed within the Specific Plan area to connect the two east/west arterials. Each street will be improved and dedicated as a public street with a 72 foot right-of-way.

4.4.4 Primary access to the project area shall be from the existing signalized intersection of Gonzales Road and Rice Avenue, and the proposed new signalized intersections of Gonzales Road and Del Norte Boulevard, and the new east/west arterial with Rice Avenue and Del Norte Boulevard.

4.4.5 Direct access to individual projects from the North/South arterial highways adjacent to the project area shall be limited and allowed only when the project, size, location or type of use, warrants such access, subject to review and approval of the City. No direct access will be allowed to individual parcels from Rice Avenue in accordance with the Memorandum of Understanding between the City and Caltrans.

4.4.6 Deceleration and acceleration lanes for individual developments may be required, depending on the location of the proposed access point. Right turn in and right turn out accesses to the arterial highways shall be considered on an individual project basis, subject to the review and approval by the City.

4.4.7 Trip reduction measures should be included in future development projects in an attempt to implement the Ventura County Congestion Management Program. Trip reduction measures may include providing for bicycle parking facilities and an adequate number of vanpool and carpool parking spaces. Alternative transportation forms including bus service and future rail access, shall be investigated with each development project. Where feasible and appropriate transit stops improvements, like bus pullouts, pads and shelter should be included in the plan. Future projects which employ fifty (50) or more employees may be required to provide basic transportation opportunities and options information to their employees through a Transportation Management Plan.

4.4.8 Pedestrian sidewalks shall be incorporated into each development project as a component of an individual project's landscape plan. Sidewalks shall be a minimum of five (5) feet wide and installed within the street right-of-way on both sides of the street adjacent to new development throughout the project area. Pedestrian walkways are encouraged to link development projects.

4.4.9 Public streets shall be developed to local street standards as shown in the Standard Plans of the City's Public Works Department, or as otherwise approved by the City Traffic engineer. Street patterns throughout the Specific Plan should link together; dead end and cul-de-sac terminations shall be discouraged.

4.4.10 On-street parking shall generally not be permitted along arterial streets in the project area.

4.4.11 The "Trip Generation Budget" identified in the E.I.R. shall be reviewed with each individual project request. Additional periodic reviews, by the Development Services Director, will also be necessary for overall compliance with the E.I.R.

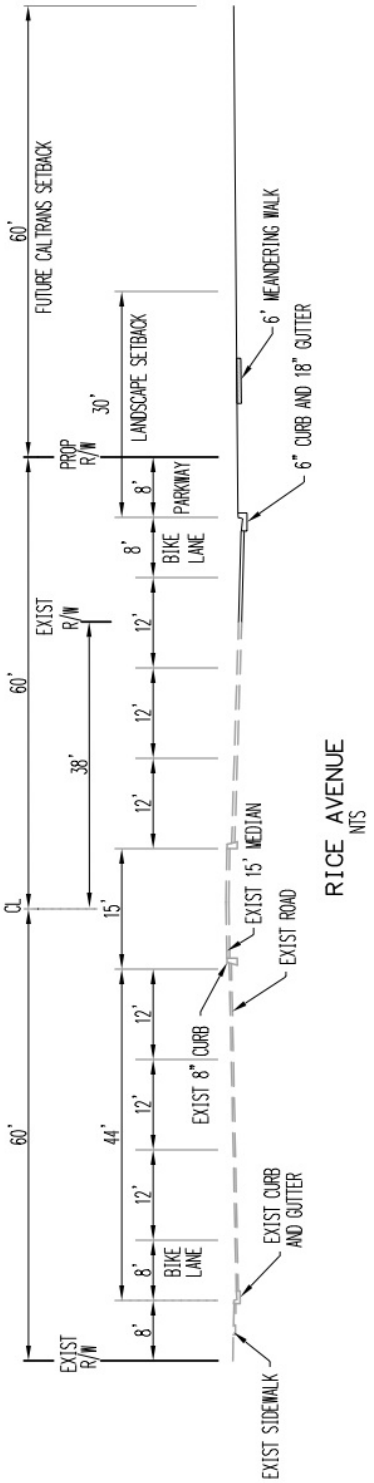
4.4.12 Circulation system improvements shall be master planned to accommodate ultimate build-out of the Specific Plan. On-site and off-site circulation improvements shall be completed prior to occupancy to provide appropriate vehicular, pedestrian and bicycle circulation to each parcel.

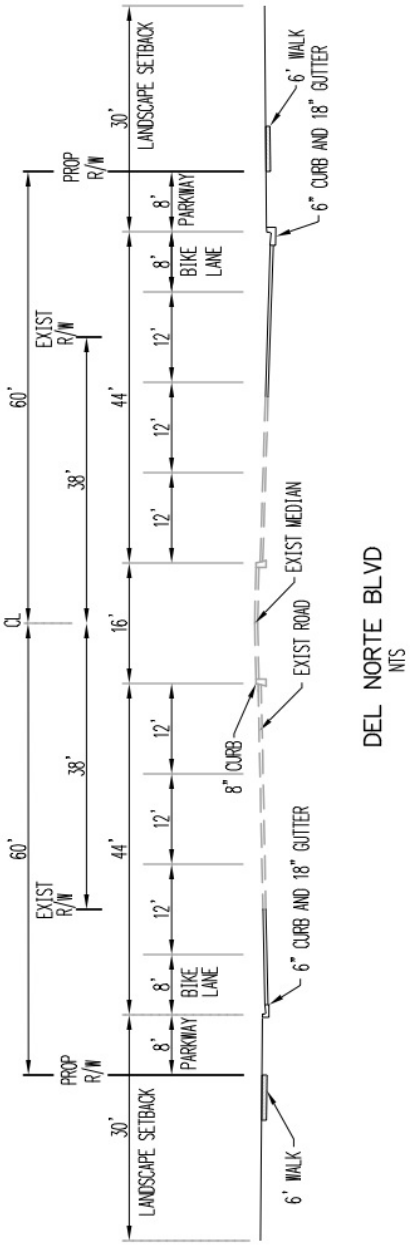
4.4.13 Phasing of public street improvements is permitted subject to review and approval by the City.

4.4.14 The secondary arterial (Street 'A') intersection with Del Norte Boulevard shall be a full movement three-way intersection with a median break plus the option to create a four-way intersection with a private drive or street entry to Planning Area 6. The Rice Avenue and Street"A" intersection shall also be a full movement three-way intersection with a median break.

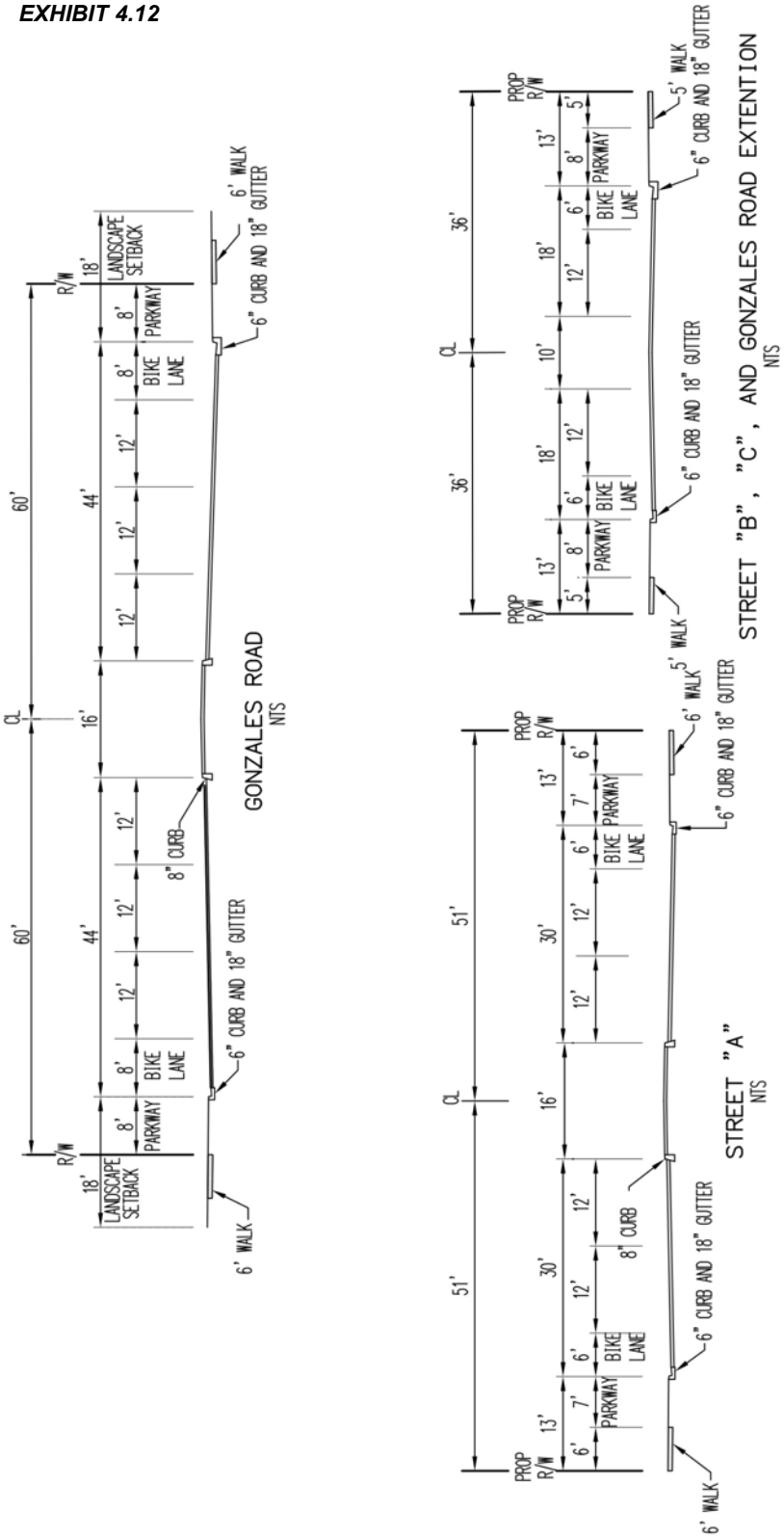
4.4.15 Street cross sections shown in figures 4.11, 4.12, 4.14 and 4.16 to 4.25 may be modified to reduce parkways and/or landscape-related water usage in order to comply with State-required water conservation goals and mandates.

STREET CROSS SECTIONS
EXHIBIT 4.11

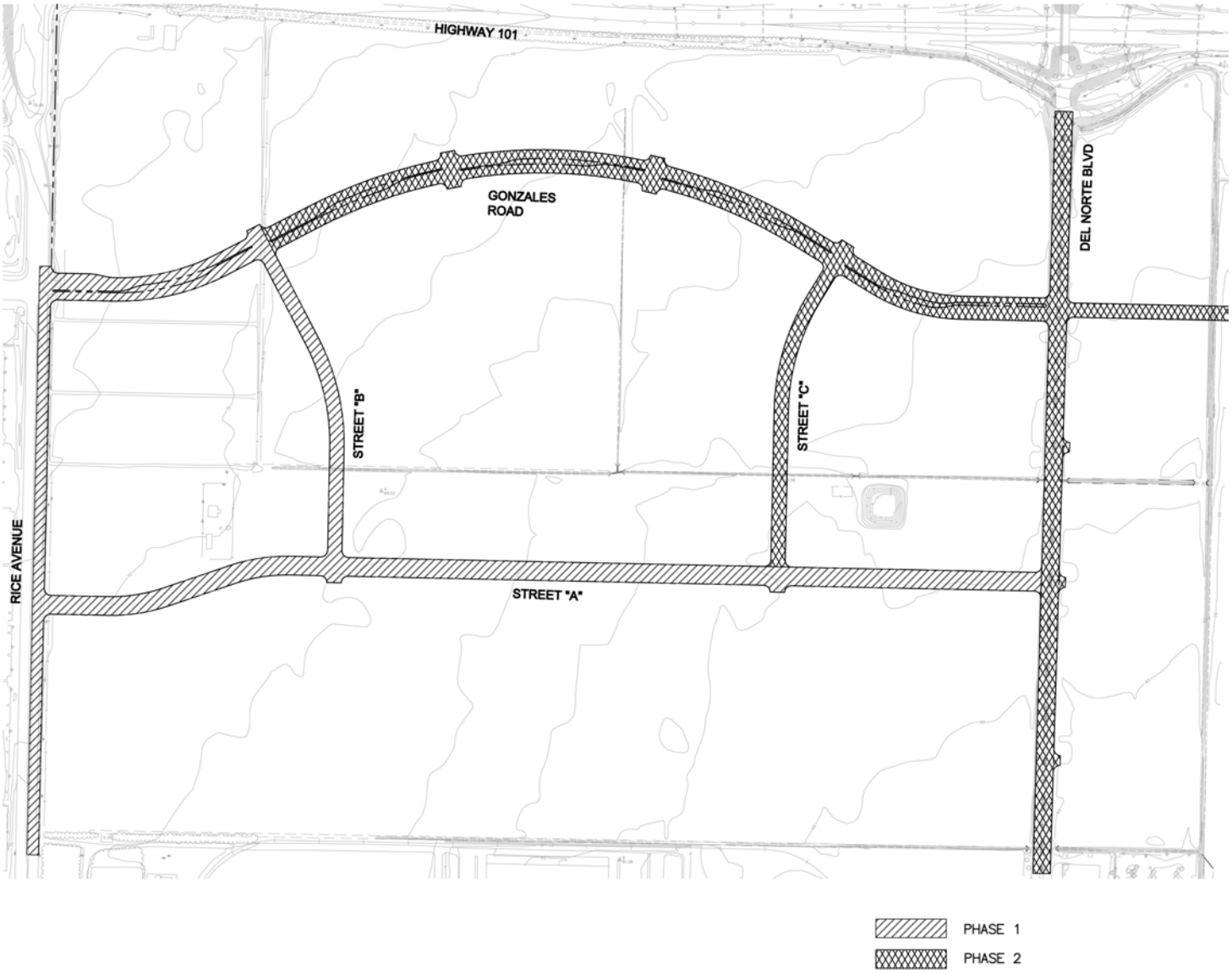


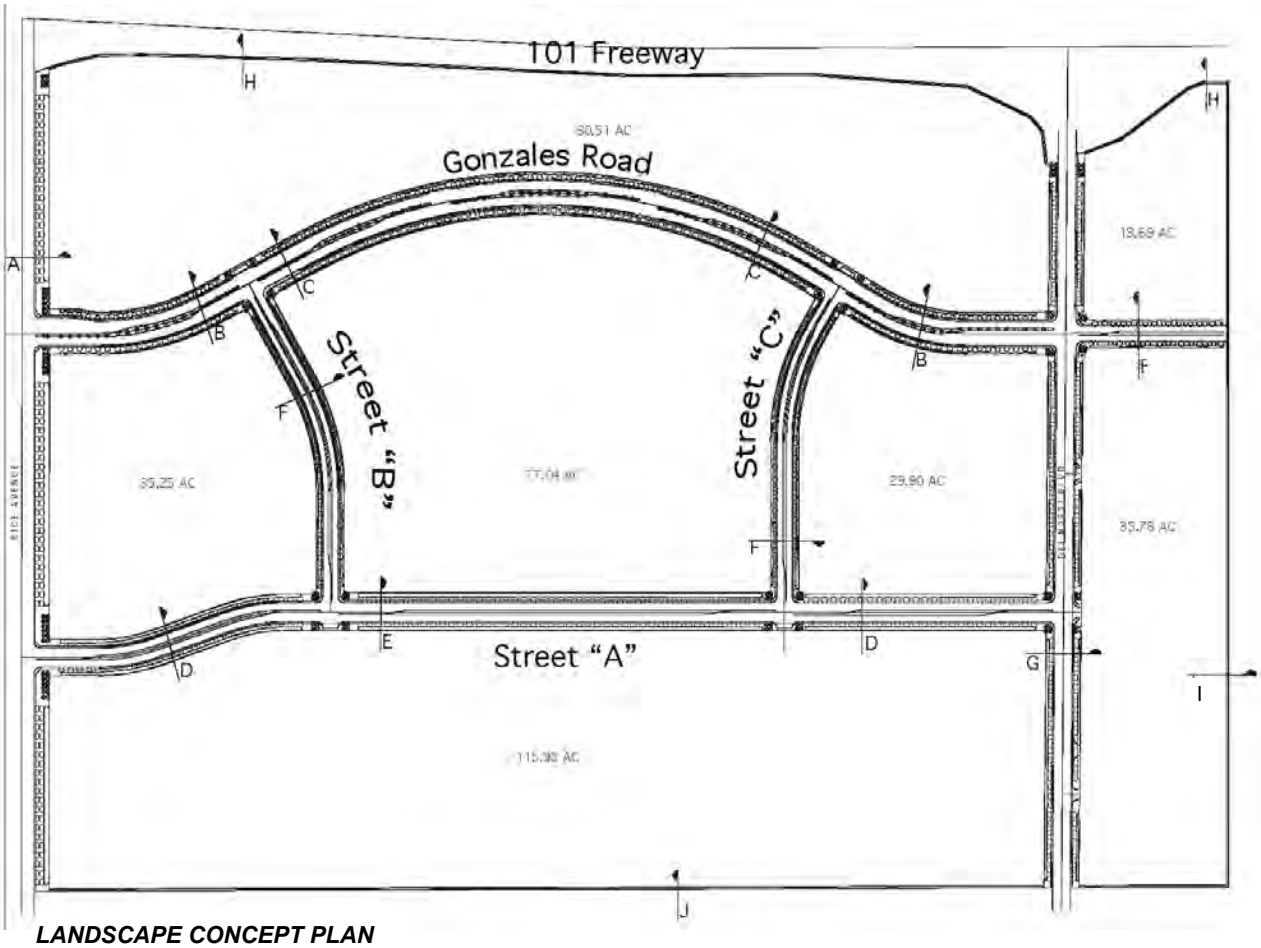


STREET CROSS SECTIONS
EXHIBIT 4.12



CONCEPTUAL STREET PHASING
EXHIBIT 4.13





LANDSCAPE CONCEPT PLAN
EXHIBIT 4.14

4.5 LANDSCAPE CONCEPT

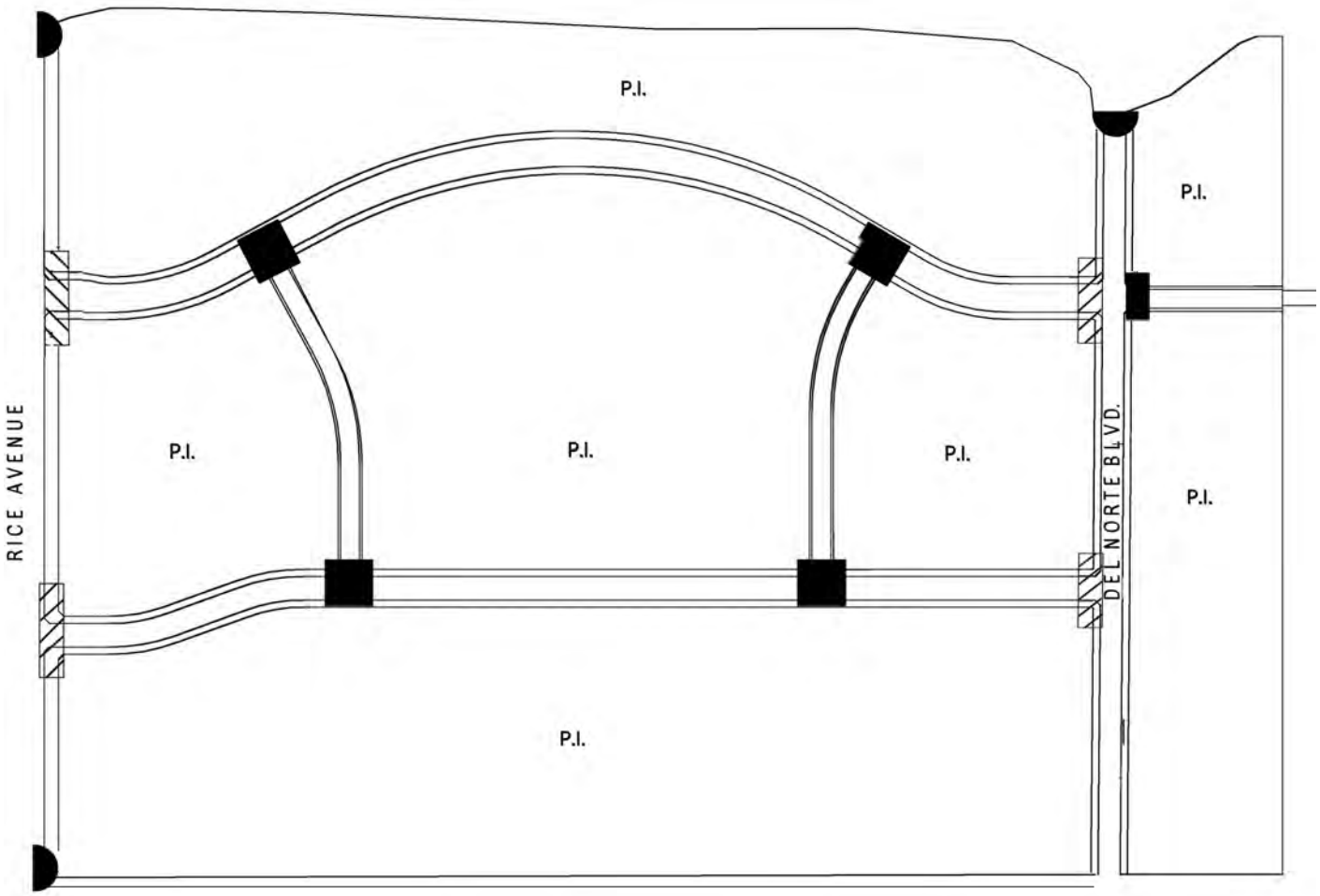
The Landscape Concept for the Sakioka Farms Business Park is intended to create a unique character and identity for the project and community which reinforces the planning and architectural concepts. It is also designed to create a hierarchy and organization of the landscape which assists in way-finding and imaging of the project while providing a visual asset to the community.

Because of the nature of the project, the landscape design will be key to creating the character of the project. The landscape will 'bridge' the varied architectural styles, land uses, and varied scale/massings into a cohesive whole, while visually organizing circulation and uses. The landscape will identify entries and intersections, while providing for a park-like image along the project streets.

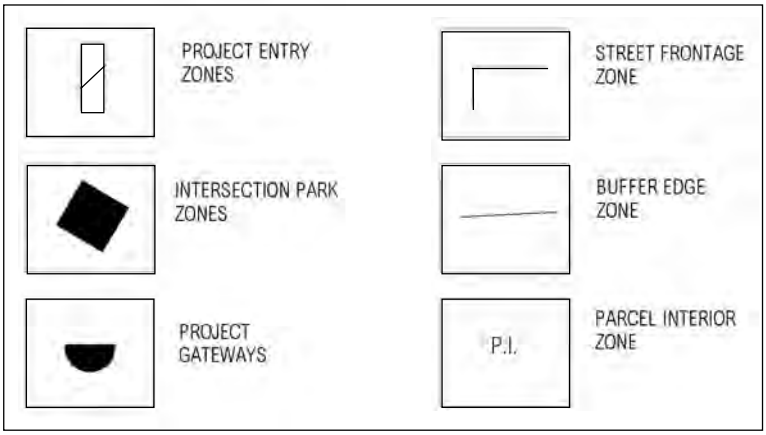
The landscaping objective for the Specific Plan is to create a project area that:

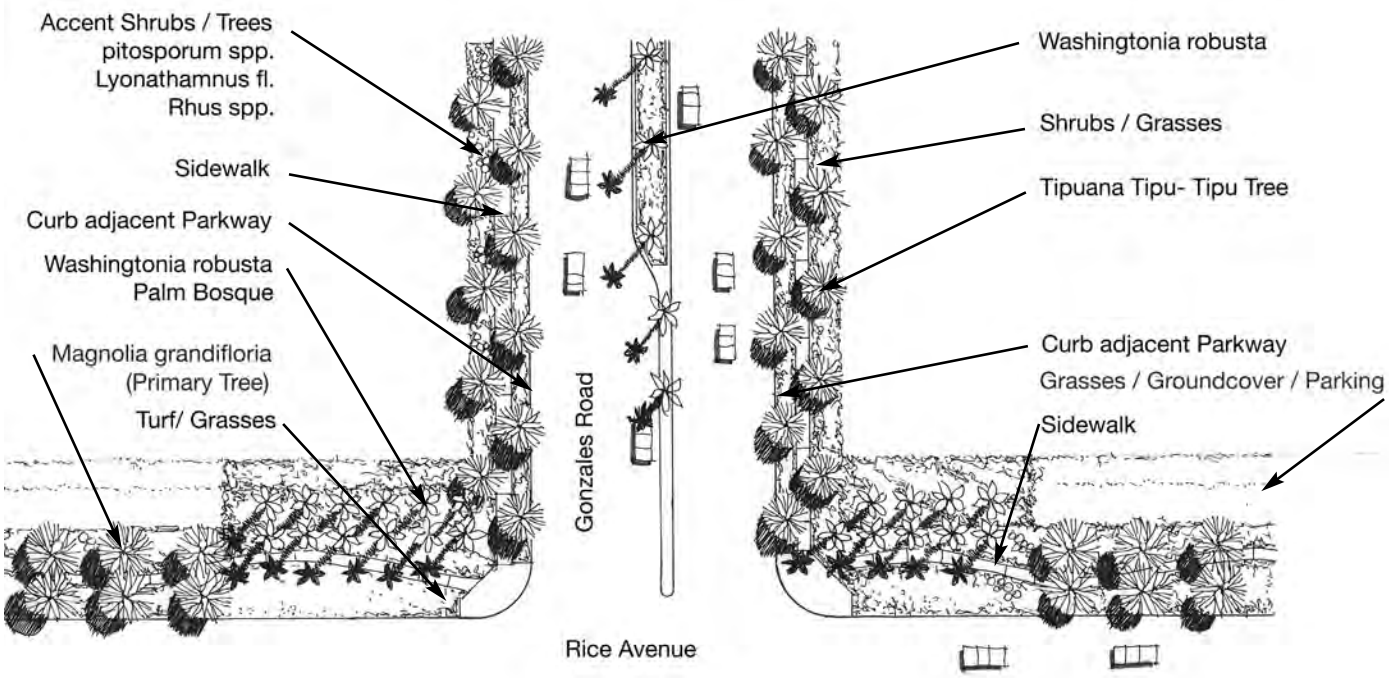
- Reflects the "macro-image" of the site through all levels of the project and acts as a unifying element that ties the individual plans together and weaves through the architecture and infrastructure.
- Develops a pleasant, 'walkable' streetscape
- Creates a memorable vision of the project area and meets or exceed the expectations of tenants and visitors.
- Develops a hierarchy of spaces to assist in visitor and tenant way-finding and identification.
- Ensures the long-term sustainability of the landscape through water conservation irrigation practices, use of drought-tolerant and low water usage materials, and through the limiting of turf use.
- Ensures that individual project landscape proposals are feasible and complement the public landscape areas.
- Considers long-term maintenance viability.
- Provides shade and wind screening for pedestrian use areas
- Reduces the scale of buildings
- Becomes a visual asset to the community
- Complies with Oxnard Resolution No. 2822

The landscape concept establishes a "California" theme, that includes an eclectic mix of indigenous plant and local materials which reflect the historical and cultural background of the area. These include perimeter landscaping, large landscape setbacks along both interior and perimeter streets, pedestrian walkways which unify the site, and intersection treatments which create a "park-like" atmosphere and assist in visitor way-finding. Street parkways maybe modified to reduce water usage to comply with State water conservation goals and mandates, and City of Oxnard Resolution No. 2822.



LANDSCAPE NODES
EXHIBIT 4.15





PROJECT ENTRIES AT RICE AVENUE
EXHIBIT 4.16

Project Entries

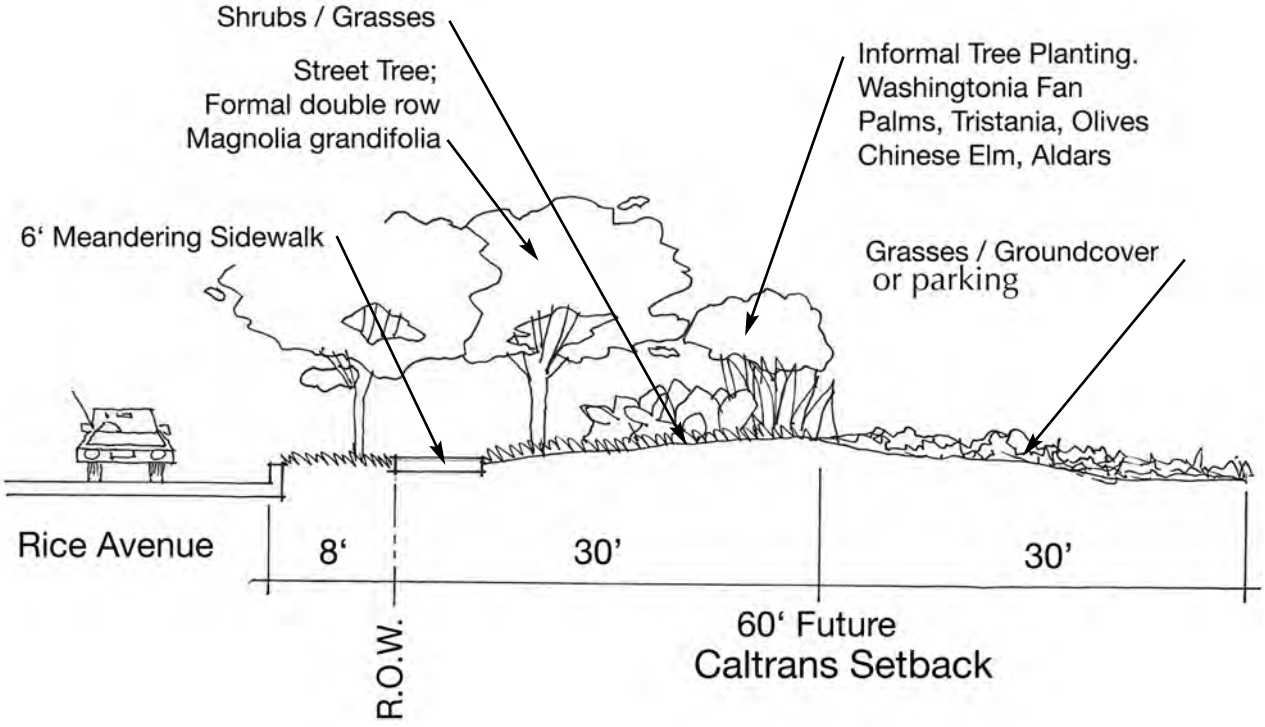
Project entry landscape shall provide a strong visual identity through formal double-row linear planting of hybrid Washingtonian palm bosques and formal shrub massing below. Business Park identification signs (5.4.8) may be incorporated into the entry landscape with a backdrop (and/or foreground) of flowering shrubs and annual color. Formal hedge plantings at the back of the entry landscaping shall screen views of parking and adjacent parcel developments.

The Gonzales/Rice entry landscape shall be approximately 60′ deep and extend approximately 175′ on each side of Gonzales along Rice as illustrated by Exhibit 4.16.

The Street 'A'/Rice entry landscape shall be approximately 30′ deep and extend approximately 75′ on each side of Street 'A' along Rice, similar to Exhibit 4.16.

The Gonzales and Street 'A'/Del Norte entries shall be approximately 30′ deep and extend approximately 75′ on each side of Gonzales and Street 'A' along Del Norte, similar to Exhibit 4.23.

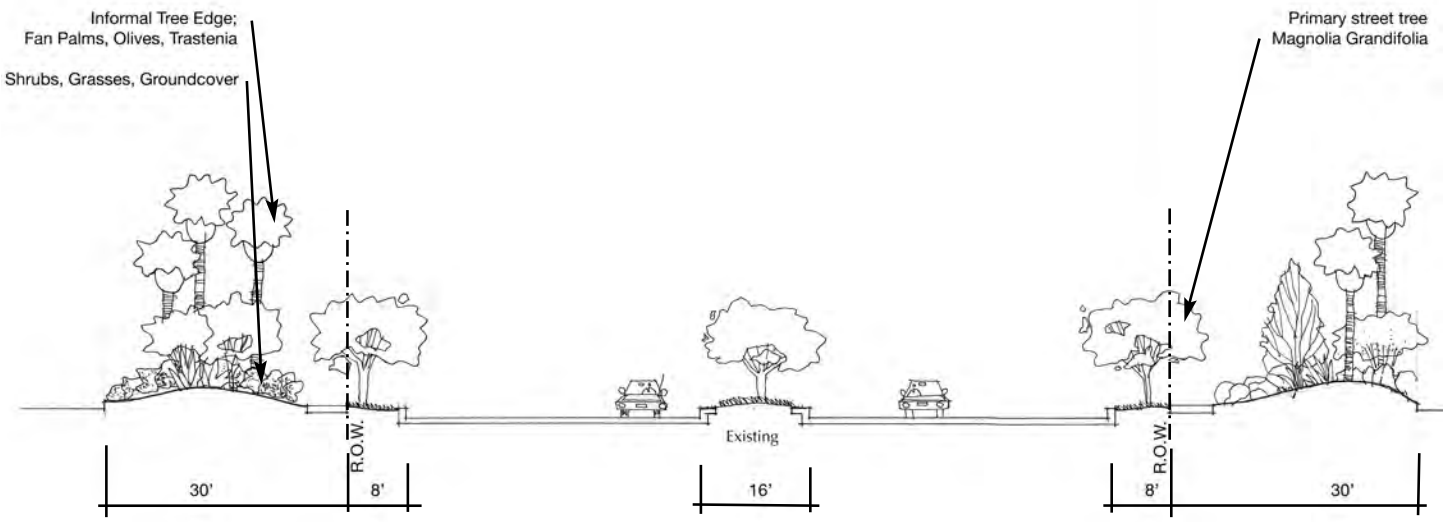
Rice and Del Norte/101 Freeway entries shall be landscaped approximately 100′ back from the property line edges. Exhibit 4.25 illustrates the general concept which shall be finalized in concert with the final Rice and Del Norte interchange design.



RICE AVENUE FRONTAGE SECTION
SECTION A
EXHIBIT 4.17

Project Frontages - Rice Avenue

The street frontage on the east side of Rice Avenue has a 60′ Caltrans setback that is consistant with the City of Oxnard’s Memorandum of Understanding with Caltrans. The curb adjacent parkway and a 30′ landscape setback will provide a double row of Magnolia grandiflora trees at 40′ on center with a background of informal Washingtonian palms and a mix of vertical screen trees and smaller flowering trees. Informal drifts of shrubs and grasses / groundcover will stretch along the entire Rice Avenue frontage. The internal 30′ of the Caltrans setback shall be planted in grass / groundcover and or surface parkingr. The Rice Avenue sidewalk is proposed to meander similar to the existing improvements to the south.

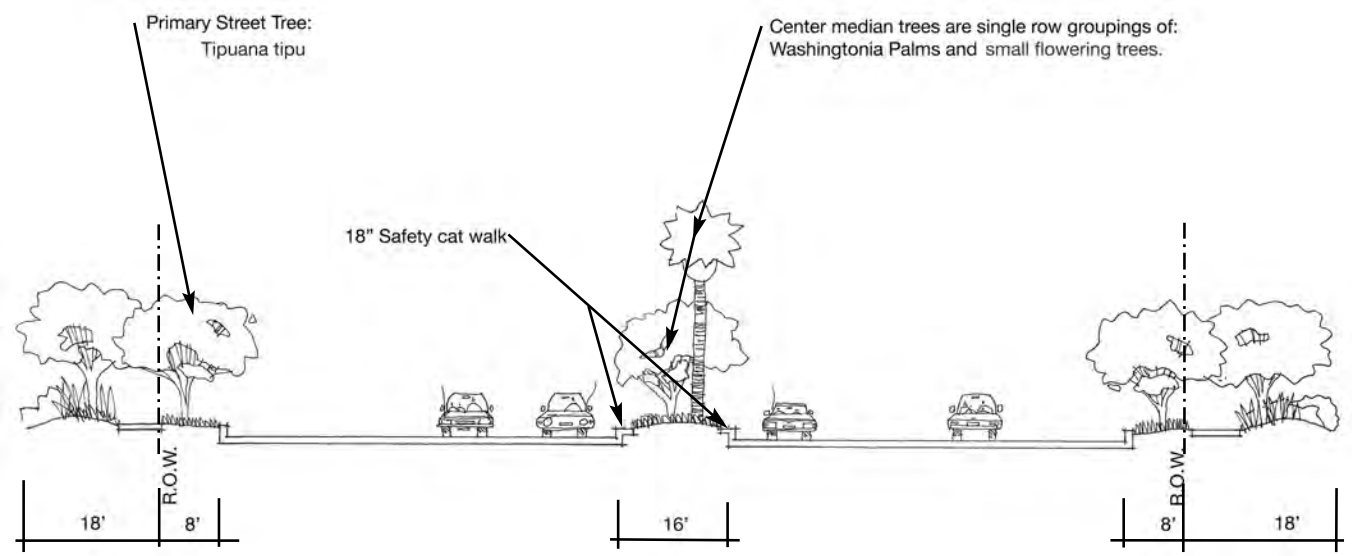


DEL NORTE BOULEVARD STREETSCAPE SECTION
SECTION G
EXHIBIT 4.18

Del Norte Boulevard Landscape

The parkway landscape along Del Norte Boulevard will be planted with a single row of Magnolia grandiflora trees at 40′ on center. The 30′ landscape setback shall create a backdrop consisting of informal groupings of Washingtonian palms and a mix of vertical screen trees and small flowering trees. Informal drifts of shrubs and grasses / groundcover will stretch along the entire length of the setback.

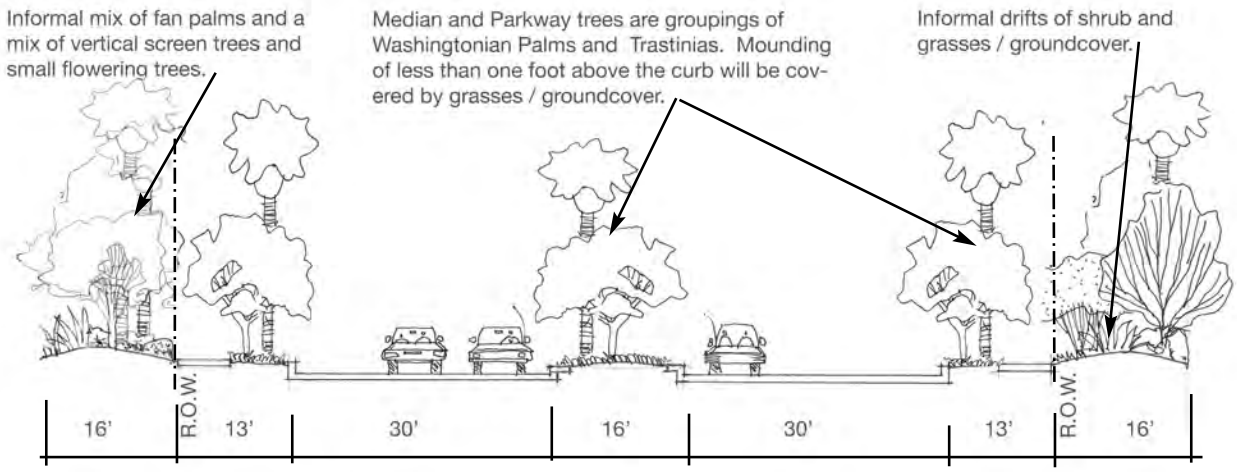
A 6′ sidewalk runs behind the 8′ curb adjacent parkway on both sides of the boulevard. All sidewalk and median improvements / alterations shall be consistent with the existing improvements to the south.



GONZALES ROAD STREETSCAPE SECTION
SECTION B & C
EXHIBIT 4.19

Gonzales Road Landscape

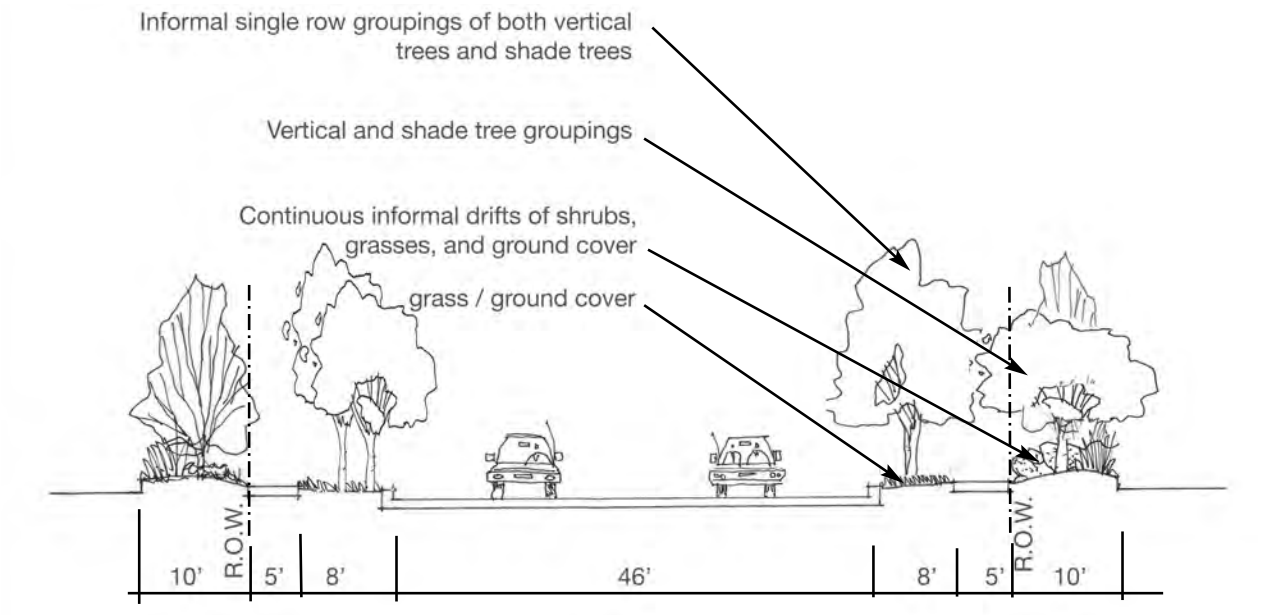
The extension of Gonzales Road, between Rice Avenue and Del Norte Boulevard, will have an 8′ curb adjacent parkway and an 18′ landscape setback on each side. A 6′ wide sidewalk seperates a double row of Tipuana trees that are triangular spaced at 40′ on-center. Informal groupings of Washingtonian palms and small flowering trees will provide a continuous backdrop above informal drifts of shrubs and grasses / ground cover. The medians will be planted with single row groupings of Washingtonian palms intersperced with groupings of a flowering tree. The median will be mounded to a maximum height of 12″ from the top of curb, be planted with grasses / ground cover and will have an 18″ catwalk on each side.



STREET "A" STREETSCAPE SECTION
SECTION D & E
EXHIBIT 4.20

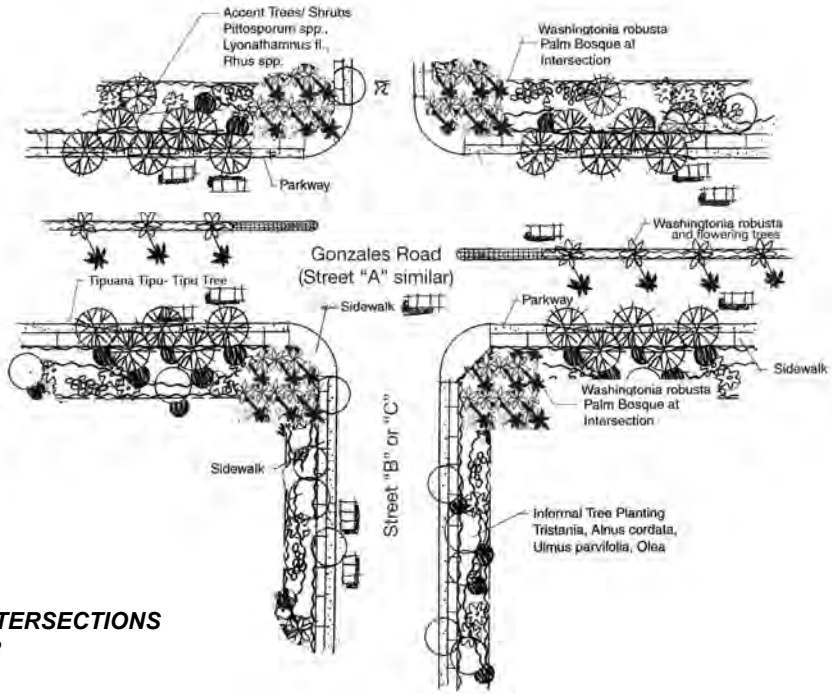
Street "A" Landscape

Street "A", the East-West Connector Street south of Gonzales Road,will have 16′ landscape setback, a 6′ sidewalk and an 8′ curb-adjacent parkway along both sides of the street. A 16′ center median separates two 30′ street sections. The median and parkway shall be planted with groupings of Washingtonian Palms and Trastinias, with a continuous grass / ground cover base. The 16′ landscape setback provides a background planting of informal groups of Washingtonian palms and a mix of vertical screen trees and small flowering trees. Informal drifts of shrub and grasses / ground cover will stretch along the entire Street "A" setback.. The median will be mounted, with a maximum height of no more than 12″ from the top of curb and will have an 18″ catwalk on each side.



STREET "B", "C" AND GONZALES ROAD EXTENSION
STREETSCAPE SECTION
SECTION F
EXHIBIT 4.21

Street "B", "C" and Gonzales Road Extension have an 8′ curb adjacent parkway, a 5′ sidewalk and a 10′ landscape setback along both sides of these streets. The parkway planting design features informal vertical and shade tree groupings with a grass / groundcover base. The 10′ setback is mounded and continues the parkway planting design of informal vertical and shade tree groupings. At their base are continuous iInformal drifts of shrubs, and grasses / groundcover.

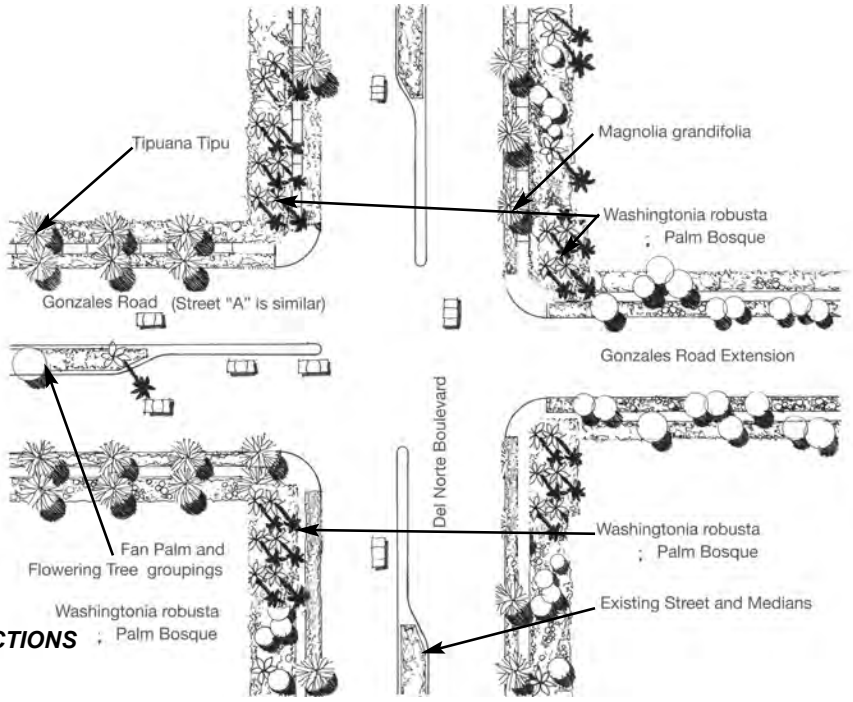


PRIMARY INTERSECTIONS
EXHIBIT 4.22

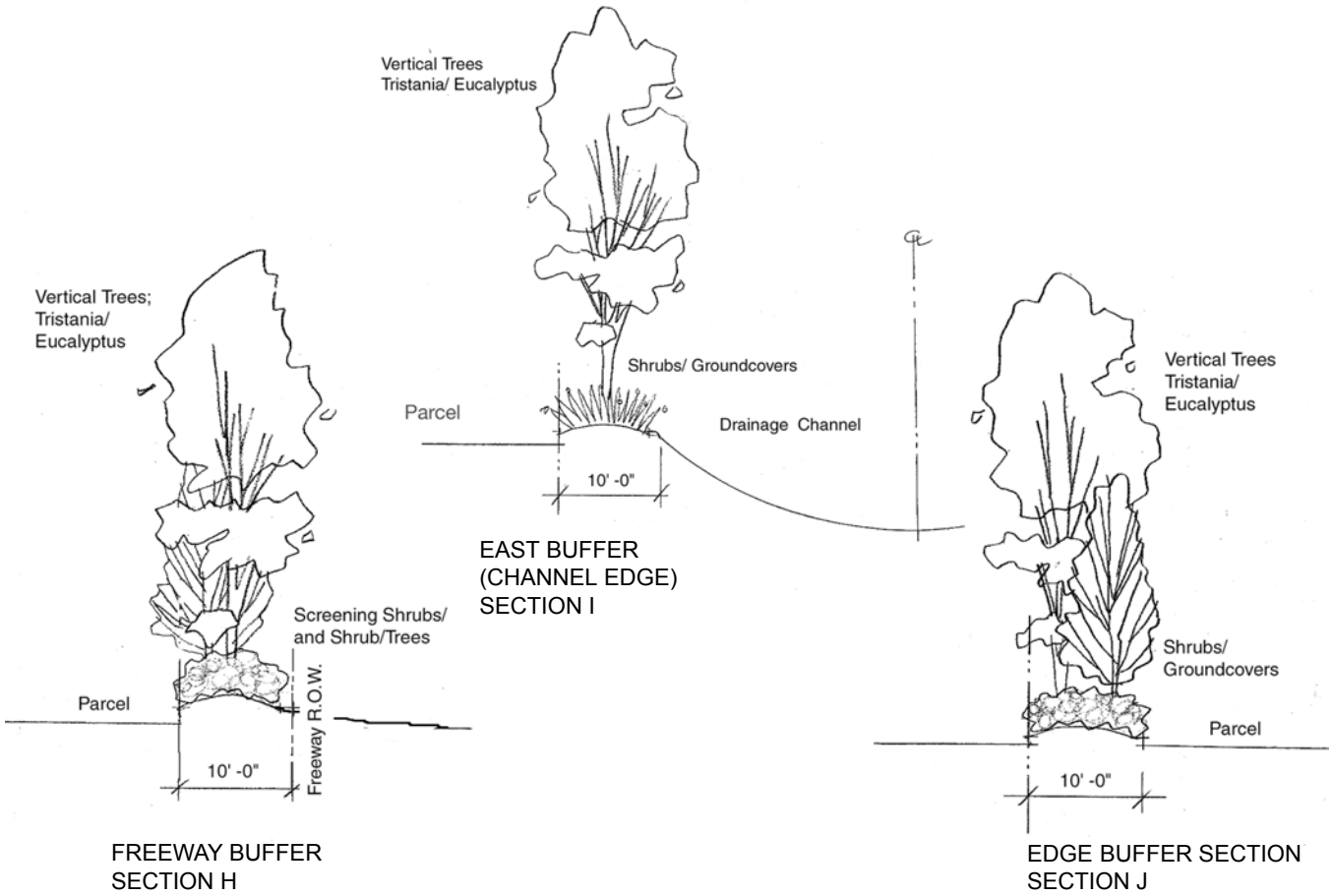
Intersection Treatments

The intersections at Gonzales Road, Street "A", and Streets "B" and "C" are intended to create park-like plantings that also identify the intersections and assist in way-finding.

Intersection orner plantings will create a palm bosque of hybrid Washingtonian palms with formal shrub and grasses/groundcover plantings below.



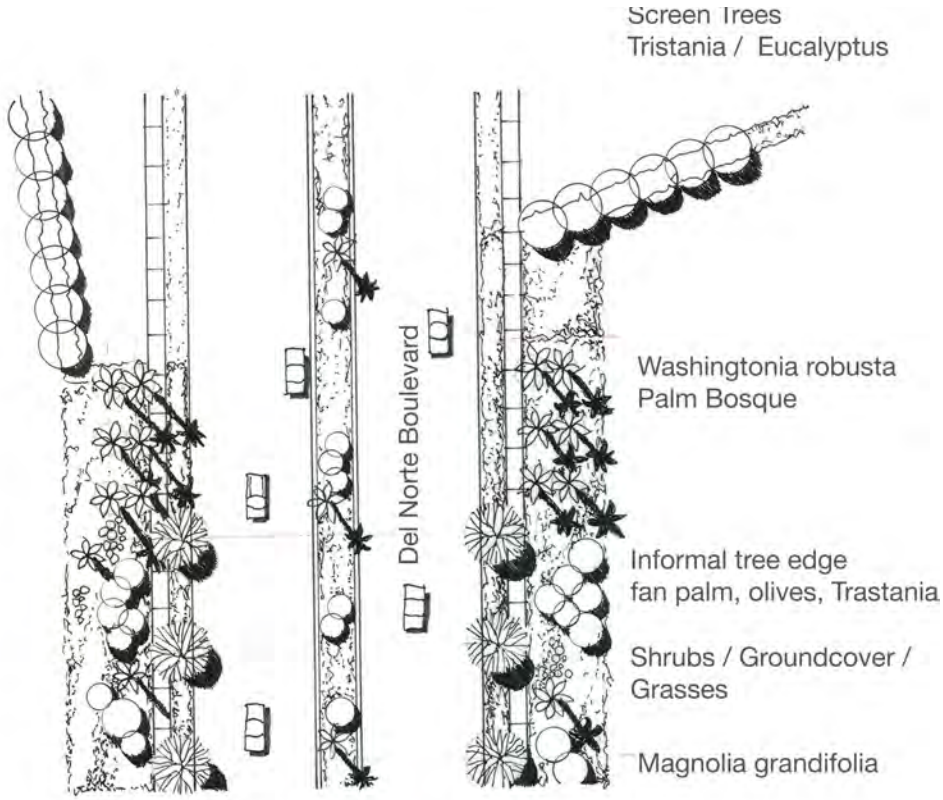
DEL NORTE INTERSECTIONS
EXHIBIT 4.23



BUFFER SECTIONS
EXHIBIT 4.24

Project Perimeters / Buffer Edges

The project perimeters which require landscaping occur along the north property line adjacent to the 101 Freeway, the east property line, and the south property line. The edge setbacks are 10′ typical, and will be planted with informal vertical tree plantings such as eucalyptus, pines, brisbane box, carob trees. Ground plane plantings shall consist of shrub/tree species and hedge material to screen rear parcel areas. Rear parking lot perimeter tree planting shall be 40′ on-center.



101 FREEWAY ENTRIES AT DEL NORTE AND SIMILAR ENTRIES AT THE N.E. CORNER OF RICE AVENUE

EXHIBIT 4.25

Parcel Entries

Individual parcel entries are to be installed by each parcel owner/developer but shall include landscape elements that transition and blend the streetscape design into the parcels. Plant material types and layouts shall be compatible with and complimentary to the adjacent streetscape setback plantings.

Parcel Interior

Parcel Interiors/Private Developer improvements shall be compatible with and complimentary to the overall project landscape theme.

4.6 PUBLIC FACILITIES PLANS

The Public Facilities Plans identify existing and proposed infrastructure, including water, wastewater, storm drain and facility improvements to serve development within the Specific Plan area. A specific analysis of infrastructure requirements and detailed design, construction and phasing plans will be identified in the Infrastructure Master Plan Technical Appendix to the E.I.R.

WATER SYSTEM PLAN

The Water System Plan for the site includes a system of water mains to be constructed in conjunction with the phased project build-out. This system will be contained in the streets and will connect to existing facilities in Del Norte Blvd. and Rice Ave. Water systems shall be looped to provide adequate water pressure and fire flow for each phase of the build-out. Stub outs shall be provided for each lot, and future on-site water mains shall be sized in accordance with the City of Oxnard Fire Department and Public Works Department requirements. Where the needs of future in-tract development exceed system capacity, additional upgrades such as tanks or pump stations may be required to achieve calculated demands.

The existing potable water supply facilities contained in Rice Ave. and Del Norte Blvd. are adequate to supply the projected needs of the site. A 16″ water main looped through the site will satisfy fire flow requirements, and the merging of two pressure zones serving the area will further improve the available pressure.

All anticipated water system connections should be constructed prior to or concurrently with each respective phase of the site improvements. In accordance with SB610, a water supply assessment was prepared by the City due to the development's size.

WASTEWATER PLAN

The Wastewater Plan for the site includes a system of gravity mains to be constructed in conjunction with the phases build-out, and will connect to existing facilities in Del Norte Boulevard and Rice Avenue. The proposed wastewater system will be constructed to accommodate the worst-case generation assuming the ultimate build-out of the project. The existing system in Del Norte Boulevard and Rice Avenue have locally sufficient capacity to accommodate the additional wastewater discharges anticipated from the site build-out. Proposed main sizes and layouts are generally consistent with the City of Oxnard Standard Plans for Public Works Construction (Standard Plans) and the Wastewater Master Plan. Wastewater mains were sized in accordance with the worst case discharge rates and peaking factors found in the City's Standard Plans.

STORM DRAIN PLAN

The Storm Drain Plan for the site proposes a system of storm drain lines to be constructed both within the streets and easements in accordance the anticipated drainage patterns of the developed site. The project site drains generally to the

southeast in both the existing and ultimate drainage conditions to a connection with the existing Sturgis Road Drain at the southeast corner of the site. Storm water discharges from the site are consistent with those envisioned by the City of Oxnard Master Storm Drain Plan.

The proposed Storm Drain Plan anticipates the construction of storm water detention facilities with outlet control structures to effectively limit peak storm water runoff discharge rates from the site to pre-development levels for each storm event (up to and including a 100-year event) with an overall maximum allowed runoff rate of 1 cfs/acre regardless of pre-development runoff rate. All new development projects will be required to implement hydraulic control measures to prevent accelerated downstream erosion by limiting the post-development peak storm water runoff discharge rates as previously described and construction of mitigation measures, such as but not necessarily limited to, energy dissipaters, flow spreaders, and check dams when determined effective in erosion prevention.

Runoff from the project shall comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) as described in the Ventura County Municipal Storm Water NPDES permit Order No. 00-108, as well as the provisions of the Ventura Countywide Storm Water Quality Urban Impact Mitigation Plan (SQUIMP) where applicable. The Project shall comply with the performance criteria set forth in the 2002 Technical Guidance Manual for Stormwater Quality Control Measures under Board Order 00-108 including the Best Management Practices (BMPs) specified in said manual or other equally effective methods proposed by the developer and approved by the City.

The on-site storm water conveyance system will be consistent with the City of Oxnard Master Storm Drain Plan, Ventura County Watershed Protection District discharge limitations for the Revolon Slough, and the Northeast Industrial Assessment District (NIAD) plans which considered future drainage configurations for the property. The existing trapezoidal channel which is the point of connection for the project (the Sturgis Road Drain) is anticipated to be extended to the north property line of the project along its current alignment. The existing earthen channel would be replaced by a concrete trapezoidal channel sized per future runoff quantity calculation.

Off-site drainage is contributed to the northerly section of the site from the adjacent southbound portion of the Route 101 interchange. Four box culverts transfer drainage from the 40 acres to the north of the project through the Route 101/Caltrans right-of-way. This drainage, together with contributions from permeable and impermeable portions of Route 101, is intercepted by the off-site earthen channel just north of the project, and then conveyed to the proposed trapezoidal channel extension.

STORM WATER QUALITY

The City of Oxnard requires all new development within the City to comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) by incorporating storm water quality control measures into the proposed improvement plans in compliance with the Ventura County Stormwater Quality Urban Impact Mitigation Plan (SQUIMP). Projects within this Specific Plan are subject to these requirements. Each site as it develops will be responsible to comply with the performance criteria set forth in the 2002 Technical Guidance Manual for Stormwater Quality Control Measures "2002 TGM" under Board Order 00-108 or other equally effective methods approved by the City for treating storm water runoff from that project site. BMPs implemented on private property shall be maintained by either the individual property owner on which the BMP is located or by a private association, public maintenance district and/or other form of financial arrangement satisfactory to the City.

BMPs designed in accordance with the 2002 TGM shall also be implemented to effectively treat runoff from public rights-of-way within the specific plan. Maintenance costs associated with BMPs implemented to treat runoff from the public right-of-way shall be fully funded by a Community Facilities District, Property Owners Association and/or other form of financial arrangement satisfactory to the City as elected by the property owner.

FIRE STATION

A new fire station, on a 1.5 acre site, is proposed within Planning Area 2 or 3. The Oxnard Fire Department is requesting that the fire station be fully constructed and operational prior to the issuance of building permits in excess of 1.7 million gross square feet. These estimates are based upon current deficiencies in service, future demands from other adjacent developments and projects within the Specific Plan area. The criteria for any future development limitations shall be provided by the Oxnard Fire Department. As part of the Sakioka Specific Plan EIR Adoptive Mitigation and Monitoring Plan mitigation measures, the Oxnard Fire Department shall conduct subsequent reviews to determine whether additional development may be allowed based on future fire protection capability. The fire station will front on the north/south arterial, (Street "B"), between Planning Areas 2 & 3, approximately equal distance between the Gonzales Road extension to the north and the proposed new southern east/west arterial (Street "A"), to the south. The final design and location area is subject to review and approval by the Oxnard Fire Department as part of the first Tenative Traact Map in Planning Areas 1, 2, or 3 when cumulative total development exceeds 1.0 million square feet, or as otherwise determined. Unless otherwise determined, the 1.5 acre fire station site shall be reserved for the fire station.

UTILITIES

There are several public utility service providers in the Sakioka Farms Business Park area.

Electricity

Electrical service to the area is provided by the Southern California Edison Company.

Natural Gas

Natural gas service in the Specific Plan area is provided by The Gas Company.

Telephone

Telephone service in the Specific Plan area is provided by GTE of California.

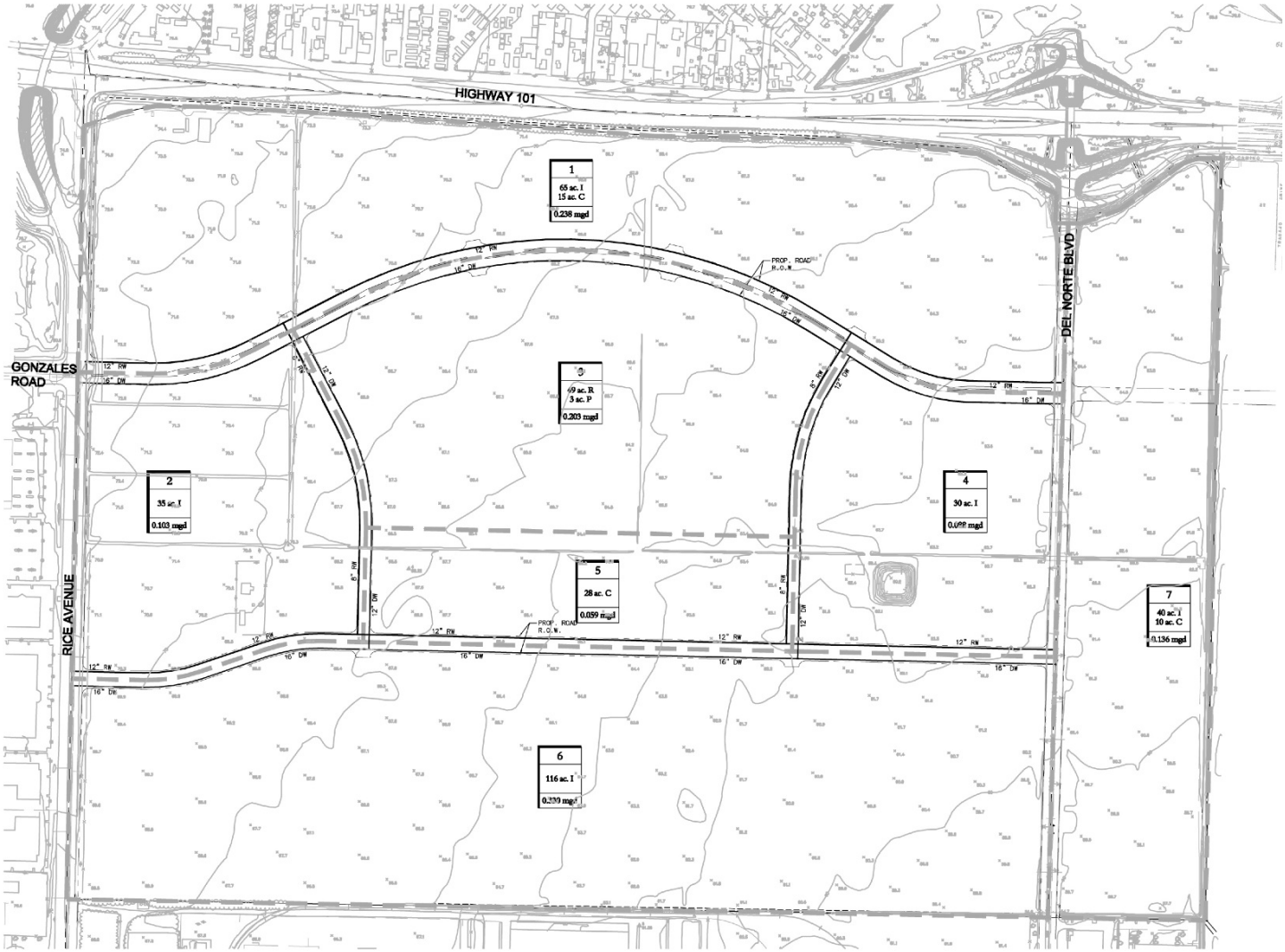
Cable Television

Cable television service within Oxnard is provided by Time Warner. Developers should coordinate with the cable company for the installation of new service.

Solid Waste Disposal

The City of Oxnard currently provides solid waste disposal services for the area. No solid waste disposal facilities are planned to be located in the Specific Plan area.

WATER SYSTEMS
EXHIBIT 4.26



LEGEND

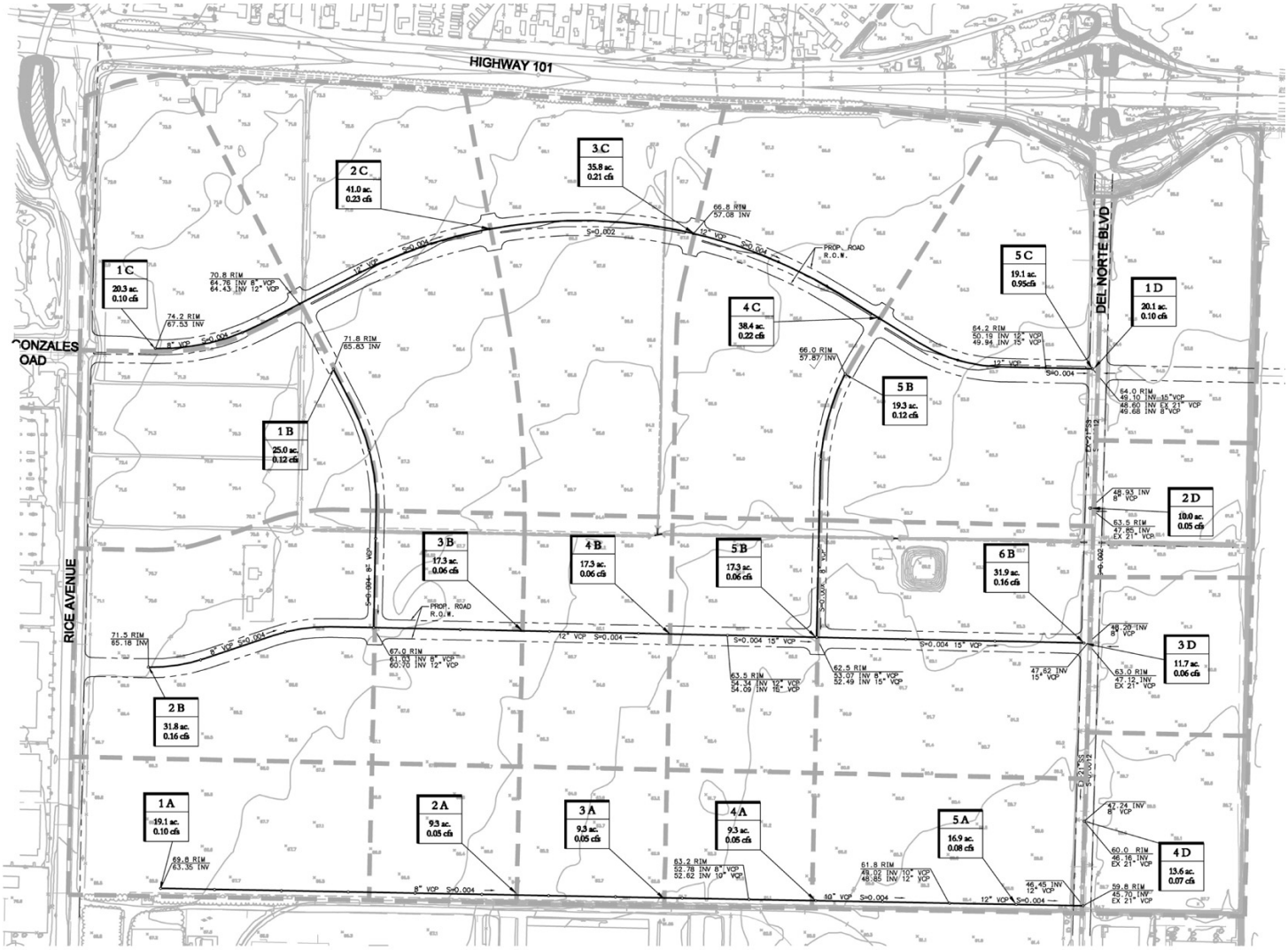
6	TRIBUTARY AREA DESIGNATION
69 ac. I	PLANNED LAND USE ACREAGE I=INDUSTRIAL C=COMMERCIAL R=RESIDENTIAL P=PARK
1.0 mgd	WATER DEMAND (IN MILLION GALLONS PER DAY)
— — —	TRIBUTARY AREA BOUNDARY
16" PVC	PROPOSED WATER LINE
EXIST. 16" PVC	EXISTING WATER LINE

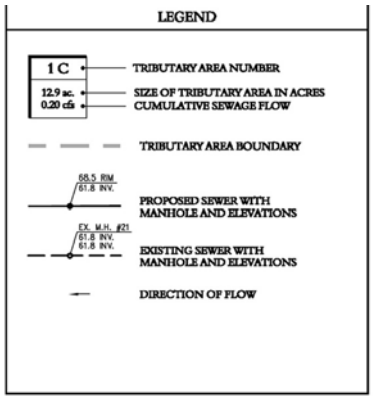
SAKIOKA FARMS,
CITY OF OXNARD

CONCEPTUAL MASTER PLAN
WATER SYSTEMS

RBF CONSULTING

SEWER SYSTEMS
EXHIBIT 4.27

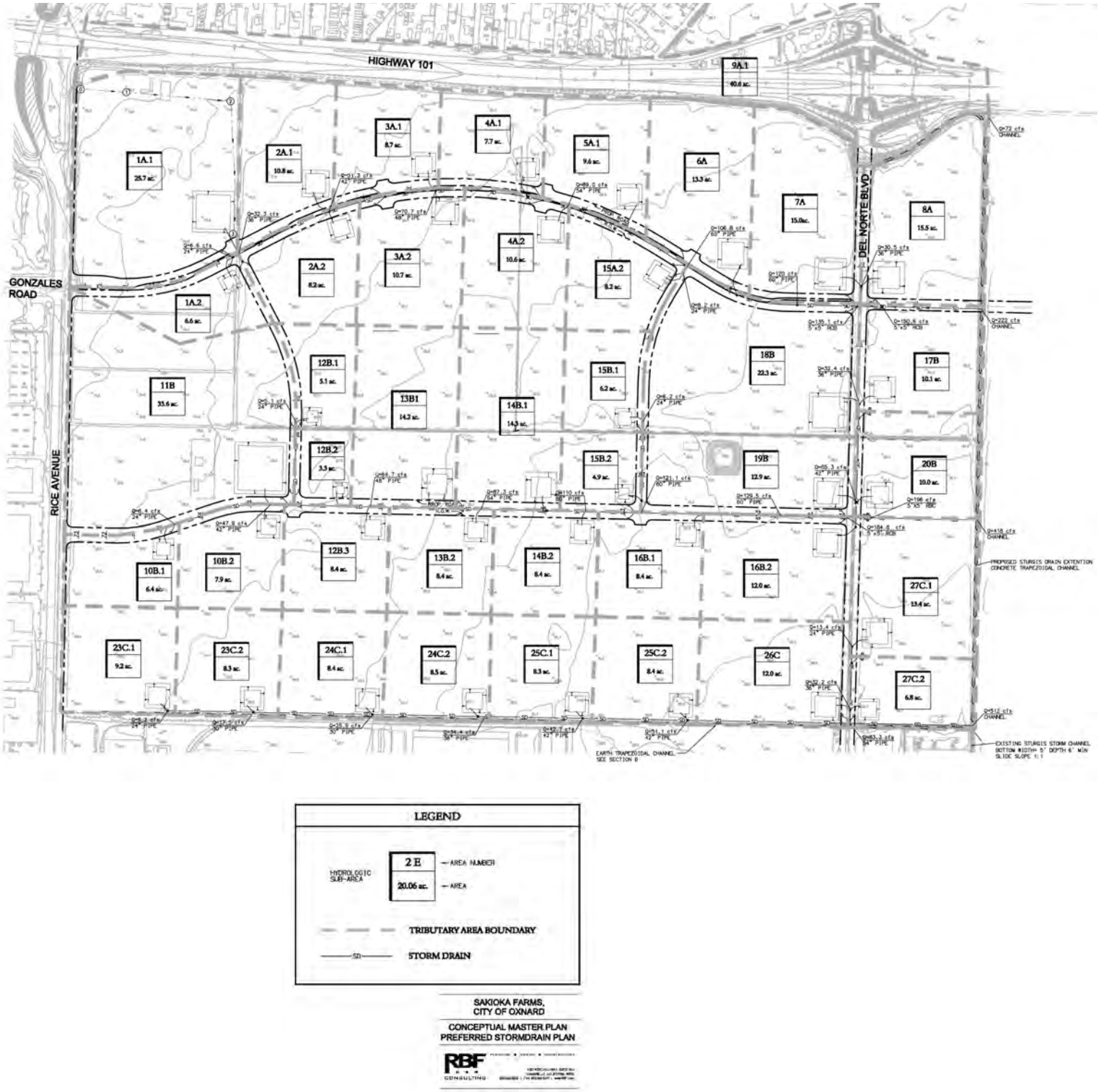




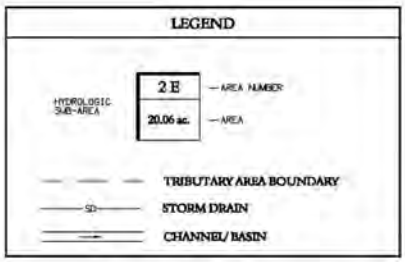
SAKIOKA FARMS,
CITY OF OXNARD
CONCEPTUAL MASTER PLAN
SEWER SYSTEM

RBF CONSULTING

PREFERRED STORMDRAIN PLAN
EXHIBIT 4.28



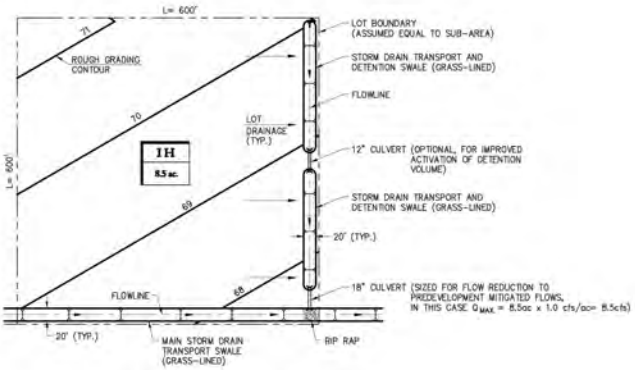
ALTERNATE STORMDRAIN PLAN
EXHIBIT 4.29



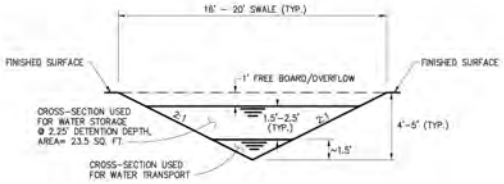
SAKIOKA FARMS,
CITY OF OXNARD
CONCEPTUAL MASTER PLAN
ALTERNATE STORMDRAIN PLAN

RBF CONSULTING

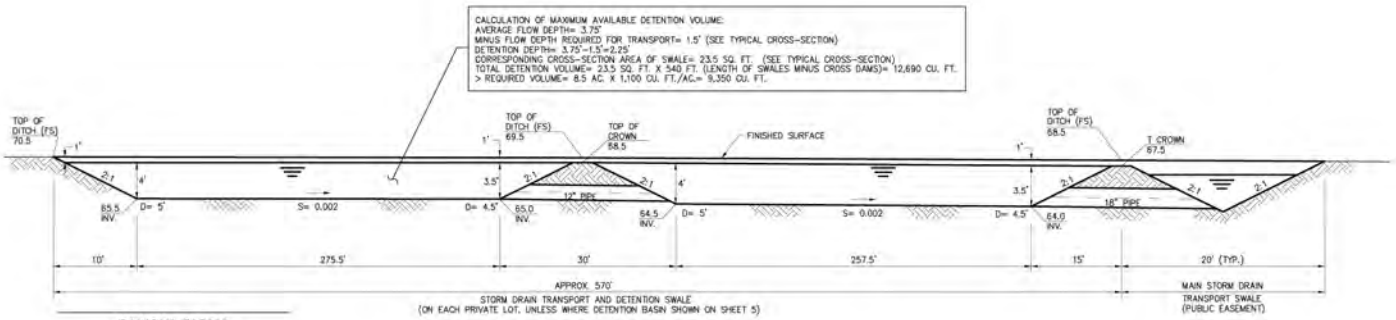
ALTERNATE STORMDRAIN PLAN
EXHIBIT 4.30



TYPICAL LOT DRAINAGE
PLAN VIEW
NTS



TYPICAL CROSS SECTION
STORM DRAIN AND DETENTION SWALE
NTS



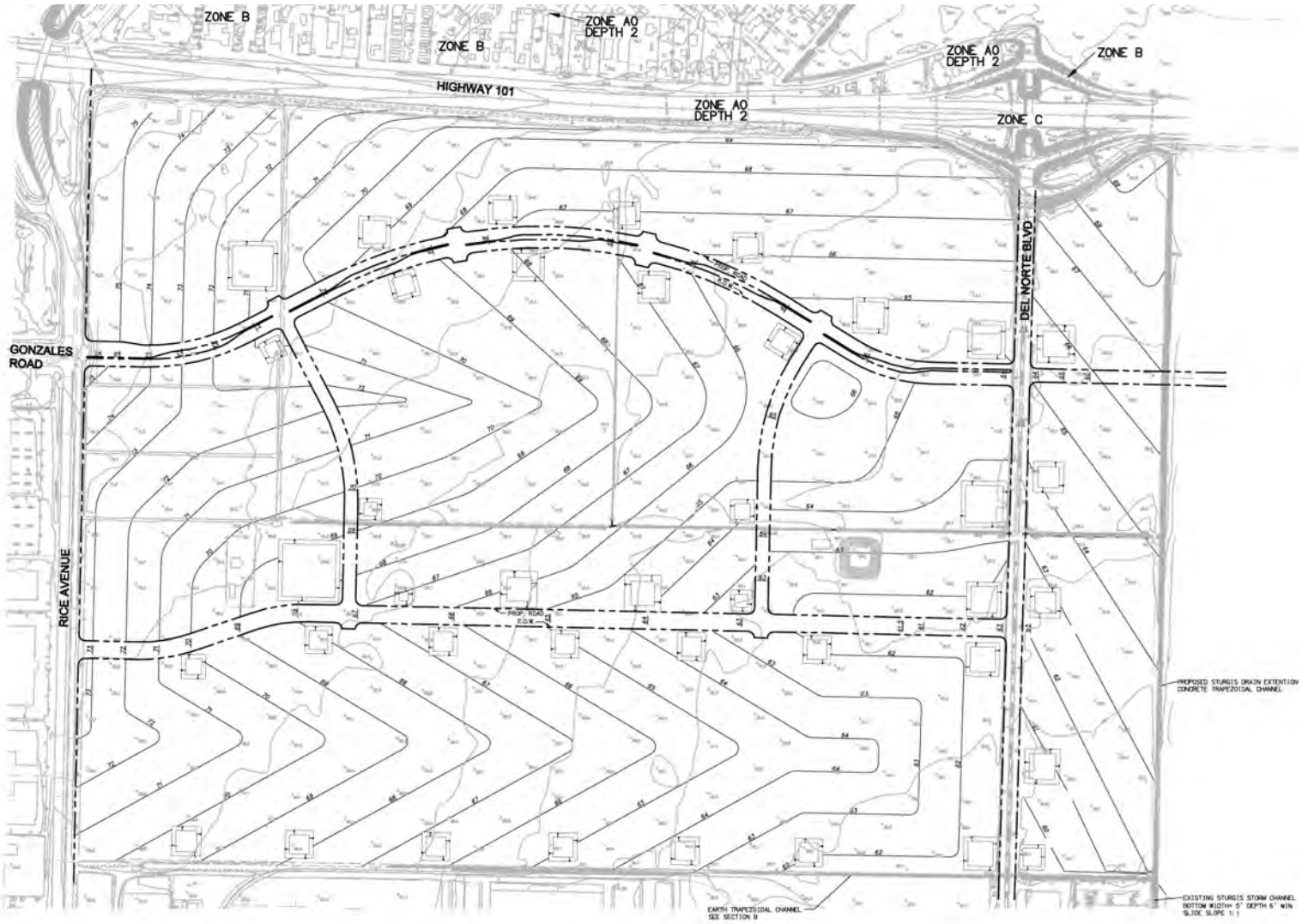
SAKIOKA FARMS,
CITY OF OXNARD

CONCEPTUAL MASTER PLAN
ALTERNATE STORMDRAIN PLAN

RBF CONSULTING

TYPICAL
PROFILE STORM DRAIN TRANSPORT
AND DETENTION SWALE
NTS

GRADING PLAN
EXHIBIT 4.31



LEGEND

- PROPOSED CONTOUR LINE
- PROPOSED FINISHED SURFACE
- PROPOSED SLOPE
- FLOOD ZONE LIMITS
- EXISTING ℄ ROAD AND R.O.W.
- PROPOSED ℄ ROAD AND R.O.W.

NOTES:

1. *THE PROPOSED ROAD ELEVATIONS ARE FINISHED SURFACE ELEVATIONS, WHEREAS THE CONTOURS DEPICT ROUGHT GRADES.*
2. *SOME OF THE ROAD ELEVATIONS ARE THEORETICAL, HOWEVER, AS THE MINIMUM ℄ GRADIENT IS 0.4%. IN CASES WHERE THE SHOWN ℄ GRADES ARE LESS THAN 0.4%, THE ACTUAL ELEVATIONS WILL REFLECT A SAW TOOTH PATTERN OF THE ℄ GOING UP AND DOWN TO PROVIDE THE MINIMUM GRADIENT. FOR THE PURPOSE OF THIS STUDY THE ACTUAL ELEVATIONS ARE NOT SHOWN.*

SAKIOKA FARMS,
CITY OF OXNARD

CONCEPTUAL MASTER PLAN
GRADING

RBF

PHASING MATRIX	PLANNING AREAS						
	1	2	3	4	5	6	7
2012-2015	25%	25%	25%	25%	33%		
2015-2020	25%	25%	50%	25%	33%	25%	
2020-2025	25%	25%	25%	25%	33%	25%	25%
2025-2030	25%	25%		25%		50%	75%

Years are approximate and contingent on thebeginning period

PHASING MATRIX
EXHIBIT 4.32

4.7 PHASING PLAN

The Sakioka Farms Business Park will be developed in various phases over several decades. In order to accommodate the anticipated intermittent development patterns, all required circulation, infrastructure and community improvements to accommodate each new development of the Specific Plan shall be completed prior to, or simultaneously with, individual projects. See Exhibit 4.13 for the Conceptual Street Phasing Plan.

The Specific Plan Planning Areas may be further divided into Subareas to better reflect the anticipated development pattern and infrastructure improvement phasing. The Phasing Plan presents a schedule of project development based on an incremental installation of infrastructure improvements.

The Phasing Plan recognizes that the project area is presently vacant with few infrastructure improvements. The development phasing schedule has been prepared to provide that adequate public facilities and services will be available for each new project.

The first phase of the infrastructure improvements will extend, install and upgrade the utilities necessary to provide for new projects in the affected Planning Area(s).

SECTION FIVE 5

5.0 PROJECT AREA CHARACTER

The Design Guidelines establish the character and style for the development of a business park complex with buildings and streetscapes that have a distinct visual identity. The Guidelines accommodate individual development identities and promote interrelationships between complementary land uses and community features. The major elements of the Design Guidelines include: site planning, architecture, streetscape, landscaping, and signage. All development proposals within the Specific Plan area shall conform to the Design Guidelines and shall incorporate appropriate theme elements.

The Design Guidelines are to be used by the private developer, the project's Architectural Review Committee and the City of Oxnard as part of the plan review process. The Design Guidelines are general and may be interpreted with some flexibility in their application to individual projects. Variations may be considered for projects with special design characteristics that still meet the objectives of the Guidelines. The Design Guidelines shall be used to promote a high level of design quality while encouraging creativity on the part of individual project designers.

5.1 SITE PLANNING GUIDELINES

The Specific Plan anticipates a combination of industrial, office and commercial buildings, each varying in parcel size, building height,and intensty of development. The Design Guidelines section provides the measure by which basic concepts for coordinated site planning can be realized. Care must be taken in the creation of each parcel in the project area to provide convenient access, and cluster common activities.

Effective site planning techniques will establish a strong outline and framework for guiding future individual development projects, and create a unique high quality business park. The successful integration of effective site planning techniques, with the basic design elements on individual projects, will enhance the visual experience in the Specific Plan area, and promote a true sense of place.

To facilitate the development of the Sakioka Farms Business Park into a unique resource for the community, the following site planning policies have been complied for the Specific Plan.

5.1.0 DESIGN POLICIES

5.1.1 Site layout for individual projects shall be designed to route people and vehicles through the site in a clear, identifiable, efficient and effective manner.

5.1.2 Building orientation should reflect an understanding and response to the sun, shade and wind conditions along with views into and from the project. Buildings shall be designed compatible with other approved projects in the area. Building entryways, administration areas

and other window areas shall front on to any adjacent street. Relationship to adjacent sites shall be considered concurrent with individual project layout. Projects shall be off-set to minimize views directly into opposing buildings.

5.1.3 Access to individual projects shall be compatible and enhance adjacent activities. Vehicle circulation shall be provided with an adequate turning radius and roadway widths for all drive aisles and fire lanes consistent with the adopted City standard. Additional fire and emergency considerations shall be addressed on a project by project basis, subject to review and approval by the City.

Entry drives shall be of a uniform size and design throughout the project area. Main and secondary entrances shall be a minimum of twenty-five (25) feet wide. Shared driveways and entry locations may be proposed. Driveways and entrances on opposite sides of a street shall align. Any proposed offset of driveways on opposite sides of a street shall be subject to review and approval by the City.

5.1.4 Project functions, activities and elements should be logically located, so that the business operates efficiently. The project should function well for people who work, shop and visit the area.

5.1.5 Transitional areas between the street and building should provide adequate landscaping, walkways and parking to create a visually pleasing and functional buffer.

5.1.6 Parking areas for individual projects shall be provided on-site in a manner that is convenient and compatible with the layout and design of the overall project area. In order to create larger building setback, surface parking facilities may be located between the main building front façade and adjacent street. Parking areas should be screened from public ways and divided with landscaping, walls, fences, berms and other elements.

5.1.7 Trash, loading and storage areas including truck access shall be in the rear and/or side portions of the lot, and screened from the street. All truck maneuvers (i.e. backing into truck loading areas) shall be performed within the project site. Service areas should be conveniently located and big enough to adequately function.

Trash enclosures for refuse containers and equipment shall be easily accessed by service vehicles and screened from public view. Refuse containers and equipment shall be located within a building's façade or within a screened enclosure, and reflect the architectural style of the main building, including the use of similar materials. Landscaping shall be provided on each side of all screened enclosures within parking areas.

Loading areas shall be designed to include attractive and durable materials, and conform with other guidelines pertaining to building features, materials and finishes. Fixed hardware for rolling doors shall be located on the inside of buildings to minimize visual clutter.

Loading dock areas shall be screened with a solid decorative wall or berm. Where views of these features are possible from streets or connecting walkways, they shall be screened through the use of walls, trellises, tall landscaping, or equivalent features. Loading docks shall be provided at a lower grade, where practical, to minimize views from the street and the need for tall walls or fencing.

Outdoor storage shall not exceed ten (10) feet in height. All outdoor storage areas must be screened consistent with the loading area provisions. The wall height shall be sufficient to screen the loading areas and vehicles and trailers from view of adjacent properties and streets and shall not exceed ten (10) feet in height.

Satellite structures (detached) can provide an effective variety in building layout and design; provided it can also be an efficient solution for company operations. Satellite structures must be designed to be compatible with the main structure and built with compatable materials.

5.1.8 Exterior Lighting shall be located and designed to minimize direct glare beyond the parking lot or service area. Light standards under thirty-five (35) feet in height are recommended throughout a project area and shall illuminate all sidewalks and connecting walk-ways. All light standards shall be consistent with respect to design, materials, color and color of light, and with the overall architectural style of the project. Illumination of buildings and landscaping can be indirect, to create a strong positive image. Concealing light fixtures within buildings and landscaping can highlight attractive features. Use of lighting is especially recommended at entries, plazas, parking lots, and other areas where evening activity is expected. All proposed lighting shall comply with the City's Outdoor Lighting Code & Guidelines and Title 24, Part 6 of the California Code of Regulations: California's Energy Efficiency Standards for Residential and Nonresidential Buildings. All exterior lighting shall be approved by the Police Department prior to issuance of a permit. Exterior lighting in public areas shall be independent from tenant control.

5.1.9 Handicap accessibility shall be incorporated into all individual project plans and must reflect sensitivity to the needs and requirements of handicapped employees and visitors. The California Accessibility Code (Title 24) requirements shall be considered as a minimum set of guidelines. All accessways and parking layouts shall be handicap accessible and convenient.

5.1.10 Security provisions, including lighting, building entrance visibility and drive locations, shall be carefully considered and subject to review and approval by the City.

5.1.11 Vehicle control gates shall be operable by City approved radio equipment.

5.2 ARCHITECTURAL GUIDELINES

The Architectural Guidelines are intended to establish a compatible character, style and quality for all development projects within the Sakioka Farms Business Park. This compatibility of character is not intended to discourage individual innovation and creativity, but to simply provide a framework within which an overall sense of community and place will be reinforced.

The architectural theme shall reflect a contemporary research and development complex. Each project shall be designed and sighted with sensitive regard to climate, context, and proper use of materials and form in an honest expression of function as well as aesthetics. Building design shall comply with the following architectural policies.

5.2.0 ARCHITECTURAL POLICIES

5.2.1 Unifying and harmonious design elements shall be incorporated into all projects. New elements should be compatible with existing elements and shall be updated to blend with new proposals. A unifying theme or common denominator should be used in the various components of design. This basic theme will serve as a guide for design details, choosing elements and selecting materials.

Building designs shall reflect an industrial/business office park theme and include a recognizable base and top. The base shall visually relate to the proportion and scale of the building. Contrasting materials, textures and color are encouraged on the base of buildings that face streets or connecting walkways, especially those adjacent to major entries. Building rooflines are encouraged to feature the potential visual prominence of thebuilding's silhouette. A buildings entry and office areas are encouraged to include cornice treatments, roof overhangs and architectural details that incorporate richly textured and/or different color materials.

5.2.2 Building scale, location, massing and orientation on the individual sites, shall provide a balance in form and composition. Building components should be appropriate in scale for the size and style of the building and its relation to the size of the lot. Building design shall avoid a single dominant mass. Substantial variations in massing should include changes in height and horizontal plane. The horizontal mass of the building elevations may be broken up with external treatment detached from the main building structure. Such massing breaks include: columns, colonnades, trellises, wall segment textures, materials, pattern or color and enhanced landscape treatment. The extent of massing breaks and building projections shall relate visually to the overall scale of the building.

5.2.3 Building proportions and inner relationships shall be designed with consideration to adjacent projects and activities. Special attention shall be give to maintain the highest quality of design, harmony and compatibility, especially between new proposals and existing activities.

5.2.4 Rhythm and balance in building design can be obtained through site layout and clustering of activities. Building articulation and fenestration are encouraged to avoid large flat building walls. Building elevations can also be enhanced with second story areas and/or vaulted areas establishing a variety in building volumes and composition.

Building walls shall avoid blank areas between massing breaks, especially along facades immediately visible from adjacent streets or walkways. This can be accomplished with a change in surface texture, revealed pilaster, a change in building planes, a vertical variation of the roof line, window placement and/or intensified accent landscaping.

Building entries shall be visible from public streets and incorporate interesting and attractive features. The entry feature treatment shall be an integral part of the building design and a monolithic appearance shall be avoided.

Building corner situations shall incorporate special architectural treatment on elevations, visible from a public street. Any special façade treatment shall be continued around the building corner to a logical point of terminus.

5.2.5 Building materials chosen should be consistent with the architectural style and theme for the area, and may be a combination of concrete, metal, glass and/or other contemporary composites. Concrete tilt-up construction can be an integral component of building design.

5.2.6 Building finishes and colors shall be chosen from a palette of subtle tones (white, off white, light gray and beige); projects are encouraged to use color accents. Glazing shall be tinted with high-performance materials. Glazing colors,shall be limited to green, blue and light gray shades. Clear,lightly tinted, and reflective coatings are acceptable. The selected finishes should respect the architectural style of the building and surrounding development.

5.2.7 Pedestrian sensitivity needs to be carefully considered when designing street level activities. Building design should make pedestrians feel comfortable when walking by. Pedestrian scale amenities should be incorporated within the transitional areas of the project.

Building entries shall be obvious. A clearly defined, primary pedestrian entry, with an enhanced hardscape foreground, is required for each building. Building entries shall be emphasized by design features such as overhangs, recesses, walls and roof forms that are integrated into the overall building design. Greater height can be used to highlight and accentuate entries. Building entrances should be easily accessible from pedestrian walkways which connect the building entrance and the public sidewalk.

5.2.8 Mechanical equipment, shall be screened from view of adjacent property. Mechanical equipment shall not be exposed on the wall surface or roof of a building. Screening material and color shall be compatible with the overall building design and colors. Backflow devices, electrical transformers and other mechanical equipment shall be screened from public view or undergrounded, with the exception of public safety features. Mechanical equipment such as ventilation devices, louvers, exposed flashing tanks, overhead doors, and other service doors shall be finished consistent with the color scheme of the building. Cyclone blowers shall be screened and located below the fascia or roofline of a building. These devices shall be located at the rear and painted to match the color scheme of the building.

Mechanical equipment, located adjacent to but detached from the main building, shall be screened with compatible building and/or landscape materials.

5.2.9 Sustainable green building design, construction and operation of developments within the Specific Plan are encouraged. Considerations shall include: increasing the efficiency with which buildings and their sites use energy, water and materials, as well as reducing building impacts on human health and the environment through siting, design, construction, operation, maintenance and waste removal through the complete building life cycle. Developments are encouraged to utilize established and evolving green building performance-oriented rating systems such as the U.S. Green Building Council's LEED portfolio, Green Globes, or similar state, federal and trade organization guidelines during project design, construction and operation.

Solar collection systems are encouraged and "solar farming" on rooftops and/or parking lots is a permitted activity within the Specific Plan.

5.2.10 Public art shall be included as part of all large projects within the Specific Plan area; smaller projects may contribute to the establishment and maintenance of a public art program within the common areas. The proposed art feature shall be located in an area which can be easily viewed and accessed by the public. The public art requirement may be satisfied in a number of ways; the City's, Cultural Arts Committee has established a formal approval process.

5.3 LANDSCAPE GUIDELINES

These Landscape Guidelines are intended to supplement the City of Oxnard Landscape Standards and the City of Oxnard Parking Ordinances. They are intended to provide uniformity to the site and establish a "Sense of Place" with both aesthetic and functional considerations. The Landscape Guidelines establish the design and visual qualities for

individual development in the project areas. In cases where these guidelines differ from those City standards or ordinances, these guidelines shall govern. In cases where these guidelines are silent on issues, the City of Oxnard's Landscape Standards shall govern.The landscape treatment for buildings and public right-of-ways should be designed with a compatible interpretation of the guidelines.

The Landscape Guidelines accommodate individual development identities and promote inter-relationships between complementary land uses and community features. All development proposals within the Master Plan area shall conform to the Landscape Guidelines and shall incorporate appropriate theme elements. The Landscape Guidelines create an overall theme, however, alternative approaches may be considered which preserve the intent of the guidelines while proposing modifications to the regulations.

The Landscape Guidelines are to be used by the private developer, the project's Architectural Review Committee and the City of Oxnard as part of the plan review process. The Landscape Guidelines are general and may be interpreted with some flexibility in their application to individual projects. Variations may be considered for projects with special design characteristics that still meet the objectives of the guidelines. The Landscape Guidelines shall be used to promote a high level of design quality while encouraging creativity on the part of individual project designers.

The Landscape Guidelines propose a continuation of the landscape and streetscape patterns currently surrounding the project area. The specific project establishes a "California" theme, which includes an eclectic mix of indigenous plant and local materials which reflect the historical and cultural background of the area. These include perimeter landscaping, large landscape setbacks along both interior and perimeter streets, pedestrian walkways which unify the site, and intersection treatments which create a "park-like" atmosphere and assist in visitor way-finding.

To develop a consistent streetscape design, all streets shall be improved with landscape as noted in the enclosed sketches. Individual developer parcel landscaping will be developed in a similar and complimentary manner as outlined in the following sections. Plant materials shall be drawn from the projects plant materials palette. The plant materials palette includes turf, shrubs, ground cover and trees which are compatible with the City's overall landscaping requirements and consistent with the existing adjacent streetscape.

5.3.0 LANDSCAPE POLICIES

5.3.1 Streetscapes/frontages, public areas, and development sites landscape design shall respect and compliment the natural and existing site features of the surrounding area. The landscaping should be in proportion with the whole development and integrated with the building design to enhance the appearance of the project, and soften the effect of buildings

and hardscape. The landscaping should be a combination of trees, shrubs, grasses, and ground cover plants; vines should be considered on exposed perimeter, screen and trash enclosure walls. A project's landscaping should blend with the adjacent property when appropriate. Turf shall be kept to a minimum.

A minimum of ten (10) percent of the net site area shall be landscaped. A maximum of five (5) percent of the minimum required landscape area may be improved with hardscape (entries, plazas, and walkways).

5.3.2 Public Right of Ways/Streetscapes:

- **Gonzales Road;** setbacks shall provide minimal turf, except between the sidewalk and curb when landscape parkways are present. Street trees shall be formal double-row plantings of Tipuana trees. Informal drifts of shrubs and ground-cover/indigenous grasses shall extend between the back of sidewalk and the property line. Informal plantings of palm trees and shrub/tree species shall also be planted continuousy in the 18′ setback.

  The medians shall have single row groupings of Mexican fan palms and flowering trees. Ground cover / grasses will create a continuous base.

- **STREET "A",** the East-West Connector Street south of Gonzales Road, will have 16′ landscape setback, a 6′ sidewalk and an 8′ curb-adjacent parkway along both sides of the street. A 16′ center median separates two 30′ street sections. The median and parkway are planted with groupings of Washingtonian Palms and Trastinia, with a continuous grass / ground cover base. The 16′ landscape setback provides a background planting of informal groups of Washingtonian palms and a mix of vertical screen trees and small flowering trees. Informal drifts of shrubs, grasses and-or ground cover will stretch along the entire Street "A" setback. The median will be mounded, with a maxi mum height of no more than 12″ from the top of curb and will have an 18″ catwalk on each side.

- **Street "B", "C" and Gonzales Road Extension** have an 8′ curb adjacent parkway, a 5′ sidewalk and a 10′ landscape setback. The parkway planting design features informal vertical and shade tree groupings with a grass and/or groundcover base. The 10′ setback is mounded and continues the parkway planting design of informal vertical and shade tree groupings. At their base are continuous informal drifts of shrubs, and grasses and/or groundcover.

- **Rice Avenue's** eastern street frontage has a 60′ Caltrans setback and a 30′ landscape set back that is consistent with the City of Oxnard's Memorandum of Understanding with Caltrans. The curb adjacent parkway and the first 30′of the setback will provide a double row of Magnolia grandiflora trees at 40′ on center with a background of informal Washingtonian palms and a mix of vertical screen trees and smaller flowering trees. Informal drifts of shrubs and grasses and/or

groundcover will stretch along the entire Rice Avenue frontage. The Rice Avenue sidewalk is proposed to meander similar to the existing improvements to the south.

- **Del Norte Boulevard;** the setback shall have a single formal row of Magnolia grandiflora trees with an informal background planting of palms and shrub/tree species. Ground plane plantings shall consist of shrub and ground cover/ grasses in informal drifts between the back of sidewalk and the property line.
- **Rice Avenue entry treatments;** the entries at Gonzales Road and Street "A" shall have entry planting treatments which identify and enhance the project arrival experience. These treatments shall consist of a linear,formal double-row planting of hybrid Mexican fan palms with formal linear plantings of flowering shrubs and groundcovers/grasses.
- **Del Norte Boulevard entry treatments;** the entries off of Del Norte Boulevard shall be a formal planting of hybrid Mexican fan palms and a formal, linear planting of shrubs and groundcovers/grasses.
- **All Landscape medians,** located in the roadways adjacent to the project area, shall be designed and constructed per City of Oxnard standards and shall be maintained by the City.

5.3.3 Perimeter Landscape planting along the project edges shall provide a consistent treatment using a limited number of plant materials, and shall meander in informal groupings around the site. Perimeter landscaping shall preserve or construct, a minimum ten (10) foot wide landscape buffer between off-site properties/ improvements and private project improvements, including buildings, walls, parking areas, etc. The landscape buffer shall be adjacent to the individual projects landscaping and off-site projects

Tree planting in these areas shall include a minimum of one (1) twenty-four (24) inch box tree for each twenty (20) feet of lineal frontage. Tree planting may include a combination with thirty-six (36) inch or larger box trees. Shrub plantings shall provide mid-height (5'-7') screening of off-site views.

5.3.4 Each Individual parcel shall provide a level of landscape and design in keeping with the overall master plan intent and planting theme. Private landscape improvements and adjacent right-of-way landscape improvements shall be constructed by individual project developers. On site landscape improvements shall be maintained by each adjacent / abutting property owner, consistent with the overall landscape theme.

A minimum of ten (10) percent of the net site area shall be landscaped. A maximum of five (5) percent of the minimum required landscape area may be improved with hardscape (entries, plazas, and walkways). Plant selections should consider the function of the material,i.e., shade, wind break, ornamental, groundcover, accent, structural aesthetic and layering or materials to achieve a cohesive design.

landscaped in accordance with the City's Parking Regulations and Standards for Parking Lot Design. Perimeter parking lots adjacent to arterial streets, shall be provided with a continuous visual screen 36″ high at installation. Berming in these areas is encouraged and shall be a maximum of 30″ high and have natural continuous contoured appearance. Shrub hedges shall be planted along the perimeter of all parking areas. Hedges shall be trimmed in a formal manner and shall be maintained between 36″ and 42″ in height. Where cars overhang the curbs, ground cover planting shall be required at a minimum width of two (2) feet (inside dimension). The overhang area shall not be considered as part of the required minimum percentage of on-site landscaping. A 6" concrete curb/mowstrip is required to separate all on-site private landscape from association/project streetscapes. Where cars overhang a sidewalk, the sidewalk width shall be a minimum of 7′.

Parking lots shall be planted at a rate of one (1) tree for every six (6) parking stalls for parking areas fronting public streets. For parking lots at the rear of the parcel or not visible from the street, the rate shall be one (1) tree for every ten (10) parking stalls to accommodate industrial uses. Trees for rear parking areas may be planted at site perimeters when large open turnaround or truck areas are required. Parking lot trees shall be minimum twenty-four (24) inch box trees. All tree planting areas shall be a minimum net width of five (5) feet and provide no less than 25 square feet of planting area. All finger landscape areas shall have a minimum width of 9 feet. Rear parking lot perimeter planting is to include a minimum of one tree every 40′. Foundation plantings at the building edges consisting of hedges or medium height shrubs are encouraged where possible.

Parking lot treatments shall be consistent and contribute to the project landscaping unity. Parking lots shall be planted with trees in such a manner as to provide maximum shade. An alternative which clusters or groups parking lot trees adjacent to the building may be considered. Larger trees may also be substituted for a number of smaller trees, subject to review and approval by the City.

5.3.6 Entry drives shall be designed to provide entering and exiting with adequate views of approaching pedestrians and vehicles. Entry drives shall provide convenient access to parking lots at various site locations. In addition to street trees and on-site landscaping, each entry shall be designated by ground cover and a minimum of two thirty-six (36) inch box specimen trees, on both sides of the entry. These trees shall be located behind setbacks or a minimum of ten (10) feet back from the face of the street, whichever is greater.

5.3.7 Pedestrian walkway systems within private parcels shall be designed to unify the entire project area and provide pedestrian site access to buildings, parking and site activity areas. Pedestrian walkways shall be provided on each parcel and within the adjacent public right-of-way. Walks shall be a minimum of five (5) feet in width, except those walkways directly adjacent to parking areas with overhangs. In these areas a minimum walk width shall be seven (7) feet. Pedestrian walkway improvements shall be installed concurrent with the landscape improvements.

5.3.8 Entry plaza areas and courtyards shall be provided as focal points and for employee use.

provided as focal points and for employee use. These areas shall be an integral part of the building architecture and be connected by a walkway system to the public pedestrian walkways. They shall include such amenities as special paving, walls, gateways, seating areas, shade structures, fountains, and specimen plantings. Hardscape is excluded from the 10% landscape requirement.

5.3.9 Walls and Screening of project areas and walls, screening and fencing along the perimeter arterials shall be compatible with adjacent projects and provide project identity, privacy and noise control. Individual wall treatments shall reflect the architectural character of the adjacent main buildings and be compatible with other buildings throughout the project area.

5.3.10 Trash enclosure areas shall be provided with walled enclosures a minimum of 6' high and shall include tree and shrub planting screens to soften the enclosure. Roofing of trash enclosures with architectural treatment complimentary to the building design is encouraged. Mechanical equipment and transformer areas shall have landscape screening and/or low-level screen walls. Valves, meters, back flow preventors, etc. shall also be screened by shrub plantings and/or low-level screen walls.

5.3.11 Landscape lighting shall be provided to aesthetically enhance the site, as well as providing for the safety and security of motorists and pedestrians throughout the project area. Pedestrian walkways shall include adequate night lighting for public safety.
Pedestrian pole light fixtures should be complementary to the building design vernacular and the master plan lighting. Poles should not exceed 20 feet in height.

Low-level lighting includes wall lights, bollard lights, ground-mounted uplights. Fixtures should be in the same family and should match any pole fixtures. Colors are as noted above. Low level wall or step light fixtures should include either opal or sandblasted glass or grills to minimize glare.

Bollard lights should be of the same family or vernacular as other light fixtures and should provide area lighting with minimal glare. Sandblasted or opal glass fixtures are recommended.

Ground-mounted uplights for trees can be either in-ground or pedestal mounted types, but should have grills to minimize glare. Tree up/downlighting is allowed for specimen trees and palms.

Lamp types should be quartz, metal halide, fluorescent, or incandescent types. High pressure sodium is approved only for use in parking lots or service areas. Specimen tree uplighting is encouraged for site entries, building entries, and plaza areas.

5.3.12 Plant materials surrounding individual projects shall be selected to create an informal pattern of landscaping with a more formal pattern of landscaping created at the project entries. Landscaping should include a variety of deciduous and evergreen shade trees, flowering shrubs and ground cover. Trees shall be of even size and

shape at time of installation. Trees shall be selected based upon the size of the planting area, to allow for mature growth without causing future damage to the improvements.

All plant materials are to be heat and drought-tolerant. Plant materials that are salt-tolerant are also recommended. Perimeter areas/project edges should be planted with low water use shrubs and groundcover. Lawns and moderate-water-use shrubs and groundcovers should be restricted to feature areas and podium decks and limited in area to minimize water use. Shrubs should be used in massings interspersed with accent or specimen plantings. The use of unmowed perennial grasses such as Pennisetum, miscanthus, or Carex spp. as a foreground or middle ground material is encouraged.

Large spreading trees should be selected to provide the maximum shading of ground level and deck areas, with palm plantings used to create outdoor 'rooms' and feature plazas. Informal palm plantings and vertical tree species are to be used to reduce the scale of buildings and screen views and architecture.

Trees shall have comparatively straight trunks, well-developed leaders, and tops and roots characteristic of the species or variety. All plants must be free of insects, disease, mechanical injuries, and other objectionable features at the time of planting. Shrubs and vines shall be 5-gallon size (minimum) and drought-tolerant species. Ground cover shall be evergreen and colorful, drought -tolerant species and planted from flats (minimum) at 12" O.C. (maximum) spacing. Ground cover may be a container plant at approved spacing. All landscape areas shall be mulched with a minimum of 2" of composited bark mulch to minimize evapotranspiration.

5.3.13 Root barriers are required for all trees planted within 6 feet of, driveways, public roadways, sidewalks or plaza/courtyard hardscape areas. The root barriers will help to minimize potential lifting and cracking of the adjacent pavement.

5.3.14 Water Conservation measures shall be incorporated into the landscape design of the public areas as well as the private developer parcels. Drought tolerant and other low water using plants should be considered. Xeriscape plant material and design may be appropriate for select projects. Use of mowed turf should be kept to a minimum; the majority of landscape areas should be planted with shrubs and ground cover/ indigenous grasses. All plant material selections shall be made from the approved plant materials list. Additional materials with similar characteristics may be approved by the Architectural Review Committee.

5.3.15 Automatic irrigation shall be drip, bubbler or pop-up spray or rotor head irrigation system. The design of such a system shall minimize overspray onto paved areas. The design shall provide water use calculations per A.B. 25. For spray systems, pop-up heads shall be used in all areas adjacent to paving , parking lots and plazas. For shrub areas, pop-up shall be 6" minimum, with 12" preferred. Turf pop-ups shall be 4" high. All irrigation systems shall provide automatic operation, with pressure regulation as necessary. Quick couplers for manual watering or wash-down shall be provided at 150' on-center maximum.

5.3.16 Maintenance responsibility for all landscaping shall be by the individual projects and kept free from weeds and debris. All vegetation shall be maintained free of physical damage or injury arising from lack of water, chemical damage, insects, diseases or other causes. Vegetation showing such damage shall be replaced with the same or similar vegetation which will be comparable at full growth. Whenever any person fails to conform to this section, the Parks Superintendent shall require compliance upon thirty (30) days written notice. This notice may be appealed to the City Council. In the event non-compliance continues thereafter, the Park Superintendent shall cause work to be done and plantings to be made to bring the landscaped area into compliance. The work will be done at the property owner's expense.

5.3.17 Plant List

Plantings for site public landscapes/streetscape and private development parcels shall be selected from the following list. Additional plant species may be considered for approval by City's Planning Landscape Architect. All Street and Median Trees shall be a minimum 36" box size.

A. Frontages/ Streetscapes Trees:

1. Rice Avenue/Del Norte Boulevard;

a. Formal Street Trees
Magnolia grandiflora

b. Background Informal Trees

Washingtonia robusta-Mexican fan Palm
Syagrus romanzoffiana - Queen Palm
Washington hybrid- Hybrid Fan Palm
Tristania conferta-Brisbane Box
Eucalyptus spp.
Pittosporum spp.
Metrosideros excelsus
Ulmus parvifolia - Chinese Elm

2. Del Norte Avenue;

a. Formal Street Trees
Magnolia grandiflora

b. Background Informal Trees

Washingtonia robusta- Mexican fan Palm
Syagrus romanzoffiana - Queen Palm
Washington hybrid - Hybrid Fan Palm
Tristania conferta -Brisbane Box
Eucalyptus spp.
Pittosporum spp.
Ulmus parvifolia - Chinese Elm
Metrosideros excelsus

3. Gonzales Avenue;

a. Formal Street Trees
Tipuana Tipu- Tipu Tree

b. Background Informal Trees
Washingtonia robusta-Mexican fan Palm
Syagrus romanzoffiana - Queen Palm
Washington hybrid - Hybrid Fan Palm
Tristania conferta - Brisbane Box
Eucalyptus spp.
Pittosporum spp.
Alnus cordata - Italian Alder
Chorisia speciosa (thornless)
Metrosideros excelsus

4. Streets"B", "C"& Gonzales Extension

Informal Trees-
Washington hybrid -Hybrid Fan Palm
Syagrus romanzoffiana - Queen Palm

Tristania conferta - Brisbane Box
Eucalyptus spp.
Fraxinus spp. - Ash Tree
Alnus cordata - Italian Alder
Olea europea - Olive
Metrosideros excelsus

5. Project Perimeter Trees;
Eucalyptus spp. - Euclayptus
Ceratonia siliqua - Carob tree
Fraxinus spp. - Ash Tree
Populus alba - White Poplar
Metrosideros excelsus

B. Shrubs;
Ligustrum japonicum 'texanum' - Ligustrum/Privet (hedges)
Raphiolepis spp. - Indian Hawthorn
Rhus integrifolia - Lemonade Berry
Phormium tenax - Flax
Agave spp. - Agave
Aloe spp. - Aloes
Alyogene hueglii - Blue Hibiscus
Dasilyrion wheeleri - Sotol
Arctostaphylos spp -
Pittosporum spp - Pittosporum
Xylosma congestum - Shiny Xylosma
Thevetia peruviana - Yellow Oleander
Lavendula spp. - Lavender
Heteromeles arbutifolia - Toyon
Grevillea spp. - Grevillea
Garrya elliptica - Silktassel
Echium fastuosum - Pride of Maderia
Cytisus racemosus - Broom
Cistus spp. - Rockrose
Coleonema pulchrum - Pink Breath of Heaven
Myoporum laetum - Myoporum
Strelitzia reginae - Bird of Paradise
Dietes bicolor - Yellow Fortnite Lily
Ribes viburnifolium - Catalina Currant
Bougainvillea spp - Bougainvillea
Leptospermum laevigatum - Tea Tree
Salvia clevelandii -Blue Sage

C. Groundcovers/ Grasses;
Rosmarinus officianalis - Rosemary
Miscanthus spp; - Silvergrass
Festuca maieri - Fescue
Calamagrostis spp. - Reedgrass
Pennisetum spp. - Fountain Grass
Baccharis pilularis - Coyote Bush
Oenothera berlandieri -Mexican Primrose
Kniphofia uvaria - Red-Hot Poker
Senecio mandraliscae - Blue Senecio
Vinca major - Periwinkle
Juniperus spp - Prostrate Junipers
Turf - In Parkways only, subject to City of Oxnard Ordinance No. 2822

5.4 SIGNAGE GUIDELINES

The Signage Guidelines provide a framework for the design and implimentation of all exterior signage within the project. The Signage Guidelines contribute to the overall project design theme by requireng consistent solutions to the various catagories of signage. The guidelines help asure that quality materials are used and that appropriate color, size and placement of signs occur. The intent is to create and promote a quality visual environment by allowing only signs which are compatible with their surroundings and which effectively communicate their message.

Signs shall be designed to be architecturally compatible with the colors and materials of the adjacent building. All signs shall be subject to the provisions and procedures of the Oxnard Zoning Ordinance, and comply with the following policies.

5.4.0 SIGNAGE POLICIES

5.4.1 Signage design shall be an integral element of all projects. Proposed sign materials, size, color, lettering, location and arrangements must be carefully considered as part of the site and building design and must be compatible with the surroundings.

5.4.2 Wall signs and logos shall be located on the building for optimum visibility from the adjacent street and shall be limited to identify tenants within each building. These signs shall be restricted to the name of the firm, company or corporation only. The colors and materials of the sign structure shall be compatible with the building architectural colors and materials; sign face materials and colors may contrast.

Wall signs and logos attached to the building shall be individual letters and surface mounted.

No signs shall be painted directly on the building. No signs shall be boxed with internal lighting and attached to a building.

Wall signs shall not exceed an area equal to one square foot for each lineal foot of building frontage. Maximum size sign for each building façade adjacent to a street shall be one hundred (100) square feet for industrial projects, two hundred (200) square feet for commercial projects. Maximum letter height shall be thirty (30) inches.

Wall signs shall be limited to one (1) sign per building elevation with a maximum of two (2) wall signs per primary tenant on non-adjacent building facades. These signs shall be internally illuminated or non-illuminated.

Wall signs shall be limited for secondary tenants to a maximum of one (1) sign per tenant. In no event shall there be more than four (4) secondary tenant wall signs permitted per building and no more than two (2) per building elevation. Additional wall signs shall be permitted at the primary entry to a building. The maximum size shall be ten (10) square feet with the maximum letter height of twelve (12) inches.

5.4.3 Freestanding signs for business identification shall be limited to perimeter locations within the street landscape setback area and shall be of a monument design. These signs shall not exceed five (5) feet in height, as measured from the adjacent grade, and not more than one-hundred twenty (120) square feet in area. Freestanding signs for tenant identification may be installed within or adjacent to a private entry driveway. Entry signs must be located and sized so as to not interfere with vehicular visibility and/or movement. Entry signs shall be limited to thirty-two (32) square feet and shall not exceed four (4) feet in height. Entry signs may be placed on a berm not exceeding eighteen (18) inches in height. Entry signs shall include the building address.

All freestanding signs shall be of a monument design, including: business identification, business directory, and information/ directional identification. Street-side signs, at access driveways, shall be used to identify a building address/tenant, and to direct traffic to that building. Internal, on-site signs shall be utilized to provide information and location to pedestrian and automobile traffic. Freestanding retail commercial signs shall be a minimum of two hundred and fifty (250) feet apart.

5.4.4 Business directory signs which are freestanding shall be located near the primary entry and access drive. These signs shall be limited to identifying the building address and tenants, and shall be visible from the intersection of a private driveway and a public street. These signs shall not be allowed elsewhere within the landscape setback area or along street frontages. Business directory signs shall not exceed a maximum area of twelve (12) square feet per face, may be double faced adjacent to a street front and single faced adjacent to a building, and shall not exceed three (3) feet in vertical height. Signs shall be limited to one sign per building. More than one building address may be identified on one sign. Signs shall be consistent with the overall building architecture.

5.4.5 Information/directional signs shall be used to provide direction to on-site automobile traffic or pedestrians and not visible from off-site areas. Informational/directional signs shall be limited to six (6) square feet per face, double faced. This sign shall not exceed three (3) feet in vertical height.

Informational/directional signs shall be limited to the identification of function and/or service and shall not contain the name of the business, company or corporation providing the function and/or service. When appropriate, such signs shall contain a directional arrow and provide direction to functions and/or services or information such as Authorized Vehicles Only, Handicapped Parking Only, and Loading zone.

5.4.6 Temporary signs shall be allowed to provide information and facilitate information during the construction and leasing. Such signs shall be limited to one per lot, with a maximum of sixty-four (64) square feet and eight (8) feet in overall height.

Temporary directory signs shall be permitted on construction sites, and limited to one (1) for all contractors. The sign shall not exceed thirty-two (32) square feet, unless legally required by government contracts to be larger. The sign shall not exceed eight (8) feet in overall height and shall be located no less than ten (10) feet from any property line. These signs shall be removed upon completion of the project.

5.4.7 Future tenant signs may be placed on vacant or developing property to advertise the future use of the property and where additional information may be obtained. Such signs shall be limited to one per street frontage and to a maximum of thirty-two (32) square feet in area and eight (8) feet in overall height. These signs shall be placed no less than ten (10) feet from the property line. Any such sign shall be removed upon occupancy of the project.

5.4.8 Business Park identification signs may also be installed at key intersections, in landscaped areas within the right-of-way or landscaped street medians. Park identification signs shall be limited to an area of one hundred fifty (150) square feet and shall not exceed five (5) feet in vertical height. They shall only identify the overall business park.

5.4.9 City Monument Sinage

The Del Norte Boulevard corridor provides an ideal location for a City of Oxnard Entry Monument Sign in the median of Del Norte Boulevard just south of the future reconstruction of the Del Norte Boulevard / 101 intersection . The City of Oxnard Park's and Facilities Division shall be consulted for review and approval of a Entry Monument Sign that shall be developed in conjunction with the Del Norte Street Design and Construction Level Landscape Plans for that area.

SECTION SIX 6

6.0 PURPOSE AND INTENT

The purpose of this section is to provide specific development regulations and standards that will be applied to individual development projects in each Planning Area of the Specific Plan. Upon adoption by the City of Oxnard, the Sakioka Farms Business Park Specific Plan will be the zoning for the project area.

6.1 GENERAL PROVISIONS

The provisions contained herein shall govern the design and development of the Sakioka Farms Business Park Specific Plan area. Standards and/or criteria for development and activities not specifically addressed in this Specific Plan may require referral to the current provisions of the Oxnard Zoning Ordinance and Municipal Code.

Whenever a use has not been specifically listed as being a permitted use in a particular Planning Area of the Specific Plan, it shall be the duty of the Development Services Director or designee to determine if the use is consistent with the intent of this Specific Plan and compatible with other permitted uses. In the case of any conflicting provisions, the regulation and policies of the Specific Plan shall prevail. In addition, all projects must comply with the following policies.

6.1.0 POLICIES

6.1.1 Grading Plans shall be approved by both the Development Services Director or designee and Director of Public Works, unless there are provisions to the contrary.

6.1.2 All construction shall comply with published, applicable, Federal, State, and Municipal laws, rules, regulations and codes in effect at the time of the work, and the interpretations of the agencies having jurisdiction thereof for that period of time.

6.1.3 Construction may commence only after the Development Services Director or designee finds that the project is consistent with the regulations, and applicable policies and guidelines of the Specific Plan.

6.1.4 Existing farming and related activities at the time of plan adoption shall be deemed in conformance with the Specific Plan. In addition, all existing facilities are deemed to be in conformance with the Specific Plan.

6.2 DEFINITIONS

For the purposes of the Specific Plan, words, phrases and terms shall have the meanings as defined below. Terms not specifically defined in the Specific Plan shall have the same definition as used in the City of Oxnard Zoning Ordinance at the time of Specific Plan adoption.

When not inconsistent with the context, words used in the present tense include the future tense; words used in the singular number include the plural number; and words of the masculine gender include the feminine and neuter gender. The word "shall" is always mandatory and the word "may" is permissive.

6.2.1 Accessory building. A detached building on the same site as a main building, the use of which is incidental to that of the main building such as a storage shed, etc., and which is used exclusively by the occupants of the main building. May also be referred to as satellite structures.

6.2.2 Antenna, satellite dish. An apparatus capable of receiving communications from a transmitter or transmitter relay.

6.2.3 Architectural projections or appurtenances. Features on buildings which provide visual variation and/or relief but do not serve as interior or exterior living or working space.

6.2.4 Building height. The vertical dimension measured from the top of the highest roofline to the finished pad elevation shown on the approved grading plan.

6.2.5 Building, main. A building in which the principal use of the lot is conducted.

6.2.6 Director. Development Services Director or designee for the City of Oxnard.

6.2.7 Entryway. The point of ingress and egress from a public or private street to individual projects may also serve as shared entryway to multiple parcels or projects.

6.2.8 Final approval. Ten (10) days after approval by the discretionary body and no appeal of that decision has been filed.

6.2.9 Grade. The surface of the ground or pavement at a stated location as it exists prior to disturbance in preparation for a project.

6.2.10 Gross floor area. The area included within the surrounding exterior walls of a building.

6.2.11 Line of sight. A visual path emanating from an average eye level adjudged to be five (5) feet above ground level.

6.2.12 Local street. A low-speed, low-volume public thoroughfare used primarily for access to individual properties.

6.2.13 Lot. Any numbered or lettered parcel shown on a recorded tract map, a record of survey pursuant to an approved division of land, or a parcel map. A lot includes any area of land under one ownership abutting upon at least one street, alley, common area lot or recorded easement.

6.2.14 Lot area. See net lot area.

6.2.15 Lot depth. The average horizontal distance between the front and rear property lines, measured in the mean direction of the side property lines.

6.2.16 Lot frontage. The linear length of a lot measured along the property line adjacent to a street or easement.

6.2.17 Lot line. Any line bounding a lot. "Property line" means the same as "lot line."

6.2.18 Lot line, front. On an interior lot, the front lot line is the property line abutting the street. On a corner or reverse corner lot, the front lot line is the shorter property line abutting a street, except in those cases where the subdivision or parcel map specified another line as the front lot line. On a through lot, or a lot with three or more sides abutting a street, or a corner or a reverse corner lot with lot lines of equal length, the Development Services Director or designee shall determine which property line shall be the front lot line for the purposes of compliance with yard and setback provisions of this division. On a private street or easement, the front and/or exterior lot line shall be designed as the edge of the easement.

6.2.19 Lot line, interior. A lot line not abutting a street.

6.2.20 Lot line, rear. A lot line not abutting a street which is opposite and most distant from the front lot line; in the case of an irregularly shaped lot, the rear lot line shall be determined by the Development Services Director or designee. A lot which is bounded on all sides by streets may have no rear lot lines.

6.2.21 Lot width. Lot width shall be calculated as indicated for the following types of lots:

(a) Rectangular lot shall be measured along a line equidistant to and twenty (20) feet from the front property line.

(b) Cul-de-sac and knuckle lots shall be measured twenty (20) feet from the front property line along a line perpendicular to the bisector of the front property line.

(c) Cul-de-sac lots siding on another street, or similar properties, shall be measured along a line perpendicular to the interior side property line and twenty (20) feet from the front property line.

6.2.22 Net lot area. The total horizontal area within the property lines of a parcel of land exclusive of all rights-of-way, easements or dedications which physically prohibit the surface use of that portion of the property for other than vehicular ingress and egress, parking, and/or landscaping.

6.2.23 Open space. Any part of a lot or parcel unobstructed from the ground upward, excepting architectural features extending no more than thirty-six (36) inches from the structure. Driveways and other parking areas shall not be considered open space.

6.2.24 Parking structure. A structure used for parking of vehicles where parking spaces, turning radii and drive aisles are incorporated within the structure.

6.2.25 Person. The word "person" includes association, company, firm, corporation, partnership, co-partnership or joint venture.

6.2.26 Private street. A privately owned and maintained roadway used to provide vehicle access to abutting properties.

6.2.27 Retail commercial use. Permitted uses within this designation include restaurants, hotels, entertainment and general merchandise establishments.

6.2.28 Setback line. The line which defines the width or depth of the required yard. Such line shall be parallel to the property line and removed there from by the perpendicular distance described as the setback.

6.2.29 Site. Any legally created parcel of land bounded by property lines after dedication

6.2.30 Site coverage. The footprint building area of all structures on a site, as measured from all exterior building surfaces. Architectural features such as bay windows, eaves and canopies that do not project more than thirty-six (36) inches, and decks that do not exceed more than forty-eight (48) inches in height are excluded.

6.2.31 Site plan. A plan prepared to scale, showing accurate and complete dimensions of all: buildings, structures, landscaping, parking, drive aisles, uses, etc. and the exact manner of development proposed for a specific parcel of land.

6.2.32 Story. That portion of a building, excluding basements, included between the surface of any floor and the surface of the floor next above it or the finished under surface of the roof directly above.

6.2.33 Street. A public or approved private thoroughfare or road easement which affords the principal means of access to abutting property.

6.2.34 Structure. Any building or portion thereof, wall, fence, etc., extending forty-eight (48) inches in height above the grade.

6.2.35 Structural alteration. Any change in, or alterations to, the structure of a building involving: the bearing wall, column, beam or ceiling joints, roof rafters, roof diaphragms, foundations, retaining walls or similar components.

6.2.36 Ultimate right-of-way. The adopted maximum width for any street, alley or thoroughfare as established by: the General Plan, a precise plan of street, alley or private street alignment, a recorded parcel map, or a standard plan of the department of Public Works. Such thoroughfares shall include any adjacent public easement used as a walkway and/or utility easement.

6.2.37 Yard. An open, unoccupied space on a lot on which a building is situated and, except where provided in the ordinance code, is completely unobstructed from the ground to the sky.

6.2.38 Yard, front. A yard extending across the full width of the lot between the side lot lines and between the front lot line and either the nearest line of the main building or the nearest line of any enclosed or covered entry. The front lot line shall be deemed to be the existing nearest right-of-way line of the abutting street, road or highway, unless a different right-of-way line for future use shall have been precisely fixed by formal action of the City Council pursuant to law or ordinance.

6.2.39 Yard, rear. A yard extending across the full width of the lot between the side lot lines and measured between the rear lot line and the nearest rear line of the main building or the nearest line of any enclosed or covered entry.

6.2.40 Yard, side. A yard extending from the front yard to the rear yard between the side property line and the nearest line of the main building or any accessory building.

6.3 DEVELOPMENT STANDARDS

The Development Standards shall serve as the mechanism for the implementation of the Sakioka Farms Business Park land uses. The standards set forth in this section will assure that future development within the Specific Plan is implemented in a manner consistent with the intent of the Master Plan. The standards contained herein provide flexible mechanisms to anticipate future needs and achieve compatibility between land uses and the surrounding community. The standards and guidelines are designed to be compatible with the existing land use categories of the City. The primary land uses in the Sakioka Farms Business Park shall be industrial, research and development and office; commercial, public and semi-public uses are secondary and may be permitted in certain Planning Areas.

The Development Standards establish an orderly framework of land uses, amenities and building design criteria within the Specific Plan. They are structured to allow a variety of compatible land uses, operations and activities that will create a desirable environment and effect a harmonious relationship with surrounding properties and the community in general.

6.3.1 Permitted Uses

The Specific Plan's permitted uses shall comply with these Development Regulations and, when not addressed by these Regulations, the City of Oxnard Zoning Code.

The list of permitted uses is typical of the types of uses which shall be allowed in each Planning Area. Uses listed which do not reasonably comply with the performance standards of this zone shall not be permitted. All permitted uses and activities shall be within an enclosed building unless otherwise approved. Storage or ancillary activities may be conducted outside if adequately screened from view and approved.

Accessory Structures incidental to a permitted principal use or structure, may be erected on any parcel containing a main building provided that such structures conform with all requirements of the Specific Plan.

Parking Structures may be constructed in each Planning Area and subject to all the development regulations of the Planning Area with the exception of maximum floor area ratio and maximum site coverage; no maximums shall be established for these provisions.

Accessory Uses intended to augment and support the primary activity are permitted within each Planning Area. Such activities may include administrative and corporate offices within industrial uses, governmental facilities within public/semi-public uses, employee cafeteria, service and recreational facilities, along with repair, maintenance and storage facilities related to the primary permitted use.

Prohibited Uses not allowed within the Specific Plan shall include:

- Adult Businesses

PERMITTED USES MATRIX
EXHIBIT 6.1

PERMITTED USES	PLANNING AREA						
	1	2	3	4	5	6	7
INDUSTRIAL							
MANUFACTURING		○	○	○	○	○	
FABRICATION		○	○	○	○	○	
ASSEMBLY		○	○	○	○	○	
PROCESSING MATERIALS		○	○	○	○	○	
AGRICULTURAL PRODUCE		○	○	○	○	○	
MAINTENANCE AND REPAIR		○	○	○	○	○	
WAREHOUSE AND STORAGE		○	○	○	○	○	
PACKAGING		○	○	○	○	○	
OFFICES (not exceeding 20% of the primary use)		○	○	○	○	○	
BUSINESS AND RESEARCH							
RESEARCH AND DEVELOPMENT	○	○	○	○		○	
LABORATORIES	○	○	○	○		○	
OFFICES	○	○	○	○			○
LIGHT INDUSTRIAL		○	○	○	○	○	
PROFESSIONAL SERVICES	○	○	○	○		○	
PERSONAL SERVICES	○	○	○	○		○	
SUPPORT COMMERCIAL (not exceeding 15% of the primary use)	○	○	○	○			○
COMMERCIAL							
BANKS & FINANCIAL INSTITUTIONS		○	○	○			○
EATING AND DRINKING ESTABLISHMENTS	○	○	○	○			○
RETAIL SALES		○	○	○			○
MAINTENANCE AND REPAIR							○
PERSONAL SERVICES		○	○	○			○
HOTEL, MOTEL AND ANCILLARY RETAIL	○						
AUTOMOBILE SERVICE STATIONS	○						○
HEALTH CLUB / RECREATION	○						
PUBLIC / SEMI PUBLIC							
CONFERENCE FACILITIES	○		○				
DAY CARE FACILITIES	○	○	○	○			
CHURCH/RELIGIOUS FACILITIES	○	○	○	○			
GOVERNMENT FACILITIES		○	○	○			
COMMUNITY PARK FACILITIES		○	○	○			
PUBLIC RECREATION FACILITIES		○	○	○			
COMMUNITY UTILITY FACILITIES					○	○	

6.3.2 Division of Property

The development of all permitted uses shall take place only on legally constituted building sites of record. Where the division or reversion to acreage of property is required, the regulations and procedures of the City of Oxnard subdivision ordinance shall be followed.

6.3.3 Lot Area, Width & Depth

Minimum lot area width and depth, exclusive of any public right-of-way dedicated for road purposes or proposed road purposes, shall be established in each Planning Area when subdivisions are approved.

6.3.4 Maximum Building Height

The maximum allowable building height shall be established in each Planning Area. An additional fifteen (15) feet in height will be allowed for roofline treatment, architectural features and special equipment or mechanical devices. Building height may also be increased by fifteen (15) feet for buildings 3 stories or less and twenty (20) for buildings over 3 stories to allow roof top mechanical equipment.

6.3.5 Intensity

The overall intensity for the Specific Plan area has been established by the City's 2030 General Plan. The maximum floor area ratio (F.A.R.) for each Planning Area varies in accordance with the anticipated uses.

6.3.6 Site Coverage

The maximum ground floor area of all buildings and structures shall be established in each Planning Area, and measured by the maximum ground floor area of all buildings and structures.

6.3.7 Setbacks

The minimum setbacks for all buildings and structures shall be as follows:

Front yard setbacks adjacent to a public roadway shall not be less than twenty (20) feet from the property line. A minimum of thirty (30) feet shall be required adjacent to an arterial highway.

Side yard setbacks on interior property lines shall not be less than ten (10) feet from the property line. The side yard adjacent to the public street shall meet the front yard setback requirements.

A common building wall with a zero setback may be established by a development plan, which shall provide documentation describing the exchange and recordation of necessary documents to insure adequate access, parking and easements to serve the development.

Rear yard setbacks shall be not less than ten (10) feet from the property line.

DEVELOPMENT REGULATIONS MATRIX
EXHIBIT 6.2

		PLANNING AREA						
		1	2	3	4	5	6	7
MINIMUM LOT AREA (1)		60,000 s.f.	15,000 s.f.	40,000 s.f.	15,000 s.f.	100,000 s.f.	10,000 s.f.	80,000 s.f.
MINIMUM LOT		250′	100′	200′	100′	300′	100′	250′
MINIMUM LOT		250′	150′	200′	150′	300′	100′	250′
MAXIMUM BUILDING HEIGHT (2)		175′ (12 stories)	90′ (6 stories)	175′ (12 stories)	90′ (6 stories)	50′ (3 stories)	35′ (2 stories)	90′ (6 stories)
MAXIMUM INTENSITY		1.0	0.7	1.0	0.7	0.5	0.5	0.8
MAXIMUM SITE COVERAGE (3)		50%	50%	50%	50%	60%	60%	50%
MINIMUM SETBACKS NG	FRONT	30′	30′	30′	25′	30′	25′	25′
	SIDE*	10′	10′	10′	10′	10′	10′	10′
	REAR*	10′	10′	10′	10′	10′	10′	10′
MINIMUM LANDSCAPING		10%	10%	10%	10%	10%	10%	10%

*** Zero (0) setback permitted between parcels of the same land use and developed concurrently.**

(1) Footprint lots may be smaller than the minimum lot area and shall have all required appurtenant are contiguous thereto and the sum of these areas shall not be less than the minimum lot area.

(2) Maximum height measured to main roofline with equipment, equipment rooms and roof screen permitted to extend beyond maximum building height.

(3) Parking structures are excluded from Maximum Site Coverage.

6.3.8 Landscaping

Project landscaping is intended to enhance, conserve and stabilize property values by encouraging a pleasant and attractive environment. Landscaped areas shall be considered those areas of lawn, trees, planter boxes, shrubs or other plants. Courtyards, plazas, water ponds, fountains, decks, kiosks, walkways and similar areas may be part of the landscaped area. A minimum portion of each project site must be landscaped with a combination of landscape materials and hardscape walkways and plazas, the extent of required landscaping shall be established in each Planning Area.

A landscape plan shall be prepared and submitted with all requests for development. All other setback and parking lot areas fronting on, or visible from, adjacent public streets shall be landscaped and permanently maintained in an attractive manner, consistent with the Landscape Guidelines contained in the Specific Plan and City Standard Landscape Plans.

A minimum five (5) foot wide landscape setback to parking is required at interior property lines.

Plant materials used for screening purposes shall consist of compact evergreen plants, together with evergreen trees. They shall be of a kind, or used in such a manner, so as to provide an opaque screen within eighteen (18) months after initial installation. This requirement shall be located on the second parcel developed.

6.3.9 Parking

Parking requirements have been established for the Specific Plan based on the City of Oxnard's Parking Regulations and Standards Ordinance adopted in October of 1994. Administrative relief from the parking provisions of the Specific Plan may be requested subject to the provisions outlined in the City's Zoning Code (Sec. 36-7.1, 31).

In order to provide suitable off-street parking facilities for various property uses and to ensure the safe movement of traffic on public streets and to protect adjacent properties from adverse impacts; all developments will be required to meet the minimum on-site parking standards outlined in the Specific Plan. On-street parking will not be permitted on any arterial.

Vehicle and bicycle parking facilities shall be provided off-street for any new building constructed, for any new use established and for any change in use in an existing building that would result in additional parking spaces being required.

Standard parking spaces shall be an unobstructed rectangle of not less than nine (9) feet in width by nineteen (19) feet in depth, and shall meet City's striping standards.

Parking lots need to be designed to City Standards with a minimum 25′ wide drive aisles and 48′ turning radius

REQUIRED PARKING MATRIX
EXHIBIT 6.3

USE	REQUIRED PARKING
INDUSTRIAL	
LIGHT MANUFACTURING	1 sp. / 500 sq. ft. *
HEAVY MANUFACTURING	1 sp. / 500 sq. ft. *
WAREHOUSING (first 20,000 sq. ft.)	1 sp. / 1000 sq. ft. *
WAREHOUSING (second20,000 sq. ft.)	1 sp. / 2000 sq. ft. *
WAREHOUSING (40,000+ sq. ft.)	1 sp. / 4000 sq. ft. *
BUSINESS AND RESEARCH	
RESEARCH AND DEVELOPMENT	1 sp. / 350 sq. ft. *
OFFICES	1 sp. / 250 sq. ft.
MEDICAL OFFICES	1 sp. / 200 sq. ft.
PROFESSIONAL SERVICES	1 sp. / 250 sq. ft.
COMMERCIAL	
SHOPPING CENTER	1 sp. / 250 sq. ft.
RETAIL GENERAL	1 sp. / 300 sq. ft.
RETAIL NEIGHBORHOOD	1 sp. / 250 sq. ft.
RETAIL FURNITURE / APPLIANCE	1 sp. / 300 sq. ft. (display) 1 sp. / 800 sq. ft. (warehouse)
AUTO REPAIR / SERVICE	1 sp. / 300 sq. ft. + 3sp / service bay
BANKS / FINANCIAL	1 sp. / 250 sq. ft.
HOTEL / MOTEL	1 sp. / room
RESTAURANT	1 sp. / 75 sq. ft. (first 6,000 sq. ft.) 1 sp. / 180 sq. ft. (+6,000 sq. ft.)
RESTAURANT (fast food)	1 sp. / 50 sq. ft.
HEALTH CLUB	1 sp. / 200 sq. ft.
PUBLIC / SEMI PUBLIC	
DAY CARE FACILITY	1 sp. / 10 children (must be provided w/ drop-off area)
PUBLIC ASSEMBLY	1 sp. / 35 sq. ft.

* Plus the required parking for gross floor area devoted to other uses

Handicap accessible parking spaces shall be as required by Federal and State laws and codes.

Multiple Uses developed in combination on a site shall provide parking for each of the uses according to the schedules given. Uses not listed on the parking schedule shall have the required parking determined by the approval body on the basis of requirements for similar uses, or any appropriate traffic engineering or planning data with recommended minimum requirements.

Shared parking may be permitted for combined office and commercial uses. A shared parking program may allow for a reduction of code required parking by up to twenty-five (25) percent, based upon a shared parking analysis. Shared off-site parking facilities may also be permitted for adjacent office and industrial uses, and unique uses such as churches or other community facilities.

Phasing required parking may be permitted and installed, as needed, provided sufficient parking for employee projections can be met. The initial phase of required parking shall be a minimum of fifty (50) percent of the required parking. A covenant shall be recorded on the property prior to occupancy to insure provision of all parking as necessary. All areas set aside for future parking facilities shall be landscaped consistent with other on-site landscaping and may not be used for building development or expansion.

Bicycle parking shall be provided as required by California Building Code and/or City Code, whichever is greater.

Bicycle racks shall be located in a visible area from the street or building entrance. Safe and convenient access for bicyclists from the external circulation system to on-site buildings or internal streets shall be provided. However, separate bicycle paths shall not be required. Bicycle parking areas must be separated from motor vehicle parking areas by at least a curb barrier in order to prevent vehicles from damaging bicycles.

Motorcycle parking shall be provided in required parking facilities at the rate of one (1) parking space per fifty (50) automobile parking spaces. Motorcycle spaces shall be a minimum of four and one-half (4 ½) feet in width by seven (7) feet in length.

Loading spaces shall be provided and maintained off-street within the project at the following rate:

Use	**Requirements**
gross floor area	# of loading spaces
Commercial & Industrial	
0-15,000	1
15,001-40,000	2
40,000-90,000	3
90,000-150,000	4
150,000 and over	5
Offices	
0-50,000	1
50,001-100,000	2
100,000 and over	3
Hotels, motels, and restaurants	1

Loading spaces shall be at least twelve (12) feet in width, thirty-eight (38) feet in length, and with fourteen (14) feet in vertical clearance. Loading zone requirements shall be subject to individual project reviews.

Drive-thru facilities may be approved subject to individual project review. Drive-thru lanes shall be separated from the circulation routes necessary for ingress or egress to the property and parking access. The principal pedestrian access to the entrance of the drive-thru facility shall not cross the drive-thru lane. The vehicle stacking capacity for uses containing drive-thru facilities shall be as follows:

Use	Requirements
Fast-food restaurant	Stacking for three (3) cars between the order board and the pick-up window and stacking for five (5) cars behind the order board.
Bank drive-thru windows	Stacking for five (5) cars for each window.

Vehicle stacking areas may be used as credit for required parking up to thirty (30) percent but shall not exceed twenty (20) spaces.

Finishes and surfacing for all parking spaces and maneuvering areas shall be paved and permanently maintained with asphalt, concrete, or any other all-weather method. Curbs/wheel stops shall be provided to prevent vehicle encroachment into landscape and access areas.

A curb shall consist of a continuous six (6) inch high concrete installed above the parking lot level and serve as an edging for planting areas, islands, protection for walls and for entrances and exits. Where concrete curbs are not installed adjacent to public sidewalks, wheel stops or bollards shall be installed to prevent vehicles from encroaching into or onto a public right-of-way.

Vehicle overhangs may be permitted up to two (2) feet adjacent to walkways and landscape areas providing that a minimum seven (7) foot wide walkway (five foot clear) and the minimum landscape setback width is maintained beyond the two (2) foot overhang.

6.3.10 Signs

All signs in the project area shall conform to the provisions of the City's Zoning and Subdivision Ordinance and shall be consistent with the Guidelines of the Specific Plan.

6.3.11 Lighting

All illumination of streets, parking areas, and project sites, shall be coordinated to provide a consistent illumination intensity and shielded from abutting streets and adjoining properties. Emphasis shall be placed on areas of high vehicular and pedestrian activity. Light fixtures and standards shall be consistent with building architectural style.

6.3.12 Walls and Fencing

Walls and fences are encouraged as means of providing security and screening. Walls shall be constructed of masonry or concrete materials

consistent with, and complimentary to, building architecture. Fencing shall be restricted to ornamental iron; chain-link fencing shall not be used. Decorative masonry walls a minimum of six (6) feet in height or other type of visual buffering such as landscaping, architectural treatment, or a combination thereof, shall be provided and maintained on a property line which abuts or is across a public street or alley from a residential zone. Such wall or visual buffering shall be placed in the location to provide the necessary screening from the public right-of-way. Screening walls surrounding outdoor storage and other activity areas may be constructed up to ten (10) feet in height.

6.4 Performance Standards

The maximum permitted levels of operational characteristics resulting from any activity shall be called performance standards. Continued compliance with the performance standards as outlined in the Specific Plan shall be required of all permitted uses.

All sites and structures within the Specific Plan area shall not be used or occupied in any manner so as to create any dangerous, noxious, injurious, or otherwise objectionable situation. Dangerous or objectionable substances, conditions or elements, shall not be used in a manner or amount as to adversely affect the environment or surrounding community. More restrictive performance standards or regulations enacted by an authorized governmental agency having jurisdiction on such matter shall take precedence over the provisions of the Specific Plan.

6.4.1 Noise

Baffling or muffling devices or other precautionary means shall be employed with the processes or operations causing objectionable noise characteristics to prevent their being objectionable when measured at the property line during normal operation.

6.4.2 Smoke and Particulates

Visible emissions of smoke will not be permitted which exceed Ringlemann No. 1 on the Ringlemann Chart of the U.S. Bureau of Mines, except for exhausts emitted by motor vehicles or other transportation facilities. This requirement shall also be applicable to the disposal of trash and waste materials. Wind-borne dust, dirt, fly ash, airborne solids, sprays and mists (except water vapor) originating from any use will not be permitted.

6.4.3 Toxic or Noxious Matter

Toxic gases or noxious matter shall not be emitted which can cause any damage to health, animals, vegetation or other forms of property, or which can cause any excessive soiling beyond the lot lines of the use.

6.4.4 Odorous Matter

Operations, processes or products which emit odors that are detectable at any point beyond the property line from any use are not to be permitted.

6.4.5 Glare or Heat

Any operation producing intense glare or heat shall be performed within an enclosed or screened area in such a manner that the glare or heat emitted will not be discernable from the property line.

6.4.6 Vibration

All activities shall be operated so that the ground vibration generated by the use is not harmful or injurious to the use of the surrounding properties. No vibration shall be permitted which is perceptible without instruments at any point along the property line.

6.4.7 Electricity and Radio Activity

No activity shall be permitted which causes electrical disturbances affecting the operation of any equipment located beyond the property line of such activity.

Radio and television transmitters shall be operated at the regularly assigned wave lengths (or within the authorized tolerances) as assigned by the appropriate governmental agency. Any exception must be suitably wired, shielded and controlled so that in operation they shall not emit electrical impulses or waves beyond the lot lines which adversely affect the operation and control of any domestic household equipment or any other electronic devices and equipment.

6.4.8 Liquid and Solid Wastes

Liquid or solid wastes discharged from the premises shall be properly treated prior to discharge so as not to contaminate or pollute any watercourse or groundwater supply or interfere with bacterial processes in sewage treatment. Such operations shall comply with authorized governmental health and safety regulations of agencies having jurisdiction over such disposal activities. The disposal or dumping of solid wastes, such as slag, paper or fiber wastes, or other industrial wastes, shall not be permitted on any premises unless otherwise provided for.

6.4.9 Fire and Explosive Hazards

All activities involving the use or storage of combustible, flammable or explosive materials shall be in compliance with nationally recognized standards, and shall be provided with adequate firefighting and fire-suppression equipment and devices in compliance with the current edition of the National Fire Protection Association regulations. Burning of waste materials in open fires is prohibited.

6.4.10 Exceptions

The outlined Performance Standards do not apply to unexpected brief periods where the standards are exceeded, if based upon a reasonable cause, such as equipment testing, breakdown of equipment, modification or cleaning of equipment, or other similar reason when it is evident that such cause was not reasonably preventable.

SECTION SEVEN

7

Adaptive Management Mitigation Monitoring and Reporting Program

for the Sakioka Farms Business Park Specific Plan

Incorporating Mitigation Measures from the Certified Sakioka Farms Business Park Specific Plan Final EIR

Adaptive Management shall be applicable to any Mitigation Measure which states that it is an Adaptive Management Mitigation Measure. Adaptive Management allows for the continuing consideration of mitigation measures based an evaluation of environmental conditions at the actual time of their proposed implementation, and their effectiveness in achieving the adopted objectives of the Final EIR which are an impact level of less than significant, unless otherwise stated. Adaptive management would not require exceeding the level or extent of stated mitigation measures as specified in the Final EIR unless established by subsequent CEQA review.

This Adaptive Management Mitigation Monitoring and Reporting Program shall be incorporated in the Sakioka Farms Business Park Specific Plan document as Section 7 under said title.

Mitigation Measure	Action Required	Timing	Enforcement Agency
A - CULTURAL RESOURCES			
A-1 This is an adaptive management mitigation measure. The Project developer and/or subsequent responsible parties shall contract with a qualified archaeologist to monitor initial grading and excavation in excess of three feet. In the event that any historic or prehistoric cultural resources are discovered, they will be evaluated in accordance with the procedures set forth in CEQA Section 15064.5. If the evaluation determines that such resources are either unique or significant archaeological, paleontological, or historic resources and that the Project would result in significant effects on those resources, then further mitigation would be required. In cases where the resources are unique, then avoidance, capping, or other measures, including data recovery, would be appropriate mitigation. If the resources are not unique, then recovery, without further mitigation, would be appropriate.	Project developers shall provide a copy of a contract for services to the City for review and approval as part of each planning and/or building permit application unless an active contract is on file. Developers shall provide reports to the City for review in the event that any historic or prehistoric cultural resources are discovered during periods of actual grading and/or trenching deeper than three feet.	Contract provided or on file as part of the determination of a complete application. Reports provided as warranted during site grading activities and finalized prior to approval of final building certificate(s) of occupancy signature.	City of Oxnard Planning Division and Engineering Services Division.
A-2 This is an adaptive management mitigation measure. The Project developer and/or subsequent responsible parties shall contract with a Native American monitor to be present during all subsurface grading, trenching, or construction activities in excess of three feet on the Project site. The monitor shall provide a monthly report to the Planning Division summarizing the activities during the reporting period. If any qualifying cultural materials are encountered during this phase of project construction, construction activities on the project site shall be halted immediately, and the Project developer shall notify the City. If any find were determined to be significant by the Native American	Project developers shall provide a copy of a contract for services to the City for review and approval as part of each planning and/or building permit application unless an active contract is on file. Developers shall provide reports to the City for review in the event that cultural materials or human remains are discovered during grading and/or trenching deeper than three feet. If materials are	Contract provided or on file as part of the determination of a complete application. Reports provided as warranted during site grading activities and finalized prior to approval of final building certificate(s) of occupancy signature.	City of Oxnard Planning Division and Engineering Services Division.

Mitigation Measure	Action Required	Timing	Enforcement Agency
monitor, the City and the Native American monitor would meet to determine the appropriate course of action. A copy of the contract for these services shall be submitted to the Planning Division Manager for review and approval prior to issuance of any grading permits. A final monitoring report(s) shall be provided to the Planning Division prior to approval of final building certificate(s) of occupancy signature.	encountered, construction activities shall be halted immediately so as to not disturb the remains and the Developer shall notify the City for further consultation.		
B - LAND USE AND PLANNING			
B-1 If the Oxnard 2030 General Plan is adopted before the Final Sakioka Farms EIR is certified or the Development Services Director determines that the Sakioka Farms Specific Plan final adoption actions are likely to occur after adoption of the Oxnard 2030 General Plan, a 2030 General Plan consistency analysis shall be completed by the City and reimbursed by the Applicant. The 2030 General Plan consistency analysis shall, at a minimum, be prepared as an Addendum to the Draft or Final Sakioka Farms EIR, whichever is applicable. If the 2030 General Plan consistency analysis identifies significant impacts and/or new or modified mitigations, the appropriate CEQA required actions shall be taken, the costs of which are to be reimbursed by the Applicant consistent with the City's CEQA review policies and practices.	If determined to be required, a 2030 General Plan consistency analysis shall be completed by the City and reimbursed by the Project applicant.	Prior to adoption of the Project Specific Plan and Final EIR.	City of Oxnard Planning Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
C - AGRICULTURAL RESOURCES			
The Project together with other pending urban development projects in the City, even after application of the following mitigation measures, will result in a cumulative effect on agricultural resources that is considered significant and unavoidable. Accordingly, a Statement of Overriding Considerations was prepared in accordance with CEQA and included within the resolution approving the Specific Plan.			
C-1 This is an adaptive management mitigation measure. The Project developer shall offer, at cost, the top 12 inches of the Prime Farmland soils (at 100 acres) for relocation to a farm site or farm sites that have lower quality soils. The cost will include the suitable replacement soil, if needed for site improvements. This mitigation may occur in phases as the areas with Prime Farmland are incrementally developed.	The Project developer shall provide a copy of the published advertisement offering, at cost, the top 12 inches of the Prime Farmland soils for relocation to a farm site or farm sites that have lower quality soils to the City.	At least 30 days prior to issuance of grading permits for the area subject to the mitigation.	City of Oxnard Planning Division
C-2 This is an adaptive management mitigation measure. The Project developer shall install a fence or wall with a minimum height of eight (8) feet along the eastern perimeter of the project site that abuts the unincorporated portion of Ventura County when developed is proposed east of Del Norte Boulevard. Fencing may be required between developed phases of the Project and continuing agricultural operations on the remaining Project site based on subsequent entitlement actions.	Project developer shall provide a copy of the building plans that show the specifications and location for the perimeter wall or other buffer fencing as needed during phased development.	Prior to approval of grading permits	City of Oxnard Planning Division, Engineering Services, or Public Works depending on the type of permit.
C-3 This is an adaptive management mitigation measure. In order to buffer on- or off-site agricultural land uses and on-site non-agricultural uses either of the following measures may be undertaken to allow scheduled Restricted Materials applications by an on- or off-site farmer; 1) closure of the buildings during periods when restricted materials will be used on the adjacent farmland parcels or 2) notification, consistent with common-practice in Ventura County, of	The Project developer shall prepare a pamphlet regarding the potential of nearby farming activities to impact Sakioka Farms development and distribute it to purchasers and/or developers of individual building sites and to new building occupants within the	Pamphlet prepared prior to final approval of the first subdivision tract map and available to all subsequent property owners, developers, and agents.	City of Oxnard Planning Division with the invited review by the Office of the Ventura County Agricultural Commissioner.

Mitigation Measure	Action Required	Timing	Enforcement Agency
building occupants and/or building managers that normal farming activities will occur nearby from time to time which can include noise, mild dust, and odors; that inert and non-toxic substances are frequently used by farmers which should be of no concern to people nearby, and that actual chemical spray drift from farms is rare and should not be misperceived.	proposed project area whose parcels could be impacted by this activity. The Sakioka Farms Specific Plan Covenants, Conditions and Restrictions (CC&Rs) shall require the Project developer provide the pamphlet to subsequent buyers and occupants of buildings on those parcels.		
E - BIOLOGICAL RESOURCES			
E-1 This is an adaptive management mitigation measure. In order to avoid adverse impacts to nesting birds, including nesting migratory birds known to exist in the trees (if any) on the Project site, during construction activities, ground vegetation removal activities must take place outside of the nesting season recognized by the California Department of Fish and Game for species in this area. If vegetation removal activities occur during the nesting season, a qualified ecologist/biologist must be present to monitor the removal activities to ensure that no active nests will be impacted. If nests are found, a 300 foot (500 feet for raptors) buffer radius shall be established until the young have fledged. If nests are observed and lesser buffer distances are desired, the biological monitor shall confer with Planning and Fish and Game staff to determine an appropriate buffer distance based on species specific requirements. This measure does not apply to agricultural row crops.	The Project developer shall limit site grading activities to September 1st through February 14th or as recognized by the California Department of Fish and Game for species in this area. This mitigation measure shall be printed on project grading plans. Developer shall provide a copy of a survey report from a recognized biologist monitor if non-agricultural vegetation removal occurs during the specified period .	Prior to issuance of grading permits unless the entire grading area was in active agriculture production within the previous 30 days.	City of Oxnard Planning Division, Engineering Services Division, or Public Works depending on type of grading permit.

Mitigation Measure	Action Required	Timing	Enforcement Agency
E-2 This is an adaptive management mitigation measure. Prior to processing the initial tract map for a planning area that could lead to construction activities that may result in the placement of fill material into the potentially jurisdictional irrigation drainage features, prepare and submit to the Corps for verification a "Preliminary Delineation Report for Waters of the U.S." and a Streambed Alteration Notification package to CDFG for the irrigation drainage features. If these agencies determine that the feature is not regulated under their jurisdiction, then no further mitigation is necessary. However, if the Corps considers the feature to be jurisdictional through a "significant nexus" test per recent Corps and EPA guidance,[1] then a Clean Water Act Section 404 permit shall be obtained from the Corps, and any permit conditions shall be agreed to, prior to the start of construction activities in the affected area. If CDFG determines that the drainage is a regulated "streambed", then a Streambed Alteration Agreement shall be entered into with CDFG and any associated conditions shall be agreed to prior to the start of construction in the affected area.	The Project developer shall provide a copy of the Preliminary Delineation Report for Waters of the U.S. and either verification by the U.S. Army Corps of Engineers and the CDFG that the drainage feature is not regulated or a copy of the Clean Water Act Section 404 permit and the Streambed Alteration Agreement to the Planning Division to keep with the project files.	Prior to processing the initial tract map for a planning area containing potentially jurisdictional irrigation drainage features, or, as an alternative, a verification document for the entire Specific Plan area acceptable to the Director of Public Works.	City of Oxnard Planning Division, Engineering Services Division, or Public Works depending on type of grading permit.
E-3 This is an adaptive management mitigation measure. In order to prevent unauthorized impacts to jurisdictional features, the following permits shall be issued and/or reports approved (or exemptions issued) by the respective resource agency, and any associated conditions of approval shall be agreed upon, prior to processing the initial tract map for a planning area that could lead to construction activities that may result in the placement of fill material into the	The Project developer shall provide a copy of the Preliminary Delineation Report for Waters of the U.S. and either verification by the U.S. Army Corps of Engineers and the CDFG that the drainage feature is not regulated or provision of the approved	Prior to processing the initial tract map for a planning area containing potentially jurisdictional irrigation drainage features, or, as an alternative, a	City of Oxnard Planning Division, Engineering Services Division, or Public Works depending on type of grading permit.

1 *U.S. Environmental Protection Agency and U.S. Department of the Army. 2007. Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States. June 5, 2007.*

Mitigation Measure	Action Required	Timing	Enforcement Agency
potentially jurisdictional irrigation drainage features, subsequent to adoption of the Project (i.e. Specific Plan): • Clean Water Act Section 404 Permit from the Corps, • Streambed Alteration Agreement under Section 1600 of the Fish and Game Code from CDFG, • Clean Water Act Section 401 Water Quality Certification or Waste Discharge Requirements from the RWQCB. If the irrigation ditches are determined as jurisdictional by the Corps, it will be necessary to insure adequate compensation for adverse impacts to jurisdictional features from Project development. If applicable, a Mitigation Plan shall be prepared by a qualified biologist. The Mitigation Plan shall describe and justifying the (1) formal delineation; (2) proposed methods including timing, materials, and erosion control measures; (3) the proposed location for the replacement areas; and (4) habitat protection measures (including a mechanism for permanent preservation of the area supporting the replacement habitat). The Mitigation Plan shall be submitted to and approved by the County, Corps, CDFG, and RWQCB prior to initiation of construction activities.	Mitigation Plan, the Clean Water Act Section 404 permit, the Clean Water Act Section 401 permit, the Streambed Alteration Agreement and the RWQCB Waste Discharge Requirements to the Planning Division submitted to the County along with copies to keep with the project files.	verification document for the entire Specific Plan area acceptable to the Director of Public Works.	

Mitigation Measure	Action Required	Timing	Enforcement Agency
E-4 This is an adaptive management mitigation measure. If required to compensate for riparian habitat loss by the Corps, the project applicant will place under conservation easement in a manner acceptable to the Corps and the California Department of Fish and Game an area of riparian habitat that will accommodate constructed replacement at a ratio to be determined during the formulation of a Lake and Stream Alteration Agreement (i.e. a number of acres of constructed riparian habitat). This conserved riparian habitat must be of the same or higher quality as the habitat that is to be removed as a result of the Project. -- or -- The Project applicant will purchase the requisite number of credits from a qualified conservation bank. The Project applicant can only purchase credits from those banks that sell credits covering the riparian species to be affected by the proposed Project or as approved by the Corps or agency of jurisdiction.	If required, the Project developer shall provide a copy of the conservation easement or proof of the purchase of the requisite number of credits from a nearby qualified conservation bank to the Planning Division to keep with the project files.	Prior to processing the initial tract map for a planning area containing potentially jurisdictional irrigation drainage features, or, as an alternative, a verification document for the entire Specific Plan area acceptable to the Director of Public Works.	City of Oxnard Planning Division, Engineering Services Division, or Public Works depending on type of grading permit.
E-5 This is an adaptive management mitigation measure. Prior to construction of the Planning Area 1, located adjacent to the Ventura Freeway, a qualified ecologist/biologist shall determine the presence and extent/absence of monarch butterfly activity surrounding the proposed construction area if any mature windrow trees are present. If temporary aggregation activity is observed within this area, construction shall be halted until after the temporary aggregation season (September – December) or until the monarchs have left the vicinity.	The Project developer shall limit site grading activities in Planning Area 1 to January 1st through February 14th as specified in project grading plans; or provide a copy of the survey report and the contract for biologist monitor contract to the City for review and approval.	Prior to issuance of grading permits and/or planning permits, whichever occur first, within each planning area in Planning Area 1.	City of Oxnard Planning Division, Engineering Services Division, or Public Works depending on type of grading permit.

Mitigation Measure	Action Required	Timing	Enforcement Agency
F - GEOLOGY AND SOILS			
F-1 This is an adaptive management mitigation measure. *Conduct Geotechnical Investigations and Adhere to Recommendations:* Detailed design level geotechnical investigations shall be performed by qualified licensed professionals for each individual proposed project/phase of the Sakioka Farms Business Park Specific Plan project. These geotechnical investigations shall include, but not be limited to: • identification of unsuitable soils including expansive, corrosive, and collapsible soils, • identification presence and extent of liquefiable soils, • calculation of site-specific seismic design criteria, • a fault evaluation study to confirm the presence or absence of the Springville and Camarillo segments of the Simi-Santa Rosa fault across the southern half of the Proposed Project site. Recommendations shall be provided in these reports for design of project structures and facilities and for mitigation of any unsuitable conditions encountered. These reports shall be provided to the City and other reviewing agencies for review. These recommendations shall be implemented, as deemed appropriate by the City and the Applicant's engineering design consultant.	The Project developer shall provide copies of the applicable geotechnical investigations incorporating the recommendations to the City for review and approval as part of the applicable planning, grading, and/or building permit application process.	Prior to issuance of grading, and/or building permits.	City of Oxnard Planning Division, Engineering Services Division, or Public Works depending on type of grading permit.

Mitigation Measure	Action Required	Timing	Enforcement Agency
G - HAZARDS AND HAZARDOUS MATERIALS			
G-1 All miscellaneous vehicles, maintenance equipment and materials, construction/irrigation materials, miscellaneous stockpiled debris, dumpsters, pesticide application equipment, ASTs, 55-gallon drums, and 5-gallon buckets should be removed offsite consistent with the phased development described within the Specific Plan, and properly disposed of. Once removed, a visual inspection of the areas beneath the removed materials should be performed. Any stained soils observed underneath the removed materials should be sampled. Results of the sampling would indicate the level of remediation efforts that may be required.	Project developer shall provide reports of site sampling following removal of debris to the City for review and any remediation efforts should they be required demonstrating that all hazardous materials have been appropriately abated.	Prior to issuance of grading and demolition permits and during demolition	City of Oxnard Engineering Services Division
G-2 A visual inspection of all storage structures shall be performed prior to demolition activities. In the event that hazardous materials are encountered, the materials shall be tested and properly disposed of pursuant to Local, State and Federal regulations.	Project developer shall provide reports of site sampling to the City for review and any remediation efforts should they be required demonstrating that all hazardous materials have been appropriately abated.	Prior to issuance of grading and demolition permits	City of Oxnard Engineering Services Division
G-3 Due to visible evidence of dark surface soil staining of oil/petroleum products located within Area 5, soil shall be excavated to determine the exact vertical extent of the contamination. If during soil removal, staining appears to continue below the ground surface, sampling shall be performed to identify the extent of contamination and appropriate remedial measures shall be taken.	Project developer shall provide reports of site sampling to the City for review and any remediation efforts should they be required demonstrating that all hazardous materials have been appropriately abated.	Prior to issuance of grading and demolition permits	City of Oxnard Engineering Services Division
G-4 Areas of exposed soil five feet from the expanded Caltrans Right-of-Way along the Ventura Freeway after completion	Project developer shall provide reports of site sampling to the City	Prior to issuance of grading and	City of Oxnard Engineering Services Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
of the Rice Avenue/101 Freeway interchange reconstruction, which will be disturbed during any excavation/grading activities, shall be sampled and tested for lead. In the unlikely event that unacceptable levels of lead materials are encountered, the materials shall be disposed of pursuant to State and Federal regulations.	for review and any remediation efforts should they be required demonstrating that all hazardous materials have been appropriately abated.	demolition permits	
G-5 This is an adaptive management mitigation measure. Soil sampling shall occur throughout the Project site concurrent with phased development, including the pesticide mixing areas within Areas 1 and 3. The sampling will determine if pesticide concentrations exceed established regulatory requirements and will identify proper handling procedures that may be required.	Project developer shall provide reports of site sampling to the City for review and any remediation efforts should they be required demonstrating that all hazardous materials have been appropriately abated.	Prior to issuance of grading and demolition permits	City of Oxnard Engineering Services Division
G-6 Padre & Associates findings regarding residual soil contamination associated with the historical operation of oil/gas extraction wells should be reviewed and appropriate remedial recommendations (if any) should be administered. In addition to recommendations provided by Padre & Associates, the California Department of Oil, Gas and Geothermal Resources (DOGGR) well abandonment procedures shall be followed and formal verification of closure be received by DOGGR.	Project developer shall provide appropriate documentation to the City and the DOGGR demonstrating that the recommendations provided by Padre & Associates have been followed.	Prior to issuance of grading permits and approval of final building permits	City of Oxnard Engineering Services Division and the DOGGR
G-7 A qualified lead-paint abatement consultant shall be employed to comply with applicable state and federal rules and regulations governing lead paint abatement if any remaining structures are suspected of containing lead-based paint.	Project developer shall provide a copy of the contract for services to the City for review and approval.	Prior to issuance of grading and demolition permits	City of Oxnard Engineering Services Division
G-8 This is an adaptive management mitigation measure. Consistent with the Airport Comprehensive Land Use Plan for Ventura County (ACLUP) and the Sakioka Farms	Project developer shall provide copies of the applicable grading and construction plans	Prior to approval of planning permits or building permits if no	City of Oxnard Planning Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
Specific Plan, commercial/industrial development is permitted within the Extended Traffic Pattern Zone and residential development, should it be incorporated into future plans, is permitted within the Extended Traffic Pattern Zone subject to avigation easements and appropriate recorded disclosures.	demonstrating compliance with the ACLUP and evidence of appropriate avigation easements to the City for review and approval.	planning permit is required.	
I - TRANSPORTATION/TRAFFIC			
The following Transportation/Traffic mitigation measures are part of an adaptive management mitigation program. The traffic improvements listed below as I-1 through I-34, inclusive, are intended to maintain Level of Service C with the development of the Project unless excepted by the City Council based upon the traffic modeling completed in February 2010 for the Draft EIR. Subsequent traffic studies required by the Specific Plan may change the number and type of improvements based upon phasing of development, traffic counts and future travel behavior. Adaptive management will allow consideration of such subsequent traffic studies in the implementation of the Transportation/Traffic mitigation measures. The February 2010 traffic modeling does not take into account the City's Intelligent Transportation Systems (ITS) project under construction in 2011. Similar ITS projects have improved travel time and speed by 12%-16% and decreased delay by 32%-44% (ATSAC evaluation study, 1994). As part of the adaptive management of the Transportation/Traffic mitigation measures, the implementation of such mitigation measures shall take into account when feasible the ITS, future traffic counts and updated trip generation data which may reduce, change or make unnecessary the mitigation measures while still achieving the City's adopted Level of Service, unless modified by City Council. The Developer's payment of applicable City and County traffic impact fees in the amount agreed to by the City, County and Developer or, if there is no agreement, in the amount in effect at the time of issuance of a building permit, satisfies in full the action required by Developer in connection with the implementation of the Transportation/Traffic mitigation measures. Developer may also contribute additional funds towards the traffic improvements subject to reimbursement from the City in the form of credits against future City traffic impact fees or repayment by the City.			
Phase 1 (2010)			
I-1 *Rose Avenue & Gonzales Road:* The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and developer towards implementing improvements to the Rose Avenue & Gonzales Road intersection that adds a fourth westbound thru lane which will mitigate both Project and cumulative (2010 no Project) impacts.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to recordation of the final map or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
I-2 *Rose Avenue & Camino Del Sol:* The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and developer towards implementing improvements to the Rose Avenue & Camino Del Sol intersection that adds a third northbound thru lane by removing the existing northbound right-turn lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to recordation of the final map or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-3 *Rice Avenue & Fifth Street:* The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and developer towards implementing improvements to the Rice Avenue & Fifth Street intersection that adds a third southbound thru lane by removing the existing southbound right turn lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to recordation of the final map or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-4 *Del Norte Boulevard & Ventura Freeway NB Ramps:* The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and developer towards providing signalization.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to recordation of the final map or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-5 *Del Norte Boulevard & Ventura Freeway SB Ramps:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to signalize and add a northbound right turn lane which will mitigate both Project and cumulative (2010 no Project) impacts.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
Phase 2 (2015)			
I-6 *Ventura Road & Wooley Road:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Ventura Road & Wooley Road intersection that adds a third northbound thru lane and a third southbound thru lane which will mitigate both Project and cumulative (2010 no Project) impacts.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-7 *Oxnard Boulevard & Gonzales Road:* The Project	The Project developer shall pay	Prior to issuance of	City of Oxnard Engineering

Mitigation Measure	Action Required	Timing	Enforcement Agency
developer shall pay applicable City and County traffic impact fees toward improvements adding a third eastbound thru lane at the Oxnard Boulevard & Gonzales Road intersection	applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	building permits or as otherwise agreed upon with the City	Services Division
I-8 *Rose Avenue & Gonzales Road:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rose Avenue & Gonzales Road intersection that adds a fourth southbound thru lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer..	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-9 *Rose Avenue & Fifth Street:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rose Avenue & Fifth Street intersection that adds a second eastbound thru lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-10 *Rice Avenue & Fifth Street:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rice Avenue & Fifth Street intersection that adds a second westbound left turn lane which will mitigate both Project and cumulative (2010 no Project) impacts.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-11 *Rice Avenue & Channel Islands Boulevard:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rice Avenue & Channel Islands Boulevard intersection that changes the southbound defacto right turn lane to a free right turn lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-12 *Del Norte Boulevard & Ventura Freeway NB Ramps:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Del Norte Boulevard & Ventura Freeway NB Ramps intersection that adds a second northbound thru lane, adds a separate northbound left turn lane, adds a second southbound thru lane, adds a separate southbound right turn lane, and adds a separate	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
westbound left turn lane.			
I-13 *Del Norte Boulevard & Ventura Freeway SB Ramps*: The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Del Norte Boulevard & Ventura Freeway SB Ramps intersection that adds a second northbound thru lane, adds a separate northbound free-right turn lane, adds a second southbound thru lane, adds a separate southbound left turn lane, and adds a separate eastbound left turn lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-14 *Oxnard Boulevard & Vineyard Avenue:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Oxnard Boulevard & Vineyard Avenue intersection that adds a third northbound thru lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
Phase 3 (2020)			
I-15 *Oxnard Boulevard & Vineyard Avenue:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Oxnard Boulevard & Vineyard Avenue intersection that adds a fourth southbound thru lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-16 *Rose Avenue & Gonzales Road:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rose Avenue & Gonzales Road intersection that adds a second westbound left turn lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-17 *Rose Avenue & Fifth Street:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rose Avenue & Fifth Street intersection that adds a second westbound left turn lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
I-18 *Rice Avenue & Fifth Street:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rice Avenue & Fifth Street intersection that completes the grade separation / bypass which will mitigate both Project and cumulative (2020 no Project) impacts.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-19 *Rice Avenue & Wooley Road:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rice Avenue & Wooley Road intersection that adds a third northbound thru lane and a third southbound thru lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-20 *Ventura Road & Wooley Road:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Ventura Road & Wooley Road intersection that adds a second southbound left lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-21 *Rose Avenue & Camino Del Sol:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rose Avenue & Camino Del Sol intersection that adds a second eastbound left lane and a second westbound left lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-22 *Del Norte Blvd & Fifth Street:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Del Norte Blvd & Fifth Street intersection that adds a second westbound thru lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City.	City of Oxnard Engineering Services Division
Phase 4 (2025)			
I-23 *Ventura Road & Gonzales Road:* The Project developer	The Project developer shall pay	Prior to issuance of	City of Oxnard Engineering

Mitigation Measure	Action Required	Timing	Enforcement Agency
shall pay applicable City and County traffic impact fees toward implementing improvements to the Ventura Road & Gonzales Road intersection that adds a second northbound left turn lane and a third northbound thru lane which will mitigate both Project and cumulative (2025 no Project) impacts.	applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	building permits or as otherwise agreed upon with the City	Services Division
I-24 *Ventura Road & Wooley Road:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Ventura Road & Wooley Road intersection that adds a third eastbound thru lane and a third westbound thru lane which will mitigate both Project and cumulative (2025 no Project) impacts.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-25 *Rose Avenue & Camino Del Sol:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rose Avenue & Camino Del Sol intersection that removes the southbound free right turn lane, adds a third southbound thru lane and adds an eastbound right turn lane which will mitigate both Project and cumulative (2025 no Project) impacts.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-26 *Rose Avenue & Fifth Street:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rose Avenue & Fifth Street intersection that adds a southbound right turn lane or grade separation.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-27 *Rose Avenue & Channel Islands Boulevard:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rose Avenue & Channel Islands Boulevard intersection that adds a third northbound thru lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-28 *Rose Avenue & Bard Road:* The Project developer shall	The Project developer shall pay	Prior to issuance of	City of Oxnard Engineering

Mitigation Measure	Action Required	Timing	Enforcement Agency
pay applicable City and County traffic impact fees toward implementing improvements to the Rose Avenue & Bard Road intersection that adds a third northbound thru lane and a third southbound thru lane by removing the existing northbound and southbound right turn lanes.	applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	building permits or as otherwise agreed upon with the City	Services Division
I-29 *Rice Avenue & Camino Del Sol:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rice Avenue & Camino Del Sol intersection that adds a second eastbound left turn lane which will mitigate both Project and cumulative (2025 no Project) impacts.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-30 *Rose Avenue & Wooley Road:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rose Avenue & Wooley Road intersection that adds a third southbound thru lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-31 *Rose Avenue & Pleasant Valley Road:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rose Avenue & Pleasant Valley Road intersection that adds a third northbound thru lane and a third southbound thru lane by removing existing northbound and southbound right turn lanes.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-32 *SR-1/Rice NB & Pleasant Valley Road:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the SR- 1/Rice NB & Pleasant Valley Road intersection that adds a westbound right turn lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
Year 2030			

Mitigation Measure	Action Required	Timing	Enforcement Agency
I-33 *Rice Avenue & Gonzales Road:* The Project developer shall pay applicable City and County traffic impact fees and dedicate additional land to accommodate improvements to the Rice Avenue & Gonzales Road intersection to achieve LOS C, unless the City Council decides this mitigation is infeasible and accepts LOS D for this intersection with an accompanying Statement of Overriding Consideration.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
Ventura Freeway			
I-34 *101 (Ventura) Freeway:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements that are, or are subsequently included, component(s) of the Oxnard Traffic Capital Improvement Program which: 1) extend and connect north- and south-bound Ventura Freeway exit and entrance ramps between Oxnard Blvd and Del Norte Blvd. and/or 2) extend Gonzales Road and/or Ventura Road to Central Avenue.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
J - AIR QUALITY			
The Project together with other pending urban development projects in the City which, even after application of the following mitigation measures, will result in a cumulative effect on greenhouse gas emissions and continuing Basin air quality non-attainment that is considered significant and unavoidable. Accordingly, a Statement of Overriding Considerations was prepared in accordance with CEQA and included within the resolution approving the Specific Plan.			
Construction			
J-1 This is an adaptive management mitigation measure. The	Measures shall be included in	Prior to issuance of	City of Oxnard Planning Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
Project developer shall implement fugitive dust control measures throughout all phases of construction. The Project developer shall include in construction contracts the control measures required and recommended by the VCAPCD at the time of development. These measures, like all EIR mitigation measures, are binding on subsequent parties and developers. Examples of the types of measures currently required and recommended include the following: • Minimize the area disturbed on a daily basis by clearing, grading, earthmoving, and/or excavation operations. • Pre-grading/excavation activities shall include watering the area to be graded or excavated before the commencement of grading or excavation operations. Application of water should penetrate sufficiently to minimize fugitive dust during these activities. • All trucks shall be required to cover their loads as required by California Vehicle Code §23114. • All graded and excavated material, exposed soil areas, and active portions of the construction site, including unpaved on-site roadways, shall be treated to prevent fugitive dust. Treatment shall include, but not necessarily be limited to, periodic watering, application of environmentally-safe soil stabilization materials, and/or roll-compaction as appropriate. Watering shall be done as often as necessary. • Material stockpiles shall be enclosed, covered, stabilized, or otherwise treated, to prevent blowing fugitive dust offsite.	construction documents and implemented during grading and construction.	grading permits and during grading and construction	and Engineering Services Division (building inspectors)

Mitigation Measure	Action Required	Timing	Enforcement Agency
• Graded and/or excavated inactive areas of the construction site shall be monitored by a City-designated monitor at least weekly for dust stabilization. Soil stabilization methods, such as water and roll-compaction, and environmentally-safe control materials, shall be periodically applied to portions of the construction site that are inactive for over four days. If no further grading or excavation operations are planned for the area, the area should be seeded and watered until grass growth is evident, or periodically treated with environmentally-safe dust suppressants, to prevent excessive fugitive dust. • Signs shall be posted on-site limiting on-site traffic to 15 miles per hour or less. • During periods of high winds (i.e., wind speed sufficient to cause fugitive dust to impact adjacent properties), all clearing, grading, earth moving, and excavation operations shall be curtailed to the degree necessary to prevent fugitive dust created by on-site activities and operations from being a nuisance or hazard, either off-site or on-site. The site superintendent/supervisor shall use his/her discretion in conjunction with the VCAPCD is determining when winds are excessive. • Adjacent streets and roads shall be swept at least once per day, preferably at the end of the day, if visible soil material is carried over to adjacent streets and roads. • Personnel involved in grading operations, including contractors and subcontractors should be advised to wear respiratory protection in accordance with			

Mitigation Measure	Action Required	Timing	Enforcement Agency
California Division of Occupational Safety and Health regulations.			
J-2 The Project developer shall implement measures to reduce the emissions of pollutants generated by heavy-duty diesel-powered equipment operating at the Project site throughout the Project construction phases. The Project developer shall include in construction contracts the control measures required and recommended by the VCAPCD at the time of development. Examples of the types of measures currently required and recommended include the following: • Maintain all construction equipment in good condition and in proper tune in accordance with manufacturer's specifications. • Limit truck and equipment idling time to five minutes or less. • Minimize the number of vehicles and equipment operating at the same time during the smog season (May through October). • Use alternatively fueled construction equipment, such as compressed natural gas (CNG), liquefied natural gas (LNG), or electric, to the extent feasible.	Measures shall be included in construction documents and implemented during grading and construction.	Prior to issuance of grading permits and during grading and construction	City of Oxnard Planning Division and Engineering Services Division (building inspectors)
Operations			
J-3 This is an adaptive management mitigation measure. The Project developer shall include in construction and building management contracts one or more of the following requirements or other measures shown to be equally effective: • Use solar or low-emission water heaters in new buildings where feasible and as in common practice in similar new construction in the Oxnard area.	The development review process will condition planning and/or discretionary building projects with these or similar requirements.	Prior to recording of Final Map of first subdivision action.	City of Oxnard Planning Division and Engineering Services Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
• Require that commercial landscapers providing services at the common areas of project site use electric or battery-powered equipment, or other internal combustion equipment that is either certified by the California Air Resources Board or is three years old or less at the time of use, to the extent that such equipment is reasonably available and competitively priced in Ventura County (meaning that the equipment can be easily purchased at stores in Ventura County and the cost of the equipment is not more than 20 percent greater than the cost of standard equipment). • Provide bus stops pull-out areas, and/or shelters at locations along and within the Project site. The number and location of bus stops shall be determined in consultation with Gold Coast Transit and the City Traffic Engineer. Cumulative air quality impact fees (see Mitigation J-6) paid by the Project developer or subsequent interests may be used for some or all of these structures or as credits against the fee and/or to be funded from the fee fund consistent with the City's practice with other projects with similar transit-oriented mitigation requirements.			
J-4 This is an adaptive management mitigation measure. A Project-wide Transportation Demand Management (TDM) program shall be prepared by a qualified consultant for review by the Development Services Director within one year of the recordation of the first Final Tract Map and implemented on a phase by phase basis thereafter. The TDM program shall incorporate best and commonly used trip-reduction incentives, programs, and practices found in	The Project developer will prepare a Project-wide TDM program document for City review and approval.	Within one year of the recordation of the first Final Tract Map and implemented on a phase by phase basis thereafter.	City of Oxnard Planning Division with invited cooperation by Gold Coast Transit.

Mitigation Measure	Action Required	Timing	Enforcement Agency
TDMs of similar projects in terms of allowed uses, size, and transportation and transit service context. The TDM shall, to the maximum extent financially feasible or practical, be coordinated and consistent with Gold Coast Transit service planning, development and/or final adoption of a regional and/or Oxnard Sustainable Communities Strategy (under SB 375), and TDMs or similar efforts of surrounding businesses and organized business and commercial organizations, including but not limited to, the Camino Real Business Park; Proctor and Gamble; Riverpark (The Collections); The Esplanade; The Village; Oxnard Auto Center Dealers Associations; and the McGinnes Ranch, Northgate, and Seagate business parks. The TDM shall include an estimate of Project vehicular trips; a target reduction; a strategy and timeline to achieve the target; and one or more means of an independent sustainable funding program to administer, monitor, and routinely update the TDM program. At the discretion of the City Traffic Engineer based on applicable professional practice, documented and sustained TDM-attributable trip reductions shall be incorporated into future Project-related traffic studies and/or analyses for purposes of calculating traffic fees and/or modifying traffic-related mitigations. The TDM may be implemented on a phase-by-phase basis.			
J-5 This is an adaptive management mitigation measure. The Specific Plan shall include a requirement that all structures with a flat or nearly flat roof area of over 10,000 square feet shall be designed with roof systems capable of supporting equipment that generates electricity from sunlight and/or wind if economically feasible and subject to review by the Fire Department. The roof systems may be designed to	The Specific Plan will be amended with this or similar language in an appropriate section.	Prior to recording of Final Map of first subdivision action.	City of Oxnard Planning Division and Engineering Services Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
service the building and/or enter into a commercially reasonable public or private utility agreement for purposes of generating energy or transmission.			
J-6 This is an adaptive management mitigation measure. The Project developer shall contribute to a cumulative impacts mitigation "buy-down" fund managed by the City based on the Ventura County Air Pollution Control District fee schedule effective at the time a building permit is issued. The fee contribution shall be assessed and paid incrementally as individual buildings are developed. The fee is allocated based on each development's share of average daily trips (ADT) for the Project buildout. The ADT shall be recalculated annually by the City Traffic Engineer or upon request of the Project developer with a payment of a fee determined by the City Traffic Engineer that covers actual time and material costs to the City. The City shall consider transit and traffic demand management improvements and programs suggested by the Project developer, in excess of those otherwise required, as credits against the fee and/or to be funded from the fee fund.	The Project developer(s) shall provide payment as agreed between the developer(s) and the City.	Prior to issuance of applicable building permits to which the buy down mitigation applies	City of Oxnard Engineering Services Division
K - NOISE			
The Project together with other pending urban development projects in the City will result in cumulative roadway noise impacts along Gonzales Road between Rice Avenue and Rose Avenue for which no mitigation measures are feasible and that are considered significant and unavoidable. Accordingly, a Statement of Overriding Considerations was prepared in accordance with CEQA and included within the resolution approving the Specific Plan.			

Mitigation Measure	Action Required	Timing	Enforcement Agency
L - POPULATION AND HOUSING			
L-1 If there is a housing component within the Project of over 10 units, ten percent of the total units within each project or a percentage determined by an economic impact assessment that estimates the need for very low and low income housing created by actual and anticipated development with the Specific Plan, whichever percentage is higher but not to exceed 23 percent, would be developed as affordable housing in a manner consistent with the City's inclusionary housing program for qualified low and moderate income households, to be determined by an economic impact assessment that estimates the need for very low and low income housing created by the actual and anticipated development and the wages paid to their employees. This information shall also be reflected in the Specific Plan document under section 4.7, Affordable Housing.	The development review process for any housing will check for consistency with the Specific Plan and this mitigation.	Prior to approval of the applicable planning permit for housing.	City of Oxnard Planning Division in conjunction with the Oxnard Housing Department.

Mitigation Measure	Action Required	Timing	Enforcement Agency
M - PUBLIC SERVICES			
Fire Station			
M.1-1 The Specific Plan permits the development of 1.7 million square feet of development (approximately 20 percent of allowed development by the Specific Plan) prior to the completion of a fully operational fire station. The exact location of an approximately 1.5-acre site near Rice Avenue and the easterly extension of Gonzales Road and construction of the fire station are subject to a future agreement among City, Oxnard Fire Department (OFD) and Developer.	The Project developer shall reserve an approximately 1.5-acre site for a new fire station within the Project site near Rice Avenue and the easterly extension of Gonzales Road and pay applicable City fees in the amount agreed to by the City, the OFD and Developer.	Prior to the issuance of building permits for projects that would exceed an aggregated total of 1.7 million square feet within the Specific Plan Area.	City of Oxnard Planning Division
Police – Construction			
M.2-1 During all construction activities, the Project or subsequent developer shall ensure that all onsite areas of active development, material and equipment storage, and vehicle staging, be secured with temporary fences to prevent trespass.	Project developer shall obtain a temporary use permit and/or fence permit.	Prior to issuance of building permit	City of Oxnard Engineering Services Division or Public Works Department, depending on type of permit.
Police – Operation			
M.2-2 The building and site design of subsequent developments under the Specific Plan program shall include crime deterrence and prevention features, building security systems, architectural design modifications, surveillance systems, and secure parking facilities. In addition, industrial businesses may be required to enroll into existing Oxnard Police crime prevention programs, depending on the nature of the business.	The development review process incorporates these topics.	Prior to approval of building permits	City of Oxnard Planning Division and/or Engineering Services Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
Schools			
M.3-1 This is an adaptive management mitigation measure. The subsequent developer(s) under the specific plan would be required to pay all applicable school fees to offset the impact of additional student enrollment at schools. No other mitigation measures are required as part of the environmental review process unless State Law changes so as to allow subsequent environmental reviews to identify appropriate feasible mitigations to reduce a significant impact on schools to a level below the significance threshold.	Project developer to provide CC&Rs and other necessary legal language that binds future developers to this mitigation – to be reviewed by the City Attorney – prior to recording of first Final Map.	Prior to recording of first Final Map	City of Oxnard Planning Division
N - UTILITIES			
Water			
N-1 The on-site domestic water system shall include the following: • A public pipeline systems which feed into separate water meters for each ownership. In addition, there shall be separate water meters for each multi-family unit townhouses, but not apartment units. The high-rise residential towers may be master-metered. • A separate water meter (1) for the common landscape areas that would be connected to the future recycled water system. • All domestic water pipelines shall adhere to Division of Occupational Health and Safety (DOHS) requirements for separation between water and recycled water/wastewater pipelines. • The Project developer shall be responsible for	Project developer to incorporate the required water features in the application and provide dedications, connection fees, and related documents and studies as required and requested.	Prior to issuance of building permits.	City of Oxnard Planning Division, Engineering Services Division, and the Public Works Department

Mitigation Measure	Action Required	Timing	Enforcement Agency
payment of capital improvement/connection fees, including all related "installation fees." • The Project developer shall provide the City any approvals necessary to dedicate to the City all FCGMA allocation associated with the Project site, on a phase-by-phase basis and upon the conversion of land from agricultural to urban uses.			
N-2 This is an adaptive management mitigation measure. The Project developer shall provide a recycled water system that serves all practical irrigated areas and which is: (1) separated from the domestic water system, (2) constructed per the City's Recycled Water Construction Standards (being developed), (3) irrigated at night, and (4) properly signed once the system is fully operational. • The portion of the irrigation intended for the future recycled water system shall be separately metered from that portion of the system that will not be connected to the future recycled water system, if any. • Until the recycled water system is operational, the common area irrigation system shall be connected to the domestic system. Once recycled water is available, and connection to the recycled water system is made, the Project developer shall remove the connection to the domestic water system. No domestic water back-up is needed, since the City will provide such back-up including an appropriate air gap facility as part of the City's system. • Prior to the availability of recycled water, the Project developer shall be responsible for payment of the Recycled Water Connection Fee or the water	Project developer to incorporate the required water features in the application and provide dedications, connection fees, and related documents and studies as required and requested. Project developer to provide CC&Rs and other necessary legal language that binds future developers to this mitigation – to be reviewed by the City Attorney – prior to recording of first Final Map.	Prior to issuance of building permits.	City of Oxnard Planning Division, Engineering Services Division, and the Public Works Department

Mitigation Measure	Action Required	Timing	Enforcement Agency
connection fee, whichever is greater for facilities constructed. • At such time as recycled water is available, the Project developer shall be responsible for all costs involved with the re-connection of the applicable portions of the irrigation system to the public recycled water system, including appropriate signage. Credits for connection fees shall be given by the City based on the size of the meter(s). Under no circumstance will there be a refund of water connection fees already paid. • The Project developer shall be responsible for appropriate Sakioka Farms Specific Plan Covenants, Conditions and Restrictions (CC&Rs) covering the use of recycled water and for proper disclosures.			
N-3 This is an adaptive management mitigation measure. The Project developer shall, to the extent feasible, incorporate exterior water conservation features, as recommended by the State Department of Water Resources at the time of adoption or in common practice in the future, into the Project. These shall include, but are not limited to: • Landscaping of common areas with low water-using plants, • Minimizing the use of turf by limiting it to lawn dependent uses, and • Wherever turf is used, installing warm season grasses.	Project developer(s) shall provide landscape plans showing low-water- consuming plant varieties, minimization of turf areas and the appropriate selection of warm season grasses.	Prior to issuance of final building permits and prior to certificates of occupancy	City of Oxnard Planning Division and Engineering Services Division
N-4 This is an adaptive management mitigation measure. The Project developer shall, to the extent feasible, use reclaimed water for irrigation of landscaping and other uses if or when such water is available at the project site.	Project developer(s) shall provide construction plans showing recycled water landscape irrigation design, if and when applicable.	Prior to approval of final building permits.	City of Oxnard Planning Division and Engineering Services Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
N-5 The Project developer shall predominantly use vegetation that requires minimal irrigation (i.e., drought tolerant plant species) in all site landscaping where feasible for new plantings.	Project developer(s) shall provide landscape plans showing low-water- consuming plant varieties.	Prior to approval of final building permits and prior to certificates of occupancy	City of Oxnard Planning Division and Engineering Services Division
N-6 The future water system shall be designed in a loop configuration with connections to the existing 16-inch water line on Del Norte Boulevard.	Project developer(s) shall provide construction plans showing a loop-configuration water system.	Prior to issuance of building permits	City of Engineering Services Division
N-7 The use of a 14-inch line would be feasible and should only be connected to mainlines of 14- inches or larger.	Project developer(s) shall provide construction plans showing appropriate water system connections.	Prior to approval of final building permits	City of Oxnard Engineering Services Division
N-8 Rice Avenue is planned to become a state highway; therefore, no new utilities shall be installed along this roadway.	Project developer(s) construction plans will not show utilities installed in Rice Avenue.	Prior to approval of final building permits that involve frontage along Rice Avenue	City of Oxnard Engineering Services Division
N-9 The Project developer shall ensure that the landscape irrigation system be designed, installed, and tested to provide uniform irrigation coverage. Sprinkler head patterns shall be adjusted to minimize over spray onto walkways and streets.	The Project developer to provide CC&Rs and other necessary legal language that binds future developers to this mitigation – to be reviewed by the City Attorney – prior to recording of first Final Map. The Project developer(s) shall provide construction plans showing the landscape irrigation design.	Prior to recording of first Final Map Prior to approval of final building permits and prior to certificates of occupancy	City of Oxnard Planning Division City of Oxnard Engineering Services Division
N-10 The Project developer shall, to the extent feasible, install a "smart sprinkler" system to provide irrigation for the landscaped areas. Irrigation run times for all zones shall be	Project developer(s) shall provide construction plans showing the landscape irrigation design.	Prior to approval of building permits	City of Oxnard Engineering Services Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
adjusted seasonally, reducing water times and frequency in the cooler months (fall, winter, spring). Sprinkler timer run times shall be automatically adjusted by a state-of-the-art system that relies on local weather forecasts.			
N-11 The Project developer shall install low-flush water toilets in all new construction at the project site. Low-flow faucet aerators shall be installed on all new sink faucets.	Project developer(s) shall provide construction plans meeting the requirements for low-flush toilets and low-flow faucets.	Prior to approval of final building permits	City of Oxnard Engineering Services Division
N-12 This is an adaptive management mitigation measure. The Project's annual water supply deficit of 330 acre feet was estimated using 2010 water use estimates for the theoretical buildout of the entire project. Actual water demand over the buildout of the Project is likely to change as actual development and uses occur and changing water consumption. Subsequent water demand/supply analyses required by subsequent CEQA review may change water supply needs relative to the City's future water supply. The Draft 2010 Urban Water Management Plan (UWMP) incorporates the Project's water demand as proposed. Should subsequent project development incur water demand in excess of that anticipated by the adopted 2010 UWMP and/or the City's water supplies are reduced below those anticipated by the adopted 2010 UWMP, the Project shall, to the extent feasible, implement one or more, but not limited to, the following adaptive measures to remain water neutral to the City's available and projected supply at the time of subsequent project approvals that involve a Negative Declaration, Mitigated Negative Declaration, or Subsequent EIR: **N-12.1** The Project developer shall provide to the City	Project developer shall work with the Public Works Department, Water Section, to review existing and anticipated water demand relative to the City's existing and anticipated supply and choose, if necessary, one or more of the listed mitigations to eliminate a water supply shortage, if identified. This analysis and selection of mitigations, if needed, shall occur during reviews of the master subdivision maps of each Planning Area unless an alternative approach is agreed to in a Development Agreement.	Prior to recordation of the final map for each Planning Area or as otherwise agreed upon with the City	City of Oxnard Planning Division and Engineering Services Division with input from the Public Works Department, Water Section

Mitigation Measure	Action Required	Timing	Enforcement Agency
additional water rights of at least the shortage amount. **N-12.2** The Project developer shall provide to the City water supplies equal to the shortage amount until City supply is adequate. **N-12.3** The Project developer shall provide to the City permanent quantified water offsets in the form of recycled water facilities or conservation retrofits. **N-12.4** The Project developer shall provide to the City financial contributions towards City programs which generate in-City water conservation or recycled water capacity or conveyance. **N-12.5** The Project developer shall participation in other similar programs with cumulatively result in an adequate water supply contribution.			
N-13 The Project developer shall, in a manner as agreed to in the development agreement, participate in an assessment district or similar financing instrument for the construction of a recycled water supply pipeline that will connect into the Project's recycled internal pipelines required by mitigation, or pay applicable connection fees to connect to the City's recycled water line when requested.	Project developer shall in a manner as agreed to in the development agreement provide applicable payment and/or participate in an assessment district.	Prior to recordation of the final tract map or as otherwise required if an assessment district is formed.	City of Oxnard Engineering Services Division
Note: The "Project developer" is defined in this Mitigation Monitoring and Reporting Program as Sakioka Farms, the Project applicant, as well as the eventual individual developers of each parcel within the project site.			

APPENDICES

LIST OF REFERENCE DOCUMENTS

1. City Council Resolution No.14234
   Final EIR (FEIR No. 06-01) Certification, findings of Fact, and Adaptive Mitigation and Monitoring Program

2. City Council Resolution No.14,235
   Specific Plan Adoption (PZ No. 02-640-01)

3. City Council Ordinance No.2858
   Approving Zone Change (PZ No. 02-570-04)

4. Planning Commission Final Resolution Nos. 2011-34/-35/-36

5. Final Environmental Impact Report (FEIR No. 06-01) July 2011
   Sakioka Farms Business Park Specific Plan
   State Clearinghouse No. 2002011070

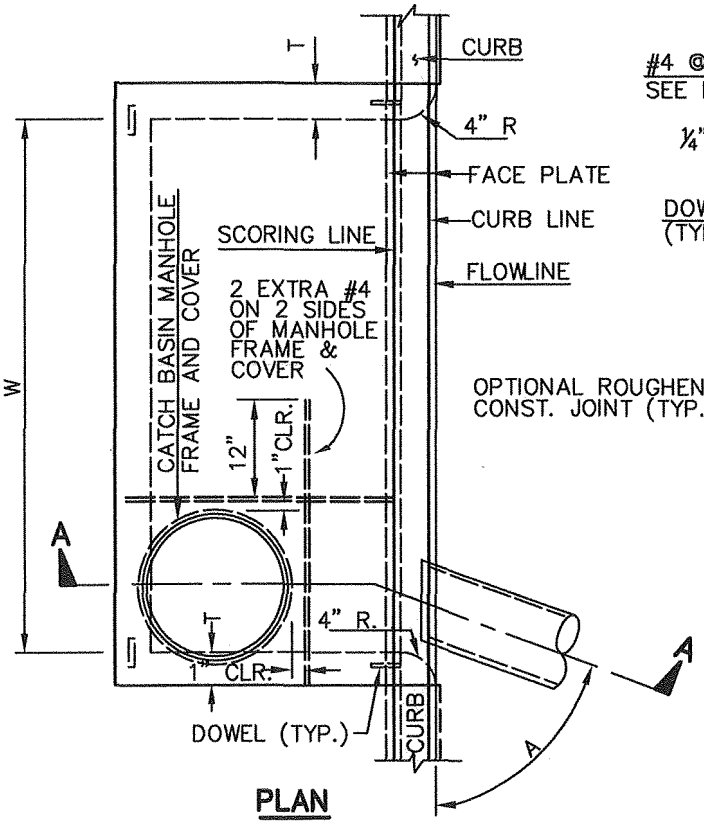
6. Draft Environmental Impact Report (DEIR) September 2010
   Sakioka Farms Business Park Specific Plan

7. Detention Basin Analysis March 3, 2009

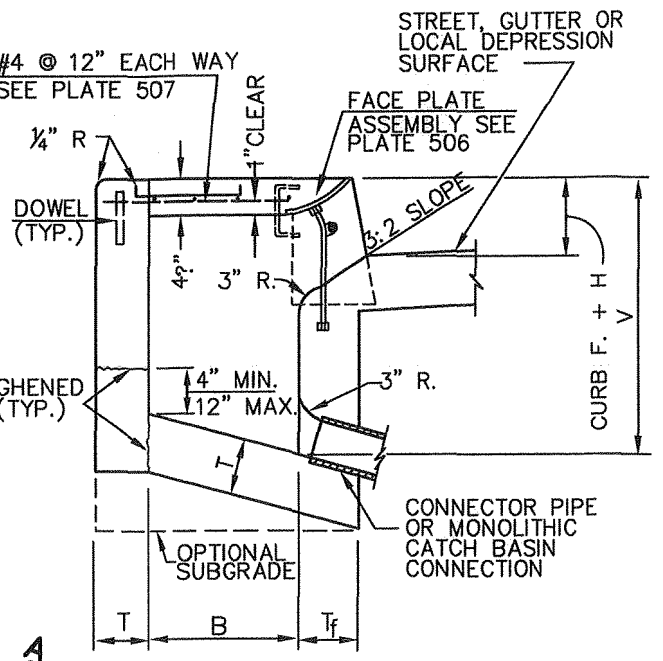
8. Los Angeles Regional Water Quality Board letter, dated 5/12/2012, addressed to the City of Oxnard stating that Sakioka Farms Business Park is subject to the 2002 TGM MS4 permit.

APPENDIX N

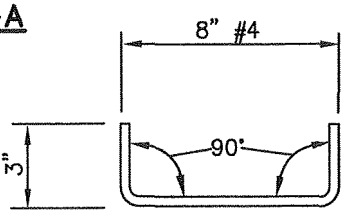
CITY OF OXNARD STANDARD PLATES



PLAN



SECTION A–A



DOWEL DETAIL

STRUCTURAL DATA

WALL AND SLAB DIMENSIONS AND REINFORCEMENT REQUIREMENTS

MAX. W	MAX. V	T	T_f	REINFORCEMENT REQUIRED IN: FRONT WALL	REAR WALL	BOTTOM SLAB	END WALL
3.5'	8'	6"	6"	NO REINFORCEMENT REQUIRED			
3.5'	12'	8"	8"				
7'	6'	6"	6"				
7'	12'	8"	8"				
14'	4'	6"	6"	REINFORCEMENT REQUIRED			
14'	8'	6"	8"				
14'	12'	8"	10"				
21' AND 28'	4'	6"	6"			REQUIRED	
	6'	6"	8"				
	8'	8"	8"				
	10'	8"	10"				
	12'	8"	10"		SEE PLATE 507		

FOR W > 28', V > 12' OR B > 4' SEE PROJECT PLANS

REV.	APPR. BY	DATE

REV.	APPR. BY	DATE

CITY OF Oxnard
Department of Public Works

CURB OPENING CATCH BASIN

DRAWN: STAFF CKD.: PAUL WENDT

APPR. L. Balderrama, PE, City Engineer

STANDARD PLAN 2002

PLATE 501

SHEET 1 OF 2

NOTES:

1. WHERE THE BASIN IS TO BE CONSTRUCTED WITHIN THE LIMITS OF EXISTING OR PROPOSED SIDEWALK OR IS CONTIGUOUS TO SUCH SIDEWALK, THE TOP SLAB OF THE BASIN MAY BE POURED EITHER MONOLITHIC WITH THE SIDEWALK OR SEPARATELY, USING THE SAME CLASS OF CONCRETE AS THE BASIN. WHEN POURED MONOLITHICALLY, THE SIDEWALK SHALL BE PROVIDED WITH A WEAKENED PLANE OR A 1" DEEP SAWCUT CONTINUOUSLY AROUND THE EXTERNAL PERIMETER OF THE CATCH BASIN WALLS, INCLUDING ACROSS THE FULL WIDTH OF THE SIDEWALK. SURFACE OF ALL EXPOSED CONCRETE SHALL CONFORM IN SLOPE, GRADE, COLOR, FINISH, AND SCORING TO EXISTING OR PROPOSED CURB AND WALK ADJACENT TO THE BASIN.

2. ALL CURVED CONCRETE SURFACES SHALL BE FORMED BY CURVED FORMS, AND SHALL NOT BE SHAPED BY PLASTERING.

3. FLOOR OF BASIN SHALL BE GIVEN A STEEL TROWEL FINISH AND SHALL HAVE A LONGITUDINAL AND LATERAL SLOPE OF 1:12 MINIMUM AND 1:3 MAXIMUM, EXCEPT WHERE THE GUTTER GRADE EXCEEDS 8 PERCENT, IN WHICH CASE THE LONGITUDINAL SLOPE OF THE FLOOR SHALL BE THE SAME AS THE GUTTER GRADE. SLOPE FLOOR FROM ALL DIRECTIONS TO THE OUTLET.

4. DIMENSIONS:

   B = 3'-2"

   V = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT OF THE CATCH BASIN AT THE OUTLET = 4.5'.

   V_U = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT AT THE UPSTREAM END OF THE BASIN . V_U SHALL BE DETERMINED BY THE REQUIREMENTS OF NOTE 3, BUT SHALL NOT BE LESS THAN CURB FACE PLUS 12".

   V_I = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT OF THE INLET, NOTED ON THE PROJECT PLANS.

   H =2" UNLESS NOTED ON THE PROJECT PLANS.

   W = NOTED ON THE PROJECT PLANS AND SHALL BE 3.5', 7', 10, 14, OR 21'.

   A = THE ANGLE, IN DEGREES, INTERCEPTED BY THE CENTERLINE OF THE CONNECTOR PIPE AND THE CATCH BASIN WALL TO WHICH THE CONNECTOR PIPE IS ATTACHED.

5. PLACE CONNECTOR PIPES AS INDICATED ON THE PROJECT PLANS. UNLESS OTHERWISE SPECIFIED, THE CONNECTOR PIPE SHALL BE LOCATED AT THE DOWNSTREAM END OF THE BASIN. WHERE THE CONNECTOR PIPE IS SHOWN AT A CORNER, THE CENTERLINE OF THE PIPE SHALL INTERSECT THE INSIDE CORNER OF THE BASIN. THE PIPE MAY BE CUT AND TRIMMED AT A SKEW NECCESSARY TO INSURE MINIMUM 3" PIPE EMBEDMENT, ALL AROUND, WITHIN THE CATCH BASIN WALL, AND 3" RADIUS OF ROUNDING OF STRUCTURE CONCRETE, ALL AROUND, ADJACENT TO PIPE ENDS. A MONOLITHIC CATCH BASIN CONNECTION SHALL BE USED TO JOIN THE CONNECTOR PIPE TO THE CATCH BASIN WHENEVER ANGLE "A" IS LESS THAN 70 DEGREES OR GREATER THAN 110 DEGREES, OR WHENEVER THE CONNECTOR PIPE IS LOCATED IN A CORNER. THE OPTIONAL USE OF A MONOLITHIC CATCH BASIN CONNECTION IN ANY CASE IS PERMITTED. MONOLITHIC CATCH BASIN CONNECTIONS MAY BE CONSTRUCTED TO AVOID CUTTING STANDARD LENGTHS OF PIPE.

6. DOWELS ARE REQUIRED AT EACH CORNER AND AT 7' ON CENTER (MAX.) ALONG THE BACKWALL.

7. ALL CATCH BASINS SHALL INCLUDE INSTALLATION OF A PLACARD STATING "NO DUMPING – DRAINS TO OCEAN" (or WETLANDS or WATERWAYS as applicable). PLACARD SHALL BE PLACED ON THE TOP OF CURB ON THE LEFT SIDE OF THE OPENING ORIENTED SO READABLE FROM THE SIDEWALK. PLACARDS ARE AVAILABLE FROM STORMWATER QUALITY PROGRAM.

8. THE FOLLOWING STANDARD PLANS ARE INCORPORATED HEREIN:
   508 MONOLITHIC CATCH BASIN CONNECTION
   507 CATCH BASIN REINFORCEMENT
   506 CATCH BASIN FACE PLATE ASSEMBLY AND PROTECTION BAR
   510 CATCH BASIN MANHOLE FRAME AND COVER

REV.	APPR. BY	DATE

REV.	APPR. BY	DATE
1	L. Balderrama	08/02/11

CITY OF Oxnard
Department of Public Works

CURB OPENING CATCH BASIN

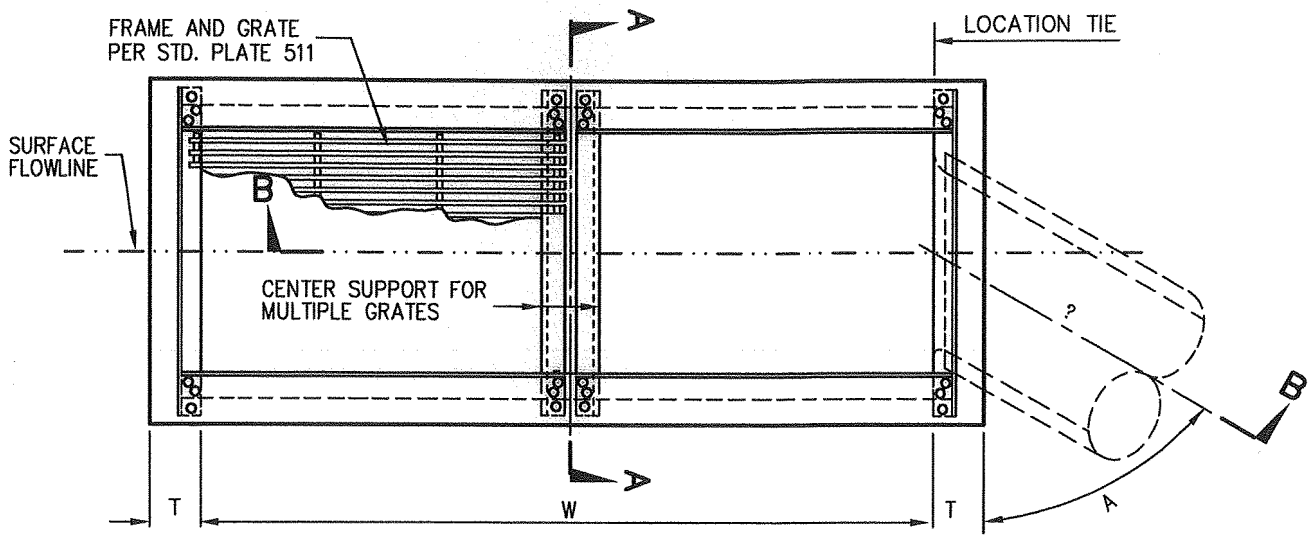
DRAWN: STAFF CKD.: PAUL WENDT

APPR. L. Balderrama, PE, City Engineer

STANDARD PLAN 2002

PLATE 501

SHEET 2 OF 2



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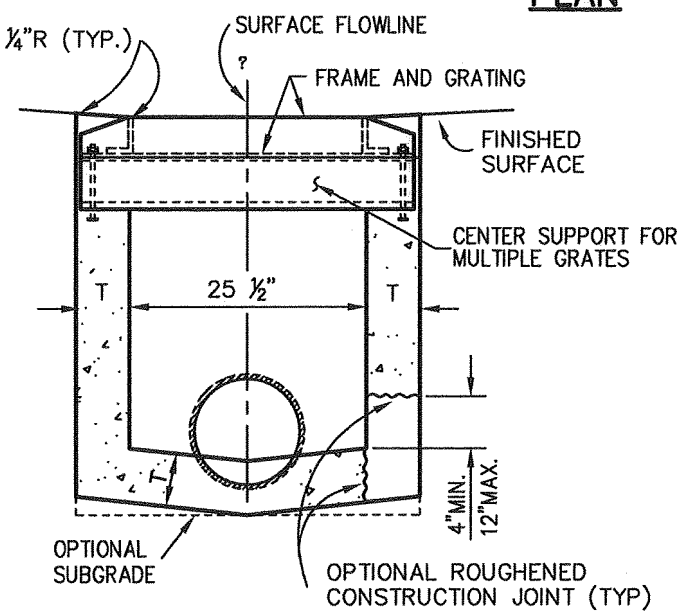
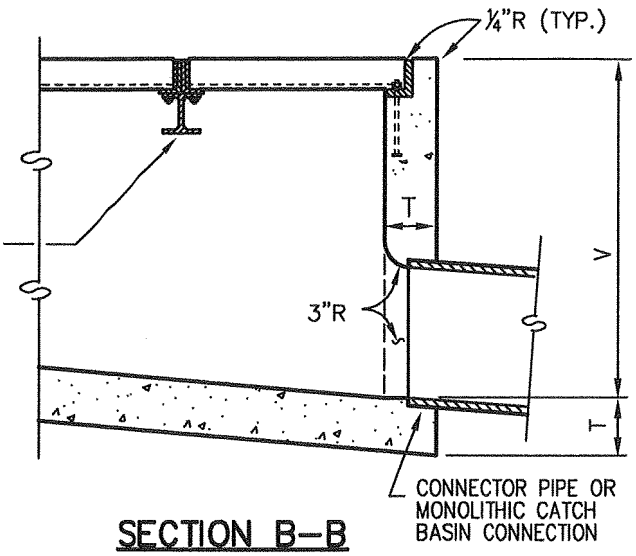


SECTION A–A



SECTION B–B

STRUCTURAL DATA			
WALL AND SLAB DIMENSIONS AND REINFORCEMENT REQUIREMENTS			
NO. OF GRATES	MAX. V	T	REINFORCEMENT FOR WALLS AND SLABS
1–2	4'	6"	NOT REQUIRED
1–2	8'	8"	
1–2	10'	10"	
1–2	12'	10"	REQUIRED
3–4	4'	6"	NOT REQUIRED
3–4	7'	8"	
3–4	8'	8"	REQUIRED
3–4	12'	10"	
5–6	4'	6"	NOT REQUIRED
5–6	6'	8"	
5–6	8'	8"	REQUIRED
5–6	12'	10"	
>6	4'	6"	
>6	8'	8"	
>6	12'	10"	

REV.	APPR. BY	DATE

REV.	APPR. BY	DATE

CITY OF Oxnard
Department of Public Works

GRATED CATCH BASIN–ALLEY (LONGITUDINAL)

DRAWN: STAFF CKD.: PAUL WENDT

APPR. L. Balderrama, PE, City Engineer

STANDARD PLAN 2002

PLATE 504

SHEET 1 OF 2

NOTES:

1. ALL CURVED CONCRETE SURFACES SHALL BE FORMED BY CURVED FORMS, AND SHALL NOT BE SHAPED BY PLASTERING.

2. FLOOR OF BASIN SHALL BE GIVEN A STEEL TROWEL FINISH AND SHALL HAVE A LONGITUDINAL AND LATERAL SLOPE OF 1:12 MINIMUM AND 1:3 MAXIMUM, EXCEPT WHERE THE GUTTER GRADE EXCEEDS 8 PERCENT, IN WHICH CASE THE LONGITUDINAL SLOPE OF THE FLOOR SHALL BE THE SAME AS THE GUTTER GRADE. SLOPE FLOOR FROM ALL DIRECTIONS TO THE OUTLET.

3. DIMENSIONS:

   V = 3.5 FT.

   V_U = THE DEPTH AT THE UPSTREAM END OF THE BASIN AND SHALL BE DETERMINED BY THE REQUIREMENTS OF NOTE 2, BUT SHALL NOT BE LESS THAN 2.5'.

   V_I = THE DEPTH AT THE INVERT OF THE INLET. NOTED ON PLANS.

   W = 2'–11 ⅜" FOR ONE GRATING ADD 3'–5 ⅜" FOR EACH ADDITIONAL GRATING.

   A = THE ANGLE, IN DEGREES, INTERCEPTED BY THE CENTERLINE OF THE CONNECTOR PIPE AND THE CATCH BASIN WALL TO WHICH THE CONNECTOR PIPE IS ATTACHED.

4. PLACE CONNECTOR PIPES AS INDICATED ON THE PROJECT PLANS. UNLESS OTHERWISE SPECIFIED, THE CONNECTOR PIPE SHALL BE LOCATED AT THE DOWNSTREAM END OF THE BASIN. WHERE THE CONNECTOR PIPE IS SHOWN AT A CORNER, THE CENTERLINE OF THE PIPE SHALL INTERSECT THE INSIDE CORNER OF THE BASIN. THE PIPE MAY BE CUT AND TRIMMED AT A SKEW NECCESSARY TO INSURE MINIMUM 3" PIPE EMBEDMENT, ALL AROUND, WITHIN THE CATCH BASIN WALL, AND 3" RADIUS OF ROUNDING OF STRUCTURE CONCRETE, ALL AROUND, ADJACENT TO PIPE ENDS. A MONOLITHIC CATCH BASIN CONNECTION SHALL BE USED TO JOIN THE CONNECTOR PIPE TO THE CATCH BASIN WHENEVER ANGLE "A" IS LESS THAN 70 DEGREES OR GREATER THAN 110 DEGREES, OR WHENEVER THE CONNECTOR PIPE IS LOCATED IN A CORNER. THE OPTIONAL USE OF A MONOLITHIC CATCH BASIN CONNECTION IN ANY CASE IS PERMITTED. MONOLITHIC CATCH BASIN CONNECTIONS MAY BE CONSTRUCTED TO AVOID CUTTING STANDARD LENGTHS OF PIPE.

1 5. ALL CATCH BASINS SHALL INCLUDE INSTALLATION OF A PLACARD STATING "NO DUMPING – DRAINS TO OCEAN" (or WETLANDS or WATERWAYS as applicable). PLACARD SHALL BE PLACED ON THE TOP OF CURB ON THE LEFT SIDE OF THE OPENING ORIENTED SO READABLE FROM THE SIDEWALK. PLACARDS ARE AVAILABLE FROM STORMWATER QUALITY PROGRAM.

6. THE FOLLOWING STANDARD PLANS ARE INCORPORATED HEREIN:
   508 MONOLITHIC CATCH BASIN CONNECTION
   507 CATCH BASIN REINFORCEMENT
   511 FRAME AND GRATING FOR CATCH BASINS

7. ONE GRATING IS REQUIRED UNLESS OTHERWISE SHOWN ON THE PROJECT PLANS.

REV.	APPR. BY	DATE

REV.	APPR. BY	DATE
1	L. Balderrama	08/02/11

CITY OF Oxnard
Department of Public Works

GRATED CATCH BASIN–ALLEY (LONGITUDINAL)

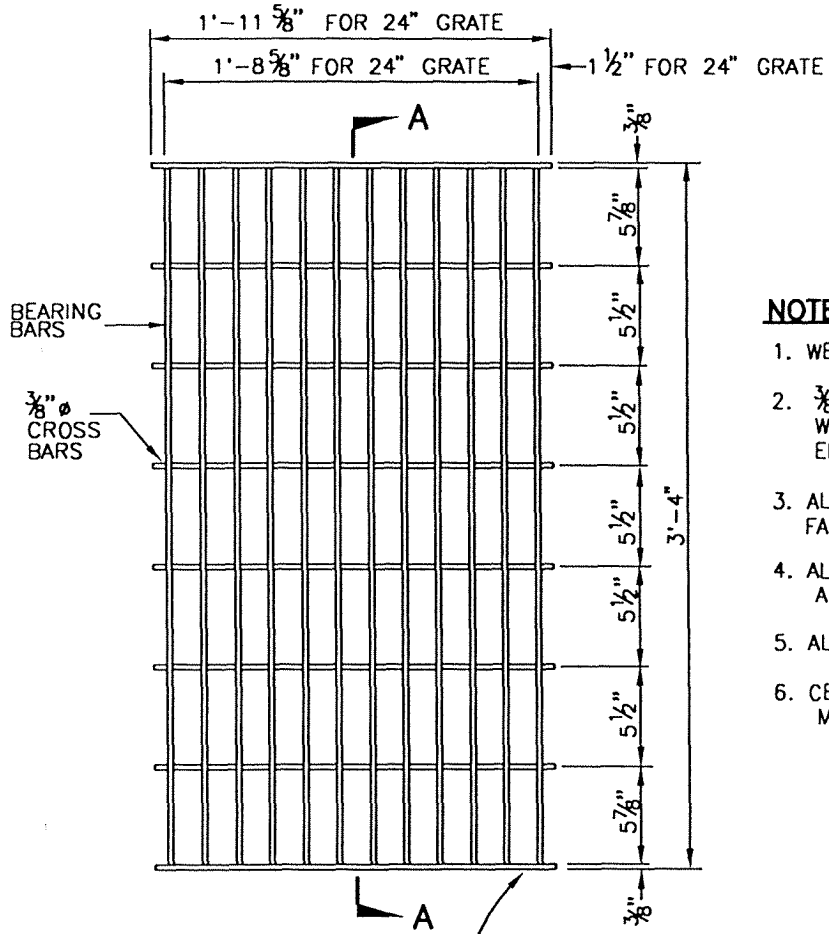
DRAWN: STAFF CKD.: PAUL WENDT

APPR. L. Balderrama, PE, City Engineer

STANDARD PLAN 2002

PLATE 504

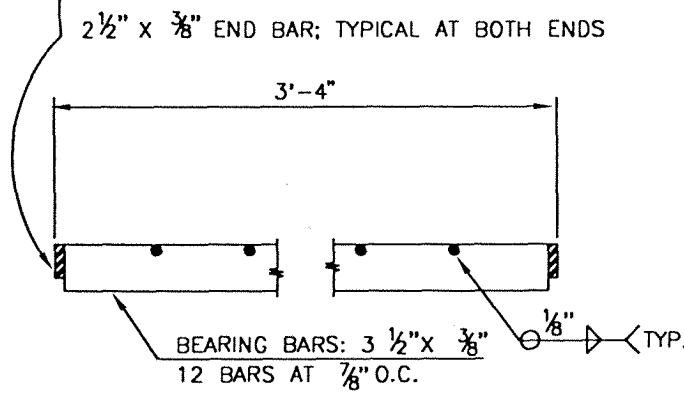
SHEET 2 OF 2



PLAN

NOTES:

1. WEIGHT OF 24" GRATE = 192 LBS.
2. 3/8"ø CROSS BARS MAY BE FILLET WELDED, RESISTANCE WELDED, OR ELECTRO-FORGED TO BEARING BARS.
3. ALL PARTS ARE TO BE GALVANIZED AFTER FABRICATION.
4. ALL DIMENSIONS ARE FINISHED DIMENSIONS, AND INCLUDE GALVANIZING.
5. ALL THREADS SHALL BE NATIONAL COARSE.
6. CENTER SUPPORT ASSEMBLY REQUIRED WHEN MORE THAN ONE GRATE IS CALLED FOR.



SECTION A-A

REV.	APPR. BY	DATE

REV.	APPR. BY	DATE

ATTENTION: PREFER CURB OPENING C.B., NO C.B. WITH GRATES IS PERMITTED WITHOUT PRIOR APPROVAL.

CITY OF Oxnard

Department of Public Works

BICYCLE PROOF GRATE DETAILS

DRAWN: STAFF CKD.: STAFF

APPR. Granville M. Bowman

STANDARD PLAN 2002

PLATE 511

SHEET 1 OF 1

F.2 - Stormwater Quality Management Plan

draft

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1st Submittal

Stormwater Quality Management Plan

Prepared in accordance with the Ventura County Technical Guidance Manual

for Stormwater Quality Control Measures, Manual Update 2011, Errata Update 2018

For Tract ### (or Planning and Zoning Permit ##-###-###)

Project Bruin
Oxnard, California

Southwest Corner of Ventura Freeway & N Del Norte Boulevard

Date:

March 2020

Prepared for:

Seefried Industrial Properties, Inc.

2201 E. Camelback Road, Suite 225B

Phoenix, AZ 85016

310.536.7900

Stormwater Quality Management Plan
Project Bruin

MARCH 2020 | ENTITLEMENT SUBMITTAL

Prepared By:

Kimley»Horn

Project Owner's Certification

This Stormwater Quality Management Plan (SWQMP) has been prepared for Seefried Industrial Properties, Inc. by Kimley-Horn and Associates. The SWQMP is intended to comply with the requirements of the City of Oxnard, Ventura County and the NPDES Areawide Stormwater Program requiring the preparation of a SWQMP. The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with Ventura County Technical Guidance Manual for Stormwater Quality Control Measures, Manual Update 2011, Errata Update 2018, and the intent of the NPDES Permit for Ventura County. Once the undersigned transfers its interest in the property, its successors in interest and the City of Oxnard and Ventura County shall be notified of the transfer. The new owner will be informed of its responsibility under this SWQMP. A copy of the approved SWQMP shall be available on the subject site in perpetuity.

"I certify under a penalty of law that the provisions (implementation, operation, maintenance, and funding) of the WQMP have been accepted and that the plan will be transferred to future successors."

Project Data			
Permit/Application Number(s):	TBD	Grading Permit Number(s):	TBD
Tract/Parcel Map Number(s):	Tract No. 5996-1; Lot 8, 9, 10, 11, and 12	Building Permit Number(s):	TBD
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract):			APN 216-0-030-155

Owner's Signature			
Owner Name: Jason Quintel			
Title	Senior Vice President – Western Region		
Company	Seefried Industrial Properties, Inc.		
Address	527 W. 7th Street, Suite 308, Los Angeles, CA 90014		
Email	jasonquintel@seefriedproperties.com		
Telephone #	602-337-8730, Ext. 28		
Signature		Date	

Preparer's Certification

Project Data			
Permit/Application Number(s):	TBD	Grading Permit Number(s):	TBD
Tract/Parcel Map Number(s):	Tract No. 5996-1; Lot 8, 9, 10, 11, and 12	Building Permit Number(s):	TBD
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract):			APN 216-0-030-155

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan were prepared under my oversight and meet the requirements of Regional Water Quality Control Board Order No. R4-2010-0108."

Engineer: Davie Cowan, CA PE #86803		PE Stamp Below
Title	Civil Engineer	
Company	Kimley-Horn and Associates	
Address	401 B Street, Suite 600, San Diego, CA 92101	
Email	Davie.cowan@kimley-horn.com	
Telephone #	619-744-0144	
Signature		
Date		

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Appendix C BMP Educational Material

Appendix D WQMP Agreement

Appendix E BMP Operation and Maintenance

Appendix F Hydromodification Control Plan Applicability Map

Appendix G Geotechnical Report

Appendix H Project Bruin Hydrology and Hydraulic Drainage Report

Appendix I Project Bruin Civil Engineering Plans

Appendix J Sakioka Farms Business Park Master Drainage Report

SECTION 1 DISCRETIONARY PERMIT(S)

Project Information					
Project Name	Project Bruin				
Project Owner Contact Name:	Jason Quintel				
Mailing Address:	2201 E. Camelback Road, Suite 225B	E-mail Address:	jasonquintel@seefriedproperties.com	Telephone:	602-337-8730, Ext. 28
Permit/Application Number(s):	TBD		Tract/Parcel Map Number(s):	TBD	
Additional Information/ Comments:					
Description of Project:	Seefried Properties, Inc. intends to develop a multi-level distribution center within the Sakioka Farms Business Park Specific Plan (SFBP SP) located in the City of Oxnard, CA. The existing Sakioka Farms Business Park Specific Plan area covers approximately 430 acres located in the northeastern portion of the City of Oxnard. The site is bounded on the north by Ventura Freeway (U.S. Route 101)' on the east by the Oxnard-Camarillo Greenbelt (agricultural preserve); on the south by the existing Proctor & Gamble plant and portion of the McInnes Ranch Business Park, and on the west by Rice Avenue. Refer to **Appendix A: Figure 1-1** for the Regional Map of Ventura County with the location of the Sakioka Farms Business Park Specific Plan location. Within the SFBP SP, Project Bruin is located within the Light Industrial land use area that consistent of approximately 300-acres. Based on the Specific Plan, refer to **Appendix A: Figure 1-2** for 2030 General Plan Use for the SFBP SP, and **Appendix A: Figure 1-3** for the Project Site Location. Per the SFBP SP Tentative Tract Map No. 5996-1, Project Bruin will be located on Lot 8, 9, 10, 11, and 12 for a combined project site of approximately 64.65-acres. Project Bruin proposes an 857,173 SF multi-level distribution center, employee parking, trailer parking, and trailer storage on the site. Refer to **Appendix A: Figure 1-4** for the project site plan. This Stormwater Quality Management Plan includes the analysis for the post-development condition with water quality Best Management Practices (BMPs). This project will utilize bioretention with underdrain (BIO-1)and Proprietary Biotreatment (BIO-5). Conveyance of water quality storm events will be through the Project Bruin storm drain system, **Appendix H**. The Project Bruin storm drain system will discharge into the Sakioka Farm Business Park Regional Drainage Facility, located on Lot A and Lot B of Tract Map No. 5996-1. The Sakioka Farm Business Park Regional Drainage Study has been provided in **Appendix J** of the Storm Water Quality Management Plan.				

1.1 PROPERTY OWNERSHIP/MANAGEMENT

Property Ownership/Management
Describe property ownership/management responsible for long-term maintenance of WQMP stormwater facilities:
The project site, including the proposed building, paved areas, landscape areas, onsite utilities and the BMPs included within this WQMP will be owned, operated and maintained by Seefried Industrial Properties, Inc. and/or lease/tenant transaction occurs. No transfer of infrastructure to public agencies is anticipated. Long-term stormwater facility maintenance will be conducted by Seefried Industrial Properties, Inc. and/or Lease/Tenant.

SECTION 2 STORMWATER MANAGEMENT STANDARDS

2.1. INTRODUCTION

The selection of appropriate stormwater management control measures should be a collaborative effort between the project proponent and the local permitting agency staff. It is recommended that discussion between project planners, engineers, and local permitting agency staff regarding selection of stormwater management control measures occur earlier in the design process.

2.2. PROJECT APPLICABILITY

VENTURA COUNTY MS-4 PERMIT ORDER NO. R4-2010-0108

The City of Oxnard is a co-permittee of the Ventura County MS-4 Permit Order No. R4-2010-00108. New development and redevelopment projects meeting the applicability criteria contained in Section 4.E.11 of Order R4-2010-0109 [presented in Section 1.5 of the 2011 TGM] must include control measures specific in the 2011 TGM.

The following information regarding “Purpose” has been derived from Order R4-2010-0108:

a) Lessen the water quality impacts of development by using smart growth practices such as compact development, direction development towards existing communities via infill or redevelopment, safe guarding of environmentally sensitive areas, mixing of land uses (e.g., homes offices, and shops), transit accessibility, and better pedestrian bicycle amenities.

b) Minimize the adverse impacts from storm water runoff on the biological integrity of Natural Drainage Systems and the beneficial use of waterbodies in accordance with the requirements under CEQA (Cal. Pub. Resources Code § 21100).

c) Minimize the percentage of effective impervious surfaces on land developments to mimic predevelopment water balance through infiltration, evapotranspiration, and reuse.

d) Minimize pollutant loadings from impervious surfaces such as roof-tops, parking lots, and roadways through the use of properly designed, technically appropriate BMPs (including Source Control BMPs such as good housekeeping practices), Low Impact Development Strategies, and Treatment Control BMPs.

e) Properly select, design and maintain Treatment Control BMPs and Hydromodification Control BMPs to address pollutants that are likely to be generated, assure long-term function, and to avoid the breeding of vectors.

f) Prioritize the selection of BMPs suites to remove storm water pollutants, reduce storm water runoff volume, and beneficially reuse storm water to support and integrated approach to protecting water quality and managing water resources in the following order of preference:

    - Infiltration BMPs
    - BMPs that store and reuse storm water runoff
    - BMPs that incorporate vegetation to promote pollutant removal and runoff volume reduction and integrate multiple uses

- BMPs which percolate runoff through engineered soil and allow it to discharge downstream slowly
- Approved modular/proprietary treatment control BMPs that are based on LID concepts and that meet pollution removal goals

The following information regarding "New Development Performance Criteria" has been derived from Order R4-2010-0109:

1. Integrated Water Quality/ Flow Reduction/Resources Management Criteria

a) Except as provided in subpart 4.E.III.1.(c), Permittees shall require all New Development and Redevelopment projects identified in subpart 4.E.II to control pollutants, pollutant loads, and runoff volume emanating from impervious surfaces through infiltration, storage for reuse, evapotranspiration, or bioretention/ biofiltration by reducing the percentage of Effective Impervious Area (EIA) to 5 percent or less of the total project area.

b) Impervious surfaces may be rendered "ineffective", and thus not count toward the 5 percent EIA limitation, if the stormwater runoff from those surfaces is fully retained on-site for the design storm event specified in provision (c), below. To satisfy the EIA limitation and low-impact development requirements, the permittees must require stormwater runoff to be infiltrated, reused, or evapotranspired on-site through a stormwater management technique allowed under the terms of this permit and implementing documents. If on-site retention is determined to be technically infeasible pursuant to 4.E.III.2(b), an on-site biofiltration system that achieves equivalent stormwater volume and pollutant load reduction as would have been achieved by on-site retention shall satisfy the EIA limitation. An on-site biofiltration system that releases above the design volume shall achieve 1.5 times the amount of stormwater volume and pollutant load reduction as would have been achieved by on-site retention and, thereby, shall satisfy the EIA limitation.

c) The permittees shall require all features constructed or otherwise utilized to render impervious surfaces "ineffective", as described in provision (b), above, to be properly sized to infiltrate, store for reuse, or evapotranspire, without any runoff at least the volume of water, or in the case of biofiltration with release above the design volume, 1.5 times the volume of water, that results from:

- The 85th percentile 24-hour runoff event determined as the maximized capture stormwater volume for the area using a 48 to 72-hour draw down time, from the formula recommended in Urban Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87, (1998);
- The volume of annual runoff based on unit basin storage water quality volume, to achieve 80 percent or more volume treatment by the method recommended in the Ventura County Technical Guidance Manual for Storm Water Quality Control Measures (July 2002 and its revisions); or
- The volume of runoff produced from a 0.75-inch storm event.

d) To address any impervious surfaces that may not be rendered "ineffective", surface discharge of stormwater runoff if any, that results from New Development and Redevelopment projects identified in subpart 4.E.II which have complied with subparts 4.E.III.1.(a)-(c), above, shall be mitigated in accordance with subpart 4.E.III.4.

2. Alternative Compliance for Technical Infeasibility

a) To encourage smart growth and infill development of existing urban centers where on-site compliance with post-construction requirements may be technically infeasible, the permittees may allow projects that are unable to meet the Integrated Water Quality/Flow Reduction/Resources Management Criteria in subpart 4.E.III.1, above, to comply with this permit through the alternative compliance measures described in subpart 4.E.III.2.(c), below.

b) To utilize alternative compliance measures, the project applicant must demonstrate that compliance with the applicable post-construction requirements would be technically infeasible by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer, geologist, architect, and/or landscape architect. Technical infeasibility may result from conditions including the following:

1. Locations where seasonal high groundwater is within 5 feet of the surface
2. Locations within 100 feet of a groundwater well used for drinking water
3. Brownfield development sites or other locations where pollutant mobilization is a documented concern
4. Locations with potential geotechnical hazards
5. Smart growth and infill or redevelopment locations where the density and/ or nature of the project would create significant difficulty for compliance with the on-site volume retention requirement
6. Other site or implementation constraints identified in the LID Technical Guidance document required by subpart 4.E.IV.4.

c) Alternative Compliance Measures. When a permittee finds that a project applicant has demonstrated technical infeasibility, the permittee shall identify alternative compliance measures that the project will need to comply with as a substitute for the otherwise applicable post-construction requirements listed in subparts 4.E.III.1.(a)-(c) of this permit. The Ventura County Technical Guidance Manual shall be revised to identify the alternative compliance measures and shall include the following requirement:

1. Minimum on-site requirement. The project must take all feasible measures to reduce the percentage of Effective Impervious Area to no more than 30 percent of the total project area and treat all remaining runoff pursuant to the design and sizing requirements of subparts 4.E.III.1.(b)-(d). (2) Offsite mitigation volume. The difference in volume between the amount of stormwater infiltrated, reused, and/ or evapotranspired and/or biofiltered by the project on-site and the otherwise applicable requirements of subparts 4.E.III.1.(a)-(c) (the "offsite mitigation volume'), above, must be mitigated by the project applicant either by performing offsite mitigation that is approved by the permittee or by providing sufficient funding for public or private offsite mitigation to achieve equivalent stormwater volume and pollutant load reduction through infiltration, reuse, evapotranspiration and/ or biofiltration. For projects with demonstrable technical infeasibility that cannot reduce the Effective Impervious Area to 5% or less of the total project, but are able to reduce the Effective Impervious Area to no more than 30 percent of the total project, mitigation or payment in lieu must be equivalent to the amount of stormwater not managed on site.

2. For projects with demonstrable technical infeasibility that cannot reduce the Effective Impervious Area to 30% of the total project or less, mitigation or payment in lieu must be for 1.5 times the amount of stormwater not managed on site

3. Location of offsite mitigation. Offsite mitigation projects must be located in the same sub-watershed (defined as draining to the same hydrologic area in the Basin Plan) as the new development or redevelopment project. A list of eligible public and private offsite mitigation projects available for funding shall be identified by the Permittees and provided to the project applicant. Offsite mitigation projects include green streets projects, parking lot retrofits, other site specific LID BMPs, and regional BMPs. Project applicants seeking to utilize these alternative compliance provisions may propose other offsite mitigation projects, which the Permittees may approve if they meet the requirements of this subpart.

4. Timing and Reporting Requirements for Offsite Mitigation Projects. The Permittee(s) shall develop a schedule for the completion of offsite mitigation projects, including milestone dates to identify fund, design, and construct the projects. Offsite mitigation projects shall be completed as soon as possible, and at the latest, within 4 years of the certificate of occupancy for the first project that contributed funds toward the construction of the offsite mitigation project, unless a longer period is otherwise authorized by the Executive Officer. For public offsite mitigation projects, the permittees must provide in their annual reports a summary of total offsite mitigation funds raised to date and a description (including location, general design concept, volume of water expected to be retained, and total estimated budget) of all pending public offsite mitigation projects. Funding sufficient to address the offsite mitigation volume must be transferred to the permittee (for public offsite mitigation projects) or to an escrow account (for private offsite mitigation projects) within one year of the initiation of construction.

5. The project applicant must demonstrate that the EIA achieved on-site is as close to 5 percent EIA as technically feasible, given the site's constraints.

d) Watershed equivalence. Regardless of the methods through which permittees allow project applicants to implement alternative compliance measures, the sub-watershed -wide (defined as draining to the same hydrologic area in the Basin Plan) result of all development must be at least the same level of water quality protection as would have been achieved if all projects utilizing these alternative compliance provisions had complied with subparts 4.E.III.1.(a)-(d) of the permit. The permittees shall provide in their annual report to the Regional Board a list of mitigation project descriptions and pollutant and flow reduction analyses (compiled from design specifications submitted by project applicants and approved by the permittee(s)) comparing the expected aggregate results of alternative compliance projects to the results that would otherwise have been achieved by meeting the 5 percent EIA requirement on-site.

Applicability			
New Development Projects			
☒ All development projects equal to 1 acre or greater of disturbed area and adding more than 10,000 square feet of impervious surface area	☒Industrial park 10,000 square feet or more of surface area	☐ Commercial strip mall 10,000 square feet or more of impervious surface area	☐Retail gasoline outlet 5,000 square feet or more of surface area
☐ Restaurant (SIC 5812) 5,000 square feet or more of surface area	☒ Parking lot 5,000 square feet or more of impervious surface area, or with 25 of more parking spaces	☐ Streets, roads, highways, and freeway construction of 10,000 square feet of more of impervious surface area shall incorporate USEPA guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets to the maximum extent practicable.	☐ Automotive service facilities (SIC 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) [5,000 square feet of more of surface area]
☐ Redevelopment projects in subject categories that meet Redevelopment thresholds (identified in subpart E.II.2)	☐ Project located in or directly adjacent to an Environmentally Sensitive Area (ESA), where the development will: (A) Discharge storm water runoff that is likely to impact a sensitive biological species or habitat; and (B) Create 2,500 square feet or more of impervious surface area.	☐ Single family hillside homes.	☐ Redevelopment Project
Project Area (ft2):	2,815,985 SF (64.65 AC)	SIC Code: 1541	
Is Project going to be phased? Yes ☐ No ☒			
Does Project include roads? Yes ☐ No ☒			

DECISION FLOWCHART

STORMWATER MANAGEMENT STANDARDS

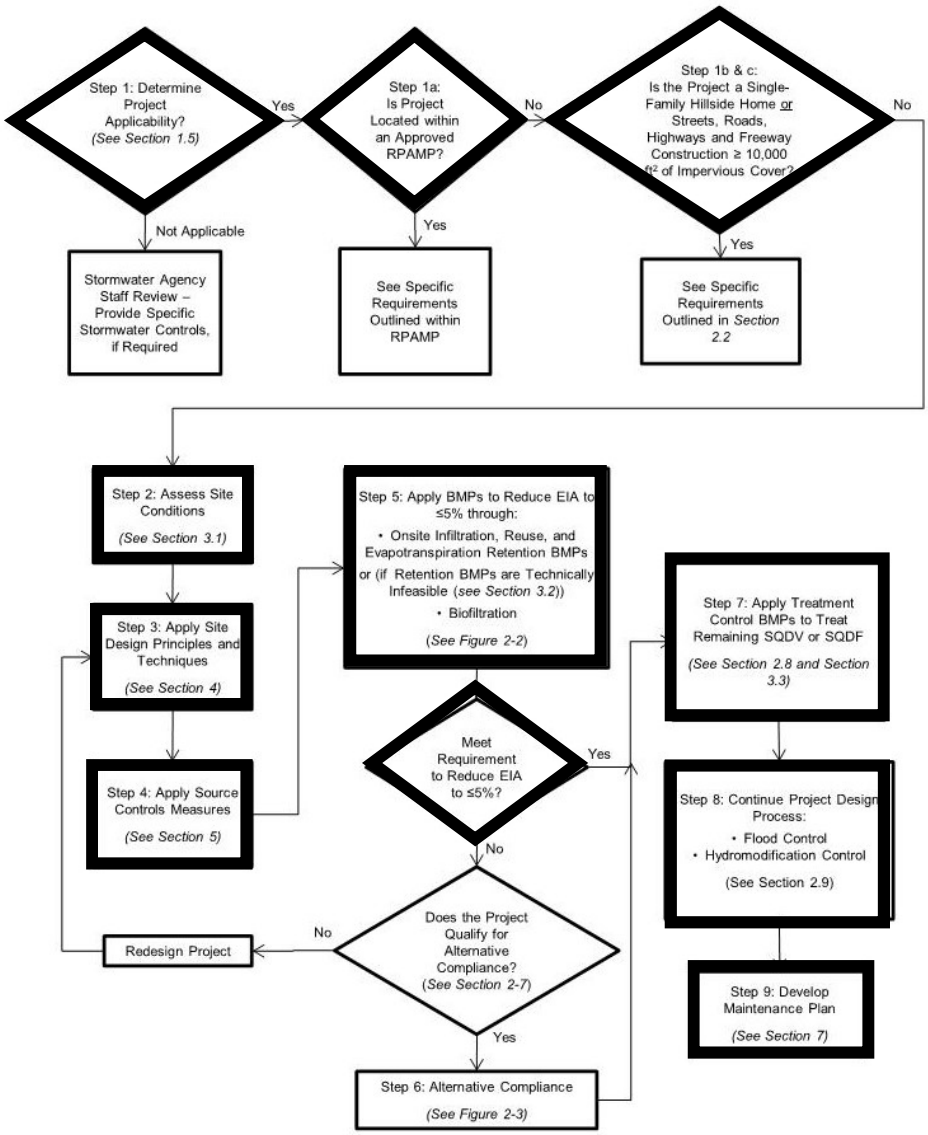

Figure 2-1: Stormwater Management Control Measures Design Decision Flowchart

SECTION 3 SITE ASSESSMENT AND BMP SELECTION

The next step is to collect site information that is critical for the selection and implementation of Retention BMPs, Biofiltration BMPs, and Treatment Control Measures. The following information should be documented: topography, soil type and geology, groundwater, geotechnical considerations, offsite drainage, existing utilities, and Environmentally Sensitive Areas. In addition, soil and infiltration testing should be conducted. Detailed guidance on assessing site conditions can be found in Section 3.1.

3.1. ASSESSING SITE CONDITIONS AND OTHER CONSTRAINTS

Site Conditions	
Topography	The proposed project grading plan consists of areas of paved and pervious areas. Majority of the paved areas have a slope that ranges from 1.0% to 5.0% depending on the location. The pervious areas have a slope that ranges from 1.0% to 50% (2:1 slopes). The pervious area with considerable slope is located in an above ground detention basin for the 100-year storm event.
Soil Type and Geology	Based on the Natural Resource Conservation Service (NRCS) of the U.S. Department of Agriculture, Project Bruin is mainly NRCS Hydrologic Soils Group B, 93%. There is a section of the site that is NRCS Hydrologic Soils Group C, 7%. Based on the Ventura County Hydrology Manual, Group B soils correspond to Ventura County soil numbers 4 and 5.
Infiltration Data	Infiltration-based BMPs should be feasible in areas mapped with Ventura County Soil Numbers 4 through 7. Based on the site-specific infiltration testing performed by Terracon Consultants, Inc. on May 11, 2018, the infiltration rates of six (6) borings for the site were recorded as followed in inch/hr: 0.44, <0.1, 0.15, 1.35, 0.31, and 0.11. Based on these results, the average infiltration rate was 0.4 in./hr., which is lower than the 0.5 in.hr. considered feasible for infiltration. Therefore, infiltration has been considered infeasible for this project.
Groundwater Consideration	Based on the Terracon Consultants, Inc. Geotechnical Report, groundwater was observed in the test borings at depths ranging between 3 and 11 feet below ground surface (bgs) at the time of the field exploration. Based on the existing topography and proposed grading, it is assumed that groundwater would prohibit the use of infiltration at the site as depth to groundwater would be less than five feet of separation.
Geotechnical Considerations	1. This project is located in a seismically active area; 2. This project is located within a potential liquefaction hazard zone as designated by the California Geologic Survey (CGS); 3. Historical high ground water in the project vicinity is shallower than 10 feet below the surface; 4. Based on the liquefication study, the project site seismically-induced settlements are expected to range between 2.4 and 3 inches and seismically-induced dry sand differential settlements are expected to range between 1.3 to 2.0 inches.

Managing Offsite Drainage	There are no anticipated offsite run-on drainage flows from surrounding roadway infrastructure or existing land.
Existing Utilities	There are no existing utilities on the project site. BMPs will be located away from proposed utilities of water, sewer, power, and communications.
Environmentally Sensitive Areas	There are no identified Environmentally Sensitive Areas (ESAs) located on the project site.

3.2. TECHNICAL FEASIBILITY SCREENING

Technical Infeasibility List	Description	Applicable
1	Locations where seasonal high groundwater or mounded groundwater beneath an infiltration BMP is within 5 feet of the bottom of the infiltration BMP	Yes
2	Location on the project site where soils are mapped with Ventura Hydrology Manual Soil Numbers 1-2 or site-specific analyses show that the soils have an infiltration rate less than 0.3 inches per hours. Locations where soils are mapped with Ventura Hydrology Manual Soil Number 3, or where a site-specific analysis have an infiltration rate of 0.3 to 0.5 inches per hour, and no other infiltration-related infeasibility apply, shall use a Bioinfiltration BMP or Rainwater Harvesting (if feasible) to achieve the 5% EIA requirement	Yes
3	Locations on the project site within 100 feet of a groundwater well used for drinking water, non-potable wells, drain fields, and springs; locations less than 50 feet away from slopes steeper than 15 percent or an alternative setback established by the geotechnical expert for the project; and locations less than eight feet from building foundations or an alternative setback established by the geotechnical expert for the project.	No
4	Locations where pollutant mobilization is a documented concern, unless a site-specific analysis determines that infiltration would not be detrimental. Portions of brownfield development sites may be eligible for alternative compliance where pollutant mobilization is a concern.	No
5	Locations with potential geotechnical hazards established by the geotechnical professional for the project.	No
6	Projects with high-risk areas such as service/gas stations, truck stops, and heavy industrial sites.	No
7	Locations where reduction of surface runoff may potentially impair beneficial uses of the receiving water as documented in a site-specific study (e.g., California Environmental Quality Act (CEQA) analysis) or watershed plan.	No
8	Location where an increase in infiltration over natural conditions could potentially cause impairments to downstream beneficial uses, such as change of seasonality of ephemeral washes, as confirmed through a site-specific study.	No
9	Green roofs are not required to be considered for all project locations and types; this evapotranspiration BMP is considered optional subject to the approval of the permitting authority.	N/A

10	Projects that do not provide sufficient demand for harvested stormwater such that the system provides 80% capture with a 72-hour drawdown time considering all "allowable and reliable demand."	N/A
11	BMPs that are not allowable per current federal, state or local codes are considered infeasible. Local codes will be updated by mid-2012 as required in Order R4-2010-0108 (Provision III.D).	N/A
12	The following project types where the density and/or nature of the project would create significant difficulty for compliance with the requirement to reduce EIA to ≤5%	No
13	Pedestrian/bike trail projects	N/A
14	Agency flood control, drainage, and wet utilities projects	N/A
15	Historical preservation projects	N/A
16	Low income housing projects that occur within existing urban areas (as defined by the maps provided in Appendix B)	N/A

3.3. TECHNICAL FEASIBILITY SCREENING

Determining Maximum Volume Feasibly Infiltrated and/or Biofiltered		
	Criteria for Maximum Infiltration Volume	**Applicable**
1	BMPs are designed to the maximum depth allowed by design standards but are not required to exceed the depth that infiltrates within 48 hours at the design percolation rate.	Yes
2	All practicable methods are employed to enhance the design percolation rate, including: • Use of soil amendments to native soil below infiltration BMPs • Provision of pretreatment to reduce the allowable factor of safety, • Additional site investigation to reduce uncertainty in infiltration rate and allow the use of a lower factor of safety.	Yes
3	Good site practices have been integrated to provide the maximum pervious area feasible for infiltration BMPs, and infiltration BMPs have been configured to make use of this area. **Table 3-1** provides recommended percentages of a site, by project type, that should be feasible to dedicate to infiltration BMPs (where technically feasible) within pervious areas. If the project has not provided this portion of the project site for infiltration BMPs (where technically feasible), an attempt should be made to improve site design to provide more pervious area until it is either infeasible to provide more pervious area or EIA is reduced to ≤5%. The minimum percent of parking lot pavement area considered feasible to dedicate to permeable pavement (where technically feasible) is 20%; this does not apply to parking lots that anticipate heavy truck traffic such as truck stops and heavy industrial areas. The criteria provided in Table 3-1 are guidance; each project will be individually evaluated by the local permitting authority to determine if good site practices have been integrated into the project to provide the maximum pervious area feasible for	Yes

	siting infiltration BMPs.	

Table 3-1: Recommended Criteria for Percent of Site Feasible to Dedicate to BMPs

Table 3-1: Recommended Criteria for Percent of Site Feasible to Dedicate to BMPs

Project Type		Percent of Site[1]
New Development	SF/MF Residential < 7 du/ac	10
	SF/MF Residential 7 – 18 du/ac	7
	SF/MF Residential > 18 du/ac	5
	Mixed Use, Commercial, Institutional/Industrial w/ FAR < 1.0	10
	Mixed Use, Commercial, Institutional/Industrial w/ FAR 1.0 – 2.0	7
	Mixed Use, Commercial, Institutional/Industrial w/ FAR > 2.0	5
	Podium (parking under > 75% of project)	3
	Projects with zoning allowing development to lot lines	2
	Transit Oriented Development	5
	Parking	5

3.4. TREATMENT CONTORL MEASURE SELECTION GUIDANCE

Treatment Control Measure selection criteria contained in Order R4-2010-0108 include the following:

- Treatment Control Measures shall be selected based on the primary class of pollutants likely to be discharged from the project (e.g., metals from an auto repair shop).
- For projects that discharge to an impaired waterbody and whose discharges contain the pollutant causing impairment, the project shall select Treatment Control Measures from the top three performing BMP categories, or alternative BMPs that are designed to meet or exceed the performance of the highest performing BMP, for the pollutant causing impairment.

Land Use and Associated Pollutants		
Class of Pollutant	**Potential Land Use and Activities Source**	**Applicable**
Sediment (TSS and Turbidity)	Streets, driveways, roads, landscaped areas, construction activities, soil erosion (channels and slopes)	Yes
Nutrients	Landscape fertilizers, atmospheric deposition, automobile exhaust, soil erosion, animal waste, detergents	Yes
Metals/Metalloids	Automobiles, bridges, atmospheric deposition, industrial areas, soil erosion, metal surfaces, combustion processes	Yes
Pesticides	Landscaped areas, roadsides, utility rights-of-way	Yes
Organic Materials/ Oxygen Demanding Substances	Landscaped areas, animal wastes, industrial wastes	Yes
Oil and Grease/ Organics Associated with Petroleum	Roads, driveways, parking lots, vehicle maintenance areas, gas stations, automobile emissions, restaurants	Yes
Bacteria and Viruses	Lawns, roads, leaky sanitary sewer lines, sanitary sewer cross-connections, animal waste (domestic and wild), septic systems, homeless encampments, sediments/biofilms in stormwater conveyance system	No
Trash and Debris (Gross Solids and Floatables)	Commercial areas, roadways, schools, trash receptacles/storage/disposal	Yes

When designated beneficial uses of a particular receiving water body are being compromised by water quality for specific or multiple pollutants, Section 303(d) of the CWA requires identifying and listing that water body as “impaired”. Table 3-3 below lists the categories of pollutants and specific pollutants that are included on the 2010 303(d) list for Ventura County. Project proponents should consult the most recent 303(d) list to identify whether the project’s receiving waterbody is listed as impaired. The most recent 303(d) list is located on the State Water Resources Control Board website (click on water issues/programs/water quality assessment).

From the 303(d) list, the Calleguas Creek Reach 4 (was Revolon Slough Main Branch: Mugu Lagoon to Central Avenue on 1998 303d list). Water Body Type: River & Stream. Assessed Area: 7.188 miles. Integrated Report category:5. See **Appendix XX** for Final California 2012 Integrated Report (303(d) List/305(b) Report).

Impaired Waterbodies				
Table 3-3: Ventura County 2010 303(d)-listed Water Quality Pollutants				
Project is tributary to *Calleguas Creek Reach 4*				
Class of Pollutant	**Specific Pollutants**	**Applicable to Calleguas Creek Reach**	**303(d) Determination**	**Project Bruin Requirement for BMPs**
Sediment	▪ Sedimentation/Siltation	▪ Sedimentation/ Siltation	▪ List on 303(d)	Yes
Nutrients	▪ Ammonia ▪ Nitrate and Nitrite ▪ Nitrate ▪ Nitrogen ▪ Organic Enrichment/ Low Dissolved Oxygen ▪ Algae ▪ Eutrophic	▪ Nitrate as Nitrate (NO3) ▪ Nitrogen	▪ Nitrate - List on 303(d) ▪ Nitrogen – List on 303(d) ▪	Yes
Metals/ Metalloids	▪ Boron ▪ Copper ▪ Copper, Dissolved ▪ Lead ▪ Mercury ▪ Nickel ▪ Selenium ▪ Zinc	▪ Boron ▪ Selenium	▪ Boron – Delist from 303(d) list ▪ Selenium – List on 303(d)	Yes
Pesticides	▪ ChemA (tissue) ▪ Chlordane ▪ Chlordane (tissue & ▪ sediment) ▪ Chlordane (tissue) ▪ Chlorpyrifos ▪ Chlorpyrifos (tissue) ▪ DDT ▪ DDT (sediment) ▪ DDT (tissue & sediment) ▪ DDT (tissue) ▪ Diazinon ▪ Dieldrin ▪ Dieldrin (tissue) ▪ Endosulfane (tissue & sediment) ▪ Organophosphorous ▪ Pesticides ▪ Toxaphene ▪ Toxaphene (tissue & ▪ sediment) ▪ Toxaphene (tissue)	▪ DDT ▪ ChemA ▪ Chlordane (tissue & sediement) ▪ Chlorpyrifos (tiss) ▪ Diazinon ▪ Dieldrin (tissue) ▪ Endosulfane (tissue & sediment) ▪ Toxaphene (tissue & sediment)	▪ DDT– Do Not Delist from 303(d) ▪ ChemA - List on 303(d) ▪ Chlordane - List on 303(d) ▪ Chlorpyrifos – List on 303(d) ▪ Diazinon – List on 303(d) ▪ Dieldrin (tissue) 0 List on 303(d) ▪ Endosulfane (tissue & sulfane) – List on 303(d) ▪ Toxaphene (tissue & sediment) – List of 303(d)	Yes
Trash and Debris	▪ Trash and Debris	▪ Trash	▪ List on 303(d)	Yes
Other Organics	▪ PCBs	▪ PCBs	▪ List on 303(d)	Yes
Bacteria and Viruses	▪ Coliform Bacteria ▪ Indicator Bacteria	▪ Coliform	▪ Fecal Coliform – Do Not Delist from 303(d) list	No
Salinity	▪ Chloride	N/A	N/A	N/A
Toxicity	▪ Sediment Toxicity ▪ Toxicity	▪ Toxicity	▪ Toxicity – List on 303(d)	No
Miscellaneous	▪ pH ▪ Scum/Foam-unnatural ▪ Sulfates		▪ Excess Algal Growth – Delist from 303(d) list ▪ Sulfates - Delist from 303(d) list	No

Table 3-4: Treatment Control Measures for Addressing Pollutants of Concern		
Class of Pollutant	**Recommended BMP**	**Project Bruin Implementation**
Sediment	▪ Retention BMP (Infiltration) ▪ Biofiltration BMPs	Yes
Nutrients	▪ Retention BMP (Infiltration) ▪ Biofiltration BMPs	Yes
Metals/ Metalloids	▪ Retention BMP (Infiltration) ▪ Biofiltration BMPs	Yes
Pesticides	▪ Source Controls, Erosion Controls ▪ Retention BMP (Infiltration) ▪ Biofiltration BMPs	Yes
Trash and Debris	▪ Source Control ▪ Trash Screens	Yes

Table 3-5: Site Suitability Considerations					
BMP	**Tributary Area (Acres)**	**Site Slope (%)**	**Depth to Groundwater**	**Soil Number**	**Project Bruin Implementation**
BIO-1: Bioretention with Underdrain	<5	< 15; planter boxes are generally, more suitable for steep slopes2,3	> 2 with underdrains; > 5 without underdrains	Underdrains should be provided for Soil Numbers 1, 2, and 3	Yes
BIO-3: Vegetated Swale	<5	<10 site slope; 0.5 to 6 longitudinal slopes of swale	> 2 with underdrains; > 5 without underdrains	Any	Yes
BIO-5: Proprietary Biotreatment Devices	The site suitability requirements for specific propriety devices must be proved by the manufacturer and should be verified by independent sources of assessed by a quality water quality professional				Yes
PT-1: Hydrodynamic Devices	The site suitability requirements for specific propriety devices must be proved by the manufacturer and should be verified by independent sources of assessed by a quality water quality professional				Yes
PT-2: Catch Basin Inserts	The site suitability requirements for specific propriety devices must be proved by the manufacturer and should be verified by independent sources of assessed by a quality water quality professional				Yes

SECTION 4 SITE DESIGN PRINCIPLES AND TECHNIQUES

The third step is to apply Site Design Principles & Techniques (see Section 4). The implementation of LID requires an integrated approach to site design and stormwater management. Traditional approaches to stormwater management planning within the site planning process are not likely to achieve the LID performance standard of the MS4 Permit. The use of the site planning techniques presented in Section 4 (Site Design Principles & Techniques) will help generate a more hydrologically functional site, maximize the effectiveness of Retention BMPs, and integrate stormwater management throughout the site.

4.1. PROJECT BRUIN SITE CHARACTERISTICS

Project Bruin has implemented LID in the approach to site design and stormwater management. The project proposes several locations for treatment areas through landscape planters that have been designed for Bioretention BMPs, Vegetated Swale BMPs, Proprietary Biotreatment Devices, Hydrodynamic Devices, and Catch Basin Inserts. This information is presented in the Stormwater Quality Management Plan Exhibit. The project has been designed for water quality measures and flood control requirements.

Based on the existing topography, Project Bruin is maintaining the existing drainage patterns to convey stormwater from the northwest corner to the south end of the site. By implementing BMPs throughout the site, the project has approached stormwater management to mimic the natural hydrology of the site by retaining rainfall onsite to the maximum extent practicable. The project has used slopes at a minimum of 1% for pervious and impervious areas to limit the increase of time of concentration. Additionally, this project encourages the use of multiple modes of transportation for bicycle and pedestrian-friendly access, well-connected sidewalks, and access to the public streets from the site.

Due to the high groundwater for the project site, the site is proposing minimal infiltration to the natural ground, however, the use of BMPs will promote the treatment of stormwater. Additionally, this project will implement drought-tolerant landscaping to reduce the water consumption for typical landscaping in industrial developments.

SECTION 5 SOURCE CONTROLS MEASURES

All applicable projects must implement applicable Source Control Measures. Source Control Measures are operational practices that reduce potential pollutants at the source. They typically do not require maintenance or significant construction. Guidance on Source Control Measures can be found in Section 5.

Non-Structural Source Control BMPs				
Identifier	Name	Check One		Describe BMP Implementation OR, if not applicable, state reason
		Included	Not Applicable	
N1	Education of Property Owners, Tenants and Occupants on Stormwater BMPs	☒	☐	Property owner will familiarize himself/ herself with the education materials provided within this WQMP and educate tenants and employees.
N2	Activity Restrictions	☒	☐	No outdoor work areas, processing, storage or wash area proposed.
N3	Landscape Management BMPs	☒	☐	Irrigation must be consistent with the City's Water Conservation Ordinance. Fertilizer and pesticide usage will be consistent with County Management Guidelines for Use of Fertilizers and Pesticides.
N4	BMP Maintenance	☒	☐	BMP maintenance, implementation schedules, and responsible parties are included within this WQMP.
N5	Title 22 CCR Compliance (How development will comply)	☐	☒	Not Applicable – No hazardous waste onsite.
N6	Local Water Quality Ordinances	☐	☒	Not Applicable
N7	Spill Contingency Plan	☒	☐	Owner will have a spill contingency plan based on site needs.
N8	Underground Storage Tank Compliance	☐	☒	Not Applicable – No underground storage tank proposed onsite.
N9	Hazardous Materials Disclosure Compliance	☐	☒	Not Applicable – No hazardous materials onsite.
N10	Uniform Fire Code Implementation	☒	☐	Owner will comply with Article 80 of the Uniform Fire Code enforced by the fire protection agency.
N11	Litter/Debris Control Program	☒	☐	Owner to implement litter debris control program to provide during regularly scheduled maintenance.
N12	Employee Training	☒	☐	Owner to ensure tenants are familiar with onsite BMPs and the associated maintenance required. Owner will check with City and County at least once a year to obtain new or updated education materials and provide these materials to tenants. Employees shall be trained to clean up spills and participate in ongoing maintenance. The WQMP requires bi-annually employee training and training for new hires within 2 months.
N13	Housekeeping of Loading Docks	☒	☐	All fluids to be kept indoors. Clean up spills immediately and keep spills from entering the storm drain system. No direct discharges are allowed into the storm drain system. Area shall be inspected weekly for proper containment and practices with spills cleansed up immediately and disposed of properly.
N14	Catch Basin Inspection Program	☒	☐	Monthly catch basin and inlet inspection by Owner's designee required. Vacuum when sediment or trash becomes 2 inches deep and dispose of properly.
N15	Vacuum Sweeping of Private Streets and Parking Lots	☒	☐	All landscape maintenance contractors will be required to vacuum sweep up all landscape cuttings, mowing and fertilizer materials off paved areas weekly and dispose of properly. Parking areas and drive ways will be swept monthly by sweeping contractor.
N16	Other Non-structural Measures for Public Agency Projects	☐	☒	Not Applicable – Not a public agency project.

N17	Comply with all other applicable NPDES permits	☒	☐	Project will comply with Construction General permit.

Structural Source Control BMPs				
Identifier	Name	Check One		Describe BMP Implementation OR, If not applicable, state reason
		Included	Not Applicable	
S1	Provide storm drain system stencilling and signage (CASQA New Development BMP Handbook SD-13)	☒	☐	"No Dumping" stencils will be included on all proposed catch basins and inlets. Legibility of stencil will be maintained on a yearly basis.
S2	Design and construct outdoor material storage areas to reduce pollution introduction (CASQA New Development BMP Handbook SD-34)	☐	☒	Not Applicable – No outdoor material storage areas onsite.
S3	Design and construct trash and waste storage areas to reduce pollution introduction (CASQA New Development BMP Handbook SD-32)	☒	☐	Trash and wastes storage areas will be paved with an impervious surface and not allow any run-on from adjacent areas. Drainage will be diverted from adjoining roofs and pavements. Trash and waste storage area will be screened or walled to prevent offsite transport of trash and have solid roof or awning to prevent direct contact with rainfall.
S4	Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control (State wide Model Landscape Ordinance; CASQA New Development BMP Handbook SD-12)	☒	☐	Irrigation systems shall include reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines. Timers will be used to avoid over watering and watering cycles and duration shall be adjusted seasonally by the landscape maintenance contractor. The landscaping areas will be grouped with plants that have similar water requirements. Native or drought tolerant species shall also be used where appropriate to reduce excess irrigation runoff and propose surface filtration.
S5	Finish grade of landscaped areas at a minimum of 1-2 inches below top of curb, sidewalk, or pavement	☒	☐	Where applicable, landscaped areas will be depressed in order to increase retention of stormwater/ irrigation water promote infiltration. This includes around parking lots.
S6	Protect slopes and channels and provide energy dissipation (CASQA New Development BMP Handbook SD-10)	☒	☐	All slopes will be vegetated or properly mulched with non-organic mulch (gravel/rocks) and maintained to prevent erosion and transport of sediment. Energy dissipaters are installed at all inlets into the basin.
S7	Covered dock areas (CASQA New Development BMP Handbook SD-31)	☐	☒	Not Applicable – Loading docks are not covered
S8	Covered maintenance bays with spill containment plans (CASQA New Development BMP Handbook SD-31)	☐	☒	Not Applicable – No maintenance bays onsite.
S9	Vehicle wash areas with spill containment plans (CASQA New Development BMP Handbook SD-33)	☐	☒	Not Applicable – No vehicle wash areas onsite.
S10	Covered outdoor processing areas (CASQA New Development BMP Handbook SD-36)	☐	☒	Not Applicable – No outdoor processing areas onsite.
S11	Equipment wash areas with spill containment plans (CASQA New Development BMP Handbook SD-33)	☐	☒	Not Applicable - No equipment wash area on-site.
S12	Fueling areas (CASQA New Development BMP Handbook SD-30)	☐	☒	Not Applicable - No fueling areas on-site.

S13	Hillside landscaping (CASQA New Development BMP Handbook SD-10)	☐	☒	Not Applicable – No Hillside landscaping
S14	Wash water control for food preparation areas	☐	☒	Not Applicable – No food preparation areas onsite.
S15	Community car wash racks (CASQA New Development BMP Handbook SD-33)	☐	☒	Not Applicable - No community car wash racks on-site.

SECTION 6 STORMWATER BMP DESIGN

Retention BMPs, Biofiltration BMPs, and Treatment Control Measures are required to augment Site Design Principles and Techniques and Source Control Measures to reduce pollution from stormwater discharges to the maximum extent practicable. Retention BMPs are engineered facilities that are designed to retain surface runoff on the project site. Biofiltration BMPs are vegetated stormwater BMPs that remove pollutants by filtering stormwater through vegetation and soils. Treatment Control Measures are engineered BMPs that provide a reduction of pollutant loads and concentrations in stormwater runoff. The type(s) of Retention BMPs and Biofiltration BMPs to be implemented depends on site suitability factors discussed in this chapter. The type of Treatment Control Measure(s) to be implemented at a site depends on a number of factors including: type of pollutants in the stormwater runoff, quantity of stormwater runoff to be treated, project site conditions, receiving water conditions, and state industrial permit requirements, where applicable. Land requirements and costs to design, construct, and maintain Treatment Control Measures vary by type. Unlike flood control measures that are designed to handle peak flows, stormwater Retention BMPs, Biofiltration BMPs, and Treatment Control Measures are designed to retain or treat the more frequent, lower-flow storm events, or the first flush runoff from larger storm events (typically referred to as the first flush events). Small, frequent storm events represent most of the total average annual rainfall for the area. It's the volume from such small events, referred to as the Stormwater Quality Design Volume (SQDV), that is targeted for retention onsite in Retention BMPs. Biofiltration BMPs and Treatment Control Measures can be sized to capture either the SQDV or the Stormwater Quality Design Flow (SQDF). Calculation methods for the SQDV and the SQDF are presented in Section 2 and Appendix E.

6.1 PROJECT BRUIN BMPS

BIO-1: BIORETENTION WITH UNDERDRAIN

Bioretention stormwater treatment facilities are landscaped shallow depressions that capture and filter stormwater runoff. These facilities function as a soil and plant-based filtration device that removes pollutants through a variety of physical, biological, and chemical treatment processes. The facilities normally consist of a ponding area, mulch layer, planting soils, and plantings. As stormwater passes down through the planting soil, pollutants are filtered, adsorbed, and biodegraded by the soil and plants. Bioretention with an underdrain is a treatment control measures that can be used for areas with low permeability native soils or steep slopes.

The following design elements are conceptually planned for the Bioretention with Undrain:

- Overflow Device for 100-Year Storm Event
- Perforated 6" PVC Pipe underdrain
- 4" of mulch/gravel
- 24 inches/36 inches of planting mix
- Ponding Depth of 6"
- Impermeable liner on all sides and bottom with anchors

BIO-5: PROPRIETARY BIOTREATMENT DEVICES

Proprietary biotreatment devices are manufactured treatment BMPs that incorporate plants, soil, and microbes engineered to provide treatment at higher flow rates or volumes and with smaller footprints than their non-proprietary counterparts. Incoming flows are typically pretreated to remove larger particles/debris, filtered through a planting media (mulch, compost, soil, and plants), collected by an underdrain, and delivered to the stormwater conveyance system.

The following design elements are planned to be implemented:

- BioClean - Modular Wetlands System Linear

P2-2: CATCH BASIN INSERTS

Catch basin inserts are manufactured filters or fabric placed in a drop inlet to remove sediment and debris and may include sorbent media (oil absorbent pouches) to remove floating oils and grease. Catch basin inserts are selected specifically based upon the orientation of the inlet.

The following design elements are conceptually planned to be implemented of upstream above ground detention basins:

- ACF Environmental – ACF Gratemaster
- ACF Environmental – Trench Drain Filter

Calculations

Site Data

- Project Area ($A_{project}$) = 64.65 Acres
- Total Impervious Area (TIA) = 51.26 Acres (2,232,890 SF)
- Pervious Area = 13.39 Acres (583,270 SF)

Allowable EIA

- $EIA_{allowable}$ = ($A_{project}$) * (5%)
- $EIA_{allowable}$ = (64.65 Acres) * (5%)
- $EIA_{allowable}$ = 3.2325 Acres

Impervious Area to be Retained

- A_{Retain} = TIA - $EIA_{allowable}$
- A_{Retain} = 51.26 Acres – 3.2325 Acres
- A_{Retain} = 48.0275 Acres

Area of Treatment

- $A_{Treatment}$ = EIA + Landscape Area
- $A_{Treatment}$ = 3.2325 + 13.39 Acres
- $A_{Treatment}$ = 16.6225 Acres

Runoff Volume that that is to be retained onsite

- Methodology #3 = 0.75-inch storm event
- V_{Retain} = C*(0.75/12)*A_{Retain}
- V_{Retain} = 0.95*(0.75/12)*(48.0275)
- V_{Retain} = 2.85 Acre-Feet

The project must retain at least 2.85 acre-feet from impervious surfaces using Retention BMPs.

6.2 STORMWATER QUALITY DESIGN FLOW (SQDF)

The Stormwater Quality Design Flow (SQDF) was calculated by the following procedure as outlined in the Ventura County Technical Guidance Manual for Stormwater Quality Control Measures:

#1 – Determine the drainage area from which the flow-based BMP will be receiving runoff ($A_{project}$)

#2 – Calculate the runoff coefficient (C) as a function of impervious and pervious area ratios

#3 – Determine the Stormwater Runoff Design Flow (SQDF):

where SQDV = C*I*A, where I = 0.35 in/hr assuming a Time of Concentration of 5 minutes per Table 2-1 below.

Table 2-1: Flow-Based Biofiltration BMP Design Intensity for 150% Sizing

Time of Concentration, minutes	Design Intensity for 150% Sizing, in/hr
30	0.24
20	0.25
15	0.28
10	0.31
5	0.35

The table below summarizes the SQDF for the Project.

DMA ID	AREA (ac)	IMPERVIOUS AREA (ac)	C, WEIGHTED RUNOFF COEFFICIENT	SQDF (cfs)
1	12.40	11.55	0.89	3.86
2	9.49	9.49	0.95	3.16
3	4.91	4.91	0.95	1.63
4	9.26	9.23	0.95	3.07
5	1.55	1.45	0.89	0.48
6	2.73	2.47	0.86	0.83
7	1.16	1.05	0.86	0.35
8	0.54	0.39	0.71	0.13
9	1.26	1.14	0.86	0.38
10	0.56	0.44	0.75	0.15
11	2.00	1.68	0.81	0.57
12	0.69	0.65	0.89	0.22
13	0.56	0.34	0.60	0.12
14	0.54	0.45	0.81	0.15
15	1.33	1.16	0.84	0.39
16	0.54	0.47	0.84	0.16
17	1.28	1.14	0.85	0.38
18	0.54	0.44	0.78	0.15
19	0.70	0.56	0.77	0.19
20	0.51	0.39	0.74	0.13
21	0.94	0.00	0.05	SELF MITIGATING
22	0.77	0.00	0.05	SELF MITIGATING
23	3.45	1.87	0.54	0.65
24	6.31	0.00	0.05	SELF MITIGATING
25	1.55	0.00	0.05	SELF MITIGATING

6.3 ALTERNATIVE COMPLIANCE

Certain new development and redevelopment project types are eligible for alternative compliance measures if onsite Retention BMPs and/or Biofiltration BMPs cannot feasibly be used to meet the 5% EIA standard (see Section 3.2). Alternative Compliance is not proposed on Project Bruin since the project will utilize retention and biofiltration BMPs for water quality mitigation.

6.4 APPLY TREATMENT CONTROL BMPS TO TREAT REMAINING SQDV OR SQDF

Stormwater runoff from EIA and developed pervious surfaces shall be mitigated using Retention BMPs, Biofiltration BMPs, or Treatment Control Measures [Chapter 6] selected per the BMP selection process outlined in Section 3.3. Biofiltration BMPs and Treatment Control Measures may be sized to meet the Stormwater Quality Design Volume (SQDV) or the Stormwater Quality Design Flow (SQDF). Treatment Control Measures should be designed in adherence with the guidance provided in Section 6 of the 2011 TGM in order to assure a level of pollutant removal comparable to those listed in Attachment “C” of Order R4-2010-0108 (also provided in Appendix D.1). Projects that are eligible for Offsite Mitigation must still provide treatment for all impervious surfaces and developed pervious areas using Treatment Control Measures sized to meet the SQDV or SQDF on site. Treatment Control Measures must be selected per the BMP selection process outlined in Section 3.3.

6.5 CONTINUE PROJECT DESIGN PROCESS

The project applicant should continue with the design process to address additional requirements that the City of Oxnard may require in their review.

6.6 DEVELOP MAINTENANCE PLAN

The Ventura Countywide Stormwater Quality Management Program (Program) requires the submittal of a Maintenance Plan and execution of a Maintenance Agreement with the owner/operator of any stormwater control that requires maintenance including Site Design Principles and Techniques (Section 4); Source Control Measures (Section 5; and Retention BMPs, Biofiltration BMPs, and Treatment Control Measures (Section 6). Maintenance Plans must include guidelines for how and when inspection and maintenance should occur for each control. Section 7 and Appendices H and I provide additional information and guidance on compliance with maintenance requirements.

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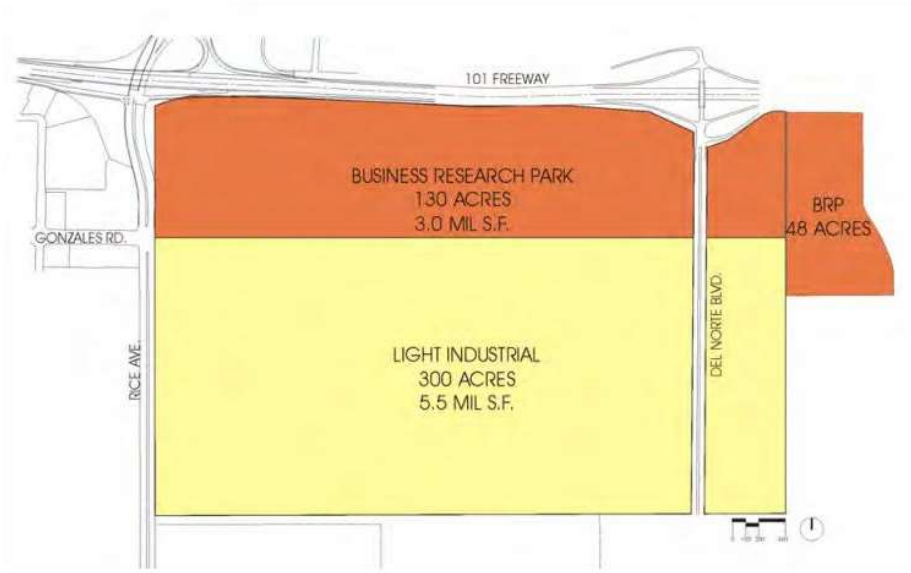
Appendix A Project Specific Information

Figure 1-1 – Regional Map of Ventura County

Source: Sakioka Farms Business Park Specific Plan, June 2012

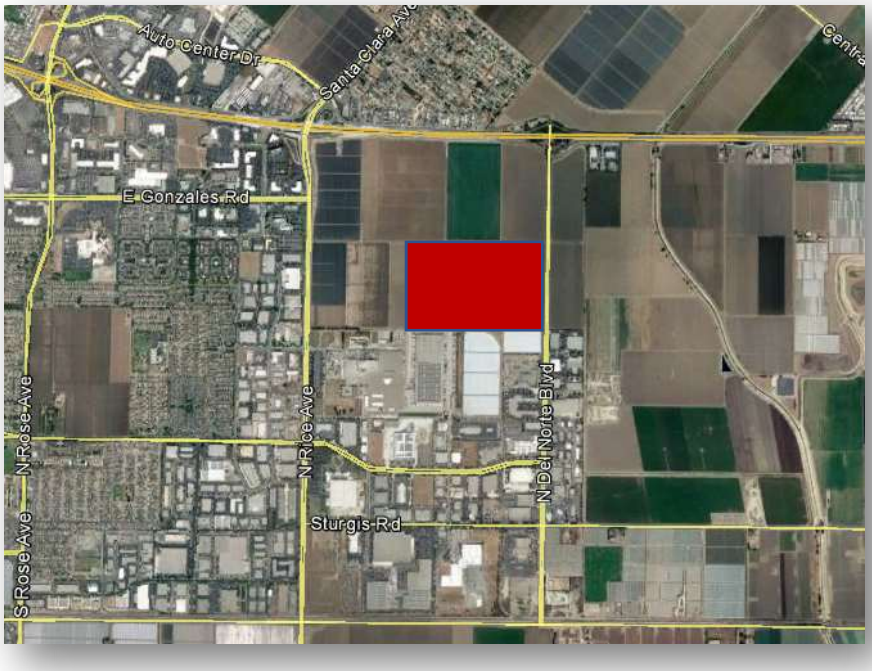
Figure 1-2 – 2030 General Plan Use for Sakioka Farms Business Park



2030 GENERAL PLAN LAND USES
EXHIBIT 2.3

Source: Sakioka Farms Business Park Specific Plan, June 2012

Figure 1-3 – Project Site Location

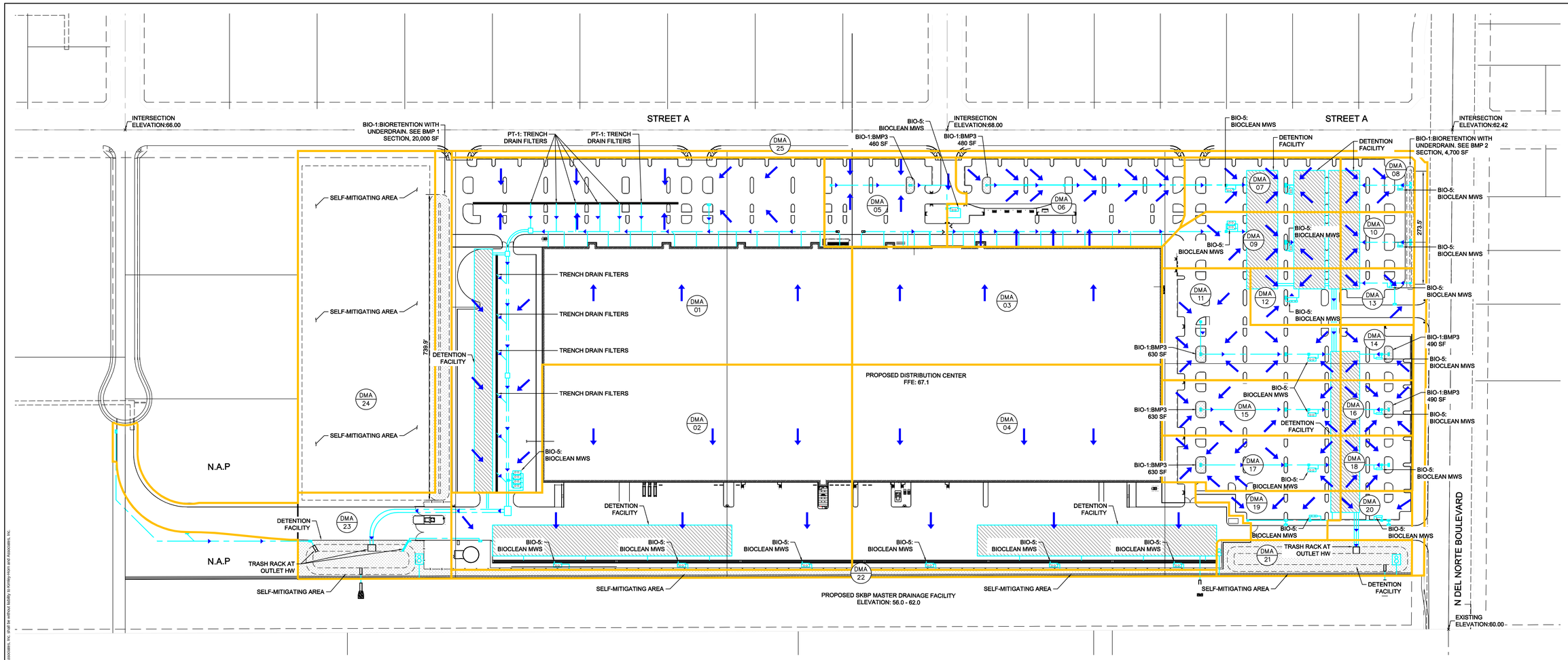


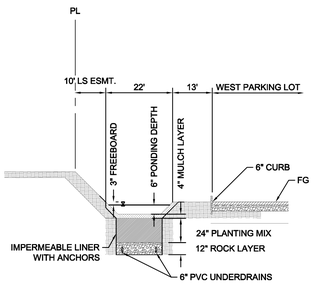
Source: Google Maps, 2020

Figure 1-4 – Project Site Plan

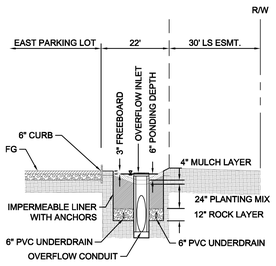
Source: Ware Malcomb, 2020

Appendix B WQMP Site Plan Exhibit and BMP Calculations





BIO-1: BMP 1
HORZ: 1"=20'
VERT: 1"=4'



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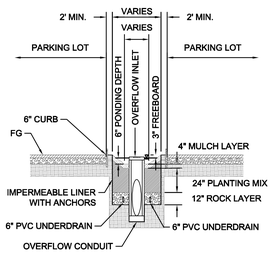
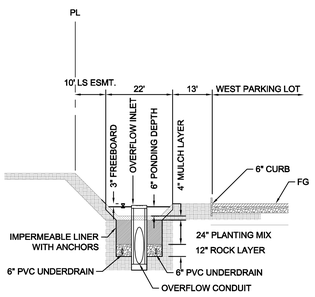
HORZ: 1"=20'
VERT: 1"=4'



BIO-1: TYP. PARKING LOT BMP 3
HORZ: 1"=20'
VERT: 1"=4'



BIO-1: BMP 1
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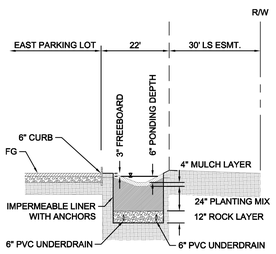
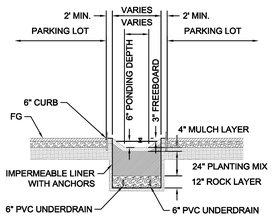


BIO-1: BMP 2
HORZ: 1"=20'
VERT: 1"=4'



BIO-1: TYP. PARKING LOT BMP 3
HORZ: 1"=20'
VERT: 1"=4'

SQDF TREATMENT FLOW SUMMARY TABLE

DMA ID	AREA (ac)	IMPERVIOUS AREA (ac)	C, WEIGHTED RUNOFF COEFFICIENT	SQDF (cfs)
1	12.40	11.55	0.89	3.86
2	9.49	9.49	0.95	3.16
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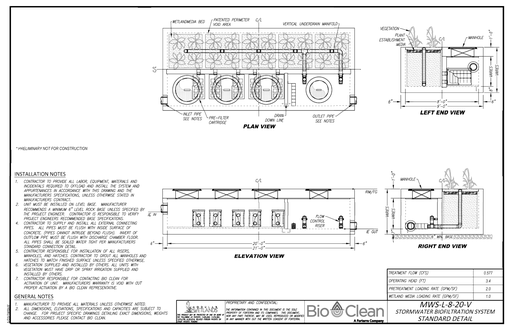


BIO-5: BIOCLEAN MWS
NTS

LEGEND

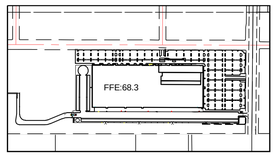
- DMA ID (XX / XX): DMA ID NUMBER
- DMA BOUNDARY
- FLOW DIRECTION
- PROPERTY LINE
- PROPOSED STORM DRAIN LINE
- FLOWLINE

NOTES

1. PROJECT PROPOSES TO INSTALL CURB INLET INSERTS, TRENCH DRAIN FILTERS, AND TRASH RACKS AT DETENTION BASIN OUTLETS AS MEANS OF PRETREATMENT
2. DMAS COMPRISED OF 100% PERVIOUS AREA ARE CONSIDERING SELF MITIGATING AND DO NOT REQUIRE FURTHER WATER QUALITY MEASURES.

NORTH

GRAPHIC SCALE IN FEET
0 50 100 200



KEY MAP

No.	REVISIONS	DATE	BY

Kimley»Horn
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PHONE: 619-234-9411
WWW.KIMLEY-HORN.COM

PRELIMINARY
NOT FOR CONSTRUCTION
Prepared for Concept Plan submittal
Not for construction purposes or permits.
Kimley»Horn
Engineer EUGENE D. COWAN III.
P.E. No. 86803 Date 3/5/2020

KHA PROJECT	196170003
DATE	3/5/2020
SCALE	AS SHOWN
DESIGNED BY	KS&DC
DRAWN BY	KS
CHECKED BY	DC

STORM WATER QUALITY MAP

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD, CA

SHEET NUMBER
OF 8

Plotted By:ahsia, Kris; Sheet Set:Kha Layout:STORM WATER QUALITY MAP, March 05, 2020 01:14:29pm \\snsfhc01\projects\IND_LDEV\196170003 - Project Bruin\Stormwater\Exhibit\STORM WATER QUALITY MAP.dwg
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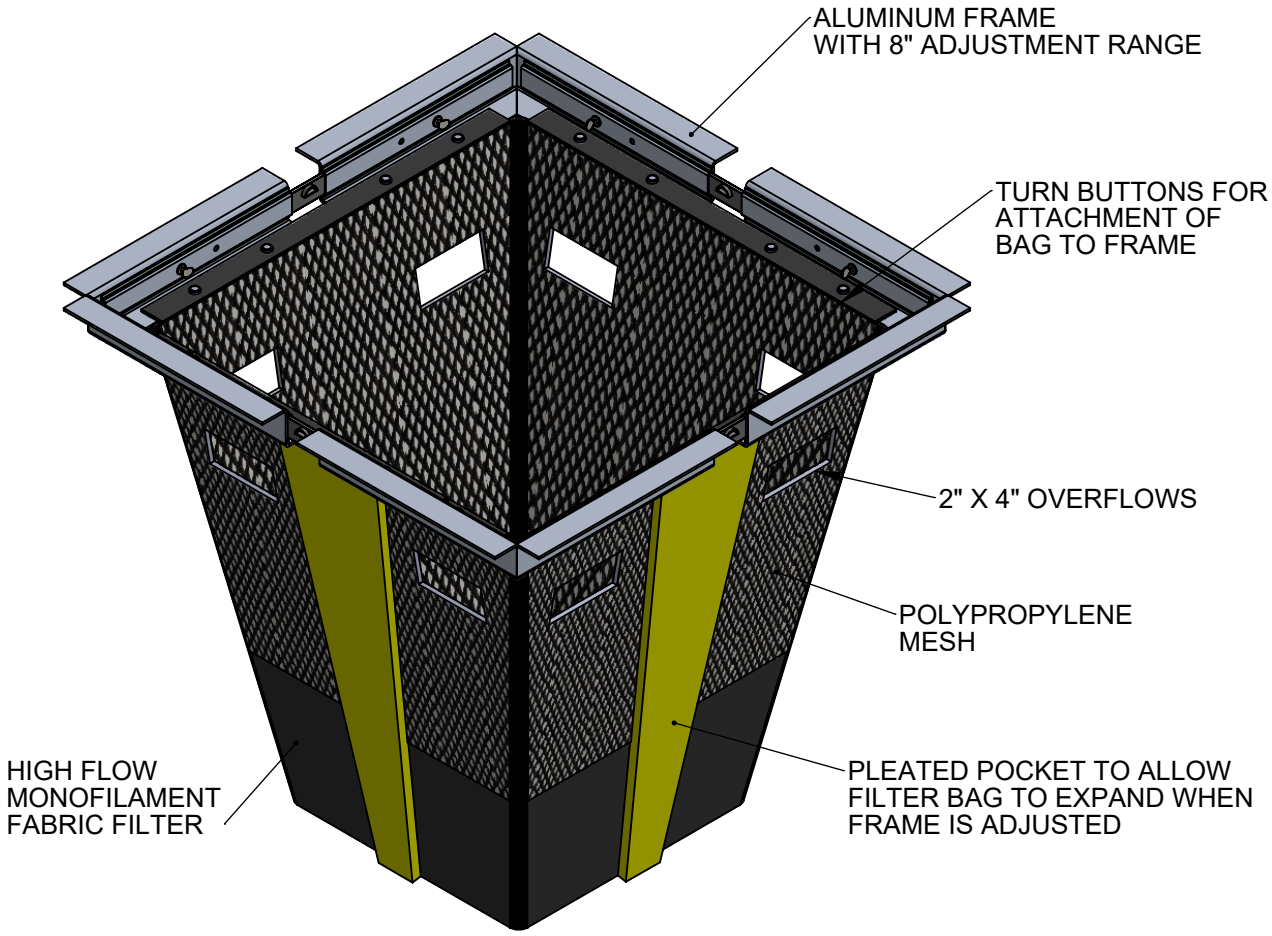
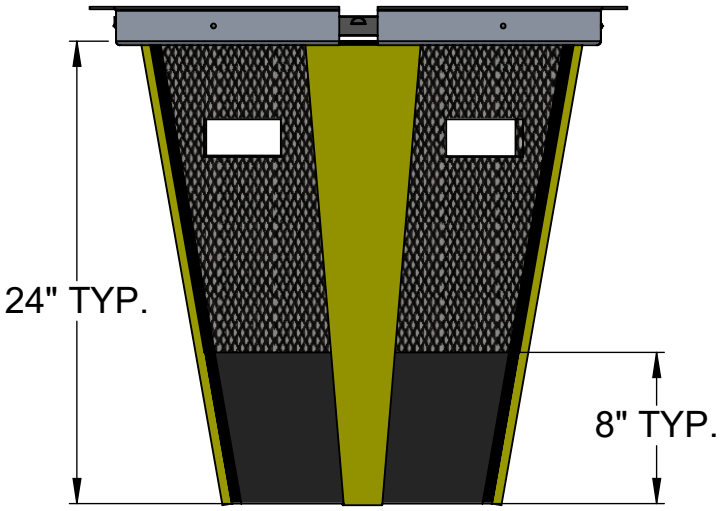
8	0.54	0.39	0.71	0.13
9	1.26	1.14	0.86	0.38
10	0.56	0.44	0.75	0.15
11	2.00	1.68	0.81	0.57
12	0.69	0.65	0.89	0.22
13	0.56	0.34	0.60	0.12
14	0.54	0.45	0.81	0.15
15	1.33	1.16	0.84	0.39
16	0.54	0.47	0.84	0.16
17	1.28	1.14	0.85	0.38
18	0.54	0.44	0.78	0.15
19	0.70	0.56	0.77	0.19
20	0.51	0.39	0.74	0.13
21	0.94	0.00	0.05	SELF MITIGATING
22	0.77	0.00	0.05	SELF MITIGATING
23	3.45	1.87	0.54	0.65
24	6.31	0.00	0.05	SELF MITIGATING
25	1.55	0.00	0.05	SELF MITIGATING

Appendix C BMP Educational Material





PART NUMBER	ADJUSTMENT RANGE
GRTMA1927S	19" - 27" x 19" - 27"
GRTMA2837S	28" - 37" x 28" - 37"
GRTMA3849S	38" - 49" x 38" - 49"
GRTMAS2X3R	23" - 31" x 35" - 43"
GRTMAS2X4R	23" - 31" x 41" - 49"

ACF ENVIRONMENTAL
LET'S GET IT DONE

ACF GRATEMASTER
TYPE A (STANDARD)

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF ENVIRONMENTAL, 800-448-3636 / WWW.ACFENVIRONMENTAL.COM

DATE 1/19/17

Bio Clean

A Forterra Company

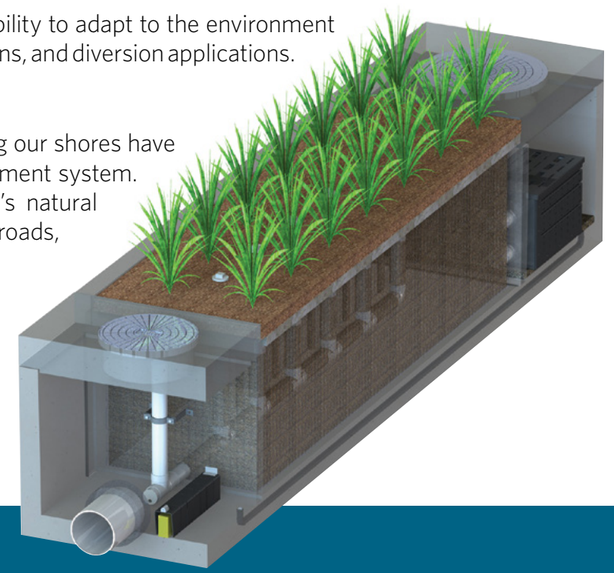
Modular Wetlands® System Linear

A Stormwater Biofiltration Solution

OVERVIEW

The Bio Clean Modular Wetlands® System Linear (MWS Linear) represents a pioneering breakthrough in stormwater technology as the only biofiltration system to utilize patented horizontal flow, allowing for a smaller footprint, higher treatment capacity, and a wide range of versatility. While most biofilters use little or no pretreatment, the Modular Wetlands System Linear incorporates an advanced pretreatment chamber that includes separation and pre-filter cartridges. In this chamber, sediment and hydrocarbons are removed from runoff before entering the biofiltration chamber, reducing maintenance costs and improving performance.

Horizontal flow also gives the system the unique ability to adapt to the environment through a variety of configurations, bypass orientations, and diversion applications.



The Urban Impact

For hundreds of years, natural wetlands surrounding our shores have played an integral role as nature's stormwater treatment system. But as cities grow and develop, our environment's natural filtration systems are blanketed with impervious roads, rooftops, and parking lots.

Bio Clean understands this loss and has spent years re-establishing nature's presence in urban areas, and rejuvenating waterways with the MWS Linear.

PERFORMANCE

The Modular Wetlands® System Linear continues to outperform other treatment methods with superior pollutant removal for TSS, heavy metals, nutrients, hydrocarbons, and bacteria. Since 2007 the MWS Linear has been field tested on numerous sites across the country and is proven to effectively remove pollutants through a combination of physical, chemical, and biological filtration processes. In fact, the MWS Linear harnesses some of the same biological processes found in natural wetlands in order to collect, transform, and remove even the most harmful pollutants.

66% REMOVAL OF DISSOLVED ZINC	69% REMOVAL OF TOTAL ZINC	38% REMOVAL OF DISSOLVED COPPER	64% REMOVAL OF TOTAL PHOSPHORUS

45% REMOVAL OF NITROGEN	50% REMOVAL OF TOTAL COPPER	95% REMOVAL OF MOTOR OIL	67% REMOVAL OF ORTHO PHOSPHORUS	85% REMOVAL OF TSS

APPROVALS

The Modular Wetlands® System Linear has successfully met years of challenging technical reviews and testing from some of the most prestigious and demanding agencies in the nation and perhaps the world. Here is a list of some of the most high-profile approvals, certifications, and verifications from around the country.

Washington State Department of Ecology TAPE Approved
The MWS Linear is approved for General Use Level Designation (GULD) for Basic, Enhanced, and Phosphorus treatment at 1 gpm/ft^2 loading rate. The highest performing BMP on the market for all main pollutant categories.

California Water Resources Control Board, Full Capture Certification
The Modular Wetlands® System is the first biofiltration system to receive certification as a full capture trash treatment control device.

Virginia Department of Environmental Quality, Assignment
The Virginia Department of Environmental Quality assigned the MWS Linear the highest phosphorus removal rating for manufactured treatment devices to meet the new Virginia Stormwater Management Program (VSMP) regulation technical criteria.

Maryland Department of the Environment, Approved ESD
Granted Environmental Site Design (ESD) status for new construction, redevelopment, and retrofitting when designed in accordance with the design manual.

MASTEP Evaluation
The University of Massachusetts at Amherst – Water Resources Research Center issued a technical evaluation report noting removal rates up to 84% TSS, 70% total phosphorus, 68.5% total zinc, and more.

Rhode Island Department of Environmental Management, Approved BMP
Approved as an authorized BMP and noted to achieve the following minimum removal efficiencies: 85% TSS, 60% pathogens, 30% total phosphorus, and 30% total nitrogen.

Texas Commission on Environmental Quality

Atlanta Regional Commission

ADVANTAGES

- HORIZONTAL FLOW BIOFILTRATION
- GREATER FILTER SURFACE AREA
- PRETREATMENT CHAMBER
- PATENTED PERIMETER VOID AREA
- FLOW CONTROL
- NO DEPRESSED PLANTER AREA
- AUTO DRAINDOWN MEANS NO MOSQUITO VECTOR

OPERATION

The Modular Wetlands® System Linear is the most efficient and versatile biofiltration system on the market, and it is the only system with horizontal flow which:

- Improves performance
- Reduces footprint
- Minimizes maintenance

Figure 1 & Figure 2 illustrate the invaluable benefits of horizontal flow and the multiple treatment stages.

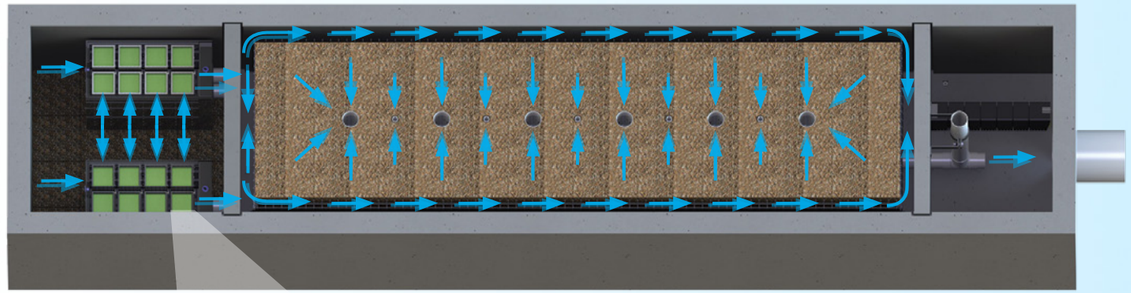


Figure 2, Top View

2x to 3x more surface area than traditional downward flow bioretention systems.

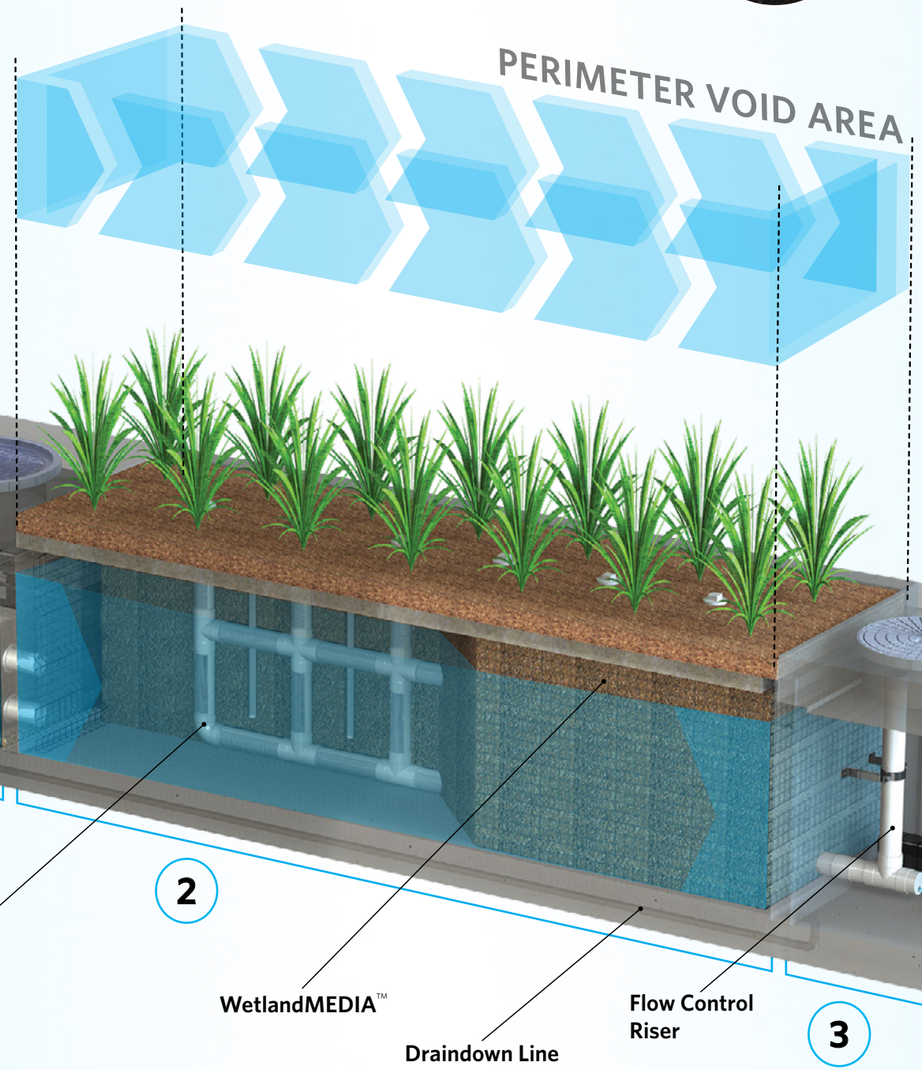
1 PRETREATMENT

SEPARATION

- Trash, sediment, and debris are separated before entering the pre-filter boxes
- Designed for easy maintenance access

PRE-FILTER BOXES

- Over 25 sq. ft. of surface area per box
- Utilizes BioMediaGREEN™ filter material
- Removes over 80% of TSS and 90% of hydrocarbons
- Prevents pollutants that cause clogging from migrating to the biofiltration chamber



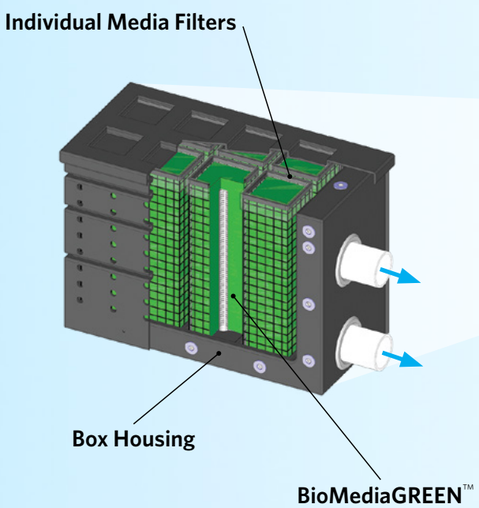


Figure 1

2 BIOFILTRATION

HORIZONTAL FLOW

- Less clogging than downward flow biofilters
- Water flow is subsurface
- Improves biological filtration

PATENTED PERIMETER VOID AREA

- Vertically extends void area between the walls and the WetlandMEDIA™ on all four sides
- Maximizes surface area of the media for higher treatment capacity

WETLANDMEDIA

- Contains no organics and removes phosphorus
- Greater surface area and 48% void space
- Maximum evapotranspiration
- High ion exchange capacity and lightweight

3 DISCHARGE

FLOW CONTROL

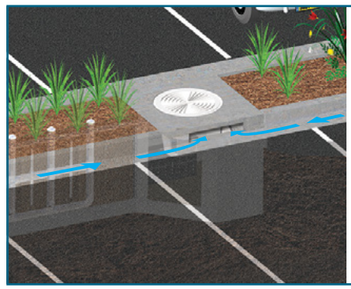
- Orifice plate controls flow of water through WetlandMEDIA™ to a level lower than the media's capacity
- Extends the life of the media and improves performance

DRAINDOWN FILTER

- The draindown is an optional feature that completely drains the pretreatment chamber
- Water that drains from the pretreatment chamber between storm events will be treated

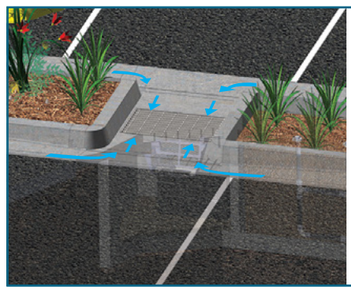
CONFIGURATIONS

The Modular Wetlands® System Linear is the preferred biofiltration system of civil engineers across the country due to its versatile design. This highly versatile system has available "pipe-in" options on most models, along with built-in curb or grated inlets for simple integration into your storm drain design.



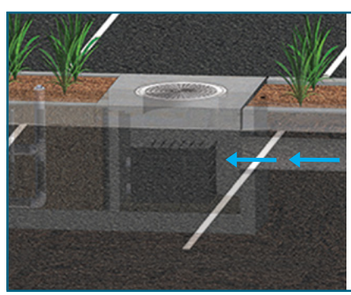
CURB TYPE

The Curb Type configuration accepts sheet flow through a curb opening and is commonly used along roadways and parking lots. It can be used in sump or flow-by conditions. Length of curb opening varies based on model and size.



GRATE TYPE

The Grate Type configuration offers the same features and benefits as the Curb Type but with a grated/drop inlet above the systems pretreatment chamber. It has the added benefit of allowing pedestrian access over the inlet. ADA-compliant grates are available to assure easy and safe access. The Grate Type can also be used in scenarios where runoff needs to be intercepted on both sides of landscape islands.



VAULT TYPE

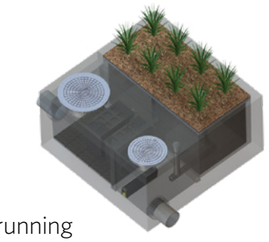
The system's patented horizontal flow biofilter is able to accept inflow pipes directly into the pretreatment chamber, meaning the Modular Wetlands® can be used in end-of-the-line installations. This greatly improves feasibility over typical decentralized designs that are required with other biofiltration/ bioretention systems. Another benefit of the "pipe-in" design is the ability to install the system downstream of underground detention systems to meet water quality volume requirements.

DOWNSPOUT TYPE

The Downspout Type is a variation of the Vault Type and is designed to accept a vertical downspout pipe from rooftop and podium areas. Some models have the option of utilizing an internal bypass, simplifying the overall design. The system can be installed as a raised planter, and the exterior can be stuccoed or covered with other finishes to match the look of adjacent buildings.

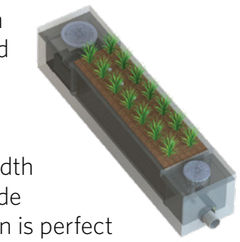
ORIENTATIONS

SIDE-BY-SIDE



The Side-By-Side orientation places the pretreatment and discharge chamber adjacent to one another with the biofiltration chamber running parallel on either side. This minimizes the system length, providing a highly compact footprint. It has been proven useful in situations such as streets with directly adjacent sidewalks, as half of the system can be placed under that sidewalk. This orientation also offers internal bypass options as discussed below.

END-TO-END



The End-To-End orientation places the pretreatment and discharge chambers on opposite ends of the biofiltration chamber, therefore minimizing the width of the system to 5 ft. (outside dimension). This orientation is perfect for linear projects and street retrofits where existing utilities and sidewalks limit the amount of space available for installation. One limitation of this orientation is that bypass must be external.

BYPASS

INTERNAL BYPASS WEIR (SIDE-BY-SIDE ONLY)

The Side-By-Side orientation places the pretreatment and discharge chambers adjacent to one another allowing for integration of internal bypass. The wall between these chambers can act as a bypass weir when flows exceed the system's treatment capacity, thus allowing bypass from the pretreatment chamber directly to the discharge chamber.

EXTERNAL DIVERSION WEIR STRUCTURE

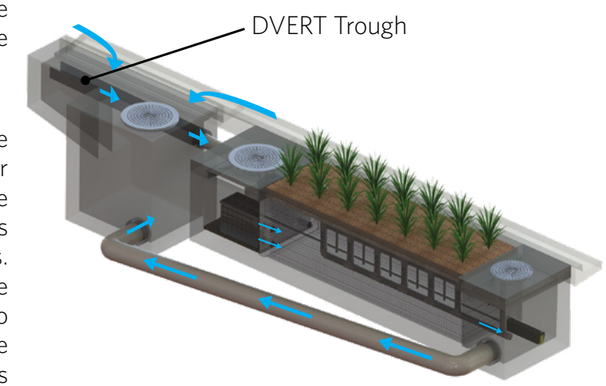
This traditional offline diversion method can be used with the Modular Wetlands® System Linear in scenarios where runoff is being piped to the system. These simple and effective structures are generally configured with two outflow pipes. The first is a smaller pipe on the upstream side of the diversion weir - to divert low flows over to the MWS Linear for treatment. The second is the main pipe that receives water once the system has exceeded treatment capacity and water flows over the weir.

FLOW-BY-DESIGN

This method is one in which the system is placed just upstream of a standard curb or grate inlet to intercept the first flush. Higher flows simply pass by the MWS Linear and into the standard inlet downstream.

DVERT LOW FLOW DIVERSION

This simple yet innovative diversion trough can be installed in existing or new curb and grate inlets to divert the first flush to the Modular Wetlands® System Linear via pipe. It works similar to a rain gutter and is installed just below the opening into the inlet. It captures the low flows and channels



them over to a connecting pipe exiting out the wall of the inlet and leading to the MWS Linear. The DVERT is perfect for retrofit and green street applications that allow the system to be installed anywhere space is available.

SPECIFICATIONS

FLOW-BASED DESIGNS

The Modular Wetlands® System Linear can be used in stand-alone applications to meet treatment flow requirements, and since it is the only biofiltration system that can accept inflow pipes several feet below the surface, it can be used not only in decentralized design applications but also as a large central end-of-the-line application for maximum feasibility.

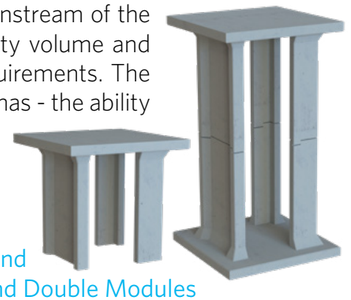
MODEL #	DIMENSIONS	WETLANDMEDIA SURFACE AREA (sq. ft.)	TREATMENT FLOW RATE (cfs)
MWS-L-4-4	4′ x 4′	23	0.052
MWS-L-4-6	4′ x 6′	32	0.073
MWS-L-4-8	4′ x 8′	50	0.115
MWS-L-4-13	4′ x 13′	63	0.144
MWS-L-4-15	4′ x 15′	76	0.175
MWS-L-4-17	4′ x 17′	90	0.206
MWS-L-4-19	4′ x 19′	103	0.237
MWS-L-4-21	4′ x 21′	117	0.268
MWS-L-6-8	7′ x 9′	64	0.147
MWS-L-8-8	8′ x 8′	100	0.230
MWS-L-8-12	8′ x 12′	151	0.346
MWS-L-8-16	8′ x 16′	201	0.462
MWS-L-8-20	9′ x 21′	252	0.577
MWS-L-8-24	9′ x 25′	302	0.693
MWS-L-10-20	10' x 20'	302	0.693

VOLUME-BASED DESIGNS

HORIZONTAL FLOW BIOFILTRATION ADVANTAGE

MODULAR WETLANDS® SYSTEM LINEAR WITH URBANPOND™ PRESTORAGE

In the example above, the Modular Wetlands® System Linear is installed downstream of the UrbanPond storage system. The MWS Linear is designed for the water quality volume and will treat and discharge the required volume within local draindown time requirements. The MWS Linear's unique horizontal flow design, gives it benefits no other biofilter has - the ability to be placed downstream of detention ponds, extended dry detention basins, underground storage systems and permeable paver reservoirs. The system's horizontal flow configuration and built-in orifice control allows it to be installed with just 6" of fall between inlet and outlet pipe for a simple connection to projects with shallow downstream tie-in points.



UrbanPond
Single and Double Modules

DESIGN SUPPORT

Bio Clean engineers are trained to provide you with superior support for all volume sizing configurations throughout the country. Our vast knowledge of state and local regulations allow us to quickly and efficiently size a system to maximize feasibility. Volume control and hydromodification regulations are expanding the need to decrease the cost and size of your biofiltration system. Bio Clean will help you realize these cost savings with the MWS Linear, the only biofilter than can be used downstream of storage BMPs.

ADVANTAGES

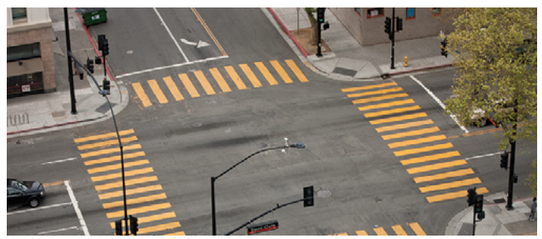
- LOWER COST THAN FLOW-BASED DESIGN
- MEETS LID REQUIREMENTS
- BUILT-IN ORIFICE CONTROL STRUCTURE
- WORKS WITH DEEP INSTALLATIONS

APPLICATIONS

The Modular Wetlands® System Linear has been successfully used on numerous new construction and retrofit projects. The system's superior versatility makes it beneficial for a wide range of stormwater and waste water applications - treating rooftops, streetscapes, parking lots, and industrial sites.

INDUSTRIAL
Many states enforce strict regulations for discharges from industrial sites. The MWS Linear has helped various sites meet difficult EPA-mandated effluent limits for dissolved metals and other pollutants.

RESIDENTIAL
Low to high density developments can benefit from the versatile design of the MWS Linear. The system can be used in both decentralized LID design and cost-effective end-of-the-line configurations.



STREETS
Street applications can be challenging due to limited space. The MWS Linear is very adaptable, and it offers the smallest footprint to work around the constraints of existing utilities on retrofit projects.

PARKING LOTS
Parking lots are designed to maximize space and the Modular Wetlands'® 4 ft. standard planter width allows for easy integration into parking lot islands and other landscape medians.

COMMERCIAL
Compared to bioretention systems, the MWS Linear can treat far more area in less space, meeting treatment and volume control requirements.

MIXED USE
The MWS Linear can be installed as a raised planter to treat runoff from rooftops or patios, making it perfect for sustainable "live-work" spaces.

More applications include:
• Agriculture • Reuse • Low Impact Development • Waste Water

PLANT SELECTION

Abundant plants, trees, and grasses bring value and an aesthetic benefit to any urban setting, but those in the Modular Wetlands® System Linear do even more - they increase pollutant removal. What's not seen, but very important, is that below grade, the stormwater runoff/flow is being subjected to nature's secret weapon: a dynamic physical, chemical, and biological process working to break down and remove non-point source pollutants. The flow rate is controlled in the MWS Linear, giving the plants more contact time so that pollutants are more successfully decomposed, volatilized, and incorporated into the biomass of the Modular Wetlands'® micro/macro flora and fauna.

A wide range of plants are suitable for use in the Modular Wetlands®, but selections vary by location and climate. View suitable plants by visiting biocleanenvironmental.com/plants.

INSTALLATION

The Modular Wetlands® System Linear is simple, easy to install, and has a space-efficient design that offers lower excavation and installation costs compared to traditional tree-box type systems. The structure of the system resembles precast catch basin or utility vaults and is installed in a similar fashion.

The system is delivered fully assembled for quick installation. Generally, the structure can be unloaded and set in place in 15 minutes. Our experienced team of field technicians is available to supervise installations and provide technical support.

MAINTENANCE

Reduce your maintenance costs, man hours, and materials with the Modular Wetlands® System Linear. Unlike other biofiltration systems that provide no pretreatment, the MWS Linear is a self-contained treatment train which incorporates simple and effective pretreatment.

Maintenance requirements for the biofilter itself are almost completely eliminated, as the pretreatment chamber removes and isolates trash, sediments, and hydrocarbons. What's left is the simple maintenance of an easily accessible pretreatment chamber that can be cleaned by hand or with a standard vac truck. Only periodic replacement of low-cost media in the pre-filter boxes is required for long-term operation, and there is absolutely no need to replace expensive biofiltration media.

Bio Clean
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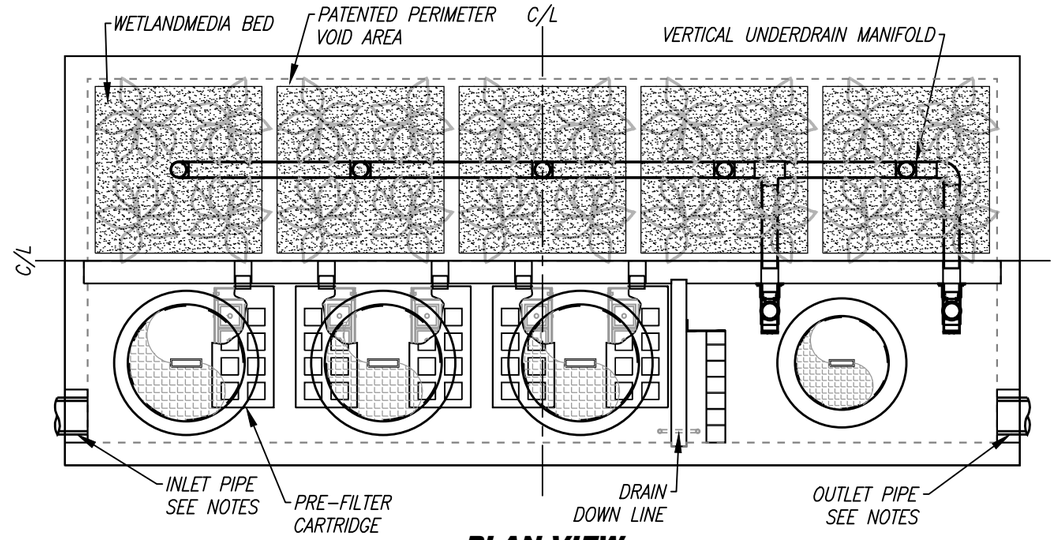
stormwater@forterrabp.com
biocleanenvironmental.com

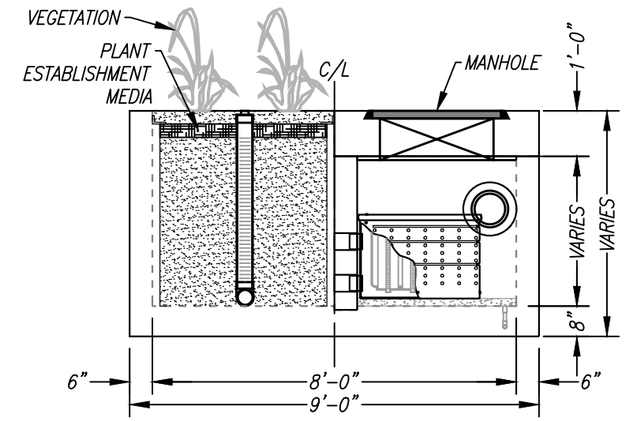
01172020

SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
N/A		0.577	
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
FRAME & COVER	3EA ø30"	OPEN PLANTER	ø24"
NOTES:			

* PRELIMINARY NOT FOR CONSTRUCTION



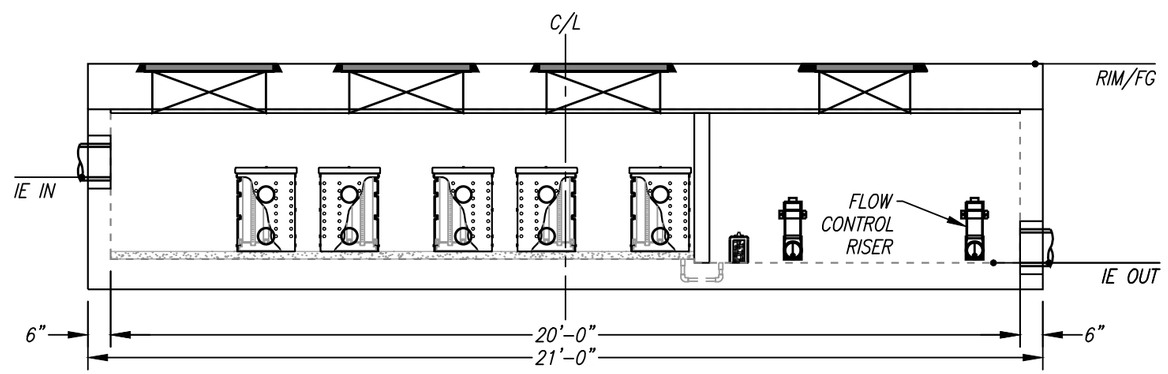
PLAN VIEW



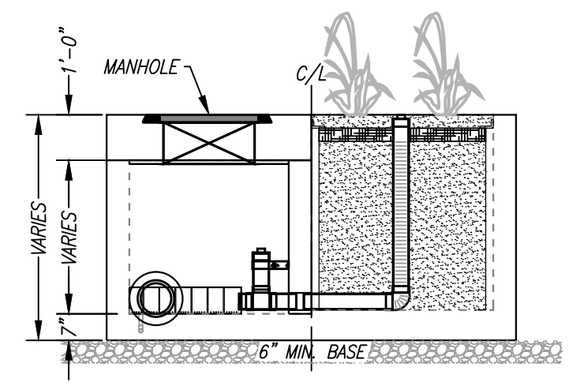
LEFT END VIEW

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURERS STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURERS WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.



ELEVATION VIEW



RIGHT END VIEW

TREATMENT FLOW (CFS)	0.577
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.

MODULAR WETLANDS

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING US PATENTS: 7,425,262; 7,470,362; 7,674,378; 8,303,816; RELATED FOREIGN PATENTS OR OTHER PATENTS PENDING

PROPRIETARY AND CONFIDENTIAL:

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Bio Clean
A Forterra Company

MWS-L-8-20-V
STORMWATER BIOFILTRATION SYSTEM STANDARD DETAIL

5/23/19TOLEE

NOTES:

1. WEIGHT (DRY): 15-LBS

2. MATERIALS:
   A. DEBRIS SHIELD: PERFORATED STAINLESS STEEL ALLOY WITH 51% OPEN AREA
   B. BYPASS HOOD: ALUMINUM ALLOY, 0.062 THK
   C. SUPPORT HARDWARE: CRES 300 SERIES

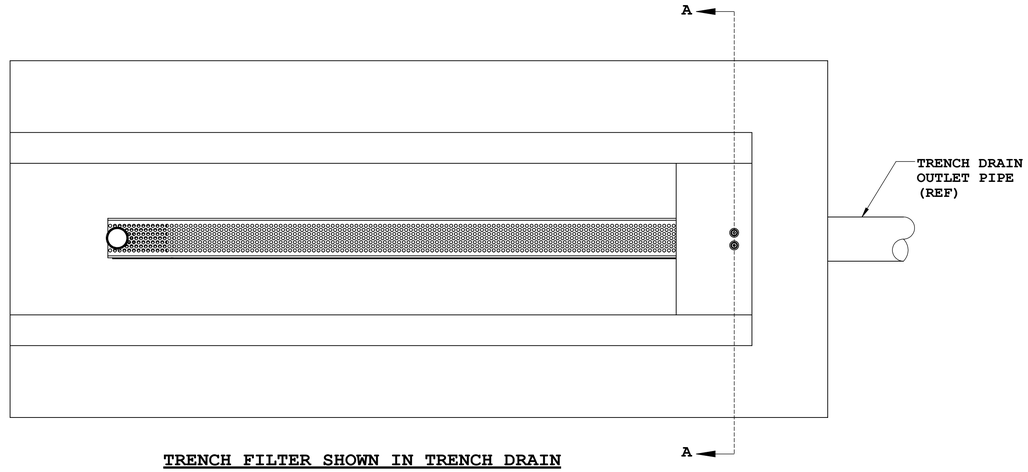
3. PERFORMANCE CHARACTERISTICS:
   A. PERFORATED DEBRIS SHIELD FLOW RATE: 1440 GPM (3.2 CFS)
   B. DEBRIS CAPACITY: 0.96 CU-FT
   C. BYPASS FLOW RATE: 109 GPM (0.24 CFS)

4. ADJUSTMENT RANGE:
   A. MINIMUM TRENCH WIDTH: 6.0-IN
   B. MAXIMUM TRENCH WIDTH: 10.0-IN
   C. MINIMUM TRENCH DRAIN DEPTH: 10" BELOW BOTTOM OF GRATE(s)

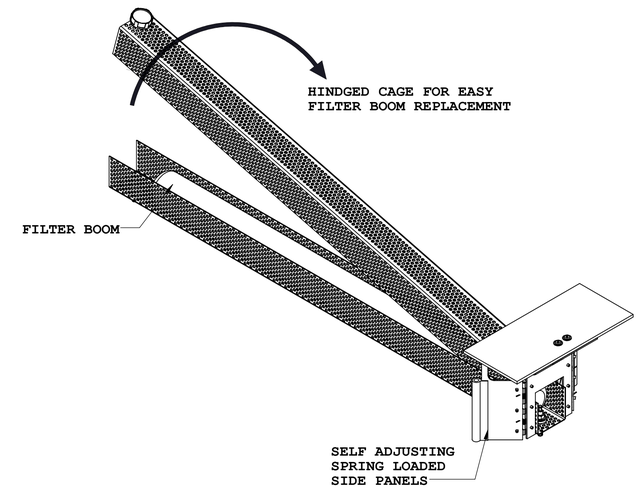
5. TYPICAL INSTALLATION:
   CAREFULLY REMOVE THE TRENCH DRAIN GRATE(S) AND PLACE THE FILTER UNIT DIRECTLY ON THE DRAIN FLOOR. VERIFY THAT THE BYPASS HOOD IS AT OR BELOW THE GRATE SUPPORT LEDGE SO NOT TO INTERFERE WITH THE RE-INSTALLED GRATE(S). WITH THE TRENCH DRAIN FILTER APPROXIMATELY CENTERED IN THE DRAIN TROUGH, MARK, DRILL AND SECURE UNIT IN PLACE WITH THE STRIKE ANCHORS PROVIDED

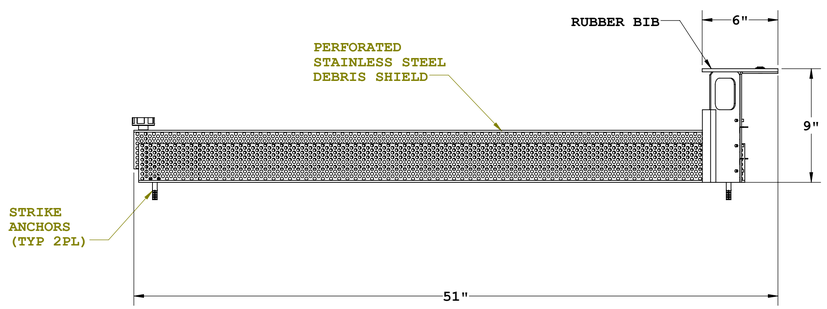
6. MAINTENANCE:
   SYSTEM IS DESIGNED TO BE EASILY OPENED FOR CLEANING OF DEBRIS AND REMOVAL OF FILTER BOOM. USE STANDARD VACTOR HOSE OR SIMPLE SHOVEL AND RAKE TO REMOVE DEBRIS. DISPOSE OF FILTER BOOM AND DEBRIS ACCORDING TO LOCAL ORDINANCES/ REGULATIONS. PRESSURE WASH DEBRIS SHIELD AS NEEDED AND INSERT NEW FILTER BOOM.
   USE ONLY FABCO REPLACEABLE FILTER BOOM,P/N: 10063-1-"SEE TABLE".

REPLACEABLE FILTRATION BOOMS	
10063-1-710	OIL BOOM
10063-1-720	NUTRIENT BOOM
10063-1-730	BACTERIA BOOM

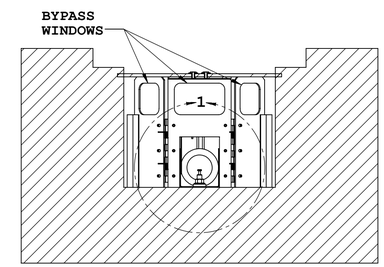


TRENCH FILTER SHOWN IN TRENCH DRAIN

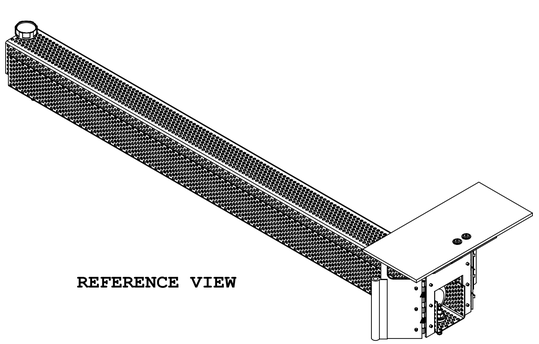




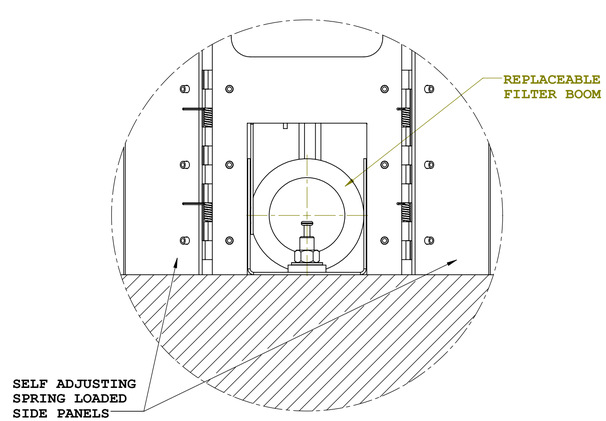
TRENCH DRAIN COVER GRATE NOT SHOWN FOR CLARITY



SECTION A-A



REFERENCE VIEW



DETAIL 1

UNLESS OTHERWISE SPECIFIED
REMOVE ALL BURRS
BREAK SHARP EDGES .002 - .020
FILLETS .020 MAX
DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES

TOLERANCES:
DEC .00 ± .01
DEC .000 ± .005
FRACT ± 1/16
ANGLE ± 2°

	APPROVALS	DATE
DWN	MS	11/25/14
CHKR		
ENGR	JP	11/25/14
ARVD		

PROJECT

MATERIAL: SEE NOTES

MODEL LINK: 10063-1-000

FABCO INDUSTRIES, INC.
66 CENTRAL AVENUE
FARMINGDALE, NY 11735

WWW.FABCO-INDUSTRIES.COM

TITLE: TRENCH DRAIN FILTER 6"-10" CLEAR WIDTH

SIZE: D | DWG. NO.: 10063-1-000 | REV: E

SCALE: 1:6 | WEIGHT: | SHEET 1 OF 1

EPA
United States Environmental Protection Agency

EPA 841-F-03-003

Protecting Water Quality *from* URBAN RUNOFF

Clean Water Is Everybody's Business

In urban and suburban areas, much of the land surface is covered by buildings and pavement, which do not allow rain and snowmelt to soak into the ground. Instead, most developed areas rely on storm drains to carry large amounts of runoff from roofs and paved areas to nearby waterways. The stormwater runoff carries pollutants such as oil, dirt, chemicals, and lawn fertilizers directly to streams and rivers, where they seriously harm water quality. To protect surface water quality and groundwater resources, development should be designed and built to minimize increases in runoff.

The most recent National Water Quality Inventory reports that runoff from urbanized areas is the leading source of water quality impairments to surveyed estuaries and the third-largest source of impairments to surveyed lakes.

Did you know that because of impervious surfaces like pavement and rooftops, a typical city block generates more than 5 times more runoff than a woodland area of the same size?

How Urbanized Areas Affect Water Quality

Increased Runoff

The porous and varied terrain of natural landscapes like forests, wetlands, and grasslands traps rainwater and snowmelt and allows them to filter slowly into the ground. In contrast, impervious (nonporous) surfaces like roads, parking lots, and rooftops prevent rain and snowmelt from infiltrating, or soaking, into the ground. Most of the rainfall and snowmelt remains above the surface, where it runs off rapidly in unnaturally large amounts.

Storm sewer systems concentrate runoff into smooth, straight conduits. This runoff gathers speed and erosional power as it travels underground. When this runoff leaves the storm drains and empties into a stream, its excessive volume and power blast out streambanks, damaging streamside vegetation and wiping out aquatic habitat. These increased storm flows carry sediment loads from construction sites and other denuded surfaces and eroded streambanks. They often carry higher water temperatures from streets, roof tops, and parking lots, which are harmful to the health and reproduction of aquatic life.

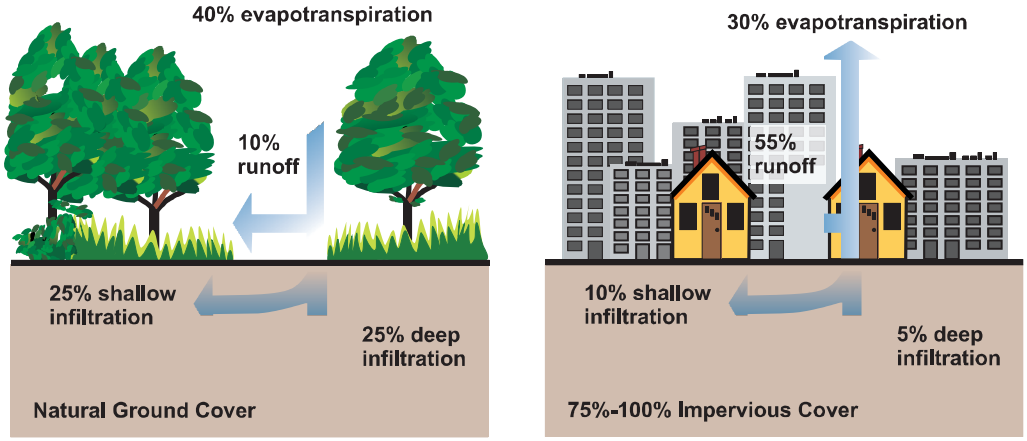
The loss of infiltration from urbanization may also cause profound groundwater changes. Although urbanization leads to great increases in flooding during and immediately after wet weather, in many instances it results in lower stream flows during dry weather. Many native fish and other aquatic life cannot survive when these conditions prevail.

Increased Pollutant Loads

Urbanization increases the variety and amount of pollutants carried into streams, rivers, and lakes. The pollutants include:

- Sediment
- Oil, grease, and toxic chemicals from motor vehicles
- Pesticides and nutrients from lawns and gardens
- Viruses, bacteria, and nutrients from pet waste and failing septic systems
- Road salts
- Heavy metals from roof shingles, motor vehicles, and other sources
- Thermal pollution from dark impervious surfaces such as streets and rooftops

These pollutants can harm fish and wildlife populations, kill native vegetation, foul drinking water supplies, and make recreational areas unsafe and unpleasant.



Relationship between impervious cover and surface runoff. Impervious cover in a watershed results in increased surface ruunoff. As little as 10 percent impervious cover in a watershed can result in stream degradation.

Managing Urban Runoff

What Homeowners Can Do

To decrease polluted runoff from paved surfaces, households can develop alternatives to areas traditionally covered by impervious surfaces. Porous pavement materials are available for driveways and sidewalks, and native vegetation and mulch can replace high maintenance grass lawns. Homeowners can use fertilizers sparingly and sweep driveways, sidewalks, and roads instead of using a hose. Instead of disposing of yard waste, they can use the materials to start a compost pile. And homeowners can learn to use Integrated Pest Management (IPM) to reduce dependence on harmful pesticides.

In addition, households can prevent polluted runoff by picking up after pets and using, storing, and disposing of chemicals properly. Drivers should check their cars for leaks and recycle their motor oil and antifreeze when these fluids are changed. Drivers can also avoid impacts from car wash runoff (e.g., detergents, grime, etc.) by using car wash facilities that do not generate runoff. Households served by septic systems should have them professionally inspected and pumped every 3 to 5 years. They should also practice water conservation measures to extend the life of their septic systems.

Controlling Impacts from New Development

Developers and city planners should attempt to control the volume of runoff from new development by using low impact development, structural controls, and pollution prevention strategies. Low impact development includes measures that conserve natural areas (particularly sensitive hydrologic areas like riparian buffers and infiltrable soils); reduce development impacts; and reduce site runoff rates by maximizing surface roughness, infiltration opportunities, and flow paths.

Controlling Impacts from Existing Development

Controlling runoff from existing urban areas is often more costly than controlling runoff from new developments. Economic efficiencies are often realized through approaches that target "hot spots" of runoff pollution or have multiple benefits, such as high-efficiency street sweeping (which addresses aesthetics, road safety, and water quality). Urban planners and others responsible for managing urban and suburban areas can first identify and implement pollution prevention strategies and examine source control opportunities. They should seek out priority pollutant reduction opportunities, then protect natural areas that help control runoff, and finally begin ecological restoration and retrofit activities to clean up degraded water bodies. Local governments are encouraged to take lead roles in public education efforts through public signage, storm drain marking, pollution prevention outreach campaigns, and partnerships with citizen groups and businesses. Citizens can help prioritize the clean-up strategies, volunteer to become involved in restoration efforts, and mark storm drains with approved "don't dump" messages.

Related Publications

Turn Your Home into a Stormwater Pollution Solution!
www.epa.gov/nps

This web site links to an EPA homeowner's guide to healthy habits for clean water that provides tips for better vehicle and garage care, lawn and garden techniques, home improvement, pet care, and more.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas
www.epa.gov/owow/nps/urbanmm

This technical guidance and reference document is useful to local, state, and tribal managers in implementing management programs for polluted runoff. Contains information on the best available, economically achievable means of reducing pollution of surface waters and groundwater from urban areas.

Onsite Wastewater Treatment System Resources
www.epa.gov/owm/onsite

This web site contains the latest brochures and other resources from EPA for managing onsite wastewater treatment systems (OWTS) such as conventional septic systems and alternative decentralized systems. These resources provide basic information to help individual homeowners, as well as detailed, up-to-date technical guidance of interest to local and state health departments.

Low Impact Development Center
www.lowimpactdevelopment.org

This center provides information on protecting the environment and water resources through integrated site design techniques that are intended to replicate preexisting hydrologic site conditions.

Stormwater Manager's Resource Center (SMRC)
www.stormwatercenter.net

Created and maintained by the Center for Watershed Protection, this resource center is designed specifically for stormwater practitioners, local government officials, and others that need technical assistance on stormwater management issues.

Strategies: Community Responses to Runoff Pollution
www.nrdc.org/water/pollution/storm/stoinx.asp

The Natural Resources Defense Council developed this interactive web document to explore some of the most effective strategies that communities are using around the nation to control urban runoff pollution. The document is also available in print form and as an interactive CD-ROM.

For More Information

U.S. Environmental Protection Agency
Nonpoint Source Control Branch (4503T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov/nps

February 2003

Building & Grounds Maintenance SC-41

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	
Metals	✓
Bacteria	✓
Oil and Grease	
Organics	

Description

Stormwater runoff from building and grounds maintenance activities can be contaminated with toxic hydrocarbons in solvents, fertilizers and pesticides, suspended solids, heavy metals, abnormal pH, and oils and greases. Utilizing the protocols in this fact sheet will prevent or reduce the discharge of pollutants to stormwater from building and grounds maintenance activities by washing and cleaning up with as little water as possible, following good landscape management practices, preventing and cleaning up spills immediately, keeping debris from entering the storm drains, and maintaining the stormwater collection system.

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

Pollution Prevention

- Switch to non-toxic chemicals for maintenance when possible.
- Choose cleaning agents that can be recycled.
- Encourage proper lawn management and landscaping, including use of native vegetation.

CASQA
California Stormwater Quality Association

- Encourage use of Integrated Pest Management techniques for pest control.
- Encourage proper onsite recycling of yard trimmings.
- Recycle residual paints, solvents, lumber, and other material as much as possible.

Suggested Protocols

Pressure Washing of Buildings, Rooftops, and Other Large Objects

- In situations where soaps or detergents are used and the surrounding area is paved, pressure washers must use a water collection device that enables collection of wash water and associated solids. A sump pump, wet vacuum or similarly effective device must be used to collect the runoff and loose materials. The collected runoff and solids must be disposed of properly.
- If soaps or detergents are not used, and the surrounding area is paved, wash runoff does not have to be collected but must be screened. Pressure washers must use filter fabric or some other type of screen on the ground and/or in the catch basin to trap the particles in wash water runoff.
- If you are pressure washing on a grassed area (with or without soap), runoff must be dispersed as sheet flow as much as possible, rather than as a concentrated stream. The wash runoff must remain on the grass and not drain to pavement.

Landscaping Activities

- Dispose of grass clippings, leaves, sticks, or other collected vegetation as garbage, or by composting. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Use mulch or other erosion control measures on exposed soils.

Building Repair, Remodeling, and Construction

- Do not dump any toxic substance or liquid waste on the pavement, the ground, or toward a storm drain.
- Use ground or drop cloths underneath outdoor painting, scraping, and sandblasting work, and properly dispose of collected material daily.
- Use a ground cloth or oversized tub for activities such as paint mixing and tool cleaning.
- Clean paintbrushes and tools covered with water-based paints in sinks connected to sanitary sewers or in portable containers that can be dumped into a sanitary sewer drain. Brushes and tools covered with non-water-based paints, finishes, or other materials must be cleaned in a manner that enables collection of used solvents (e.g., paint thinner, turpentine, etc.) for recycling or proper disposal.
- Use a storm drain cover, filter fabric, or similarly effective runoff control mechanism if dust, grit, wash water, or other pollutants may escape the work area and enter a catch basin. This is particularly necessary on rainy days. The containment device(s) must be in place at the beginning of the work day, and accumulated dirty runoff and solids must be collected and disposed of before removing the containment device(s) at the end of the work day.

- If you need to de-water an excavation site, you may need to filter the water before discharging to a catch basin or off-site. If directed off-site, you should direct the water through hay bales and filter fabric or use other sediment filters or traps.
- Store toxic material under cover during precipitation events and when not in use. A cover would include tarps or other temporary cover material.

Mowing, Trimming, and Planting

- Dispose of leaves, sticks, or other collected vegetation as garbage, by composting or at a permitted landfill. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Use mulch or other erosion control measures when soils are exposed.
- Place temporarily stockpiled material away from watercourses and drain inlets, and berm or cover stockpiles to prevent material releases to the storm drain system.
- Consider an alternative approach when bailing out muddy water: do not put it in the storm drain; pour over landscaped areas.
- Use hand weeding where practical.

Fertilizer and Pesticide Management

- Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of fertilizers and pesticides and training of applicators and pest control advisors.
- Use less toxic pesticides that will do the job when applicable. Avoid use of copper-based pesticides if possible.
- Do not use pesticides if rain is expected.
- Do not mix or prepare pesticides for application near storm drains.
- Use the minimum amount needed for the job.
- Calibrate fertilizer distributors to avoid excessive application.
- Employ techniques to minimize off-target application (e.g., spray drift) of pesticides, including consideration of alternative application techniques.
- Apply pesticides only when wind speeds are low.
- Fertilizers should be worked into the soil rather than dumped or broadcast onto the surface.
- Irrigate slowly to prevent runoff and then only as much as is needed.
- Clean pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.
- Dispose of empty pesticide containers according to the instructions on the container label.

- Use up the pesticides. Rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- Implement storage requirements for pesticide products with guidance from the local fire department and County Agricultural Commissioner. Provide secondary containment for pesticides.

Inspection

- Inspect irrigation system periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering and repair leaks in the irrigation system as soon as they are observed.

Training

- Educate and train employees on pesticide use and in pesticide application techniques to prevent pollution.
- Train employees and contractors in proper techniques for spill containment and cleanup.
- Be sure the frequency of training takes into account the complexity of the operations and the nature of the staff.

Spill Response and Prevention

- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Place a stockpile of spill cleanup materials, such as brooms, dustpans, and vacuum sweepers (if desired) near the storage area where it will be readily accessible.
- Have employees trained in spill containment and cleanup present during the loading/unloading of dangerous wastes, liquid chemicals, or other materials.
- Familiarize employees with the Spill Prevention Control and Countermeasure Plan.
- Clean up spills immediately.

Other Considerations

Alternative pest/weed controls may not be available, suitable, or effective in many cases.

Requirements

Costs

- Cost will vary depending on the type and size of facility.
- Overall costs should be low in comparison to other BMPs.

Maintenance

Sweep paved areas regularly to collect loose particles. Wipe up spills with rags and other absorbent material immediately, do not hose down the area to a storm drain.

Supplemental Information

Further Detail of the BMP

Fire Sprinkler Line Flushing

Building fire sprinkler line flushing may be a source of non-stormwater runoff pollution. The water entering the system is usually potable water, though in some areas it may be non-potable reclaimed wastewater. There are subsequent factors that may drastically reduce the quality of the water in such systems. Black iron pipe is usually used since it is cheaper than potable piping, but it is subject to rusting and results in lower quality water. Initially, the black iron pipe has an oil coating to protect it from rusting between manufacture and installation; this will contaminate the water from the first flush but not from subsequent flushes. Nitrates, poly-phosphates and other corrosion inhibitors, as well as fire suppressants and antifreeze may be added to the sprinkler water system. Water generally remains in the sprinkler system a long time (typically a year) and between flushes may accumulate iron, manganese, lead, copper, nickel, and zinc. The water generally becomes anoxic and contains living and dead bacteria and breakdown products from chlorination. This may result in a significant BOD problem and the water often smells. Consequently dispose fire sprinkler line flush water into the sanitary sewer. Do not allow discharge to storm drain or infiltration due to potential high levels of pollutants in fire sprinkler line water.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Mobile Cleaners Pilot Program: Final Report. 1997. Bay Area Stormwater Management Agencies Association (BASMAA). http://www.basmaa.org/

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Association (BASMAA). http://www.basmaa.org/

Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net/

Parking/Storage Area Maintenance SC-43

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Description

Parking lots and storage areas can contribute a number of substances, such as trash, suspended solids, hydrocarbons, oil and grease, and heavy metals that can enter receiving waters through stormwater runoff or non-stormwater discharges. The following protocols are intended to prevent or reduce the discharge of pollutants from parking/storage areas and include using good housekeeping practices, following appropriate cleaning BMPs, and training employees.

Approach

Pollution Prevention

- Encourage alternative designs and maintenance strategies for impervious parking lots. (See New Development and Redevelopment BMP Handbook).
- Keep accurate maintenance logs to evaluate BMP implementation.

Suggested Protocols

General

- Keep the parking and storage areas clean and orderly. Remove debris in a timely fashion.
- Allow sheet runoff to flow into biofilters (vegetated strip and swale) and/or infiltration devices.
- Utilize sand filters or oleophilic collectors for oily waste in low concentrations.

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- Arrange rooftop drains to prevent drainage directly onto paved surfaces.
- Design lot to include semi-permeable hardscape.

Controlling Litter

- Post "No Littering" signs and enforce anti-litter laws.
- Provide an adequate number of litter receptacles.
- Clean out and cover litter receptacles frequently to prevent spillage.
- Provide trash receptacles in parking lots to discourage litter.
- Routinely sweep, shovel and dispose of litter in the trash.

Surface cleaning

- Use dry cleaning methods (e.g. sweeping or vacuuming) to prevent the discharge of pollutants into the stormwater conveyance system.
- Establish frequency of public parking lot sweeping based on usage and field observations of waste accumulation.
- Sweep all parking lots at least once before the onset of the wet season.
- If water is used follow the procedures below:
  - Block the storm drain or contain runoff.
  - Wash water should be collected and pumped to the sanitary sewer or discharged to a pervious surface, do not allow wash water to enter storm drains.
  - Dispose of parking lot sweeping debris and dirt at a landfill.
- When cleaning heavy oily deposits:
  - Use absorbent materials on oily spots prior to sweeping or washing.
  - Dispose of used absorbents appropriately.

Surface Repair

- Pre-heat, transfer or load hot bituminous material away from storm drain inlets.
- Apply concrete, asphalt, and seal coat during dry weather to prevent contamination form contacting stormwater runoff.
- Cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc., where applicable. Leave covers in place until job is complete and until all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal.

- Use only as much water as necessary for dust control, to avoid runoff.
- Catch drips from paving equipment that is not in use with pans or absorbent material placed under the machines. Dispose of collected material and absorbents properly.

Inspection

- Have designated personnel conduct inspections of the parking facilities and stormwater conveyance systems associated with them on a regular basis.
- Inspect cleaning equipment/sweepers for leaks on a regular basis.

Training

- Provide regular training to field employees and/or contractors regarding cleaning of paved areas and proper operation of equipment.
- Train employees and contractors in proper techniques for spill containment and cleanup.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Keep your Spill Prevention Control and countermeasure (SPCC) plan up-to-date, nad implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Limitations related to sweeping activities at large parking facilities may include high equipment costs, the need for sweeper operator training, and the inability of current sweeper technology to remove oil and grease.

Requirements

Costs

Cleaning/sweeping costs can be quite large, construction and maintenance of stormwater structural controls can be quite expensive as well.

Maintenance

- Sweep parking lot to minimize cleaning with water.
- Clean out oil/water/sand separators regularly, especially after heavy storms.
- Clean parking facilities on a regular basis to prevent accumulated wastes and pollutants from being discharged into conveyance systems during rainy conditions.

Supplemental Information

Further Detail of the BMP

Surface Repair

Apply concrete, asphalt, and seal coat during dry weather to prevent contamination form contacting stormwater runoff. Where applicable, cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc. Leave covers in place until job is complete and until all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal. Use only as much water as necessary for dust control, to avoid runoff.

References and Resources

http://www.stormwatercenter.net/

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality control Board. July 1998 (Revised February 2002 by the California Coastal Commission).

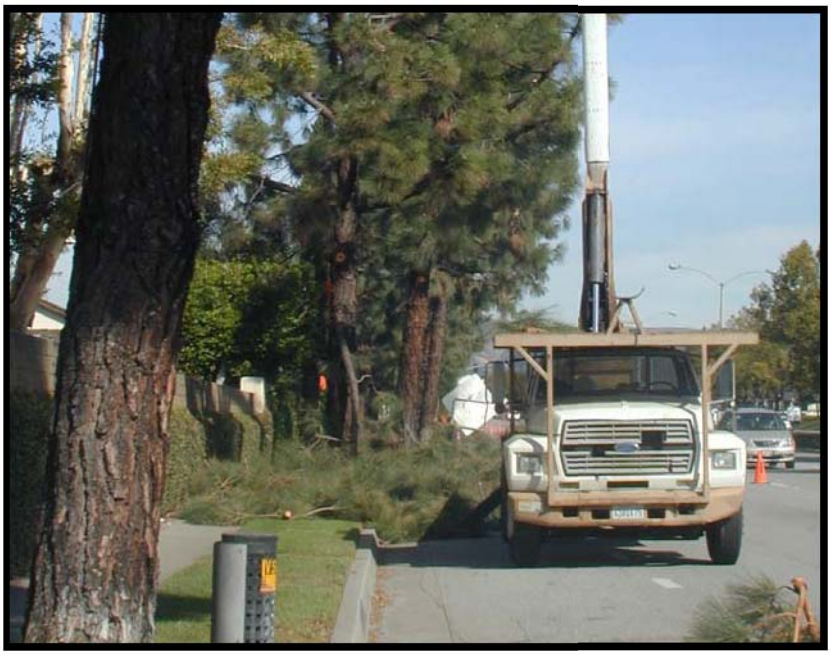
Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp

Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Association (BASMAA) http://www.basma.org

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program (URMP)
http://www.projectcleanwater.org/pdf/Model%20Program%20Municipal%20Facilities.pdf

Landscape Maintenance SC-73



Objectives

- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	
Bacteria	
Oil and Grease	
Organics	
Oxygen Demanding	☑

Description

Landscape maintenance activities include vegetation removal; herbicide and insecticide application; fertilizer application; watering; and other gardening and lawn care practices. Vegetation control typically involves a combination of chemical (herbicide) application and mechanical methods. All of these maintenance practices have the potential to contribute pollutants to the storm drain system. The major objectives of this BMP are to minimize the discharge of pesticides, herbicides and fertilizers to the storm drain system and receiving waters; prevent the disposal of landscape waste into the storm drain system by collecting and properly disposing of clippings and cuttings, and educating employees and the public.

Approach

Pollution Prevention

- Implement an integrated pest management (IPM) program. IPM is a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools.
- Choose low water using flowers, trees, shrubs, and groundcover.
- Consider alternative landscaping techniques such as naturescaping and xeriscaping.
- Conduct appropriate maintenance (i.e. properly timed fertilizing, weeding, pest control, and pruning) to help preserve the landscapes water efficiency.

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- Consider grass cycling (grass cycling is the natural recycling of grass by leaving the clippings on the lawn when mowing. Grass clippings decompose quickly and release valuable nutrients back into the lawn).

Suggested Protocols

Mowing, Trimming, and Weeding

- Whenever possible use mechanical methods of vegetation removal (e.g mowing with tractor-type or push mowers, hand cutting with gas or electric powered weed trimmers) rather than applying herbicides. Use hand weeding where practical.
- Avoid loosening the soil when conducting mechanical or manual weed control, this could lead to erosion. Use mulch or other erosion control measures when soils are exposed.
- Performing mowing at optimal times. Mowing should not be performed if significant rain events are predicted.
- Mulching mowers may be recommended for certain flat areas. Other techniques may be employed to minimize mowing such as selective vegetative planting using low maintenance grasses and shrubs.
- Collect lawn and garden clippings, pruning waste, tree trimmings, and weeds. Chip if necessary, and compost or dispose of at a landfill (see waste management section of this fact sheet).
- Place temporarily stockpiled material away from watercourses, and berm or cover stockpiles to prevent material releases to storm drains.

Planting

- Determine existing native vegetation features (location, species, size, function, importance) and consider the feasibility of protecting them. Consider elements such as their effect on drainage and erosion, hardiness, maintenance requirements, and possible conflicts between preserving vegetation and the resulting maintenance needs.
- Retain and/or plant selected native vegetation whose features are determined to be beneficial, where feasible. Native vegetation usually requires less maintenance (e.g., irrigation, fertilizer) than planting new vegetation.
- Consider using low water use groundcovers when planting or replanting.

Waste Management

- Compost leaves, sticks, or other collected vegetation or dispose of at a permitted landfill. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Place temporarily stockpiled material away from watercourses and storm drain inlets, and berm or cover stockpiles to prevent material releases to the storm drain system.
- Reduce the use of high nitrogen fertilizers that produce excess growth requiring more frequent mowing or trimming.

- Avoid landscape wastes in and around storm drain inlets by either using bagging equipment or by manually picking up the material.

Irrigation

- Where practical, use automatic timers to minimize runoff.
- Use popup sprinkler heads in areas with a lot of activity or where there is a chance the pipes may be broken. Consider the use of mechanisms that reduce water flow to sprinkler heads if broken.
- Ensure that there is no runoff from the landscaped area(s) if re-claimed water is used for irrigation.
- If bailing of muddy water is required (e.g. when repairing a water line leak), do not put it in the storm drain; pour over landscaped areas.
- Irrigate slowly or pulse irrigate to prevent runoff and then only irrigate as much as is needed.
- Apply water at rates that do not exceed the infiltration rate of the soil.

Fertilizer and Pesticide Management

- Utilize a comprehensive management system that incorporates integrated pest management (IPM) techniques. There are many methods and types of IPM, including the following:
  - Mulching can be used to prevent weeds where turf is absent, fencing installed to keep rodents out, and netting used to keep birds and insects away from leaves and fruit.
  - Visible insects can be removed by hand (with gloves or tweezers) and placed in soapy water or vegetable oil. Alternatively, insects can be sprayed off the plant with water or in some cases vacuumed off of larger plants.
  - Store-bought traps, such as species-specific, pheromone-based traps or colored sticky cards, can be used.
  - Slugs can be trapped in small cups filled with beer that are set in the ground so the slugs can get in easily.
  - In cases where microscopic parasites, such as bacteria and fungi, are causing damage to plants, the affected plant material can be removed and disposed of (pruning equipment should be disinfected with bleach to prevent spreading the disease organism).
  - Small mammals and birds can be excluded using fences, netting, tree trunk guards.
  - Beneficial organisms, such as bats, birds, green lacewings, ladybugs, praying mantis, ground beetles, parasitic nematodes, trichogramma wasps, seed head weevils, and spiders that prey on detrimental pest species can be promoted.
- Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of fertilizers and pesticides and training of applicators and pest control advisors.

- Use pesticides only if there is an actual pest problem (not on a regular preventative schedule).
- Do not use pesticides if rain is expected. Apply pesticides only when wind speeds are low (less than 5 mph).
- Do not mix or prepare pesticides for application near storm drains.
- Prepare the minimum amount of pesticide needed for the job and use the lowest rate that will effectively control the pest.
- Employ techniques to minimize off-target application (e.g. spray drift) of pesticides, including consideration of alternative application techniques.
- Fertilizers should be worked into the soil rather than dumped or broadcast onto the surface.
- Calibrate fertilizer and pesticide application equipment to avoid excessive application.
- Periodically test soils for determining proper fertilizer use.
- Sweep pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.
- Purchase only the amount of pesticide that you can reasonably use in a given time period (month or year depending on the product).
- Triple rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- Dispose of empty pesticide containers according to the instructions on the container label.

Inspection

- Inspect irrigation system periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering, and repair leaks in the irrigation system as soon as they are observed.
- Inspect pesticide/fertilizer equipment and transportation vehicles daily.

Training

- Educate and train employees on use of pesticides and in pesticide application techniques to prevent pollution. Pesticide application must be under the supervision of a California qualified pesticide applicator.
- Train/encourage municipal maintenance crews to use IPM techniques for managing public green areas.
- Annually train employees within departments responsible for pesticide application on the appropriate portions of the agency's IPM Policy, SOPs, and BMPs, and the latest IPM techniques.

- Employees who are not authorized and trained to apply pesticides should be periodically (at least annually) informed that they cannot use over-the-counter pesticides in or around the workplace.
- Use a training log or similar method to document training.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup
- Have spill cleanup materials readily available and in a know in location
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- The Federal Pesticide, Fungicide, and Rodenticide Act and California Title 3, Division 6, Pesticides and Pest Control Operations place strict controls over pesticide application and handling and specify training, annual refresher, and testing requirements. The regulations generally cover: a list of approved pesticides and selected uses, updated regularly; general application information; equipment use and maintenance procedures; and record keeping. The California Department of Pesticide Regulations and the County Agricultural Commission coordinate and maintain the licensing and certification programs. All public agency employees who apply pesticides and herbicides in "agricultural use" areas such as parks, golf courses, rights-of-way and recreation areas should be properly certified in accordance with state regulations. Contracts for landscape maintenance should include similar requirements.
- All employees who handle pesticides should be familiar with the most recent material safety data sheet (MSDS) files.
- Municipalities do not have the authority to regulate the use of pesticides by school districts, however the California Healthy Schools Act of 2000 (AB 2260) has imposed requirements on California school districts regarding pesticide use in schools. Posting of notification prior to the application of pesticides is now required, and IPM is stated as the preferred approach to pest management in schools.

Requirements

Costs

Additional training of municipal employees will be required to address IPM techniques and BMPs. IPM methods will likely increase labor cost for pest control which may be offset by lower chemical costs.

Maintenance

Not applicable

Supplemental Information

Further Detail of the BMP

Waste Management

Composting is one of the better disposal alternatives if locally available. Most municipalities either have or are planning yard waste composting facilities as a means of reducing the amount of waste going to the landfill. Lawn clippings from municipal maintenance programs as well as private sources would probably be compatible with most composting facilities

Contractors and Other Pesticide Users

Municipal agencies should develop and implement a process to ensure that any contractor employed to conduct pest control and pesticide application on municipal property engages in pest control methods consistent with the IPM Policy adopted by the agency. Specifically, municipalities should require contractors to follow the agency's IPM policy, SOPs, and BMPs; provide evidence to the agency of having received training on current IPM techniques when feasible; provide documentation of pesticide use on agency property to the agency in a timely manner.

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Drainage System Maintenance SC-74

Photo Credit: Geoff Brosseau

Objectives

- Contain
- Educate
- Reduce/Minimize

Description

As a consequence of its function, the stormwater conveyance system collects and transports urban runoff that may contain certain pollutants. Maintaining catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis will remove pollutants, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the system functions properly hydraulically to avoid flooding.

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Approach

Suggested Protocols

Catch Basins/Inlet Structures

- Municipal staff should regularly inspect facilities to ensure the following:
  - Immediate repair of any deterioration threatening structural integrity.
  - Cleaning before the sump is 40% full. Catch basins should be cleaned as frequently as needed to meet this standard.
  - Stenciling of catch basins and inlets (see SC-75 Waste Handling and Disposal).
- Clean catch basins, storm drain inlets, and other conveyance structures in high pollutant load areas just before the wet season to remove sediments and debris accumulated during the summer.

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- Conduct inspections more frequently during the wet season for problem areas where sediment or trash accumulates more often. Clean and repair as needed.
- Keep accurate logs of the number of catch basins cleaned.
- Record the amount of waste collected.
- Store wastes collected from cleaning activities of the drainage system in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain.
- Dewater the wastes with outflow into the sanitary sewer if permitted. Water should be treated with an appropriate filtering device prior to discharge to the sanitary sewer. If discharge to the sanitary sewer is not allowed, water should be pumped or vacuumed to a tank and properly disposed of. Do not dewater near a storm drain or stream.
- Except for small communities with relatively few catch basins that may be cleaned manually, most municipalities will require mechanical cleaners such as eductors, vacuums, or bucket loaders.

Storm Drain Conveyance System

- Locate reaches of storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.
- Collect flushed effluent and pump to the sanitary sewer for treatment.

Pump Stations

- Clean all storm drain pump stations prior to the wet season to remove silt and trash.
- Do not allow discharge from cleaning a storm drain pump station or other facility to reach the storm drain system.
- Conduct quarterly routine maintenance at each pump station.
- Inspect, clean, and repair as necessary all outlet structures prior to the wet season.
- Sample collected sediments to determine if landfill disposal is possible, or illegal discharges in the watershed are occurring.

Open Channel

- Consider modification of storm channel characteristics to improve channel hydraulics, to increase pollutant removals, and to enhance channel/creek aesthetic and habitat value.
- Conduct channel modification/improvement in accordance with existing laws. Any person, government agency, or public utility proposing an activity that will change the natural (emphasis added) state of any river, stream, or lake in California, must enter into a steam or Lake Alteration Agreement with the Department of Fish and Game. The developer-applicant should also contact local governments (city, county, special districts), other state agencies

(SWRCB, RWQCB, Department of Forestry, Department of Water Resources), and Federal Corps of Engineers and USFWS

Illicit Connections and Discharges

- During routine maintenance of conveyance system and drainage structures field staff should look for evidence of illegal discharges or illicit connections:
  - Is there evidence of spills such as paints, discoloring, etc.
  - Are there any odors associated with the drainage system
  - Record locations of apparent illegal discharges/illicit connections
  - Track flows back to potential dischargers and conduct aboveground inspections. This can be done through visual inspection of up gradient manholes or alternate techniques including zinc chloride smoke testing, fluorometric dye testing, physical inspection testing, or television camera inspection.
  - Once the origin of flow is established, require illicit discharger to eliminate the discharge.
- Stencil storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

Illegal Dumping

- Regularly inspect and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.
- Establish a system for tracking incidents. The system should be designed to identify the following:
  - Illegal dumping hot spots
  - Types and quantities (in some cases) of wastes
  - Patterns in time of occurrence (time of day/night, month, or year)
  - Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills)
  - Responsible parties
- Post "No Dumping" signs in problem areas with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

- The State Department of Fish and Game has a hotline for reporting violations called Cal TIP (1-800-952-5400). The phone number may be used to report any violation of a Fish and Game code (illegal dumping, poaching, etc.).
- The California Department of Toxic Substances Control's Waste Alert Hotline, 1-800-69TOXIC, can be used to report hazardous waste violations.

Training

- Train crews in proper maintenance activities, including record keeping and disposal.
- Only properly trained individuals are allowed to handle hazardous materials/wastes.
- Train municipal employees from all departments (public works, utilities, street cleaning, parks and recreation, industrial waste inspection, hazardous waste inspection, sewer maintenance) to recognize and report illegal dumping.
- Train municipal employees and educate businesses, contractors, and the general public in proper and consistent methods for disposal.
- Train municipal staff regarding non-stormwater discharges (See SC-10 Non-Stormwater Discharges).

Spill Response and Prevention

- Refer to SC-11, Prevention, Control & Cleanup
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Cleanup activities may create a slight disturbance for local aquatic species. Access to items and material on private property may be limited. Trade-offs may exist between channel hydraulics and water quality/riparian habitat. If storm channels or basins are recognized as wetlands, many activities, including maintenance, may be subject to regulation and permitting.
- Storm drain flushing is most effective in small diameter pipes (36-inch diameter pipe or less, depending on water supply and sediment collection capacity). Other considerations associated with storm drain flushing may include the availability of a water source, finding a downstream area to collect sediments, liquid/sediment disposal, and disposal of flushed effluent to sanitary sewer may be prohibited in some areas.
- Regulations may include adoption of substantial penalties for illegal dumping and disposal.
- Municipal codes should include sections prohibiting the discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the storm drain system.
- Private property access rights may be needed to track illegal discharges up gradient.

- Requirements of municipal ordinance authority for suspected source verification testing for illicit connections necessary for guaranteed rights of entry.

Requirements

Costs

- An aggressive catch basin cleaning program could require a significant capital and O&M budget. A careful study of cleaning effectiveness should be undertaken before increased cleaning is implemented. Catch basin cleaning costs are less expensive if vacuum street sweepers are available; cleaning catch basins manually can cost approximately twice as much as cleaning the basins with a vacuum attached to a sweeper.

- Methods used for illicit connection detection (smoke testing, dye testing, visual inspection, and flow monitoring) can be costly and time-consuming. Site-specific factors, such as the level of impervious area, the density and ages of buildings, and type of land use will determine the level of investigation necessary. Encouraging reporting of illicit discharges by employees can offset costs by saving expense on inspectors and directing resources more efficiently. Some programs have used funds available from "environmental fees" or special assessment districts to fund their illicit connection elimination programs.

Maintenance

- Two-person teams may be required to clean catch basins with vactor trucks.

- Identifying illicit discharges requires teams of at least two people (volunteers can be used), plus administrative personnel, depending on the complexity of the storm sewer system.

- Arrangements must be made for proper disposal of collected wastes.

- Requires technical staff to detect and investigate illegal dumping violations, and to coordinate public education.

Supplemental Information

Further Detail of the BMP

Storm Drain flushing

Sanitary sewer flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants in sanitary sewer systems. The same principles that make sanitary sewer flushing effective can be used to flush storm drains. Flushing may be designed to hydraulically convey accumulated material to strategic locations, such as to an open channel, to another point where flushing will be initiated, or over to the sanitary sewer and on to the treatment facilities, thus preventing re-suspension and overflow of a portion of the solids during storm events. Flushing prevents "plug flow" discharges of concentrated pollutant loadings and sediments. The deposits can hinder the designed conveyance capacity of the storm drain system and potentially cause backwater conditions in severe cases of clogging.

Storm drain flushing usually takes place along segments of pipe with grades that are too flat to maintain adequate velocity to keep particles in suspension. An upstream manhole is selected to place an inflatable device that temporarily plugs the pipe. Further upstream, water is pumped into the line to create a flushing wave. When the upstream reach of pipe is sufficiently full to

cause a flushing wave, the inflated device is rapidly deflated with the assistance of a vacuum pump, releasing the backed up water and resulting in the cleaning of the storm drain segment.

To further reduce the impacts of stormwater pollution, a second inflatable device, placed well downstream, may be used to re-collect the water after the force of the flushing wave has dissipated. A pump may then be used to transfer the water and accumulated material to the sanitary sewer for treatment. In some cases, an interceptor structure may be more practical or required to re-collect the flushed waters.

It has been found that cleansing efficiency of periodic flush waves is dependent upon flush volume, flush discharge rate, sewer slope, sewer length, sewer flow rate, sewer diameter, and population density. As a rule of thumb, the length of line to be flushed should not exceed 700 feet. At this maximum recommended length, the percent removal efficiency ranges between 65-75 percent for organics and 55-65 percent for dry weather grit/inorganic material. The percent removal efficiency drops rapidly beyond that. Water is commonly supplied by a water truck, but fire hydrants can also supply water. To make the best use of water, it is recommended that reclaimed water be used or that fire hydrant line flushing coincide with storm drain flushing.

Flow Management

Flow management has been one of the principal motivations for designing urban stream corridors in the past. Such needs may or may not be compatible with the stormwater quality goals in the stream corridor.

Downstream flood peaks can be suppressed by reducing through flow velocity. This can be accomplished by reducing gradient with grade control structures or increasing roughness with boulders, dense vegetation, or complex banks forms. Reducing velocity correspondingly increases flood height, so all such measures have a natural association with floodplain open space. Flood elevations laterally adjacent to the stream can be lowered by increasing through flow velocity.

However, increasing velocity increases flooding downstream and inherently conflicts with channel stability and human safety. Where topography permits, another way to lower flood elevation is to lower the level of the floodway with drop structures into a large but subtly excavated bowl where flood flows we allowed to spread out.

Stream Corridor Planning

Urban streams receive and convey stormwater flows from developed or developing watersheds. Planning of stream corridors thus interacts with urban stormwater management programs. If local programs are intended to control or protect downstream environments by managing flows delivered to the channels, then it is logical that such programs should be supplemented by management of the materials, forms, and uses of the downstream riparian corridor. Any proposal for steam alteration or management should be investigated for its potential flow and stability effects on upstream, downstream, and laterally adjacent areas. The timing and rate of flow from various tributaries can combine in complex ways to alter flood hazards. Each section of channel is unique, influenced by its own distribution of roughness elements, management activities, and stream responses.

Flexibility to adapt to stream features and behaviors as they evolve must be included in stream reclamation planning. The amenity and ecology of streams may be enhanced through the landscape design options of 1) corridor reservation, 2) bank treatment, 3) geomorphic restoration, and 4) grade control.

Corridor reservation - Reserving stream corridors and valleys to accommodate natural stream meandering, aggradation, degradation, and over bank flows allows streams to find their own form and generate less ongoing erosion. In California, open stream corridors in recent urban developments have produced recreational open space, irrigation of streamside plantings, and the aesthetic amenity of flowing water.

Bank treatment - The use of armoring, vegetative cover, and flow deflection may be used to influence a channel's form, stability, and biotic habitat. To prevent bank erosion, armoring can be done with rigid construction materials, such as concrete, masonry, wood planks and logs, riprap, and gabions. Concrete linings have been criticized because of their lack of provision of biotic habitat. In contrast, riprap and gabions make relatively porous and flexible linings. Boulders, placed in the bed reduce velocity and erosive power.

Riparian vegetation can stabilize the banks of streams that are at or near a condition of equilibrium. Binding networks of roots increase bank shear strength. During flood flows, resilient vegetation is forced into erosion-inhibiting mats. The roughness of vegetation leads to lower velocity, further reducing erosive effects. Structural flow deflection can protect banks from erosion or alter fish habitat. By concentrating flow, a deflector causes a pool to be scoured in the bed.

Geomorphic restoration – Restoration refers to alteration of disturbed streams so their form and behavior emulate those of undisturbed streams. Natural meanders are retained, with grading to gentle slopes on the inside of curves to allow point bars and riffle-pool sequences to develop. Trees are retained to provide scenic quality, biotic productivity, and roots for bank stabilization, supplemented by plantings where necessary.

A restorative approach can be successful where the stream is already approaching equilibrium. However, if upstream urbanization continues new flow regimes will be generated that could disrupt the equilibrium of the treated system.

Grade Control - A grade control structure is a level shelf of a permanent material, such as stone, masonry, or concrete, over which stream water flows. A grade control structure is called a sill, weir, or drop structure, depending on the relation of its invert elevation to upstream and downstream channels.

A sill is installed at the preexisting channel bed elevation to prevent upstream migration of nick points. It establishes a firm base level below which the upstream channel can not erode.

A weir or check dam is installed with invert above the preexisting bed elevation. A weir raises the local base level of the stream and causes aggradation upstream. The gradient, velocity, and erosive potential of the stream channel are reduced. A drop structure lowers the downstream invert below its preexisting elevation, reducing downstream gradient and velocity. Weirs and drop structure control erosion by dissipating energy and reducing slope velocity.

When carefully applied, grade control structures can be highly versatile in establishing human and environmental benefits in stabilized channels. To be successful, application of grade control structures should be guided by analysis of the stream system both upstream and downstream from the area to he reclaimed.

Examples

The California Department of Water Resources began the Urban Stream Restoration Program in 1985. The program provides grant funds to municipalities and community groups to implement stream restoration projects. The projects reduce damages from streambank aid watershed instability arid floods while restoring streams' aesthetic, recreational, and fish and wildlife values.

In Buena Vista Park, upper floodway slopes are gentle and grassed to achieve continuity of usable park land across the channel of small boulders at the base of the slopes.

The San Diego River is a large, vegetative lined channel, which was planted in a variety of species to support riparian wildlife while stabilizing the steep banks of the floodway.

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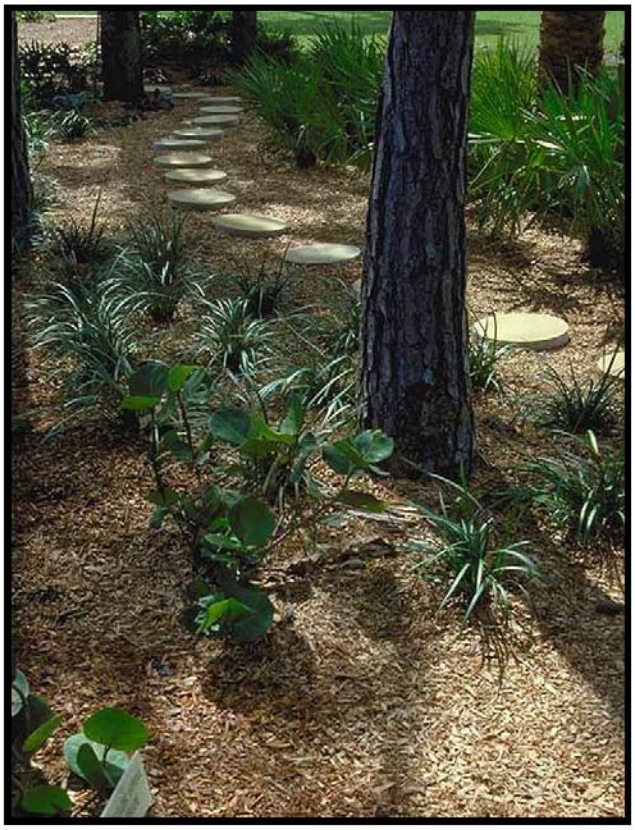
Site Design & Landscape Planning SD-10



Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- ☑ Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Integrating and incorporating appropriate landscape planning methodologies into the project design is the most effective action that can be done to minimize surface and groundwater contamination from stormwater.

Approach

Landscape planning should couple consideration of land suitability for urban uses with consideration of community goals and projected growth. Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for site design and landscapes planning should conform to applicable standards and specifications of agencies with jurisdiction and be consistent with applicable General Plan and Local Area Plan policies.

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Designing New Installations

Begin the development of a plan for the landscape unit with attention to the following general principles:

- Formulate the plan on the basis of clearly articulated community goals. Carefully identify conflicts and choices between retaining and protecting desired resources and community growth.

- Map and assess land suitability for urban uses. Include the following landscape features in the assessment: wooded land, open unwooded land, steep slopes, erosion-prone soils, foundation suitability, soil suitability for waste disposal, aquifers, aquifer recharge areas, wetlands, floodplains, surface waters, agricultural lands, and various categories of urban land use. When appropriate, the assessment can highlight outstanding local or regional resources that the community determines should be protected (e.g., a scenic area, recreational area, threatened species habitat, farmland, fish run). Mapping and assessment should recognize not only these resources but also additional areas needed for their sustenance.

Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Conserve Natural Areas during Landscape Planning

If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

- Cluster development on least-sensitive portions of a site while leaving the remaining land in a natural undisturbed condition.

- Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.

- Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.

- Promote natural vegetation by using parking lot islands and other landscaped areas.

- Preserve riparian areas and wetlands.

Maximize Natural Water Storage and Infiltration Opportunities Within the Landscape Unit

- Promote the conservation of forest cover. Building on land that is already deforested affects basin hydrology to a lesser extent than converting forested land. Loss of forest cover reduces interception storage, detention in the organic forest floor layer, and water losses by evapotranspiration, resulting in large peak runoff increases and either their negative effects or the expense of countering them with structural solutions.

- Maintain natural storage reservoirs and drainage corridors, including depressions, areas of permeable soils, swales, and intermittent streams. Develop and implement policies and

regulations to discourage the clearing, filling, and channelization of these features. Utilize them in drainage networks in preference to pipes, culverts, and engineered ditches.

- Evaluating infiltration opportunities by referring to the stormwater management manual for the jurisdiction and pay particular attention to the selection criteria for avoiding groundwater contamination, poor soils, and hydrogeological conditions that cause these facilities to fail. If necessary, locate developments with large amounts of impervious surfaces or a potential to produce relatively contaminated runoff away from groundwater recharge areas.

Protection of Slopes and Channels during Landscape Design

- Convey runoff safely from the tops of slopes.
- Avoid disturbing steep or unstable slopes.
- Avoid disturbing natural channels.
- Stabilize disturbed slopes as quickly as possible.
- Vegetate slopes with native or drought tolerant vegetation.
- Control and treat flows in landscaping and/or other controls prior to reaching existing natural drainage systems.
- Stabilize temporary and permanent channel crossings as quickly as possible, and ensure that increases in run-off velocity and frequency caused by the project do not erode the channel.
- Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.
- Line on-site conveyance channels where appropriate, to reduce erosion caused by increased flow velocity due to increases in tributary impervious area. The first choice for linings should be grass or some other vegetative surface, since these materials not only reduce runoff velocities, but also provide water quality benefits from filtration and infiltration. If velocities in the channel are high enough to erode grass or other vegetative linings, riprap, concrete, soil cement, or geo-grid stabilization are other alternatives.
- Consider other design principles that are comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Redevelopment may present significant opportunity to add features which had not previously been implemented. Examples include incorporation of depressions, areas of permeable soils, and swales in newly redeveloped areas. While some site constraints may exist due to the status of already existing infrastructure, opportunities should not be missed to maximize infiltration, slow runoff, reduce impervious areas, disconnect directly connected impervious areas.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Stormwater Management Manual for Western Washington, Washington State Department of Ecology, August 2001.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Efficient Irrigation SD-12

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

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- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.
- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:
  - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff
  - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect
  - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible
  - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth
- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Storm Drain Signage SD-13

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include "NO DUMPING

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– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.

- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Trash Storage Areas SD-32

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Description

Trash storage areas are areas where a trash receptacle (s) are located for use as a repository for solid wastes. Stormwater runoff from areas where trash is stored or disposed of can be polluted. In addition, loose trash and debris can be easily transported by water or wind into nearby storm drain inlets, channels, and/or creeks. Waste handling operations that may be sources of stormwater pollution include dumpsters, litter control, and waste piles.

Approach

This fact sheet contains details on the specific measures required to prevent or reduce pollutants in stormwater runoff associated with trash storage and handling. Preventative measures including enclosures, containment structures, and impervious pavements to mitigate spills, should be used to reduce the likelihood of contamination.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Design requirements for waste handling areas are governed by Building and Fire Codes, and by current local agency ordinances and zoning requirements. The design criteria described in this fact sheet are meant to enhance and be consistent with these code and ordinance requirements. Hazardous waste should be handled in accordance with legal requirements established in Title 22, California Code of Regulation.

Wastes from commercial and industrial sites are typically hauled by either public or commercial carriers that may have design or access requirements for waste storage areas. The design criteria in this fact sheet are recommendations and are not intended to be in conflict with requirements established by the waste hauler. The waste hauler should be contacted prior to the design of your site trash collection areas. Conflicts or issues should be discussed with the local agency.

Designing New Installations

Trash storage areas should be designed to consider the following structural or treatment control BMPs:

- Design trash container areas so that drainage from adjoining roofs and pavement is diverted around the area(s) to avoid run-on. This might include berming or grading the waste handling area to prevent run-on of stormwater.
- Make sure trash container areas are screened or walled to prevent off-site transport of trash.

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- Use lined bins or dumpsters to reduce leaking of liquid waste.
- Provide roofs, awnings, or attached lids on all trash containers to minimize direct precipitation and prevent rainfall from entering containers.
- Pave trash storage areas with an impervious surface to mitigate spills.
- Do not locate storm drains in immediate vicinity of the trash storage area.
- Post signs on all dumpsters informing users that hazardous materials are not to be disposed of therein.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Additional Information

Maintenance Considerations

The integrity of structural elements that are subject to damage (i.e., screens, covers, and signs) must be maintained by the owner/operator. Maintenance agreements between the local agency and the owner/operator may be required. Some agencies will require maintenance deed restrictions to be recorded of the property title. If required by the local agency, maintenance agreements or deed restrictions must be executed by the owner/operator before improvement plans are approved.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Street Sweeping and Vacuuming SE-7

Categories

EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	☑
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	☑
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Street sweeping and vacuuming includes use of self-propelled and walk-behind equipment to remove sediment from streets and roadways, and to clean paved surfaces in preparation for final paving. Sweeping and vacuuming prevents sediment from the project site from entering storm drains or receiving waters.

Suitable Applications

Sweeping and vacuuming are suitable anywhere sediment is tracked from the project site onto public or private paved streets and roads, typically at points of egress. Sweeping and vacuuming are also applicable during preparation of paved surfaces for final paving.

Limitations

Sweeping and vacuuming may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose).

Implementation

- Controlling the number of points where vehicles can leave the site will allow sweeping and vacuuming efforts to be focused, and perhaps save money.
- Inspect potential sediment tracking locations daily.
- Visible sediment tracking should be swept or vacuumed on a daily basis.
- Do not use kick brooms or sweeper attachments. These tend to spread the dirt rather than remove it.

- If not mixed with debris or trash, consider incorporating the removed sediment back into the project

Costs

Rental rates for self-propelled sweepers vary depending on hopper size and duration of rental. Expect rental rates from $58/hour (3 yd^3 hopper) to $88/hour (9 yd^3 hopper), plus operator costs. Hourly production rates vary with the amount of area to be swept and amount of sediment. Match the hopper size to the area and expect sediment load to minimize time spent dumping.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- When actively in use, points of ingress and egress must be inspected daily.
- When tracked or spilled sediment is observed outside the construction limits, it must be removed at least daily. More frequent removal, even continuous removal, may be required in some jurisdictions.
- Be careful not to sweep up any unknown substance or any object that may be potentially hazardous.
- Adjust brooms frequently; maximize efficiency of sweeping operations.
- After sweeping is finished, properly dispose of sweeper wastes at an approved dumpsite.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Labor Surcharge and Equipment Rental Rates, State of California Department of Transportation (Caltrans), April 1, 2002 – March 31, 2003.

Appendix D WQMP Agreement

Recorded at the request of:

City of _____

After recording, return to:

City of _____

City Clerk

Stormwater Treatment Device Access and Maintenance Agreement

OWNER:

PROPERTY ADDRESS:_____

APN:

THIS AGREEMENT is made and entered into in_____, California, this___day of_____, by and between_____ _____, hereinafter referred to as "Owner" and the CITY OF____ _____, a municipal corporation, located in the County of Ventura, State of California hereinafter referred to as "CITY";

WHEREAS, the Owner owns real property ("Property") in the City of _____, County of Ventura, State of California, more specifically described in Exhibit "A" and depicted in Exhibit "B", each of which exhibits is attached hereto and incorporated herein by this reference;

WHEREAS, at the time of initial approval of development project known as____ _____within the Property described herein, the City required the project to employ on-site control measures to minimize pollutants in urban runoff;

WHEREAS, the Owner has chosen to install a _____ _____, hereinafter referred to as "Device", as the on-site control measure to minimize pollutants in urban runoff;

WHEREAS, said Device has been installed in accordance with plans and specifications accepted by the City;

WHEREAS, said Device, with installation on private property and draining only private property, is a private facility with all maintenance or replacement, therefore, the sole responsibility of the Owner in accordance with the terms of this Agreement;

WHEREAS, the Owner is aware that periodic and continuous maintenance, including, but not necessarily limited to, filter material replacement and sediment removal, is required to assure peak performance of Device and that, furthermore, such maintenance activity will require compliance with all Local, State, or Federal laws and regulations, including those pertaining to confined space and waste disposal methods, in effect at the time such maintenance occurs;

NOW THEREFORE, it is mutually stipulated and agreed as follows:

1) Owner hereby provides the City of City's designee complete access, of any duration, to the Device and its immediate vicinity at any time, upon reasonable notice, or in the event of emergency, as determined by City's Director of Public Works no advance notice, for the purpose of inspection, sampling, testing of the Device, and in case of emergency, to undertake all necessary repairs or other preventative measures at owner's expense as provided in paragraph 3 below. City shall make every effort at all times to minimize or avoid interference with Owner's use of the Property.

2) Owner shall use its best efforts diligently to maintain the Device in a manner assuring peak performance at all times. All reasonable precautions shall be exercised by Owner and Owner's representative or contractor in the removal and extraction of material(s) from the Device and the ultimate disposal of the material(s) in a manner consistent with all relevant laws and regulations in effect at the time. As may be requested from time to time by the City, the Owner shall provide the City with documentation identifying the material(s) removed, the quantity, and disposal destination.

3) In the event Owner, or its successors or assigns, fails to accomplish the necessary maintenance contemplated by this Agreement, within five (5) days of being given written notice by the City, the City is hereby authorized to cause any maintenance necessary to be done and charge the entire cost and expense to the Owner or Owner's successors or assigns, including administrative costs, attorneys fees and interest thereon at the maximum rate authorized by the Civil Code from the date of the notice of expense until paid in full.

4) The City may require the owner to post security in form and for a time period satisfactory to the city of guarantee of the performance of the obligations stated herein. Should the Owner fail to perform the obligations under the Agreement, the City may, in the case of a cash bond, act for the Owner using the proceeds from it, or in the case of a surety bond, require the sureties to perform the obligations of the Agreement. As an additional remedy, the Director may withdraw any previous stormwater related approval with respect to the

property on which a Device has been installed until such time as Owner repays to City it's reasonable costs incurred in accordance with paragraph 3 above.

5) This agreement shall be recorded in the Office of the Recorder of Ventura County, California, at the expense of the Owner and shall constitute notice to all successors and assigns of the title to said Property of the obligation herein set forth, and also a lien in such amount as will fully reimburse the City, including interest as herein above set forth, subject to foreclosure in event of default in payment.

6) In event of legal action occasioned by any default or action of the Owner, or its successors or assigns, then the Owner and its successors or assigns agree(s) to pay all costs incurred by the City in enforcing the terms of this Agreement, including reasonable attorney's fees and costs, and that the same shall become a part of the lien against said Property.

7) It is the intent of the parties hereto that burdens and benefits herein undertaken shall constitute covenants that run with said Property and constitute a lien there against.

8) The obligations herein undertaken shall be binding upon the heirs, successors, executors, administrators and assigns of the parties hereto. The term "Owner" shall include not only the present Owner, but also its heirs, successors, executors, administrators, and assigns. Owner shall notify any successor to title of all or part of the Property about the existence of this Agreement. Owner shall provide such notice prior to such successor obtaining an interest in all or part of the Property. Owner shall provide a copy of such notice to the City at the same time such notice is provided to the successor.

9) Time is of the essence in the performance of this Agreement.

10) Any notice to a party required or called for in this Agreement shall be served in person, or by deposit in the U.S. Mail, first class postage prepaid, to the address set forth below. Notice(s) shall be deemed effective upon receipt, or seventy-two (72) hours after deposit in the U.S. Mail, whichever is earlier. A party may change a notice address only by providing written notice thereof to the other party.

IF TO CITY:	IF TO OWNER:
_____	_____
_____	_____
_____	_____

IN WITNESS THEREOF, the parties hereto have affixed their signatures as of the date first written above.

APPROVED AS TO FORM:

_____
City Attorney

OWNER:

_____
Owner

Name: _____

Title: _____

CITY OF_____:

_____

Name:_____

Title:_____

OWNER:

_____

Name:_____

Title:_____

ATTEST:

_____

City Clerk Date

Notaries on Following Page

EXHIBIT A

(Legal Description)

EXHIBIT B

(Map/illustration)

Appendix E BMP Operation and Maintenance

Attachment 1 – Bioclean Modular Wetland Maintenance Documents

Attachment 2 – Bioretention Inspection and Maintenance Form

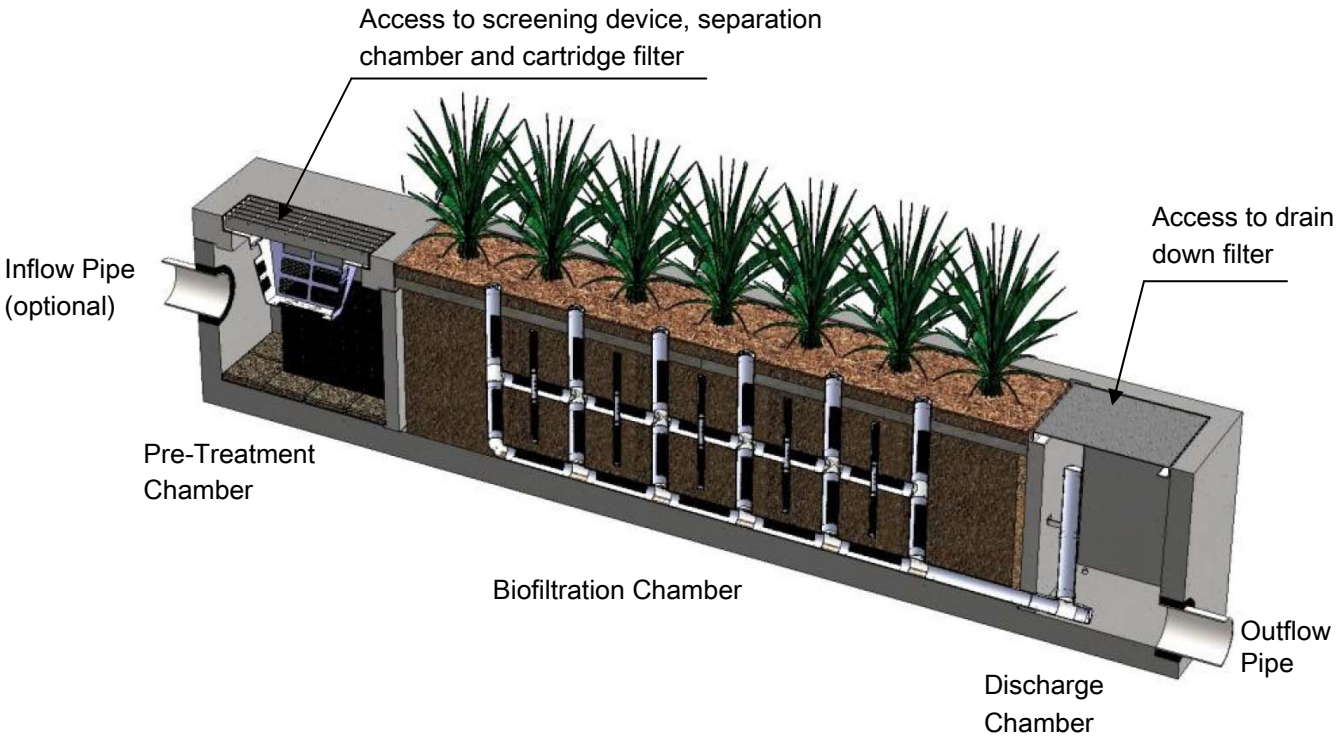
Attachment 3 – Proprietary BMP Inspection and Maintenance Form

Maintenance Guidelines for Modular Wetland System - Linear

Maintenance Summary

- Remove Trash from Screening Device – average maintenance interval is 6 to 12 months.
  - (*5 minute average service time*).
- Remove Sediment from Separation Chamber – average maintenance interval is 12 to 24 months.
  - (*10 minute average service time*).
- Replace Cartridge Filter Media – average maintenance interval 12 to 24 months.
  - (*10-15 minute per cartridge average service time*).
- Replace Drain Down Filter Media – average maintenance interval is 12 to 24 months.
  - (*5 minute average service time*).
- Trim Vegetation – average maintenance interval is 6 to 12 months.
  - (*Service time varies*).

System Diagram



Maintenance Procedures

Screening Device

1. Remove grate or manhole cover to gain access to the screening device in the Pre-Treatment Chamber. Vault type units do not have screening device. Maintenance can be performed without entry.
2. Remove all pollutants collected by the screening device. Removal can be done manually or with the use of a vacuum truck. The hose of the vacuum truck will not damage the screening device.
3. Screening device can easily be removed from the Pre-Treatment Chamber to gain access to separation chamber and media filters below. Replace grate or manhole cover when completed.

Separation Chamber

1. Perform maintenance procedures of screening device listed above before maintaining the separation chamber.
2. With a pressure washer spray down pollutants accumulated on walls and cartridge filters.
3. Vacuum out Separation Chamber and remove all accumulated pollutants. Replace screening device, grate or manhole cover when completed.

Cartridge Filters

1. Perform maintenance procedures on screening device and separation chamber before maintaining cartridge filters.
2. Enter separation chamber.
3. Unscrew the two bolts holding the lid on each cartridge filter and remove lid.
4. Remove each of 4 to 8 media cages holding the media in place.
5. Spray down the cartridge filter to remove any accumulated pollutants.
6. Vacuum out old media and accumulated pollutants.
7. Reinstall media cages and fill with new media from manufacturer or outside supplier. Manufacturer will provide specification of media and sources to purchase.
8. Replace the lid and tighten down bolts. Replace screening device, grate or manhole cover when completed.

Drain Down Filter

1. Remove hatch or manhole cover over discharge chamber and enter chamber.
2. Unlock and lift drain down filter housing and remove old media block. Replace with new media block. Lower drain down filter housing and lock into place.
3. Exit chamber and replace hatch or manhole cover.

Maintenance Notes

1. Following maintenance and/or inspection, it is recommended the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.

2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.

3. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.

4. Entry into chambers may require confined space training based on state and local regulations.

5. No fertilizer shall be used in the Biofiltration Chamber.

6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may require irrigation.

Maintenance Procedure Illustration

Screening Device

The screening device is located directly under the manhole or grate over the Pre-Treatment Chamber. It's mounted directly underneath for easy access and cleaning. Device can be cleaned by hand or with a vacuum truck.

Separation Chamber

The separation chamber is located directly beneath the screening device. It can be quickly cleaned using a vacuum truck or by hand. A pressure washer is useful to assist in the cleaning process.

Cartridge Filters

The cartridge filters are located in the Pre-Treatment chamber connected to the wall adjacent to the biofiltration chamber. The cartridges have removable tops to access the individual media filters. Once the cartridge is open media can be easily removed and replaced by hand or a vacuum truck.

Drain Down Filter

The drain down filter is located in the Discharge Chamber. The drain filter unlocks from the wall mount and hinges up. Remove filter block and replace with new block.

Trim Vegetation

Vegetation should be maintained in the same manner as surrounding vegetation and trimmed as needed. No fertilizer shall be used on the plants. Irrigation per the recommendation of the manufacturer and or landscape architect. Different types of vegetation requires different amounts of irrigation.

Inspection Form

Modular Wetland System, Inc.
P. 760.433-7640
F. 760-433-3176
E. Info@modularwetlands.com

www.modularwetlands.com

Inspection Report
Modular Wetlands System

For Office Use Only
(Reviewed By)
(Date) Office personnel to complete section to the left.

Project Name _____

Project Address _____ (city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

Inspector Name _____ Date ____/____/____ Time _____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

Inspection Checklist

Modular Wetland System Type (Curb, Grate or UG Vault): _____ Size (22', 14' or etc.): _____

Structural Integrity:	**Yes**	**No**	**Comments**
Damage to pre-treatment access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Damage to discharge chamber access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Does the MWS unit show signs of structural deterioration (cracks in the wall, damage to frame)?			
Is the inlet/outlet pipe or drain down pipe damaged or otherwise not functioning properly?			
Working Condition:			
Is there evidence of illicit discharge or excessive oil, grease, or other automobile fluids entering and clogging the unit?			
Is there standing water in inappropriate areas after a dry period?			
Is the filter insert (if applicable) at capacity and/or is there an accumulation of debris/trash on the shelf system?			
Does the depth of sediment/trash/debris suggest a blockage of the inflow pipe, bypass or cartridge filter? If yes, specify which one in the comments section. Note depth of accumulation in in pre-treatment chamber.			Depth:
Does the cartridge filter media need replacement in pre-treatment chamber and/or discharge chamber?			Chamber:
Any signs of improper functioning in the discharge chamber? Note issues in comments section.			
Other Inspection Items:			
Is there an accumulation of sediment/trash/debris in the wetland media (if applicable)?			
Is it evident that the plants are alive and healthy (if applicable)? Please note Plant Information below.			
Is there a septic or foul odor coming from inside the system?			

Waste:	**Yes**	**No**
Sediment / Silt / Clay		
Trash / Bags / Bottles		
Green Waste / Leaves / Foliage		

Recommended Maintenance	
No Cleaning Needed	
Schedule Maintenance as Planned	
Needs Immediate Maintenance	

Plant Information	
Damage to Plants	
Plant Replacement	
Plant Trimming	

Additional Notes:

2972 San Luis Rey Road, Oceanside, CA 92058 P (760) 433-7640 F (760) 433-3176

Maintenance Report

Modular Wetland System, Inc.
P. 760.433-7640
F. 760-433-3176
E. Info@modularwetlands.com

www.modularwetlands.com

Cleaning and Maintenance Report
Modular Wetlands System

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

Inspector Name _____ Date ____/____/_____ Time _____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

Site Map #	GPS Coordinates of Insert	Manufacturer / Description / Sizing	Trash Accumulation	Foliage Accumulation	Sediment Accumulation	Total Debris Accumulation	Condition of Media 25/50/75/100 (will be changed @ 75%)	Operational Per Manufactures' Specifications (If not, why?)
	Lat: Long:	MWS Catch Basins						
		MWS Sedimentation Basin						
		Media Filter Condition						
		Plant Condition						
		Drain Down Media Condition						
		Discharge Chamber Condition						
		Drain Down Pipe Condition						
		Inlet and Outlet Pipe Condition						

Comments:

2972 San Luis Rey Road, Oceanside, CA 92058 P. 760.433.7640 F. 760.433.3176

Section [_____]
Modular Subsurface Flow Wetland System

PART 1 – GENERAL

01.01.00 Purpose
The purpose of this specification is to establish generally acceptable criteria for Modular Subsurface Flow Wetland Systems used for biofiltration of stormwater runoff including dry weather flows and other contaminated water sources. It is intended to serve as a guide to producers, distributors, architects, engineers, contractors, plumbers, installers, inspectors, agencies and users; to promote understanding regarding materials, manufacture and installation; and to provide for identification of devices complying with this specification.

01.02.00 Description
Modular Subsurface Flow Wetland Systems (MSFWS) are used for filtration of stormwater runoff including dry weather flows. The MSFWS is a pre-engineered biofiltration system composed of a pretreatment chamber containing filtration cartridges, a horizontal flow biofiltration chamber with a peripheral void area and a centralized and vertically extending underdrain, the biofiltration chamber containing a sorptive media mix which does not contain any organic material and a layer of plant establishment media, and a discharge chamber containing an orifice control structure . Treated water flows horizontally in series through the pretreatment chamber cartridges, biofiltration chamber and orifice control structure.

01.03.00 Manufacturer
The manufacturer of the MSFWS shall be one that is regularly engaged in the engineering design and production of systems developed for the treatment of stormwater runoff for at least (10) years, and which have a history of successful production, acceptable to the engineer of work. In accordance with the drawings, the MSFWS(s) shall be a filter device Manufactured by Bio Clean Environmental Services, Inc., or Modular Wetland Systems, Inc., or assigned distributors or licensees. Bio Clean Environmental Services Inc., and Modular Wetland Systems, Inc., can be reached at:

Corporate Headquarters:
Bio Clean Environmental Service, Inc.
2972 San Luis Rey Road
Oceanside, CA 92058
Phone: (760) 433-7640
Fax: (760) 433-3176
www.biocleanenvironmental.net

Corporate Headquarters:
Modular Wetland Systems, Inc.
P.O. Box 869
Oceanside, CA 92049
Phone: (760) 433-7650
www.modularwetlands.net

01.04.00 Submittals

01.04.01 Shop drawings are to be submitted with each order to the contractor and consulting engineer.

01.04.02 Shop drawings are to detail the MSFWS and all components required and the sequence for installation, including:

- System configuration with primary dimensions
- Interior components
- Any accessory equipment called out on shop drawings

01.04.03 Inspection and maintenance documentation submitted upon request.

01.05.00 Work Included

01.05.01 Specification requirements for installation of MSFWS.

01.05.02 Manufacturer to supply components of the MSFWS(s):

- Pretreatment chamber components (pre-assembled)
- Concrete Structure(s)
- Biofiltration chamber components (pre-assembled)
- Flow control discharge structure (pre-assembled)

01.06.00 Reference Standards

ASTM C 29	Standard Test Method for Unit Weight and Voids in Aggregate
ASTM C 88	C 88 Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C131	C 131 Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregates by Abrasion and Impact in the Los Angeles Machine
ASTM C 136	C 136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C 330	C 330 Standard Specification for Lightweight Aggregate for Structural Concrete
ASTM D 698	Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft.-lbf/ft3 (600 kN-m/m3)
ASTM D 1621	10 Standard Test Method for Compressive Properties Of Rigid Cellular Plastics
ASTM D 1777	ASTM D1777 - 96(2007) Standard Test Method for Thickness of Textile Materials
ASTM D 4716	Standard Test Method for Determining the (In-plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head
AASHTO T 99-01	Standard Method of Test for Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in) Drop
AASHTO T 104	Standard Method of Test for Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate
AASHTO T 260	Standard Method of Test for Sampling and Testing for Chloride Ion in Concrete and Concrete Raw Materials.
AASHTO T 288	Standard Method of Test for Determining Minimum Laboratory Soil Resistivity
AASHTO T 289	Standard Method of Test for Determining ph of Soil for Use in Corrosion Testing
AASHTO T 291	Standard Method of Test for Determining Water Soluble Chloride Ion Content in Soil
AASHTO T 290	T 290 Standard Method of Test for Determining Water Soluble Sulfate Ion Content in Soil

PART 2 – COMPONENTS

The Modular Subsurface Flow Wetland Systems (MSFWS) and all of its components shall be self-contained within a concrete structure constructed of concrete with a minimum 28 day compressive strength of 5,000 psi, with reinforcing per ASTM A 615, Grade 60, and supports and H20 loading as indicated by AASHTO. Each Chamber shall have appropriate access hatches for easy maintenance and sized to allow removal of all internal components without disassembly. All water transfer system components shall conform with the following;

- Filter netting shall be 100% Polyester with a number 16 sieve size, and strength tested per ASTM D 3787.
- Drainage cells shall be manufactured of lightweight injection-molded plastic and have a minimum compressive strength test of 6,000 psi and a void area along the surface making contact with the filter media of 75% or greater. The cells shall be at least 2" in thickness and allow water to freely flow in all four directions.

02.01.00 Pretreatment Chamber Components

02.01.01 Filter Cartridges shall operate at a loading rate not to exceed 3 gallons per minute per square foot surface area.

02.01.02 Drain Down System shall include a pervious floor that allows water to drain into the underdrain pipe that is connected to the discharge chamber.

02.02.00 Biofiltration Chamber Components

02.02.01 Media shall consist of ceramic material produced by expanding and vitrifying select material in a rotary kiln. Media must be produced to meet the requirements of ASTM C330, ASTM C331, and AASHTO M195. Aggregates must have a minimum 24-hour water absorption of 10.5% mass. Media shall not contain any organic material. Flow through media shall be horizontal from the outer perimeter of the chamber toward the centralized and vertically extending underdrain. The retention time in the media shall be at least 3 minutes. Downward flow filters are not acceptable alternatives. The thickness of the media shall be at least 19" from influent end to effluent end. The loading rate on the media shall not exceed 1.1 gallons per minute per square foot surface area. Media must be contained within structure that spaces the surface of the media at least 2" from all vertically extending walls of the concrete structure.

02.02.02 Planting shall be native, drought tolerant species recommend by manufacturer and/or landscape architect.

02.02.03 Plant Support Media shall be made of a 3" thick moisture retention cell that is inert and contains no chemicals or fertilizers, is not made of organic material and has an internal void percentage of 80%.

02.03.00 Discharge Chamber

The discharge device shall house a flow control orifice plate that restricts flows greater than designed treatment flow rate. All piping components shall be made of a high-density polyethylene. The discharge chamber shall also contain a drain down filter if specified on the drawing.

PART 3 – PERFORMANCE

03.01.00 General

03.01.01 Function - The MSFWS has no moving internal components and functions based on gravity flow, unless otherwise specified. The MSFWS is composed of a pretreatment chamber, a biofiltration chamber and a discharge chamber. The pretreatment device houses cartridge media filters, which consist of filter media housed in a perforated enclosure. The untreated runoff flows into the system via subsurface piping and or surface inlet. Water entering the system is forced through the filter cartridge enclosures by gravity flow. Then the flow contacts the filter media. The flow through the media is horizontal toward the center of each individual media filter. In the center of the media shall be a round slotted PVC pipe of no greater than 1.5" in diameter. The slotted PVC pipe shall extend downward into the water transfer cavity of the cartridge. The slotted PVC pipe shall be threaded on the bottom to connect to the water transfer cavity. After pollutants have been removed by the filter media the water discharges the pretreatment chamber and flows into the water transfer system and is conveyed to the biofiltration chamber. Once runoff has been filtered by the biofiltration chamber it is collected by the vertical underdrain and conveyed to a discharge chamber equipped with a flow control orifice plate. Finally the treated flow exits the system.

03.01.02 Pollutants - The MSFWS will remove and retain debris, sediments, TSS, dissolved and particulate metals and nutrients including nitrogen and phosphorus species, bacteria, BOD, oxygen demanding substances, organic compounds and hydrocarbons entering the filter during frequent storm events and continuous dry weather flows.

03.01.03 Treatment Flow Rate and Bypass - The MSFWS operates in-line. The MSFWS will treat 100% of the required water quality treatment flow based on a minimum filtration capacities listed in section 03.02.00. The size of the system must match those provided on the drawing to ensure proper performance and hydraulic residence time.

Minimum Treatment Capabilities

• System must be capable of treating flows to the specified treatment flow rate on the drawings. The flow rate shall be controlled by an orifice plate.

PART 4 - EXECUTION

04.01.00 General

The installation of the MSFWS shall conform to all applicable national, state, state highway, municipal and local specifications.

04.02.00 Installation

The Contractor shall furnish all labor, equipment, materials and incidentals required to install the (MSFWS) device(s) and appurtenances in accordance with the drawings and these specifications.

04.02.01 Grading and Excavation site shall be properly surveyed by a registered professional surveyor, and clearly marked with excavation limits and elevations. After site is marked it is the responsibility of the contractor to contact local utility companies and/or DigAlert to check for underground utilities. All grading permits shall be approved by governing agencies before commencement of grading and excavation. Soil conditions shall be tested in accordance with the governing agencies requirements. All earth removed shall be transported, disposed, stored, and handled per governing agencies standards. It is the responsibility of the contractor to install and maintain proper erosion control measures during grading and excavation operations.

04.02.02 Compaction – All soil shall be compacted per registered professional soils engineer's recommendations prior to installation of MSFWS components.

04.02.03 Backfill shall be placed according to a registered professional soils engineer's recommendations, and with a minimum of 6" of gravel under all concrete structures.

04.02.04 Concrete Structures – After backfill has been inspected by the governing agency and approved the concrete structures shall be lifted and placed in proper position per plans.

04.02.05 Subsurface Flow Wetland Media shall be carefully loaded into area so not to damage the Wetland Liner or Water Transfer Systems. The entire wetland area shall be filled to a level 9 inches below finished surface.

04.02.06 Planting layer shall be installed per manufacturer's drawings and consist of a minimum 3" grow enhancement media that ensures greater than 95% plant survival rate, and 6" of wetland media. Planting shall consist of native plants recommended by manufacturer and/or landscape architect. Planting shall be drip irrigated for at least the first 3 months to insure long term plant growth. No chemical herbicides, pesticides, or fertilizers shall be used in the planting or care and maintenance of the planted area.

04.03.00 Shipping, Storage and Handling

04.03.01 Shipping – MSFWS shall be shipped to the contractor's address or job site, and is the responsibility of the contractor to offload the unit(s) and place in the exact site of installation.

04.03.02 Storage and Handling– The contractor shall exercise care in the storage and handling of the MSFWS and all components prior to and during installation. Any repair or replacement costs associated with events occurring after delivery is accepted and unloading has commenced shall be born by the contractor. The MSFWS(s) and all components shall always be stored indoors and transported inside the original shipping container until the unit(s) are ready to be installed. The MSFWS shall always be handled with care and lifted according to OSHA and NIOSA lifting recommendations and/or contractor's workplace safety professional recommendations.

04.04.00 Maintenance and Inspection

04.04.01 Inspection – After installation, the contractor shall demonstrate that the MSFWS has been properly installed at the correct location(s), elevations, and with appropriate components. All components associated with the MSFWS and its installation shall be subject to inspection by the engineer at the place of installation. In addition, the contractor shall demonstrate that the MSFWS has been installed per the manufacturer's specifications and recommendations. All

components shall be inspected by a qualified person once a year and results of inspection shall be kept in an inspection log.

04.04.02 Maintenance – The manufacturer recommends cleaning and debris removal maintenance of once a year and replacement of the Cartridge Filters as needed. The maintenance shall be performed by someone qualified. A Maintenance Manual is available upon request from the manufacturer. The manual has detailed information regarding the maintenance of the MSFWS. A Maintenance/Inspection record shall be kept by the maintenance operator. The record shall include any maintenance activities preformed, amount and description of debris collected, and the condition of the filter.

04.04.03 Material Disposal - All debris, trash, organics, and sediments captured by the MSFWS shall be transported and disposed of at an approved facility for disposal in accordance with local and state requirements. Please refer to state and local regulations for the proper disposal of toxic and non-toxic material.

PART 5 – QUALITY ASSURNACE

05.01.00 Warranty

The Manufacturer shall guarantee the MSFWS against all manufacturing defects in materials and workmanship for a period of (5) years from the date of delivery to the _____. The manufacturer shall be notified of repair or replacement issues in writing within the warranty period. The MSFWS is limited to recommended application for which it was designed.

05.02.00 Performance Certification

The MSFWS manufacturer shall submit to the Engineer of Record a “Manufacturer’s Performance Certificate” certifying the MSFWS is capable of achieving the specified removal efficiency for suspended solids, phosphorous and dissolved metals.

I.1 Bioretention/Planter Box Inspection and Maintenance Checklist

Date: _____ Work Order # _____

Type of Inspection: □ post-storm □ annual □ routine □ post-wet season □ pre-wet season

Facility: _____ Inspector(s): _____

Defect	Conditions When Maintenance Is Needed	Inspection Result (0, 1, or 2)†	Date Maintenance Performed	Comments or Action(s) Taken to Resolve Issue
Appearance	Untidy			
Trash and Debris Accumulation	Trash, plant litter and dead leaves accumulated on surface.			
Vegetation	Unhealthy plants and appearance.			
Irrigation	Functioning incorrectly (if applicable).			
Inlet	Inlet pipe blocked or impeded.			
Splash Blocks	Blocks or pads correctly positioned to prevent erosion.			
Overflow	Overflow pipe blocked or broken.			
Filter media	Infiltration design rate is met (e.g., drains 36-48 hours after moderate - large storm event).			

†Maintenance: Enter 0 if satisfactory, 1 if maintenance is needed and include WO#. Enter 2 if maintenance was performed same day.

I.10 Proprietary Device Inspection and Maintenance Checklist

Date: _____ Work Order # _____

Type of Inspection: □ post-storm □ annual □ routine □ post-wet season □ pre-wet season

Facility: _____ Inspector(s): _____

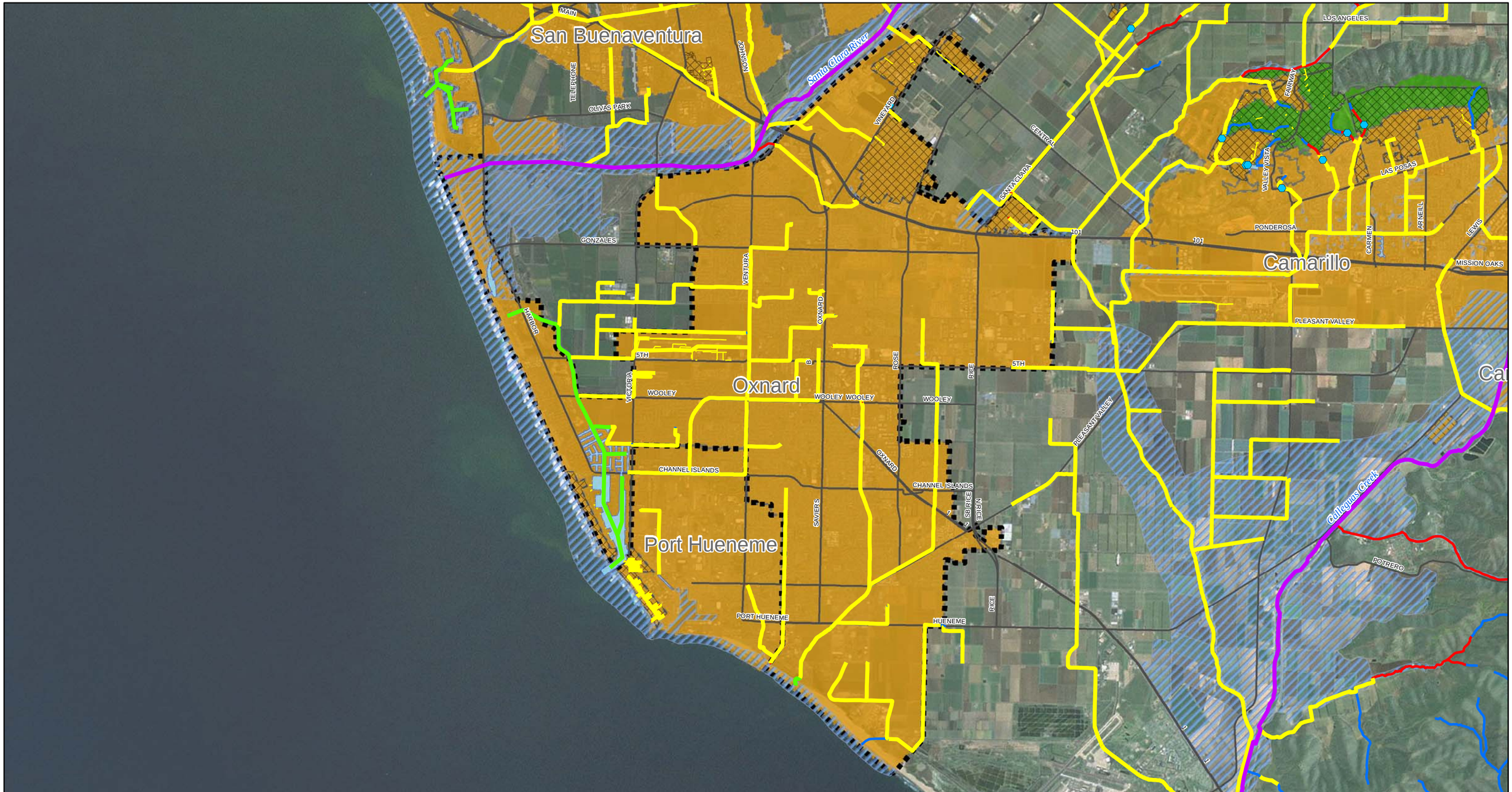
Defect	Conditions When Maintenance Is Needed	Inspection Result (0,1, or 2) †	Date Maintenance Performed	Comments or Action(s) taken to resolve issue
Refer to the manufacturer's instructions for maintenance/inspection requirements, below are generic guidelines to supplement manufacturer's recommendations.				
Underground Vault				
Sediment Accumulation on Media	Sediment depth exceeds 0.25-inches.			
Sediment Accumulation in Vault	Sediment depth exceeds 6-inches in first chamber.			
Trash/Debris Accumulation	Trash and debris accumulated on compost filter bed.			
Sediment in Drain Pipes or Cleanouts	When drain pipes, clean-outs, become full with sediment and/or debris.			
Damaged Pipes	Any part of the pipes that are crushed or damaged due to corrosion and/or settlement.			
Access Cover Damaged/Not Working	Cover cannot be opened; one person cannot open the cover using normal lifting pressure, corrosion/deformation of cover.			
Vault Structure Includes Cracks in Wall, Bottom, Damage to	Cracks wider than 1/2-inch or evidence of soil particles entering the structure through the cracks, or maintenance/inspection personnel determine that the vault is not structurally sound.			

Defect	Conditions When Maintenance Is Needed	Inspection Result (0,1, or 2) †	Date Maintenance Performed	Comments or Action(s) taken to resolve issue
Frame and/or Top Slab	Cracks wider than 1/2-inch at the joint of any inlet/outlet pipe or evidence of soil particles entering through the cracks.			
Baffles	Baffles corroding, cracking warping, and/or showing signs of failure as determined by maintenance/inspection person.			
Access Ladder Damaged	Ladder is corroded or deteriorated, not functioning properly, not securely attached to structure wall, missing rungs, cracks, or misaligned.			
Below Ground Cartridge Type				
Filter Media	Drawdown of water through the media takes longer than 1 hour and/or overflow occurs frequently.			
Short Circuiting	Flows do not properly enter filter cartridges.			

†Maintenance: Enter 0 if satisfactory, 1 if maintenance is needed and include WO#. Enter 2 if maintenance was performed same day.

Appendix F Hydromodification Control Plan Applicability Map

Attachment from Ventura County Hydromodification Control Plan (HCP), September 2013



Legend

- Large Channel (Q100>25,000 cfs) - Not Susceptible
- Modified Channel - Not Susceptible
- Storm Drain - Not Susceptible
- Tidal Channel - Not Susceptible
- Natural Redline Channel - Susceptible
- Natural Blueline Channel - Susceptible
- Lakes
- 100 Year Floodplain
- Urban County
- Street
- Basins

Hydromod Applicability
- Applicable
- Exempt
- Undetermined

Note: Applicability maps are provided for illustrative purposes. Determination of applicability is based on the requirements of the MS4 Permit and will be made by the land development permitting agency.

N

0 3,250 6,500 13,000 Feet

Basemap Source: ESRI

Hydromodification Control Applicability Map

Oxnard, CA

Geosyntec consultants

WW1717 | September 2013

Figure 3-6

P:\GIS\Ventura_County_HCP\Projects\Cities\Figure3-6Oxnard.mxd

Appendix G Geotechnical Report

Attachment by Terracon Consultants, Inc.

Geotechnical Engineering Report

Proposed Oxnard Confidential Project Gaucho

Southwest Corner of Hwy 101 and N Del Norte Blvd.

Oxnard, California

May 11, 2018

Terracon Project No. 60185017

Prepared for:
Seefried Industrial Properties, Inc.
El Segundo, California

Prepared by:
Terracon Consultants, Inc.
Tustin, California

DRAFT

May 11, 2018

Seefried Industrial Properties, Inc.
2301 Rosecrans Avenue, Suite 3165
El Segundo, CA 90245

Attn: Mr. Dan Bick
P: 310-536-7900
E: danbick@seefriedproperties.com

Re: Geotechnical Engineering Report
Oxnard Confidential Project Gaucho
Southwest Corner of Hwy 101 and N Del Norte Blvd.
Oxnard, California
Terracon Project No. 60185017

Dear Mr. Bick:

Terracon Consultants, Inc. (Terracon) has completed the geotechnical engineering services for the above referenced project. These services were performed in general accordance with our proposal number P60185017 dated March 13, 2018.

This geotechnical engineering report presents the results of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations, floor slab, pavements, and infiltration systems for the proposed development.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Sivasubramaniam (Raj) Pirathiviraj, P.E., G.E.
Senior Geotechnical Engineer

F. Fred Buhamdan, P.E.
Principal

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GEOTECHNICAL ENGINEERING REPORT
OXNARD CONFIDENTIAL PROJECT GAUCHO
SOUTHWEST CORNER OF HWY 101 AND N DEL NORTE BLVD.
OXNARD, CALIFORNIA

Terracon Project No. 60185017

May 11, 2018

1.0 INTRODUCTION

This report presents the results of our geotechnical engineering services performed for the Oxnard Confidential Project (Gaucho) to be located at the southwest corner of Hwy 101 and N Del Norte Blvd. in Oxnard, California. The Site Location Plan (Exhibit A-1) is included in Appendix A of this report. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- subsurface soil conditions
- earthwork
- seismic considerations
- floor slab design and construction
- groundwater conditions
- foundation design and construction
- pavement design and construction
- infiltration systems

Our geotechnical engineering scope of work for this project included the advancement of thirty-seven (37) test borings and six (6) Cone Penetrometer Test (CPT) soundings to approximate depths ranging between 5 to 58 feet below existing site grades.

Logs of the borings along with the Exploration Location Plan (Exhibit A-2) are included in Appendix A of this report. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included in Appendix B of this report. Descriptions of the field exploration and laboratory testing are included in their respective appendices.

2.0 PROJECT INFORMATION

2.1 Project Description

ITEM	DESCRIPTION
Site layout	Refer to the Exploration Location Plan (Exhibit A-2 in Appendix A).
Structures	The proposed project will consist in the development of the 54-acre project site to include a 640,000-square foot warehouse surrounded by rigid and flexible pavement.

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ITEM	DESCRIPTION
Construction	Reinforced concrete columns and masonry walls or tilt-up walls supported on a reinforced concrete foundation system with concrete slab-on-grade floors.
Finished floor elevation	Assumed within one foot of existing grade (assumed).
Maximum loads	Provided structural loads are presented below: ▪ Steel Columns: 1100 to 1760 kips ▪ Walls: 10 kips per linear foot (klf) ▪ Pilasters: 760 kips ▪ Slabs: 500 pounds per square foot (psf) plus weight of the slab
Proposed Roadway	A new 150-ft wide roadway is proposed with an east-west alignment and approximate length of 4,600 feet. The road will pass along the northern border of the project and extends from N Del Norte Boulevard to N Rice Avenue.
Grading	Grading will include over-excavation and backfill to bring the site to construction grade.
Below Grade Structures / Basements	Not Anticipated
Onsite Infiltration Systems	The development will also include a storm water retention system along the south side of the property.
Pavements	Paved driveway and parking will be constructed on approximately 25 acres of the parcel. We assume both rigid (concrete) and flexible (asphalt) pavement sections should be considered. Anticipated traffic is as follows: ▪ Autos/light trucks: 100 vehicles per day ▪ Light delivery and trash collection vehicles: 50 vehicles per week ▪ Tractor-trailer trucks: approximately 200 vehicles per day The pavement design period is 20 years based on Caltrans Highway Design Manual.

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2.2 Site Location and Description

Item	Description
Location	The site is located west of North Del Norte Boulevard approximately 2,250 feet south of Highway 101 in Oxnard, California. The site encompasses an approximate area of 62.5 acres.
Existing improvements	The project site is currently vacant agricultural land.
Current ground cover	Asphalt pavement with associated hardscape and landscape.
Existing topography	The site is relatively flat.
Anticipated Seismic Hazards	Based on our review of the State Fault Hazard Maps, the project site is not located within Alquist-Priolo Earthquake Fault Zones. However, the project site is mapped within a liquefaction potential zone as designated by the California Geologic Survey.

3.0 SUBSURFACE CONDITIONS

3.1 Site Geology

The site is situated within the eastern Transverse Range Geomorphic Province in Southern California. Geologic structures within the Transverse Ranges Province trend mostly east west, in contrast to the prevailing northwest trend elsewhere in the state. The Transverse Range Province contains the highest peaks composed of pre-Phanerozoic rocks south of the Sierra Nevada, four of the eight islands off the southern California coast, and is both bounded and transected by several major fault zones.[1, 2] Based on the geologic map of California (Los Angeles Sheet), the proposed project site is underlain by Alluvium (Qal).

3.2 Typical Subsurface Profile

Specific conditions encountered at the boring locations are indicated on the individual boring logs. Stratification boundaries on the boring logs represent the approximate location of changes in soil types; in-situ, the transition between materials may be gradual. Details for the borings can be found on the boring logs included in Appendix A. Based on the results of the borings, subsurface conditions on the project site can be generalized as follows:

[1] Harden, D. R., "*California Geology, Second Edition*," Pearson Prentice Hall, 2004.

[2] Norris, R. M. and Webb, R. W., *"Geology of California, Second Edition,"* John Wiley & Sons, Inc., 1990.

Description	Approximate Depth to Bottom of Stratum	Material Encountered	Consistency/Density
Stratum 1	2 to 8	Clayey Sand	Very Loose to Loose
Stratum 2	10 to 15	Sand with variable amounts of silt and clay with interbedded layers of Lean Clay with variable amounts of sand	Very Loose to Medium Dense
Stratum 3	25 to 29	Lean Clay with variable amounts of sand with interbedded layers of Sand with variable amounts of silt and clay	Very Soft to Hard
Stratum 4	28 to 35	Sand with variable amounts of clay, silt and gravel	Medium Dense
Stratum 5	51½	Lean Clay with variable amounts of sand with interbedded layers of Clayey Sand	Medium Stiff to Hard

Laboratory tests were conducted on selected soil samples and the test results are presented in Appendix B. Atterberg limits test indicates that on-site clayey soils have low to medium plasticity. An Expansion Index test was performed on the near surface clayey soils and indicates that these materials have an Expansion Index of 12 and 15. Consolidation/swell tests indicate that the clayey soils encountered at approximate depth of 2½ feet have slight collapse potential when saturated under normal footing loads of 2,000 psf. Direct shear test was performed in a sandy soils encountered at the depth of 7½ feet indicates a ultimate friction angle of 32 degrees and corresponding cohesion of 78 psf. R-value test indicates that the near surface materials have R-values ranging between 69 and 72.

3.3 Groundwater

Groundwater was observed in the test borings at depths ranging between 3 and 11 feet below ground surface (bgs) at the time of field exploration. These observations represent groundwater conditions at the time of the field exploration and may not be indicative of other times, or at other locations.

In clayey soils with low permeability, the accurate determination of groundwater level may not be possible without long term observation. Long term observation after drilling could not be performed as borings were backfilled immediately upon completion due to safety concerns. Groundwater levels can best be determined by implementation of a groundwater monitoring plan. Such a plan would include installation of groundwater monitoring wells, and periodic measurement of groundwater levels over a sufficient period of time.

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Based on regional data, historical groundwater is anticipated to occur at depths of less than 10 feet below the ground surface at the project location.[3]

3.4 Faulting and Estimated Ground Motions

The site is located in a seismically active area. The type and magnitude of seismic hazards affecting the site are dependent on the distance to causative faults, the intensity, and the magnitude of the seismic event. The following table indicates the distance of the fault zones and the associated maximum credible earthquake that can be produced by nearby seismic events, as calculated using the USGS Unified Hazard Tool. The Simi-Santa Rosa Fault, which is located approximately 3.5 kilometers from the site, is considered to have the most significant effect at the site from a design standpoint.

Estimated Earthquakes for Regional Faults

Fault Name	Approximate Distance to Site (kilometers)	Maximum Credible Earthquake (MCE) Magnitude
Simi-Santa Rosa	3.5	6.94
Oak Ridge (Onshore)	6.5	7.36
Ventura-Pitas Point	10.4	7.41
Oak Ridge (Offshore)	13.3	6.87

Based on these sources, the mean earthquake magnitude at the subject site for a 2% Probability of Exceedance in 50 years (Return period of 2475 years) is expected to be about 6.89. Based on the USGS Design Maps Summary Report, using the American Society of Civil Engineers (ASCE 7-10) standard, the peak ground acceleration (PGA_M) at the project site is expected to be 0.935 g.

The site is not located within an Alquist-Priolo Earthquake Fault Zone based on our review of the State Fault Hazard Maps.[4]

3.5 Liquefaction Potential

Liquefaction is a mode of ground failure that results from the generation of high pore water pressures during earthquake ground shaking, causing loss of shear strength. Liquefaction is typically a hazard where loose sandy soils exist below groundwater. The California Geologic Survey (CGS) has designated certain areas within southern California as potential liquefaction hazard zones. These are areas considered at a risk of liquefaction-related ground failure during

3. California Geologic Survey, Seismic Hazard Zone Report for the Oxnard 7.5-Minute Quadrangle, Orange County, CA.
4. California Department of Conservation Division of Mines and Geology (CDMG), *"Digital Images of Official Maps of Alquist-Priolo Earthquake Fault Zones of California, Southern Region"*, CDMG Compact Disc 2000-003, 2000.

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a seismic event, based upon mapped surficial deposits and the presence of a relatively shallow water table.

The project site is located within a potential liquefaction hazard zone as designated by the CGS. Materials encountered at the project site generally consisted of interbedded layers of fine and coarse grained soils. Groundwater was observed in the test borings at depths ranging between 3 and 11 feet bgs at the time of field exploration. Historical high groundwater in the project vicinity is shallower than 10 feet below the ground surface.

Liquefaction analysis for the site was performed in general accordance with the DMG Special Publication 117. The liquefaction study utilized the software "LiquefyPro" by CivilTech Software. This analysis was based on the soils data using CPT soundings CPT-16, CPT-18, CPT-19 and CPT-20. Peak Ground Acceleration (PGAm) was of 0.935 g was used. The CPT calculation was performed using the modified Robertson et al method which includes fine correction for liquefaction and settlement. Settlement analysis used the Tokimatsu, M-correction method. Liquefaction potential analysis was calculated from a depth of 0 to 50 feet bgs. Liquefaction potential analysis is attached in Appendix D of this report.

Based on the subsurface conditions presented in CPTs and based on the calculation results, seismically-induced settlements are expected to range between 2.5 and 3 inches and seismically-induced dry sand differential settlements are expected to range between 1.3 and 2.0 inches.

3.6 Seismic Considerations

DESCRIPTION	VALUE
2016 California Building Code Site Classification (CBC) [1]	E [2]
Site Latitude	N 34.2138°
Site Longitude	W -119.1309°
S_s Spectral Acceleration for a Short Period	2..641g
S_1 Spectral Acceleration for a 1-Second Period	0.954g
F_a Site Coefficient for a Short Period (Class E) [2]	0.9
F_v Site Coefficient for a 1-Second Period (Class E) [2]	2.4

[1] Note: The 2016 California Building Code (CBC) requires a site soil profile determination extending to a depth of 100 feet for seismic site classification.

[2] Per CBC Table 1613.5.2, any profile containing soils vulnerable to potential failure or collapse under seismic loading such as liquefiable soils. However, for structures with fundamental periods of vibration less than 0.5 seconds, Section 20.3.1 of ASCE 7-05 allows the site coefficients (F_a and F_v) to be determined assuming that liquefaction does not occur (i.e., Site Class E). The structure's fundamental period should be verified by the structural engineer.

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3.7 Percolation Test Results

Six (6) borings were advanced to approximate depths ranging between 3 and 7 feet bgs and were utilized for percolation testing (falling head borehole permeability). After the borings were advanced the augers were removed from the ground and an approximately 2-inch thick layer of gravel was placed in the bottom of each boring, and a 3-inch diameter perforated pipe was installed on top of the gravel layer in the three borings. Gravel was used to backfill between the perforated pipes and the boring sidewall. The borings were then filled with water for a pre-soak period. At the beginning of each test, the pipes were refilled with water and readings were taken at 10-minute time intervals. Percolation rates are provided in the following table:

TEST RESULTS				
Test Location (depth of percolation)	**Soil Classification**	**Percolation Rate, in/hr**	**Infiltration Rate[1], in/hr**	**Initial Water Head, in**
Perc-1 (0ft - 5ft)	Clayey Sand	5.0	0.44	42
Perc-2 (0ft - 5ft)	Clayey Sand	0.5	<0.1	56
Perc-3 (0ft - 5ft)	Clayey Sand	2.0	0.15	51
Perc-4 (0ft - 6ft)	Clayey Sand	19.5	1.35	57
Perc-5 (0ft - 7ft)	Clayey Sand	3.0	0.31	35
Perc-6 (0ft - 3ft)	Clayey Sand	1.0	0.11	31

[1]If proposed infiltration system will mainly rely on vertical downward seepage, the correlated infiltration rates should be used. The correlated infiltration rates were calculated using the LA County Reduction Factor method

The field test results are not intended to be design rates. They represent the result of our tests, at the depths and locations indicated, as described above. The design rate should be determined by the designer by applying an appropriate factor of safety. The designer should take into consideration the variability of the native soils when selecting appropriate design rates. With time, the bottoms of infiltration systems tend to plug with organics, sediments, and other debris. Long term maintenance will likely be required to remove these deleterious materials to help reduce decreases in actual percolation rates.

The percolation test was performed with clear water, whereas the storm water will likely not be clear, but may contain organics, fines, and grease/oil. The presence of these deleterious materials will tend to decrease the rate that water percolates from the infiltration system. Design of the storm water infiltration systems should account for the presence of these materials and should incorporate structures/devices to remove these deleterious materials.

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Based on the soils encountered in our borings, we expect the percolation rates of the soils could be different than measured in the field due to variations in fines and gravel content. The design elevation and size of the proposed infiltration system should account for this expected variability in infiltration rates.

Infiltration testing should be performed after construction of the infiltration system to verify the design infiltration rates. It should be noted that siltation and vegetation growth, along with other factors, may affect the infiltration rates of the infiltration areas. The actual infiltration rate may vary from the values reported here. Infiltration systems should be located at least 10 feet from any existing or proposed foundation system.

3.8 Corrosion Potential

Results of soluble sulfate testing indicate that ASTM Type V Portland cement should be used for all concrete on and below grade. Foundation concrete may be designed for exposure class S2 in accordance with the provisions of the ACI Design Manual, Section 318, Chapter 19.

Laboratory test results indicate the on-site soils have a pH of 8.19 and 7.97, a minimum resistivity values of 669 and 970 ohm-centimeters, sulfate contents of 0.15 and 0.37 percent, and a chloride contents of 95 and 145 ppm, as shown on the attached Summary of Laboratory Results sheet.

These values indicate corrosive environment for the ferrous metals and corrosion engineer should be consulted to further evaluate corrosive potential of the on-site soils to underground ferrous metals.

Refer to the Summary of Laboratory Results in Appendix B for the complete results of the corrosivity testing conducted in conjunction with this geotechnical exploration.

4.0 RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

4.1 Geotechnical Considerations

The site appears suitable for the proposed construction based upon geotechnical conditions encountered in the test borings and provided the geotechnical engineering recommendations included in this report are implemented in the design and construction of the project.

Due to the anticipated seismic induced settlement, liquefaction potential, and presence of relatively high compressibility of clay soils, we recommend that the upper subsurface soils be improved and densified by rammed aggregate pier (RAP) systems. The proposed building may be supported by shallow foundations bearing on the RAP improved soils. As an alternative, the

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proposed building may be supported on drilled shaft foundations. Shallow foundations bearing on engineered fill may be used to support minor on-site structures.

Due to the low bearing capacity of the near surface soils, the upper on-site soils should be over-excavated to the depth of 2 feet below the deepest bottom of foundation or 4 feet below the existing grades, whichever is greater, within the footprint of the proposed building. The excavated soils should be replaced with engineered fill. On-site soils are considered suitable for use as engineered fill beneath floor slabs and foundations.

Geotechnical engineering recommendations for foundation systems and other earth connected phases of the project are outlined below. The recommendations contained in this report are based upon the results of field and laboratory testing (which are presented in Appendices A and B), engineering analyses, and our current understanding of the proposed project.

4.2 Earthwork

The following presents recommendations for site preparation, excavation, subgrade preparation and placement of engineered fills on the project. The recommendations presented for the design and construction of earth supported elements including, foundations, slabs, and pavements, are contingent upon following the recommendations outlined in this section.

Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, foundation bearing soils, and other geotechnical conditions exposed during the construction of the project.

4.2.1 Site Preparation

Strip and remove existing vegetation, top soil, organic materials, root systems, and other deleterious materials from proposed building and pavement areas. We recommend stripping topsoil to depths that expose soils with less than 3 percent organics and no roots having a diameter greater than 1/8 inch. While the depth of the unsuitable soils should be expected to vary, the thickness of the top soil layer may be estimated to range between 6 and 12 inches for construction budgeting purposes. The thickness of the top soil layer was not determined during our field exploration. Therefore, the actual depth of stripping should be verified by engineering observations made during the grading operations at the project. Exposed surfaces should be free of mounds and depressions which could prevent uniform compaction.

Stripped materials consisting of vegetation and organic materials should be wasted from the site, or used to revegetate landscaped areas or exposed slopes after completion of grading operations. If it is necessary to dispose of organic materials on site, they should be placed in non-structural areas, and in fill sections not exceeding 5 feet in height

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The site should be initially graded to create a relatively level surface to receive fill, and provide for a relatively uniform thickness of fill beneath proposed building structures.

Excavations that extend below groundwater would involve construction dewatering to maintain excavations in a relatively dry condition. Pumping from sumps may be utilized to control water within excavations. Well points may be required for significant groundwater flow, or where excavations penetrate groundwater to a significant depth. Excavation contractors are responsible for dewatering the planned temporary excavations and maintaining the stability of the excavations.

Although evidence of fill or underground facilities such as septic tanks, cesspools, basements, and utilities was not observed during the site reconnaissance, such features could be encountered during construction. If fill materials or underground facilities are encountered, such materials and features should be removed and the excavation thoroughly cleaned prior to backfill placement and/or construction.

4.2.2 Subgrade Preparation

Due to the low bearing capacity of the near surface soils, the upper on-site soils should be over-excavated within the footprint of the proposed buildings to a depth of 4 feet below existing grades, or 2 feet below the deepest foundation, whichever is greater. Over-excavation should extend laterally a minimum of 3 feet beyond the perimeter of the proposed buildings.

Excavations should then be backfilled with engineered fill placed in lifts of 8 inches or less in loose thickness and should be moisture conditioned and compacted following the recommendations in section 4.2.4 of this report.

Care should be taken to prevent wetting or drying of the bearing materials during construction. Wet, dry, or loose/disturbed material in the bottom of the footing excavations should be removed before foundation concrete is placed.

Subsequent to the surface clearing, grubbing, and other overexcavation efforts, subgrade soils beneath exterior slabs and pavements should be scarified, moisture conditioned, and compacted to a minimum depth of 10 inches. The moisture content and compaction of subgrade soils should be maintained until slab or pavement construction.

Exposed areas which will receive fill, once properly cleared and benched where necessary, should be scarified to a minimum depth of 10 inches, moisture conditioned, and compacted per the compaction requirements in Section 4.2.4.

The exposed soils at the bottom of the excavations are expected to have elevated water contents and may pump or yield during attempts to compact the bottom of the excavation. If such conditions occur, the bottom of the pits should be over-excavated to a minimum depth of

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12 inches, and replaced with well sorted crushed aggregate materials. The aggregate materials should be wrapped (top, bottom and sides) with non-woven geotextile such as Mirafi 140N, or an approved equivalent. The crushed aggregate could have a nominal particle size of ¾ to 1 inch. The aggregate layer and the geotextile layer are anticipated to create a stable platform beneath the overlying backfill materials.

4.2.3 Fill Materials and Placement

All fill materials should be inorganic soils free of vegetation, debris, and fragments larger than three inches in size. Pea gravel or other similar non-cementitious, poorly-graded materials should not be used as fill or backfill without the prior approval of the geotechnical engineer. The on-site soils are considered suitable for use as engineered fill for this project.

Approved on-site and imported materials may be used as fill material for the following:

- general site grading
- foundation areas
- interior floor slab areas
- foundation backfill
- pavement areas
- exterior slab areas

Imported soils for use as fill material within proposed building and structure areas should conform to low volume change materials as indicated below:

Gradation	Percent Finer by Weight (ASTM C 136)
3”	100
No. 4 Sieve	50-100
No. 200 Sieve	20-50

- Liquid Limit ..... 30 (max)
- Plasticity Index ..... 15 (max)
- Maximum expansion index* ..... 20 (max)

*ASTM D 4829

Engineered fill should be placed and compacted in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift. Fill lifts should not exceed eight inches loose thickness.

4.2.4 Compaction Requirements

Recommended compaction and moisture content criteria for engineered fill materials are as follows:

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Material Type and Location	Per the Modified Proctor Test (ASTM D 1557)		
	Minimum Compaction Requirement (%)	Range of Moisture Contents for Compaction Above Optimum	
		Minimum	Maximum
On-site soils and low volume change imported fill:			
Beneath foundations:	95	0%	+3%
Beneath interior slabs:	95	0%	+3%
Fill greater than 5 feet in depth	95	0%	+3%
Miscellaneous backfill and behind retain walls:	90	0%	+3%
Beneath pavements:	95	0%	+3%
Utility Trenches*:	90	0%	+3%
Bottom of native soil excavation receiving fill:	95	0%	+3%
Aggregate base (beneath pavements):	95	0%	+3%

* Upper 12 inches should be compacted to 95% within pavement and structural areas. Low-volume change imported soils should be used in structural areas.

4.2.5 Grading and Drainage

Positive drainage should be provided during construction and maintained throughout the life of the development. Infiltration of water into utility trenches or foundation excavations should be prevented during construction. Planters and other surface features which could retain water in areas adjacent to the building or pavements should be sealed or eliminated. In areas where sidewalks or paving do not immediately adjoin the structure, we recommend that protective slopes be provided with a minimum grade of approximately 5 percent for at least 10 feet from perimeter walls.

Backfill against footings, exterior walls, and in utility and sprinkler line trenches should be well compacted and free of all construction debris to reduce the possibility of moisture infiltration. We recommend a minimum horizontal setback distance of 10 feet from the perimeter of any building and the high-water elevation of the nearest storm-water retention basin.

Roof drainage should discharge into splash blocks or extensions when the ground surface beneath such features is not protected by exterior slabs or paving. Sprinkler systems and landscaped irrigation should not be installed within 5 feet of foundation walls.

4.2.6 Exterior Slab Design and Construction

Exterior slabs-on-grade, exterior architectural features, and utilities founded on, or in backfill may experience some movement due to the volume change of the backfill. To reduce the potential for damage caused by movement, we recommend:

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- exterior slabs should be supported directly on subgrade fill with no, or very low expansion potential;
- strict moisture-density control during placement of subgrade fills;
- maintain proper subgrade moisture until placement of slabs;
- placement of effective control joints on relatively close centers and isolation joints between slabs and other structural elements;
- provision for adequate drainage in areas adjoining the slabs;
- using of designs which allow vertical movement between the exterior slabs and adjoining structural elements.

4.2.7 Utility Trenches

It is anticipated that the on-site soils and fill materials will provide suitable support for underground utilities and piping that may be installed. Any soft and/or unsuitable material encountered at the bottom of excavations should be removed and be replaced with an adequate bedding material. A non-expansive granular material with a sand equivalent greater than 30 should be used for bedding and shading of utilities, unless specified otherwise by the utility manufacturer.

On-site materials are considered suitable for backfill of utility and pipe trenches from one foot above the top of the pipe to the final ground surface, provided the material is free of organic matter and deleterious substances. Imported low volume change soils should be used for trench backfill in structural areas.

Trench backfill should be mechanically placed and compacted as discussed earlier in this report. Compaction of initial lifts should be accomplished with hand-operated tampers or other lightweight compactors. Where trenches are placed beneath slabs or footings, the backfill should satisfy the gradation and expansion index requirements of engineered fill discussed in this report. Flooding or jetting for placement and compaction of backfill is not recommended.

4.2.8 Construction Considerations

It is anticipated that excavations for the proposed construction can be accomplished with conventional earthmoving equipment. On-site clayey soils may pump and unstable subgrade conditions could develop during general construction operations, particularly if the soils are wetted and/or subjected to repetitive construction traffic. The use of light construction equipment would aid in reducing subgrade disturbance. The use of remotely operated equipment, such as a backhoe, would be beneficial to perform cuts and reduce subgrade disturbance. Should unstable subgrade conditions develop stabilization measures will need to be employed.

At the time of our study, moisture contents of the surface and near-surface native soils ranged from about 10 percent to 25 percent. Based on these moisture contents, some moisture conditioning will likely be needed for the project. The soils may need to be dried by aeration

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during dry weather conditions, or an additive, such as lime, cement, or kiln dust, may be needed to stabilize the soil.

Upon completion of filling and grading, care should be taken to maintain the subgrade moisture content prior to construction of floor slabs and pavements. Construction traffic over the completed subgrade should be avoided to the extent practical. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. If the subgrade should become desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and recompacted prior to floor slab and pavement construction.

The geotechnical engineer should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation, proof-rolling, placement and compaction of controlled compacted fills, backfilling of excavations to the completed subgrade.

We recommend that the earthwork portion of this project be completed during extended periods of dry weather if possible. If earthwork is completed during the wet season (typically November through April) it may be necessary to take extra precautionary measures to protect subgrade soils. Wet season earthwork operations may require additional mitigative measures beyond that which would be expected during the drier summer and fall months. This could include diversion of surface runoff around exposed soils and draining of ponded water on the site. Once subgrades are established, it may be necessary to protect the exposed subgrade soils from construction traffic.

Excavations into the on-site soils will possibly encounter groundwater, depending upon the final depth of excavation. The individual contractor(s) is responsible for designing and constructing stable, temporary excavations as required to maintain stability of both the excavation sides and bottom. Excavations should be sloped or shored in the interest of safety following local, and federal regulations, including current OSHA excavation and trench safety standards.

4.3 Foundations

Due to the anticipated seismic induced settlement, liquefaction potential, and presence of relatively high compressibility clay soils, we recommend that the upper subsurface soils be improved and densified by rammed aggregate piers (RAP) systems. The proposed building may be supported by shallow foundations bearing on the RAP improved soils. As an alternative, the proposed building may be supported on drilled shaft foundations. Shallow foundations bearing on engineered fill may be used to support minor on-site structures.

4.3.1 Rammed Aggregate Pier (RAP) Recommendations

Rammed Aggregate Pier elements may be installed for support of the main building. RAP elements provide increased bearing capacity, reduce liquefaction potential, and enhance settlement control by delivering a composite stiffened bearing materials to reduce the matrix soil compressibility.

The construction process typically consists of utilizing pre-augered or displacement methods. The augered or displaced cavities are backfilled with aggregate that is compacted in place using static crowd pressure augmented with a high frequency, low amplitude, vibratory hammer. The impact hammer densifies aggregate vertically while the tamper foot forces aggregate laterally into cavity sidewalls resulting in stiff RAP elements and a stiffened matrix/soil. Constructed diameters may range from 20 to 30 inches depending on the method of installation.

In the event that RAP foundation systems are considered for the project, the proposed buildings can be supported on shallow foundations. RAP design is typically performed by a specialty design build ground improvement contractor who should be consulted to provide further analysis and recommendations. The specialty contractor shall make their own interpretation of strength parameters and soil characteristics from the boring logs, CPT soundings, and laboratory testing presented in Appendix A and B of this report.

4.3.2 Shallow Foundations with RAP Design Recommendations

DESCRIPTION	RECOMMENDATION
Structures	Proposed Main Building
Bearing Material	Improved subsurface soils comprised of a composite of RAP systems, engineered fill extending to a minimum of 4 feet below existing grades or 2 feet below deepest foundation, whichever is greater, and onsite soils beneath 4 feet bgs.
Allowable Bearing Pressure	To be provided by specialty contractor based on RAP design
Minimum Width	Walls: 18 inches; Columns: 24 inches
Minimum Embedment Depth Below Finished Grade	18 inches
Estimated Static Settlement	1 inch (should be achieved by specialty contractor design)
Estimated Differential Static Settlement	¾ inch in 40 feet. (should be achieved by specialty contractor design)

4.3.3 Shallow Foundations Design Recommendations

DESCRIPTION	RECOMMENDATION
Structures	Minor structures with foundation width less than 5 feet

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DESCRIPTION	RECOMMENDATION
	such as trash enclosures, equipment pads, and low retaining walls.
Bearing Material	Engineered fill extending to a minimum of 4 feet below existing grades or 2 feet below the deepest foundation, whichever is greater.
Allowable Bearing Pressure	2,000 psf for footing widths up to 6 feet.
Maximum Width	6 feet
Minimum Width	Walls: 18 inches; Columns: 24 inches
Minimum Embedment Depth Below Finished Grade	18 inches
Estimated Static Settlement	1 inch
Estimated Differential Static Settlement	¾ inch in 40 feet.

4.3.4 Drilled Shaft Design Recommendations

As an alternative, the proposed building may be supported on drilled shaft foundations. Terracon can provide design and construction recommendations to support the proposed building in the event shallow foundations and RAP systems were not feasible.

4.4 Floor Slab

DESCRIPTION	VALUE
Interior floor system	Slab-on-grade concrete.
Floor slab support	Engineered fill extending to a minimum of 4 feet below existing grades or 2 feet below the deepest foundation, whichever is greater.
Sub-base/Capillary break	4-inches of Class II Aggregate Base materials
Modulus of subgrade reaction	200 pounds per square inch per inch (psi/in) (The modulus was obtained based on engineered fill, aggregate sub-base, and estimates obtained from NAVFAC 7.1 design charts). This value is for a small loaded area (1 Sq. ft or less) such as for point loads and should be adjusted for larger loaded areas.

In areas of exposed concrete, control joints should be saw cut into the slab after concrete placement in accordance with ACI Design Manual, Section 302.1R-37 8.3.12 (tooled control joints are not recommended). Additionally, dowels should be placed at the location of proposed construction joints. To control the width of cracking (should it occur) continuous slab reinforcement should be considered in exposed concrete slabs.

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Positive separations and/or isolation joints should be provided between slabs and all foundations, columns or utility lines to allow independent movement. Interior trench backfill placed beneath slabs should be compacted in accordance with recommendations outlined in the Earthwork section of this report. Other design and construction considerations, as outlined in the ACI Design Manual, Section 302.1R are recommended.

The use of a vapor retarder or barrier should be considered beneath concrete slabs on grade that will be covered with moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture to prevent moisture migration. When conditions warrant the use of a vapor retarder, the slab designer and slab contractor should refer to ACI 302 and ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder/barrier.

4.5 Lateral Earth Pressures

The lateral earth pressure recommendations herein are applicable to the design of rigid retaining walls subject to slight rotation, such as cantilever, or gravity type concrete walls. These recommendations are not applicable to the design of geogrid-reinforced-backfill walls. Recommendations covering these types of wall systems are beyond the scope of services for this assignment; however, we are available to develop recommendations for the design of such wall systems upon request.

For onsite soils used as engineered fill above any free water surface, recommended equivalent fluid pressures for foundation elements are:

ITEM	VALUE (Onsite Soils)
Active Case	37 psf/ft
Passive Case[1]	385 psf/ft
At-Rest Case	57 psf/ft
Surcharge Pressure	0.31*(Surcharge)
Coefficient of friction	0.35[2]

[1] Note: Ignore passive pressure in the upper 18 inches because of soil disturbance.
[2] Note: Reduce to 0.30 when used in conjunction with passive pressure.

The lateral earth pressures herein do not include any factor of safety and are not applicable for submerged soils/hydrostatic loading. Additional recommendations may be necessary if such conditions are to be included in the design.

Surcharge pressure for uniform pressure acting at the back of the wall should be applied to the wall as a uniform pressure over the entire wall height and is added to the static earth pressures. Other surcharge loads should be considered where they are located within a horizontal distance

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behind the wall equal to 1.5 times the height of the wall. Surcharge stresses due to point loads, line loads, and those of limited extent, such as compaction equipment, should be evaluated using elastic theory.

Fill against foundation and retaining walls should be compacted to densities specified in the Earthwork section of this report. Compaction of each lift adjacent to walls should be accomplished with hand-operated tampers or other lightweight compactors.

Adequate drainage should be provided behind the walls to collect water from irrigation, landscaping, surface runoff, or other sources, to achieve a free-draining backfill condition. The wall back drain should consist of Class 2 permeable materials that are placed behind the entire wall height to within 18 inches of ground surface at the top of the wall. As a minimum, the width of Class 2 permeable materials behind the wall should be two feet. Water collected by the back drain should be directed to an appropriate outlet, such as weep holes or perforated pipes, for disposal.

4.6 Pavements

4.6.1 Design Recommendations

Three samples of the near surface soils were obtained and tested to determine their Resistance Value (R-value). These tests all produced R-values above 50. These samples were taken in the upper 24 inches of the surface. Given the cut and fills anticipated at the site, we recommend obtaining additional R-value samples once rough grading is near completion, within 1 foot. Some of the underlying soils have more fines and will eventually mixed with the upper materials, likely resulting in lower R-values. At this time, a design R-value of 45 was used for the Asphalt Concrete (AC) and Portland Cement Concrete (PCC) pavement designs. The anticipated daily traffic of 200 trucks corresponds to a traffic index (TI) of 10.0. Since the entire parking area will not receive this much truck traffic, we are also providing pavement sections for TI's of 6.0, 7.0, and 8.0 for use by the civil engineer in determining which pavement section to use for the truck parking areas. These TI's correspond to daily truck traffic volumes of 2, 10, and 30, respectively. We have also included a pavement section for automobile traffic using a TI of 5.0.

Assuming the pavement subgrades will be prepared as recommended within this report, the following pavement sections should be considered minimums for this project for the traffic indices assumed in the table below. As more specific traffic information becomes available, we should be contacted to reevaluate the pavement design recommendations.

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Conventional Asphalt Concrete Design					
Layer	**Thickness (inches)**				
	TI=5.0	**TI=6.0**	**TI=7.0**	**TI=8.0**	**TI= 10.0**
Asphalt Concrete	3.0	3.0	4.0	4.0	5.0
Aggregate Base	4.0	6.0	6.0	9.0	11.0

1. See **Project Description** for more specifics regarding traffic classifications.
2. All materials should meet the current California Department of Transportation (Caltrans) Standard Specifications, latest edition.

Portland Cement Concrete Design			
Layer	**Thickness (inches)**		
	TI=5.0	**TI=10.0**	**Dumpster Pad** [3]
PCC	4”	8” Jointed reinforced with dowels or 10” Plain Jointed	7”
Aggregate Base	--	4”	4”

1. All materials should meet the current Caltrans Standard Specifications, latest edition.
2. In areas of anticipated heavy traffic, fire trucks, delivery trucks, or concentrated loads (e.g. dumpster pads), and areas with repeated turning or maneuvering of heavy vehicles.

These pavement sections are considered minimal sections based upon the expected traffic and the existing subgrade conditions. However, they are expected to function with periodic maintenance and overlays if good drainage is provided and maintained.

Subgrade soils beneath all pavements should be scarified, moisture conditioned, and compacted to a minimum depth of 10 inches. All materials should meet the CALTRANS Standard Specifications for Highway Construction. Aggregate base materials should meet the gradation and quality requirement of Class 2 Aggregate Base in Caltrans Standard Specifications, latest edition, Sections 25 through 29.

All concrete for rigid pavements should have a minimum flexural strength of 600 psi, and be placed with a maximum slump of four inches. Proper joint spacing will also be required to prevent excessive slab curling and shrinkage cracking. All joints should be sealed to prevent entry of foreign material and dowelled where necessary for load transfer.

It is our experience that asphalt pavement sections will suffer severe distress and shoving in tight turning radiuses areas. We recommend that portland cement concrete pavement should be used for such areas.

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Asphalt concrete sections must be thickened to 8 inches at transitions with concrete, especially at the trash enclosure pad, loading zones, escape lane intersections, and any other transitions with concrete.

Preventative maintenance should be planned and provided for through an on-going pavement management program in order to enhance future pavement performance. Preventative maintenance activities are intended to slow the rate of pavement deterioration, and to preserve the pavement investment.

Preventative maintenance consists of both localized maintenance (e.g. crack sealing and patching) and global maintenance (e.g. surface sealing). Preventative maintenance is usually the first priority when implementing a planned pavement maintenance program and provides the highest return on investment for pavements.

4.6.2 Pavement Construction Considerations

Materials and construction of pavements for the project should be in accordance with the requirements and specifications of the State of California Department of Transportation, or other approved local governing specifications.

Base course or pavement materials should not be placed when the surface is wet. Surface drainage should be provided away from the edge of paved areas to minimize lateral moisture transmission into the subgrade.

5.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related construction phases of the project.

The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between explorations, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or

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prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

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APPENDIX A

FIELD EXPLORATION

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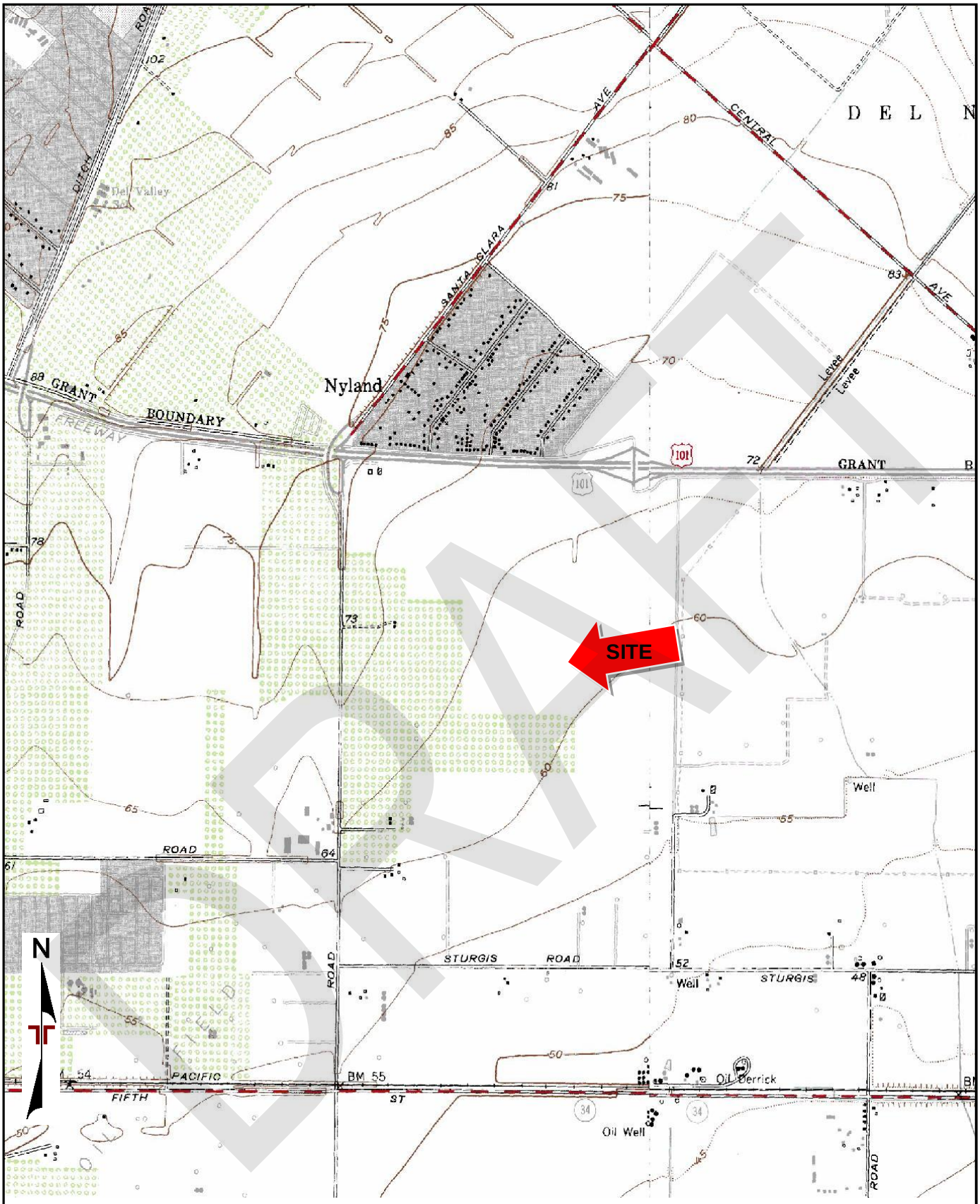

TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY
QUADRANGLES INCLUDE: OXNARD, CA (1/1/1967) and CAMARILLO, CA (1/1/1967).

Project Manager: JM	Project No. 60185017	Terracon 1421 Edinger Ave Ste C Tustin, CA 92780-6287	SITE LOCATION	Exhibit
Drawn by: DTB	Scale: 1"=2,000'		Seefried: Industrial Warehouse; Oxnard **Highway 101 and Del Norte Boulevard** **Oxnard, CA**	A-1
Checked by: JM	File Name: A-1			
Approved by: FB	Date: 04/2018			

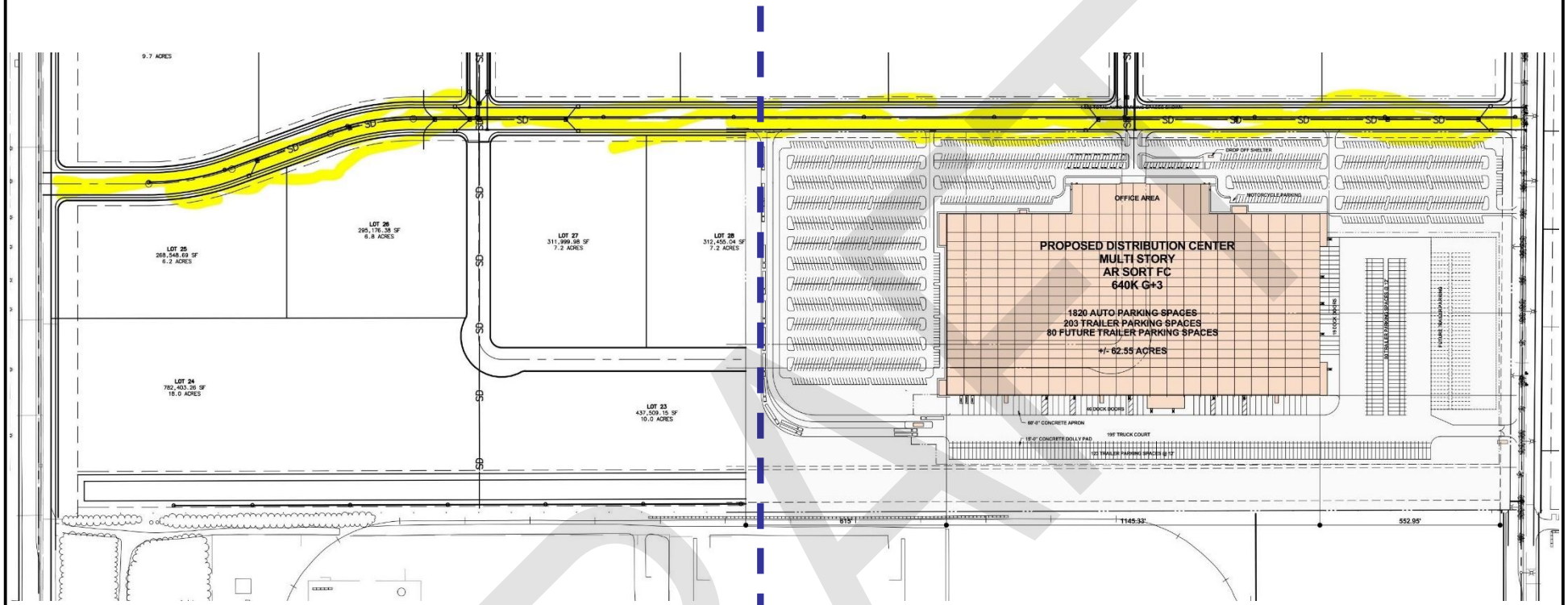

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DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	JM
Drawn by:	DTB
Checked by:	JM
Approved by:	FB

Project No.	60185017
Scale:	1"≈480'
File Name:	A-2
Date:	04/2018

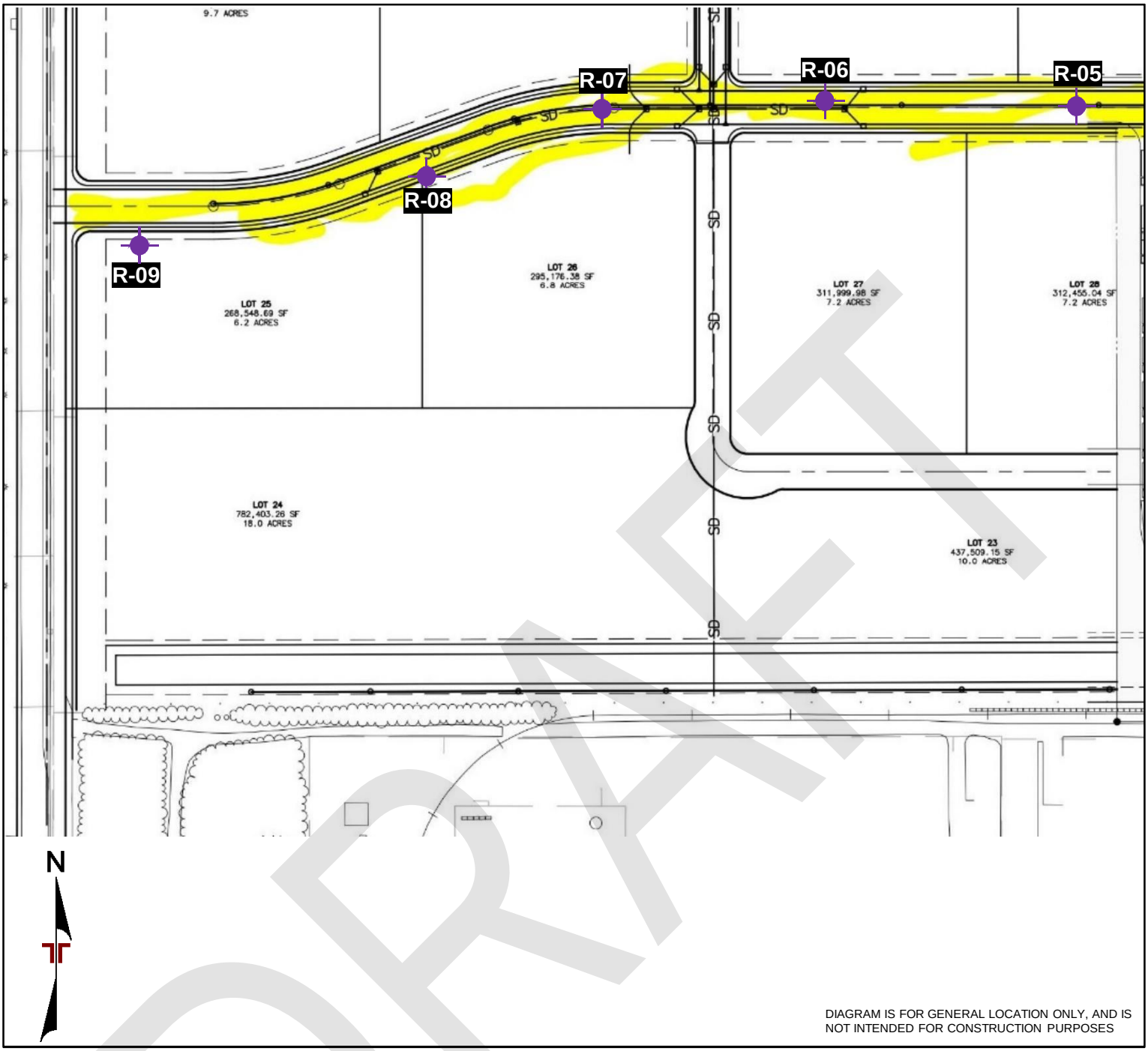
Terracon
Consulting Engineers & Scientists
1421 Edinger Avenue Ste C Tustin, California 92780
PH. (949) 261-0051 FAX. (949) 261-6110

BORING LOCATION PLAN

Seefried: Industrial Warehouse; Oxnard
Highway 101 and Del Norte Boulevard
Oxnard, CA

Exhibit

A-2



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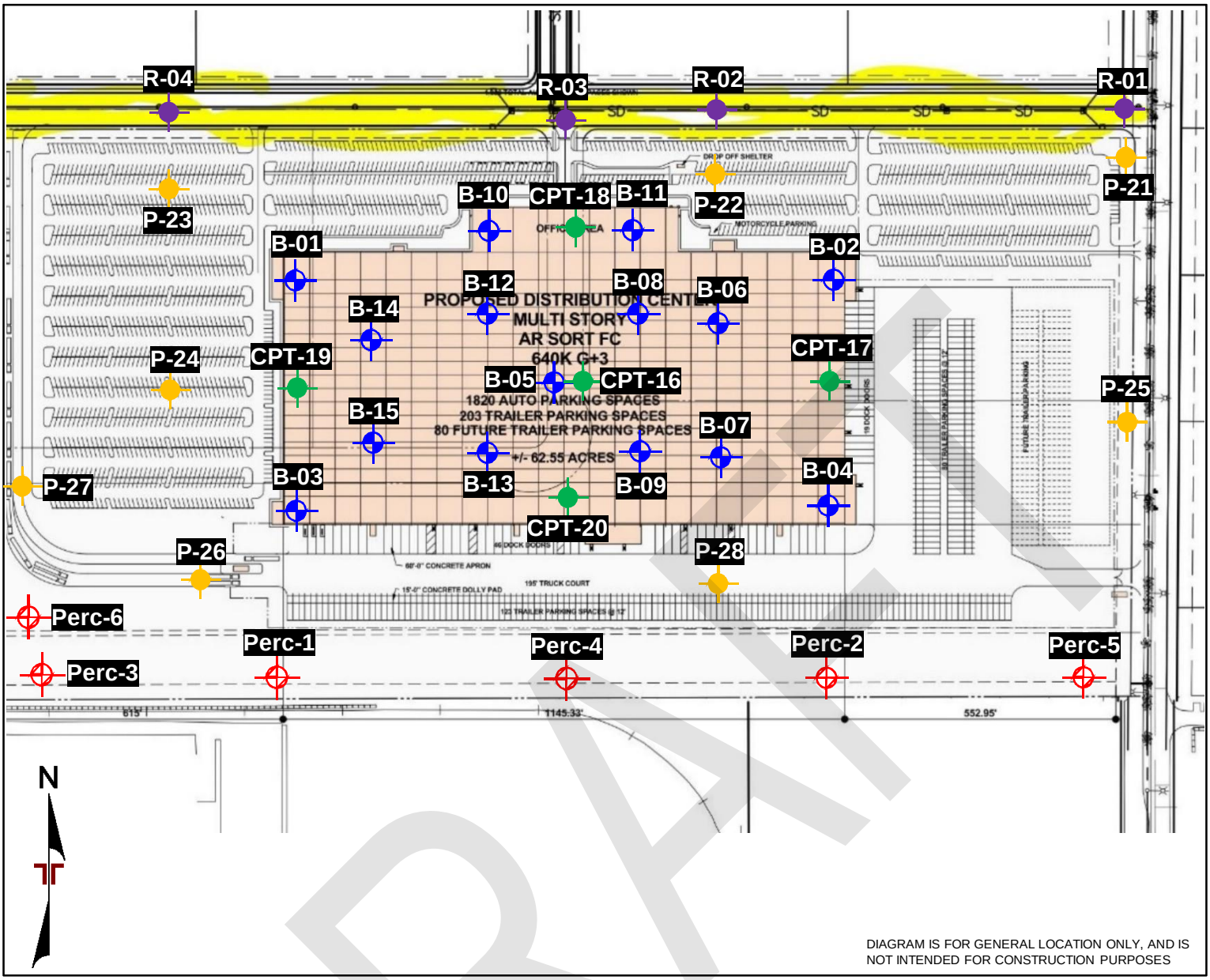
LEGEND

R-01 **BORING APPROXIMATE LOCATION**

Project Manager: JM	Project No. 60185017	Terracon Consulting Engineers & Scientists	BORING LOCATION PLAN
Drawn by: DTB	Scale: 1"≈300'	1421 Edinger Avenue Ste C, Tustin, California 92780	Seefried: Industrial Warehouse; Oxnard
Checked by: JM	File Name: A-3	PH. (949) 261-0051, FAX. (949) 261-6110	**Highway 101 and Del Norte Boulevard**
Approved by: FB	Date: 04/2018		**Oxnard, CA**

Exhibit A-3



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LEGEND

- **B-01** BORING APPROXIMATE LOCATION
- **Perc-1** BORING AND PERCOLATION TEST APPROXIMATE LOCATION
- **P-01** BORING APPROXIMATE LOCATION
- **CPT-01** CONE PENETRATION TEST APPROXIMATE LOCATION
- **R-01** BORING APPROXIMATE LOCATION

Project Manager: JM	Project No. 60185017	Terracon Consulting Engineers & Scientists	BORING LOCATION PLAN
Drawn by: DTB	Scale: 1"≈300'	1421 Edinger Avenue Ste C, Tustin, California 92780	Seefried: Industrial Warehouse; Oxnard
Checked by: JM	File Name: A-4	PH. (949) 261-0051, FAX. (949) 261-6110	Highway 101 and Del Norte Boulevard
Approved by: FB	Date: 04/2018		Oxnard, CA

Exhibit A-4

Field Exploration Description

Field exploration program included the advancement of thirty-seven (37) test borings and six (6) Cone Penetrometer Test (CPT) soundings to approximate depths ranging between 5 to 58 feet below existing site grades. The field program was performed at the site between April 3 and April 11, 2018. Due to current agricultural operations, the location of B-10 was not accessible to our crew. Furthermore. one additional CPT attempt was performed onsite to advance through refusal materials.

The drilled test borings were advanced with a truck-mounted Mobil B-61 drill rig utilizing 6-inch diameter hollow-stem auger. CPT soundings were advanced with a 30-ton truck providing the reaction weight for pushing the cone assembly into the ground at a constant rate of 20-mm per second (approximately four feet per minute). The cone tip resistance and sleeve friction resistance were recorded every 2-cm (approximately ¾-inch) and stored in digital form.

The borings were located in the field by using the proposed site plan, an aerial photograph of the site, a hand-held GPS device, and measuring from existing site features and property lines. The accuracy of boring locations should only be assumed to the level implied by the method used. The location of the borings and CPT soundings is shown on the attached Boring Location Plan, Exhibit A-2.

Continuous lithologic logs of the borings were recorded by the field engineer during the drilling operations. At selected intervals, samples of the subsurface materials were taken by driving split-spoon or ring-barrel samplers. Bulk samples of subsurface materials were also obtained. Groundwater conditions were evaluated in the borings at the time of site exploration.

Penetration resistance measurements were obtained by driving the split-spoon and ring-barrel samplers into the subsurface materials with a 140-pound automatic hammer falling 30 inches. The penetration resistance value is a useful index in estimating the consistency or relative density of materials encountered.

An automatic hammer was used to advance the split-barrel sampler in the borings performed on this site. A significantly greater efficiency is achieved with the automatic hammer compared to the conventional safety hammer operated with a cathead and rope. This higher efficiency has an appreciable effect on the SPT-N value. The effect of the automatic hammer's efficiency has been considered in the interpretation and analysis of the subsurface information for this report.

The samples were tagged for identification, sealed to reduce moisture loss, and taken to our laboratory for further examination, testing, and classification. Information provided on the boring logs attached to this report includes soil descriptions, consistency evaluations, boring depths, sampling intervals, and groundwater conditions. The borings were backfilled with auger cuttings prior to the drill crew leaving the site.

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BORING LOG NO. B-01

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2144° Longitude: -119.1328°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
4.0	58+/-	
		SANDY LEAN CLAY (CL), dark brown, very soft
7.5	54.5+/-	
		POORLY GRADED SAND WITH SILT (SP-SM), trace clay, brown, loose
		medium dense
14.5	47.5+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown stiff
		very soft

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
								25-16-9	41
		2-2-2				25	96		
5		0-0-1 N=1							
		1-5-11				22	100		
10		4-7-7 N=14							10
15		7-6-6				21	105		
20		0-0-0 N=0						37-25-12	72
25									

WATER LEVEL OBSERVATIONS: ▽ (5 ft)

EXPANSION INDEX

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-6

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-01

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2144° Longitude: -119.1328°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		LEAN CLAY WITH SAND (CL), dark grayish brown *(continued)* stiff
28.0	34+/-	**POORLY GRADED SAND WITH SILT (SP-SM)**, grayish brown, medium dense
33.5	28.5+/-	**SANDY LEAN CLAY (CL)**, dark grayish brown, very stiff
39.5	22.5+/-	**FAT CLAY (CH)**, dark grayish brown, medium stiff
43.3	19+/-	**SANDY LEAN CLAY (CL)**, dark grayish brown, very stiff
47.3	15+/-	**CLAYEY SAND (SC)**, dark grayish brown
50.0	12+/-	

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	4-5-5	32	92		
30	3-7-5 N=12			NP	11
35	5-10-31	21	104		
40	2-2-5 N=7			54-27-27	97
45	6-15-10	41	85		
50					

WATER LEVEL OBSERVATIONS; SAMPLE TYPE; EXPANSION INDEX; STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)): not recorded.

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-6

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-01

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2144° Longitude: -119.1328°

Approximate Surface Elev: 62 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		SANDY LEAN CLAY (CL), dark grayish brown, very stiff				8-10-11 N=21								52
	51.5	10.5+/-												
		Boring Terminated at 51.5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-6

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-02

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2143° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
0.0	53+/-	**CLAYEY SAND (SC)**, dark brown, very loose
5.0	42.5+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown, medium dense; very loose
15.5	38.5+/-	**SANDY LEAN CLAY (CL)**, dark brown, soft
19.5	33+/-	**LEAN CLAY WITH SAND (CL)**, brown, stiff
25.0		

DEPTH (Ft.)	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		15						24-16-8	37
	0-2-1 N=3								
5	5-9-12					21	106		
	4-7-3 N=10								
10	1-1-1					20			
15	2-2-1 N=3								
20	5-9-7					24	101		
25									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018
Boring Completed: 04-05-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-7

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-02

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2143° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), brown, medium dense
28.5	29.5+/-	
		POORLY GRADED SAND WITH GRAVEL (SP), tan, medium dense
35.0	23+/-	
		SANDY LEAN CLAY (CL), dark grayish brown, stiff
39.3	19+/-	
		LEAN CLAY WITH SAND (CL), dark gray stiff
		very stiff

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
		4-7-5 N=12		
30		8-10-35	17	
35		4-6-7 N=13		
40		4-7-8	45	78
45		2-7-12 N=19		
50				

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018 | Boring Completed: 04-05-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-7

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-02

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2143° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	LEAN CLAY WITH SAND (CL), dark gray *(continued)*					10-21-23					22	103		
51.5	hard													
	6.5+/-													
	Boring Terminated at 51.5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018
Boring Completed: 04-05-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-7

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-03

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1328°

Approximate Surface Elev: 63 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		SILTY CLAYEY SAND (SC-SM), dark brown, very loose
4.8	58.5+/-	
		SANDY LEAN CLAY (CL), dark brown, medium stiff
7.3	56+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, loose
9.8	53.5+/-	
		CLAYEY SAND (SC), dark brown, medium dense
		loose
16.0	47+/-	
		SANDY LEAN CLAY (CL), dark grayish brown, medium stiff
19.5	43.5+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown medium stiff

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
			12						24-17-7	45
		0-2-1 N=3								
5		0-3-2					22	104		
		0-0-5 N=5								
10		11-14-9					22	103		
15		1-3-2 N=5								
20		3-4-5					30	96		
25										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-8

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-03

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1328°

Approximate Surface Elev: 63 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
		LEAN CLAY WITH SAND (CL), dark grayish brown *(continued)* stiff		3-4-5 N=9		
29.0	34+/-	**CLAYEY SAND**, dark grayish brown, medium dense	30	11-19-11	17	111
35.0	28+/-	**LEAN CLAY WITH SAND (CL)**, dark grayish brown, medium stiff	35	4-4-4 N=8		
40.3	23+/-	**LEAN CLAY (CL)**, trace sand, dark grayish brown, stiff	40	5-7-10	38	82
42.0	21+/-	**CLAYEY SAND (SC)**, dark grayish brown				
45.0	18+/-	**LEAN CLAY (CL)**, trace sand, dark grayish brown, very stiff	45	6-10-9 N=19	33	92
			50			

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-8

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-03

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1328°

Approximate Surface Elev: 63 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), trace sand, dark grayish brown, very stiff *(continued)*					8-15-12					26	98		
	51.5 black	11.5+/-												
	Boring Terminated at 51.5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018 | Boring Completed: 04-06-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-8

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-04

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
4.5	53.5+/-	**CLAYEY SAND (SC)**, dark brown, very loose
11.0	47+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown, medium dense; loose, sample not recovered; very loose
24.0	34+/-	**LEAN CLAY WITH SAND (CL)**, dark brown, very soft; dark grayish brown, medium stiff; brown, stiff
		SANDY LEAN CLAY (CL), dark brown, hard

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
	2-2-4	20	104
5	3-5-5 N=10		
	15-9-5		
10	0-0-1 N=1		
15	0-3-3	32	89
20	4-6-6 N=12		

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018 | Boring Completed: 04-05-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-9

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-04

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
		SANDY LEAN CLAY (CL), dark brown, hard *(continued)*		5-20-36	20	108
		stiff	30	3-6-9 N=15		
		very stiff	35	8-12-14	32	91
39.0	19+/-					
		LEAN CLAY WITH SAND (CL), dark grayish brown, stiff	40	3-7-4 N=11		
43.0	15+/-					
		SANDY LEAN CLAY (CL), dark brown, very stiff	45	5-6-15		
			50			

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018 | Boring Completed: 04-05-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-9

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-04

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	SANDY LEAN CLAY (CL), dark brown, very stiff *(continued)*					3-5-11 N=16								
	51.5	6.5+/-												
	Boring Terminated at 51.5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018
Boring Completed: 04-05-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-9

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BORING LOG NO. B-05

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2138° Longitude: -119.131°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
0.0	59	**SILTY CLAYEY SAND (SC-SM)**, dark brown, very loose brown
6.0	53+/-	**SILTY SAND (SM)**, brown, medium dense
10.5	48.5+/-	**LEAN CLAY (CL)**, trace sand, dark grayish brown, soft
13.0	46+/-	**SILTY CLAYEY SAND (SC-SM)**, dark brown, very loose
		loose
25.0	34+/-	

Sample Depth (Ft.)	Field Test Results	Atterberg Limits LL-PL-PI	Percent Fines
0.0–6.0		24-17-7	46
2.5	0-0-1 N=1		
5.0	3-6-6 N=12	NP	18
7.5	5-14-9 N=23		
10.0	2-1-1 N=2		
15.0	2-1-1 N=2	23-18-5	46
20.0	0-2-3 N=5		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-10

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BORING LOG NO. B-05

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2138° Longitude: -119.131°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		LEAN CLAY WITH SAND (CL), dark grayish brown, medium stiff
		stiff
31.0	28+/-	**CLAYEY SAND**, dark brown, loose
35.0	24+/-	**SILT (ML)**, dark grayish brown, stiff
40.0	19+/-	**LEAN CLAY (CL)**, trace sand, dark grayish brown, stiff

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		2-3-4 N=7						43-24-19	75
30		7-4-5 N=9							
35		5-7-6 N=13						36-25-11	98
40		2-3-6 N=9							
45		2-4-5 N=9						40-24-16	87
50									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-10

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BORING LOG NO. B-05

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2138° Longitude: -119.131°

Approximate Surface Elev: 59 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), trace sand, dark grayish brown, stiff *(continued)*					5-5-7 N=12								
	51.5	7.5+/-												
	Boring Terminated at 51.5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-10

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BORING LOG NO. B-06

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2141° Longitude: -119.1299°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		loose
7.3	51+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown, medium dense
10.0	48+/-	**LEAN CLAY WITH SAND (CL)**, dark grayish brown, soft
13.5	44.5+/-	**POORLY GRADED SAND WITH CLAY**, grayish brown, very loose
15.5	42.5+/-	**LEAN CLAY WITH SAND (CL)**, dark grayish brown, soft
		very stiff
21.5	36.5+/-	***Boring Terminated at 21.5 Feet***

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		2-1-2 N=3							
5		2-3-5				10	81		
		2-5-9 N=14							
10		0-1-2				39	81		
15		0-1-2 N=3							
20		8-15-20				28	99		

WATER LEVEL OBSERVATIONS: While drilling; At completion of drilling

EXPANSION INDEX

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-09-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-11

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BORING LOG NO. B-07

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2134° Longitude: -119.1299°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		loose
7.5	50.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, medium dense
		very loose
11.0	47+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, very soft
14.8	43.5+/-	
		CLAYEY SAND (SC), grayish brown, medium dense
		loose
20.8	37.5+/-	
21.5	36.5+/-	**LEAN CLAY WITH SAND (CL)**, dark grayish brown, medium stiff to stiff
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
5	0-1-2	24	98
	2-2-3 N=5		
10	9-16-26	16	108
	0-0-0 N=0		
15	3-10-13	21	103
20	2-3-5 N=8		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-09-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-12

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BORING LOG NO. B-08

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2141° Longitude: -119.1304°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
4.5	54.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, loose
6.5	52.5+/-	
		CLAYEY SAND (SC), dark brown
7.5	51.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, dense
10.0	49+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, very stiff
		soft
		very stiff
21.5	37.5+/-	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		1-1-1 N=2							
5		2-4-8				20	101		
		17-23-23 N=46							
10		22-22-12				38	87		
15		0-1-1 N=2							
20		4-11-13				24	101		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-03-2018
Boring Completed: 04-03-2018
Drill Rig: LAR
Driller: CalPac
Project No.: 60185017
Exhibit: A-13

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-09

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2134° Longitude: -119.1304°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		medium dense
7.0	52+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, medium dense
9.8	49.5+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, very soft
13.5	45.5+/-	
		CLAYEY SAND (SC), dark brown, loose
17.0	42+/-	
		SANDY LEAN CLAY (CL), dark grayish brown, very soft
21.0	38+/-	
21.5	37.5+/-	**CLAYEY SAND (SC)**, dark brown, very loose
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
	2-3-3	25	99
5	4-7-10 N=17		
	10-23-27	19	108
10	0-0-1 N=1		
15	4-8-7	21	102
20	0-0-1 N=1		

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-03-2018 | Boring Completed: 04-03-2018

Drill Rig: LAR | Driller: CalPac

Project No.: 60185017 | Exhibit: A-14

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-11

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2146° Longitude: -119.1305°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
4.5	54.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), dark brown, medium dense
		brown
10.8	48.5+/-	very loose
		LEAN CLAY WITH SAND (CL), dark grayish brown, soft
13.5	45.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), dark brown, medium dense
		sample not recovered
19.5	39.5+/-	
		SANDY LEAN CLAY (CL), dark brown, stiff
21.5	37.5+/-	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
		2-2-4	19	106
5		2-4-6 N=10		
		16-21-24	20	110
10		1-1-1 N=2		
15		19-18-16		
20		0-4-7 N=11		

WATER LEVEL OBSERVATIONS: ▽ While drilling; ▽ At completion of drilling

GRAPHIC LOG | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018 | Boring Completed: 04-04-2018
Drill Rig: LAR | Driller: CalPac
Project No.: 60185017 | Exhibit: A-15

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-12

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.214° Longitude: -119.1323°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		brown, medium dense
6.0	54+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, medium dense
		very loose
10.8	49+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, soft
		medium stiff
		medium stiff to stiff
21.5	38.5+/-	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
	4-3-3	23	102
5	3-5-7 N=12		
	13-23-33	21	107
10	2-1-1 N=2		
15	3-2-5	35	89
20	2-4-4 N=8		

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-10-2018 | Boring Completed: 04-10-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-16

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-13

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2134° Longitude: -119.1316°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		brown
5.0	55+/-	
		CLAYEY SAND (SC), brown, medium dense
6.8	53.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, medium dense
		very loose
11.0	49+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, soft
		stiff
21.5	38.5+/-	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
	1-1-1 N=2		
5	2-6-12	19	111
	6-6-5 N=11		
10	3-1-2	31	89
15	1-1-1 N=2		
20	2-4-9	25	99

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-10-2018
Boring Completed: 04-10-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-17

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-14

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.214° Longitude: -119.1323°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		brown, loose
6.5	53.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, medium dense trace gravel
		no gravel
13.3	47+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, soft
		very stiff
21.5	38.5+/-	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	1-1-1 N=2							
5	3-4-8				19	111		
	5-7-7 N=14							
10	8-17-7				17	112		
15	2-1-1 N=2							
20	7-13-15				25	99		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-10-2018
Boring Completed: 04-10-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-18

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-15

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2135° Longitude: -119.1323°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		brown
5.8	56.5+/-	loose
		POORLY GRADED SAND WITH CLAY (SP), brown, loose
		medium dense
11.0	51+/-	very loose
		LEAN CLAY WITH SAND (CL), dark grayish brown, soft
14.0	48+/-	**POORLY GRADED SAND WITH CLAY (SP)**, grayish brown, loose sample not recovered
20.3	42+/-	
21.5	40.5+/-	**LEAN CLAY WITH SAND (CL)**, dark grayish brown, medium stiff to stiff
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
	2-1-2	21	102
5	1-5-4 N=9		
	19-24-24	19	107
10	1-2-1 N=3		
15	3-5-5		
20	2-4-4 N=8		

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-10-2018 | Boring Completed: 04-10-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-19

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-21

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.215° Longitude: -119.1272°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)
5.0	53+/-

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), dark brown												
	5											
Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

At completion of drilling

at 10 Minutes

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018	Boring Completed: 04-04-2018
Drill Rig: Hand Auger	Driller: Hand Auger
Project No.: 60185017	Exhibit: A-20

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-22

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2149° Longitude: -119.1299°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	POORLY GRADED SAND (SP), dark brown												
	brown											21-18-3	2
5.0	54+/-	5											
	Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

At completion of drilling

at 10 Minutes

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018 | Boring Completed: 04-04-2018

Drill Rig: Hand Auger | Driller: Hand Auger

Project No.: 60185017 | Exhibit: A-21

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-23

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2149° Longitude: -119.1336°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), dark brown													
5.0	57+/-	5	▽										
Boring Terminated at 5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018 | Boring Completed: 04-11-2018

Drill Rig: CME 75 | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-22

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-24

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2138° Longitude: -119.1336°

Approximate Surface Elev: 63 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		SILTY CLAYEY SAND (SC-SM), dark brown											22-18-4	27
4.0	59+/-													
5.0	58+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown	5	▽										
		Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018 | Boring Completed: 04-11-2018

Drill Rig: CME 75 | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-23

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-25

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2135° Longitude: -119.1272°

Approximate Surface Elev: 57 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), dark brown													
brown													
dark brown													
5.0	52+/-	5											
Boring Terminated at 5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018
Boring Completed: 04-04-2018
Drill Rig: Hand Auger
Driller: Hand Auger
Project No.: 60185017
Exhibit: A-24

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-26

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2127° Longitude: -119.1334°

Approximate Surface Elev: 65 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), dark brown brown													
5.0	60+/-	5	▽										
Boring Terminated at 5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*
▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018 | Boring Completed: 04-04-2018
Drill Rig: Hand Auger | Driller: Hand Auger
Project No.: 60185017 | Exhibit: A-25

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-27

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2132° Longitude: -119.1347°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown
4.0	58+/-	
		LEAN CLAY WITH SAND, dark brown
5.0	57+/-	
		Boring Terminated at 5 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-26

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-28

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2126° Longitude: -119.13°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown												
	brown												
5.0	55+/-	5											
	Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018
Boring Completed: 04-04-2018
Drill Rig: Hand Auger
Driller: Hand Auger
Project No.: 60185017
Exhibit: A-27

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-1

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2121° Longitude: -119.1329°

Approximate Surface Elev: 64 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown, loose													
	5.0	59+/-	5			1-3-5					18	102		
	Boring Terminated at 5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-28

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-2

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2121° Longitude: -119.1292°

Approximate Surface Elev: 59 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown, very loose													
	5.0	54+/-				0-2-4					24	101		
	Boring Terminated at 5 Feet		5											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-29

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-3

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2121° Longitude: -119.1345°

Approximate Surface Elev: 64 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	FIELD TEST RESULTS	TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	LL-PL-PI
		5	1-1-4				16	82	

CLAYEY SAND (SC), dark brown, very loose

6.0 — 58+/-

SANDY LEAN CLAY (CL), dark brown, medium stiff

7.0 — 57+/-

Boring Terminated at 7 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-30

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-4

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.212° Longitude: -119.131°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
6.0	54+/-	
		SANDY LEAN CLAY (CL), dark brown
7.0	53+/-	
		Boring Terminated at 7 Feet

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
5		2-1-1				13			

GRAPHIC LOG

WATER LEVEL OBSERVATIONS

EXPANSION INDEX

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-31

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-5

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2121° Longitude: -119.1275°

Approximate Surface Elev: 56 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown, very loose													
			5			1-2-4					23	99		
	7.0	49+/-												
	Boring Terminated at 7 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-32

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-6

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2125° Longitude: -119.1347°

Approximate Surface Elev: 63 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown													
	3.0	60+/-												
	Boring Terminated at 3 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-33

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-01

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2153° Longitude: -119.1272°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
		CLAYEY SAND (SC), dark brown
		brown
10.0	49+/-	***Boring Terminated at 10 Feet***

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
		▽										
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018	Boring Completed: 04-09-2018
Drill Rig: CME 75	Driller: S/G Drilling
Project No.: 60185017	Exhibit: A-34

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-02

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2153° Longitude: -119.1299°

Approximate Surface Elev: 57 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		POORLY GRADED SAND (SP), dark brown												
			5	▽									22-17-5	2
		brown												
10.0	47+/-		10											
		Boring Terminated at 10 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018 | Boring Completed: 04-09-2018

Drill Rig: CME 75 | Driller: S/G Drilling

Project No.: 60185017 | Exhibit: A-35

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-03

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2153° Longitude: -119.1309°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
		CLAYEY SAND (SC), dark brown
5.0	55+/-	
5.8	54.5+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown
		Boring Terminated at 5.75 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5	▽										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018 | Boring Completed: 04-11-2018

Drill Rig: CME 75 | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-36

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-04

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2153° Longitude: -119.1336°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
		CLAYEY SAND (SC), dark brown
5.3	57+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown
10.0	52+/-	
		Boring Terminated at 10 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5	▽										
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-37

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-05

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2153° Longitude: -119.1352°

Approximate Surface Elev: 63 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
3.5	59.5+/-	**CLAYEY SAND (SC)**, dark brown
6.3	57+/-	**LEAN CLAY WITH SAND (CL)**, dark brown
10.0	53+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown
		Boring Terminated at 10 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

At completion of drilling

at 10 Minutes

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-38

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-06

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2154° Longitude: -119.1369°

Approximate Surface Elev: 66 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown
2.8	63.5+/-	
		LEAN CLAY WITH SAND (CL), dark brown
7.0	59+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown
10.0	56+/-	
		Boring Terminated at 10 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-39

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-07

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2154° Longitude: -119.1384°

Approximate Surface Elev: 67 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
0		**CLAYEY SAND (SC)**, dark brown
3.0	64+/-	**LEAN CLAY WITH SAND (CL)**, dark brown
6.0	61+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown
9.0	58+/-	**CLAYEY SAND (SC)**, dark brown
10.0	57+/-	***Boring Terminated at 10 Feet***

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-40

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-08

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.215° Longitude: -119.1395°

Approximate Surface Elev: 68 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown
2.5	65.5+/-	
		LEAN CLAY WITH SAND (CL), dark brown
5.5	62.5+/-	
		SANDY LEAN CLAY (CL), brown
8.0	60+/-	
		CLAYEY SAND (SC), brown
10.0	58+/-	
		Boring Terminated at 10 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-41

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-09

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2146° Longitude: -119.1415°

Approximate Surface Elev: 67 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
0.0	67	**CLAYEY SAND (SC)**, dark brown
6.0	61+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown
10.0	57+/-	***Boring Terminated at 10 Feet***

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-42

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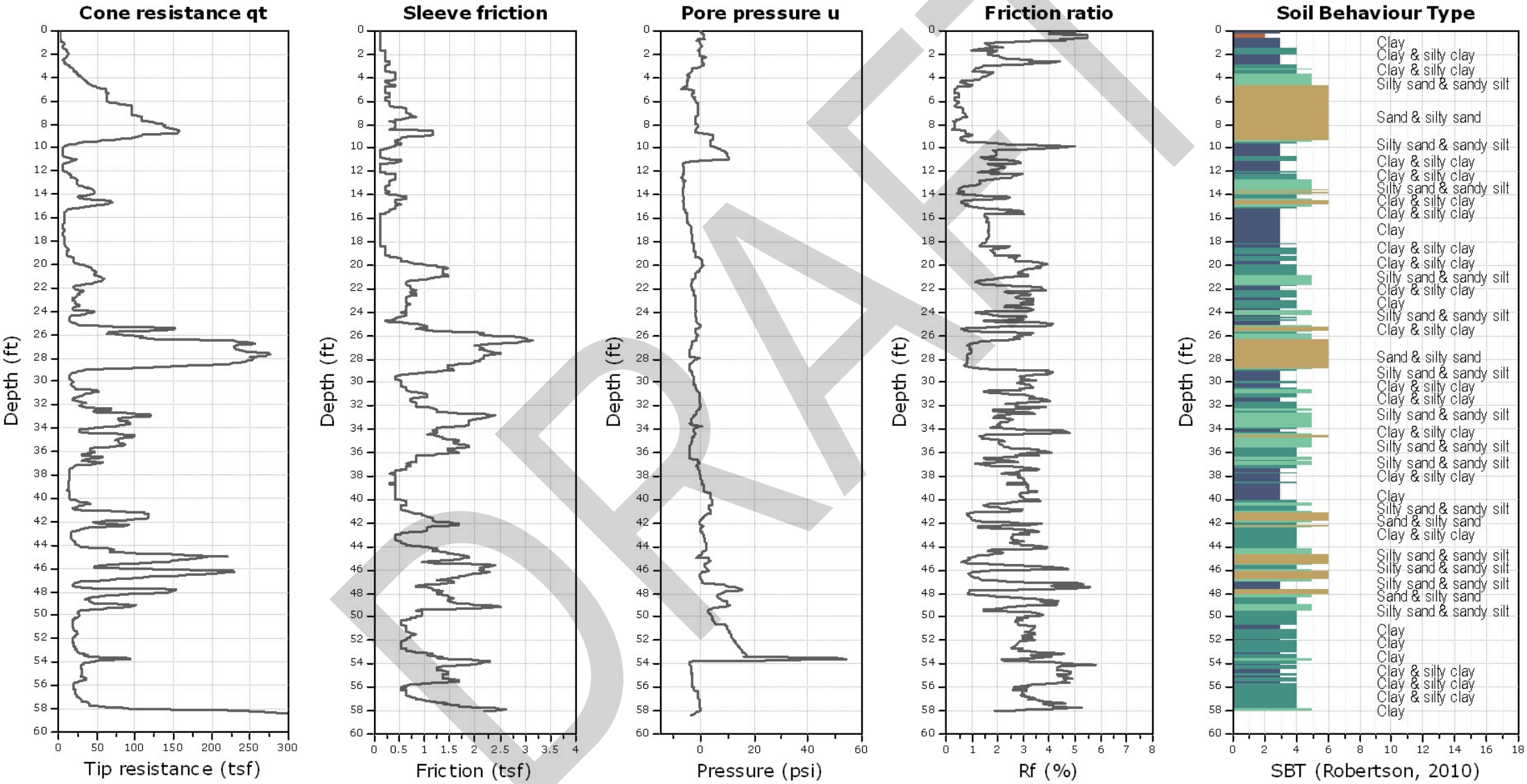
THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-16

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 58.35 ft, Date: 5/3/2018
Cone Type: Vertek



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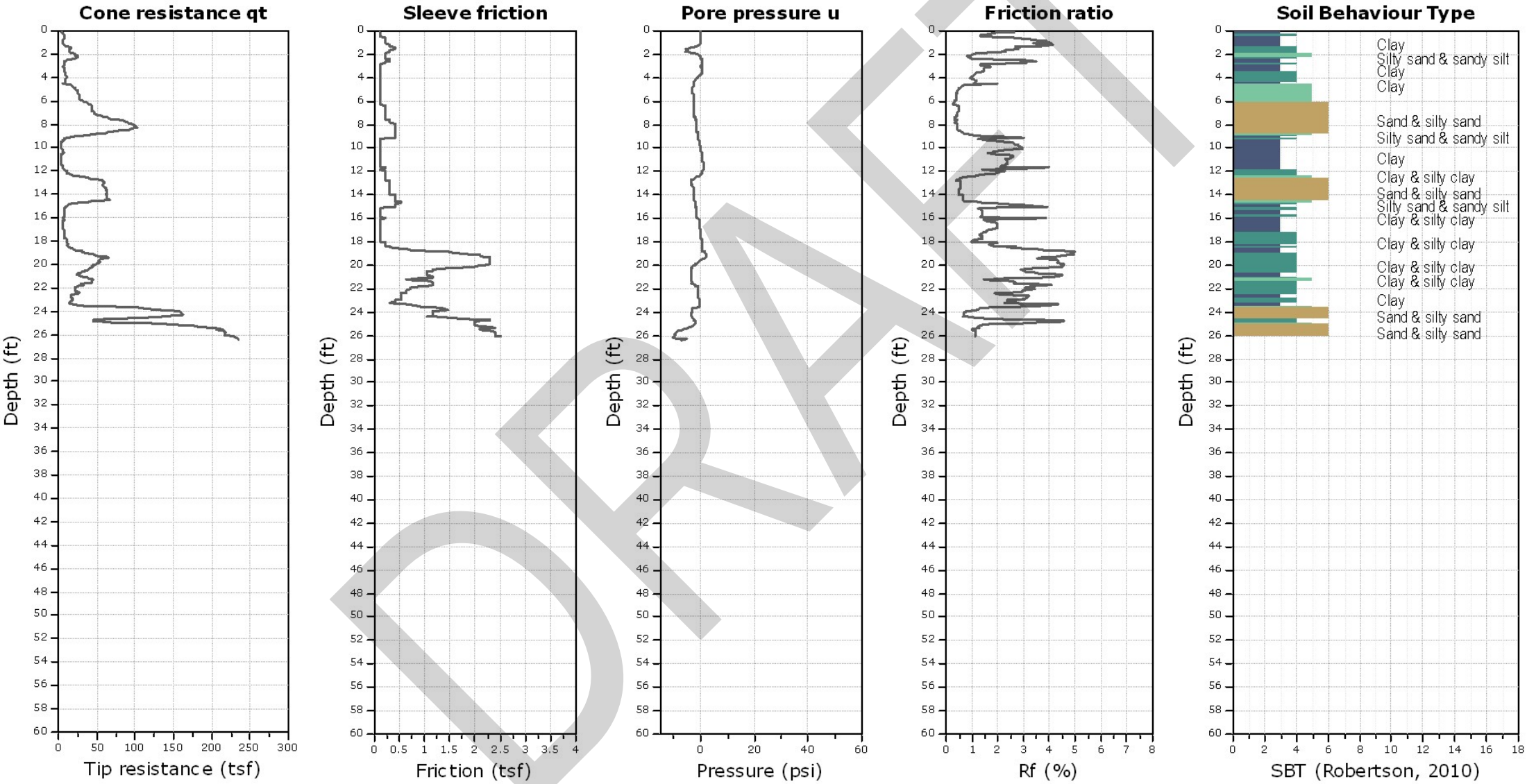
Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-17

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 26.38 ft, Date: 5/4/2018
Cone Type: Vertek



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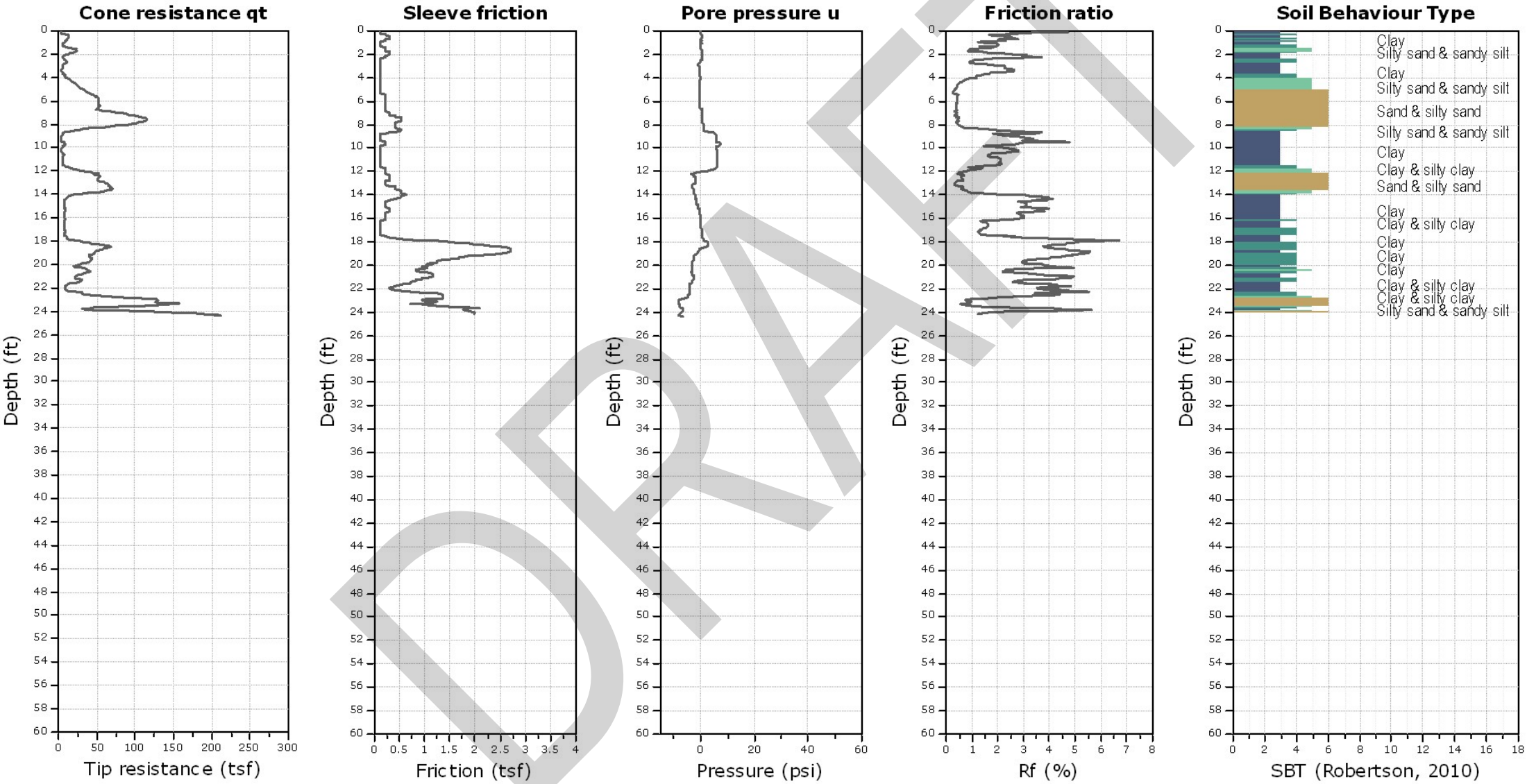
Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-17B

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 24.43 ft, Date: 5/4/2018
Cone Type: Vertek



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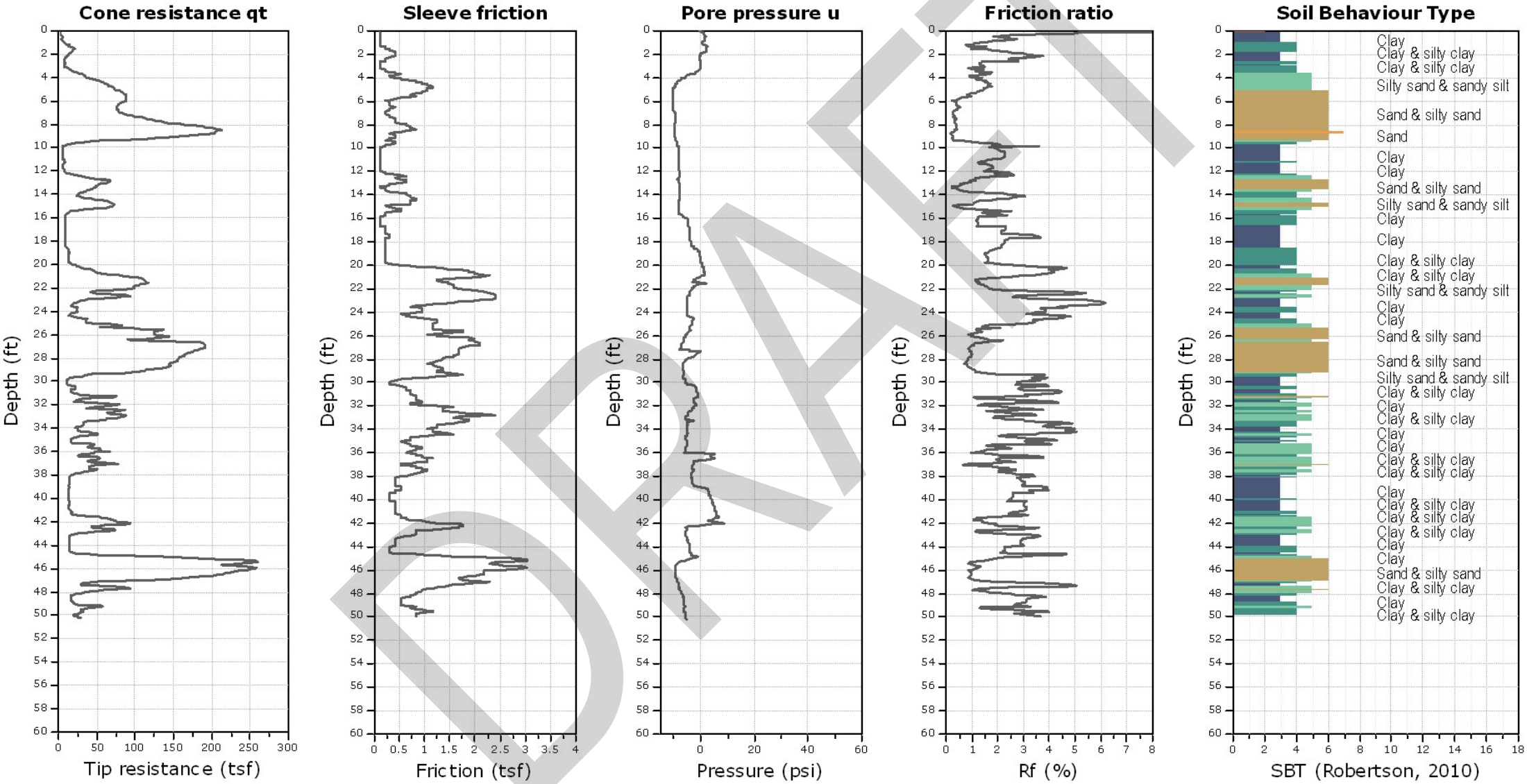
Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-18

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 50.22 ft, Date: 5/4/2018
Cone Type: Vertek



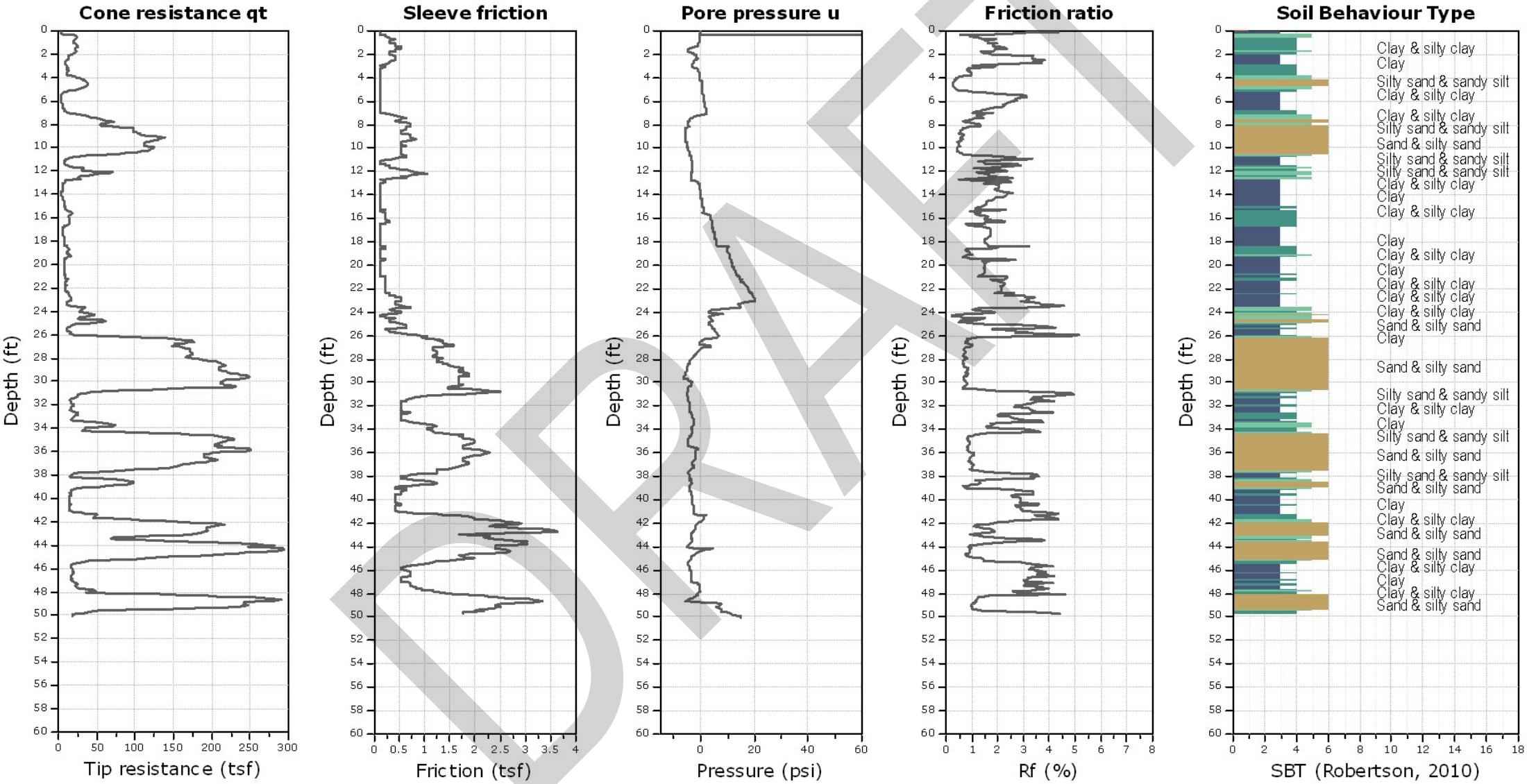
DRAFT

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-19

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 50.02 ft, Date: 5/4/2018
Cone Type: Vertek



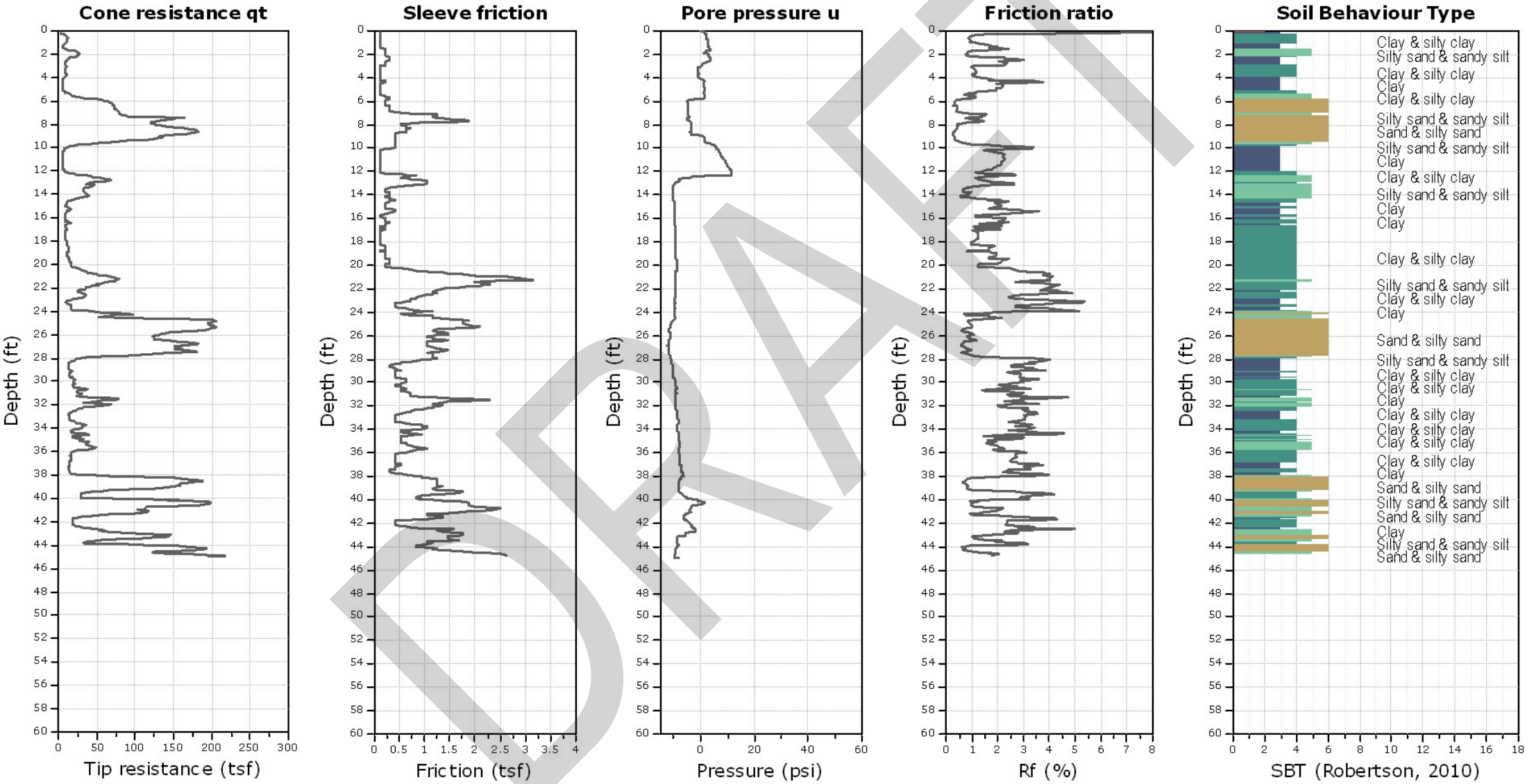
DRAFT

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-20

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 45.02 ft, Date: 5/3/2018
Cone Type: Vertek



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APPENDIX B

LABORATORY TESTING

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Laboratory Testing

Samples retrieved during the field exploration were taken to the laboratory for further observation by the project geotechnical engineer and were classified in accordance with the Unified Soil Classification System (USCS) described in Appendix A. At that time, the field descriptions were confirmed or modified as necessary and an applicable laboratory testing program was formulated to determine engineering properties of the subsurface materials.

Laboratory tests were conducted on selected soil samples and the test results are presented in this appendix. The laboratory test results were used for the geotechnical engineering analyses, and the development of foundation and earthwork recommendations. Laboratory tests were performed in general accordance with the applicable ASTM, local or other accepted standards.

Selected soil samples obtained from the site were tested for the following engineering properties:

- In-situ Dry Density
- Soluble Chlorides
- pH
- Percent Passing #200 Sieve
- Atterberg Limits
- Direst Shear
- In-situ Water Content
- Soluble Sulfates
- Minimum Resistivity
- Consolidation/Collapse Potential
- Expansion Index
- R-Value

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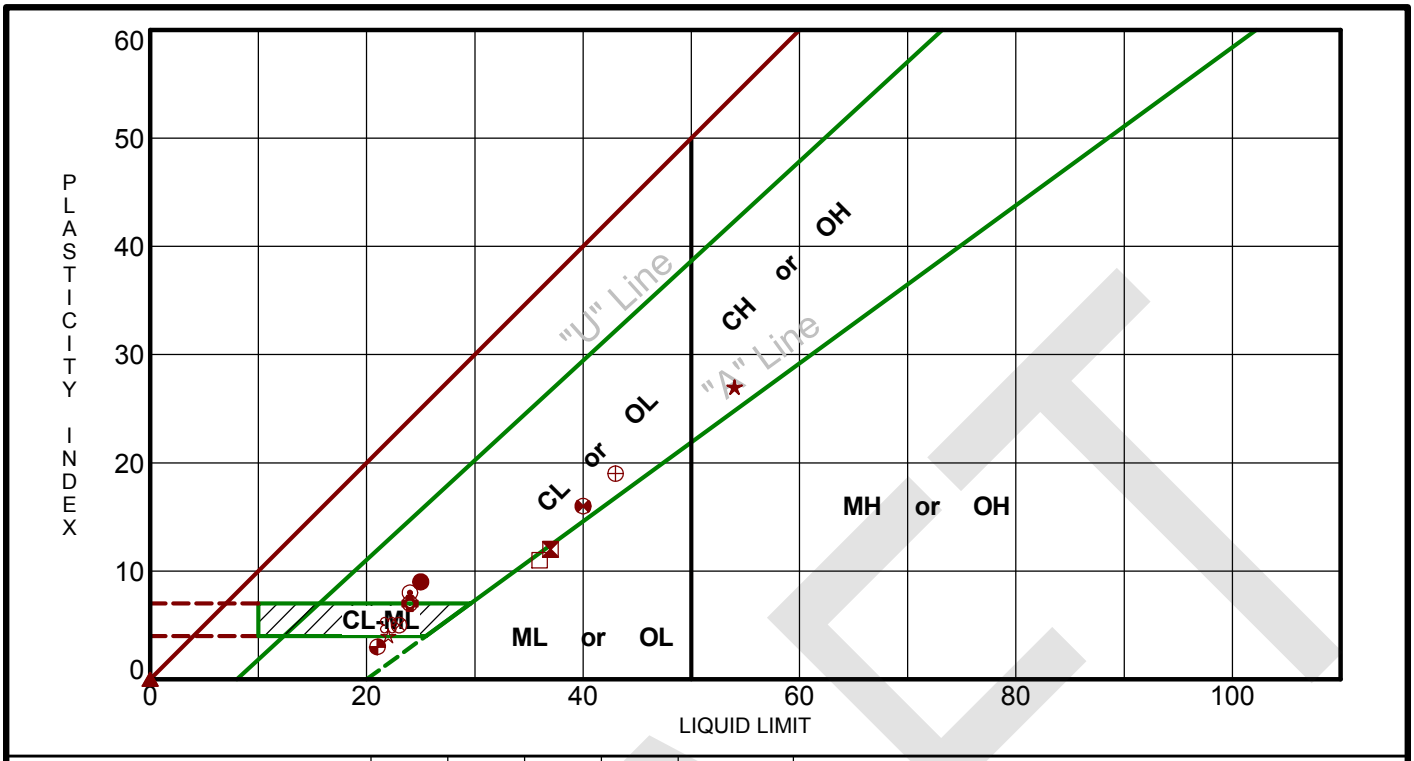
ATTERBERG LIMITS RESULTS

ASTM D4318



	Boring ID	Depth	LL	PL	PI	Fines	USCS	Description
●	B-01	0 - 2.5	25	16	9	41	SC	CLAYEY SAND
⊠	B-01	20 - 21.5	37	25	12	72	ML	SILT with SAND
▲	B-01	30 - 31.5	NP	NP	NP	11	SP-SM	POORLY GRADED SAND WITH SILT
★	B-01	40 - 41.5	54	27	27	97	CH	FAT CLAY
⊙	B-02	0 - 2.5	24	16	8	37	SC	CLAYEY SAND
✿	B-03	0 - 2.5	24	17	7	45	SC-SM	SILTY, CLAYEY SAND
○	B-05	0 - 2.5	24	17	7	46	SC-SM	SILTY, CLAYEY SAND
△	B-05	5 - 6.5	NP	NP	NP	18	SM	SILTY SAND
⊗	B-05	15 - 16.5	23	18	5	46	SC-SM	SILTY, CLAYEY SAND
⊕	B-05	25 - 26.5	43	24	19	75	CL	LEAN CLAY with SAND
□	B-05	35 - 36.5	36	25	11	98	ML	SILT
⊗	B-05	45 - 46.5	40	24	16	87	CL	LEAN CLAY
◕	P-22	0 - 5	21	18	3	2	SP	POORLY GRADED SAND
☆	P-24	0 - 4	22	18	4	27	SC-SM	SILTY, CLAYEY SAND
✿	R-02	0 - 10	22	17	5	2	SP	POORLY GRADED SAND

PROJECT: Oxnard Confidential Project Gaucho

SITE: Highway 101 and Del Norte Boulevard

Terracon
1421 Edinger Ave Ste C
Tustin, CA

PROJECT NUMBER: 60185017

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

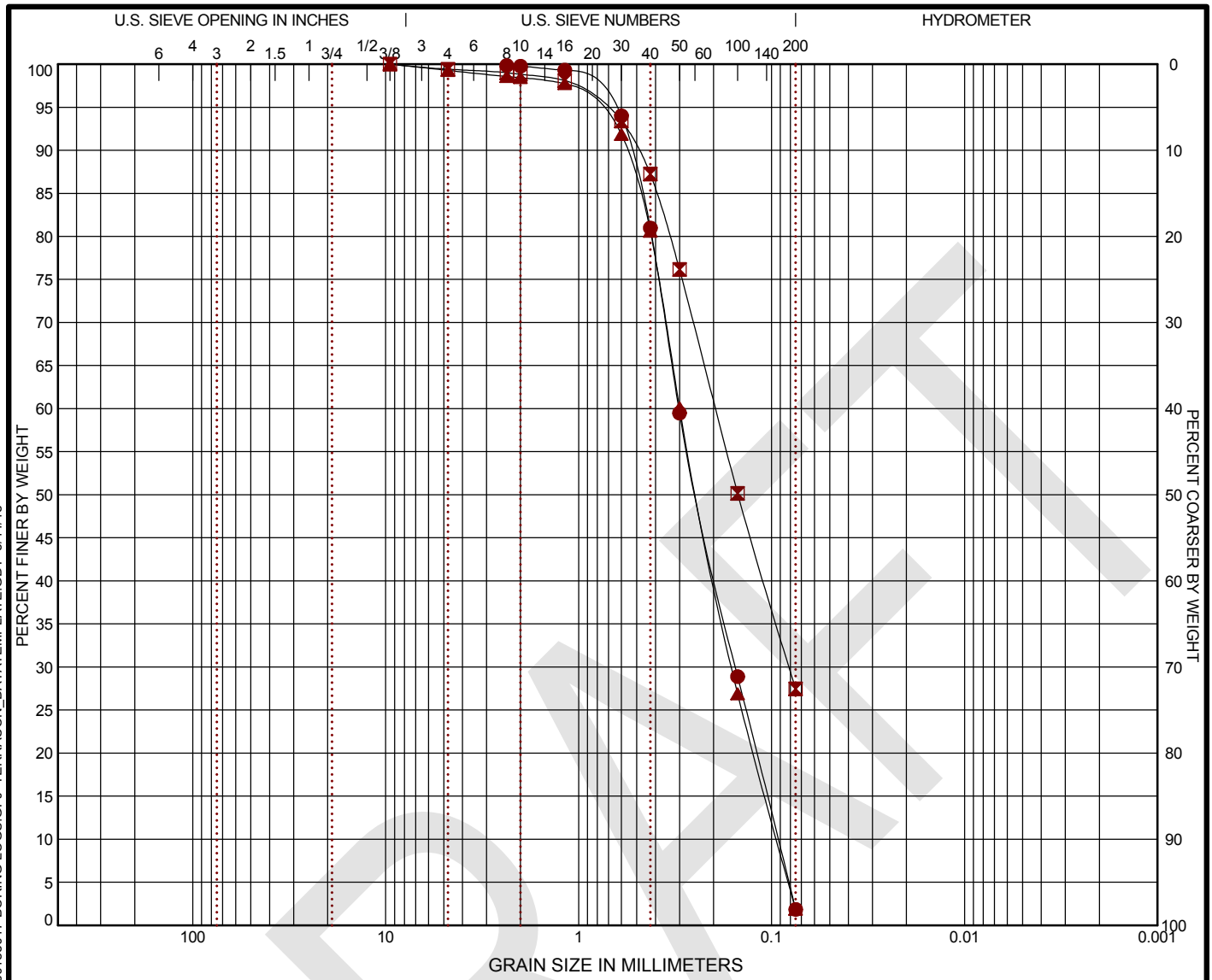
EXHIBIT: B-2

DRAFT

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. ATTERBERG LIMITS 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BORING ID	DEPTH	% COBBLES	% GRAVEL	% SAND	% SILT	% FINES	% CLAY	USCS
●	**P-22**	**0 - 5**			**98.0**		**1.8**		**SP**
⊠	**P-24**	**0 - 4**	**0.0**	**0.6**	**72.0**		**27.5**		**SC-SM**
▲	**R-02**	**0 - 10**	**0.0**	**0.7**	**97.4**		**1.9**		**SP**

	GRAIN SIZE		
	●	⊠	▲
D_{60}	**0.303**	**0.195**	**0.299**
D_{30}	**0.154**	**0.081**	**0.16**
D_{10}	**0.092**		**0.094**
	COEFFICIENTS		
C_C	**0.85**		**0.91**
C_U	**3.27**		**3.18**

●		⊠		▲	
Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
#8	**99.84**	**3/8"**	**100.0**	**3/8"**	**100.0**
#10	**99.76**	**#4**	**99.41**	**#4**	**99.27**
#16	**99.3**	**#8**	**99.0**	**#8**	**98.57**
#30	**94.0**	**#10**	**98.82**	**#10**	**98.43**
#40	**80.98**	**#16**	**98.09**	**#16**	**97.73**
#50	**59.49**	**#30**	**93.4**	**#30**	**91.84**
#100	**28.89**	**#40**	**87.23**	**#40**	**80.6**
#200	**1.85**	**#50**	**76.14**	**#50**	**60.11**
		#100	**50.17**	**#100**	**26.89**
		#200	**27.45**	**#200**	**1.85**

SOIL DESCRIPTION

● POORLY GRADED SAND (SP)

⊠ SILTY, CLAYEY SAND (SC-SM)

▲ POORLY GRADED SAND (SP)

REMARKS

●

⊠

▲

PROJECT: Oxnard Confidential Project Gaucho

SITE: Highway 101 and Del Norte Boulevard

Terracon
1421 Edinger Ave Ste C
Tustin, CA

PROJECT NUMBER: 60185017

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

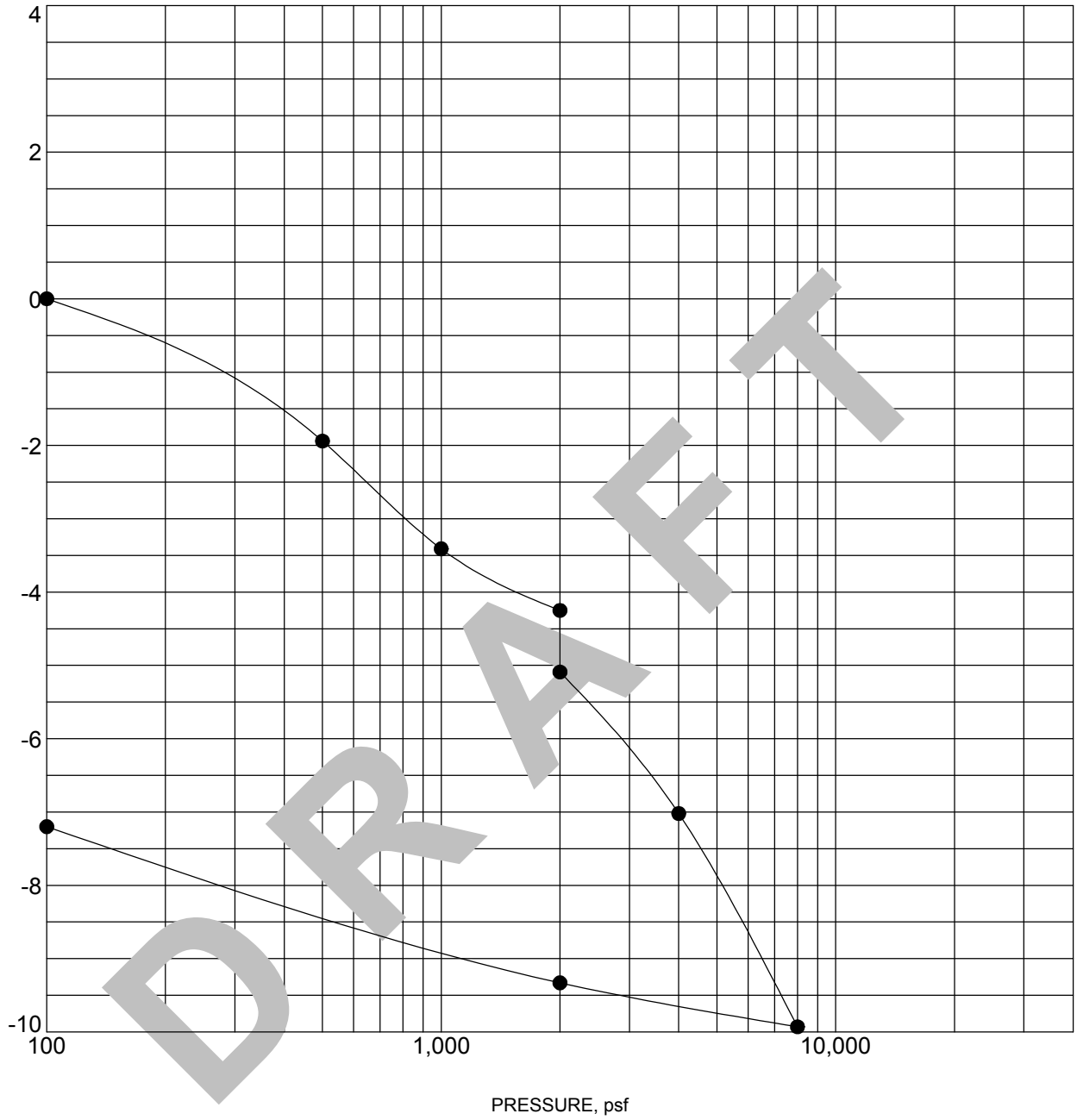
EXHIBIT: B-3

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS 1 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

DRAFT

SWELL CONSOLIDATION TEST

ASTM D2435



Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-01	2.5 - 4 ft	CLAYEY SAND	96	25

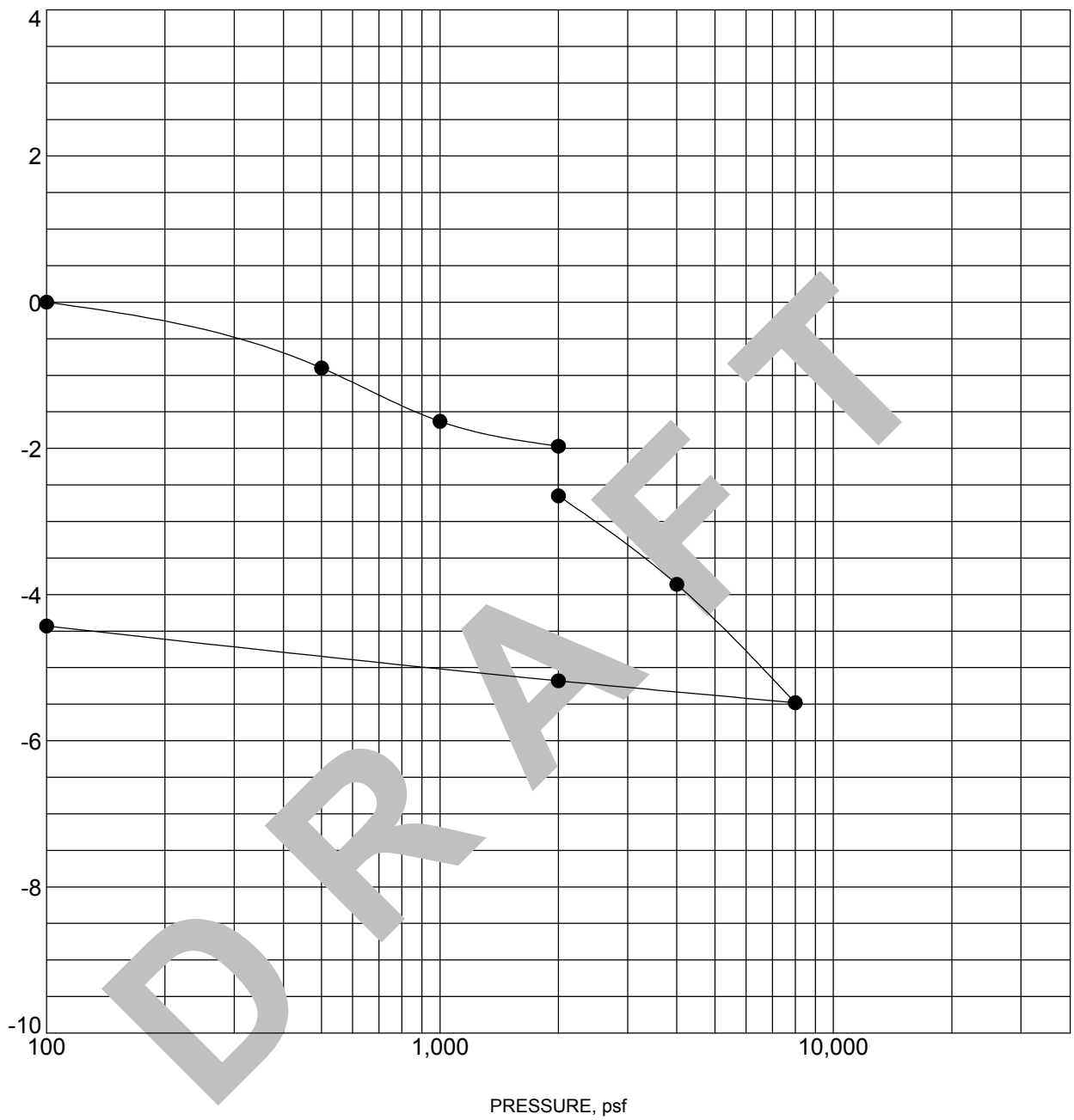
NOTES: Water added at 2,000 psf.

PROJECT: Oxnard Confidential Project Gaucho	Terracon 1421 Edinger Ave Ste C Tustin, CA	PROJECT NUMBER: 60185017
SITE: Highway 101 and Del Norte Boulevard		CLIENT: Seefried Industrial Properties, Inc. El Segundo, CA
		EXHIBIT: B-4

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

SWELL CONSOLIDATION TEST

ASTM D2435



Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-04	2.5 - 4 ft	CLAYEY SAND	104	20

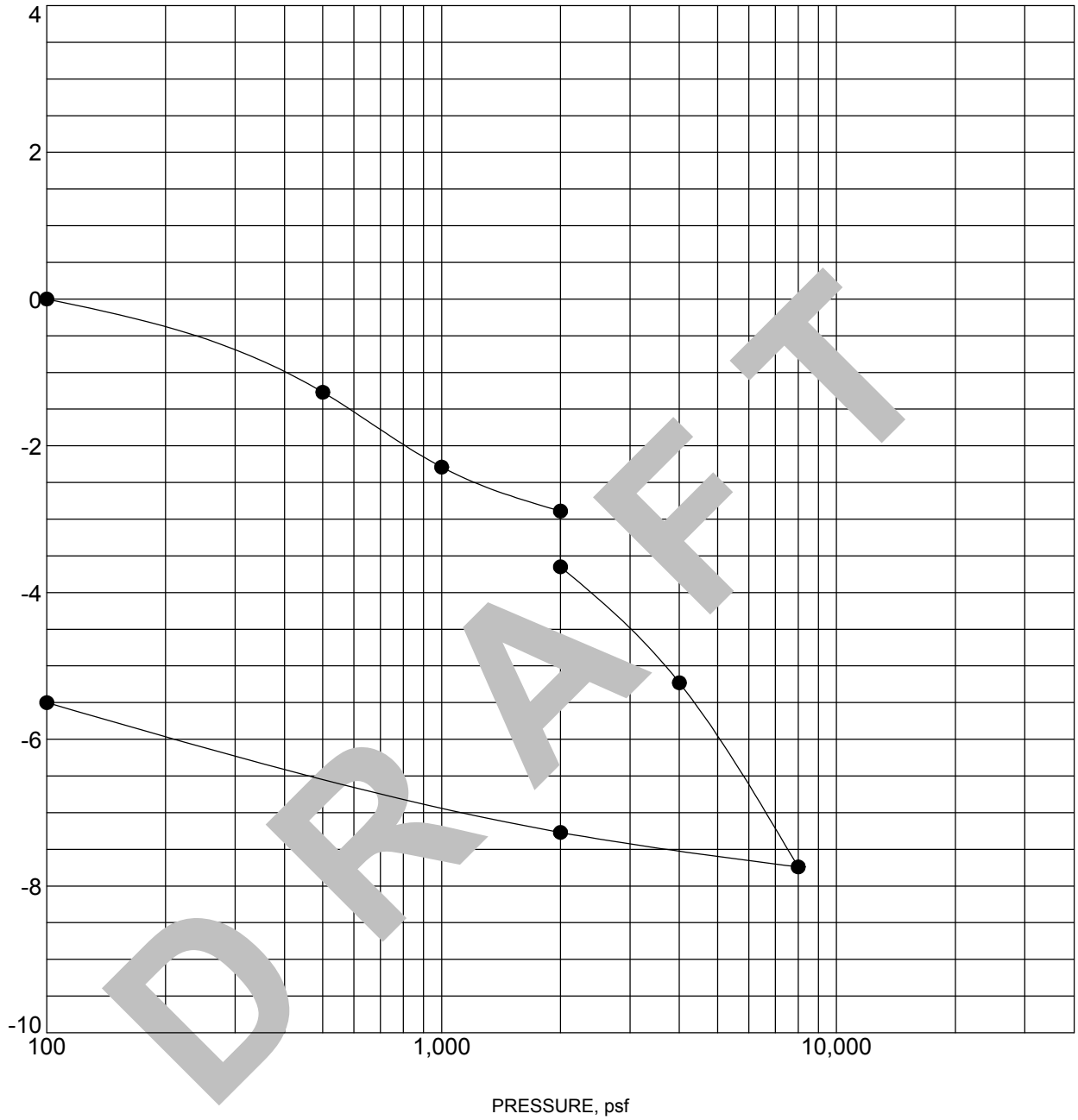
NOTES: Water added at 2,000 psf

PROJECT: Oxnard Confidential Project Gaucho	Terracon 1421 Edinger Ave Ste C Tustin, CA	PROJECT NUMBER: 60185017
SITE: Highway 101 and Del Norte Boulevard		CLIENT: Seefried Industrial Properties, Inc. El Segundo, CA
		EXHIBIT: B-5

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

SWELL CONSOLIDATION TEST

ASTM D2435



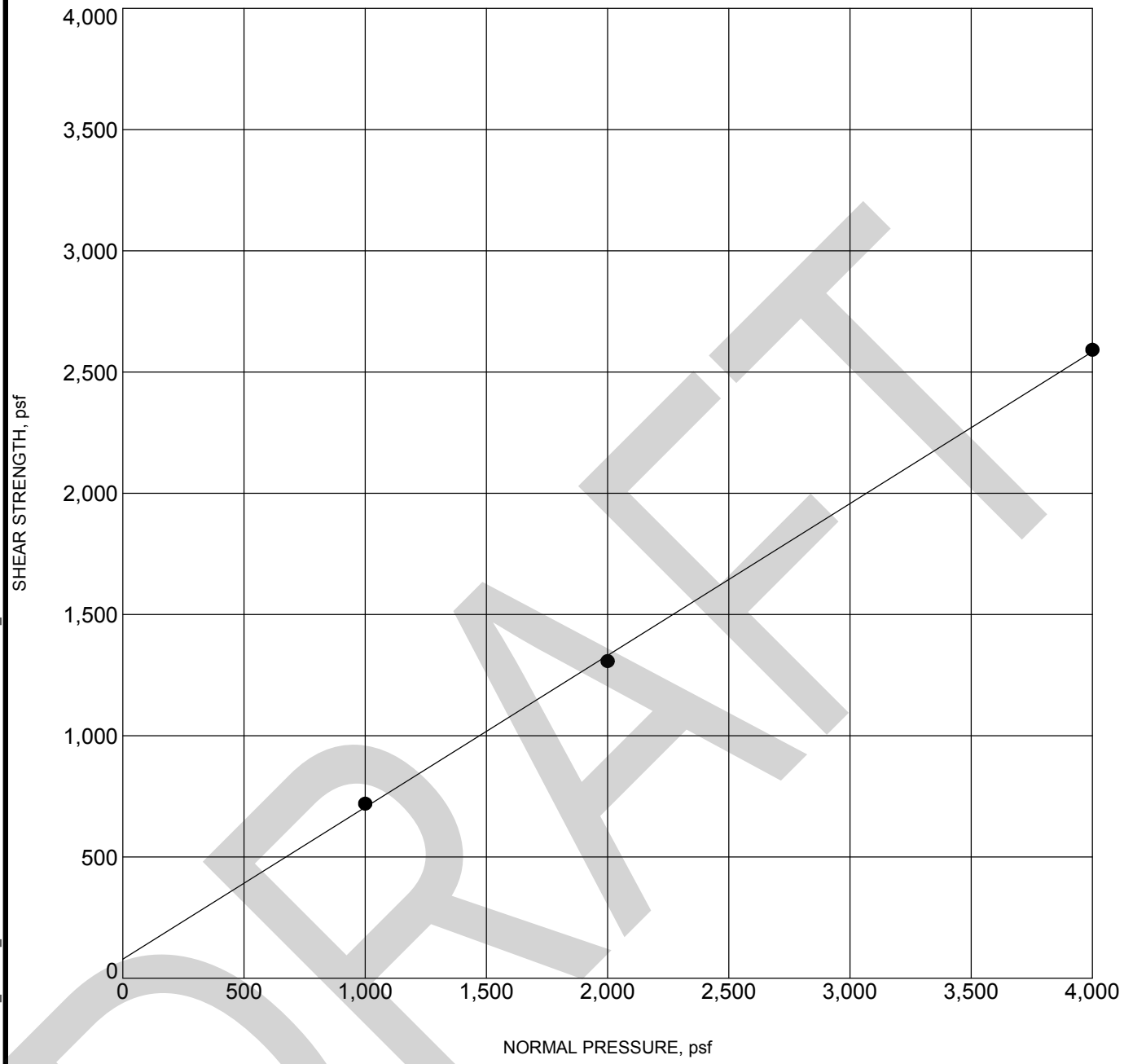
Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-07	2.5 - 4 ft	CLAYEY SAND	98	24

NOTES: Water added at 2,000 psf.

PROJECT: Oxnard Confidential Project Gaucho	Terracon 1421 Edinger Ave Ste C Tustin, CA	PROJECT NUMBER: 60185017
SITE: Highway 101 and Del Norte Boulevard		CLIENT: Seefried Industrial Properties, Inc. El Segundo, CA
		EXHIBIT: B-6

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

DIRECT SHEAR TEST ASTM D3080



	Specimen Identification		Classification	γ_d, pcf	WC,%	c, psf	ϕ^o
●	**B-01**	**7.5ft**	**POORLY GRADED SAND WITH SILT SP-SM**	**100**	**22**	**78**	**32**

PROJECT: Oxnard Confidential Project Gaucho

SITE: Highway 101 and Del Norte Boulevard

Terracon
1421 Edinger Ave Ste C
Tustin, CA

PROJECT NUMBER: 60185017

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

EXHIBIT: B-7

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_DIRECT_SHEAR 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

DRAFT

CHEMICAL LABORATORY TEST REPORT

Project Number: 60185017
Service Date: 04/30/18
Report Date: 05/04/18
Task:

Terracon
750 Pilot Road, Suite F
Las Vegas, Nevada 89119
(702) 597-9393

Client

Seefried Industrial Properties, Inc.

Project

Seefried: Industrial Warehouse; Oxnard

Sample Submitted By: Terracon (60) **Date Received:** 4/27/2018 **Lab No.: 18-0481**

Results of Corrosion Analysis

Sample Number		
Sample Location	B-1	B-5
Sample Depth (ft.)	Bulk	Bulk
pH Analysis, AWWA 4500 H	8.19	7.97
Water Soluble Sulfate (SO4), AWWA 4500 E (percent %)	0.15	0.37
Sulfides, AWWA 4500-S D, (mg/kg)	Nil	Nil
Chlorides, ASTM D 512, (mg/kg)	95	145
Red-Ox, AWWA 2580, (mV)	+661	+662
Total Salts, AWWA 2540, (mg/kg)	3786	8260
Resistivity, ASTM G 57, (ohm-cm)	970	669

Analyzed By: Trisha Campo

Trisha Campo
Chemist

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

DRAFT

'R' VALUE CA 301

Client: Terracon / Gancho

Date: 5/4/18

By: LD

Client's Job No.: 60185017

Sample No.: P-22 / Bulk

GLA Reference: 2011-0104

Soil Type: Brown, Clayey Sand

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	**200**	**350**	**300**	
Initial Moisture Content	%	**10.4**	**10.4**	**10.4**	
Water Added	ml	**20**	**10**	**15**	
Moisture at Compaction	%	12.3	11.4	11.8	
Sample & Mold Weight	gms	**3173**	**3208**	**3196**	
Mold Weight	gms	**2098**	**2102**	**2104**	
Net Sample Weight	gms	1075	1106	1092	
Sample Height	in.	**2.44**	**2.49**	**2.48**	
Dry Density	pcf	118.9	120.9	119.3	
Pressure	lbs	**1905**	**6715**	**3650**	
Exudation Pressure	psi	152	535	291	
Expansion Dial	x 0.0001	**2**	**18**	**11**	
Expansion Pressure	psf	9	78	48	
Ph at 1000lbs	psi	**26**	**15**	**20**	
Ph at 2000lbs	psi	**44**	**26**	**33**	
Displacement	turns	**3.98**	**3.81**	**3.93**	
R' Value		62	77	71	
Corrected 'R' Value		**62**	**77**	**71**	

FINAL 'R' VALUE	
By Exudation Pressure (@ 300 psi):	**72**
By Epansion Pressure :	**70**
TI = 5	

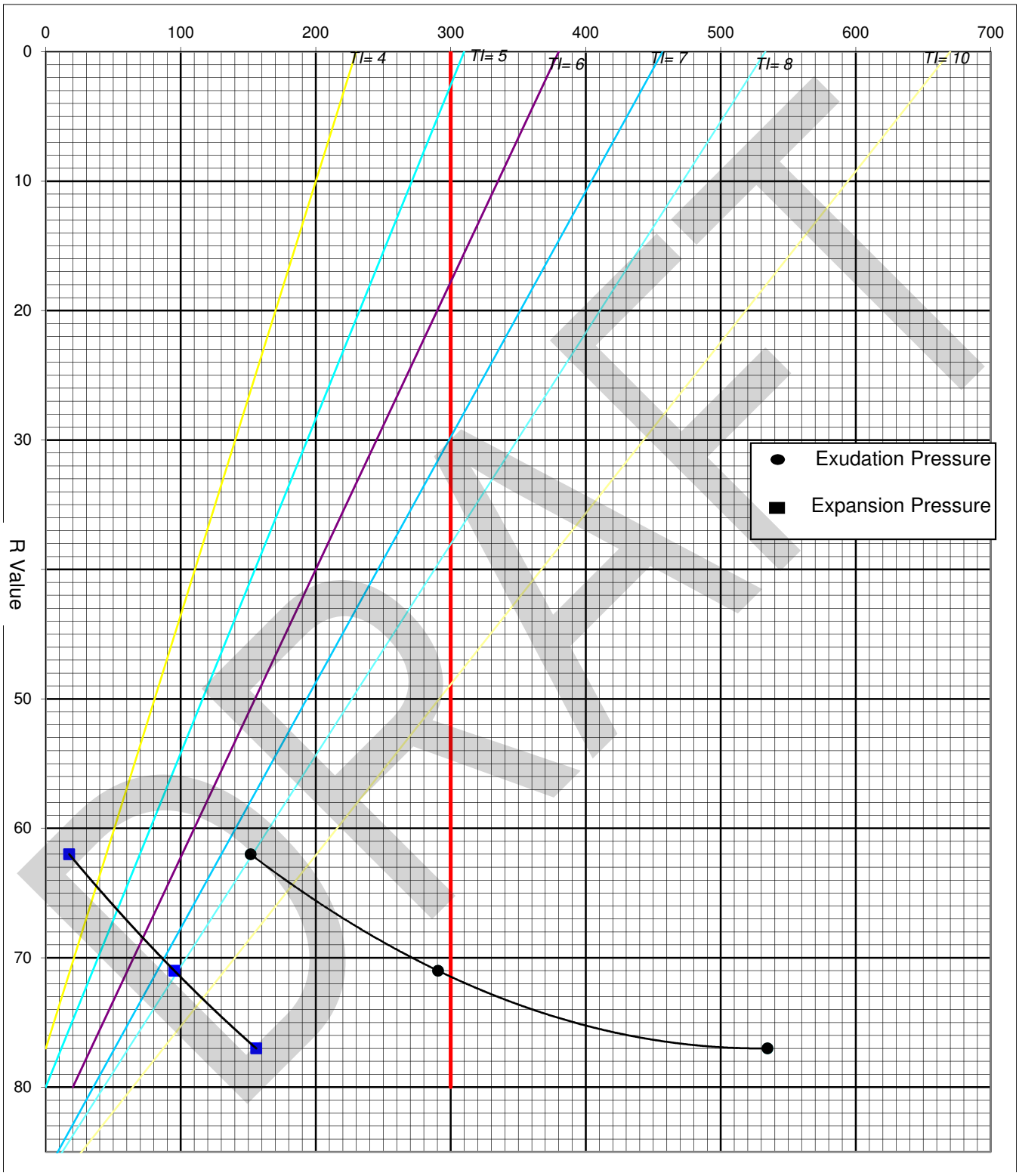
DRAFT

Geo-Logic ASSOCIATES

'R' VALUE CA 301

Job No. 2011-0104 Client# 60185017
Sample: P-22 / Bulk
1.104403

Exudation Pressure



Geo-Logic ASSOCIATES

'R' VALUE CA 301

Client: Terracon / Gancho

Date: 5/4/18

By: LD

Client's Job No.: 60185017

Sample No.: P-24 / Bulk

GLA Reference: 2011-0104

Soil Type: Brown, Clayey Sand

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	**250**	**350**	**300**	
Initial Moisture Content	%	**8.2**	**8.2**	**8.2**	
Water Added	ml	**40**	**30**	**35**	
Moisture at Compaction	%	11.8	10.9	11.3	
Sample & Mold Weight	gms	**3172**	**3198**	**3168**	
Mold Weight	gms	**2105**	**2101**	**2096**	
Net Sample Weight	gms	1067	1097	1072	
Sample Height	in.	**2.48**	**2.472**	**2.466**	
Dry Density	pcf	116.6	121.3	118.3	
Pressure	lbs	**2270**	**6795**	**4050**	
Exudation Pressure	psi	181	541	322	
Expansion Dial	x 0.0001	**3**	**20**	**12**	
Expansion Pressure	psf	13	87	52	
Ph at 1000lbs	psi	**22**	**15**	**18**	
Ph at 2000lbs	psi	**41**	**29**	**34**	
Displacement	turns	**3.95**	**3.9**	**3.92**	
R' Value		65	74	70	
Corrected 'R' Value		**65**	**74**	**70**	

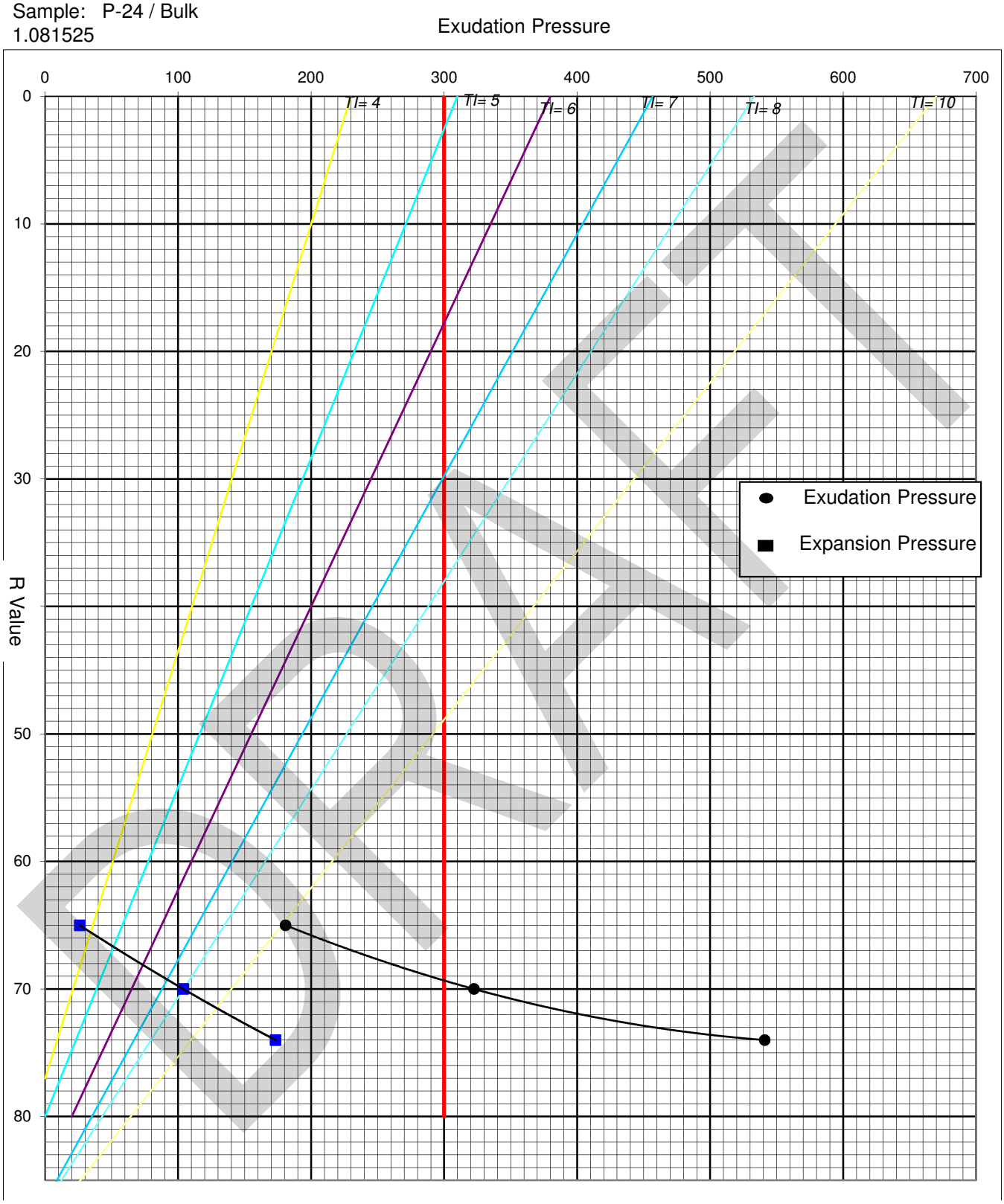
FINAL 'R' VALUE		
By Exudation Pressure (@ 300 psi):		**69**
By Epansion Pressure	:	**69**
TI =	5	

DRAFT

Geo-Logic ASSOCIATES

'R' VALUE CA 301

Job No. 2011-0104 Client# 60185017
Sample: P-24 / Bulk
1.081525



Geo-Logic ASSOCIATES

'R' VALUE CA 301

Client: Terracon / Gancho

Date: 5/4/18

By: LD

Client's Job No.: 60185017

Sample No.: R-2 / Bulk

GLA Reference: 2011-0104

Soil Type: Brown, Clayey Sand

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	**250**	**350**	**300**	
Initial Moisture Content	%	**8.9**	**8.9**	**8.9**	
Water Added	ml	**30**	**20**	**25**	
Moisture at Compaction	%	11.6	10.7	11.2	
Sample & Mold Weight	gms	**3173**	**3179**	**3169**	
Mold Weight	gms	**2102**	**2104**	**2099**	
Net Sample Weight	gms	1071	1075	1070	
Sample Height	in.	**2.462**	**2.435**	**2.448**	
Dry Density	pcf	118.1	120.8	119.2	
Pressure	lbs	**2860**	**7855**	**4120**	
Exudation Pressure	psi	228	625	328	
Expansion Dial	x 0.0001	**2**	**14**	**7**	
Expansion Pressure	psf	9	61	30	
Ph at 1000lbs	psi	**21**	**15**	**18**	
Ph at 2000lbs	psi	**40**	**25**	**33**	
Displacement	turns	**3.95**	**3.61**	**3.88**	
R' Value		66	79	71	
Corrected 'R' Value		**66**	**79**	**71**	

FINAL 'R' VALUE		
By Exudation Pressure (@ 300 psi):		**70**
By Epansion Pressure	:	**73**
TI =	5	

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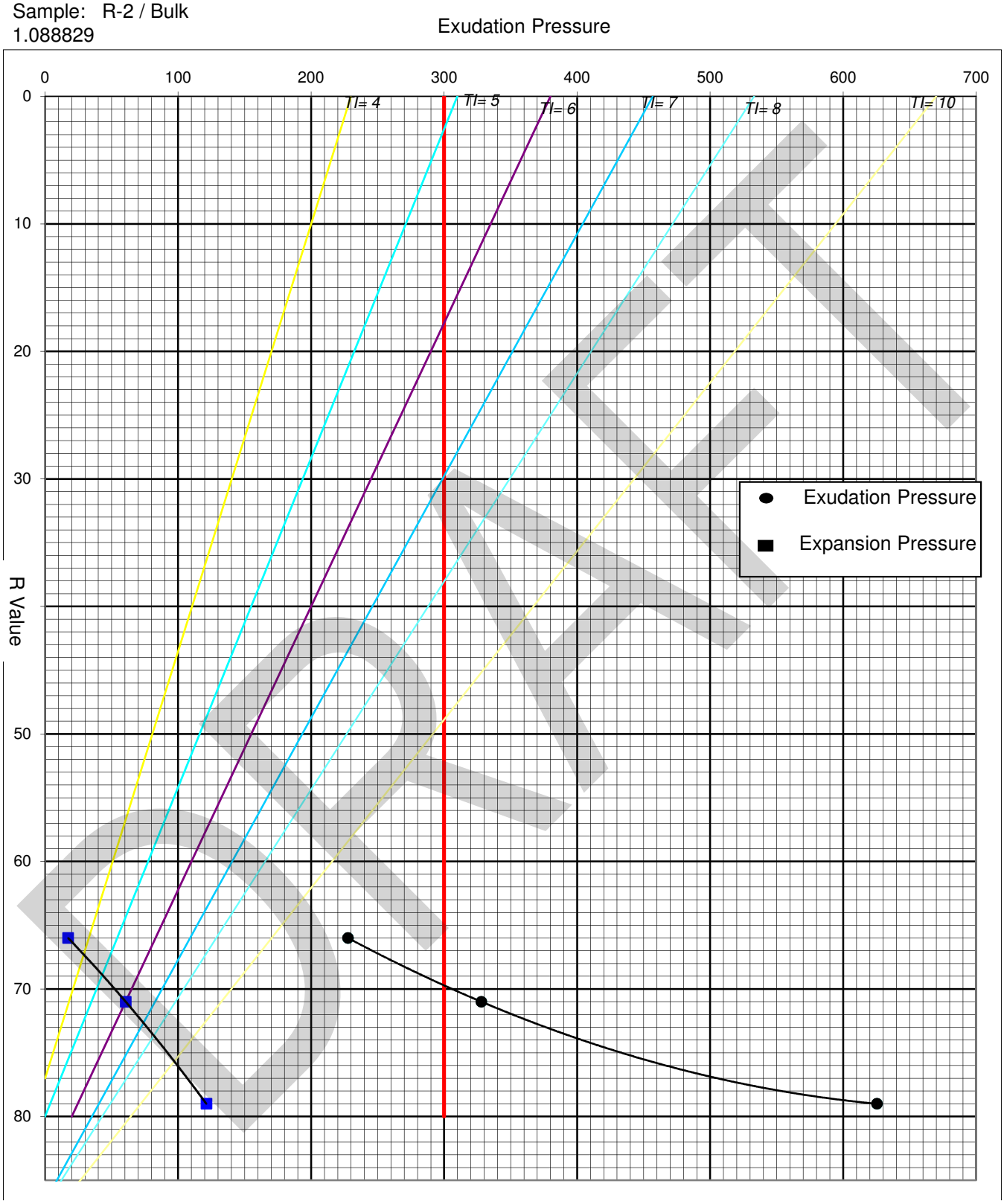
Geo-Logic ASSOCIATES

'R' VALUE CA 301

Job No. 2011-0104 Client# 60185017
Sample: R-2 / Bulk
1.088829



Geo-Logic ASSOCIATES

APPENDIX C

SUPPORTING DOCUMENTS

DRAFT

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING

Auger	Shelby Tube	Split Spoon
Rock Core	Macro Core	Modified California Ring Sampler
Grab Sample	No Recovery	Modified Dames & Moore Ring Sampler

WATER LEVEL

- Water Initially Encountered
- Water Level After a Specified Period of Time
- Water Level After a Specified Period of Time

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

(HP)	Hand Penetrometer
(T)	Torvane
(b/f)	Standard Penetration Test (blows per foot)
N	N value
(PID)	Photo-Ionization Detector
(OVA)	Organic Vapor Analyzer
(WOH)	Weight of Hammer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels and sands.			CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance Includes silts and clays.			
Descriptive Term (Density)	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.	Descriptive Term (Consistency)	Unconfined Compressive Strength, Qu, psf	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.
Very Loose	0 - 3	0 - 6	Very Soft	less than 500	0 - 1	< 3
Loose	4 - 9	7 - 18	Soft	500 to 1,000	2 - 4	3 - 4
Medium Dense	10 - 29	19 - 58	Medium-Stiff	1,000 to 2,000	4 - 8	5 - 9
Dense	30 - 50	59 - 98	Stiff	2,000 to 4,000	8 - 15	10 - 18
Very Dense	> 50	≥ 99	Very Stiff	4,000 to 8,000	15 - 30	19 - 42
			Hard	> 8,000	> 30	> 42

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

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UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel [F,G,H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G,H,I]
			Fines classify as CL or CH		SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]		CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OL	Organic clay [K,L,M,N]
						Organic silt [K,L,M,O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K,L,M]
			PI plots below "A" line		MH	Elastic Silt [K,L,M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OH	Organic clay [K,L,M,P]
						Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve
[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.
[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.
[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.
[H] If fines are organic, add "with organic fines" to group name.
[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.
[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.
[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.
[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.
[N] PI ≥ 4 and plots on or above "A" line.
[O] PI < 4 or plots below "A" line.
[P] PI plots on or above "A" line.
[Q] PI plots below "A" line.

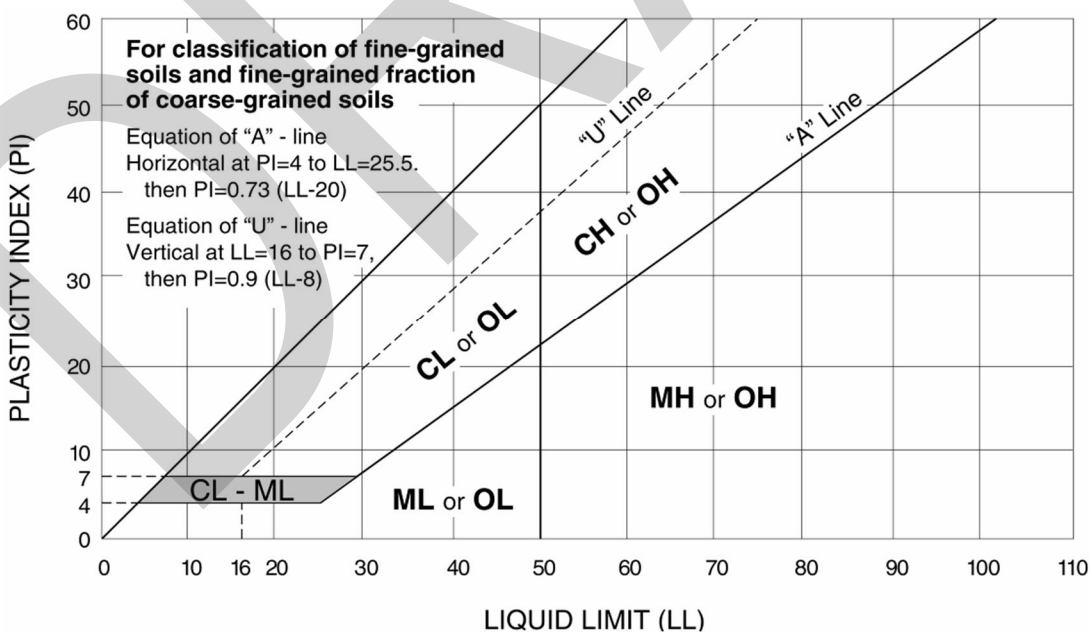

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Exhibit C-2

USGS Design Maps Detailed Report

ASCE 7-10 Standard (34.2138°N, 119.1309°W)

Site Class E – "Soft Clay Soil", Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_S) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From Figure 22-1 [1] S_S = 2.641 g

From Figure 22-2 [2] S_1 = 0.954 g

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class E, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\bar{v}_s$	$\bar{N}$ or $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index PI > 20, • Moisture content w ≥ 40%, and • Undrained shear strength $\bar{s}_u$ < 500 psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

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Section 11.4.3 — Site Coefficients and Risk–Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4–1: Site Coefficient F_a

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at Short Period				
	$S_S \leq 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_S

For Site Class = E and S_S = 2.641 g, F_a = 0.900

Table 11.4–2: Site Coefficient F_v

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at 1–s Period				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_1

For Site Class = E and S_1 = 0.954 g, F_v = 2.400

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Equation (11.4–1): $S_{MS} = F_a S_S = 0.900 \times 2.641 = 2.377$ g

Equation (11.4–2): $S_{M1} = F_v S_1 = 2.400 \times 0.954 = 2.290$ g

Section 11.4.4 — Design Spectral Acceleration Parameters

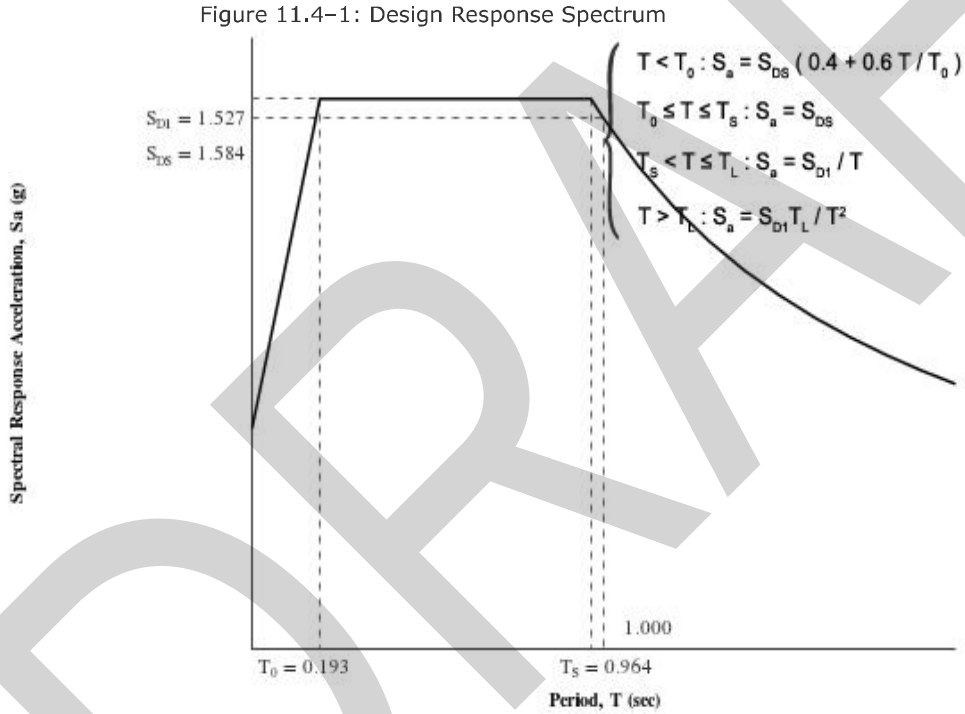
Equation (11.4–3): $S_{DS} = ⅔\ S_{MS} = ⅔ \times 2.377 = 1.584$ g

Equation (11.4–4): $S_{D1} = ⅔\ S_{M1} = ⅔ \times 2.290 = 1.527$ g

Section 11.4.5 — Design Response Spectrum

From Figure 22-12 [3] $T_L = 8$ seconds

Figure 11.4–1: Design Response Spectrum



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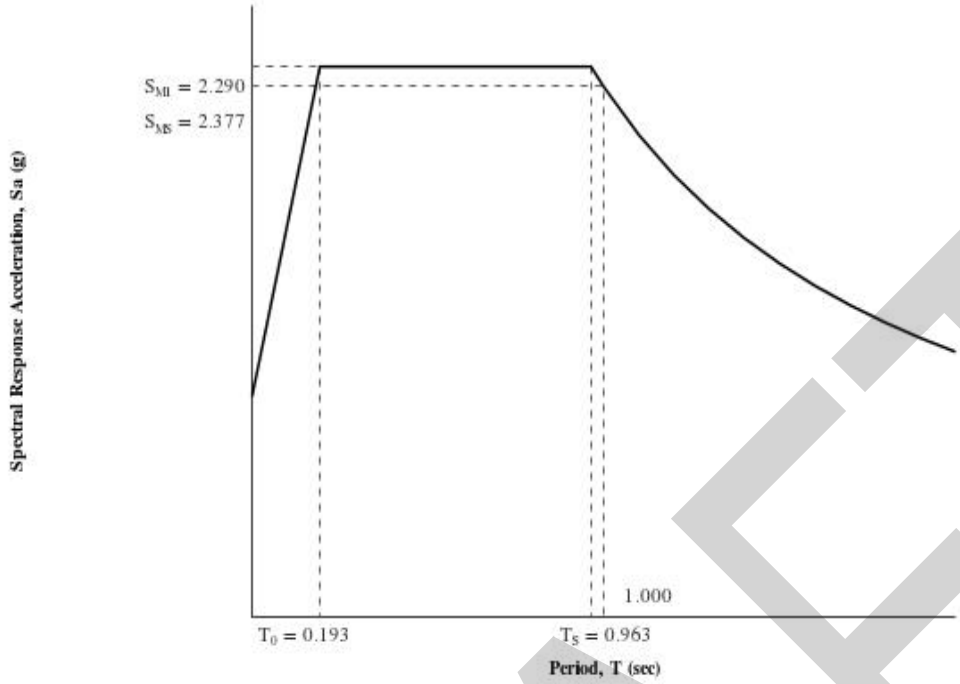
Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



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Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From Figure 22-7 [4] PGA = 1.039

Equation (11.8–1): $PGA_M = F_{PGA}PGA = 0.900 \times 1.039 = 0.935$ g

Table 11.8–1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of PGA

For Site Class = E and PGA = 1.039 g, F_{PGA} = 0.900

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From Figure 22-17 [5] C_{RS} = 0.908

From Figure 22-18 [6] C_{R1} = 0.908

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Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 1.584 g, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 1.527 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = E

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

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APPENDIX D

LIQUEFACTION ANALYSIS

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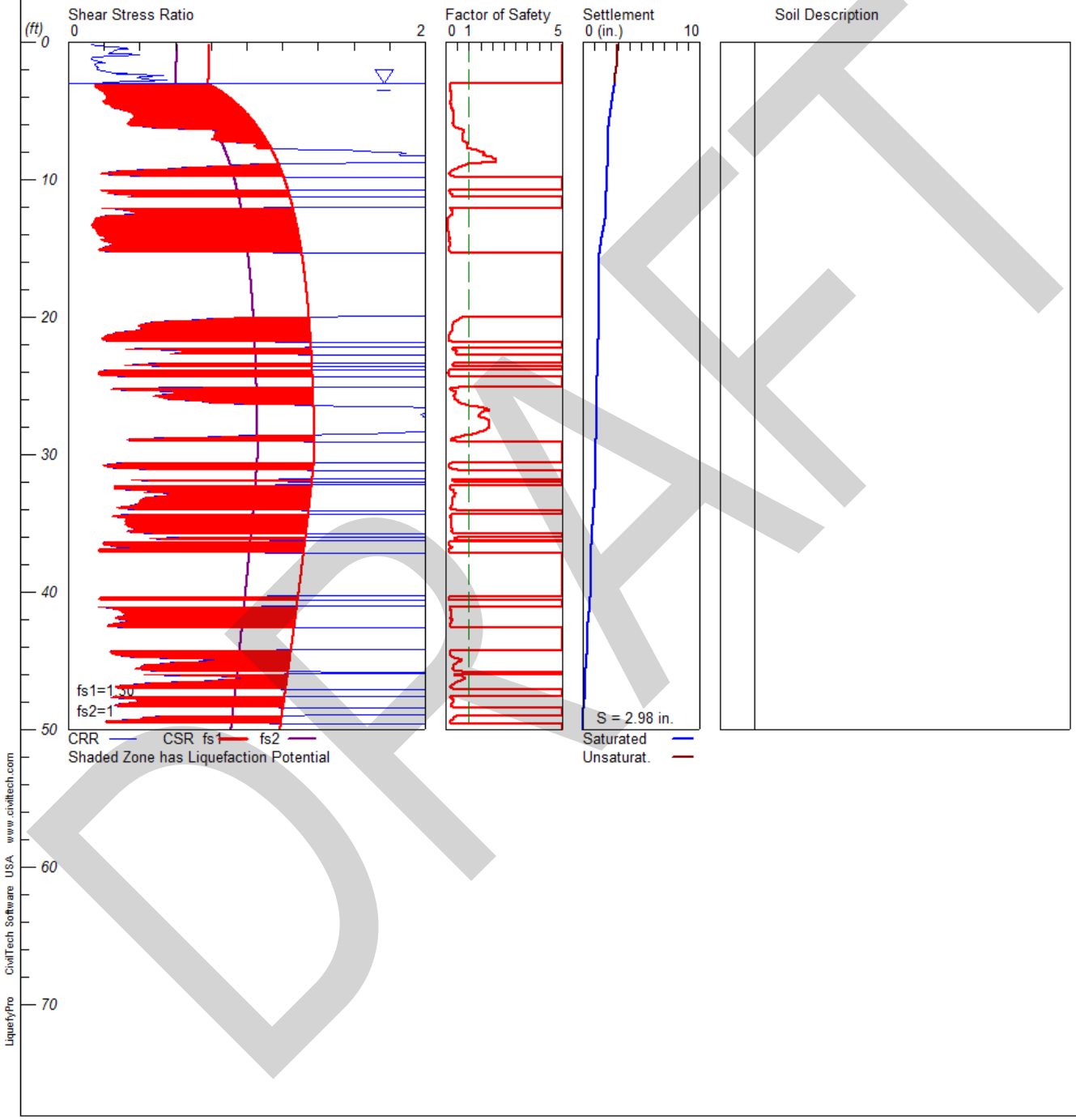
LIQUEFACTION ANALYSIS

Oxnard Warehouse

Hole No.=CPT-16 Water Depth=3 ft

Magnitude=6.89
Acceleration=0.935g



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LIQUEFACTION ANALYSIS SUMMARY
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Input File Name: N:\Projects\2018\60185017\Working Files\Calculations-Analyses\CPT-16.liq
Title: Oxnard Warehouse
Subtitle: 60185017

Surface Elev.=
Hole No.=CPT-16
Depth of Hole= 50.00 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration= 0.94 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=CPT-16
Depth of Hole=50.00 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration=0.94 g
Earthquake Magnitude=6.89
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot two CSR (fs1=User, fs2=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines	D50 mm
0.16	2.60	0.03	1.15	120.00	0.00	0.50
1.15	6.80	0.07	1.03	120.00	0.00	0.50
2.13	11.00	0.22	2.00	120.00	0.00	0.50
3.12	17.10	0.22	1.29	120.00	0.00	0.50
4.10	32.80	0.39	1.19	120.00	0.00	0.50
5.09	61.20	0.25	0.41	120.00	0.00	0.50
6.07	65.20	0.29	0.44	120.00	0.00	0.50
7.05	96.50	0.68	0.70	120.00	0.00	0.50
8.04	138.60	0.41	0.30	120.00	0.00	0.50
9.02	105.10	0.67	0.64	120.00	0.00	0.50
10.00	5.80	0.22	3.79	120.00	0.00	0.50
10.99	20.00	0.41	2.05	120.00	0.00	0.50
11.97	7.10	0.09	1.27	120.00	0.00	0.50
12.95	23.90	0.31	1.30	120.00	0.00	0.50
13.94	45.20	0.33	0.73	120.00	0.00	0.50
14.92	54.60	0.46	0.84	120.00	0.00	0.50
15.91	6.80	0.13	1.91	120.00	0.00	0.50
16.89	6.40	0.11	1.72	120.00	0.00	0.50
17.88	6.80	0.10	1.47	120.00	0.00	0.50
18.86	11.30	0.22	1.95	120.00	0.00	0.50
19.84	22.30	0.88	3.95	120.00	0.00	0.50
20.83	46.50	1.42	3.05	120.00	0.00	0.50
21.81	23.10	0.69	2.99	120.00	0.00	0.50
22.80	20.90	0.67	3.21	120.00	0.00	0.50
23.78	19.10	0.65	3.40	120.00	0.00	0.50

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24.77	14.20	0.31	2.18	120.00	0.00	0.50
25.75	75.20	2.06	2.74	120.00	0.00	0.50
26.73	254.20	2.12	0.83	120.00	0.00	0.50
27.72	273.10	2.21	0.81	120.00	0.00	0.50
28.70	159.10	1.46	0.92	120.00	0.00	0.50
29.69	14.10	0.43	3.05	120.00	0.00	0.50
30.67	31.00	0.63	2.03	120.00	0.00	0.50
31.66	21.80	0.78	3.58	120.00	0.00	0.50
32.64	51.20	1.79	3.50	120.00	0.00	0.50
33.62	92.90	1.79	1.93	120.00	0.00	0.50
34.61	98.70	1.29	1.31	120.00	0.00	0.50
35.59	64.50	1.56	2.42	120.00	0.00	0.50
36.58	46.60	0.88	1.89	120.00	0.00	0.50
37.56	14.60	0.42	2.88	120.00	0.00	0.50
38.54	13.30	0.37	2.78	120.00	0.00	0.50
39.53	14.50	0.41	2.83	120.00	0.00	0.50
40.51	35.50	0.55	1.55	120.00	0.00	0.50
41.50	116.70	1.10	0.94	120.00	0.00	0.50
42.48	53.00	1.07	2.02	120.00	0.00	0.50
43.47	16.20	0.50	3.09	120.00	0.00	0.50
44.45	68.90	1.32	1.92	120.00	0.00	0.50
45.43	138.60	1.53	1.10	120.00	0.00	0.50
46.42	203.80	1.89	0.93	120.00	0.00	0.50
47.40	17.90	0.91	5.08	120.00	0.00	0.50
48.39	51.70	1.54	2.98	120.00	0.00	0.50
49.37	63.20	1.12	1.77	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=2.72 in.
Settlement of Unsaturated Sands=0.25 in.
Total Settlement of Saturated and Unsaturated Sands=2.98 in.
Differential Settlement=1.488 to 1.964 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.16	0.13	0.79	5.00	2.72	0.25	2.98
1.16	0.13	0.79	5.00	2.72	0.25	2.97
2.16	0.22	0.79	5.00	2.72	0.08	2.81
3.16	0.15	0.80	0.19*	2.69	0.00	2.69
4.16	0.20	0.91	0.22*	2.51	0.00	2.51
5.16	0.35	1.00	0.35*	2.34	0.00	2.34
6.16	0.44	1.06	0.41*	2.18	0.00	2.18
7.16	0.84	1.11	0.75*	2.12	0.00	2.12
8.16	1.85	1.15	1.61	2.11	0.00	2.11
9.16	0.60	1.19	0.51*	2.10	0.00	2.10
10.16	2.00	1.22	5.00	2.02	0.00	2.02
11.16	0.36	1.24	0.29*	1.97	0.00	1.97
12.16	0.28	1.26	0.22*	1.96	0.00	1.96
13.16	0.14	1.28	0.11*	1.84	0.00	1.84
14.16	0.20	1.29	0.15*	1.62	0.00	1.62
15.16	0.17	1.31	0.13*	1.44	0.00	1.44
16.16	2.00	1.32	5.00	1.42	0.00	1.42
17.16	2.00	1.33	5.00	1.42	0.00	1.42
18.16	2.00	1.34	5.00	1.42	0.00	1.42
19.16	2.00	1.34	5.00	1.42	0.00	1.42
20.16	0.74	1.35	0.55*	1.42	0.00	1.42
21.16	0.25	1.36	0.19*	1.39	0.00	1.39
22.16	2.00	1.36	5.00	1.29	0.00	1.29
23.16	2.00	1.36	5.00	1.28	0.00	1.28
24.16	0.17	1.37	0.12*	1.23	0.00	1.23
25.16	0.26	1.37	0.19*	1.20	0.00	1.20
26.16	0.76	1.37	0.56*	1.14	0.00	1.14
27.16	1.98	1.38	1.44	1.14	0.00	1.14
28.16	2.38	1.38	1.73	1.14	0.00	1.14
29.16	2.00	1.38	5.00	1.11	0.00	1.11
30.16	2.00	1.38	5.00	1.11	0.00	1.11

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31.16	2.00	1.37	5.00	1.06	0.00	1.06
32.16	2.00	1.36	5.00	1.05	0.00	1.05
33.16	0.42	1.35	0.31*	0.99	0.00	0.99
34.16	2.00	1.35	5.00	0.92	0.00	0.92
35.16	0.32	1.34	0.24*	0.82	0.00	0.82
36.16	0.52	1.33	0.39*	0.76	0.00	0.76
37.16	2.00	1.32	5.00	0.64	0.00	0.64
38.16	2.00	1.31	5.00	0.64	0.00	0.64
39.16	2.00	1.30	5.00	0.64	0.00	0.64
40.16	2.00	1.29	5.00	0.64	0.00	0.64
41.16	0.23	1.28	0.18*	0.58	0.00	0.58
42.16	0.31	1.27	0.24*	0.44	0.00	0.44
43.16	2.00	1.26	5.00	0.38	0.00	0.38
44.16	2.00	1.25	5.00	0.38	0.00	0.38
45.16	0.54	1.24	0.43*	0.29	0.00	0.29
46.16	0.89	1.23	0.73*	0.22	0.00	0.22
47.16	2.00	1.22	5.00	0.15	0.00	0.15
48.16	0.27	1.21	0.22*	0.08	0.00	0.08
49.16	0.40	1.19	0.34*	0.05	0.00	0.05

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

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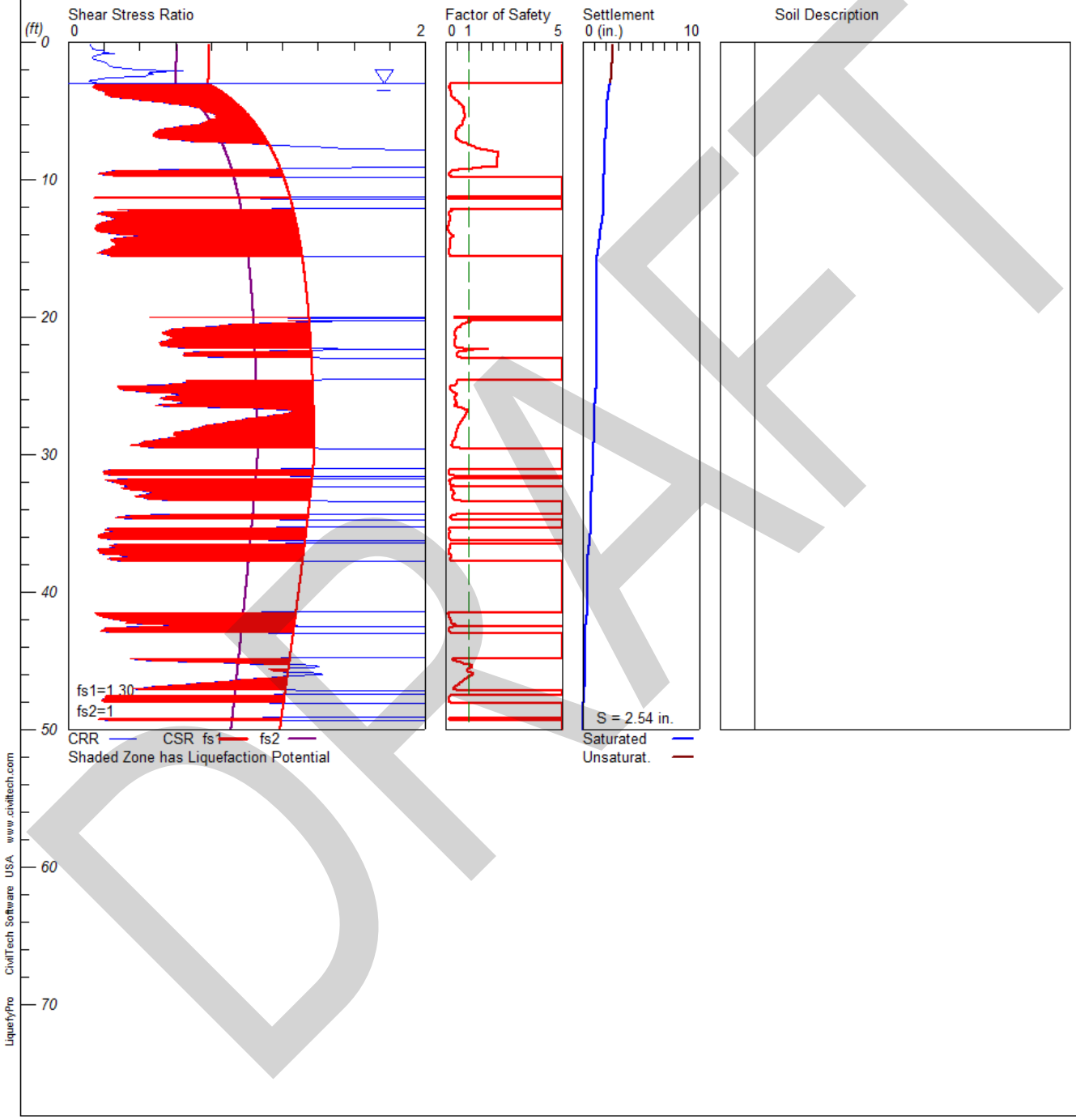
LIQUEFACTION ANALYSIS

Oxnard Warehouse

Hole No.=CPT-18 Water Depth=3 ft

Magnitude=6.89
Acceleration=0.935g



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Input File Name: N:\Projects\2018\60185017\Working Files\Calculations-Analyses\CPT-18.liq
Title: Oxnard Warehouse
Subtitle: 60185017

Surface Elev.=
Hole No.=CPT-18
Depth of Hole= 50.00 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration= 0.94 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=CPT-18
Depth of Hole=50.00 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration=0.94 g
Earthquake Magnitude=6.89
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot two CSR (fs1=User, fs2=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines mm	D50
0.16	2.00	0.02	1.00	120.00	0.00	0.50
1.15	11.50	0.10	0.87	120.00	0.00	0.50
2.13	12.10	0.39	3.22	120.00	0.00	0.50
3.12	9.10	0.12	1.32	120.00	0.00	0.50
4.10	45.60	0.58	1.27	120.00	0.00	0.50
5.09	76.40	1.01	1.32	120.00	0.00	0.50
6.07	85.90	0.30	0.35	120.00	0.00	0.50
7.05	83.90	0.25	0.30	120.00	0.00	0.50
8.04	167.50	0.60	0.36	120.00	0.00	0.50
9.02	166.50	0.42	0.25	120.00	0.00	0.50
10.00	5.90	0.11	1.86	120.00	0.00	0.50
10.99	6.30	0.08	1.27	120.00	0.00	0.50
11.97	7.70	0.14	1.82	120.00	0.00	0.50
12.95	63.40	0.44	0.69	120.00	0.00	0.50
13.94	25.80	0.62	2.40	120.00	0.00	0.50
14.92	72.30	0.30	0.41	120.00	0.00	0.50
15.91	8.70	0.15	1.72	120.00	0.00	0.50
16.89	9.30	0.22	2.37	120.00	0.00	0.50
17.88	9.30	0.19	2.04	120.00	0.00	0.50
18.86	12.90	0.24	1.86	120.00	0.00	0.50
19.84	15.50	0.33	2.13	120.00	0.00	0.50
20.83	68.60	2.21	3.22	120.00	0.00	0.50
21.81	100.40	1.59	1.58	120.00	0.00	0.50
22.80	76.30	2.39	3.13	120.00	0.00	0.50
23.78	24.50	0.94	3.84	120.00	0.00	0.50

DRAFT

24.77	36.80	1.24	3.37	120.00	0.00	0.50
25.75	125.10	1.45	1.16	120.00	0.00	0.50
26.73	190.30	2.06	1.08	120.00	0.00	0.50
27.72	165.20	1.57	0.95	120.00	0.00	0.50
28.70	145.10	1.31	0.90	120.00	0.00	0.50
29.69	17.10	0.64	3.74	120.00	0.00	0.50
30.67	18.40	0.70	3.80	120.00	0.00	0.50
31.66	21.60	0.85	3.94	120.00	0.00	0.50
32.64	67.60	1.91	2.83	120.00	0.00	0.50
33.62	32.10	1.34	4.17	120.00	0.00	0.50
34.61	39.60	0.91	2.30	120.00	0.00	0.50
35.59	38.60	0.91	2.36	120.00	0.00	0.50
36.58	52.60	1.05	2.00	120.00	0.00	0.50
37.56	50.60	1.00	1.98	120.00	0.00	0.50
38.54	13.60	0.41	3.01	120.00	0.00	0.50
39.53	12.10	0.34	2.81	120.00	0.00	0.50
40.51	13.60	0.43	3.16	120.00	0.00	0.50
41.50	42.60	0.56	1.31	120.00	0.00	0.50
42.48	43.80	1.47	3.36	120.00	0.00	0.50
43.47	14.50	0.40	2.76	120.00	0.00	0.50
44.45	14.10	0.30	2.13	120.00	0.00	0.50
45.43	259.90	2.38	0.92	120.00	0.00	0.50
46.42	216.00	2.08	0.96	120.00	0.00	0.50
47.40	31.40	1.33	4.24	120.00	0.00	0.50
48.39	16.80	0.55	3.27	120.00	0.00	0.50
49.37	36.80	0.99	2.69	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=2.31 in.
Settlement of Unsaturated Sands=0.23 in.
Total Settlement of Saturated and Unsaturated Sands=2.54 in.
Differential Settlement=1.270 to 1.676 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.16	0.12	0.79	5.00	2.31	0.23	2.54
1.16	0.14	0.79	5.00	2.31	0.21	2.53
2.16	0.46	0.79	5.00	2.31	0.13	2.44
3.16	0.14	0.80	0.17*	2.29	0.00	2.29
4.16	0.37	0.91	0.41*	2.11	0.00	2.11
5.16	0.80	1.00	0.80*	2.07	0.00	2.07
6.16	0.61	1.06	0.57*	2.02	0.00	2.02
7.16	0.66	1.11	0.59*	1.89	0.00	1.89
8.16	2.58	1.15	2.24	1.87	0.00	1.87
9.16	1.36	1.19	1.15	1.87	0.00	1.87
10.16	2.00	1.22	5.00	1.78	0.00	1.78
11.16	2.00	1.24	5.00	1.78	0.00	1.78
12.16	0.28	1.26	0.22*	1.76	0.00	1.76
13.16	0.18	1.28	0.14*	1.61	0.00	1.61
14.16	0.33	1.29	0.25*	1.44	0.00	1.44
15.16	0.19	1.31	0.15*	1.28	0.00	1.28
16.16	2.00	1.32	5.00	1.21	0.00	1.21
17.16	2.00	1.33	5.00	1.21	0.00	1.21
18.16	2.00	1.34	5.00	1.21	0.00	1.21
19.16	2.00	1.34	5.00	1.21	0.00	1.21
20.16	2.00	1.35	5.00	1.21	0.00	1.21
21.16	0.52	1.36	0.39*	1.20	0.00	1.20
22.16	0.57	1.36	0.42*	1.15	0.00	1.15
23.16	2.00	1.36	5.00	1.15	0.00	1.15
24.16	2.00	1.37	5.00	1.15	0.00	1.15
25.16	0.29	1.37	0.21*	1.12	0.00	1.12
26.16	0.64	1.37	0.46*	1.03	0.00	1.03
27.16	1.13	1.38	0.82*	1.02	0.00	1.02
28.16	0.69	1.38	0.50*	1.00	0.00	1.00
29.16	0.40	1.38	0.29*	0.91	0.00	0.91
30.16	2.00	1.38	5.00	0.89	0.00	0.89

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31.16	0.20	1.37	0.15*	0.88	0.00	0.88
32.16	0.29	1.36	0.21*	0.77	0.00	0.77
33.16	0.43	1.35	0.32*	0.71	0.00	0.71
34.16	2.00	1.35	5.00	0.71	0.00	0.71
35.16	2.00	1.34	5.00	0.69	0.00	0.69
36.16	0.24	1.33	0.18*	0.56	0.00	0.56
37.16	0.18	1.32	0.13*	0.45	0.00	0.45
38.16	2.00	1.31	5.00	0.38	0.00	0.38
39.16	2.00	1.30	5.00	0.38	0.00	0.38
40.16	2.00	1.29	5.00	0.38	0.00	0.38
41.16	2.00	1.28	5.00	0.38	0.00	0.38
42.16	0.33	1.27	0.26*	0.26	0.00	0.26
43.16	2.00	1.26	5.00	0.18	0.00	0.18
44.16	2.00	1.25	5.00	0.18	0.00	0.18
45.16	0.93	1.24	0.75*	0.17	0.00	0.17
46.16	1.17	1.23	0.95*	0.17	0.00	0.17
47.16	2.00	1.22	5.00	0.13	0.00	0.13
48.16	2.00	1.21	5.00	0.03	0.00	0.03
49.16	0.18	1.19	0.15*	0.03	0.00	0.03

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

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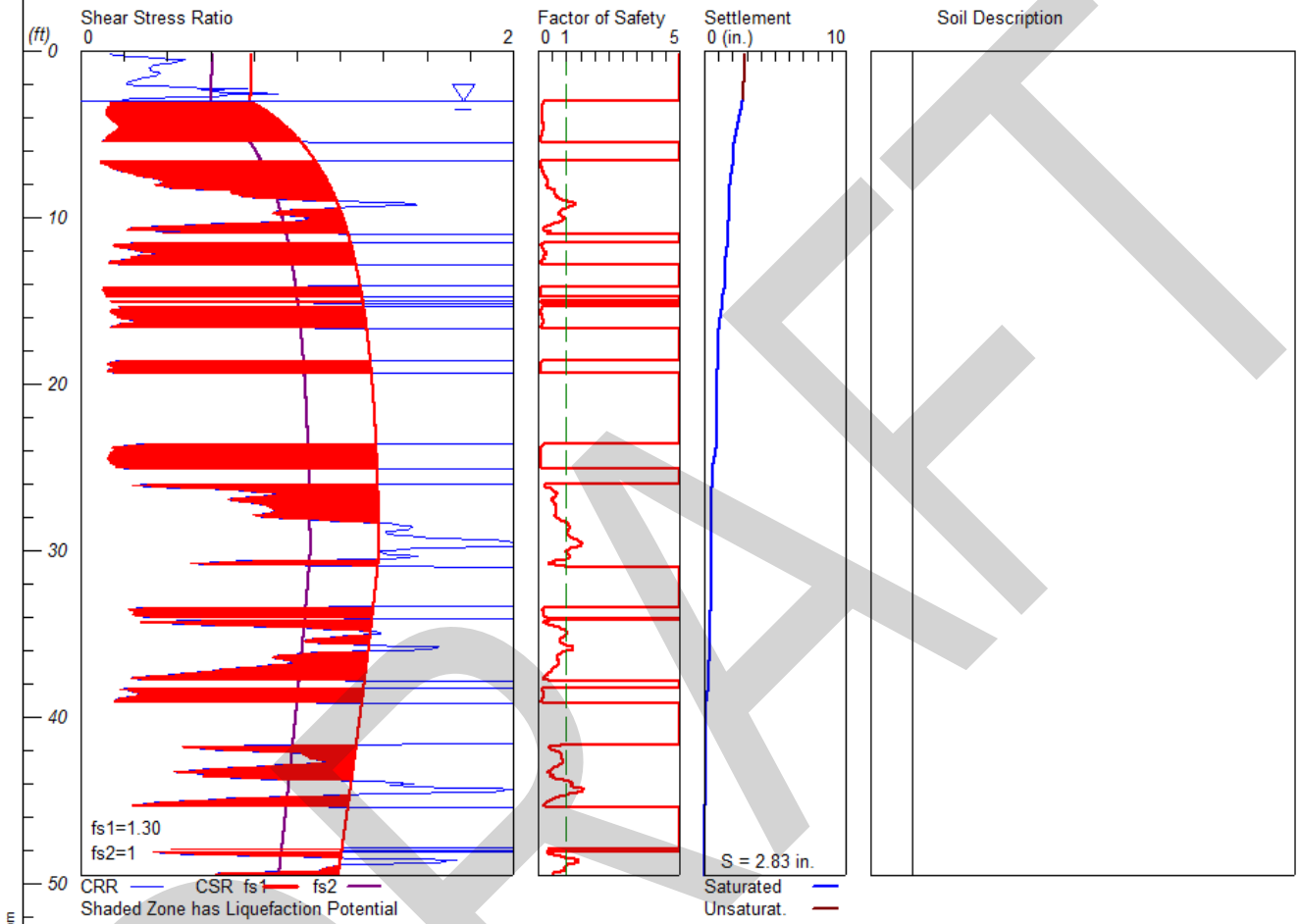
LIQUEFACTION ANALYSIS

Oxnard Warehouse

Hole No.=CPT-19 Water Depth=3 ft

Magnitude=6.89
Acceleration=0.935g



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Input File Name: N:\Projects\2018\60185017\Working Files\Calculations-Analyses\CPT-19.liq
Title: Oxnard Warehouse
Subtitle: 60185017

Surface Elev.=
Hole No.=CPT-19
Depth of Hole= 49.50 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration= 0.94 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=CPT-19
Depth of Hole=49.50 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration=0.94 g
Earthquake Magnitude=6.89
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot two CSR (fs1=User, fs2=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines	D50 mm
0.16	3.50	0.04	1.14	120.00	0.00	0.50
1.15	22.30	0.38	1.70	120.00	0.00	0.50
2.13	13.50	0.40	2.96	120.00	0.00	0.50
3.12	11.90	0.15	1.26	120.00	0.00	0.50
4.10	29.20	0.07	0.24	120.00	0.00	0.50
5.09	17.80	0.13	0.73	120.00	0.00	0.50
6.07	4.10	-0.01	-0.24	120.00	0.00	0.50
7.05	17.70	0.25	1.41	120.00	0.00	0.50
8.04	55.30	0.76	1.37	120.00	0.00	0.50
9.02	125.10	0.75	0.60	120.00	0.00	0.50
10.00	123.70	0.53	0.43	120.00	0.00	0.50
10.99	10.10	0.30	2.97	120.00	0.00	0.50
11.97	31.40	0.76	2.42	120.00	0.00	0.50
12.95	7.20	0.10	1.39	120.00	0.00	0.50
13.94	4.40	0.01	0.23	120.00	0.00	0.50
14.92	7.00	0.06	0.86	120.00	0.00	0.50
15.91	12.90	0.17	1.32	120.00	0.00	0.50
16.89	5.80	0.10	1.72	120.00	0.00	0.50
17.88	6.80	0.12	1.76	120.00	0.00	0.50
18.86	11.70	0.08	0.68	120.00	0.00	0.50
19.84	6.60	0.11	1.67	120.00	0.00	0.50
20.83	7.80	0.09	1.15	120.00	0.00	0.50
21.81	9.50	0.19	2.00	120.00	0.00	0.50
22.80	15.00	0.46	3.07	120.00	0.00	0.50
23.78	29.90	0.37	1.24	120.00	0.00	0.50

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24.77	53.20	0.30	0.56	120.00	0.00	0.50
25.75	15.30	0.47	3.07	120.00	0.00	0.50
26.73	159.10	1.50	0.94	120.00	0.00	0.50
27.72	173.00	1.18	0.68	120.00	0.00	0.50
28.70	215.10	1.65	0.77	120.00	0.00	0.50
29.69	246.00	1.68	0.68	120.00	0.00	0.50
30.67	122.00	2.27	1.86	120.00	0.00	0.50
31.66	15.00	0.56	3.73	120.00	0.00	0.50
32.64	23.00	0.57	2.48	120.00	0.00	0.50
33.62	66.80	1.16	1.74	120.00	0.00	0.50
34.61	200.40	1.73	0.86	120.00	0.00	0.50
35.59	213.40	1.81	0.85	120.00	0.00	0.50
36.58	200.00	1.75	0.88	120.00	0.00	0.50
37.56	93.90	1.21	1.29	120.00	0.00	0.50
38.54	95.30	1.21	1.27	120.00	0.00	0.50
39.53	15.70	0.44	2.80	120.00	0.00	0.50
40.51	15.50	0.45	2.90	120.00	0.00	0.50
41.50	48.40	1.87	3.86	120.00	0.00	0.50
42.48	194.50	3.18	1.63	120.00	0.00	0.50
43.47	74.10	2.76	3.72	120.00	0.00	0.50
44.45	286.10	2.55	0.89	120.00	0.00	0.50
45.43	31.40	1.02	3.25	120.00	0.00	0.50
46.42	19.10	0.74	3.87	120.00	0.00	0.50
47.40	23.00	0.77	3.35	120.00	0.00	0.50
48.39	220.20	2.80	1.27	120.00	0.00	0.50
49.37	177.00	2.08	1.18	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=2.69 in.
Settlement of Unsaturated Sands=0.14 in.
Total Settlement of Saturated and Unsaturated Sands=2.83 in.
Differential Settlement=1.415 to 1.868 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.16	0.14	0.79	5.00	2.69	0.14	2.83
1.16	0.32	0.79	5.00	2.69	0.14	2.83
2.16	0.47	0.79	5.00	2.69	0.05	2.74
3.16	0.14	0.80	0.17*	2.66	0.00	2.66
4.16	0.14	0.91	0.16*	2.41	0.00	2.41
5.16	0.12	1.00	0.12*	2.18	0.00	2.18
6.16	2.00	1.06	5.00	2.09	0.00	2.09
7.16	0.17	1.11	0.15*	1.94	0.00	1.94
8.16	0.39	1.15	0.34*	1.79	0.00	1.79
9.16	1.54	1.19	1.30	1.73	0.00	1.73
10.16	1.03	1.22	0.84*	1.71	0.00	1.71
11.16	2.00	1.24	5.00	1.64	0.00	1.64
12.16	0.34	1.26	0.27*	1.54	0.00	1.54
13.16	2.00	1.28	5.00	1.43	0.00	1.43
14.16	0.10	1.29	0.08*	1.43	0.00	1.43
15.16	2.00	1.31	5.00	1.23	0.00	1.23
16.16	0.24	1.32	0.18*	1.10	0.00	1.10
17.16	2.00	1.33	5.00	1.02	0.00	1.02
18.16	2.00	1.34	5.00	1.02	0.00	1.02
19.16	0.12	1.34	0.09*	0.91	0.00	0.91
20.16	2.00	1.35	5.00	0.87	0.00	0.87
21.16	2.00	1.36	5.00	0.87	0.00	0.87
22.16	2.00	1.36	5.00	0.87	0.00	0.87
23.16	2.00	1.36	5.00	0.87	0.00	0.87
24.16	0.13	1.37	0.10*	0.77	0.00	0.77
25.16	2.00	1.37	5.00	0.55	0.00	0.55
26.16	0.33	1.37	0.24*	0.54	0.00	0.54
27.16	0.80	1.38	0.58*	0.49	0.00	0.49
28.16	1.10	1.38	0.80*	0.46	0.00	0.46
29.16	1.56	1.38	1.13	0.46	0.00	0.46
30.16	1.39	1.38	1.01	0.46	0.00	0.46

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31.16	2.00	1.37	5.00	0.46	0.00	0.46
32.16	2.00	1.36	5.00	0.46	0.00	0.46
33.16	2.00	1.35	5.00	0.46	0.00	0.46
34.16	0.56	1.35	0.42*	0.38	0.00	0.38
35.16	1.18	1.34	0.88*	0.35	0.00	0.35
36.16	1.03	1.33	0.77*	0.35	0.00	0.35
37.16	0.62	1.32	0.47*	0.33	0.00	0.33
38.16	2.00	1.31	5.00	0.26	0.00	0.26
39.16	2.00	1.30	5.00	0.11	0.00	0.11
40.16	2.00	1.29	5.00	0.11	0.00	0.11
41.16	2.00	1.28	5.00	0.11	0.00	0.11
42.16	1.02	1.27	0.80*	0.10	0.00	0.10
43.16	0.53	1.26	0.42*	0.10	0.00	0.10
44.16	1.54	1.25	1.23	0.08	0.00	0.08
45.16	0.31	1.24	0.25*	0.06	0.00	0.06
46.16	2.00	1.23	5.00	0.02	0.00	0.02
47.16	2.00	1.22	5.00	0.02	0.00	0.02
48.16	0.39	1.21	0.32*	0.02	0.00	0.02
49.16	1.11	1.19	0.93*	0.01	0.00	0.01

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

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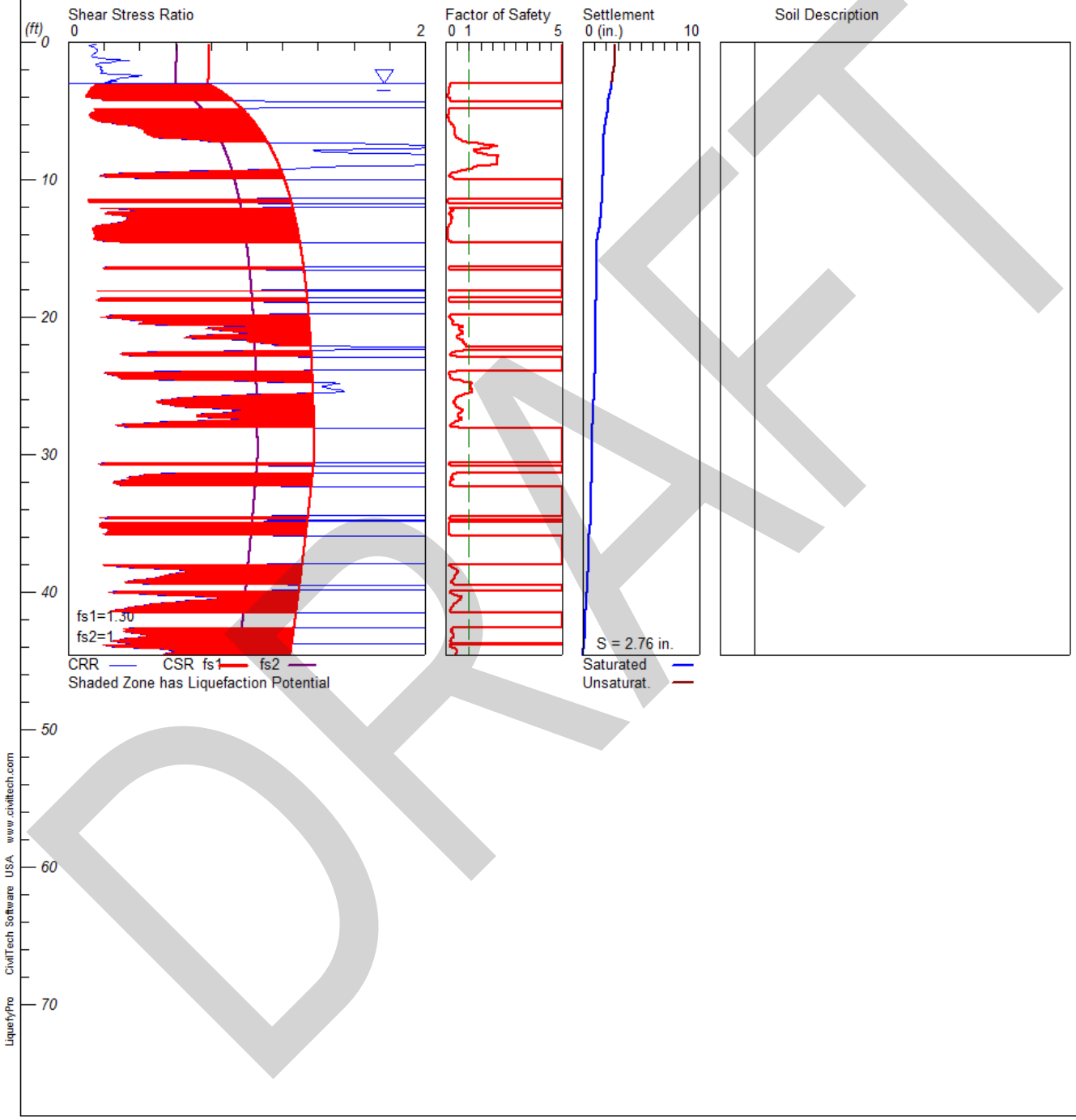
LIQUEFACTION ANALYSIS

Oxnard Warehouse

Hole No.=CPT-20 Water Depth=3 ft

Magnitude=6.89
Acceleration=0.935g



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Input File Name: N:\Projects\2018\60185017\Working Files\Calculations-Analyses\CPT-20.liq
Title: Oxnard Warehouse
Subtitle: 60185017

Surface Elev.=
Hole No.=CPT-20
Depth of Hole= 44.60 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration= 0.94 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=CPT-20
Depth of Hole=44.60 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration=0.94 g
Earthquake Magnitude=6.89
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot two CSR (fs1=User, fs2=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines mm	D50
0.16	1.70	0.02	1.18	120.00	0.00	0.50
1.15	7.60	0.13	1.71	120.00	0.00	0.50
2.13	24.70	0.26	1.05	120.00	0.00	0.50
3.12	10.30	0.14	1.36	120.00	0.00	0.50
4.10	5.90	0.07	1.19	120.00	0.00	0.50
5.09	5.40	0.05	0.93	120.00	0.00	0.50
6.07	65.50	0.20	0.31	120.00	0.00	0.50
7.05	79.40	1.01	1.27	120.00	0.00	0.50
8.04	128.80	0.57	0.44	120.00	0.00	0.50
9.02	132.30	0.37	0.28	120.00	0.00	0.50
10.00	9.30	0.28	3.01	120.00	0.00	0.50
10.99	4.30	0.03	0.70	120.00	0.00	0.50
11.97	7.00	0.08	1.14	120.00	0.00	0.50
12.95	45.90	1.05	2.29	120.00	0.00	0.50
13.94	37.00	0.28	0.76	120.00	0.00	0.50
14.92	10.20	0.23	2.25	120.00	0.00	0.50
15.91	9.40	0.18	1.91	120.00	0.00	0.50
16.89	10.20	0.17	1.67	120.00	0.00	0.50
17.88	9.70	0.11	1.13	120.00	0.00	0.50
18.86	12.40	0.15	1.21	120.00	0.00	0.50
19.84	16.00	0.28	1.75	120.00	0.00	0.50
20.83	49.50	1.91	3.86	120.00	0.00	0.50
21.81	44.10	1.81	4.10	120.00	0.00	0.50
22.80	30.70	0.79	2.57	120.00	0.00	0.50
23.78	17.00	0.75	4.41	120.00	0.00	0.50

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24.77	202.70	1.80	0.89	120.00	0.00	0.50
25.75	149.30	1.42	0.95	120.00	0.00	0.50
26.73	180.50	1.02	0.57	120.00	0.00	0.50
27.72	104.50	1.13	1.08	120.00	0.00	0.50
28.70	12.70	0.37	2.91	120.00	0.00	0.50
29.69	17.50	0.57	3.26	120.00	0.00	0.50
30.67	36.00	0.56	1.56	120.00	0.00	0.50
31.66	57.00	1.46	2.56	120.00	0.00	0.50
32.64	16.30	0.53	3.25	120.00	0.00	0.50
33.62	30.80	0.89	2.89	120.00	0.00	0.50
34.61	33.10	0.55	1.66	120.00	0.00	0.50
35.59	47.20	0.98	2.08	120.00	0.00	0.50
36.58	17.00	0.41	2.41	120.00	0.00	0.50
37.56	13.70	0.33	2.41	120.00	0.00	0.50
38.54	184.00	1.26	0.68	120.00	0.00	0.50
39.53	34.30	1.35	3.94	120.00	0.00	0.50
40.51	189.80	1.91	1.01	120.00	0.00	0.50
41.50	35.80	1.26	3.52	120.00	0.00	0.50
42.48	29.70	1.31	4.41	120.00	0.00	0.50
43.47	79.70	1.47	1.84	120.00	0.00	0.50
44.45	150.20	1.99	1.32	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=2.47 in.
Settlement of Unsaturated Sands=0.29 in.
Total Settlement of Saturated and Unsaturated Sands=2.76 in.
Differential Settlement=1.381 to 1.823 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.16	0.15	0.79	5.00	2.47	0.29	2.76
1.16	0.18	0.79	5.00	2.47	0.27	2.74
2.16	0.19	0.79	5.00	2.47	0.12	2.59
3.16	0.14	0.80	0.17*	2.45	0.00	2.45
4.16	0.19	0.91	0.21*	2.18	0.00	2.18
5.16	0.13	1.00	0.13*	2.09	0.00	2.09
6.16	0.38	1.06	0.36*	1.88	0.00	1.88
7.16	0.75	1.11	0.68*	1.76	0.00	1.76
8.16	2.05	1.15	1.78	1.75	0.00	1.75
9.16	1.33	1.19	1.12	1.75	0.00	1.75
10.16	2.00	1.22	5.00	1.67	0.00	1.67
11.16	2.00	1.24	5.00	1.67	0.00	1.67
12.16	0.34	1.26	0.27*	1.58	0.00	1.58
13.16	0.25	1.28	0.20*	1.47	0.00	1.47
14.16	0.14	1.29	0.11*	1.25	0.00	1.25
15.16	2.00	1.31	5.00	1.18	0.00	1.18
16.16	2.00	1.32	5.00	1.18	0.00	1.18
17.16	2.00	1.33	5.00	1.15	0.00	1.15
18.16	2.00	1.34	5.00	1.14	0.00	1.14
19.16	2.00	1.34	5.00	1.10	0.00	1.10
20.16	0.31	1.35	0.23*	1.06	0.00	1.06
21.16	1.01	1.36	0.74*	1.05	0.00	1.05
22.16	2.00	1.36	5.00	1.05	0.00	1.05
23.16	2.00	1.36	5.00	1.03	0.00	1.03
24.16	0.22	1.37	0.16*	1.01	0.00	1.01
25.16	1.45	1.37	1.06	0.95	0.00	0.95
26.16	0.50	1.37	0.36*	0.91	0.00	0.91
27.16	0.72	1.38	0.52*	0.85	0.00	0.85
28.16	2.00	1.38	5.00	0.79	0.00	0.79
29.16	2.00	1.38	5.00	0.79	0.00	0.79
30.16	2.00	1.38	5.00	0.79	0.00	0.79
31.16	2.00	1.37	5.00	0.76	0.00	0.76
32.16	0.27	1.36	0.20*	0.70	0.00	0.70
33.16	2.00	1.35	5.00	0.69	0.00	0.69
34.16	2.00	1.35	5.00	0.69	0.00	0.69
35.16	0.17	1.34	0.13*	0.62	0.00	0.62

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36.16	2.00	1.33	5.00	0.51	0.00	0.51
37.16	2.00	1.32	5.00	0.51	0.00	0.51
38.16	0.29	1.31	0.22*	0.48	0.00	0.48
39.16	0.34	1.30	0.26*	0.37	0.00	0.37
40.16	0.44	1.29	0.34*	0.31	0.00	0.31
41.16	0.32	1.28	0.25*	0.26	0.00	0.26
42.16	2.00	1.27	5.00	0.21	0.00	0.21
43.16	0.44	1.26	0.35*	0.16	0.00	0.16
44.16	0.54	1.25	0.43*	0.04	0.00	0.04

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

DRAFT

Appendix H Project Bruin Hydrology and Hydraulic Drainage Report

Attachment by Kimley-Horn and Associates, Inc.

1st Submittal

Hydrologic and Hydraulic Drainage Report

Project Bruin
Sakioka Farms Business Park
Oxnard, California

Southwest Corner of Ventura Freeway & N Del Norte Boulevard

Date:

March 2020

Prepared for:

Seefried Industrial Properties, Inc.

2201 E. Camelback Road, Suite 225B

Phoenix, AZ 85016

310.536.7900

Project Bruin

Hydrologic and Hydraulic Drainage Report

MARCH 2020 | ENTITLEMENT SUBMITTAL

Prepared By:

Kimley»Horn

This Drainage Report has been prepared by Kimley-Horn and Associates, Inc. under the direct supervision of the following Registered Civil engineer. The undersigned attests to the technical data contained in this study, and to the qualifications of technical specialists providing engineering computations upon which the recommendations and conclusions are based.

Preliminary_____ **March 9, 2020_____**

Eugene Davis Cowan, III CA PE #86803 Date

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Appendix M Sakioka Farms Business Park Specific Plan

Appendix N City of Oxnard Standard Plates

1 INTRODUCTION

1.1 PROJECT DESCRIPTION

Seefried Properties, Inc. intends to develop a multi-level distribution center within the Sakioka Farms Business Park Specific Plan (SKBP SP) located in the City of Oxnard, CA. The existing Sakioka Farms Business Park Specific Plan area covers approximately 430 acres located in the northeastern portion of the City of Oxnard. The site is bounded on the north by Ventura Freeway (U.S. Route 101)' on the east by the Oxnard-Camarillo Greenbelt (agricultural preserve); on the south by the existing Proctor & Gamble plant and portion of the McInnes Ranch Business Park, and on the west by Rice Avenue. Refer to **Figure 1** for the Regional Map of Ventura County with the location of the Sakioka Farms Business Park Specific Plan location.

Within the SKBP SP, Project Bruin is located within the Light Industrial land use area that consists of approximately 300-acres. Refer to **Figure 2** for 2030 General Plan Use for the SKBP SP, and **Figure 3** for the Project Site Location. Per the SKBP SP Tentative Tract Map No. 5996-1, Project Bruin will be located on Lots 8, 9, 10, 11, and 12 for a combined project site of approximately 64.65-acres. Project Burin proposes a ±857,173 SF multi-level distribution center, employee parking, trailer parking, and trailer storage on the site. Refer to Figure 4 for the site plan that illustrates the location of these improvements.

This drainage report includes the hydrologic analysis for pre-developed and post-developed conditions, storm drain sizing, as well as the analysis of the onsite underground detention system used to detain peak flows and treatment with water quality design capture volume. Refer to the site-specific Storm Water Quality Management Plan for water quality treatment and analysis, **Appendix G**.

1.2 LAND USE AND ZONING

The project site is located within the Sakioka Farms Business Park Specific Plan, **Appendix O**, with land use designation of Light Industrial, and zoning designation of M-1.

1.3 WATERSHED

OVERALL WATERSHED DESCRIPTION

The project site is part of City of Oxnard Major Drainage Watershed, EF – East Fifth Street, as identified in **Figure 6**, of the City of Oxnard, PM NO. 5.1 – Background Summary, Public Works Integrated Master Plan, provided in **Appendix A**. The EF Watershed consists of approximately 1,119 acres that drains generally from the northwest to the southwest via mains and open channels that discharge to Ventura County Flood Zone 3's Revolon Slough, which is the northern tributary to Calleguas Creek. Additional information related to the Revolon Slough and Calleguas Creek has been provided in **Appendix B**.

SAKIOKA FARMS BUSINESS PARK PROJECT BRUIN

The existing topography ranges from elevation 67.0 to elevation 59.0 generally sloping from the northwest corner to the southeast corner. Per Tentative Tract Map No. 5996., the site will be mass graded with elevations ranging from 65.0 to 62.0 and regional detention basins will be constructed in Lot A and Lot B, immediately adjacent to Project Bruin, **Appendix K**

1.4 FEMA MAPPING

The project site is covered by Map Number 06111C0910E of the FEMA Flood Insurance Rate Map (FIRM) for Ventura County, California and Incorporated Areas. The City of Oxnard, community number 060417 & 060413, is included in this FIRM. None of the project area is within a FEMA-mapped Special Flood Hazard Area. The site is located within a shaded and unshaded Zone X. Shaded Zone X are areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood. Unshaded Zone X are areas determined to be outside the 0.2% annual chance flood. The effective FEMA map is date January 20, 2010 and is provided in **Appendix C.**

1.5 GEOTECHNICAL REPORT

TYPICAL SUBSURFACE PROFILE

The "Geotechnical Engineering Report" prepared by Terracon Consultants, Inc., on May 11, 2018, describes onsite soils as Clayey Sand, Sand, and Lean Clay, and variable amounts of sand, silt, and clay within the embedded layers. Refer to **Appendix D** for the "Geotechnical Engineering Report". Additionally, the Natural Resources Conservation Service (NRCS) has classified soils into four general hydrologic soil groups for comparing infiltration and runoff rates. The NRCS results have been provided in **Appendix E.**

GROUNDWATER

The project Geotechnical Report indicates that groundwater was observed in the test borings at depths ranging between 3 and 11 feet below ground surface. Based on regional data, historical groundwater is anticipated to occur at depths of less than 10-feet below the ground surface. Final engineering design of construction plans will provide recommendations for conduit and structure construction.

PERCOLATION TEST RESULTS

The project Geotechnical Report also discusses percolation tests were performed that yielded the results shown in Page 7 of the Geotechnical Report, which can be found in **Appendix D**.

2 OBJECTIVES

The scope of this report is intended to address the following specific objectives;

1) Determine Pre-Project flow rates during the 100-year event.
2) Determine Post-Project flow rates for the 100-year event based on site grading and creation of new impervious areas
3) Justify the hydraulic sizing and location of proposed storm drain inlets and conduits during the 100-year event to protect the proposed buildings and parking areas from flooding.
4) Justify that proposed sizing of storage areas (i.e. underground detention pipes and surface detention basins) collectively mitigates site discharge to pre-development rate during the 100-year event.
5) Demonstrate compliance with City of Oxnard standards for the design and implementation of permanent stormwater Best Management Practices (BMPs).

The methodology used to achieve objectives 1-5 is discussed in detail within **Chapter 3** of this report. Objective 5 is generally discussed within **Chapter 7** and further detailed within **Appendix G**.

3 PROCEDURE

3.1 METHODOLOGY

The design of this site is based on Ventura County Watershed Protection District's (VCWPD) "Design Hydrology Manual" and Ventura County's "Technical Guidance Manual for Stormwater Quality Control Measures," Errata Update June 2018 .

The hydrologic and hydraulic modeling software utilized in this study is PC SWMM 2019 developed by Computational Hydraulics International (CHI). The PC SWMM model is designed to simulate precipitation, runoff, and storage of flow through a system of interconnected hydraulic components.

3.2 SUBCATCHMENT AREA

Subcatchment areas were delineated based on proposed topography from the preliminary engineering plans prepared by Kimley-Horn and regional discharge point located in Lot A. Peak runoff for individual subcatchment areas were established per the hydrologic parameters described below, and used to develop the conduit system model.

RUNOFF METHOD

The hydrologic methodology used for this project is the "2017 Ventura County Rational" method, which is a modified rational method designed for the analysis of design hydrology within the Ventura County area. The detailed explanation of the theory and background is presented in the "Design Hydrology Manual" from Ventura County Watershed Protection District.

SOIL TYPE

Ventura County groups their soils into seven hydrologically homogenous families based on the SCS Hydrologic Soil Group (now NRCS). Hydrologic Soil Groups A, B, and C are assigned two families, which are the upper and lower limits of the HSG's runoff coefficient curves and a single family is assigned to Hydrologic Soil Group D. Hydrologic Soil Group B encompasses a majority of the site and is consistent with Soil Type 4 and 5 in the hydrologic model. For preliminary storm system modeling, Soil Type 4, the upper limits of Hydrologic Soil Group B's runoff coefficient curve, was used as it generates a higher peak runoff compared to Soil Type 5.

HYDROGRAPH FATTENING

Ventura County's Modified Rational Method provides a hydrograph characterized by a relatively sharp and narrow peak, and generally the yield under the hydrograph is less than would be expected from a NRCS yield evaluation using Curve Numbers. Therefore, the hydrographs generated from Ventura County's Modified Rational Method cannot be used for detention basin design as it would be undersized. A method called "fattening" is used to adjust the generated hydrograph in order to match the hydrograph into the appropriate parameters used for detention basin design. The SCS Curve Number method was used for the hydrograph fattening of this project.

CURVE NUMBER

For the given soil, CN values were determined from appropriate columns of *Exhibit 14C*, which can be found in the "Design Hydrology Manual". A land use of Agriculture – Straight Row Good with Hydrologic Soil Group 4 provides a curve number of **80** in the pre-developed conditions. While an Impervious Parking Lot curve number of **98** was assumed in post-developed conditions as the site consist of mainly impervious areas.

PRECIPITATION

Precipitation values for the hydrologic analysis were determined from the site-specific precipitation frequency estimates published online in the NOAA Atlas 14. For this site, a precipitation of 6.06 inches was used for the 100-year, 24-hour storm precipitation depth. Refer to **Appendix F** for the tabular output from the NOAA Atlas 14.

TIME OF CONCENTRATION

The Ventura County hydrologic methodology limits time of concentration within an individual subcatchment area between 5 minutes minimum and 30 minutes maximum. Post-developed conditions assume a minimum time of concentration of 5 minutes due to the smaller subcatchment areas and increase in impervious area.

3.3 JUNCTIONS

Junctions nodes are used to represent hydraulic elements of the storm system such as manholes or pipe connections. The input paraments for junction nodes are the rim and invert elevations of the structure. A surcharge depth of 0.5-feet was set for all junction nodes to allow necessary head between the finished surface or parking areas and top of curbs.

3.4 DIVIDERS

For this project, "dividers" were used as theoretical nodes to represent grate inlet and curb inlet capture efficiency. They discharge through "dummy" conduits into downstream nodes used to represent subsurface pipe entrances. The type of divider used is based on the manner in which inflows are diverted. This model uses a tabular diversion curve as a function of inflow versus outflow for each specific combination of inlet type and size. Invert elevation of the dividers are set at the rim of the junction structure to provide positive drainage to the junction structure.

GRATE INLET DIVERSION CURVE

The grate inlet design is based on Plate No. 504 for the Grated Catch Basin and Plate No. 511 for the Grate Detail from the City of Oxnard's Standard Details. Equation 4-26 from the Federal Highway Administration's "Urban Drainage Design Manual" was used to set the inflow/outflow parameters of the diversion curve. The grate operates as a weir in sag conditions with an allowable depth of 0.5-feet across the grate. The parameters of the grate inlet diversion curve can be found in **Appendix I**.

CURB OPENING INLET DIVERSION CURVE

The curb opening design is based off of Plate No. 501 for the Curb Opening Catch Basin from the City of Oxnard's Standard Details. Equation 4-28 from the Federal Highway Administration's "Urban Drainage

Design Manual" was used to set the inflow/outflow parameters of the diversion curve. The curb opening operates as a weir in sag conditions with an allow depth of 0.5-feet across the curb opening. The parameters of the curb opening inlet diversion curve can be found in **Appendix I**.

3.5 STORAGE

Storage nodes are used to represent the two above ground detention ponds within the project site. The tabular storage information is based off the finished grade and contour area information for each detention basin.

3.6 OUTFALLS

Outfall nodes define the discharge location on the downstream end of the storm system. The proposed development has three discharge locations: the southeast detention basin, the south underground detention basin, and the southwest detention basin. The geometric parameters of the outfall nodes are based off the rim and invert of the discharge location. A time series curve was set to all the outfall nodes to model the tailwater effect from the adjacent regional detention facility (Lot A).

3.7 CONDUITS

The conduits are used to represent pipes that link one node to another in the storm system. The proposed storm drain encompasses only circular pipes with diameters ranging from 24-inches to 60-inches. The conduit system uses a Manning's "n" coefficient of 0.01 for all conduit links.

3.8 CONDUIT LINKS AND STRUCTURE NODE CONSIDERATIONS

Based on the preliminary grading and drainage plan, there will be storm drain infrastructure located within the highest observed groundwater throughout the site. The project will propose water tight joints, anchoring, and buoyancy calculations for conduits and structures. This information and details will be determined during final design and coordinated with the geotechnical engineer for review.

4 HYDROLOGY

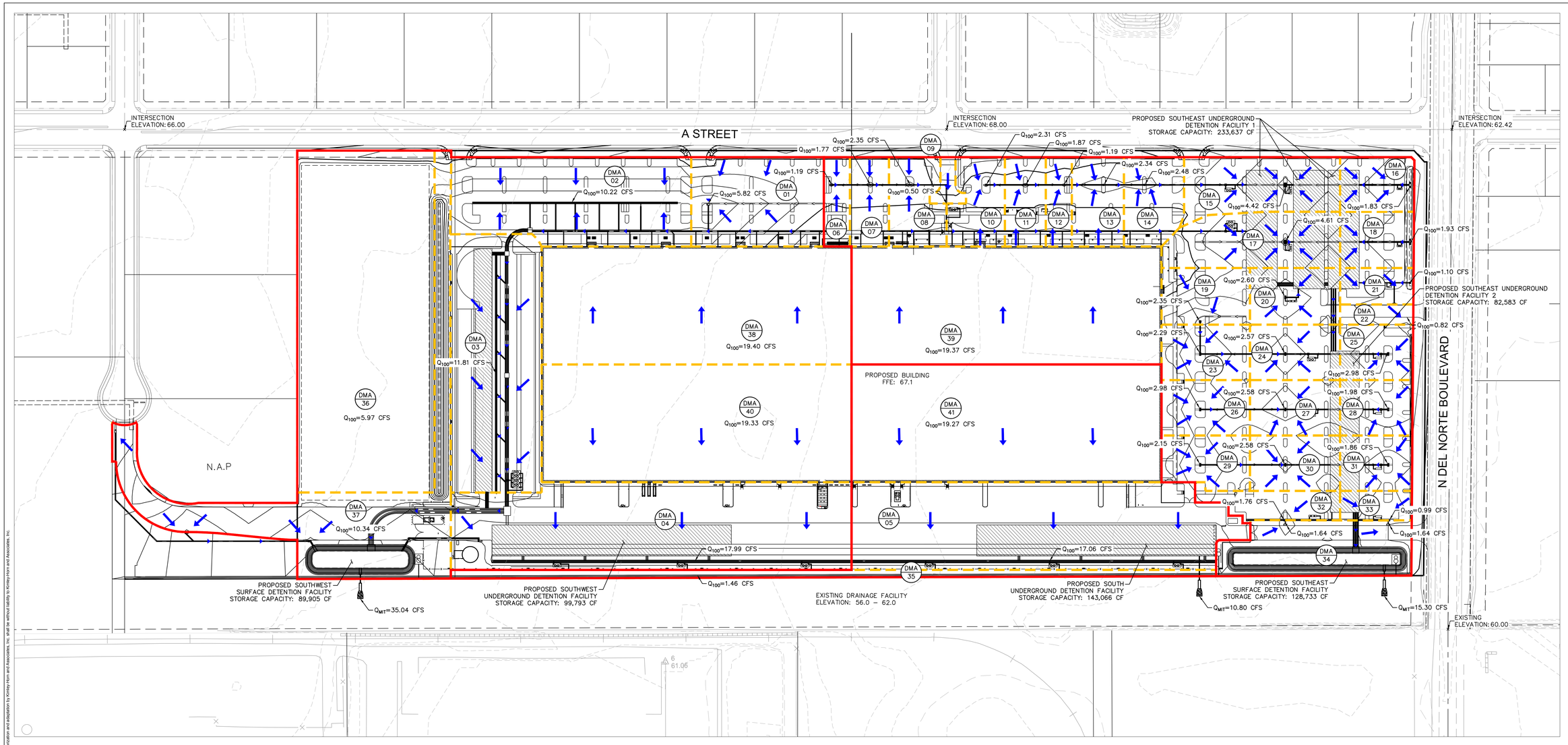
The existing hydrology will be modified to account for new elevation for the proposed building and associated hardscaping. The proposed hydrology will mimic the existing drainage patterns by conveying flow from the north side of the site to the south side of the pipe. Per the conceptual grading and drainage plans, the site storm system will discharge to three outfall areas along the southerly property line that ultimately discharge into the regional basin facility on Lot A, see attached Drainage Exhibit. Information related to the Sakioka Farms Business Park Master Drainage Report can be found in **Appendix J**. **Table 1** and **Table 2** below summarizes the peak 100-year flow summary for the pre-developed and post-developed conditions. Note that on **Table 2** basins are based on their respective outfall locations.

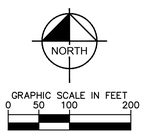
Table 1: Pre-Developed 100-Year Flow Summary

Basin ID	Basin Area (acres)	Q100 (cfs)
Project Site	64.45	65

Table 2: Post-Developed 100-Year Flow Summary

Outfall ID	DMA (acres)	Q100 (cfs)
Southwest Outfall	31.6	101
South Outfall	10.6	38
Southeast Outfall	22.3	81



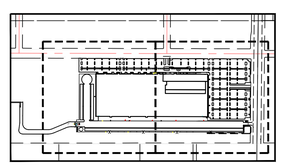


LEGEND

- DMA ID (XX / XX: DMA ID NUMBER)
- DMA BOUNDARY
- OVERALL DRAINAGE BOUNDARY
- FLOW DIRECTION
- PROPERTY LINE
- PROPOSED STORM DRAIN LINE
- FLOWLINE

FLOW SUMMARY TABLE

DMA ID	AREA (acres)	Q100 (cfs)	DMA ID	AREA (acres)	Q100 (cfs)
DMA01	1.59	5.82	DMA21	0.36	1.10
DMA02	2.74	10.22	DMA22	0.20	0.82
DMA03	3.16	11.81	DMA23	0.66	2.29
DMA04	4.59	17.99	DMA24	0.67	2.57
DMA05	4.36	17.06	DMA25	0.54	1.95
DMA06	0.31	1.19	DMA26	0.66	2.30
DMA07	0.47	1.77	DMA27	0.67	2.58
DMA08	0.64	2.35	DMA28	0.54	1.98
DMA09	0.13	0.50	DMA29	0.61	2.15
DMA10	0.63	2.31	DMA30	0.67	2.58
DMA11	0.49	1.87	DMA31	0.54	1.86
DMA12	0.31	1.19	DMA32	0.50	1.76
DMA13	0.62	2.34	DMA33	0.28	0.99
DMA14	0.68	2.48	DMA34	1.37	3.27
DMA15	1.19	4.42	DMA35	0.77	1.46
DMA16	0.54	1.83	DMA36	6.31	5.97
DMA17	1.24	4.61	DMA37	3.47	10.34
DMA18	0.56	1.93	DMA38	4.91	19.40
DMA19	0.67	2.35	DMA39	4.91	19.37
DMA20	0.69	2.60	DMA40	4.90	19.33
			DMA41	4.90	19.27



KEY MAP

No.	REVISIONS	DATE	BY

Kimley»Horn

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Kimley»Horn
Engineer EUGENE D. COWAN III
P.E. No. 66803 Date 3/5/2020

KHA PROJECT 195170003
DATE 3/5/2020
SCALE AS SHOWN
DESIGNED BY KS
DRAWN BY KS
CHECKED BY DC

PROPOSED DRAINAGE EXHIBIT

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.

CITY OF OXNARD CA

DMA

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

5 UNDERGROUND/SURFACE DETENTION BASINS

5.1 UNDERGROUND DETENTION BASIN

The underground detention facilities physically represent a series of large diameter pipes set on a flat slope which collect and detain flow in the case of a 100-year storm event. A series of junction nodes and conduits are used to model the underground detention facilities. There are three separate underground detention facilities for each outfall location. The southwest underground detention facility contains a series of nine pipes for with a length of approximately 565-feet and a diameter of 60-inches the south underground detention facility also contains a series of nine pipes but with a length of approximately 300-feet and a diameter of 60-inches. The southeast underground detention facility consists a multiple smaller underground detention facility. The underground detention facilities contain thirty-nine pipes with lengths ranging from 280-feet to 394-feet. **Table 2** below summarizes the total storage volume of each underground detention basin. Note that the detention basins are identified by their discharge location.

Table 3: Underground Detention Basin Volume

Detention Basin	Storage Volume (cu. ft.)
Southwest Underground Detention Basin	99,793
South Underground Detention Basin	143,066
Southweast Underground Detention Basin	233,636

UNDERGROUND DETENTION STORAGE CONSIDERATIONS

Based on the preliminary grading and drainage plan, **Appendix L**, the underground detention system will be located below the highest observed groundwater by an estimated 2.5 feet - 3.0 feet. Due to the variation in the groundwater, the underground detention basin will be a sealed system that will be designed to prevent groundwater from entering the system and will also be designed for buoyancy. The detention system may require a concrete slab to be constructed beneath the detention system to anchor the pipes to prevent flotation. Currently, the project has not determined if a concrete vault system or concrete pipe system will be used. This information and details will be determined during final design and coordinated with the geotechnical engineer for review.

5.2 SURFACE DETENTION BASIN

Two proposed surface detention basins located in the southwest and southeast of the project site provide storage in case of a 100-year storm event. The surface detention basins are modeled using storage nodes which was described previously in the Storage section of the Procedure in **Chapter 3**. Refer to **Appendix L** for the location of the proposed underground detention system and **Appendix I** for the Storage Output Table for the PC SWMM Model results. **Table 4** below summarizes the total storage volume for each surface detention basin. Note that the detention basins are identified by their discharge location.

Table 4: Surface Detention Basin Volume

Detention Basin	Bottom Elevation	Top Elevation	Max Q100 WSE	Storage Volume (cu. ft.)
Southwest Surface Detention Basin	54.8	62	61	89,905
Southeast Surface Detention Basin	54.8	62	61	128,733

SURFACE DETENTION BASIN STORAGE CONSIDERATIONS

Based on the preliminary grading and drainage plan, **Appendix L**, the bottom of the surface detention basin will be located below the highest observed groundwater by an estimated 2.5 feet - 3.0 feet. Due to the variation in the groundwater, the above-ground detention basin will be lined with concrete or other suitable liner to prevent groundwater from entering the basin. This information and details will be determined during final design and coordinated with the geotechnical engineer for review.

5.3 STORMWATER PUMP

Three proposed stormwater pumps will be provided for the three discharge locations. The stormwater pumps will be required to discharge the storage of the pond that is between elevation 54.80 to 62.00. **Table 5** below summarizes the Pump Curve used to discharge the flow depths below the invert.

Table 5: Pump Curves

Southwest		South		Southeast	
Depth (ft)	Flow (cfs)	Depth (ft)	Flow (cfs)	Depth (ft)	Flow (cfs)
0	5	0	1	0	0.5
1	5	1	1	1	0.5
2	5	2	1	2	0.5
3	5	3	1	3	0.5
4	5	4	1	4	0.5
5	5	5	1	5	0.5
6	5	6	1	6	0.5
7	5	7	1	7	0.5

6 COMPUTATIONS

The results of the PC SWMM Model can be found in **Appendix I**.

7 RESULTS

The computational results from the PC SWMM Model show that the hydrologic and hydraulic analysis of the proposed development will meet all the objectives previously stated above. The discussion below re-iterates the objectives for this report as well as a discussion on how the objectives were met.

1) **Determine Pre-Project flow rates during the 100-year event.**

   Peak runoff for pre-developed conditions was determined using Ventura County' Modified Rational Method. A total of 65 cfs is generated based off existing topography and land use.

2) **Determine Post-Project flow rates for the 100-year event based on site grading and creation of new impervious areas**

   Post-developed conditions followed the same hydrologic methodology as the pre-developed conditions. Additional subcatchment areas were delineated based off preliminary site grading and discharge locations. A total of 220 cfs is generated in the 100-year storm event due to the proposed development of this project.

3) **Justify the hydraulic sizing and location of proposed storm drain inlets and conduits during the 100-year event to protect the proposed buildings and parking areas from flooding.**

   Output results from the PC SWMM model calculated that there is zero flooding throughout the site during the 100-year peak storm event. This can be interpreted that the proposed inlets and storm structures were sized appropriately and the entirety of the peak 100-year storm event is captured and conveyed to their respective outfall locations.

4) **Justify that proposed sizing of storage areas (i.e. underground detention pipes and surface detention basins) collectively mitigates site discharge to pre-development rate during the 100-year event.**

   The Detention section above discusses the design and modeling methodology of the surface and underground detention basins. The PC SWMM model results show that the combination of both the underground and surface detention basins adequately detain the additional volume generated from post-developed conditions and discharges at a rate that is consistent with pre-developed conditions.

5) **Demonstrate compliance with City of Oxnard standards for the design and implementation of permanent stormwater Best Management Practices (BMPs).**

   Appendix G refers to the project specific WQMP report provided for this project.

8 REFERENCES

1. "*Geotechnical Engineering Report*," Terracon Consultants Inc., May 2018
2. "*Custom Soil Resource Report for Ventura Area, California*," Natural Resources Conservation Service, February 2020
3. "*Ventura County Technical Guidance Manual for Stormwater Quality Control Measures*," Larry Walker Associates & Geosyntec Consultants, Revised June 2018
4. "*City of Oxnard's Public Works Integrated Master Plan*" Carollo Engineers, December 2018
5. "*Design Hydrology Manual*" Ventura County Watershed Protection District, Updated July 2017
6. *"Urban Drainage Design Manual"* U.S Department of Transportation, Federal Highway Administration, Revised August 2013

FIGURES

Figure 1. Regional Map of Ventura County

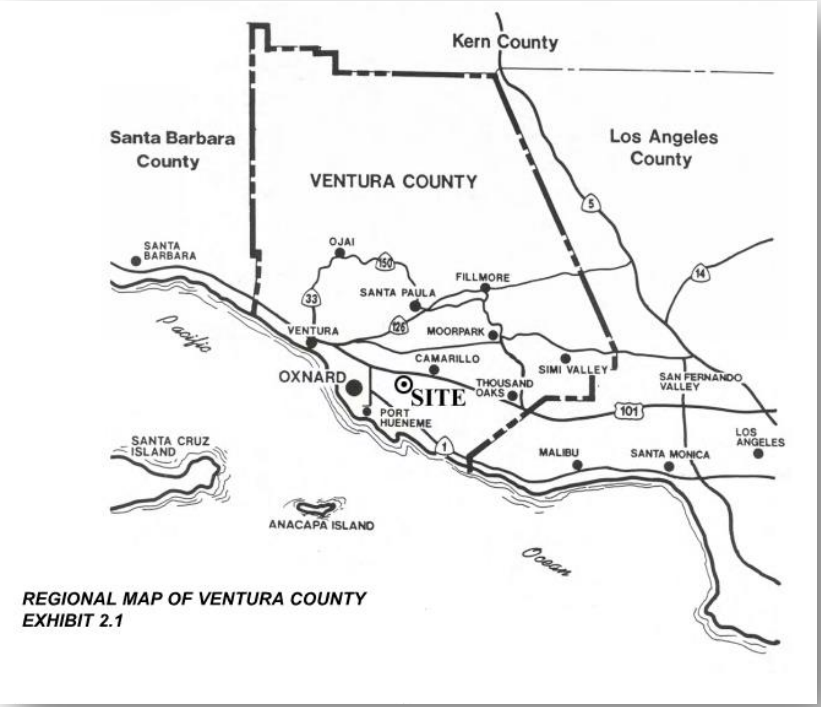

Figure 2. 2020 General Plan Land Uses

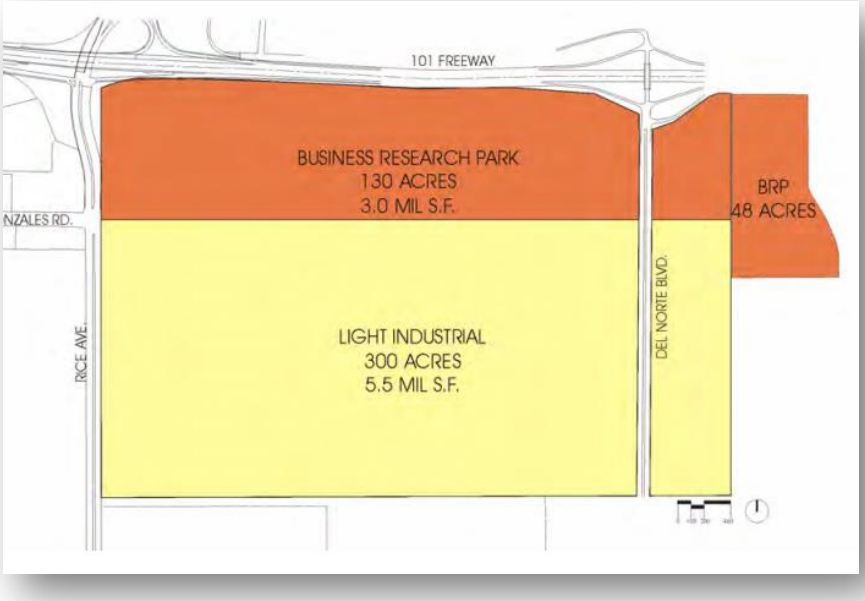

Figure 3. Project Site Location

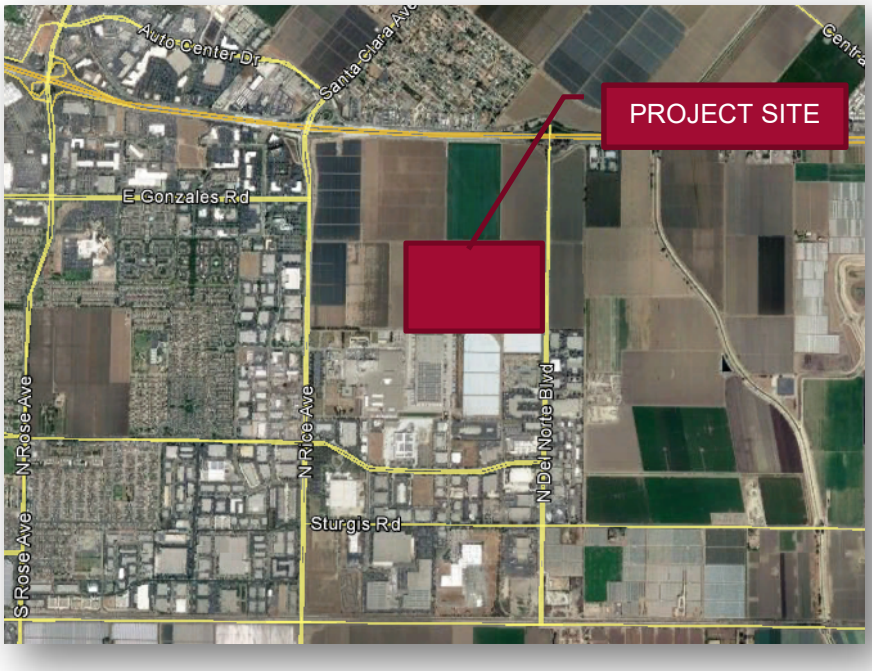

Figure 4. Site Plan

APPENDICES

APPENDIX A

CITY OF OXNARD MAJOR DRAINAGE WATERSHEDS

This document is released for the purpose of information exchange review and planning only under the authority of Hugh Steve McDonald, December 2015, State of California, PE No. 44074 and Tracy Anne Clinton, December 2015, State of California, PE No. 48199

City of Oxnard

Public Works Integrated Master Plan

STORMWATER

PROJECT MEMORANDUM 5.1
BACKGROUND SUMMARY

FINAL DRAFT
December 2015

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City of Oxnard

Public Works Integrated Master Plan

STORMWATER

PROJECT MEMORANDUM 5.1
BACKGROUND SUMMARY

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BACKGROUND SUMMARY

1.0 INTRODUCTION

The City of Oxnard's (City's) stormwater system serves the City and the surrounding lands that drain into Oxnard, approximately 35 square miles in area. The City's drainage channels are either partly or completely under the jurisdiction of the Ventura County Flood Control District (VCFCD). The drainage facilities for the City either discharge directly into the ocean or they discharge into the VCFCD facilities and then into the ocean. The City maintains a network of storm drains comprised of gravity pipes, force mains, lift stations, and various other infrastructure associated with a stormwater drainage system.

This Project Memorandum (PM) gives a brief background on the project area and the City's existing stormwater system and outlines the regulatory and water quality considerations of this system.

1.1 Project Memoranda (PMs) Used for Reference

Other PMs that expand on the wastewater system needs/recommended projects include:

- PM 5.2 - Stormwater System - Infrastructure Modeling and Alternatives.
- PM 5.3 - Stormwater System - Condition Assessment.
- PM 5.4 - Stormwater System - Treatment Alternatives.

1.2 Other Reports Used for Reference

In developing the alternatives in this Public Works Integrated Master Plan (PWIMP), recommendations from other reports were incorporated to ensure a well-rounded and holistic look at the stormwater system. The following reports are referred to in this PM:

- VCWPD Report of Waste Discharge, Ventura Countywide Stormwater Quality Management Program, (VCWPD, 2015).
- VCWPD Final Environmental Impact Report J Street Drain Project, January 2012 (VCWPD EIR, 2012).
- MS4 NPDES Permit CAS004002, Order No. R4-2010-0108, California Regional Water Quality Control Board, July 2010 (MS4 Permit, 2010).
- City of Oxnard 2030 General Plan, Development Services Department Planning Division, October 2011 (City of Oxnard General Plan, 2011).

- Feasibility of Using the Oxnard Advanced Water Purification Facility to Treat Storm Water from the J Street and Oxnard Industrial Drains (CH2M Hill, 2013).
- Ventura Countywide Stormwater Quality Management Program Annual Report, VCWPD, 2014 (VCWPD, 2014).
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- Dettinger, Michael (2005) From climate-change spaghetti to climate-change distributions for 21st Century California, San Francisco Estuary and Watershed Science, 3(1), article 4. (Dettinger, 2005).
- Santa Clara River Bacteria Total Maximum Daily Load, California EPA, R10-006, March 2012.
- Harbor Beaches of Ventura County Bacteria Total Maximum Daily Load, California EPA, 2007-017 December 2008.

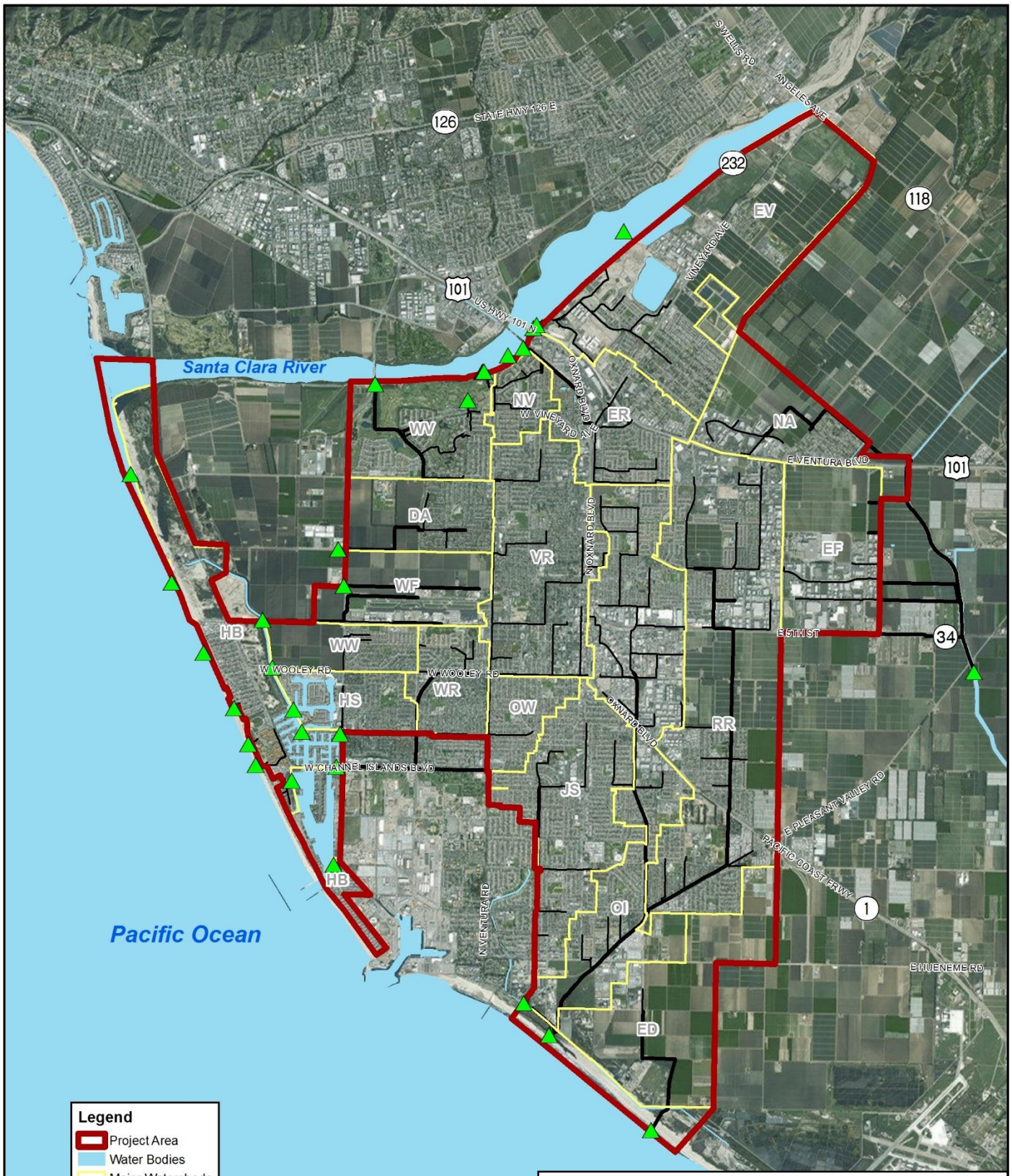
2.0 PROJECT AREA DESCRIPTION

2.1.1 Project Area

The City's project area generally encompasses lands within the city limits of Oxnard together with surrounding lands that drain into Oxnard. The City's drainage area is approximately 35 square miles in size. State Highway 1 passes through the center of Oxnard and joins U.S. Highway 101 at the north edge of the drainage area just south of the Santa Clara River. Highway 101 passes through the northern portion of the area. The project area boundary is illustrated in Figure 1.

2.1.2 Climate

The climate of the project area is mild during summer when high temperatures tend to be around 70 degrees Fahrenheit (F) and cool during winter when temperatures tend to be around 50 degrees F. The warmest month of the year is August with an average maximum temperature of 73.9 degrees F, while the coldest month of the year is December with an average minimum temperature of 45.3 degrees F. Average annual rainfall in the project area is 15.6 inches per year. Rainfall is concentrated during the winter months. The wettest month of the year is February with an average rainfall of 3.9 inches (VCWPD EIR, 2012). Precipitation, temperature, and evaporation are the main climatic conditions that drive runoff in a watershed. Along with climate, runoff can be estimated from a watershed dependent on factors relating to the area, shape, slope, and land characteristics.



PROJECT AREA

FIGURE 1

CITY OF OXNARD

PM NO.5.1 – BACKGROUND SUMMARY

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CITY OF OXNARD CALIFORNIA

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2.1.3 Topography

The City is situated near the mouth of the Santa Clara River on a gently sloping alluvial fan commonly known as the Oxnard Plain. The land generally slopes in a southwesterly direction toward the ocean at an average rate of about 10 to 20 feet per mile, or a gradient of less than one-half percent. This flat topography has a major bearing on the drainage needs of the area and the associated costs for flood protection. Elevations in the City range from mean sea level to about 128 feet above mean sea level, as illustrated in Figure 2.

2.1.4 Land Use Characteristics

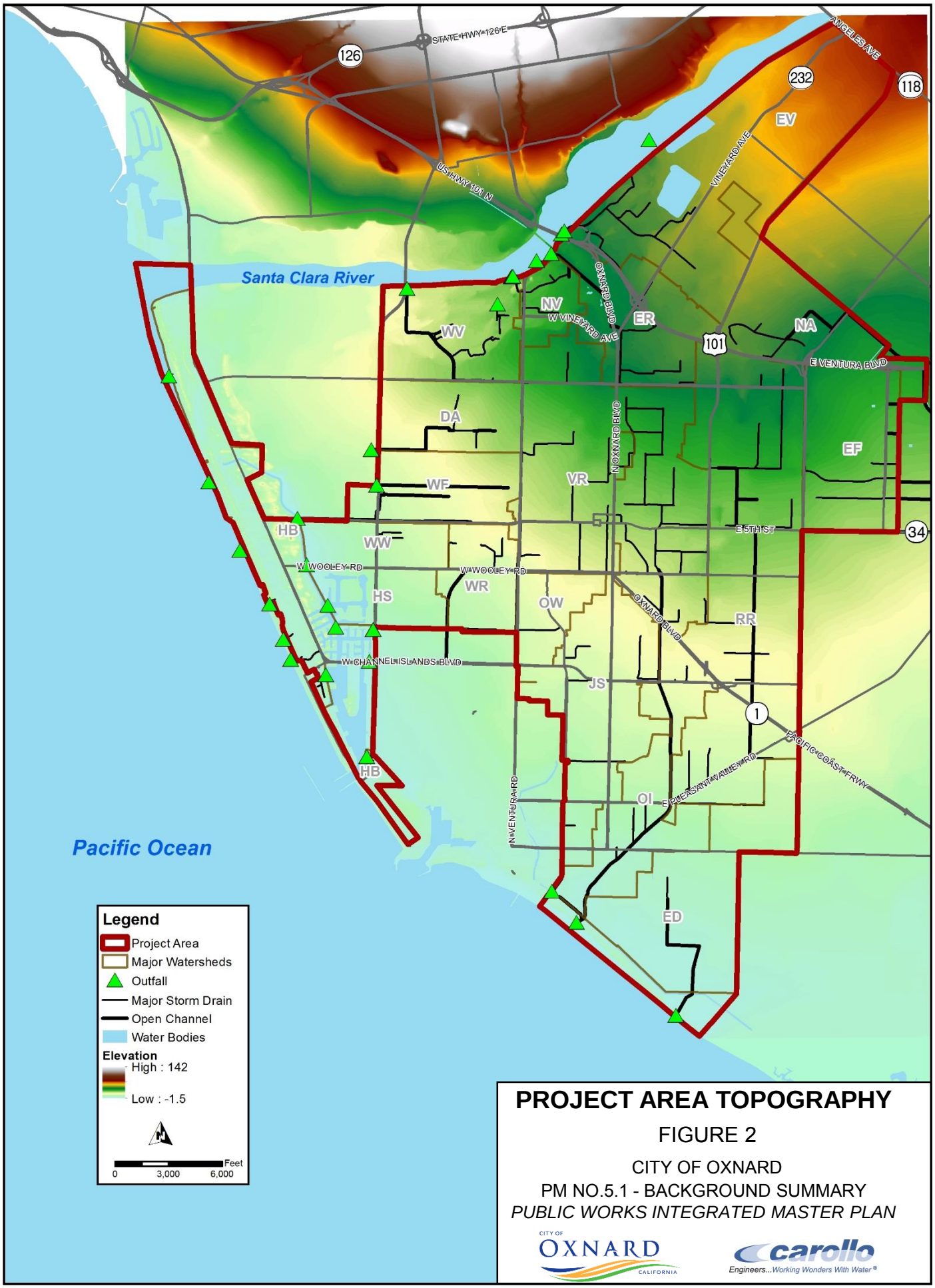
Land use information is an integral component in determining the amount of stormwater runoff generated within a City. The type of land use in an area will affect the pervious surface area, and therefore the volume and characteristics of the stormwater generation. The hydrologic response of a watershed is dependent on surface and subsurface characteristics of the drainage area.

The long service life of storm drainage pipes necessitates that runoff due to future development and changes in land use be accommodated. The type and density of land use is an important factor in runoff estimation because these directly affect surface runoff depending on the imperviousness of the land use type. Detailed existing and future land use were described in PM 1.3, *Population and Land Use Estimates.*

For the purpose of the stormwater system evaluation, land uses presented in PM 1.3 were grouped into 6 categories:

- Agriculture.
- Commercial.
- Industrial.
- Parks/Open Space/Resource Protection.
- Public.
- Residential.

Figure 3 illustrates the existing land use classifications within the project area and used for analysis in PM 5.2.



PROJECT AREA TOPOGRAPHY

FIGURE 2

CITY OF OXNARD

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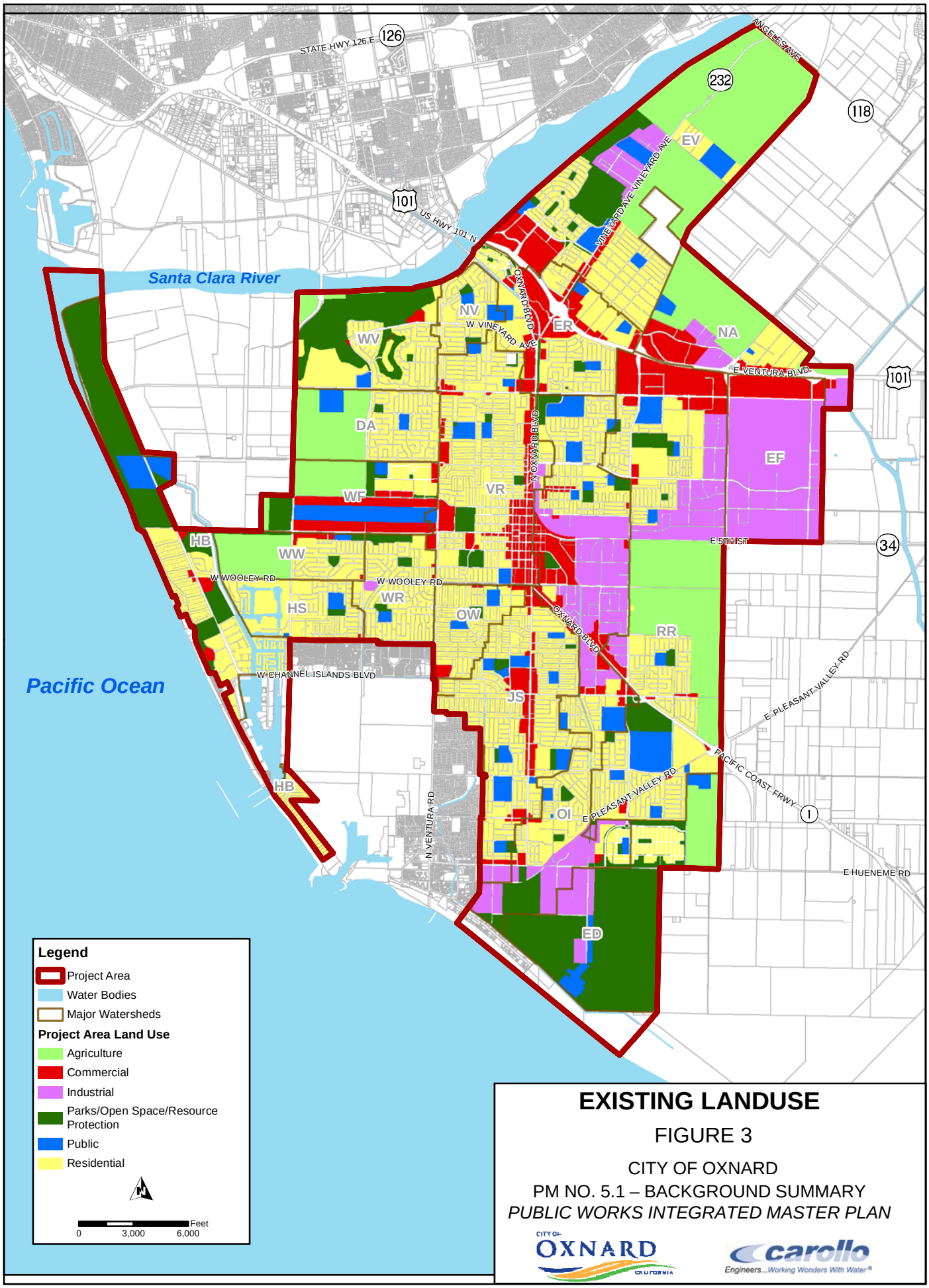

EXISTING LANDUSE

FIGURE 3

CITY OF OXNARD

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2.1.5 FEMA Flood Zones

The Federal Emergency Management Agency (FEMA) recently revised the Flood Insurance Rate Map (FIRM) for the City in 2010. The City resides in the VCWPD Flood Zone 2. The current DFIRM is illustrated on Figure 4. Four flood hazard areas are identified on this figure:

- Floodway.
- 0.2 percent (500-year) chance of annual flooding hazard.
- Area with minimal flooding.
- Area with reduced flooding due to levee.

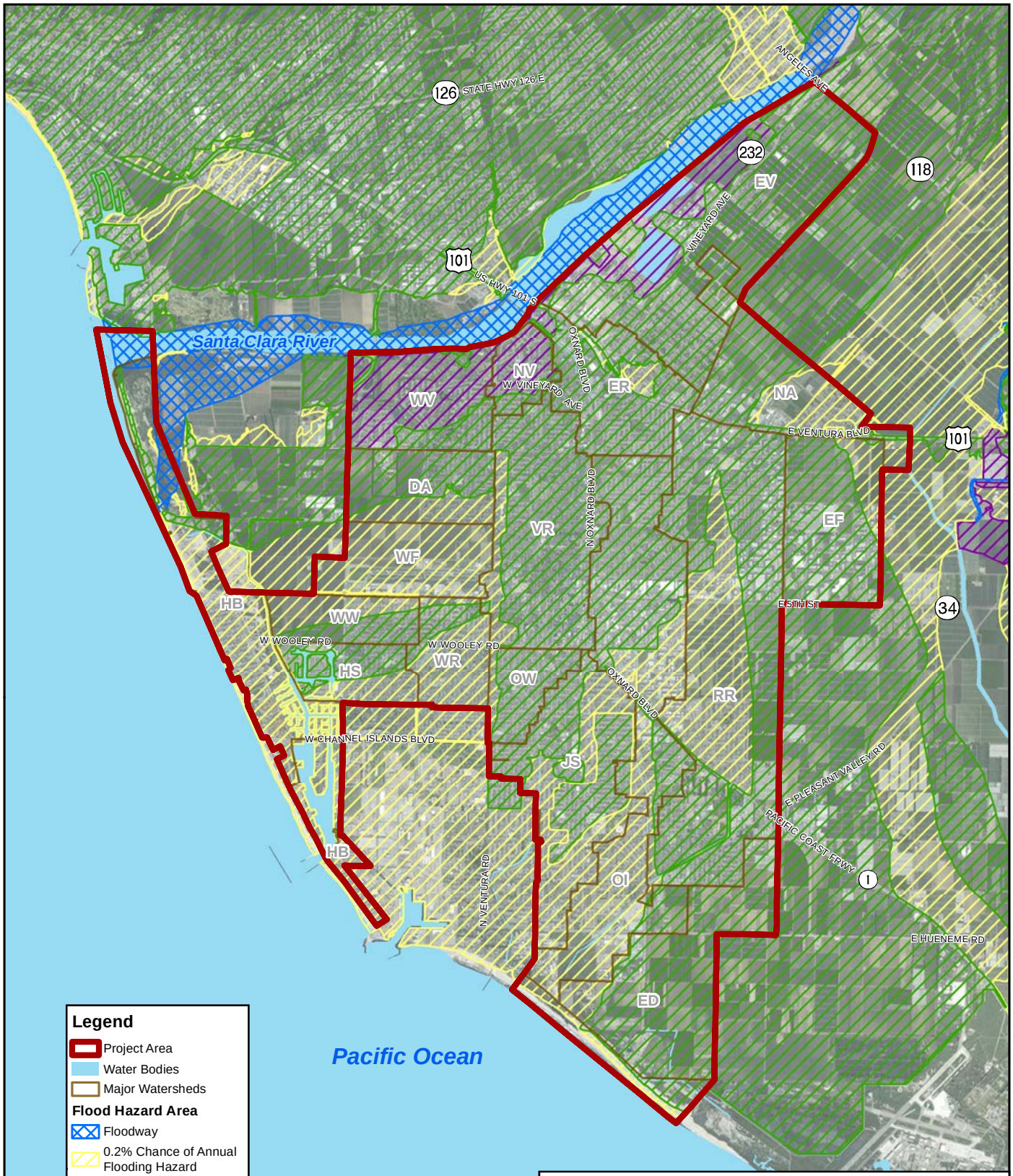
3.0 EXISTING DRAINAGE SYSTEM DESCRIPTION

3.1 System Overview

The City's existing storm drainage system collects and conveys stormwater runoff from developed and undeveloped areas throughout the City. The system includes circular pipelines ranging in size from 4 to 96 inches in diameter, rectangular pipes up to 264-inch by 96-inch in size, open channels, 5 stormwater pump stations, and associated force mains, and various valves and diversion structures throughout the system. Figure 5 shows the existing storm drainage system, including storm drain diameters, detention/retention ponds, pump stations, canals, and outfall locations. In total, there are approximately 162 miles of storm drains and open channels owned by the City, and 28 miles of open channels under the Ventura County jurisdiction.

3.2 Major Drainage Watersheds

The project area is divided into eighteen (18) major drainage watersheds. These boundaries were originally delineated in the 2003 Master Plan of Drainage. The City is familiar with these watersheds, therefore, their delineation has been maintained in this PWIMP for consistency. Figure 6 illustrates these basins, which are defined mainly by topography and major drainage facilities. Table 1 summarizes the areas of these major drainage basins. These major watersheds will be further divided for modeling purposes into smaller subcatchments.



FEMA FLOOD ZONES

FIGURE 4

CITY OF OXNARD

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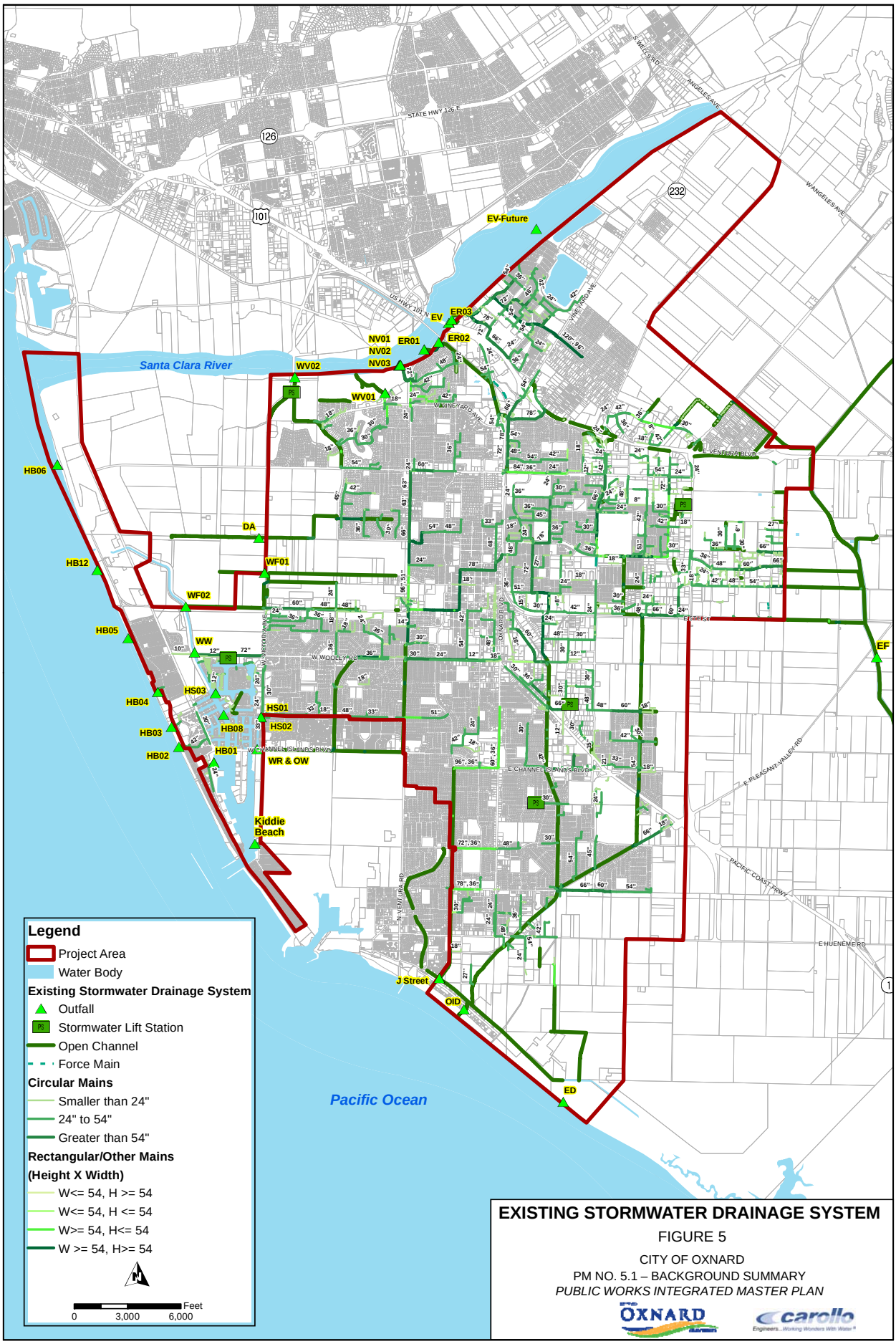


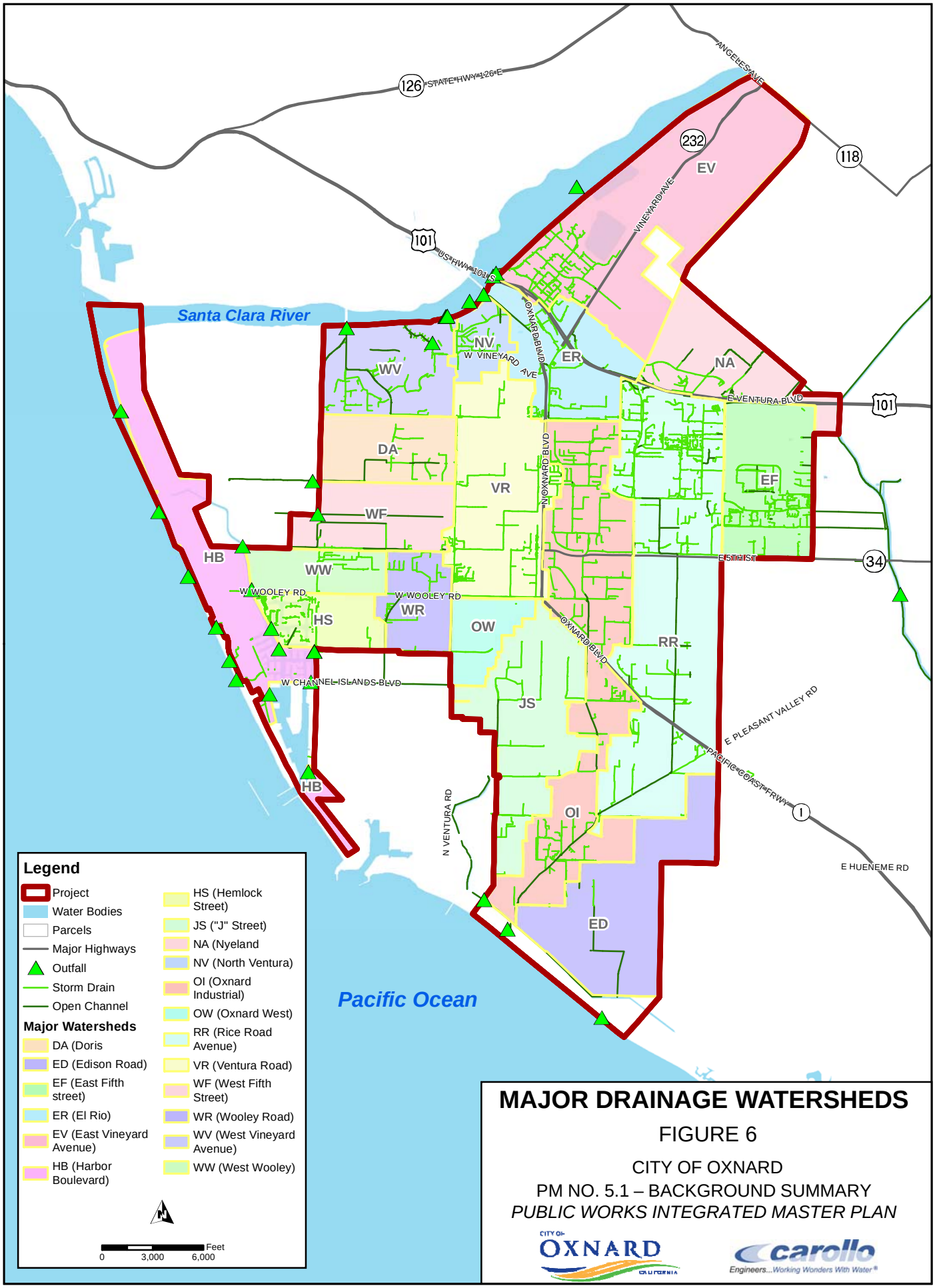
EXISTING STORMWATER DRAINAGE SYSTEM

FIGURE 5

CITY OF OXNARD

PM NO. 5.1 – BACKGROUND SUMMARY

PUBLIC WORKS INTEGRATED MASTER PLAN



MAJOR DRAINAGE WATERSHEDS

FIGURE 6

CITY OF OXNARD

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Table 1	Major Drainage Watersheds Public Works Integrated Master Plan City of Oxnard		
Basin ID	**Basin Description**	**Acres**	**Square Miles**
RR	Rice Road (Avenue)	3,323	5.19
EV	East Vineyard Avenue	2,744	4.29
OI	Oxnard Industrial	2,548	3.98
ED	Edison Road	1,544	2.41
JS	"J" Street	1,491	2.33
VR	Ventura Road	1,647	2.57
WV	West Vineyard Avenue	974	1.52
EF	East Fifth Street	1,119	1.75
ER	El Rio	1,025	1.60
NA	Nyeland Acres	975	1.52
DA	Doris Avenue	725	1.13
WF	West Fifth Street	802	1.25
HB	Harbor Boulevard	1,420	2.22
WR	Wooley Road	546	0.85
HS	Hemlock Street	508	0.79
WW	West Wooley	482	0.75
OW	Oxnard West	408	0.64
NV	North Ventura	308	0.48
Total Area		**22,586**	**35.29**

3.3 Existing Local Drainage Facilities

3.3.1 Description

The City owns and maintains approximately 162 miles of gravity pipes, open channels, and infrastructures. The majority, or approximately 72 percent, of the pipes are circular pipes, but there also are closed rectangular, or arch shaped gravity drains. Table 2 summarizes the size and length of each of these types of facilities as identified in the City's Geographic Information System (GIS).

Table 3 summarizes the material and age information on the pipelines owned by the City as included in the City's GIS. As shown in Table 3, the majority (approximately 63 percent) of the pipes were built using Reinforced Concrete Pipes (RCP).

Table 2	City Local Drainage Facility Type and Size Distribution Public Works Integrated Master Plan City of Oxnard		
Type	**Length, ft**	**Length, miles**	**Percent of Total, %**
Arch	16,930	3.21	1.98%
Circular	612,074	115.92	71.60%
Single Rectangular Box	63,324	11.99	2.36%
Double Rectangular Box	20,196	3.83	0.09%
Triple Rectangular Box	464	0.09	0.01%
Rectangular	109	0.02	7.41%
Elliptical	809	0.15	0.05%
Open Channel	116,112	21.99	13.58
Unknown	24,822	4.70	2.90%
Total	**854,841**	**161.90**	**100%**

Note:
(1) Source: City GIS Database, June 2014.

Table 3 City Local Drainage Facilities Age and Pipe Type (by length)
Public Works Integrated Master Plan
City of Oxnard

	Length, ft						
Material	**Unknown**	**<10 years**	**10-20 years**	**20-30 years**	**>30 years**	**Total**	**% of Total**
A	-	-	-	884	-	884	0.1%
ACMP	-	-	-	788	936	1,724	0.2%
ACP	-	-	180	3,056	6,098	9,333	1.1%
ADS	-	-	-	7,038	-	7,038	0.8%
APC	-	-	1,458	1,262	1,325	4,045	0.5%
CIPP	-	122	7,045	552	1,877	9,596	1.1%
CMP	-	-	2,384	2,963	8,625	13,973	1.6%
CMPA	-	-	1,638	3,045	8,877	13,560	1.6%
CONC	294	1,697	32,952	44,426	10,626	89,995	10.5%
CSP	-	125	172	865	55	1,216	0.1%
CSPA	-	-	-	1,498	-	1,498	0.2%
DIP	-	164	188	-	-	352	0.0%
HDPE	-	922	9,471	-	-	10,393	1.2%
HERCP	-	-	550	-	-	550	0.1%
PCC	-	0	1,157	1,853	558	3,567	0.4%
PVC	-	1,629	25,341	11,351	836	39,157	4.6%
RCB	-	179	20,231	46,066	36,730	103,206	12.1%
RCP	9,599	61,586	158,458	198,893	110,302	538,837	63.0%

Table 3	City Local Drainage Facilities Age and Pipe Type (by length) Public Works Integrated Master Plan City of Oxnard						
	Length, ft						
Material	**Unknown**	**<10 years**	**10-20 years**	**20-30 years**	**>30 years**	**Total**	**% of Total**
RCPA	-	-	-	514	-	514	0.1%
Steel	-	-	-	-	45	45	0.0%
Unknown	27	1,540	756	3,032	-	5,356	0.6%
Total	**9,920**	**67,964**	**261,980**	**328,086**	**186,891**	**854,841**	**100.0%**

Notes:
(1) A = Aluminum
(2) ACMP = Asphalted Corrugated Metal Pipe
(3) ACP = Asbestos Cement Pipe
(4) ADS = Advanced Drainage System
(5) APC = Asphalted Pipe Culvert
(6) CIPP = Cast in place Pipe
(7) CMP = Corrugated Metal Pipe
(8) CMPA = Corrugated Metal Pipe Arch
(9) CONC = Concrete
(10) CSP = Corrugated Steel Pipe
(11) CSPA = Corrugated Steel Pipe Arch
(12) DIP = Ductile Iron Pipe
(13) HDPE = High Density Poly Ethylene Pipe
(14) PCC = Portland Cement Concrete
(15) PVC = Poly Vinyl Chloride
(16) RCB = Reinforced Concrete Box
(17) RCP = Reinforced Concrete Pipe
(18) RCPA = Reinforced Concrete Pipe Arch

3.4 Ventura County Watershed Flood Control Facilities

The VCWPD, previously called the Ventura County Flood Control District, was formed in 1944 to perform drainage services not readily performed by local agencies. The City resides in the VCWPD Flood Zone 2.

3.4.1 Description

Drainage facilities in the study area that are partly or completely in the jurisdiction of VCWPD are included in Table 4. City drainage facilities discharge into these VCWPD channels, whenever possible. Major drainage channels within Oxnard include Doris Avenue Drain, Fifth Street Drain, Wooley Road Drain, Oxnard West Drain, Oxnard Industrial Drain, Rice Road Drain, "J" Street Drain, El Rio Drain, Camarillo Drain, and Nyeland Drain. The large majority of the Ventra County drainage system generally includes concrete pipe, reinforced concrete culverts, rectangular concrete channels, unlined channels, and manholes. VCWPD drainage facilities are shown on Figure 5 and Table 4.

Table 4 VCWPD Jurisdiction Channels Public Works Integrated Master Plan City of Oxnard		
Description	**Length (feet)**	**Length (miles)**
Beardsley Wash	19,333	3.66
Camarillo Drain	1,967	0.37
Doris Avenue Drain	9,291	1.76
El Rio Drain	4,257	0.81
West 5th Street Drain	5,013	0.95
"J" Street Drain	12,532	2.37
Nyeland Drain	7,141	1.35
Oxnard Industrial Drain	18,148	3.44
Oxnard West Drain	13,118	2.48
Revolon Slough	27,422	5.19
Rice Road Drain	20,214	3.83
Wooley Road Drain	5,185	0.98
Unknown Name	6,058	1.15
Notes: Source: City GIS Database, June 2014.		

3.4.2 Planned J-Street Drain Improvements

The purpose of the J Street Drain Improvement Project is to provide flood protection to the 100-year flood level for the area surrounding J Street Drain. Protection from a 100-year flood is the standard set by FEMA under the National Flood Insurance Program (NFIP). Construction of the proposed project would be the first major step of a proactive effort to protect properties currently threatened with flooding from J Street Drain overflow (VCWPD EIR, 2012).

VCWPD channels were initially designed to the Q50 design event. However, due to further development in the City, as well as other factors, these channels may not currently be able to convey this event. VCWPD is in the process of increasing the capacity of the J Street Drain to relieve flooding concerns in the south of the City. This drain was analyzed in 2005 and found to have a capacity between the Q5 and Q10 design hydrologic events. This is far lower than the initial planned capacity of Q50. The improvements to this drain include deepening the existing open channel to a rectangular configuration to convey the Q100 event. In 2012, a final EIR was completed for the improvement project (VCWPD EIR, 2012).

Other than the planned J Street improvements, it is unknown what modifications VCWPD has completed in the study area since the 2003 Master Plan. However, due to the significantly lower existing capacity found in the J Street Drain, and the implications this could have on flooding in the City, a further investigation into the existing capacity of the other VCWPD channels would be prudent.

4.0 REGULATIONS

4.1 Current

4.1.1 Stormwater Quality

The State Water Resources Control Board (SWRCB), in cooperation with the federal Environmental Protection Agency (EPA) has issued stormwater permits under the National Pollutant Discharge Elimination System (NPDES) program. The NPDES program requires that municipalities and counties with certain population sizes acquire municipal separate stormwater system (MS4) permits for discharges of stormwater from public stormwater systems, and develop a program to reduce stormwater pollution to the "maximum extent practicable."

The City is a co-permittee, along with nine other cities and VCWPD, for the MS4 NPDES permit issued by the California Regional Water Quality Control Board (RWQCB). The current MS4 permit was issued on July 8, 2010 (Permit CAS004002, Order No. R4-2010-0108). Additional information on the stormwater permit can be found at http://www.vcstormwater.org/documents/reference/ventcopermit.pdf. Pursuant to the permit, VCWPD has developed a County-wide Stormwater Quality Management Plan that includes management measures/best management practices (BMPs) associated with the following program elements, as required by the permit:

- Program management.
- Programs for residents.
- Programs for industrial/commercial businesses.
- Programs for land development.
- Programs for construction sites.
- Programs for Co-permittee facility maintenance.
- Programs for illicit discharge control.

Ventura County, through the use of a stormwater ordinance, also regulates stormwater quality in the County. The Ventura County Stormwater Ordinance (Ordinance No. 4142) prohibits the discharge of non- stormwater discharges into County stormwater facilities and seeks to reduce pollutants in stormwater to the maximum extent practicable. This ordinance also requires owners to comply with the State construction general stormwater permit prior

to being issued a grading permit for construction activity. The construction general stormwater permit will require the preparation of a Stormwater Pollution Prevention Plan (SWPPP). Further information on stormwater quality can be found in Section 5.0, below, in this PM.

Each co-permittee is responsible for adoption and enforcement of stormwater pollution prevention ordinances, implementation of self-monitoring programs and BMPs, and conducting applicable inspections. The City of Oxnard has adopted a Stormwater Quality Ordinance (Appendix A). The City also has guidelines that govern specific development concerns for storm sewers and drainage and retains the responsibility for the following:

- Maintain storm drain system with channel capacities less than 500 cfs.
- Collect water quality data.
- Act as floodplain manager for areas inside City boundaries.

4.1.2 Stormwater Quantity

The FEMA administers the National Flood Insurance Program (NFIP). In 1985, FEMA completed Flood Insurance Rate Maps (FIRMs) depicting flood zones that have a one percent annual chance of flooding (at that time known as the 100-year flood zone). These maps have since been digitized (DFIRMs) and for this area were issued in 2010. Property owners within Flood Zone A are federally mandated to purchase flood insurance.

The current DFIRMs are based on pre-1984 hydrologic data and hydraulic analyses conducted over 25 years ago (FEMA Flood Insurance Study 06111CV001A for Ventura County, California and Incorporated Areas, Volume 1 of 3, January 20, 2010). Since that time, Ventura County has experienced several years of record rainfall, including 1995, 1998, and 2005 (VCWPD, 2009). The DFIRMs are therefore based on data that do not reflect the trend of increasing rainfall since the 1980s.

Therefore, communities must adopt a floodplain management ordinance addressing construction and habitation in flood zones. In California, the SWRCB provides and encourages communities to adapt the California Model Floodplain Management Ordinance to deal with these DFIRM deficiencies. Ventura County adopted their Flood Plain Management Ordinance (Ordinance 3741) in 1985. Several revisions have been made since then with the latest ordinance adopted in 1990 (Ordinance 3954). The VCWPD implements this ordinance to ensure compliance with the NFIP. The ordinance addresses the risks of development within the floodplain and includes a list of prohibited discharges, exemption procedures, and requirements for construction and permitting. Further discussions of how the FEMA flood zones impact the City are included in PM 5.2, *Stormwater System – Infrastructure Modeling and Alternatives*.

The City's 2030 General Plan also contains policies applicable to stormwater management. These stormwater policies are summarized as follows:

- Development must mitigate flooding problems identified by the NFIP.
- The City shall continue to provide information to FEMA to ensure the FIRMs which cover Oxnard are updated periodically to address changing flood conditions brought about by urban development.

4.1.3 TMDLs

There are a number of water bodies with TMDLs within Ventura County. The City of Oxnard is a participating party in the Santa Clara River Bacteria TMDL as well as implementing the Harbor Beaches TMDL on its own. A brief status update on the TMDLs follows. TMDL documents and additional information can be found at http://www.waterboards.ca.gov/water_issues/programs/tmdl/.

Santa Clara River Bacteria TMDL went into effect in March 2012. The TMDL Implementation Plan is currently in development through an Agreement among County of Ventura and the cities of Fillmore, Oxnard, Santa Paula, and Ventura (VCWPD, 2015). In addition, the same parties have completed development of the receiving water monitoring plan.

The Harbor Beaches TMDL went into effect in December 2008, and dry and wet weather implementation plans were submitted in 2009 and 2010. The City has implemented and continues to implement BMPs aimed at reducing sources and transport of bacteria into the receiving waters at Kiddie and Hobie Beaches.

4.2 Future (Potential)

In January 2015, the VCWPD submitted their report of waste discharge (ROWD), which serves as the application of renewal of the waste discharge requirements set forth in the current order (Order No. R4-2010-0108). While the provisions of the next permit are currently unknown, the VCWPD is anticipating that their next permit will be based on the MS4 Permit for Los Angeles County, Order R4-2012-0175 (LA Permit) (VCWPD, January 2015). The VCWPD ROWD includes proposed recommendations for changing or modifying specific provisions of the Los Angeles County Permit (VCWPD, 2015) and the justification for these recommendations for the purpose of the VCWPD permit renewal process.

On the statewide level, CASQA (2015) outlined their strategic visions and goals for stormwater management. CASQA (2015) outlines a comprehensive plan for stormwater that will achieve the goals of the clean water act. With respect to future regulations, CASQA identified the need for stormwater to be considered a non-point source rather than a point source, and the need for regulations related to stormwater capture and use as a resource.

At the federal level, there was relatively recent EPA action on developing new federal stormwater regulations. However, this effort has recently been abandoned based on the conclusion that a broad regulatory program may not be the best approach for regulating stormwater. The EPA has not yet developed approaches and programs in lieu of federal regulations.

5.0 STORMWATER QUALITY

This section summarizes what is known of Oxnard's stormwater quality, both during wet weather and dry-weather conditions. Water quality data comes from the following two sources:

- Ventura County Watershed Protection District (VCWPD): Data is collected during both dry and wet weather events at two outfalls in Oxnard. Data has been collected in these outfalls since 2010.
- CH2M Hill Study "Feasibility of Using the Oxnard Advanced Water Purification Facility to Treat Stormwater from the J Street and Oxnard Industrial Drains": Water quality data was collected at multiple locations in the J Street Drain and Oxnard Industrial Drain as a part of this study. Data was collected in late 2009 to early 2010 and again in March 2013.

The VCWPD conducts water quality monitoring for the Ventura National Pollution Discharge Elimination System (NPDES) MS4 permit and for the Santa Clara River Bacteria TMDL. There are two major outfall sampling locations in Oxnard where dry and wet weather flows are regularly recorded. The first, the MO-HUE outfall, is located in the southern portion of Oxnard and water quality samples collected from this outfall measures certain pollutants in the Hueneme Drain, which flows to the Ocean. The second, the MO-OXN outfall, is located in the northern portion of Oxnard and water quality samples collected from this outfall measures certain pollutants in the El Rio Drain, which flows to the Santa Clara River. Both of these sampling locations are shown in Figure 7. Recorded water quality data from 2010 to 2013 for these two outfalls are summarized in Tables 5 and 6 for wet and dry weather, respectively.

STORMWATER SAMPLING LOCATIONS

FIGURE 7

CITY OF OXNARD

PM NO. 5.1 – BACKGROUND SUMMARY

PUBLIC WORKS INTEGRATED MASTER PLAN

CITY OF OXNARD CALIFORNIA

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Table 5 Wet Weather Water Quality Data from VCWPD (2010-2013)[1]
Public Works Integrated Master Plan
City of Oxnard

Constituent	Units	MO-HUE	MO-OXN
Alkalinity as CaCO3	mg/L	185	46
Ammonia as N	mg/L	0.62	0.85
BOD	mg/L	10	17
Calcium	mg/L	131	19
Chloride	mg/L	1,394	14
COD	mg/L	57	145
Cyanide[2]	mg/L	0.0027	0.0027
DO	%	32	48
E. Coli	MPN/100 mL	12,529	8,943
Fecal Coliform	MPN/100 mL	12,711	10,911
Fluoride	mg/L	0.38	0.21
Hardness as CaCO3	mg/L	816	70
Magnesium	mg/L	120	5
MBAS	mg/L	0.17	0.58
Mercury	ng/L	19	54
Oil and Grease	mg/L	1.5	2.4
pH	pH Units	7.7	7.4
Phenolics	mg/L	0.038	0.035
Phosphorus as P	mg/L	0.28	0.48
Salinity	mg/L	2,613	191
TKN	mg/L	1.9	3.4
Total Coliform	MPN/100 mL	291,338	436,180
Total Dissolved Solids	mg/L	2,775	134
Total Organic Carbon	mg/L	10	22
Total Suspended Solids	mg/L	52	208
TPH[2]	mg/L	1.9	1.9
Turbidity	NTU	18	40
Volatile Suspended Solids	mg/L	15	62

Notes:
(1) Wet weather flows are recorded for three storms annually for MS4 compliance.
(2) All data recorded was below detection limit.

Table 6 Dry Weather Water Quality Data from VCWPD (2010-2013)[1]
Public Works Integrated Master Plan
City of Oxnard

Constituent	Units	MO-HUE	MO-OXN
Alkalinity as CaCO3	mg/L	102	233
Ammonia as N	mg/L	0.16	0.44
BOD	mg/L	3.7	3.7
Calcium	mg/L	72	132
Chloride	mg/L	117	1,808
COD	mg/L	58	52
Cyanide[2]	mg/L	0.0027	0.0027
Discharge	cfs	1.2	1.2
DO	%	7.8	7.0
E. Coli	MPN/100mL	1,915	1,566
Fecal Coliform	MPN/100mL	156	953
Fluoride	mg/L	1.1	0.8
Hardness as CaCO3	mg/L	316	769
Magnesium	mg/L	32	107
MBAS	mg/L	0.19	0.19
Mercury	ng/L	-	-
Nitrate as N	mg/L	-	0.52
Oil and Grease	mg/L	-	1.3
pH	pH Units	8.9	8.5
Phenolics	mg/L	0.06	0.05
Phosphorus as P	mg/L	0.12	0.18
Salinity	mg/L	350	2,050
TKN	mg/L	1.5	1.3
Total Coliform	MPN/100mL	55,235	60,863
Total Dissolved Solids	mg/L	680	3,865
Total Organic Carbon	mg/L	14.0	10.6
Total Suspended Solids	mg/L	61	38
TPH[2]	mg/L	1.9	1.9
Turbidity	NTU	9.5	11.0
Volatile Suspended Solids	mg/L	32.0	18.5

Notes:
(1) Dry weather flows are recorded once annually for MS4 compliance. Data is only recorded when there is flow in the channel. Data below detection limit was recorded at detection limit.
(2) All data recorded was below detection limit.

In the CH2M Hill study mentioned above, additional water quality parameters were tested daily from March 18 through March 24, 2013 for two outfalls in the southern part of Oxnard - namely the J Street Drain and the Oxnard Industrial Drain. This study also recorded water quality data that was collected in late 2009 and early 2010 for the same stormwater channels. Tables 7 and 8 tabulate this data. All recorded data from this study is dry weather stormwater channel flows.

Table 7 Dry Weather Water Quality Data from Oxnard Industrial Drain (CH2M Hill)
Public Works Integrated Master Plan
City of Oxnard

Constituent	Units	IOD-A (March 2013)	IOD-B (March 2013)	OID 6 (End of 2009 - Beginning of 2010)	OID 7 (End of 2009 - Beginning of 2010)
Oil and Grease	mg/L	<5	<5	NS	NS
Turbidity	NTU	5.8	0.7	NS	NS
Mercury	mg/L	0.0001	0.0001	0.0001	0.00012
Boron	mg/L	1.5	1.5	NS	NS
Calcium	mg/L	351.4	481.4	314,5	383
Iron	mg/L	1.3	0.09	0.27	0.28
Dissolved Iron	mg/L	NS	NS	0.09	0.1
Lithium	mg/L	0.06	0.08	NS	NS
Magnesium	mg/L	115.7	101.4	169	146
Potassium	mg/L	9.7	10.5	28.3	18.3
Silicon	mg/L	5.2	13.6	NS	NS
Sodium	mg/L	275.7	185.7	710.5	492.5
Strontium	mg/L	2.9	4.1	NS	NS
Aluminum	ug/L	443.3	29.7	83.9	50.4
Antimony	ug/L	0.41	0.49	0.43	0.34
Arsenic	ug/L	1.9	1.6	6.7	5.6
Barium	ug/L	41.6	44.9	39.4	34
Beryllium	ug/L	0.12	0.14	0.66	0.66
Cadmium	ug/L	0.56	0.21	0.5	0.27
Chromium	ug/L	2.3	2	10	10
Cobalt	ug/L	1	0.8	1	1
Copper	ug/L	9.2	3.5	3.6	4
Lead	ug/L	2.7	0.3	0.3	0.3
Manganese	ug/L	468.6	53.9	262.5	213
Molybdenum	ug/L	35	52.4	NS	NS
Nickel	ug/L	6.5	13.4	9.9	10.4
Selenium	ug/L	5.8	4	19.1	18.2

Table 7 Dry Weather Water Quality Data from Oxnard Industrial Drain (CH2M Hill)
Public Works Integrated Master Plan
City of Oxnard

Constituent	Units	IOD-A (March 2013)	IOD-B (March 2013)	OID 6 (End of 2009 - Beginning of 2010)	OID 7 (End of 2009 - Beginning of 2010)
Silver	ug/L	0.11	0.1	0.36	0.36
Thallium	ug/L	>.2	<.2	0.53	0.53
Vanadium	ug/L	48.1	2.5	2	2
Zinc	ug/L	10,800	4	34	34.1
TDS	mg/L	NS	2,740	3,750	3,150
pH	Units	NS	NS	8.1	8.2
Bicarbonate Alk	mg/L	NS	NS	255	250
Chloride	mg/L	NS	NS	1,060	610
Sulfate	mg/L	NS	NS	1,225	1,300
Bromide	mg/L	NS	NS	6.9	6.3
Fluoride	mg/L	NS	NS	0.68	0.64
NH3-N	mg/L	NS	NS	0.09	0.1
NO3-N	mg/L	NS	NS	5	5
TOC	mg/L	NS	NS	5.4	6.4

Notes:
NS = Not Sampled

Table 8 Dry Weather Water Quality Data from J-Street Drain (CH2M Hill)
Public Works Integrated Master Plan
City of Oxnard

Constituent	Units	J St A (March 2013)	J St B (March 2013)	J St 1 (End of 2009 - Beginning of 2010)
Oil and grease	mg/L	<5	<5	NS
Turbidity	NTU	2.61	3.56	NS
Mercury	mg/L	0.04	0.05	0.1
Boron	mg/L	0.59	0.77	NS
Calcium	mg/L	97.86	135.29	243
Iron	mg/L	0.32	0.15	0.3
Dissolved Iron	mg/L	NS	NS	0.4
Lithium	mg/L	0.04	0.04	NS
Magnesium	mg/L	40.29	54.57	353.5
Potassium	mg/L	8.91	11.51	110.4
Silicon	mg/L	7.03	5.94	NS

Table 8 Dry Weather Water Quality Data from J-Street Drain (CH2M Hill)
Public Works Integrated Master Plan
City of Oxnard

Constituent	Units	J St A (March 2013)	J St B (March 2013)	J St 1 (End of 2009 - Beginning of 2010)
Sodium	mg/L	116.4	143.9	2,750
Strontium	mg/L	0.97	1.35	NS
Aluminum	ug/L	112	38.7	85
Antimony	ug/L	0.82	1.35	0.4
Arsenic	ug/L	1.38	1.47	8.4
Barium	ug/L	46.6	58	46.1
Beryllium	ug/L	<0.1	0.25	1.6
Cadmium	ug/L	0.23	0.26	0.8
Chromium	ug/L	1	0.92	10
Cobalt	ug/L	0.35	0.44	0.6
Copper	ug/L	8.37	12.7	2.8
Lead	ug/L	0.74	0.96	0.2
Manganese	ug/L	48.5	34.1	201
Molybdenum	ug/L	11.5	18.7	NS
Nickel	ug/L	2.81	4.77	5.5
Selenium	ug/L	2.87	3.19	19.7
Silver	ug/L	0.12	0.13	0.5
Thallium	ug/L	<0.2	0.28	1.5
Vanadium	ug/L	2.56	1.99	1.2
Zinc	ug/L	15	20.4	34.9
TDS	mg/L	9,100	2,280	10,150
pH	Units	NS	NS	8.1
Bicarbonate Alk	mg/L	NS	NS	255
Chloride	mg/L	NS	NS	5,400
Sulfate	mg/L	NS	NS	1,155
Bromide	mg/L	NS	NS	5.3
Fluoride	mg/L	NS	NS	0.5
NH3-N	mg/L	NS	NS	0.1
NO3-N	mg/L	NS	NS	0.6
TOC	mg/L	NS	NS	4

Notes:
NS = Not Sampled

6.0 CLIMATE CHANGE

6.1 Annual Rainfall

6.1.1 Current Trends

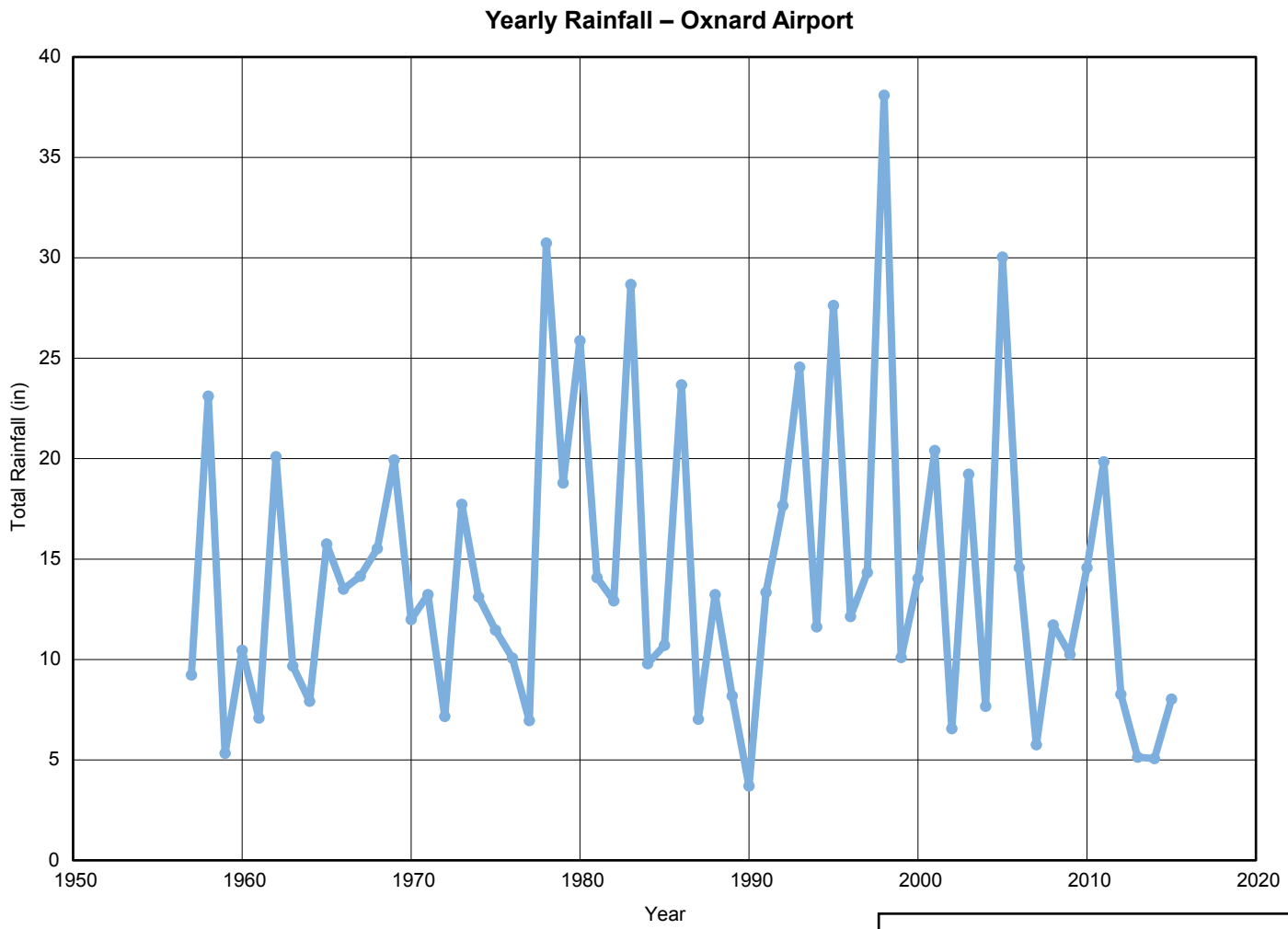
The change in trends of total annual rainfall across the U.S. is already measurable. The results of a recent study performed using two data sets of global rainfall from 1925 through 1999 showed increased annual precipitation in temperate regions of the Northern Hemisphere (Zhang *et al.*, 2007). Since about 1970, total annual precipitation across the U.S. has tended to remain above the twentieth-century mean and averaged about 5 percent more than the previous 70 years (Karl *et al.*, 1996). More importantly, in the western mountains of the U.S., approximately 74 percent of weather stations showed an increase in the fraction of annual precipitation falling as rain rather than snow from 1949 through 2004 (Knowles *et al.*, 2006).

Figure 8 shows the total annual precipitation recorded at the City of Oxnard. The data show an increase in the spread of data points - that is the minimum and maximum levels of total annual precipitation have decreased and increased, respectively, over time. Though it appears that there is a slightly increasing trend for total annual precipitation, it is not statistically significant at this point.

6.1.2 Future Projections

To examine the potential future impacts of global warming, scientists have developed computer models (general circulation and regional climate models) simulating climate. While projected temperature changes are broadly consistent across most modeling efforts, projected changes in total annual precipitation have varied widely across models and emissions scenarios (Kiparsky and Gleick 2003, Madsen and Figdor 2007). In addition, as models are run at finer levels of geographic resolution (e.g., regional or metropolitan level) the accuracy decreases.

California's precipitation patterns vary in different parts of the region. General circulation models (GCMs) do not reproduce detailed precipitation patterns accurately. The usefulness of these models is judged based on their ability to reproduce recent changes. Precipitation relies on meteorological conditions that occur at scales smaller than GCMs currently resolve. In recent years, they have become increasingly accurate and have been applied to more regions of the country. However, most regional studies performed in California have focused on Northern California, and there is still no consensus on projections for total annual precipitation for the Oxnard area. Therefore, it is recommended that long term planning be based on current trends of total annual precipitation analyzed on a monthly basis. Monthly trending would provide more specific information on general trends observed elsewhere of increasing rainfall as snowfall decreases, and the timing of precipitation events occurring earlier in the water year.



HISTORIC ANNUAL PRECIPITATION AT THE OXNARD AIRPORT

FIGURE 8

CITY OF OXNARD

PM NO. 5.1 – BACKGROUND SUMMARY

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6.2 Rainfall Intensity and Distribution

Although projections for total annual precipitation vary significantly, most regional climate model results in the U.S. suggest that the extreme daily precipitation rate will increase relative to changes in the annual mean precipitation rate. During times of high intensity precipitation, runoff rates increase rapidly resulting in less groundwater recharge, decreased surface water quality, and increased reservoir inflow. It is important to consider the potential impact global warming could have on the City's precipitation characteristics (intensity and distribution throughout the year) in order to anticipate necessary modifications to the operational management of the surface water supplies and storage capabilities.

6.2.1 Current Trends

The Environment California Research and Policy Center (ECRPC) released a study in the summer of 2012 evaluating trends in the frequency of extreme levels of precipitation (rainfall or snowfall) across the contiguous U.S. (as well as finer levels of geography). The analysis considered daily precipitation records obtained from the National Climatic Data Center (NCDC) spanning from 1948 through 2011 at more than 3,700 weather stations in 48 states. Patterns in the timing of heavy precipitation relative to the local climate at each weather station were examined (Madsen and Willcox, 2012). The results were found to be consistent with many studies performed previously, including a study completed in 1999 by researchers at the Illinois State Water Survey and the NCDC examining the period from 1931 to 1996 (Kunkel *et al.*, 1999).

The 2012 ECRPC study focused on storms with extreme 24-hour precipitation totals that are defined relative to the local climate, selecting those with an average recurrence interval of 1 year or more. With 95 percent confidence, records show that there is an average increase of 30 percent in frequency of extreme precipitation events across the continental U.S. since 1948. The largest increase is recorded in the New England area, with extreme events happening 85 percent more often than in 1948. In addition, the biggest storms in 2011 produced about 10 percent more precipitation than the biggest storms in 1948 (Madsen and Willcox, 2012).

At the state level, records show a 13 percent increase in frequency of extreme precipitation events in California since 1948 on average – with southern California showing an increasing trend and northern California showing a decreasing trend (Madsen and Willcox, 2012). Detection of statistically significant trends in the frequency of extreme precipitation events becomes more difficult at the metropolitan level. However, in the 2007 version of the study, 55 of the 248 metropolitan areas (as defined by the U.S. Census Bureau) showed a statistically significant increase in the frequency of extreme precipitation events. A review of extreme precipitation for an area including Santa Barbara, Santa Maria and Lompoc showed a 69 percent average increase in frequency of extreme precipitation events since 1948 and an area including Los Angeles, Riverside, and Orange County showed a

58 percent average increase in frequency of extreme precipitation events since 1948 (Madsen and Figdor, 2007).

6.2.2 Future Projections

Further changes in precipitation patterns are projected to occur due to climate change. Both general circulation and regional climate models project the intensity of precipitation is likely to increase around the world, with the most significant increases occurring in the middle to high latitudes (Meehl, 2005). Global simulations show the percentage increase in extreme precipitation is greater than the percentage increase in mean rainfall.

Kharin and Zwiers project the probability of 24-hour precipitation events considered to be extreme will increase by a factor of about 2 by the period of 2046 to 2065 and by a factor of 3 by the end of the 21st century relative to those that occurred during the period of 1981 to 2000. This means that return periods of 10, 20, 50, and 100 years for 24-hour precipitation events will be reduced by a factor of 2 or more (meaning they will occur two or more times as often) by the year 2100 due to climate change (Kharin and Zwiers 2005, Kharin *et al.,* 2007). In effect, these changes will shift design level rainfall. For example, a current 10-year event will become a 5-year event, a 100-year event will become a 50-year event, and so on. This implies that municipalities will have to plan on more frequent and intense flooding events in the future unless new and improved measures are taken.

Projected changes in regions of California are less accurate and do not cover the area of Oxnard. They are mainly associated with changes in moisture flowing in from the Pacific Ocean and the increase in elevation of freezing levels during the winter. By the year 2100, northern California is projected to experience an increase in both low and high intensity events (Dettinger, 2005).

Although there is a lack of model simulation results relevant to projections for the Central Coast, including the area in and around the City, it is recommended that long term planning be based on the current trends of an increase in frequency and change in distribution within the year of extreme levels of precipitation, as opposed to increases or decreases in average annual precipitation.

APPENDIX A - STORMWATER QUALITY ORDINANCE

AGENDA ITEM NO. 5-6

CITY COUNCIL OF THE CITY OF OXNARD

ORDINANCE NO. 2876

ORDINANCE OF THE CITY OF OXNARD, CALIFORNIA, AMENDING ARTICLE XII OF CHAPTER 22 (WATER) OF THE CITY CODE PERTAINING TO STORM WATER QUALITY MANAGEMENT

WHEREAS, the Federal Water Pollution Control Act (Clean Water Act or CWA) (33 USC §§ 1251 et seq.) as implemented by the United States Environmental Protection Agency (EPA) regulations require the adoption of plans and programs for storm water quality management meeting specified criteria; and

WHEREAS, in order to comply with and implement the requirements of the CWA and state clean water laws, the Ventura County Watershed Protection District, County of Ventura and the cities of Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, San Buenaventura, Santa Paula, Simi Valley and Thousand Oaks (collectively referred to as co-permittees) formed the Ventura Countywide Storm Water Quality Management Program and submitted an application to be covered by a single National Pollutant Discharge Elimination System (NPDES) permit for publicly owned municipal separate storm sewers (MS4s) in Ventura County under their respective jurisdictions; and

WHEREAS, the California Regional Water Quality Control Board, Los Angeles Region, has issued various Orders and NPDES permits to the co-permittees regulating storm water and non-storm water discharges from the MS4s within the Ventura County Watershed Protection District, and the County of Ventura and the incorporated cities therein. The current order and permit are Order R4-2010-0108 and Permit No. CAS004002 issued on July 8, 2010 (MS4 Permit); and

WHEREAS, the City has adopted Article XII of Chapter 22 (Storm Water Quality Management) of the City Code in order to comply with the requirements of applicable federal and state water quality laws and to provide an acceptable program for the conservation of water resources within the City, as well as to protect the health, safety and general welfare of its citizens; and

WHEREAS, the City Council desires to amend Article XII to conform to the current MS4 Permit and, where applicable or appropriate, attempt to recover some of the City's costs associated with compliance with the MS4 Permit; and

WHEREAS, the adoption of this ordinance in order to implement the pollutant control measures described in the MS4 Permit in furtherance of these purposes is exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to Sections 15305 and 15307-15309 of the State CEQA Guidelines.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF OXNARD DOES ORDAIN AS FOLLOWS:

Part 1. Article XII of Chapter 22 of the Oxnard City Code is amended to read as follows:

"ARTICLE XII. STORM WATER QUALITY MANAGEMENT

SEC. 22-215. PURPOSE AND INTENT.

This article implements the Federal Water Pollution Control Act (the "Clean Water Act" or "CWA"), 33 U.S.C. Section 1251 et seq., as amended, and Division 7 of the California Water Code by prohibiting the discharge of any pollutant to navigable waters of the United States from a point source unless the discharge is authorized by a permit issued pursuant to the National Pollutant Discharge Elimination System ("NPDES") required by CWA Section 402 (33 U.S.C. Section 1342), and by prohibiting non-storm water discharges into the storm drain system.

SEC. 22-216. DEFINITIONS.

For the purposes of this article, the following words and phrases will have the meanings set forth this section. Words and phrases not defined in this section or elsewhere in this article will have the meanings set forth in the regulations implementing the NPDES, Clean Water Act Section 402, and Division 7 of the California Water Code, as they may be amended from time to time, and if not defined in such laws, then the applicable definitions in the municipal storm water permit will apply.

(A) BASIN PLAN – The Water Quality Control Plan for Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the regional board on June 13, 1994, as amended from time to time.

(B) BEST MANAGEMENT PRACTICES (BMPs) – Measures, practices, and procedures to prevent or reduce, to the maximum extent that is technologically and economically feasible, the discharge of pollutants to the city's storm drain system and receiving waters. A BMP may consist of a structural BMP, source control BMP, treatment control BMP, or any other BMP promulgated by the California Stormwater Quality Association (CASQA), California Department of Transportation (Caltrans), or approved by the director for the purpose of controlling or eliminating storm water pollution.

(C) CHANNEL – An open conduit either naturally or artificially created that periodically or continuously contains moving water, or which forms a connecting link between two waterbodies.

(D) CONSTRUCTION ACTIVITY – Any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that results in a land disturbance. Construction activity does not include emergency construction activities required to immediately protect public health and safety or routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, maintain original line and grade, hydraulic capacity, or original purpose of the facility.

(E) CONTAMINATION – An impairment of the quality of waters of the state by waste to a degree that creates a hazard to the public health through poisoning or spread of disease. Contamination also includes any equivalent effect resulting from the disposal of waste, whether or not waters of the state are affected.

(F) CRITICAL SOURCE FACILITIES – Those commercial or industrial facilities or businesses that have a potential to contribute pollutants to storm water runoff and are listed in Part 4.D and Attachment D of the municipal storm water permit.

(G) DECHLORINATED/DEBROMINATED SWIMMING POOL DISCHARGE – Any swimming pool discharge with a residual chlorine or bromine level of 0.1mg/L or less; and that does not contain any detergents, wastes, algaecides, or cyanuric acid in excess of 50 ppm, or any other chemicals including salts from pools commonly referred to as "salt water pools". The term does not include swimming pool filter backwash or swimming pool water containing bacteria.

(H) DEVELOPMENT – Any construction, rehabilitation, redevelopment or reconstruction for which either a discretionary land use approval or a permit is required, for any public or private residential (whether single-family, multi-unit or planned unit development); industrial; commercial; retail; institutional; and other nonresidential projects, including public agency projects; or mass grading for future construction.

(I) DIRECTOR – The public works director or designee.

(J) DISCHARGE – When used without qualification, the discharge of a pollutant.

(K) DISCHARGE OF A POLLUTANT – Any addition of any pollutant to waters of the United States, to the city's storm drain system, or any addition of any pollutant to waters of the contiguous zone from any point source other than a vessel or other floating craft which is being used as a means of transportation.

(L) DISCHARGER – Any person causing a discharge.

(M) EPA – The Environmental Protection Agency of the United States of America.

(N) ENVIRONMENT – The physical conditions that exist within the area and that will be affected by a proposed project. The environment means both naturally occurring and man-made conditions. The area involved will be the area in which significant effects would occur, either directly or indirectly, as a result of the project.

(O) HAZARDOUS SUBSTANCES – Those substances designated as hazardous substances under Section 311(b)(2)(A) of the Clean Water Act, which are listed in the table at 40 CFR Section 116.4, and other applicable law.

(P) HEARING OFFICER – The director, who will preside at the administrative hearings authorized by this article and issue final decisions on matters raised in such hearings.

(Q) ILLICIT CONNECTION – Any engineered conveyance that is connected to the storm drain system, without a permit, through or by which an illicit discharge may occur.

(R) ILLICIT DISCHARGE – Any discharge to the storm drain system that is prohibited under local, state, or federal statutes, ordinances, codes, or regulations. The term illicit discharge includes all non-storm water discharges not composed entirely of storm water except discharges pursuant to a NPDES permit and discharges which are exempt or conditionally exempt in accordance with any applicable order of the regional board or authorized by the regional board executive officer.

(S) INVOICE FOR COSTS – An invoice for the actual costs and expenses of the city, including, but not limited to administrative overhead, salaries, attorneys' fees and other expenses recoverable under applicable law, incurred during any inspection, investigation or proceeding conducted pursuant to this article, where a notice of violation or other enforcement remedy under this article is used to obtain compliance with this article.

(T) MAXIMUM EXTENT PRACTICABLE – The level of pollutant control that is derived from available technology or other controls at the maximum level that is practicable. Pollution prevention and source control BMPs in combination with structural and treatment methods where appropriate are emphasized to achieve compliance. The maximum extent practicable approach is an ever evolving and advancing concept that considers technical and economic feasibility.

(U) MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) or STORM DRAIN SYSTEM – A conveyance or system of conveyances, including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains, as defined in 40 CFR Section 122.26(b)(8): (1) owned or operated by the city; (2) designed or used for collecting or conveying storm water; (3) which is not a combined sewer; and (4) which is not part of a publicly owned treatment works, as defined in 40 CFR Section 122.2.

(V) MUNICIPAL STORM WATER PERMIT – NPDES Permit No. CAS004002 Waste Discharge Requirements for Storm Water (Wet Weather) and Non-Storm Water (Dry Weather) Discharges from the Municipal Separate Storm Sewer Systems within the Ventura County Watershed Protection District, County of Ventura, and the Incorporated Cities Therein (Regional Board Order R4-2010-0108), as amended from time to time.

(W) NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT – A permit issued under the CWA, including a state general permit and the Municipal Storm Water Permit issued by the regional board.

(X) NEW DEVELOPMENT – Land disturbing activities, structural development, construction or installation of a building structure, creation and replacement of impervious surfaces, and land subdivision.

(Y) NON-STORM WATER DISCHARGE – Any discharge to the storm drain system that is not composed entirely of storm water.

(Z) POINT SOURCE – Any discernible, confined, and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural storm water discharges and return flows from irrigated agriculture.

(AA) POLLUTANT – A "pollutant" as defined in Section 502(6) of the Clean Water Act, 33 U.S.C. Section 1362(6), and incorporated by reference into California Water Code section 13373, or other applicable law, which is discharged into water.

(BB) POLLUTION – The man-made or man-induced alteration of the chemical, physical, biological and radiological integrity of water. Pollution also means an alteration of the quality of waters of the state by waste to a degree that unreasonably affects, or has the potential to unreasonably affect, either the waters for beneficial uses or the facilities which serve these beneficial uses.

(CC) POST-CONSTRUCTION STORM WATER MANAGEMENT PLAN (PCSMP) – A plan that defines the strategy and describes the design, placement and implementation of storm water retention and storm water treatment BMPs to effectively prevent non-storm water discharges and reduce pollutants in storm water discharges to the maximum extent practicable, for post-construction urban runoff to the storm drain system.

(DD) POTABLE WATER SOURCES – The potable water system for the treatment, distribution, and provision of water for residential, commercial, industrial, or institutional use that meets all California safe drinking water regulatory standards for human consumption.

(EE) RECEIVING WATERS – All surface water bodies identified in the basin plan.

(FF) REDEVELOPMENT – Land-disturbing activity that results in the creation, addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site as defined in the municipal storm water permit. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of a routine maintenance activity; and land disturbing activities related to structural or impervious surfaces. For an existing single-family dwelling and accessory structures, redevelopment means projects that create, add, or replace 10,000 square feet of impervious area. Redevelopment does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility, nor does it include emergency construction activities required to immediately protect public health and safety.

(GG) REGIONAL BOARD – The California Regional Water Quality Control Board, Los Angeles Region.

(HH) RESPONSIBLE PERSON – The person(s) identified in and responsible for compliance with the provisions of a SWPPP, SWPCP, or PCSMP.

(II) SOURCE CONTROL BMP – Any schedule of activities, prohibitions of practices, maintenance procedures, managerial practices or operational practices that aim to prevent storm water pollution by reducing the potential for contamination at the source of pollution.

(JJ) STATE BOARD – The California State Water Resources Control Board.

(KK) STATE GENERAL PERMIT – A permit issued by the state board or the regional board pursuant to 40 CFR Sections 122 and 123 to regulate a category of point sources. The term state general permit includes, but is not limited to, the General Permit for Storm Water Discharges Associated with Construction Activity and the General Industrial Activities Storm Water Permit and the terms and requirements of both. In the event the EPA revokes the in-lieu permitting authority of the state board, then the term state general permit will also refer to any EPA administered storm water control program for industrial, construction, and any other category of activities.

(LL) STORM WATER – Any surface flow, runoff, and/or drainage associated with rain storm events and/or snow melt, as defined in 40 CFR Section 122.26(b)(13).

(MM) STORM WATER POLLUTION CONTROL PLAN (SWPCP) – A plan or equivalent form, as required by the municipal storm water permit or by the director, identifying potential pollutant sources from a construction site with less than one acre of soil disturbance and describing proposed design, placement and implementation of BMPs, to effectively prevent non-storm water discharges and reduce pollutants in storm water discharges to the storm drain system, to the maximum extent practicable, during construction activities.

(NN) STORM WATER POLLUTION PREVENTION PLAN (SWPPP) – A plan, as required by a state general permit, identifying potential pollutant sources and describing the design, placement and implementation of BMPs, to effectively prevent non-storm water discharges and reduce pollutants in storm water discharges during activities covered by the state general permit.

(OO) STRUCTURAL BMP – Any structural facility designed and constructed to mitigate the adverse impacts of storm water runoff pollution.

(PP) TREATMENT – The application of engineered systems that use physical, chemical, or biological processes to remove pollutants.

(QQ) TREATMENT CONTROL BMP – Any engineered system designed to remove pollutants by simple gravity settling of particulate pollutants, filtration, biological uptake, media absorption or any other physical, biological, or chemical process.

(RR) VENTURA COUNTY TECHNICAL GUIDANCE MANUAL FOR STORM WATER QUALITY CONTROL MEASURES or TECHNICAL GUIDANCE MANUAL – The county technical guidance manual for storm water quality measures required by the municipal storm water permit, as amended from time to time.

(SS) WASTE – Sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal.

(TT) WATERCOURSE – Any natural or artificial channel for passage of water.

(UU) WATERS OF THE STATE – Any surface water or groundwater, including saline waters, within the boundaries of the state of California.

(VV) WATERS OF THE UNITED STATES – Bodies of water as defined in 40 CFR Section 122.2.

(WW) WET SEASON – The calendar period from October 1 through April 15.

SEC. 22-217. PROHIBITION OF ILLICIT CONNECTIONS AND ILLICIT DISCHARGES.

(A) The discharge of pollutants into the storm drain system is prohibited.

(B) All discharges of material other than storm water into the storm drain system must be in compliance with the city's NPDES permit and any other NPDES permit applicable to the subject property.

(C) No person may do any of the following:

(1) Construct, use, maintain, operate or utilize an illicit connection;

(2) Cause, permit, or allow any agent, employee, independent contractor or other person, to construct, maintain, operate, or utilize an illicit connection;

(3) Cause, allow or facilitate an illicit discharge; or

(4) Cause, permit, or allow any agent, employee, or independent contractor, to cause, allow, or facilitate an illicit discharge.

(D) In addition to any other remedy provided by law, the director may, by written notice, require persons responsible for an illicit discharge or illicit connection to immediately, or by a specified date, discontinue the illicit discharge or illicit connection and, if necessary, to take measures to eliminate the source of the illicit discharge or illicit connection. If the illicit discharge or illicit connection is not discontinued in the time specified, the city may take measures to eliminate the source of the illicit discharge or illicit connection to prevent the occurrence of future illicit discharges or illicit connections.

(E) Whenever the director finds that an illicit discharge or illicit connection resulting in the release of pollutants is taking place or has occurred which may result in or has resulted in the release of pollutants is taking place or has occurred which may result in or has resulted in pollutants entering the storm drain system, or watercourse, the director may require by written notice to the responsible person that the pollution cease, be remediated, and the affected property be restored to its pre-pollution condition within a specified time, along with all other remedies available to the city.

(F) The director may, by written notice, require a person responsible for an illicit connection to the storm drain system to eliminate or to secure approval for the connection within a specified time, regardless of whether or not the connection or discharge to it has been established or approved prior to the effective date of this article.

SEC. 22-218. GENERAL DISCHARGE PROHIBITIONS.

(A) No person may discharge any material, other than storm water into the city storm drain system or receiving waters, unless a permit has first been obtained.

(B) The following discharges are exempt from the general permit requirement in subsection (A) of this section:

(1) Discharges originating from a state, federal, or other source for which the city is preempted from regulating by state or federal law;

(2) Discharges covered by a separate individual or general NPDES permit, or conditional waiver for irrigated lands;

(3) Discharge flows from fire-fighting activities; or

(4) Discharges that fall within one of the categories below that are not a source of pollutants that exceed water quality standards, and where specified, meet all the conditions stated:

(a) Natural flows.

(i) Stream diversions authorized by the state board.

(ii) Natural springs and rising groundwater.

(iii) Uncontaminated groundwater infiltration.

(iv) Flows from riparian habitats or wetlands, provided all necessary permits or authorization are received prior to diverting the stream flow.

(b) Flows incidental to urban activities.

(i) Discharges from potable water sources provided the flows are:

(1) Low volume, incidental, and infrequent releases that are innocuous from a water quality perspective;

(2) Dechlorinated, pH adjusted if necessary, re-oxygenated, and both the volume and velocity are controlled to prevent re-suspension of sediments; and

(3) All sediments must be collected and disposed of in a legal manner.

(ii) Gravity flow from foundation, footing, and crawl space drains.

(iii) Discharges from air conditioning condensate with flow segregated to prevent introduction of pollutants.

(iv) Reclaimed and potable irrigation water runoff with flow segregated to prevent introduction of pollutants.

(v) Dechlorinated/debrominated swimming pool discharges that:

(1) do not have Chlorine or Bromine residuals that exceed 0.1 mg/L;

(2) do not contain any chemicals, detergents, wastes, or algaecides;

(3) do not contain cyanuric acid in excess of 50 ppm;

(4) do not contain salts or pH levels in excess of the water quality standards set forth in the municipal storm water permit;

(5) the volume and velocity is controlled to prevent re-suspension of sediments; and

(6) the cleaning waste water and filter back wash is not discharged to storm drain system.

(c) Non-commercial car washing by residents or non-profit organizations.

(d) Sidewalk rinsing using a high pressure-low volume of water device with no additives.

(e) Pooled storm water from treatment BMPs provided that:

(i) The discharge is not a source of pollutants;

(ii) Sediments are to be disposed of properly in compliance with all applicable laws.

SEC. 22-219. SPECIFIC DISCHARGE PROHIBITIONS.

The following discharges are prohibited from entering the storm drain system:

(A) Discharges from the washing or cleaning of gas stations, auto repair garages, or other types of automotive service facilities.

(B) Discharges from mobile auto washing, carpet cleaning, steam cleaning, sandblasting, and other such mobile commercial and industrial operations.

(C) Discharges from areas where repair of machinery and equipment, which are visibly leaking oil, fluid or antifreeze, is performed.

(D) Discharges from storage areas for materials containing grease, oil, or other hazardous substances, or uncovered receptacles containing hazardous materials.

(E) Discharges from swimming pools that have a chlorine/bromine concentration greater than 0.1 mg/L or a chloride concentration greater than 250 mg/L.

(F) Discharges from swimming pool filter backwash, decorative fountains, and ponds.

(G) Discharges from industrial/commercial areas, including the washing or cleaning of restaurant mats.

(H) Discharges from stationary or mobile pet grooming facilities.

(I) Trash container leachate.

(J) Spills, dumping or disposal of pesticide, fungicide, herbicide, litter, landscape and construction debris, garbage, food, animal waste, fuel or chemical wastes, batteries, and any other materials that have the potential to adversely impact water quality.

SEC. 22-220. REDUCTION OF POLLUTANTS IN STORM WATER.

(A) Discharges of storm water containing pollutants that have not been reduced to the maximum extent practicable are prohibited.

(B) Any person engaged in activities that will or may result in pollutants entering the storm drain system or watercourses must undertake all practicable measures to reduce such pollutants.

(C) With written concurrence of the regional board, the city may exempt in writing other non-storm water discharges that are not a source of pollutants to the storm drain system or watercourses.

SEC. 22-221. REDUCTION OF LITTER.

(A) Prohibition. No person may throw, deposit, leave, maintain, keep, or permit to be thrown, deposited, kept, or maintained, in or upon any public or private driveway, parking area, street, alley, sidewalk, trail, or component of the storm drain system or any receiving waters, any refuse, rubbish, garbage, litter, or other discarded or abandoned objects, articles, accumulations, or pollutant so that the same may cause or contribute to pollution.

(B) Waste Management on Residential Sites. Waste must be deposited in a proper receptacle that must be covered to prevent scattering by wind or animal. Spillage and overflow of wastes around containers must be promptly cleaned and properly disposed of.

(C) Waste Management on Commercial, Industrial Sites and Private Residential Complexes. It is the responsibility of any person owning or operating any commercial establishment, industrial park, or residential complex with common areas to procure and place trash receptacles at their own expense on the premises. Persons placing trash in receptacles must do so in such manner as to prevent litter from being carried or deposited by the elements upon any street, sidewalk, or other public place or upon private property. Persons owning or occupying a place of business, who sell or offer for sale food or other goods for immediate consumption wrapped in paper, plastic, cardboard or other similar disposable materials or containers, must endeavor to implement a general litter removal program so as to remove litter generated by such business at least each business day. No person owning or occupying a place of business may sweep into or deposit in the storm drain system the accumulation of litter from any building or lot from any public or private sidewalk or driveway. Persons owning or occupying places of business must keep the sidewalk in front of their business premises free of litter.

SEC. 22-222. CONSTRUCTION DEVELOPMENT.

(A) Any construction activity that results in a land disturbance that requires a grading, building, or discretionary permit must be undertaken in accordance with:

(1) Any conditions and requirements established by the municipal storm water permit or other applicable NPDES permits which are reasonably related to the reduction or elimination of pollutants in storm water runoff from the construction site.

(2) Any condition or requirement established by the director to protect specific watersheds or drainage basins.

(3) Any construction activity requiring a grading, demolition, or stockpile permit must include a plan identifying the structural and non-structural BMPs to be implemented during the construction activity to reduce pollutants in storm water runoff from the site and prevent construction site discharges from causing or contributing to a violation of water quality standards.

(a) The storm water runoff plan required for the construction activity will be based on the area of land to be disturbed by the construction activity as follows:

(i) Any construction activity requiring a grading, demolition or stockpile permit that results in the disturbance of less than one acre of land will require the applicant for such permit to submit and obtain city approval a SWPCP, or equivalent, as required by the municipal storm water permit.

(ii) Any construction activity requiring a grading, demolition or stockpile permit that results in the disturbance of one acre or greater, will require the applicant for such permit to submit and obtain city approval of a SWPPP in accordance with the municipal storm water permit and state general permit.

(b) Prior to the issuance of a grading permit or any permit authorizing construction activity including demolition, clearing, grading, grubbing, excavation, construction, if required by the state board, or where the director determines there is a substantial potential for discharge of significant levels of a pollutant into the storm drain system or receiving waters, the applicant for such permit must submit and obtain approval for the required plan based on the area of land disturbed by the construction activity.

(c) Each applicable SWPPP or SWPCP, must name a responsible person for the project.

(d) The owners of a development project, and their successors and assigns, and each named responsible person, must implement and adhere to the terms, conditions and requirements of the approved SWPPP or SWPCP. Any failure to implement and adhere to the terms, conditions and requirements of such plan will constitute a violation of this article.

(e) Compliance with the conditions and requirements of a SWPPP or SWPCP will not exempt any responsible person from the requirement to comply independently with each provision of this article.

(f) Any construction activity requiring a SWPPP or SWPCP will be inspected a minimum of once during the wet season for the implementation of storm water quality controls. If the city determines that the SWPCP or SWPPP has been improperly implemented, a follow-up site inspection will be conducted by the city within two weeks of the initial inspection.

(g) The city's costs and expenses incurred in the review, approval, or revision of any SWPPP or SWPCP, as well as for the construction site inspection and reinspection will be included as part of the applicable fee for such plans.

SEC. 22-223. POST CONSTRUCTION DEVELOPMENT.

(A) All new development and redevelopment within the city must be undertaken in accordance with:

(1) Any conditions and requirements established by the municipal storm water permit.

(2) Any condition or requirements established by the city to protect specific watersheds or drainage basins.

(B) Applicability of this article to new development and redevelopment projects will be determined in accordance with the municipal storm water permit.

(C) The following requirements apply to new development and redevelopment projects that are subject to post-construction storm water controls:

(1) A PCSMP will be required to be submitted.

(2) Each PCSMP must:

(a) include the name of the owner or other responsible person for the project;

(b) illustrate the location of proposed post-construction storm water controls;

(c) provide engineering calculations and analysis in accordance with the technical guidance manual that demonstrate that the post-construction storm water controls will function appropriately;

(d) include an operation and maintenance plan in accordance with the technical guidance manual. The operation and maintenance plan must specify a required schedule and requirements for maintenance and monitoring;

(e) include a storm water treatment device access and maintenance agreement on the form provided by the city. The director may require that the agreement be recorded with the County Recorder's office.

(3) The owner or responsible person must implement and adhere to the terms, conditions and requirements of the approved PCSMP. Each failure to implement and adhere to the PCSMP will constitute a separate violation of this article.

(4) The city's costs and expenses incurred in the review, approval or revision of any PCSMP or other related requirements will be charged to the owner or responsible person of the applicable new development or redevelopment project as a fee per the applicable city fee resolution.

(5) Compliance with the conditions and requirements of a PCSMP and related maintenance agreement does not exempt any person or development project from the requirement to comply independently with each provision of this article.

(D) The owner or responsible person of a property with a post-construction storm water control device must submit to the city an annual statement on the form provided by the city that certifies that the post-construction storm water device is being adequately maintained and functions as designed. If the annual statement is not timely received by the city, the city may inspect the post-construction storm water device and the owner or responsible person will be charged a fee per the applicable city fee resolution for such inspection and any necessary reinspections.

SEC. 22-224. BEST MANAGEMENT PRACTICES.

(A) Authorization to Adopt and Enforce Best Management Practices. The director may adopt requirements establishing appropriate BMPs for any activity, operation or facility which may cause or contribute to pollution or contamination of the storm drain system. If relevant BMPs have been promulgated by the city or any federal, state or county agency for an activity, operation or facility that would otherwise cause the discharge of pollutants to the storm drain system or watercourses, every person undertaking such activity or operation, or owning or operating such facility must implement such BMPs.

(B) Responsibility to Implement Best Management Practices. Any person engaged in activities or operations or owning facilities or property that will or may result in pollutants entering the storm drain system, or watercourses, as determined by the director, must implement applicable BMPs to the extent they are technologically and economically achievable to prevent or reduce such pollutants.

(C) Minimum BMPs for particular urban activities.

(1) Minimum BMPs for mobile car washes are full containment under and around the vehicle being washed, capture of all water used in the washing operation, and hauling of the captured wash water to a legal point of disposal.

(2) Minimum BMPs for building or sidewalk pressure washing are to use high pressure and low volume of water with no additives at an average usage of 0.006 gallons per square foot of surface area to be rinsed, capture all water used in the washing operation, and haul the captured wash water to a legal point of disposal.

(3) Minimum BMPs for landscape irrigation are inspection of irrigation systems to minimize contact with impervious surfaces, and segregation of runoff from the irrigated area following treatment (pesticide or fertilizer application) to prevent introduction of pollutants.

SEC. 22-225. COMPLIANCE WITH NPDES PERMITS.

Each industrial discharger associated with any construction activity, or any other discharger described in any NPDES permit, must comply with and undertake all other activities required by any applicable NPDES permit with regard to such discharges.

SEC. 22-226. WATERCOURSE AND STORM DRAIN SYSTEM PROTECTION.

(A) Every owner or responsible person for a property, through which a watercourse or portion of the storm drain system passes, must keep and maintain the property reasonably free of litter, debris, vegetation and other obstacles which may contribute pollutants, contaminates or cause a blockage of the flow of water through the watercourse or storm drain system.

(B) Every owner or responsible person for a property must maintain all existing structures within or adjacent to the storm drain system so that such structures will not become a hazard to the use, function or physical integrity of the storm drain system; and, consistent with other laws regarding riparian habitat protection, may not remove healthy bank vegetation beyond that actually necessary for such maintenance, nor remove any such vegetation in a manner as to increase the vulnerability of a watercourse to erosion.

SEC. 22-227. PROHIBITED ACTS AFFECTING WATERCOURSES OR STORM DRAINS.

No person may commit or cause to be committed any of the following acts, unless an appropriate permit or approval from all agencies with jurisdiction over the proposed act or project has first been obtained:

(A) The discharge of a pollutant into any pipe or channel to a watercourse or storm drain system.

(B) Modify the natural flow of water in a watercourse or storm drain system.

(C) Deposit in, plant in or remove any material from a watercourse or storm drain system including its banks, except as required for maintenance.

(D) Construct, alter, enlarge, connect to, change or remove any structure in a watercourse or storm drain system.

(E) Place any loose or unconsolidated material along the side of or within a watercourse or storm drain system, or so close to the side as to cause a diversion of the flow, or to cause a probability of such material being transported by storm waters passing through a watercourse or storm drain system.

SEC. 22-228. INSPECTIONS.

(A) Right to Inspect. Whenever it is necessary to make an inspection to monitor or enforce any of the provisions of, or perform any duty imposed by, this article, any permit, SWPCP, or other applicable law, or whenever the director has reasonable cause to believe there exists upon any premises, including any mobile or portable vehicles, any violation of the provisions of this article, any permit, SWPCP, or other applicable law, or any condition which makes such premises hazardous, unsafe or dangerous, the director is authorized to enter such property at any reasonable time to inspect the same and perform any duty imposed upon the director by this article, or other applicable law.

(B) Entry. The director is authorized to enter public or private property to investigate the source or potential source of a suspected illicit discharge to a storm drain system or watercourses located within the city at all reasonable times to inspect the same and to inspect and copy records related to storm water compliance. Prior to commencing any inspection as authorized by this article, the director will obtain the consent of the owner or responsible person for the premises or will obtain an administrative inspection warrant or criminal search warrant.

(C) Records Review. The director may examine and copy such records as is necessary to determine compliance with the provisions of this article.

(D) Sample and Test. The director may inspect, sample and test any area runoff, soils area (including groundwater testing), process discharge, materials within any waste storage area (including any container contents), or treatment system discharge for the purpose of determining the potential for contribution of pollutants to the storm drain system. The director may investigate the integrity of all storm drain and sanitary sewer systems or other pipelines on the property using appropriate tests, including but not limited to smoke and dye tests or video surveys. The director may take photographs or videotape, make measurements or drawings and create any other record reasonably necessary to document conditions on the property.

(E) Monitoring. The director may undertake monitoring and analysis including both the construction and maintenance of devices at the owners' expense, or require the owner or responsible person to undertake construction and maintenance of devices, at the owners' expense, for the purpose of measuring any discharge or potential source of discharge to the storm drain system.

(F) Test Results. The owner or responsible person of property subject to inspection must provide copies of test results to the city. On submission of a written request to the director, such person will be entitled to receive copies of any results of tests conducted by the city.

SEC. 22-229. INSPECTIONS OF CRITICAL SOURCE FACILITIES.

The city will conduct regular inspections of critical source facilities in accordance with the requirements of the municipal storm water permit. In order to defray the cost of these mandatory inspections, critical source facilities are required to pay the applicable inspection fee established by city council resolution.

SEC. 22-230. REMEDIES FOR VIOLATIONS.

(A) Notice of Violation. The director will review each report of illicit connection or illicit discharge, and, if appropriate, may serve a notice of violation to the owner or responsible person of any public or private property as to which an illicit connection or illicit discharge exists. The notice of violation shall:

(1) Identify the provision(s) of this article, the applicable SWPPP, SWPCP, PCSMP, or permit alleged to have been violated;

(2) State that continued noncompliance may result in civil, criminal or administrative enforcement actions;

(3) State a compliance date;

(4) Describe the manner of abatement required;

(5) Order any necessary remediation work; and

(6) State that the city may recover its costs of abating the violation.

(B) The notice of violation may include where deemed applicable by the director, the following:

(1) Specific steps and time schedules for compliance as reasonably necessary to prevent threatened or future unauthorized illicit discharges, including but not limited to, the threat of an illicit discharge from any pond, pit, well, surface impoundment, holding or storage area;

(2) Specific steps and time schedules for compliance as reasonably necessary to discontinue any illicit connection;

(3) Specific requirements for containment, cleanup, removal, storage, installation of overhead covering or proper disposal of any pollutant having the potential to contact storm water;

(4) Any other terms or requirements reasonably calculated to prevent continued or threatened violations of this article including, but not limited to, requirements for compliance with BMPs guidance documents promulgated by any federal, state or local agency;

(5) Any other terms or requirements reasonably calculated to achieve full compliance with the terms, conditions and requirements of an applicable SWPPP, SWPCP, PCSMP or NPDES permit, or this article.

(C) Cease and Desist Orders.

(1) The director may issue a cease and desist order where the public health, safety and/or welfare requires the same, directing the owner or responsible person to:

(a) Immediately discontinue any illicit connection or illicit discharge to the storm drain system;

(b) Immediately contain or divert any flow of non-storm water off the property, where the flow is occurring in violation of this article;

(c) Immediately discontinue any other violation of this article; and

(d) Clean up the area affected by the violation.

(2) The director may direct by cease and desist order that the owner or responsible person immediately cease any activity not in compliance with the terms, conditions and requirements of the applicable plan, NPDES permit or this article. For construction projects and activities for which a grading or building permit is required a stop work order may be issued by the director or building and safety official of the city to ensure corrective actions are made to the satisfaction of the director. No construction work may proceed until corrective actions have been completed to the satisfaction of the director.

(3) A cease and desist order will be considered a notice of violation.

(D) Recovery of Costs. The director will serve an invoice for costs upon the owner or other responsible person who is subject to a notice of violation or a cease and desist order. If any owner or other responsible person fails to pay the invoice for costs, then the city may institute collection proceedings.

(E) Service of Notices. Any notice of violation, cease and desist order or invoice for costs (collectively, "order") must be served pursuant to the requirements of this article and will be subject to the following:

(1) Each order must state that the recipient has a right to appeal the matter as set forth in this article.

(2) The order must include the address of the affected property and be addressed to the owner as shown on the most recently issued equalized assessment roll or as may otherwise appear in the current records of the city.

(3) If the owner or other responsible person cannot be located after the reasonable efforts of the director, the order will be deemed served 10 business days after posting on the property.

(F) Emergency Abatement. The director is authorized to take any reasonably necessary precautions including, but not limited to, decontamination, packaging, dyking and transportation of materials, in order to protect life, protect property or prevent damage resulting from a condition which is likely to result in a discharge presenting an imminent hazard to the public health, safety or welfare; or which, either individually or in conjunction with other discharges, is an imminent hazard to the city's storm drain system, the environment or which places the city in violation of its NPDES permit. In the furtherance of such an operation, city personnel, any party contracting with the city or a duly authorized representative of another government agency will have immediate access to the premises. The director may prohibit access to the scene of such emergency by any person, vehicle, vessel or thing, and all persons not actually employed in the extinguishment of the condition or the preservation of lives and property in the vicinity thereof. Any costs incurred by the city in performing emergency abatement procedures may be recovered pursuant to subsection (D) of this section.

(G) Consecutive Violations. Each day in which a violation occurs and each separate failure to comply with either a separate provision of this article, a notice of violation, a cease and desist order, an applicable SWPPP, SWPCP, PCSMP, or a condition or requirement of a NPDES permit, constitutes a separate violation.

SEC. 22-231. APPEALS.

(A) Any person aggrieved by the issuance of an order may appeal from the issuance of such order in accordance with the following:

(1) Any such appeal must be filed in writing within 15 days of the date of service of the order by the director upon the appealing party.

(2) No such appeal will be valid for any purpose unless it is timely filed with the City Clerk and unless a filing and processing fee is paid contemporaneously with the filing thereof in an amount as set by city council resolution.

(3) Upon the timely filing of such an appeal, the hearing officer will set a time and place for a hearing on such appeal as expeditiously as is possible and notify the appellant in writing of the time and place of the hearing.

(4) At the time of such hearing, the hearing officer will permit any interested person to present any relevant evidence bearing on the matters involved in the issuance of the order which is the subject of the appeal. The hearing officer need not follow the strict provisions of the rules of evidence as utilized in a judicial proceeding but will follow the substance of such rule to the end that the decision rendered is based upon reliable relevant evidentiary material. The hearing officer's decision will be final and subject only to judicial review.

(B) The provisions of Sections 1094.5 and 1094.6 of the Code of Civil Procedure set forth the procedure for judicial review of any action taken by the city pursuant to this article."

Part 2. Severability. If any section, subsection, sentence, clause, phrase, part or portion of this Ordinance is for any reason held to be invalid or unconstitutional by any court of competent jurisdiction, such decision will not affect the validity of the remaining portions of this Ordinance. The City Council declares that it would have adopted this Ordinance and each section, subsection, sentence, clause, phrase, part or portion thereof, irrespective of the fact that any one of more section, subsections, sentences, clauses, phrases, parts or portions be declared invalid or unconstitutional.

Part 3. Pursuant to Government Code Section 36933(c)(1), the City Attorney was designated to prepare, and the City Clerk published, a summary of this ordinance, and a certified copy of the ordinance was posted in the Office of the City Clerk a minimum of five days before the City Council's adoption of the ordinance.

Part 4. The City Clerk shall certify as to the adoption of this ordinance and shall cause the summary thereof to be published within fifteen calendar (15) days of the adoption and shall post a certified copy of this ordinance, including the vote for and against the same, in the office of the City Clerk, in accordance with Government Code Section 36933. Ordinance No. 2876 was first read on November 5, 2013, and finally adopted on _____, 2013, to become effective thirty days thereafter.

AYES:

NOES:

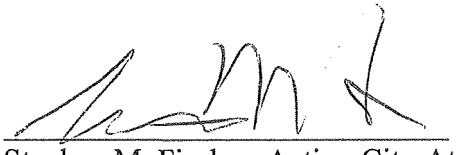
ABSENT:

_____
Tim Flynn, Mayor

ATTEST:

_____
Daniel Martinez, City Clerk

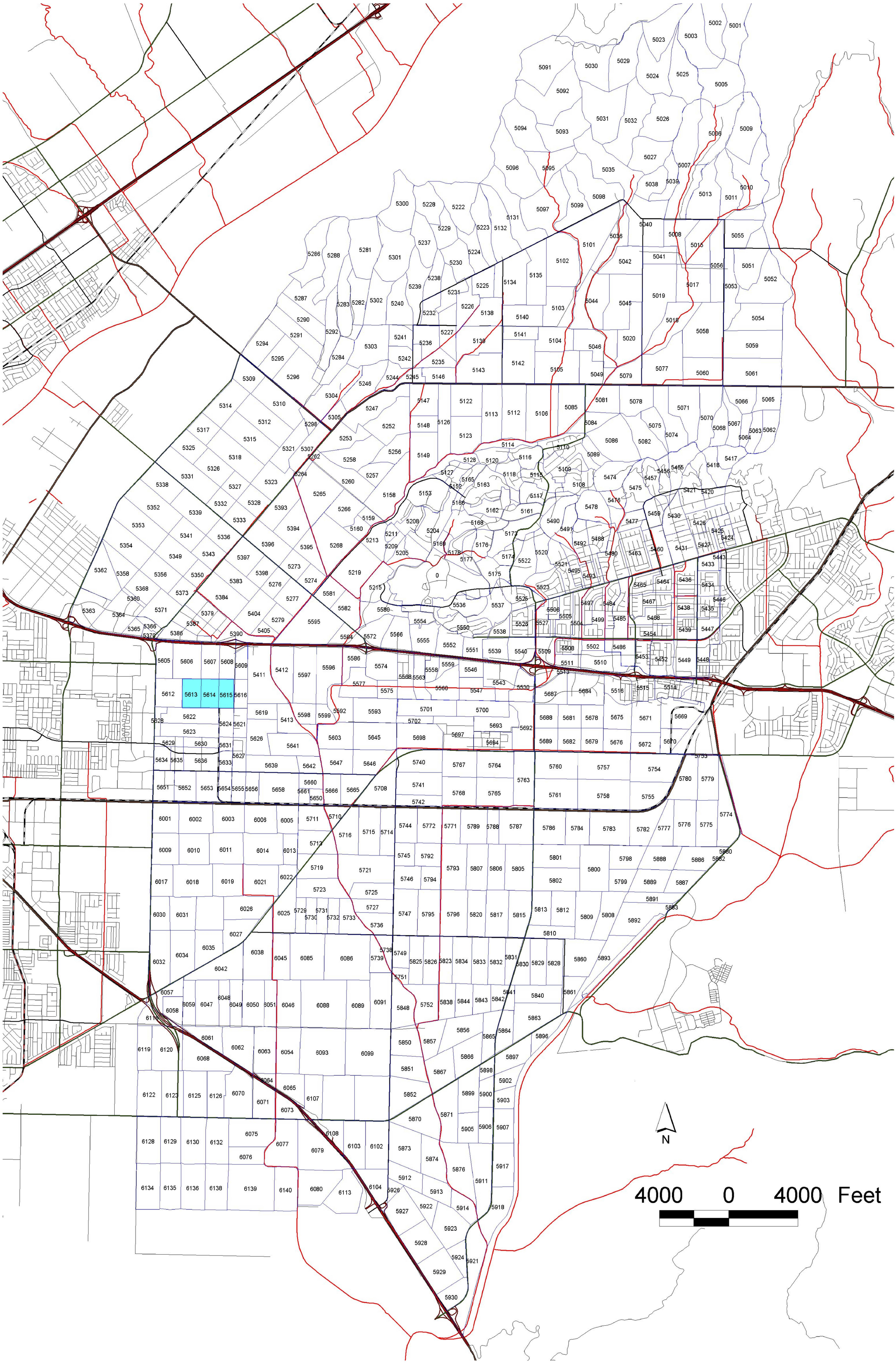
APPROVED AS TO FORM:



Stephen M. Fischer, Acting City Attorney

APPENDIX B

REVOLON SLOUGH AND CALLEGUAS CREEK


N
4000 0 4000 Feet

APPENDIX C

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1994 or later.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to confirm to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

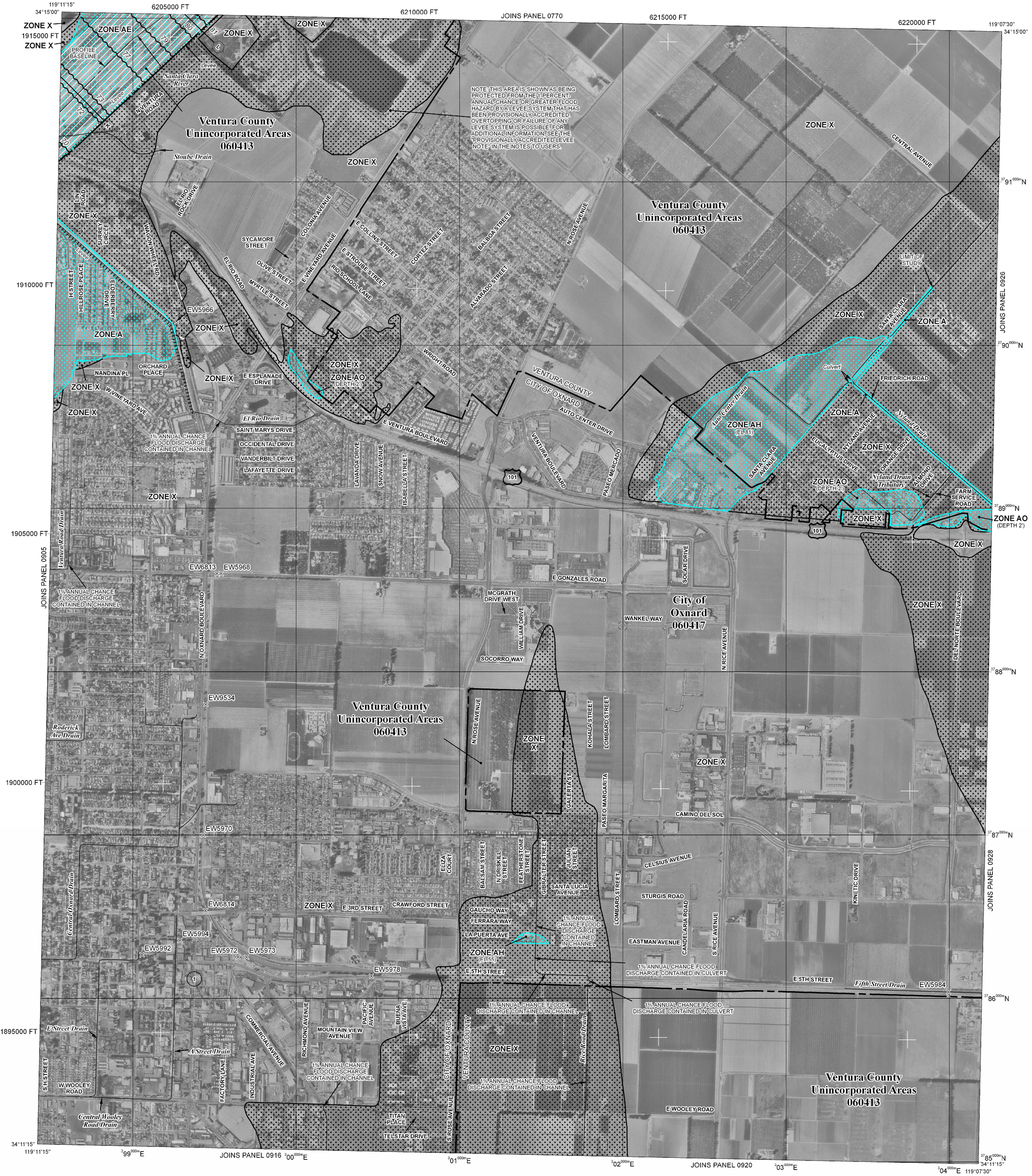
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.mcs.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.

Provisionally Accredited Levee Notes to Users: Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To maintain accreditation, the levee owner or community is required to submit the data and documentation necessary to comply with Section 65.10 of the NFIP regulations by December 1, 2009. If the community or owner does not provide the necessary data and documentation or if the data and documentation provided indicate the levee system does not comply with Section 65.10 requirements, FEMA will revise the flood hazard and risk information for this area to reflect de-accreditation of the levee system. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA Website at http://www.fema.gov/business/nfip/index.shtm.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

(A)———(A)	Cross section line
(23)- - - - - -(23)	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
3976000mN	1000-meter Universal Transverse Mercator grid values, zone 11
600000 FT	5000-foot grid ticks: California State Plane coordinate system, zone V (FIPSZONE 0405), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
●M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
January 20, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0910E

FIRM
FLOOD INSURANCE RATE MAP

VENTURA COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 910 OF 1275
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
OXNARD, CITY OF	060417	0910	E
VENTURA COUNTY	060413	0910	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06111C0910E

EFFECTIVE DATE
JANUARY 20, 2010

Federal Emergency Management Agency

APPENDIX D

GEOTECHNICAL REPORT

Geotechnical Engineering Report

Proposed Oxnard Confidential Project Gaucho

Southwest Corner of Hwy 101 and N Del Norte Blvd.

Oxnard, California

May 11, 2018

Terracon Project No. 60185017

Prepared for:
Seefried Industrial Properties, Inc.
El Segundo, California

Prepared by:
Terracon Consultants, Inc.
Tustin, California

DRAFT

May 11, 2018

Seefried Industrial Properties, Inc.
2301 Rosecrans Avenue, Suite 3165
El Segundo, CA 90245

Attn: Mr. Dan Bick
P: 310-536-7900
E: danbick@seefriedproperties.com

Re: Geotechnical Engineering Report
Oxnard Confidential Project Gaucho
Southwest Corner of Hwy 101 and N Del Norte Blvd.
Oxnard, California
Terracon Project No. 60185017

Dear Mr. Bick:

Terracon Consultants, Inc. (Terracon) has completed the geotechnical engineering services for the above referenced project. These services were performed in general accordance with our proposal number P60185017 dated March 13, 2018.

This geotechnical engineering report presents the results of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations, floor slab, pavements, and infiltration systems for the proposed development.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Sivasubramaniam (Raj) Pirathiviraj, P.E., G.E.
Senior Geotechnical Engineer

F. Fred Buhamdan, P.E.
Principal

DRAFT

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GEOTECHNICAL ENGINEERING REPORT
OXNARD CONFIDENTIAL PROJECT GAUCHO
SOUTHWEST CORNER OF HWY 101 AND N DEL NORTE BLVD.
OXNARD, CALIFORNIA

Terracon Project No. 60185017

May 11, 2018

1.0 INTRODUCTION

This report presents the results of our geotechnical engineering services performed for the Oxnard Confidential Project (Gaucho) to be located at the southwest corner of Hwy 101 and N Del Norte Blvd. in Oxnard, California. The Site Location Plan (Exhibit A-1) is included in Appendix A of this report. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- subsurface soil conditions
- earthwork
- seismic considerations
- floor slab design and construction
- groundwater conditions
- foundation design and construction
- pavement design and construction
- infiltration systems

Our geotechnical engineering scope of work for this project included the advancement of thirty-seven (37) test borings and six (6) Cone Penetrometer Test (CPT) soundings to approximate depths ranging between 5 to 58 feet below existing site grades.

Logs of the borings along with the Exploration Location Plan (Exhibit A-2) are included in Appendix A of this report. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included in Appendix B of this report. Descriptions of the field exploration and laboratory testing are included in their respective appendices.

2.0 PROJECT INFORMATION

2.1 Project Description

ITEM	DESCRIPTION
Site layout	Refer to the Exploration Location Plan (Exhibit A-2 in Appendix A).
Structures	The proposed project will consist in the development of the 54-acre project site to include a 640,000-square foot warehouse surrounded by rigid and flexible pavement.

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ITEM	DESCRIPTION
Construction	Reinforced concrete columns and masonry walls or tilt-up walls supported on a reinforced concrete foundation system with concrete slab-on-grade floors.
Finished floor elevation	Assumed within one foot of existing grade (assumed).
Maximum loads	Provided structural loads are presented below: ▪ Steel Columns: 1100 to 1760 kips ▪ Walls: 10 kips per linear foot (klf) ▪ Pilasters: 760 kips ▪ Slabs: 500 pounds per square foot (psf) plus weight of the slab
Proposed Roadway	A new 150-ft wide roadway is proposed with an east-west alignment and approximate length of 4,600 feet. The road will pass along the northern border of the project and extends from N Del Norte Boulevard to N Rice Avenue.
Grading	Grading will include over-excavation and backfill to bring the site to construction grade.
Below Grade Structures / Basements	Not Anticipated
Onsite Infiltration Systems	The development will also include a storm water retention system along the south side of the property.
Pavements	Paved driveway and parking will be constructed on approximately 25 acres of the parcel. We assume both rigid (concrete) and flexible (asphalt) pavement sections should be considered. Anticipated traffic is as follows: ▪ Autos/light trucks: 100 vehicles per day ▪ Light delivery and trash collection vehicles: 50 vehicles per week ▪ Tractor-trailer trucks: approximately 200 vehicles per day The pavement design period is 20 years based on Caltrans Highway Design Manual.

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2.2 Site Location and Description

Item	Description
Location	The site is located west of North Del Norte Boulevard approximately 2,250 feet south of Highway 101 in Oxnard, California. The site encompasses an approximate area of 62.5 acres.
Existing improvements	The project site is currently vacant agricultural land.
Current ground cover	Asphalt pavement with associated hardscape and landscape.
Existing topography	The site is relatively flat.
Anticipated Seismic Hazards	Based on our review of the State Fault Hazard Maps, the project site is not located within Alquist-Priolo Earthquake Fault Zones. However, the project site is mapped within a liquefaction potential zone as designated by the California Geologic Survey.

3.0 SUBSURFACE CONDITIONS

3.1 Site Geology

The site is situated within the eastern Transverse Range Geomorphic Province in Southern California. Geologic structures within the Transverse Ranges Province trend mostly east west, in contrast to the prevailing northwest trend elsewhere in the state. The Transverse Range Province contains the highest peaks composed of pre-Phanerozoic rocks south of the Sierra Nevada, four of the eight islands off the southern California coast, and is both bounded and transected by several major fault zones.[1, 2] Based on the geologic map of California (Los Angeles Sheet), the proposed project site is underlain by Alluvium (Qal).

3.2 Typical Subsurface Profile

Specific conditions encountered at the boring locations are indicated on the individual boring logs. Stratification boundaries on the boring logs represent the approximate location of changes in soil types; in-situ, the transition between materials may be gradual. Details for the borings can be found on the boring logs included in Appendix A. Based on the results of the borings, subsurface conditions on the project site can be generalized as follows:

[1] Harden, D. R., "*California Geology, Second Edition*," Pearson Prentice Hall, 2004.

[2] Norris, R. M. and Webb, R. W., *"Geology of California, Second Edition,"* John Wiley & Sons, Inc., 1990.

Description	Approximate Depth to Bottom of Stratum	Material Encountered	Consistency/Density
Stratum 1	2 to 8	Clayey Sand	Very Loose to Loose
Stratum 2	10 to 15	Sand with variable amounts of silt and clay with interbedded layers of Lean Clay with variable amounts of sand	Very Loose to Medium Dense
Stratum 3	25 to 29	Lean Clay with variable amounts of sand with interbedded layers of Sand with variable amounts of silt and clay	Very Soft to Hard
Stratum 4	28 to 35	Sand with variable amounts of clay, silt and gravel	Medium Dense
Stratum 5	51½	Lean Clay with variable amounts of sand with interbedded layers of Clayey Sand	Medium Stiff to Hard

Laboratory tests were conducted on selected soil samples and the test results are presented in Appendix B. Atterberg limits test indicates that on-site clayey soils have low to medium plasticity. An Expansion Index test was performed on the near surface clayey soils and indicates that these materials have an Expansion Index of 12 and 15. Consolidation/swell tests indicate that the clayey soils encountered at approximate depth of 2½ feet have slight collapse potential when saturated under normal footing loads of 2,000 psf. Direct shear test was performed in a sandy soils encountered at the depth of 7½ feet indicates a ultimate friction angle of 32 degrees and corresponding cohesion of 78 psf. R-value test indicates that the near surface materials have R-values ranging between 69 and 72.

3.3 Groundwater

Groundwater was observed in the test borings at depths ranging between 3 and 11 feet below ground surface (bgs) at the time of field exploration. These observations represent groundwater conditions at the time of the field exploration and may not be indicative of other times, or at other locations.

In clayey soils with low permeability, the accurate determination of groundwater level may not be possible without long term observation. Long term observation after drilling could not be performed as borings were backfilled immediately upon completion due to safety concerns. Groundwater levels can best be determined by implementation of a groundwater monitoring plan. Such a plan would include installation of groundwater monitoring wells, and periodic measurement of groundwater levels over a sufficient period of time.

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Based on regional data, historical groundwater is anticipated to occur at depths of less than 10 feet below the ground surface at the project location.[3]

3.4 Faulting and Estimated Ground Motions

The site is located in a seismically active area. The type and magnitude of seismic hazards affecting the site are dependent on the distance to causative faults, the intensity, and the magnitude of the seismic event. The following table indicates the distance of the fault zones and the associated maximum credible earthquake that can be produced by nearby seismic events, as calculated using the USGS Unified Hazard Tool. The Simi-Santa Rosa Fault, which is located approximately 3.5 kilometers from the site, is considered to have the most significant effect at the site from a design standpoint.

Estimated Earthquakes for Regional Faults

Fault Name	Approximate Distance to Site (kilometers)	Maximum Credible Earthquake (MCE) Magnitude
Simi-Santa Rosa	3.5	6.94
Oak Ridge (Onshore)	6.5	7.36
Ventura-Pitas Point	10.4	7.41
Oak Ridge (Offshore)	13.3	6.87

Based on these sources, the mean earthquake magnitude at the subject site for a 2% Probability of Exceedance in 50 years (Return period of 2475 years) is expected to be about 6.89. Based on the USGS Design Maps Summary Report, using the American Society of Civil Engineers (ASCE 7-10) standard, the peak ground acceleration (PGA_M) at the project site is expected to be 0.935 g.

The site is not located within an Alquist-Priolo Earthquake Fault Zone based on our review of the State Fault Hazard Maps.[4]

3.5 Liquefaction Potential

Liquefaction is a mode of ground failure that results from the generation of high pore water pressures during earthquake ground shaking, causing loss of shear strength. Liquefaction is typically a hazard where loose sandy soils exist below groundwater. The California Geologic Survey (CGS) has designated certain areas within southern California as potential liquefaction hazard zones. These are areas considered at a risk of liquefaction-related ground failure during

3. California Geologic Survey, Seismic Hazard Zone Report for the Oxnard 7.5-Minute Quadrangle, Orange County, CA.
4. California Department of Conservation Division of Mines and Geology (CDMG), *"Digital Images of Official Maps of Alquist-Priolo Earthquake Fault Zones of California, Southern Region"*, CDMG Compact Disc 2000-003, 2000.

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a seismic event, based upon mapped surficial deposits and the presence of a relatively shallow water table.

The project site is located within a potential liquefaction hazard zone as designated by the CGS. Materials encountered at the project site generally consisted of interbedded layers of fine and coarse grained soils. Groundwater was observed in the test borings at depths ranging between 3 and 11 feet bgs at the time of field exploration. Historical high groundwater in the project vicinity is shallower than 10 feet below the ground surface.

Liquefaction analysis for the site was performed in general accordance with the DMG Special Publication 117. The liquefaction study utilized the software "LiquefyPro" by CivilTech Software. This analysis was based on the soils data using CPT soundings CPT-16, CPT-18, CPT-19 and CPT-20. Peak Ground Acceleration (PGAm) was of 0.935 g was used. The CPT calculation was performed using the modified Robertson et al method which includes fine correction for liquefaction and settlement. Settlement analysis used the Tokimatsu, M-correction method. Liquefaction potential analysis was calculated from a depth of 0 to 50 feet bgs. Liquefaction potential analysis is attached in Appendix D of this report.

Based on the subsurface conditions presented in CPTs and based on the calculation results, seismically-induced settlements are expected to range between 2.5 and 3 inches and seismically-induced dry sand differential settlements are expected to range between 1.3 and 2.0 inches.

3.6 Seismic Considerations

DESCRIPTION	VALUE
2016 California Building Code Site Classification (CBC) [1]	E [2]
Site Latitude	N 34.2138°
Site Longitude	W -119.1309°
S_s Spectral Acceleration for a Short Period	2..641g
S_1 Spectral Acceleration for a 1-Second Period	0.954g
F_a Site Coefficient for a Short Period (Class E) [2]	0.9
F_v Site Coefficient for a 1-Second Period (Class E) [2]	2.4

[1] Note: The 2016 California Building Code (CBC) requires a site soil profile determination extending to a depth of 100 feet for seismic site classification.

[2] Per CBC Table 1613.5.2, any profile containing soils vulnerable to potential failure or collapse under seismic loading such as liquefiable soils. However, for structures with fundamental periods of vibration less than 0.5 seconds, Section 20.3.1 of ASCE 7-05 allows the site coefficients (F_a and F_v) to be determined assuming that liquefaction does not occur (i.e., Site Class E). The structure's fundamental period should be verified by the structural engineer.

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3.7 Percolation Test Results

Six (6) borings were advanced to approximate depths ranging between 3 and 7 feet bgs and were utilized for percolation testing (falling head borehole permeability). After the borings were advanced the augers were removed from the ground and an approximately 2-inch thick layer of gravel was placed in the bottom of each boring, and a 3-inch diameter perforated pipe was installed on top of the gravel layer in the three borings. Gravel was used to backfill between the perforated pipes and the boring sidewall. The borings were then filled with water for a pre-soak period. At the beginning of each test, the pipes were refilled with water and readings were taken at 10-minute time intervals. Percolation rates are provided in the following table:

TEST RESULTS				
Test Location (depth of percolation)	**Soil Classification**	**Percolation Rate, in/hr**	**Infiltration Rate[1], in/hr**	**Initial Water Head, in**
Perc-1 (0ft - 5ft)	Clayey Sand	5.0	0.44	42
Perc-2 (0ft - 5ft)	Clayey Sand	0.5	<0.1	56
Perc-3 (0ft - 5ft)	Clayey Sand	2.0	0.15	51
Perc-4 (0ft - 6ft)	Clayey Sand	19.5	1.35	57
Perc-5 (0ft - 7ft)	Clayey Sand	3.0	0.31	35
Perc-6 (0ft - 3ft)	Clayey Sand	1.0	0.11	31

[1]If proposed infiltration system will mainly rely on vertical downward seepage, the correlated infiltration rates should be used. The correlated infiltration rates were calculated using the LA County Reduction Factor method

The field test results are not intended to be design rates. They represent the result of our tests, at the depths and locations indicated, as described above. The design rate should be determined by the designer by applying an appropriate factor of safety. The designer should take into consideration the variability of the native soils when selecting appropriate design rates. With time, the bottoms of infiltration systems tend to plug with organics, sediments, and other debris. Long term maintenance will likely be required to remove these deleterious materials to help reduce decreases in actual percolation rates.

The percolation test was performed with clear water, whereas the storm water will likely not be clear, but may contain organics, fines, and grease/oil. The presence of these deleterious materials will tend to decrease the rate that water percolates from the infiltration system. Design of the storm water infiltration systems should account for the presence of these materials and should incorporate structures/devices to remove these deleterious materials.

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Based on the soils encountered in our borings, we expect the percolation rates of the soils could be different than measured in the field due to variations in fines and gravel content. The design elevation and size of the proposed infiltration system should account for this expected variability in infiltration rates.

Infiltration testing should be performed after construction of the infiltration system to verify the design infiltration rates. It should be noted that siltation and vegetation growth, along with other factors, may affect the infiltration rates of the infiltration areas. The actual infiltration rate may vary from the values reported here. Infiltration systems should be located at least 10 feet from any existing or proposed foundation system.

3.8 Corrosion Potential

Results of soluble sulfate testing indicate that ASTM Type V Portland cement should be used for all concrete on and below grade. Foundation concrete may be designed for exposure class S2 in accordance with the provisions of the ACI Design Manual, Section 318, Chapter 19.

Laboratory test results indicate the on-site soils have a pH of 8.19 and 7.97, a minimum resistivity values of 669 and 970 ohm-centimeters, sulfate contents of 0.15 and 0.37 percent, and a chloride contents of 95 and 145 ppm, as shown on the attached Summary of Laboratory Results sheet.

These values indicate corrosive environment for the ferrous metals and corrosion engineer should be consulted to further evaluate corrosive potential of the on-site soils to underground ferrous metals.

Refer to the Summary of Laboratory Results in Appendix B for the complete results of the corrosivity testing conducted in conjunction with this geotechnical exploration.

4.0 RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

4.1 Geotechnical Considerations

The site appears suitable for the proposed construction based upon geotechnical conditions encountered in the test borings and provided the geotechnical engineering recommendations included in this report are implemented in the design and construction of the project.

Due to the anticipated seismic induced settlement, liquefaction potential, and presence of relatively high compressibility of clay soils, we recommend that the upper subsurface soils be improved and densified by rammed aggregate pier (RAP) systems. The proposed building may be supported by shallow foundations bearing on the RAP improved soils. As an alternative, the

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proposed building may be supported on drilled shaft foundations. Shallow foundations bearing on engineered fill may be used to support minor on-site structures.

Due to the low bearing capacity of the near surface soils, the upper on-site soils should be over-excavated to the depth of 2 feet below the deepest bottom of foundation or 4 feet below the existing grades, whichever is greater, within the footprint of the proposed building. The excavated soils should be replaced with engineered fill. On-site soils are considered suitable for use as engineered fill beneath floor slabs and foundations.

Geotechnical engineering recommendations for foundation systems and other earth connected phases of the project are outlined below. The recommendations contained in this report are based upon the results of field and laboratory testing (which are presented in Appendices A and B), engineering analyses, and our current understanding of the proposed project.

4.2 Earthwork

The following presents recommendations for site preparation, excavation, subgrade preparation and placement of engineered fills on the project. The recommendations presented for the design and construction of earth supported elements including, foundations, slabs, and pavements, are contingent upon following the recommendations outlined in this section.

Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, foundation bearing soils, and other geotechnical conditions exposed during the construction of the project.

4.2.1 Site Preparation

Strip and remove existing vegetation, top soil, organic materials, root systems, and other deleterious materials from proposed building and pavement areas. We recommend stripping topsoil to depths that expose soils with less than 3 percent organics and no roots having a diameter greater than 1/8 inch. While the depth of the unsuitable soils should be expected to vary, the thickness of the top soil layer may be estimated to range between 6 and 12 inches for construction budgeting purposes. The thickness of the top soil layer was not determined during our field exploration. Therefore, the actual depth of stripping should be verified by engineering observations made during the grading operations at the project. Exposed surfaces should be free of mounds and depressions which could prevent uniform compaction.

Stripped materials consisting of vegetation and organic materials should be wasted from the site, or used to revegetate landscaped areas or exposed slopes after completion of grading operations. If it is necessary to dispose of organic materials on site, they should be placed in non-structural areas, and in fill sections not exceeding 5 feet in height

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The site should be initially graded to create a relatively level surface to receive fill, and provide for a relatively uniform thickness of fill beneath proposed building structures.

Excavations that extend below groundwater would involve construction dewatering to maintain excavations in a relatively dry condition. Pumping from sumps may be utilized to control water within excavations. Well points may be required for significant groundwater flow, or where excavations penetrate groundwater to a significant depth. Excavation contractors are responsible for dewatering the planned temporary excavations and maintaining the stability of the excavations.

Although evidence of fill or underground facilities such as septic tanks, cesspools, basements, and utilities was not observed during the site reconnaissance, such features could be encountered during construction. If fill materials or underground facilities are encountered, such materials and features should be removed and the excavation thoroughly cleaned prior to backfill placement and/or construction.

4.2.2 Subgrade Preparation

Due to the low bearing capacity of the near surface soils, the upper on-site soils should be over-excavated within the footprint of the proposed buildings to a depth of 4 feet below existing grades, or 2 feet below the deepest foundation, whichever is greater. Over-excavation should extend laterally a minimum of 3 feet beyond the perimeter of the proposed buildings.

Excavations should then be backfilled with engineered fill placed in lifts of 8 inches or less in loose thickness and should be moisture conditioned and compacted following the recommendations in section 4.2.4 of this report.

Care should be taken to prevent wetting or drying of the bearing materials during construction. Wet, dry, or loose/disturbed material in the bottom of the footing excavations should be removed before foundation concrete is placed.

Subsequent to the surface clearing, grubbing, and other overexcavation efforts, subgrade soils beneath exterior slabs and pavements should be scarified, moisture conditioned, and compacted to a minimum depth of 10 inches. The moisture content and compaction of subgrade soils should be maintained until slab or pavement construction.

Exposed areas which will receive fill, once properly cleared and benched where necessary, should be scarified to a minimum depth of 10 inches, moisture conditioned, and compacted per the compaction requirements in Section 4.2.4.

The exposed soils at the bottom of the excavations are expected to have elevated water contents and may pump or yield during attempts to compact the bottom of the excavation. If such conditions occur, the bottom of the pits should be over-excavated to a minimum depth of

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12 inches, and replaced with well sorted crushed aggregate materials. The aggregate materials should be wrapped (top, bottom and sides) with non-woven geotextile such as Mirafi 140N, or an approved equivalent. The crushed aggregate could have a nominal particle size of ¾ to 1 inch. The aggregate layer and the geotextile layer are anticipated to create a stable platform beneath the overlying backfill materials.

4.2.3 Fill Materials and Placement

All fill materials should be inorganic soils free of vegetation, debris, and fragments larger than three inches in size. Pea gravel or other similar non-cementitious, poorly-graded materials should not be used as fill or backfill without the prior approval of the geotechnical engineer. The on-site soils are considered suitable for use as engineered fill for this project.

Approved on-site and imported materials may be used as fill material for the following:

- general site grading
- foundation areas
- interior floor slab areas
- foundation backfill
- pavement areas
- exterior slab areas

Imported soils for use as fill material within proposed building and structure areas should conform to low volume change materials as indicated below:

Gradation	Percent Finer by Weight (ASTM C 136)
3”	100
No. 4 Sieve	50-100
No. 200 Sieve	20-50

- Liquid Limit ..... 30 (max)
- Plasticity Index ..... 15 (max)
- Maximum expansion index* ..... 20 (max)

*ASTM D 4829

Engineered fill should be placed and compacted in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift. Fill lifts should not exceed eight inches loose thickness.

4.2.4 Compaction Requirements

Recommended compaction and moisture content criteria for engineered fill materials are as follows:

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Material Type and Location	Per the Modified Proctor Test (ASTM D 1557)		
	Minimum Compaction Requirement (%)	Range of Moisture Contents for Compaction Above Optimum	
		Minimum	Maximum
On-site soils and low volume change imported fill:			
Beneath foundations:	95	0%	+3%
Beneath interior slabs:	95	0%	+3%
Fill greater than 5 feet in depth	95	0%	+3%
Miscellaneous backfill and behind retain walls:	90	0%	+3%
Beneath pavements:	95	0%	+3%
Utility Trenches*:	90	0%	+3%
Bottom of native soil excavation receiving fill:	95	0%	+3%
Aggregate base (beneath pavements):	95	0%	+3%

* Upper 12 inches should be compacted to 95% within pavement and structural areas. Low-volume change imported soils should be used in structural areas.

4.2.5 Grading and Drainage

Positive drainage should be provided during construction and maintained throughout the life of the development. Infiltration of water into utility trenches or foundation excavations should be prevented during construction. Planters and other surface features which could retain water in areas adjacent to the building or pavements should be sealed or eliminated. In areas where sidewalks or paving do not immediately adjoin the structure, we recommend that protective slopes be provided with a minimum grade of approximately 5 percent for at least 10 feet from perimeter walls.

Backfill against footings, exterior walls, and in utility and sprinkler line trenches should be well compacted and free of all construction debris to reduce the possibility of moisture infiltration. We recommend a minimum horizontal setback distance of 10 feet from the perimeter of any building and the high-water elevation of the nearest storm-water retention basin.

Roof drainage should discharge into splash blocks or extensions when the ground surface beneath such features is not protected by exterior slabs or paving. Sprinkler systems and landscaped irrigation should not be installed within 5 feet of foundation walls.

4.2.6 Exterior Slab Design and Construction

Exterior slabs-on-grade, exterior architectural features, and utilities founded on, or in backfill may experience some movement due to the volume change of the backfill. To reduce the potential for damage caused by movement, we recommend:

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- exterior slabs should be supported directly on subgrade fill with no, or very low expansion potential;
- strict moisture-density control during placement of subgrade fills;
- maintain proper subgrade moisture until placement of slabs;
- placement of effective control joints on relatively close centers and isolation joints between slabs and other structural elements;
- provision for adequate drainage in areas adjoining the slabs;
- using of designs which allow vertical movement between the exterior slabs and adjoining structural elements.

4.2.7 Utility Trenches

It is anticipated that the on-site soils and fill materials will provide suitable support for underground utilities and piping that may be installed. Any soft and/or unsuitable material encountered at the bottom of excavations should be removed and be replaced with an adequate bedding material. A non-expansive granular material with a sand equivalent greater than 30 should be used for bedding and shading of utilities, unless specified otherwise by the utility manufacturer.

On-site materials are considered suitable for backfill of utility and pipe trenches from one foot above the top of the pipe to the final ground surface, provided the material is free of organic matter and deleterious substances. Imported low volume change soils should be used for trench backfill in structural areas.

Trench backfill should be mechanically placed and compacted as discussed earlier in this report. Compaction of initial lifts should be accomplished with hand-operated tampers or other lightweight compactors. Where trenches are placed beneath slabs or footings, the backfill should satisfy the gradation and expansion index requirements of engineered fill discussed in this report. Flooding or jetting for placement and compaction of backfill is not recommended.

4.2.8 Construction Considerations

It is anticipated that excavations for the proposed construction can be accomplished with conventional earthmoving equipment. On-site clayey soils may pump and unstable subgrade conditions could develop during general construction operations, particularly if the soils are wetted and/or subjected to repetitive construction traffic. The use of light construction equipment would aid in reducing subgrade disturbance. The use of remotely operated equipment, such as a backhoe, would be beneficial to perform cuts and reduce subgrade disturbance. Should unstable subgrade conditions develop stabilization measures will need to be employed.

At the time of our study, moisture contents of the surface and near-surface native soils ranged from about 10 percent to 25 percent. Based on these moisture contents, some moisture conditioning will likely be needed for the project. The soils may need to be dried by aeration

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during dry weather conditions, or an additive, such as lime, cement, or kiln dust, may be needed to stabilize the soil.

Upon completion of filling and grading, care should be taken to maintain the subgrade moisture content prior to construction of floor slabs and pavements. Construction traffic over the completed subgrade should be avoided to the extent practical. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. If the subgrade should become desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and recompacted prior to floor slab and pavement construction.

The geotechnical engineer should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation, proof-rolling, placement and compaction of controlled compacted fills, backfilling of excavations to the completed subgrade.

We recommend that the earthwork portion of this project be completed during extended periods of dry weather if possible. If earthwork is completed during the wet season (typically November through April) it may be necessary to take extra precautionary measures to protect subgrade soils. Wet season earthwork operations may require additional mitigative measures beyond that which would be expected during the drier summer and fall months. This could include diversion of surface runoff around exposed soils and draining of ponded water on the site. Once subgrades are established, it may be necessary to protect the exposed subgrade soils from construction traffic.

Excavations into the on-site soils will possibly encounter groundwater, depending upon the final depth of excavation. The individual contractor(s) is responsible for designing and constructing stable, temporary excavations as required to maintain stability of both the excavation sides and bottom. Excavations should be sloped or shored in the interest of safety following local, and federal regulations, including current OSHA excavation and trench safety standards.

4.3 Foundations

Due to the anticipated seismic induced settlement, liquefaction potential, and presence of relatively high compressibility clay soils, we recommend that the upper subsurface soils be improved and densified by rammed aggregate piers (RAP) systems. The proposed building may be supported by shallow foundations bearing on the RAP improved soils. As an alternative, the proposed building may be supported on drilled shaft foundations. Shallow foundations bearing on engineered fill may be used to support minor on-site structures.

4.3.1 Rammed Aggregate Pier (RAP) Recommendations

Rammed Aggregate Pier elements may be installed for support of the main building. RAP elements provide increased bearing capacity, reduce liquefaction potential, and enhance settlement control by delivering a composite stiffened bearing materials to reduce the matrix soil compressibility.

The construction process typically consists of utilizing pre-augered or displacement methods. The augered or displaced cavities are backfilled with aggregate that is compacted in place using static crowd pressure augmented with a high frequency, low amplitude, vibratory hammer. The impact hammer densifies aggregate vertically while the tamper foot forces aggregate laterally into cavity sidewalls resulting in stiff RAP elements and a stiffened matrix/soil. Constructed diameters may range from 20 to 30 inches depending on the method of installation.

In the event that RAP foundation systems are considered for the project, the proposed buildings can be supported on shallow foundations. RAP design is typically performed by a specialty design build ground improvement contractor who should be consulted to provide further analysis and recommendations. The specialty contractor shall make their own interpretation of strength parameters and soil characteristics from the boring logs, CPT soundings, and laboratory testing presented in Appendix A and B of this report.

4.3.2 Shallow Foundations with RAP Design Recommendations

DESCRIPTION	RECOMMENDATION
Structures	Proposed Main Building
Bearing Material	Improved subsurface soils comprised of a composite of RAP systems, engineered fill extending to a minimum of 4 feet below existing grades or 2 feet below deepest foundation, whichever is greater, and onsite soils beneath 4 feet bgs.
Allowable Bearing Pressure	To be provided by specialty contractor based on RAP design
Minimum Width	Walls: 18 inches; Columns: 24 inches
Minimum Embedment Depth Below Finished Grade	18 inches
Estimated Static Settlement	1 inch (should be achieved by specialty contractor design)
Estimated Differential Static Settlement	¾ inch in 40 feet. (should be achieved by specialty contractor design)

4.3.3 Shallow Foundations Design Recommendations

DESCRIPTION	RECOMMENDATION
Structures	Minor structures with foundation width less than 5 feet

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DESCRIPTION	RECOMMENDATION
	such as trash enclosures, equipment pads, and low retaining walls.
Bearing Material	Engineered fill extending to a minimum of 4 feet below existing grades or 2 feet below the deepest foundation, whichever is greater.
Allowable Bearing Pressure	2,000 psf for footing widths up to 6 feet.
Maximum Width	6 feet
Minimum Width	Walls: 18 inches; Columns: 24 inches
Minimum Embedment Depth Below Finished Grade	18 inches
Estimated Static Settlement	1 inch
Estimated Differential Static Settlement	¾ inch in 40 feet.

4.3.4 Drilled Shaft Design Recommendations

As an alternative, the proposed building may be supported on drilled shaft foundations. Terracon can provide design and construction recommendations to support the proposed building in the event shallow foundations and RAP systems were not feasible.

4.4 Floor Slab

DESCRIPTION	VALUE
Interior floor system	Slab-on-grade concrete.
Floor slab support	Engineered fill extending to a minimum of 4 feet below existing grades or 2 feet below the deepest foundation, whichever is greater.
Sub-base/Capillary break	4-inches of Class II Aggregate Base materials
Modulus of subgrade reaction	200 pounds per square inch per inch (psi/in) (The modulus was obtained based on engineered fill, aggregate sub-base, and estimates obtained from NAVFAC 7.1 design charts). This value is for a small loaded area (1 Sq. ft or less) such as for point loads and should be adjusted for larger loaded areas.

In areas of exposed concrete, control joints should be saw cut into the slab after concrete placement in accordance with ACI Design Manual, Section 302.1R-37 8.3.12 (tooled control joints are not recommended). Additionally, dowels should be placed at the location of proposed construction joints. To control the width of cracking (should it occur) continuous slab reinforcement should be considered in exposed concrete slabs.

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Positive separations and/or isolation joints should be provided between slabs and all foundations, columns or utility lines to allow independent movement. Interior trench backfill placed beneath slabs should be compacted in accordance with recommendations outlined in the Earthwork section of this report. Other design and construction considerations, as outlined in the ACI Design Manual, Section 302.1R are recommended.

The use of a vapor retarder or barrier should be considered beneath concrete slabs on grade that will be covered with moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture to prevent moisture migration. When conditions warrant the use of a vapor retarder, the slab designer and slab contractor should refer to ACI 302 and ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder/barrier.

4.5 Lateral Earth Pressures

The lateral earth pressure recommendations herein are applicable to the design of rigid retaining walls subject to slight rotation, such as cantilever, or gravity type concrete walls. These recommendations are not applicable to the design of geogrid-reinforced-backfill walls. Recommendations covering these types of wall systems are beyond the scope of services for this assignment; however, we are available to develop recommendations for the design of such wall systems upon request.

For onsite soils used as engineered fill above any free water surface, recommended equivalent fluid pressures for foundation elements are:

ITEM	VALUE (Onsite Soils)
Active Case	37 psf/ft
Passive Case[1]	385 psf/ft
At-Rest Case	57 psf/ft
Surcharge Pressure	0.31*(Surcharge)
Coefficient of friction	0.35[2]

[1] Note: Ignore passive pressure in the upper 18 inches because of soil disturbance.
[2] Note: Reduce to 0.30 when used in conjunction with passive pressure.

The lateral earth pressures herein do not include any factor of safety and are not applicable for submerged soils/hydrostatic loading. Additional recommendations may be necessary if such conditions are to be included in the design.

Surcharge pressure for uniform pressure acting at the back of the wall should be applied to the wall as a uniform pressure over the entire wall height and is added to the static earth pressures. Other surcharge loads should be considered where they are located within a horizontal distance

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behind the wall equal to 1.5 times the height of the wall. Surcharge stresses due to point loads, line loads, and those of limited extent, such as compaction equipment, should be evaluated using elastic theory.

Fill against foundation and retaining walls should be compacted to densities specified in the Earthwork section of this report. Compaction of each lift adjacent to walls should be accomplished with hand-operated tampers or other lightweight compactors.

Adequate drainage should be provided behind the walls to collect water from irrigation, landscaping, surface runoff, or other sources, to achieve a free-draining backfill condition. The wall back drain should consist of Class 2 permeable materials that are placed behind the entire wall height to within 18 inches of ground surface at the top of the wall. As a minimum, the width of Class 2 permeable materials behind the wall should be two feet. Water collected by the back drain should be directed to an appropriate outlet, such as weep holes or perforated pipes, for disposal.

4.6 Pavements

4.6.1 Design Recommendations

Three samples of the near surface soils were obtained and tested to determine their Resistance Value (R-value). These tests all produced R-values above 50. These samples were taken in the upper 24 inches of the surface. Given the cut and fills anticipated at the site, we recommend obtaining additional R-value samples once rough grading is near completion, within 1 foot. Some of the underlying soils have more fines and will eventually mixed with the upper materials, likely resulting in lower R-values. At this time, a design R-value of 45 was used for the Asphalt Concrete (AC) and Portland Cement Concrete (PCC) pavement designs. The anticipated daily traffic of 200 trucks corresponds to a traffic index (TI) of 10.0. Since the entire parking area will not receive this much truck traffic, we are also providing pavement sections for TI's of 6.0, 7.0, and 8.0 for use by the civil engineer in determining which pavement section to use for the truck parking areas. These TI's correspond to daily truck traffic volumes of 2, 10, and 30, respectively. We have also included a pavement section for automobile traffic using a TI of 5.0.

Assuming the pavement subgrades will be prepared as recommended within this report, the following pavement sections should be considered minimums for this project for the traffic indices assumed in the table below. As more specific traffic information becomes available, we should be contacted to reevaluate the pavement design recommendations.

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Conventional Asphalt Concrete Design					
Layer	**Thickness (inches)**				
	TI=5.0	**TI=6.0**	**TI=7.0**	**TI=8.0**	**TI= 10.0**
Asphalt Concrete	3.0	3.0	4.0	4.0	5.0
Aggregate Base	4.0	6.0	6.0	9.0	11.0

1. See **Project Description** for more specifics regarding traffic classifications.
2. All materials should meet the current California Department of Transportation (Caltrans) Standard Specifications, latest edition.

Portland Cement Concrete Design			
Layer	**Thickness (inches)**		
	TI=5.0	**TI=10.0**	**Dumpster Pad** [3]
PCC	4”	8” Jointed reinforced with dowels or 10” Plain Jointed	7”
Aggregate Base	--	4”	4”

1. All materials should meet the current Caltrans Standard Specifications, latest edition.
2. In areas of anticipated heavy traffic, fire trucks, delivery trucks, or concentrated loads (e.g. dumpster pads), and areas with repeated turning or maneuvering of heavy vehicles.

These pavement sections are considered minimal sections based upon the expected traffic and the existing subgrade conditions. However, they are expected to function with periodic maintenance and overlays if good drainage is provided and maintained.

Subgrade soils beneath all pavements should be scarified, moisture conditioned, and compacted to a minimum depth of 10 inches. All materials should meet the CALTRANS Standard Specifications for Highway Construction. Aggregate base materials should meet the gradation and quality requirement of Class 2 Aggregate Base in Caltrans Standard Specifications, latest edition, Sections 25 through 29.

All concrete for rigid pavements should have a minimum flexural strength of 600 psi, and be placed with a maximum slump of four inches. Proper joint spacing will also be required to prevent excessive slab curling and shrinkage cracking. All joints should be sealed to prevent entry of foreign material and dowelled where necessary for load transfer.

It is our experience that asphalt pavement sections will suffer severe distress and shoving in tight turning radiuses areas. We recommend that portland cement concrete pavement should be used for such areas.

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Asphalt concrete sections must be thickened to 8 inches at transitions with concrete, especially at the trash enclosure pad, loading zones, escape lane intersections, and any other transitions with concrete.

Preventative maintenance should be planned and provided for through an on-going pavement management program in order to enhance future pavement performance. Preventative maintenance activities are intended to slow the rate of pavement deterioration, and to preserve the pavement investment.

Preventative maintenance consists of both localized maintenance (e.g. crack sealing and patching) and global maintenance (e.g. surface sealing). Preventative maintenance is usually the first priority when implementing a planned pavement maintenance program and provides the highest return on investment for pavements.

4.6.2 Pavement Construction Considerations

Materials and construction of pavements for the project should be in accordance with the requirements and specifications of the State of California Department of Transportation, or other approved local governing specifications.

Base course or pavement materials should not be placed when the surface is wet. Surface drainage should be provided away from the edge of paved areas to minimize lateral moisture transmission into the subgrade.

5.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related construction phases of the project.

The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between explorations, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or

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prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

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APPENDIX A

FIELD EXPLORATION

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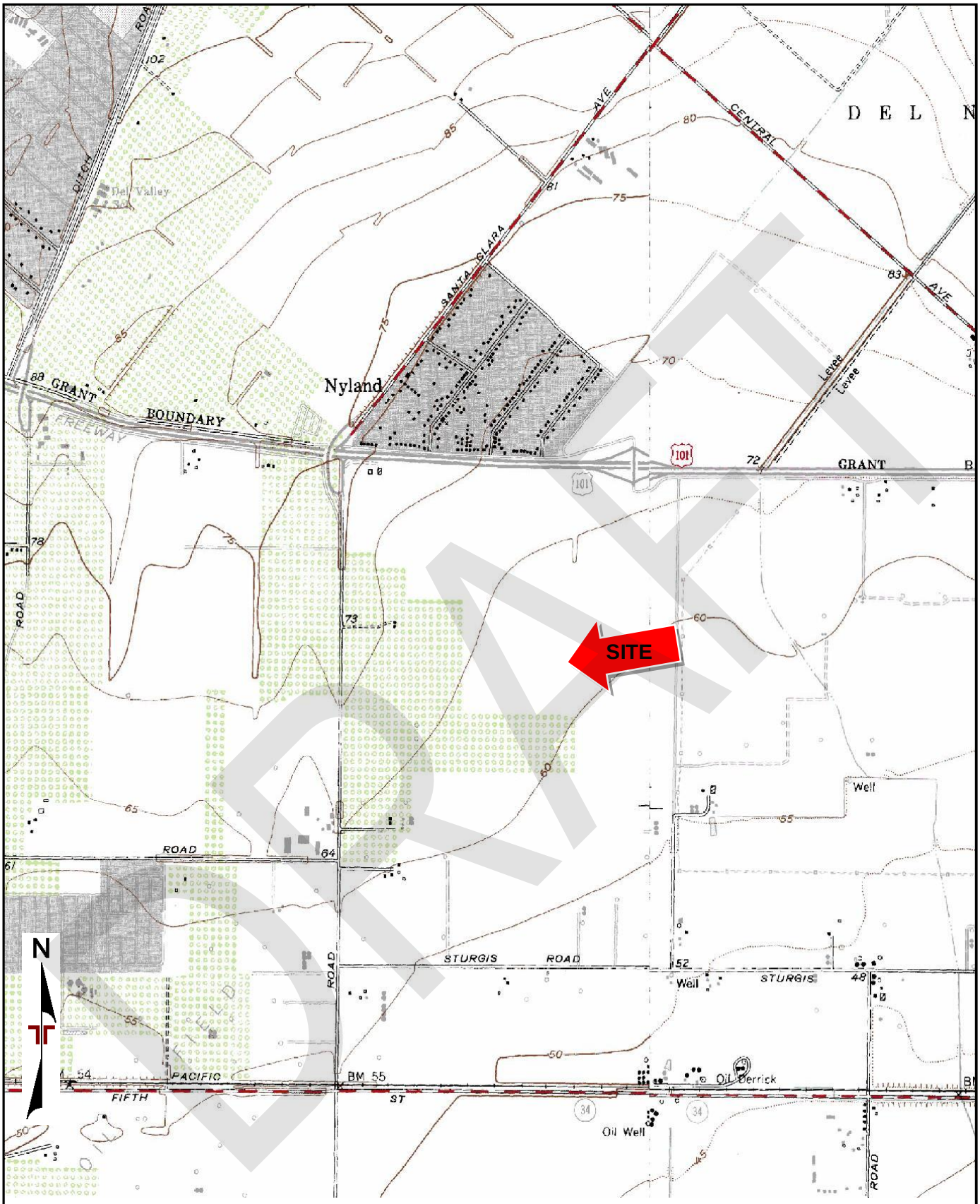
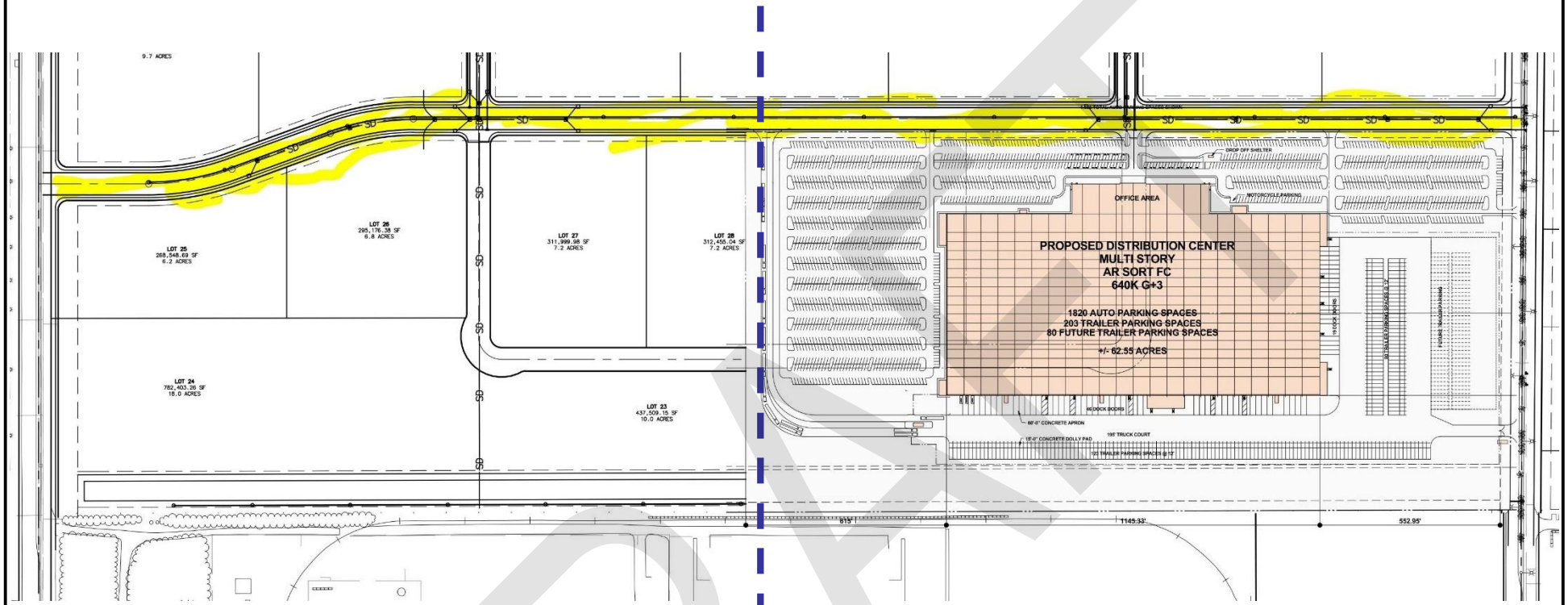


TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY
QUADRANGLES INCLUDE: OXNARD, CA (1/1/1967) and CAMARILLO, CA (1/1/1967).

Project Manager: JM	Project No. 60185017	Terracon 1421 Edinger Ave Ste C Tustin, CA 92780-6287	SITE LOCATION	Exhibit
Drawn by: DTB	Scale: 1"=2,000'		Seefried: Industrial Warehouse; Oxnard **Highway 101 and Del Norte Boulevard** **Oxnard, CA**	A-1
Checked by: JM	File Name: A-1			
Approved by: FB	Date: 04/2018			



A-3

A-4

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N

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	JM
Drawn by:	DTB
Checked by:	JM
Approved by:	FB

Project No.	60185017
Scale:	1"≈480'
File Name:	A-2
Date:	04/2018

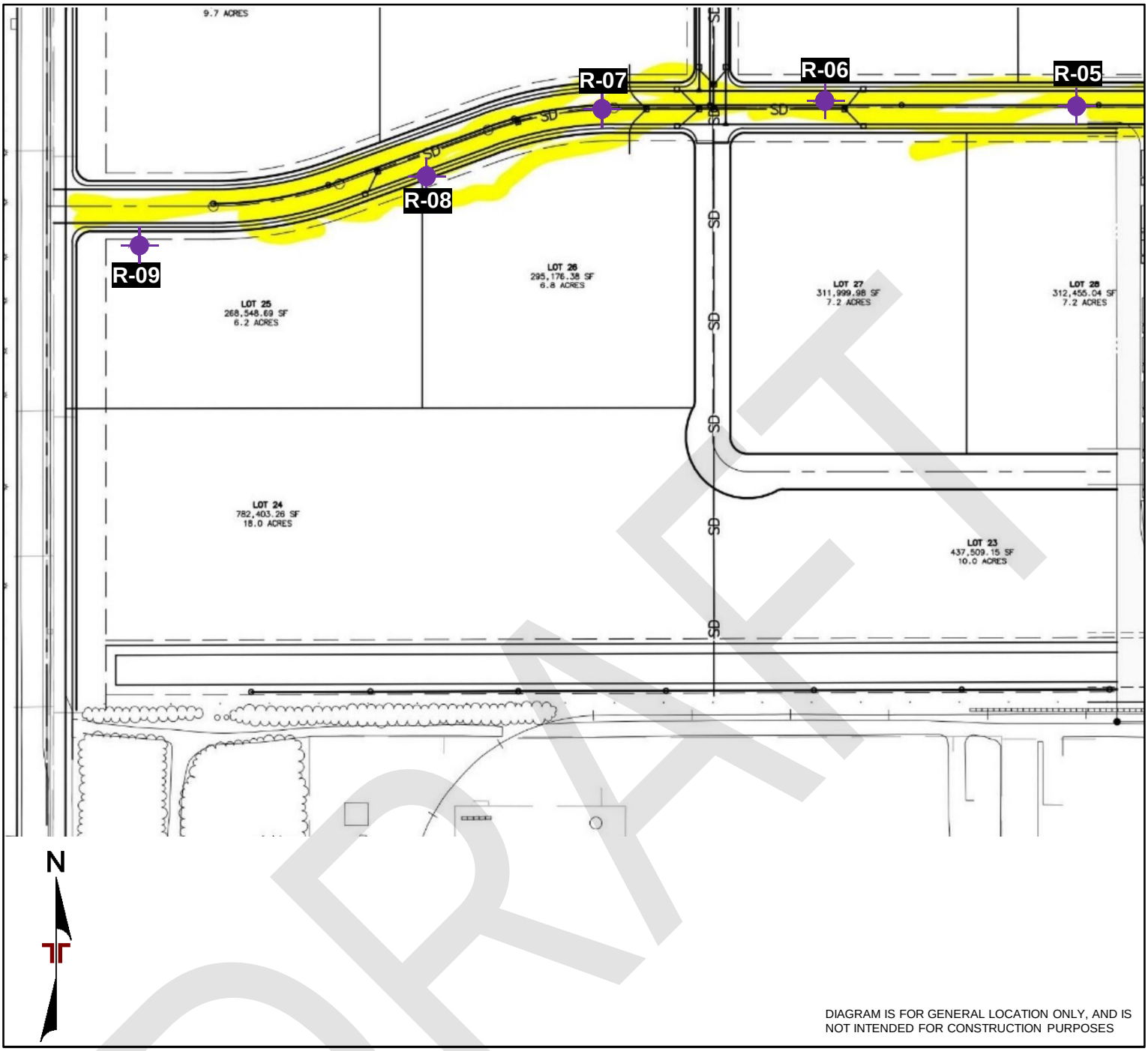
Terracon
Consulting Engineers & Scientists
1421 Edinger Avenue Ste C Tustin, California 92780
PH. (949) 261-0051 FAX. (949) 261-6110

BORING LOCATION PLAN

Seefried: Industrial Warehouse; Oxnard
Highway 101 and Del Norte Boulevard
Oxnard, CA

Exhibit

A-2



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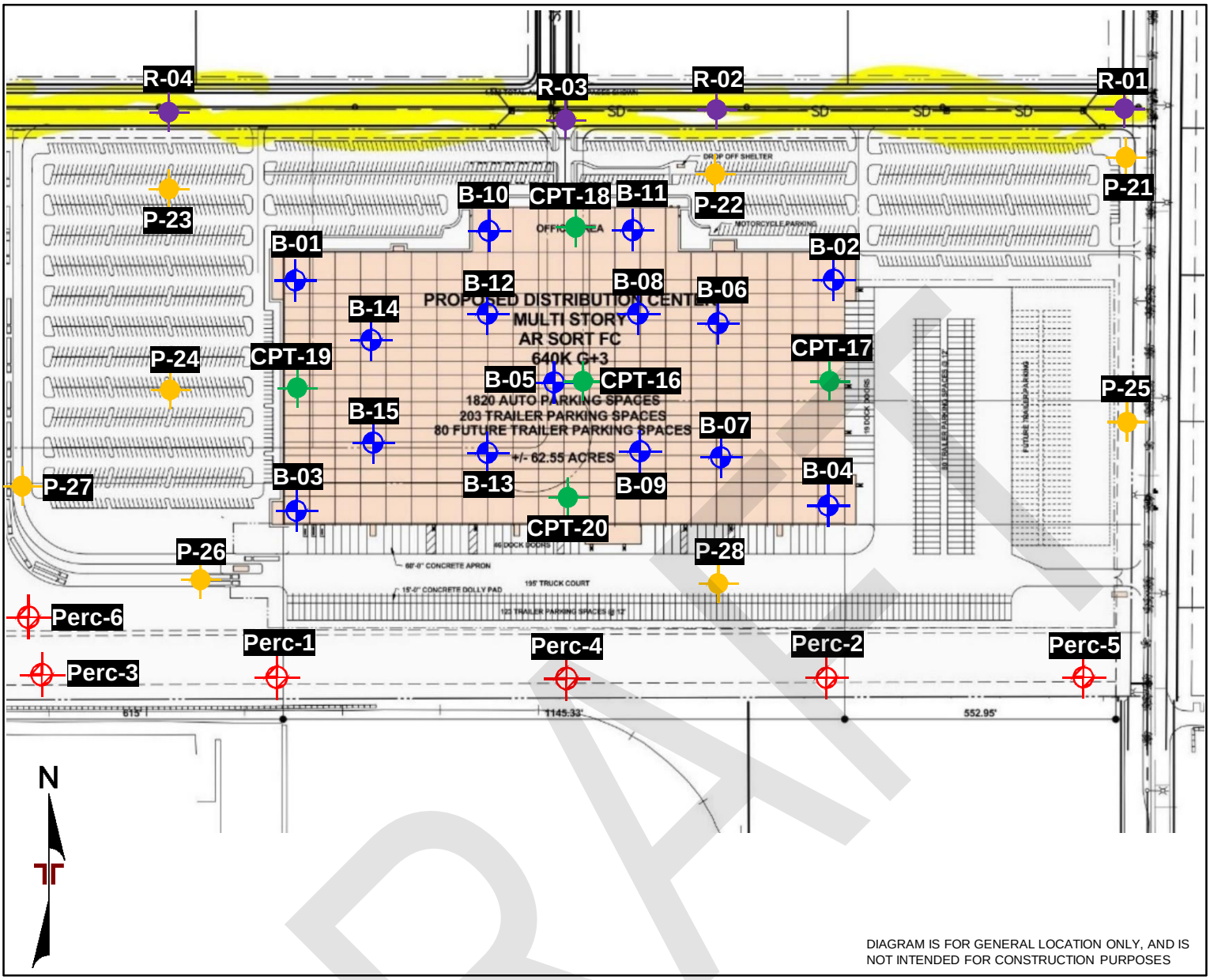
LEGEND

R-01 **BORING APPROXIMATE LOCATION**

Project Manager: JM	Project No. 60185017	Terracon Consulting Engineers & Scientists	BORING LOCATION PLAN
Drawn by: DTB	Scale: 1"≈300'	1421 Edinger Avenue Ste C, Tustin, California 92780	Seefried: Industrial Warehouse; Oxnard
Checked by: JM	File Name: A-3	PH. (949) 261-0051, FAX. (949) 261-6110	**Highway 101 and Del Norte Boulevard**
Approved by: FB	Date: 04/2018		**Oxnard, CA**

Exhibit A-3



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LEGEND

- **B-01** BORING APPROXIMATE LOCATION
- **Perc-1** BORING AND PERCOLATION TEST APPROXIMATE LOCATION
- **P-01** BORING APPROXIMATE LOCATION
- **CPT-01** CONE PENETRATION TEST APPROXIMATE LOCATION
- **R-01** BORING APPROXIMATE LOCATION

Project Manager: JM	Project No. 60185017	Terracon Consulting Engineers & Scientists	BORING LOCATION PLAN
Drawn by: DTB	Scale: 1"≈300'	1421 Edinger Avenue Ste C, Tustin, California 92780	Seefried: Industrial Warehouse; Oxnard
Checked by: JM	File Name: A-4	PH. (949) 261-0051, FAX. (949) 261-6110	Highway 101 and Del Norte Boulevard
Approved by: FB	Date: 04/2018		Oxnard, CA

Exhibit A-4

Field Exploration Description

Field exploration program included the advancement of thirty-seven (37) test borings and six (6) Cone Penetrometer Test (CPT) soundings to approximate depths ranging between 5 to 58 feet below existing site grades. The field program was performed at the site between April 3 and April 11, 2018. Due to current agricultural operations, the location of B-10 was not accessible to our crew. Furthermore. one additional CPT attempt was performed onsite to advance through refusal materials.

The drilled test borings were advanced with a truck-mounted Mobil B-61 drill rig utilizing 6-inch diameter hollow-stem auger. CPT soundings were advanced with a 30-ton truck providing the reaction weight for pushing the cone assembly into the ground at a constant rate of 20-mm per second (approximately four feet per minute). The cone tip resistance and sleeve friction resistance were recorded every 2-cm (approximately ¾-inch) and stored in digital form.

The borings were located in the field by using the proposed site plan, an aerial photograph of the site, a hand-held GPS device, and measuring from existing site features and property lines. The accuracy of boring locations should only be assumed to the level implied by the method used. The location of the borings and CPT soundings is shown on the attached Boring Location Plan, Exhibit A-2.

Continuous lithologic logs of the borings were recorded by the field engineer during the drilling operations. At selected intervals, samples of the subsurface materials were taken by driving split-spoon or ring-barrel samplers. Bulk samples of subsurface materials were also obtained. Groundwater conditions were evaluated in the borings at the time of site exploration.

Penetration resistance measurements were obtained by driving the split-spoon and ring-barrel samplers into the subsurface materials with a 140-pound automatic hammer falling 30 inches. The penetration resistance value is a useful index in estimating the consistency or relative density of materials encountered.

An automatic hammer was used to advance the split-barrel sampler in the borings performed on this site. A significantly greater efficiency is achieved with the automatic hammer compared to the conventional safety hammer operated with a cathead and rope. This higher efficiency has an appreciable effect on the SPT-N value. The effect of the automatic hammer's efficiency has been considered in the interpretation and analysis of the subsurface information for this report.

The samples were tagged for identification, sealed to reduce moisture loss, and taken to our laboratory for further examination, testing, and classification. Information provided on the boring logs attached to this report includes soil descriptions, consistency evaluations, boring depths, sampling intervals, and groundwater conditions. The borings were backfilled with auger cuttings prior to the drill crew leaving the site.

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BORING LOG NO. B-01

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2144° Longitude: -119.1328°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
4.0	58+/-	
		SANDY LEAN CLAY (CL), dark brown, very soft
7.5	54.5+/-	
		POORLY GRADED SAND WITH SILT (SP-SM), trace clay, brown, loose
		medium dense
14.5	47.5+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown stiff
		very soft

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
								25-16-9	41
		2-2-2				25	96		
5		0-0-1 N=1							
		1-5-11				22	100		
10		4-7-7 N=14							10
15		7-6-6				21	105		
20		0-0-0 N=0						37-25-12	72
25									

WATER LEVEL OBSERVATIONS: ▽ (5 ft)

EXPANSION INDEX

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

▽ *At completion of drilling*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-6

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-01

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2144° Longitude: -119.1328°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		LEAN CLAY WITH SAND (CL), dark grayish brown *(continued)* stiff
28.0	34+/-	**POORLY GRADED SAND WITH SILT (SP-SM)**, grayish brown, medium dense
33.5	28.5+/-	**SANDY LEAN CLAY (CL)**, dark grayish brown, very stiff
39.5	22.5+/-	**FAT CLAY (CH)**, dark grayish brown, medium stiff
43.3	19+/-	**SANDY LEAN CLAY (CL)**, dark grayish brown, very stiff
47.3	15+/-	**CLAYEY SAND (SC)**, dark grayish brown
50.0	12+/-	

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	4-5-5	32	92		
30	3-7-5 N=12			NP	11
35	5-10-31	21	104		
40	2-2-5 N=7			54-27-27	97
45	6-15-10	41	85		
50					

WATER LEVEL OBSERVATIONS; SAMPLE TYPE; EXPANSION INDEX; STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)): not recorded.

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-6

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-01

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2144° Longitude: -119.1328°

Approximate Surface Elev: 62 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		SANDY LEAN CLAY (CL), dark grayish brown, very stiff				8-10-11 N=21								52
	51.5	10.5+/-												
		Boring Terminated at 51.5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-6

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-02

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2143° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
0.0	53+/-	**CLAYEY SAND (SC)**, dark brown, very loose
5.0	42.5+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown, medium dense; very loose
15.5	38.5+/-	**SANDY LEAN CLAY (CL)**, dark brown, soft
19.5	33+/-	**LEAN CLAY WITH SAND (CL)**, brown, stiff
25.0		

DEPTH (Ft.)	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		15						24-16-8	37
	0-2-1 N=3								
5	5-9-12					21	106		
	4-7-3 N=10								
10	1-1-1					20			
15	2-2-1 N=3								
20	5-9-7					24	101		
25									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018
Boring Completed: 04-05-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-7

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-02

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2143° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), brown, medium dense
28.5	29.5+/-	
		POORLY GRADED SAND WITH GRAVEL (SP), tan, medium dense
35.0	23+/-	
		SANDY LEAN CLAY (CL), dark grayish brown, stiff
39.3	19+/-	
		LEAN CLAY WITH SAND (CL), dark gray stiff
		very stiff

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
		4-7-5 N=12		
30		8-10-35	17	
35		4-6-7 N=13		
40		4-7-8	45	78
45		2-7-12 N=19		
50				

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018 | Boring Completed: 04-05-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-7

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-02

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2143° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	LEAN CLAY WITH SAND (CL), dark gray *(continued)*					10-21-23					22	103		
51.5	hard													
	6.5+/-													
	Boring Terminated at 51.5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018
Boring Completed: 04-05-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-7

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-03

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1328°

Approximate Surface Elev: 63 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		SILTY CLAYEY SAND (SC-SM), dark brown, very loose
4.8	58.5+/-	
		SANDY LEAN CLAY (CL), dark brown, medium stiff
7.3	56+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, loose
9.8	53.5+/-	
		CLAYEY SAND (SC), dark brown, medium dense
		loose
16.0	47+/-	
		SANDY LEAN CLAY (CL), dark grayish brown, medium stiff
19.5	43.5+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown medium stiff

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
			12						24-17-7	45
		0-2-1 N=3								
5		0-3-2					22	104		
		0-0-5 N=5								
10		11-14-9					22	103		
15		1-3-2 N=5								
20		3-4-5					30	96		
25										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-8

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-03

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1328°

Approximate Surface Elev: 63 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
		LEAN CLAY WITH SAND (CL), dark grayish brown *(continued)* stiff		3-4-5 N=9		
29.0	34+/-	**CLAYEY SAND**, dark grayish brown, medium dense	30	11-19-11	17	111
35.0	28+/-	**LEAN CLAY WITH SAND (CL)**, dark grayish brown, medium stiff	35	4-4-4 N=8		
40.3	23+/-	**LEAN CLAY (CL)**, trace sand, dark grayish brown, stiff	40	5-7-10	38	82
42.0	21+/-	**CLAYEY SAND (SC)**, dark grayish brown				
45.0	18+/-	**LEAN CLAY (CL)**, trace sand, dark grayish brown, very stiff	45	6-10-9 N=19	33	92
			50			

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-8

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-03

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1328°

Approximate Surface Elev: 63 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), trace sand, dark grayish brown, very stiff *(continued)*					8-15-12					26	98		
	51.5 black	11.5+/-												
	Boring Terminated at 51.5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018 | Boring Completed: 04-06-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-8

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-04

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
4.5	53.5+/-	**CLAYEY SAND (SC)**, dark brown, very loose
11.0	47+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown, medium dense; loose, sample not recovered; very loose
24.0	34+/-	**LEAN CLAY WITH SAND (CL)**, dark brown, very soft; dark grayish brown, medium stiff; brown, stiff
		SANDY LEAN CLAY (CL), dark brown, hard

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
	2-2-4	20	104
5	3-5-5 N=10		
	15-9-5		
10	0-0-1 N=1		
15	0-3-3	32	89
20	4-6-6 N=12		

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018 | Boring Completed: 04-05-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-9

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-04

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
		SANDY LEAN CLAY (CL), dark brown, hard *(continued)*		5-20-36	20	108
		stiff	30	3-6-9 N=15		
		very stiff	35	8-12-14	32	91
39.0	19+/-					
		LEAN CLAY WITH SAND (CL), dark grayish brown, stiff	40	3-7-4 N=11		
43.0	15+/-					
		SANDY LEAN CLAY (CL), dark brown, very stiff	45	5-6-15		
			50			

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018 | Boring Completed: 04-05-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-9

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-04

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2131° Longitude: -119.1292°

Approximate Surface Elev: 58 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	SANDY LEAN CLAY (CL), dark brown, very stiff *(continued)*					3-5-11 N=16								
	51.5	6.5+/-												
	Boring Terminated at 51.5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-05-2018
Boring Completed: 04-05-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-9

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BORING LOG NO. B-05

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2138° Longitude: -119.131°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
0.0	59	**SILTY CLAYEY SAND (SC-SM)**, dark brown, very loose brown
6.0	53+/-	**SILTY SAND (SM)**, brown, medium dense
10.5	48.5+/-	**LEAN CLAY (CL)**, trace sand, dark grayish brown, soft
13.0	46+/-	**SILTY CLAYEY SAND (SC-SM)**, dark brown, very loose
		loose
25.0	34+/-	

Sample Depth (Ft.)	Field Test Results	Atterberg Limits LL-PL-PI	Percent Fines
0.0–6.0		24-17-7	46
2.5	0-0-1 N=1		
5.0	3-6-6 N=12	NP	18
7.5	5-14-9 N=23		
10.0	2-1-1 N=2		
15.0	2-1-1 N=2	23-18-5	46
20.0	0-2-3 N=5		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-10

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BORING LOG NO. B-05

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2138° Longitude: -119.131°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		LEAN CLAY WITH SAND (CL), dark grayish brown, medium stiff
		stiff
31.0	28+/-	**CLAYEY SAND**, dark brown, loose
35.0	24+/-	**SILT (ML)**, dark grayish brown, stiff
40.0	19+/-	**LEAN CLAY (CL)**, trace sand, dark grayish brown, stiff

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		2-3-4 N=7						43-24-19	75
30		7-4-5 N=9							
35		5-7-6 N=13						36-25-11	98
40		2-3-6 N=9							
45		2-4-5 N=9						40-24-16	87
50									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-10

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BORING LOG NO. B-05

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2138° Longitude: -119.131°

Approximate Surface Elev: 59 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), trace sand, dark grayish brown, stiff *(continued)*					5-5-7 N=12								
	51.5	7.5+/-												
	Boring Terminated at 51.5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-06-2018
Boring Completed: 04-06-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-10

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-06

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2141° Longitude: -119.1299°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		loose
7.3	51+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown, medium dense
10.0	48+/-	**LEAN CLAY WITH SAND (CL)**, dark grayish brown, soft
13.5	44.5+/-	**POORLY GRADED SAND WITH CLAY**, grayish brown, very loose
15.5	42.5+/-	**LEAN CLAY WITH SAND (CL)**, dark grayish brown, soft
		very stiff
21.5	36.5+/-	***Boring Terminated at 21.5 Feet***

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		2-1-2 N=3							
5		2-3-5				10	81		
		2-5-9 N=14							
10		0-1-2				39	81		
15		0-1-2 N=3							
20		8-15-20				28	99		

WATER LEVEL OBSERVATIONS: While drilling; At completion of drilling

EXPANSION INDEX

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-09-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-11

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-07

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2134° Longitude: -119.1299°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		loose
7.5	50.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, medium dense
		very loose
11.0	47+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, very soft
14.8	43.5+/-	
		CLAYEY SAND (SC), grayish brown, medium dense
		loose
20.8	37.5+/-	
21.5	36.5+/-	**LEAN CLAY WITH SAND (CL)**, dark grayish brown, medium stiff to stiff
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
5	0-1-2	24	98
	2-2-3 N=5		
10	9-16-26	16	108
	0-0-0 N=0		
15	3-10-13	21	103
20	2-3-5 N=8		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-09-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-12

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-08

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2141° Longitude: -119.1304°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
4.5	54.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, loose
6.5	52.5+/-	
		CLAYEY SAND (SC), dark brown
7.5	51.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, dense
10.0	49+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, very stiff
		soft
		very stiff
21.5	37.5+/-	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		1-1-1 N=2							
5		2-4-8				20	101		
		17-23-23 N=46							
10		22-22-12				38	87		
15		0-1-1 N=2							
20		4-11-13				24	101		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-03-2018
Boring Completed: 04-03-2018
Drill Rig: LAR
Driller: CalPac
Project No.: 60185017
Exhibit: A-13

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-09

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2134° Longitude: -119.1304°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		medium dense
7.0	52+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, medium dense
9.8	49.5+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, very soft
13.5	45.5+/-	
		CLAYEY SAND (SC), dark brown, loose
17.0	42+/-	
		SANDY LEAN CLAY (CL), dark grayish brown, very soft
21.0	38+/-	
21.5	37.5+/-	**CLAYEY SAND (SC)**, dark brown, very loose
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
	2-3-3	25	99
5	4-7-10 N=17		
	10-23-27	19	108
10	0-0-1 N=1		
15	4-8-7	21	102
20	0-0-1 N=1		

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-03-2018 | Boring Completed: 04-03-2018

Drill Rig: LAR | Driller: CalPac

Project No.: 60185017 | Exhibit: A-14

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-11

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2146° Longitude: -119.1305°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
4.5	54.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), dark brown, medium dense
		brown
10.8	48.5+/-	very loose
		LEAN CLAY WITH SAND (CL), dark grayish brown, soft
13.5	45.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), dark brown, medium dense
		sample not recovered
19.5	39.5+/-	
		SANDY LEAN CLAY (CL), dark brown, stiff
21.5	37.5+/-	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
		2-2-4	19	106
5		2-4-6 N=10		
		16-21-24	20	110
10		1-1-1 N=2		
15		19-18-16		
20		0-4-7 N=11		

WATER LEVEL OBSERVATIONS: ▽ While drilling; ▽ At completion of drilling

GRAPHIC LOG | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018 | Boring Completed: 04-04-2018
Drill Rig: LAR | Driller: CalPac
Project No.: 60185017 | Exhibit: A-15

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-12

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.214° Longitude: -119.1323°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		brown, medium dense
6.0	54+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, medium dense
		very loose
10.8	49+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, soft
		medium stiff
		medium stiff to stiff
21.5	38.5+/-	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
	4-3-3	23	102
5	3-5-7 N=12		
	13-23-33	21	107
10	2-1-1 N=2		
15	3-2-5	35	89
20	2-4-4 N=8		

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-10-2018 | Boring Completed: 04-10-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-16

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-13

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2134° Longitude: -119.1316°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		brown
5.0	55+/-	
		CLAYEY SAND (SC), brown, medium dense
6.8	53.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, medium dense
		very loose
11.0	49+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, soft
		stiff
21.5	38.5+/-	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
	1-1-1 N=2		
5	2-6-12	19	111
	6-6-5 N=11		
10	3-1-2	31	89
15	1-1-1 N=2		
20	2-4-9	25	99

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-10-2018
Boring Completed: 04-10-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-17

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-14

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.214° Longitude: -119.1323°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		brown, loose
6.5	53.5+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown, medium dense trace gravel
		no gravel
13.3	47+/-	
		LEAN CLAY WITH SAND (CL), dark grayish brown, soft
		very stiff
21.5	38.5+/-	
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	1-1-1 N=2							
5	3-4-8				19	111		
	5-7-7 N=14							
10	8-17-7				17	112		
15	2-1-1 N=2							
20	7-13-15				25	99		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-10-2018
Boring Completed: 04-10-2018
Drill Rig: LAR
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-18

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. B-15

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2135° Longitude: -119.1323°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
		brown
5.8	56.5+/-	loose
		POORLY GRADED SAND WITH CLAY (SP), brown, loose
		medium dense
11.0	51+/-	very loose
		LEAN CLAY WITH SAND (CL), dark grayish brown, soft
14.0	48+/-	**POORLY GRADED SAND WITH CLAY (SP)**, grayish brown, loose sample not recovered
20.3	42+/-	
21.5	40.5+/-	**LEAN CLAY WITH SAND (CL)**, dark grayish brown, medium stiff to stiff
		Boring Terminated at 21.5 Feet

DEPTH (Ft.)	FIELD TEST RESULTS	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
	2-1-2	21	102
5	1-5-4 N=9		
	19-24-24	19	107
10	1-2-1 N=3		
15	3-5-5		
20	2-4-4 N=8		

GRAPHIC LOG | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | EXPANSION INDEX | STRENGTH TEST (TEST TYPE, COMPRESSIVE STRENGTH (tsf), STRAIN (%)) | ATTERBERG LIMITS (LL-PL-PI) | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

While drilling

At completion of drilling

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-10-2018 | Boring Completed: 04-10-2018

Drill Rig: LAR | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-19

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-21

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.215° Longitude: -119.1272°

Approximate Surface Elev: 58 (Ft.) +/-

DEPTH	ELEVATION (Ft.)
5.0	53+/-

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), dark brown												
	5											
Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

At completion of drilling

at 10 Minutes

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018	Boring Completed: 04-04-2018
Drill Rig: Hand Auger	Driller: Hand Auger
Project No.: 60185017	Exhibit: A-20

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-22

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2149° Longitude: -119.1299°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	POORLY GRADED SAND (SP), dark brown												
	brown											21-18-3	2
5.0	54+/-	5											
	Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

At completion of drilling

at 10 Minutes

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018 | Boring Completed: 04-04-2018

Drill Rig: Hand Auger | Driller: Hand Auger

Project No.: 60185017 | Exhibit: A-21

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-23

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2149° Longitude: -119.1336°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), dark brown													
5.0	57+/-	5	▽										
Boring Terminated at 5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018 | Boring Completed: 04-11-2018

Drill Rig: CME 75 | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-22

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-24

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2138° Longitude: -119.1336°

Approximate Surface Elev: 63 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		SILTY CLAYEY SAND (SC-SM), dark brown											22-18-4	27
4.0	59+/-													
5.0	58+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown	5	▽										
		Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018 | Boring Completed: 04-11-2018

Drill Rig: CME 75 | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-23

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-25

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2135° Longitude: -119.1272°

Approximate Surface Elev: 57 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), dark brown													
brown													
dark brown													
5.0	52+/-	5											
Boring Terminated at 5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018
Boring Completed: 04-04-2018
Drill Rig: Hand Auger
Driller: Hand Auger
Project No.: 60185017
Exhibit: A-24

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-26

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2127° Longitude: -119.1334°

Approximate Surface Elev: 65 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
CLAYEY SAND (SC), dark brown brown													
5.0	60+/-	5	▽										
Boring Terminated at 5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*
▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018 | Boring Completed: 04-04-2018
Drill Rig: Hand Auger | Driller: Hand Auger
Project No.: 60185017 | Exhibit: A-25

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-27

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2132° Longitude: -119.1347°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown
4.0	58+/-	
		LEAN CLAY WITH SAND, dark brown
5.0	57+/-	
		Boring Terminated at 5 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-26

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. P-28

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2126° Longitude: -119.13°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown												
	brown												
5.0	55+/-	5											
	Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-04-2018
Boring Completed: 04-04-2018
Drill Rig: Hand Auger
Driller: Hand Auger
Project No.: 60185017
Exhibit: A-27

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-1

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2121° Longitude: -119.1329°

Approximate Surface Elev: 64 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown, loose													
	5.0	59+/-	5			1-3-5					18	102		
	Boring Terminated at 5 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-28

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-2

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2121° Longitude: -119.1292°

Approximate Surface Elev: 59 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown, very loose													
	5.0	54+/-				0-2-4					24	101		
	Boring Terminated at 5 Feet		5											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-29

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-3

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2121° Longitude: -119.1345°

Approximate Surface Elev: 64 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	FIELD TEST RESULTS	TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	LL-PL-PI
		5	1-1-4				16	82	

CLAYEY SAND (SC), dark brown, very loose

6.0 — 58+/-

SANDY LEAN CLAY (CL), dark brown, medium stiff

7.0 — 57+/-

Boring Terminated at 7 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-30

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-4

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.212° Longitude: -119.131°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown, very loose
6.0	54+/-	
		SANDY LEAN CLAY (CL), dark brown
7.0	53+/-	
		Boring Terminated at 7 Feet

DEPTH (Ft.)	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
5		2-1-1				13			

GRAPHIC LOG

WATER LEVEL OBSERVATIONS

EXPANSION INDEX

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-31

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-5

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2121° Longitude: -119.1275°

Approximate Surface Elev: 56 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown, very loose													
			5			1-2-4					23	99		
	7.0	49+/-												
	Boring Terminated at 7 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-32

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. Perc-6

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2125° Longitude: -119.1347°

Approximate Surface Elev: 63 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	CLAYEY SAND (SC), dark brown													
	3.0	60+/-												
	Boring Terminated at 3 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018
Boring Completed: 04-10-2018
Drill Rig: CME 75
Driller: S/G Drilling
Project No.: 60185017
Exhibit: A-33

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-01

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2153° Longitude: -119.1272°

Approximate Surface Elev: 59 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
		CLAYEY SAND (SC), dark brown
		brown
10.0	49+/-	***Boring Terminated at 10 Feet***

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
		▽										
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018	Boring Completed: 04-09-2018
Drill Rig: CME 75	Driller: S/G Drilling
Project No.: 60185017	Exhibit: A-34

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-02

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2153° Longitude: -119.1299°

Approximate Surface Elev: 57 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
		POORLY GRADED SAND (SP), dark brown												
			5	▽									22-17-5	2
		brown												
10.0	47+/-		10											
		Boring Terminated at 10 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-09-2018 | Boring Completed: 04-09-2018

Drill Rig: CME 75 | Driller: S/G Drilling

Project No.: 60185017 | Exhibit: A-35

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-03

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2153° Longitude: -119.1309°

Approximate Surface Elev: 60 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
		CLAYEY SAND (SC), dark brown
5.0	55+/-	
5.8	54.5+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown
		Boring Terminated at 5.75 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5	▽										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018 | Boring Completed: 04-11-2018

Drill Rig: CME 75 | Driller: 2R Drilling

Project No.: 60185017 | Exhibit: A-36

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-04

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2153° Longitude: -119.1336°

Approximate Surface Elev: 62 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
		CLAYEY SAND (SC), dark brown
5.3	57+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown
10.0	52+/-	
		Boring Terminated at 10 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5	▽										
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At completion of drilling*

▽ *at 10 Minutes*

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-37

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-05

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2153° Longitude: -119.1352°

Approximate Surface Elev: 63 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
3.5	59.5+/-	**CLAYEY SAND (SC)**, dark brown
6.3	57+/-	**LEAN CLAY WITH SAND (CL)**, dark brown
10.0	53+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown
		Boring Terminated at 10 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

At completion of drilling

at 10 Minutes

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-38

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-06

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2154° Longitude: -119.1369°

Approximate Surface Elev: 66 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown
2.8	63.5+/-	
		LEAN CLAY WITH SAND (CL), dark brown
7.0	59+/-	
		POORLY GRADED SAND WITH CLAY (SP), brown
10.0	56+/-	
		Boring Terminated at 10 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-39

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-07

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2154° Longitude: -119.1384°

Approximate Surface Elev: 67 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
0		**CLAYEY SAND (SC)**, dark brown
3.0	64+/-	**LEAN CLAY WITH SAND (CL)**, dark brown
6.0	61+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown
9.0	58+/-	**CLAYEY SAND (SC)**, dark brown
10.0	57+/-	***Boring Terminated at 10 Feet***

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-40

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THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-08

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.215° Longitude: -119.1395°

Approximate Surface Elev: 68 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
		CLAYEY SAND (SC), dark brown
2.5	65.5+/-	
		LEAN CLAY WITH SAND (CL), dark brown
5.5	62.5+/-	
		SANDY LEAN CLAY (CL), brown
8.0	60+/-	
		CLAYEY SAND (SC), brown
10.0	58+/-	
		Boring Terminated at 10 Feet

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-41

DRAFT

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

BORING LOG NO. R-09

PROJECT: Oxnard Confidential Project Gaucho

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

SITE: Highway 101 and Del Norte Boulevard

LOCATION See Exhibit A-2

Latitude: 34.2146° Longitude: -119.1415°

Approximate Surface Elev: 67 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
0.0	67	**CLAYEY SAND (SC)**, dark brown
6.0	61+/-	**POORLY GRADED SAND WITH CLAY (SP)**, brown
10.0	57+/-	***Boring Terminated at 10 Feet***

GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	EXPANSION INDEX	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	5											
	10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.
Elevations estimated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

Not encountered

Terracon
1421 Edinger Ave Ste C
Tustin, CA

Boring Started: 04-11-2018
Boring Completed: 04-11-2018
Drill Rig: CME 75
Driller: 2R Drilling
Project No.: 60185017
Exhibit: A-42

DRAFT

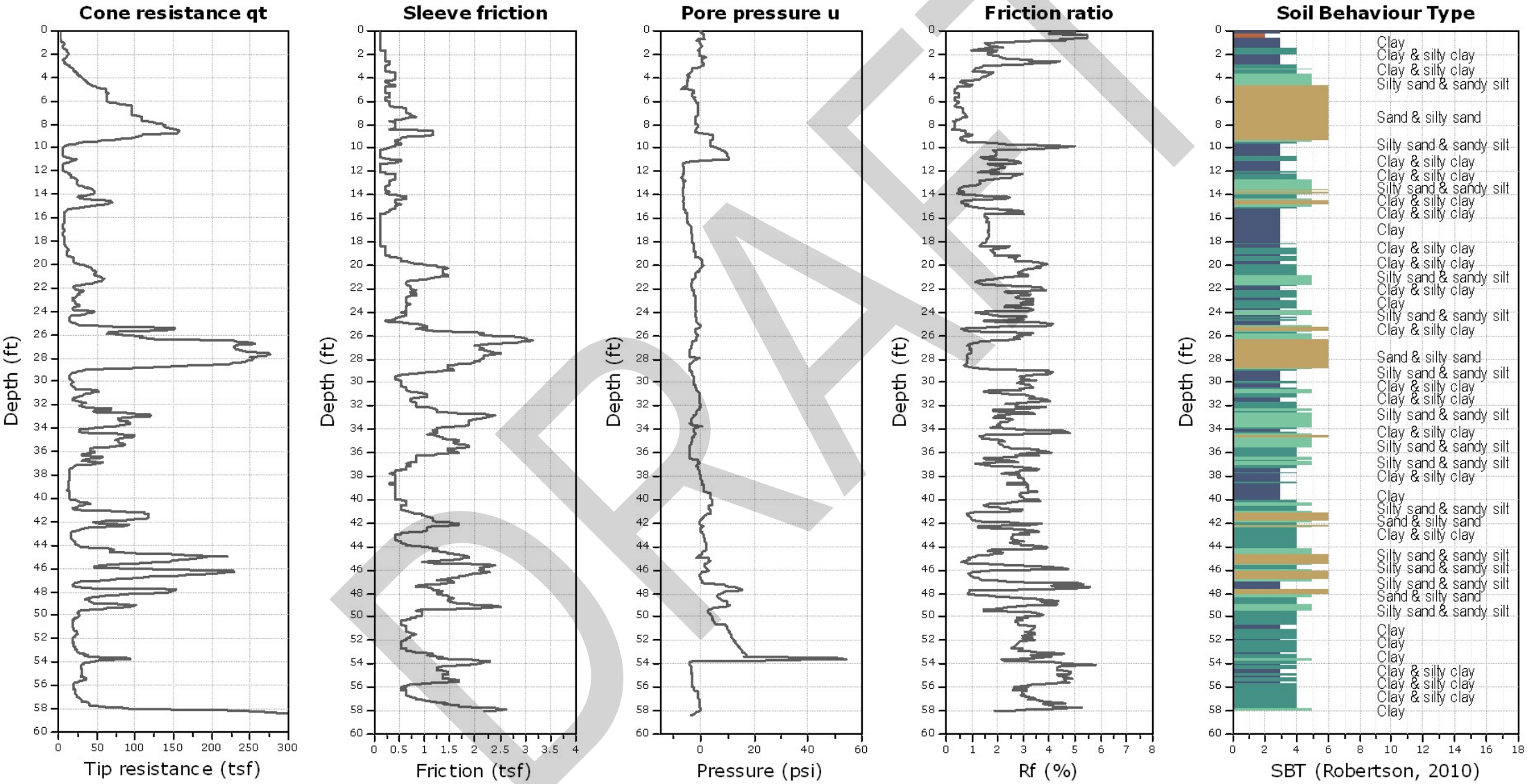
THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-16

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 58.35 ft, Date: 5/3/2018
Cone Type: Vertek



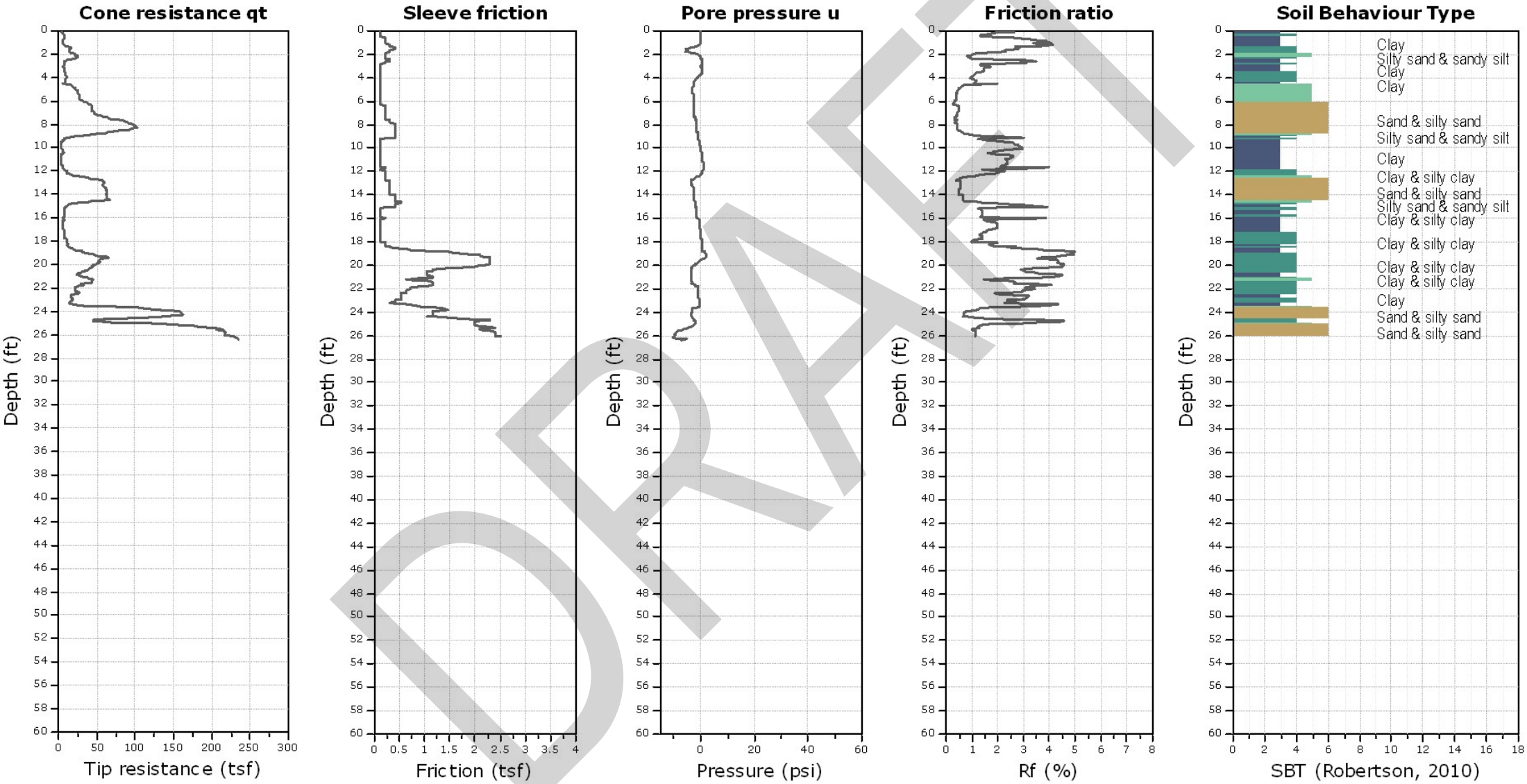
DRAFT

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-17

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 26.38 ft, Date: 5/4/2018
Cone Type: Vertek



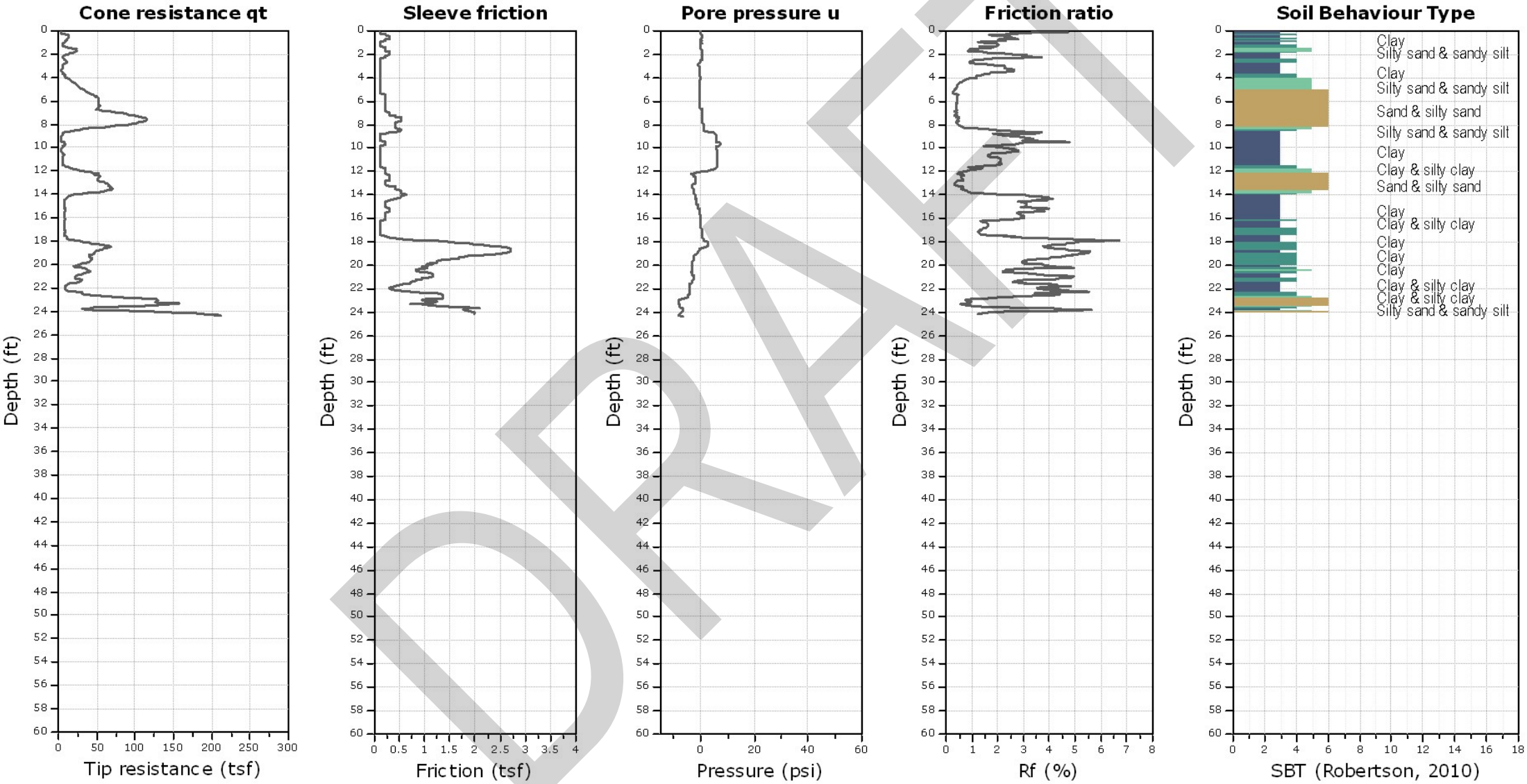
DRAFT

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-17B

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 24.43 ft, Date: 5/4/2018
Cone Type: Vertek



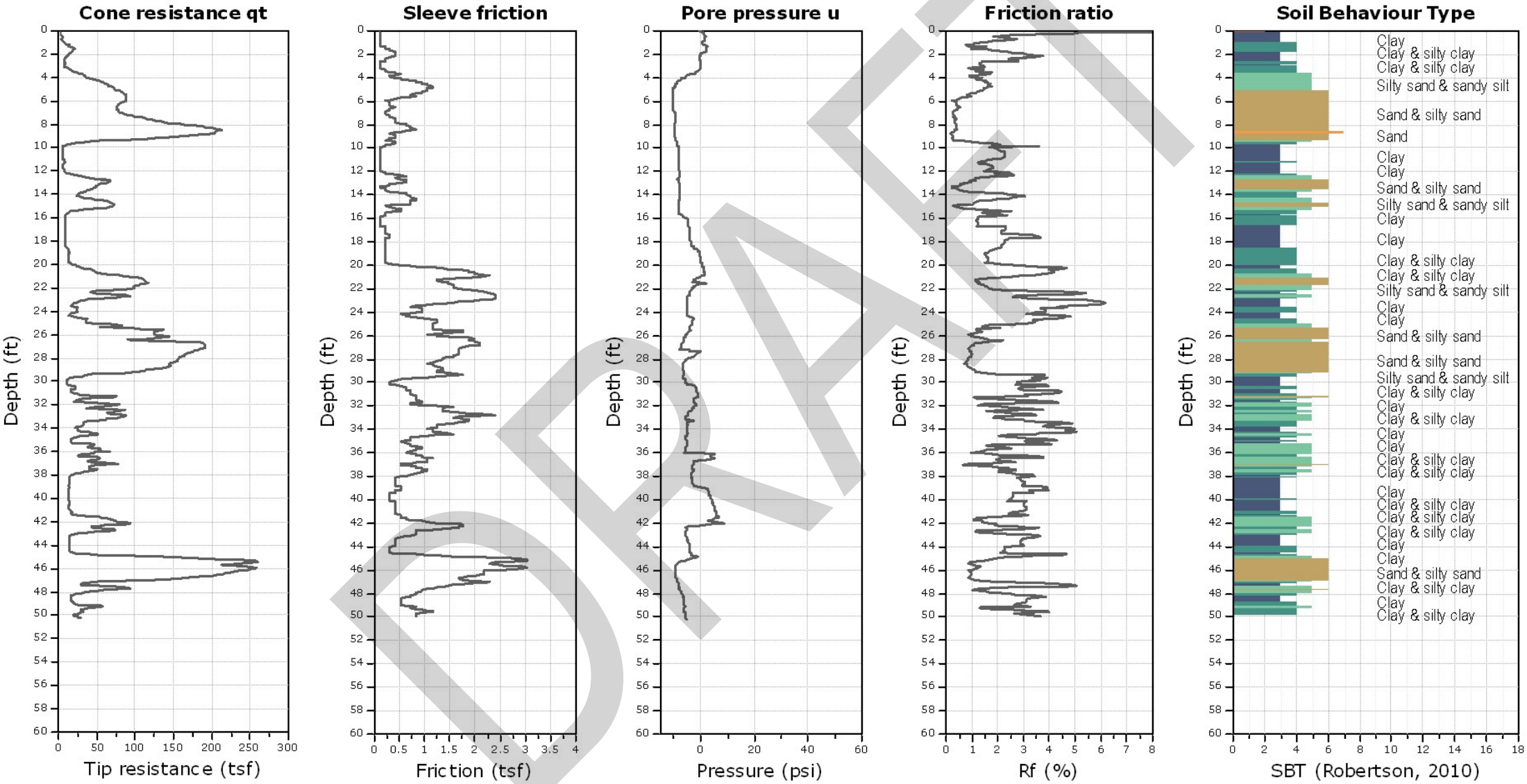
DRAFT

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-18

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 50.22 ft, Date: 5/4/2018
Cone Type: Vertek



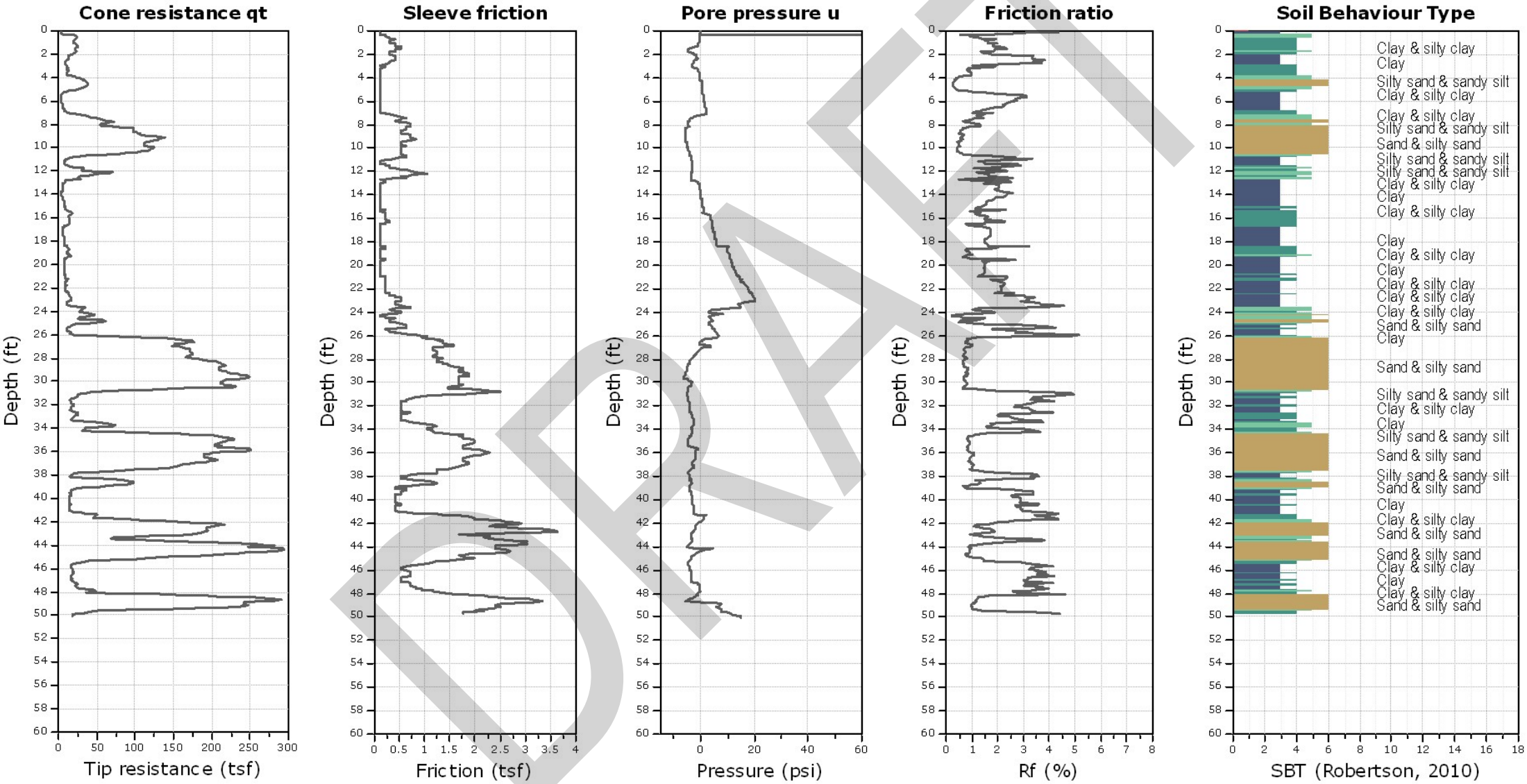
DRAFT

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-19

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 50.02 ft, Date: 5/4/2018
Cone Type: Vertek



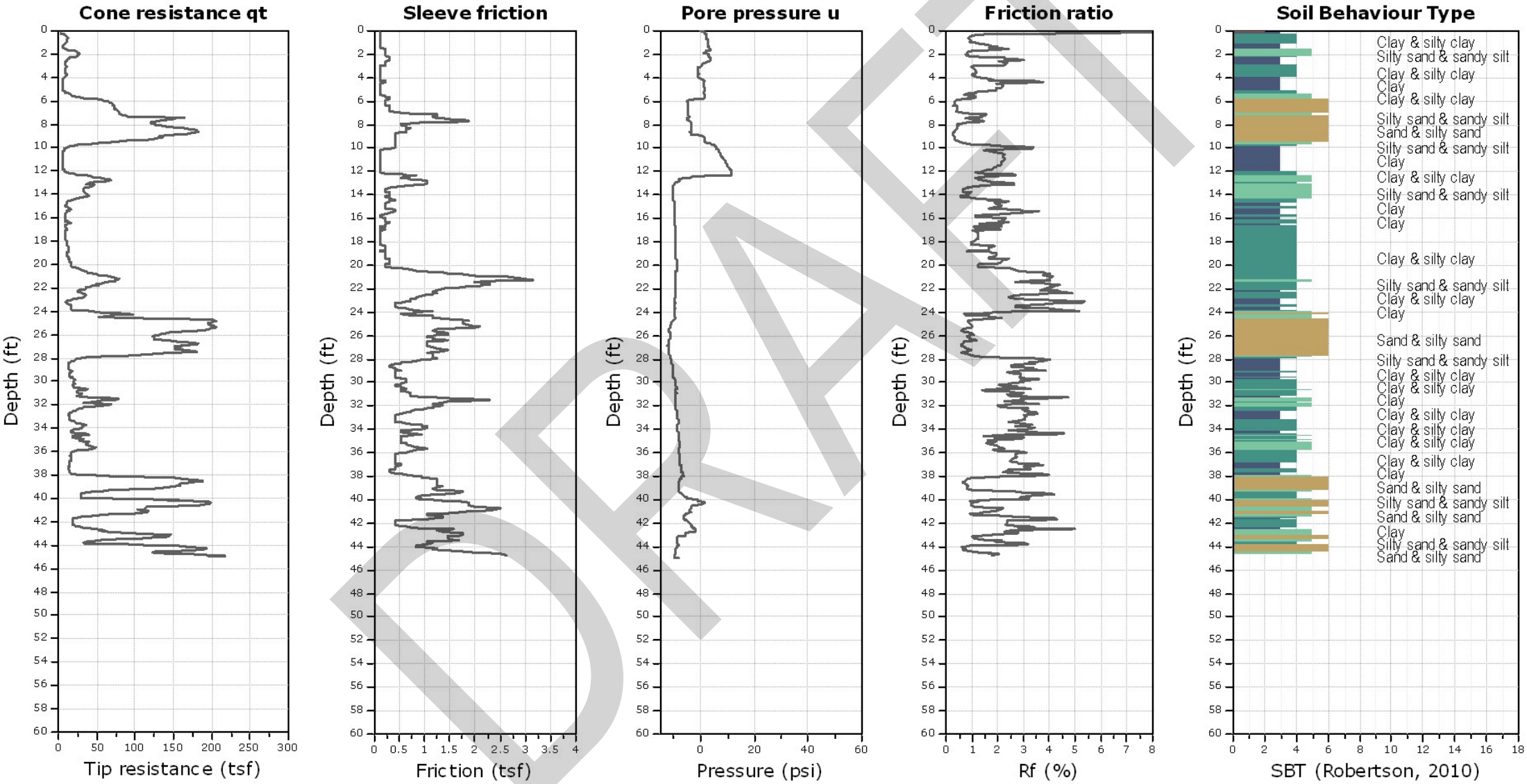
DRAFT

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-20

Project: **Terracon Consultants, Inc./Gaucho**
Location: **N. Del Norte Blvd Oxnard, CA**

Total depth: 45.02 ft, Date: 5/3/2018
Cone Type: Vertek



DRAFT

APPENDIX B

LABORATORY TESTING

DRAFT

Laboratory Testing

Samples retrieved during the field exploration were taken to the laboratory for further observation by the project geotechnical engineer and were classified in accordance with the Unified Soil Classification System (USCS) described in Appendix A. At that time, the field descriptions were confirmed or modified as necessary and an applicable laboratory testing program was formulated to determine engineering properties of the subsurface materials.

Laboratory tests were conducted on selected soil samples and the test results are presented in this appendix. The laboratory test results were used for the geotechnical engineering analyses, and the development of foundation and earthwork recommendations. Laboratory tests were performed in general accordance with the applicable ASTM, local or other accepted standards.

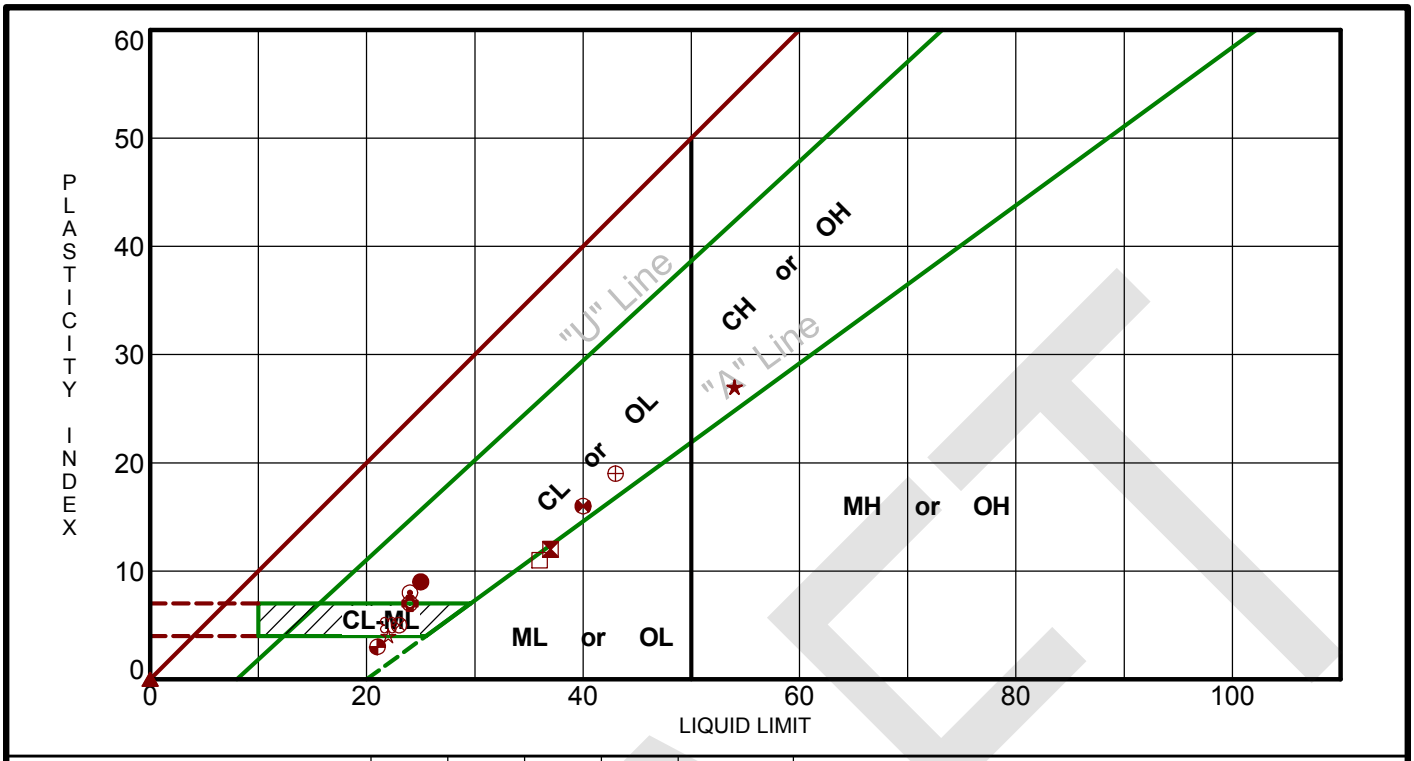
Selected soil samples obtained from the site were tested for the following engineering properties:

- In-situ Dry Density
- Soluble Chlorides
- pH
- Percent Passing #200 Sieve
- Atterberg Limits
- Direst Shear
- In-situ Water Content
- Soluble Sulfates
- Minimum Resistivity
- Consolidation/Collapse Potential
- Expansion Index
- R-Value

DRAFT

ATTERBERG LIMITS RESULTS

ASTM D4318



	Boring ID	Depth	LL	PL	PI	Fines	USCS	Description
●	B-01	0 - 2.5	25	16	9	41	SC	CLAYEY SAND
⊠	B-01	20 - 21.5	37	25	12	72	ML	SILT with SAND
▲	B-01	30 - 31.5	NP	NP	NP	11	SP-SM	POORLY GRADED SAND WITH SILT
★	B-01	40 - 41.5	54	27	27	97	CH	FAT CLAY
⊙	B-02	0 - 2.5	24	16	8	37	SC	CLAYEY SAND
✿	B-03	0 - 2.5	24	17	7	45	SC-SM	SILTY, CLAYEY SAND
○	B-05	0 - 2.5	24	17	7	46	SC-SM	SILTY, CLAYEY SAND
△	B-05	5 - 6.5	NP	NP	NP	18	SM	SILTY SAND
⊗	B-05	15 - 16.5	23	18	5	46	SC-SM	SILTY, CLAYEY SAND
⊕	B-05	25 - 26.5	43	24	19	75	CL	LEAN CLAY with SAND
□	B-05	35 - 36.5	36	25	11	98	ML	SILT
⊗	B-05	45 - 46.5	40	24	16	87	CL	LEAN CLAY
◕	P-22	0 - 5	21	18	3	2	SP	POORLY GRADED SAND
☆	P-24	0 - 4	22	18	4	27	SC-SM	SILTY, CLAYEY SAND
✿	R-02	0 - 10	22	17	5	2	SP	POORLY GRADED SAND

PROJECT: Oxnard Confidential Project Gaucho

SITE: Highway 101 and Del Norte Boulevard

Terracon
1421 Edinger Ave Ste C
Tustin, CA

PROJECT NUMBER: 60185017

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

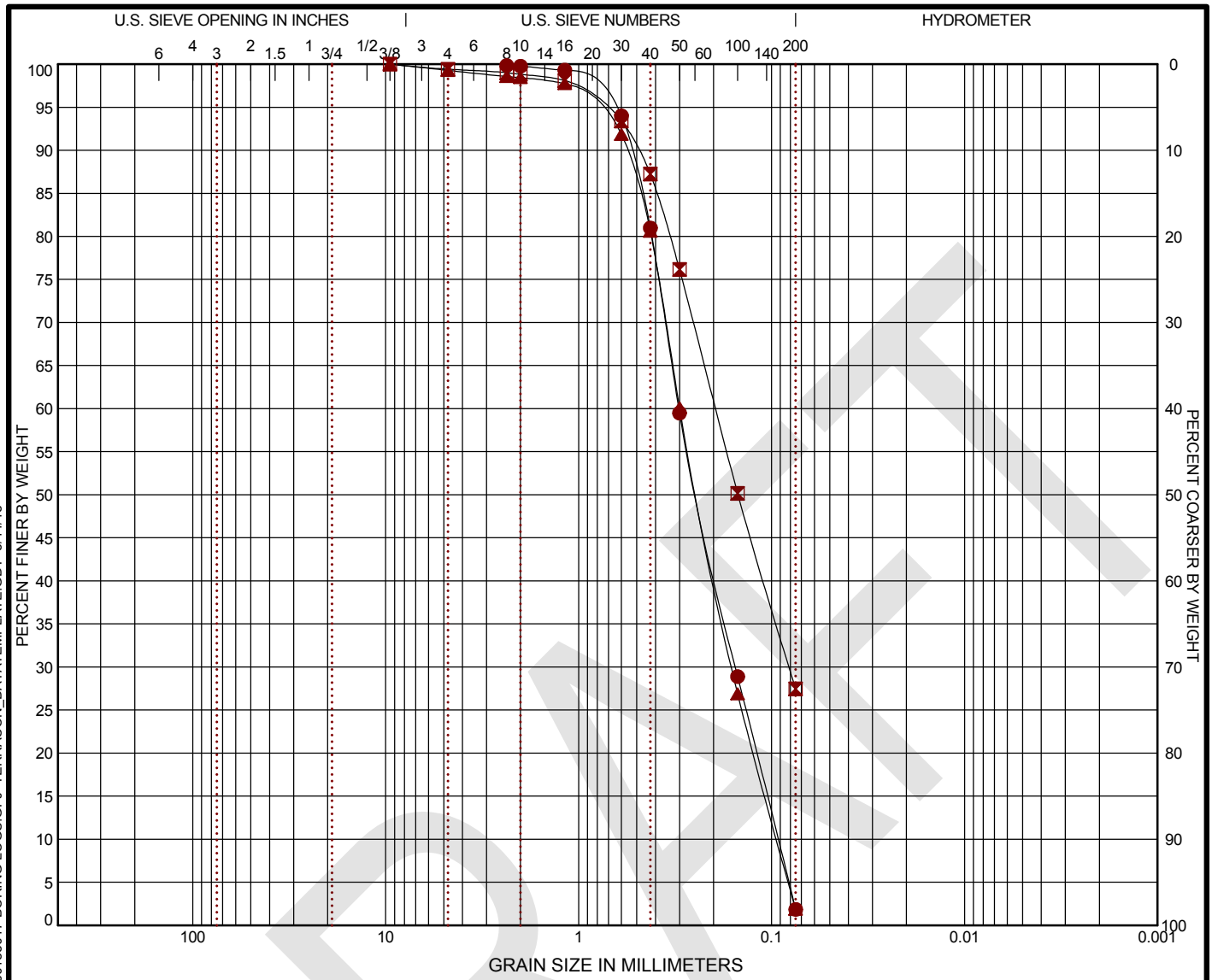
EXHIBIT: B-2

DRAFT

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. ATTERBERG LIMITS 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BORING ID	DEPTH	% COBBLES	% GRAVEL	% SAND	% SILT	% FINES	% CLAY	USCS
●	**P-22**	**0 - 5**			**98.0**		**1.8**		**SP**
⊠	**P-24**	**0 - 4**	**0.0**	**0.6**	**72.0**		**27.5**		**SC-SM**
▲	**R-02**	**0 - 10**	**0.0**	**0.7**	**97.4**		**1.9**		**SP**

	GRAIN SIZE		
	●	⊠	▲
D_{60}	**0.303**	**0.195**	**0.299**
D_{30}	**0.154**	**0.081**	**0.16**
D_{10}	**0.092**		**0.094**
	COEFFICIENTS		
C_C	**0.85**		**0.91**
C_U	**3.27**		**3.18**

●		⊠		▲	
Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
#8	**99.84**	**3/8"**	**100.0**	**3/8"**	**100.0**
#10	**99.76**	**#4**	**99.41**	**#4**	**99.27**
#16	**99.3**	**#8**	**99.0**	**#8**	**98.57**
#30	**94.0**	**#10**	**98.82**	**#10**	**98.43**
#40	**80.98**	**#16**	**98.09**	**#16**	**97.73**
#50	**59.49**	**#30**	**93.4**	**#30**	**91.84**
#100	**28.89**	**#40**	**87.23**	**#40**	**80.6**
#200	**1.85**	**#50**	**76.14**	**#50**	**60.11**
		#100	**50.17**	**#100**	**26.89**
		#200	**27.45**	**#200**	**1.85**

SOIL DESCRIPTION

● POORLY GRADED SAND (SP)

⊠ SILTY, CLAYEY SAND (SC-SM)

▲ POORLY GRADED SAND (SP)

REMARKS

●

⊠

▲

PROJECT: Oxnard Confidential Project Gaucho

SITE: Highway 101 and Del Norte Boulevard

Terracon
1421 Edinger Ave Ste C
Tustin, CA

PROJECT NUMBER: 60185017

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

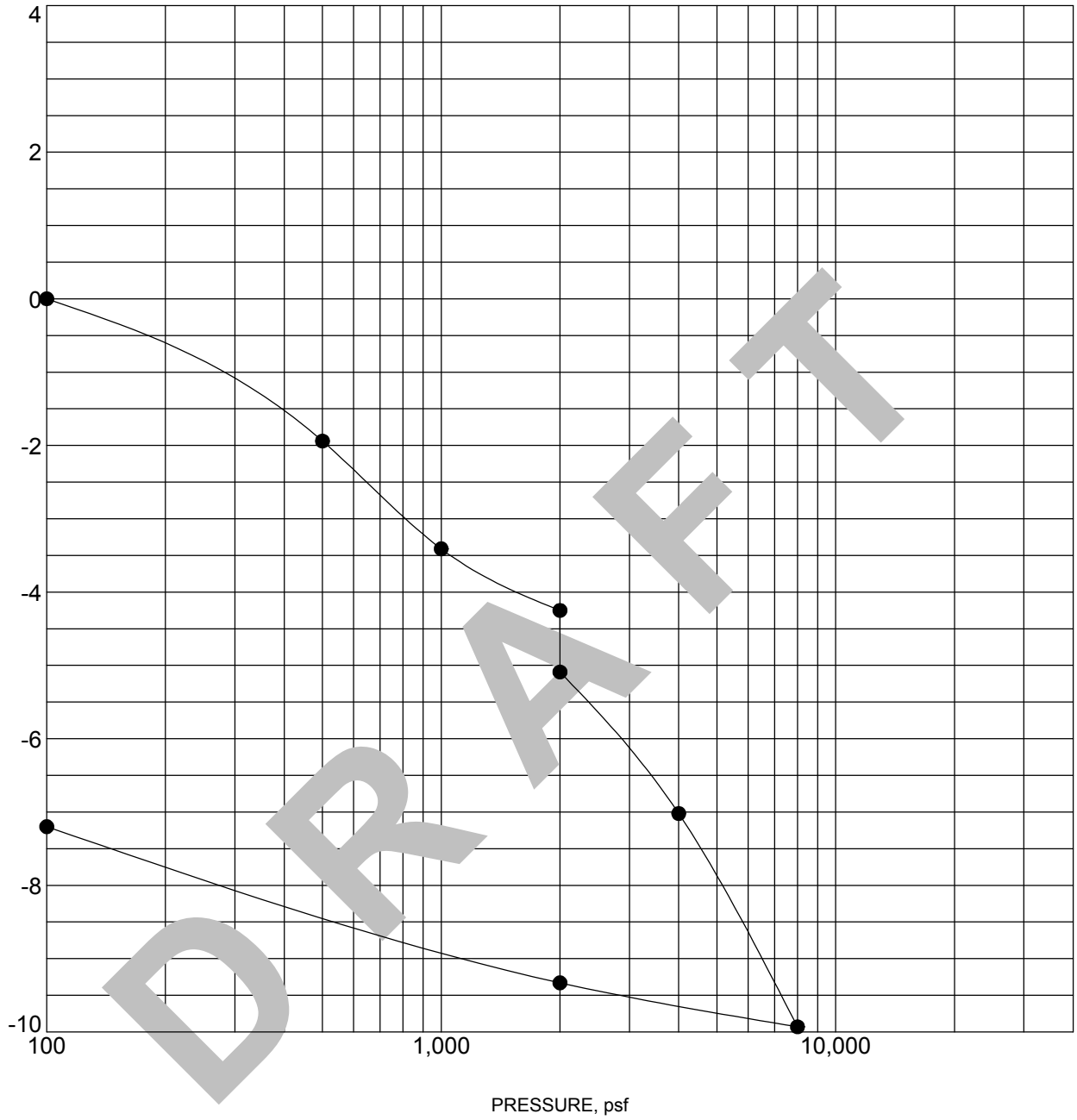
EXHIBIT: B-3

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS 1 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

DRAFT

SWELL CONSOLIDATION TEST

ASTM D2435



Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-01	2.5 - 4 ft	CLAYEY SAND	96	25

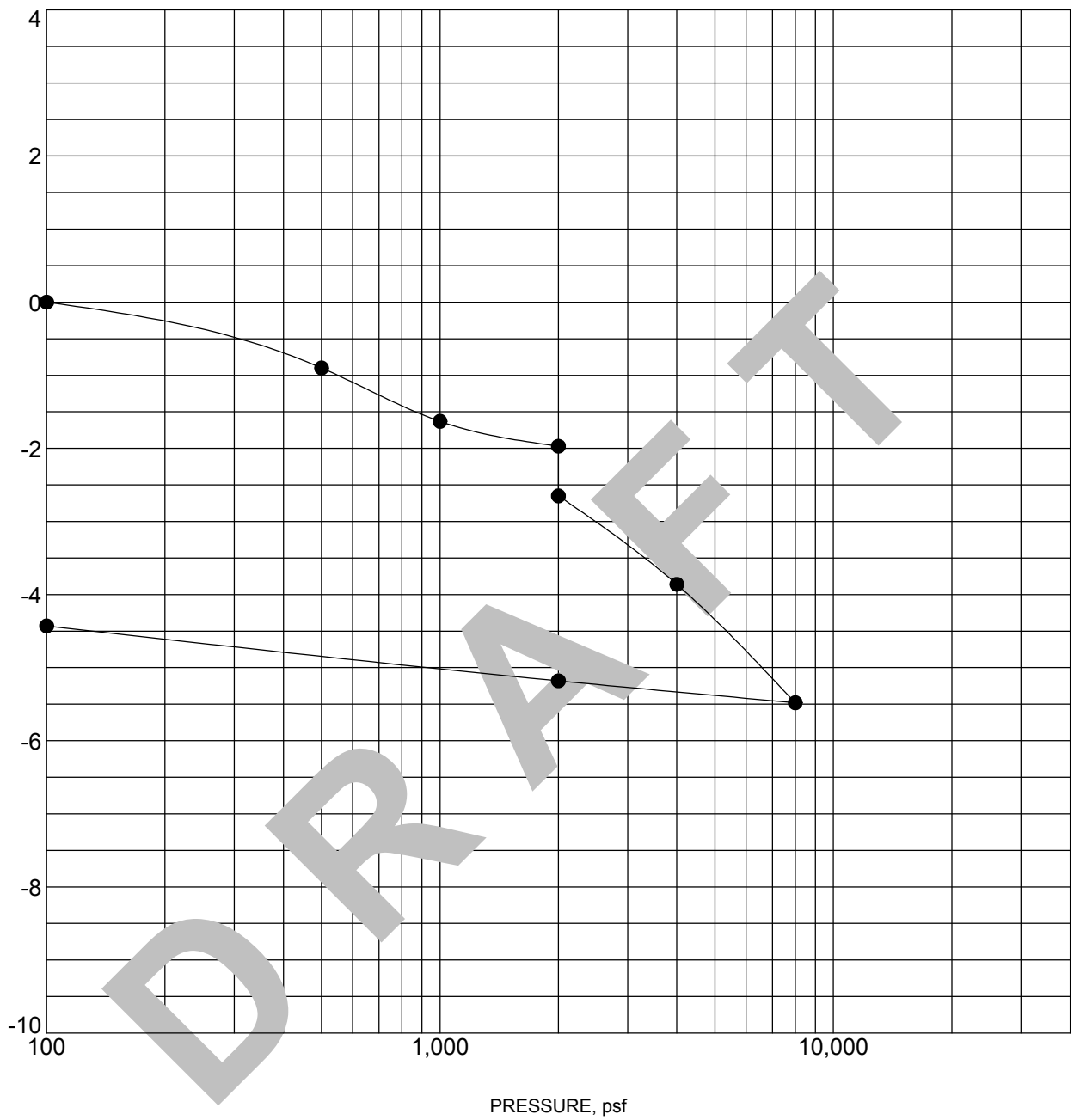
NOTES: Water added at 2,000 psf.

PROJECT: Oxnard Confidential Project Gaucho	Terracon 1421 Edinger Ave Ste C Tustin, CA	PROJECT NUMBER: 60185017
SITE: Highway 101 and Del Norte Boulevard		CLIENT: Seefried Industrial Properties, Inc. El Segundo, CA
		EXHIBIT: B-4

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

SWELL CONSOLIDATION TEST

ASTM D2435



Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-04	2.5 - 4 ft	CLAYEY SAND	104	20

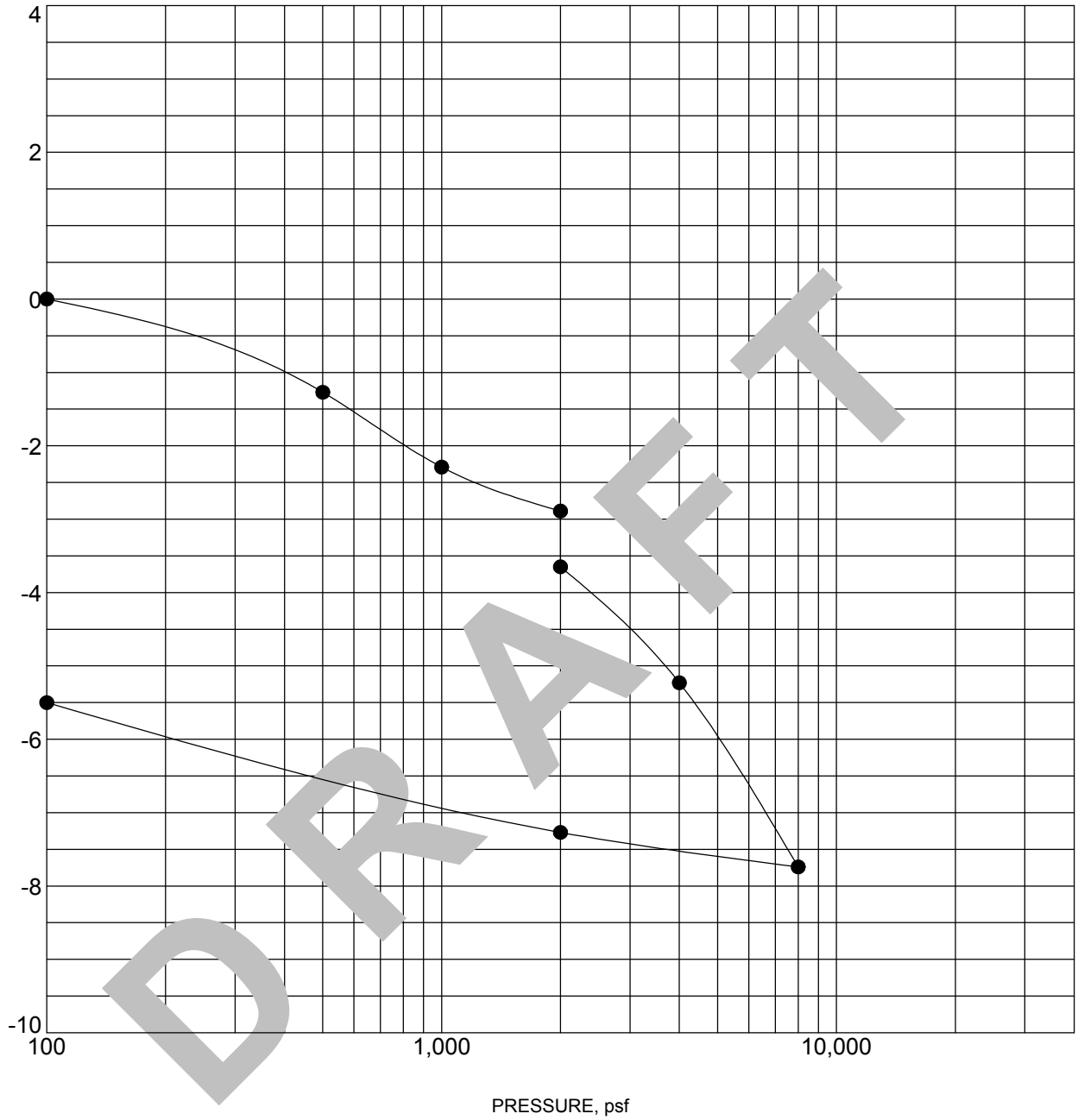
NOTES: Water added at 2,000 psf

PROJECT: Oxnard Confidential Project Gaucho	Terracon 1421 Edinger Ave Ste C Tustin, CA	PROJECT NUMBER: 60185017
SITE: Highway 101 and Del Norte Boulevard		CLIENT: Seefried Industrial Properties, Inc. El Segundo, CA
		EXHIBIT: B-5

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

SWELL CONSOLIDATION TEST

ASTM D2435



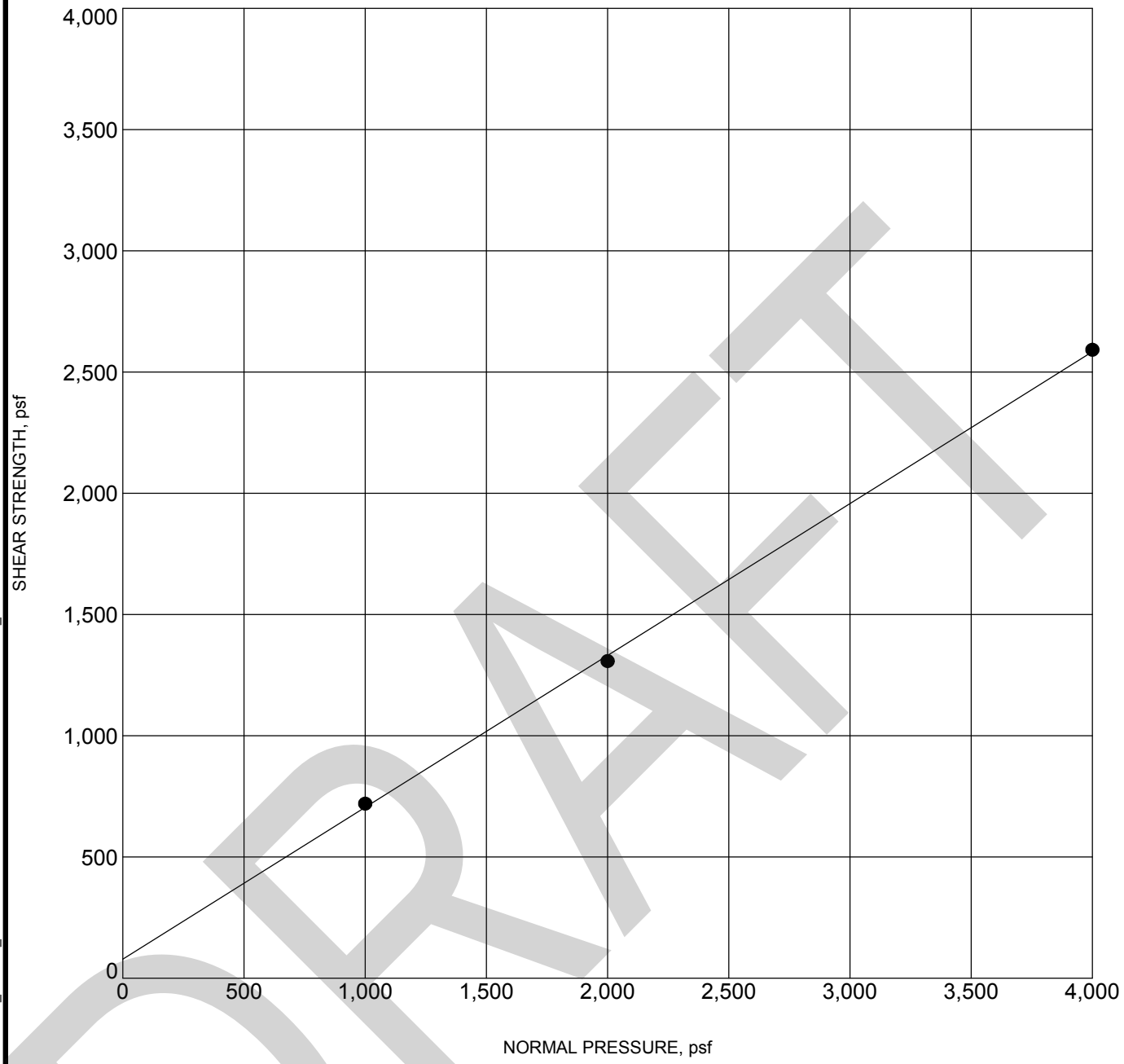
Specimen Identification			Classification	γ_d, pcf	WC, %
●	B-07	2.5 - 4 ft	CLAYEY SAND	98	24

NOTES: Water added at 2,000 psf.

PROJECT: Oxnard Confidential Project Gaucho	Terracon 1421 Edinger Ave Ste C Tustin, CA	PROJECT NUMBER: 60185017
SITE: Highway 101 and Del Norte Boulevard		CLIENT: Seefried Industrial Properties, Inc. El Segundo, CA
		EXHIBIT: B-6

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

DIRECT SHEAR TEST ASTM D3080



	Specimen Identification		Classification	γ_d, pcf	WC,%	c, psf	ϕ^o
●	**B-01**	**7.5ft**	**POORLY GRADED SAND WITH SILT SP-SM**	**100**	**22**	**78**	**32**

PROJECT: Oxnard Confidential Project Gaucho

SITE: Highway 101 and Del Norte Boulevard

Terracon
1421 Edinger Ave Ste C
Tustin, CA

PROJECT NUMBER: 60185017

CLIENT: Seefried Industrial Properties, Inc.
El Segundo, CA

EXHIBIT: B-7

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_DIRECT_SHEAR 60185017 BORING LOGS.GPJ TERRACON_DATATEMPLATE.GDT 5/11/18

DRAFT

CHEMICAL LABORATORY TEST REPORT

Project Number: 60185017
Service Date: 04/30/18
Report Date: 05/04/18
Task:

Terracon
750 Pilot Road, Suite F
Las Vegas, Nevada 89119
(702) 597-9393

Client

Seefried Industrial Properties, Inc.

Project

Seefried: Industrial Warehouse; Oxnard

Sample Submitted By: Terracon (60) **Date Received:** 4/27/2018 **Lab No.: 18-0481**

Results of Corrosion Analysis

Sample Number		
Sample Location	B-1	B-5
Sample Depth (ft.)	Bulk	Bulk
pH Analysis, AWWA 4500 H	8.19	7.97
Water Soluble Sulfate (SO4), AWWA 4500 E (percent %)	0.15	0.37
Sulfides, AWWA 4500-S D, (mg/kg)	Nil	Nil
Chlorides, ASTM D 512, (mg/kg)	95	145
Red-Ox, AWWA 2580, (mV)	+661	+662
Total Salts, AWWA 2540, (mg/kg)	3786	8260
Resistivity, ASTM G 57, (ohm-cm)	970	669

Analyzed By: Trisha Campo

Trisha Campo
Chemist

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

DRAFT

'R' VALUE CA 301

Client: Terracon / Gancho

Date: 5/4/18

By: LD

Client's Job No.: 60185017

Sample No.: P-22 / Bulk

GLA Reference: 2011-0104

Soil Type: Brown, Clayey Sand

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	**200**	**350**	**300**	
Initial Moisture Content	%	**10.4**	**10.4**	**10.4**	
Water Added	ml	**20**	**10**	**15**	
Moisture at Compaction	%	12.3	11.4	11.8	
Sample & Mold Weight	gms	**3173**	**3208**	**3196**	
Mold Weight	gms	**2098**	**2102**	**2104**	
Net Sample Weight	gms	1075	1106	1092	
Sample Height	in.	**2.44**	**2.49**	**2.48**	
Dry Density	pcf	118.9	120.9	119.3	
Pressure	lbs	**1905**	**6715**	**3650**	
Exudation Pressure	psi	152	535	291	
Expansion Dial	x 0.0001	**2**	**18**	**11**	
Expansion Pressure	psf	9	78	48	
Ph at 1000lbs	psi	**26**	**15**	**20**	
Ph at 2000lbs	psi	**44**	**26**	**33**	
Displacement	turns	**3.98**	**3.81**	**3.93**	
R' Value		62	77	71	
Corrected 'R' Value		**62**	**77**	**71**	

FINAL 'R' VALUE	
By Exudation Pressure (@ 300 psi):	**72**
By Epansion Pressure :	**70**
TI = 5	

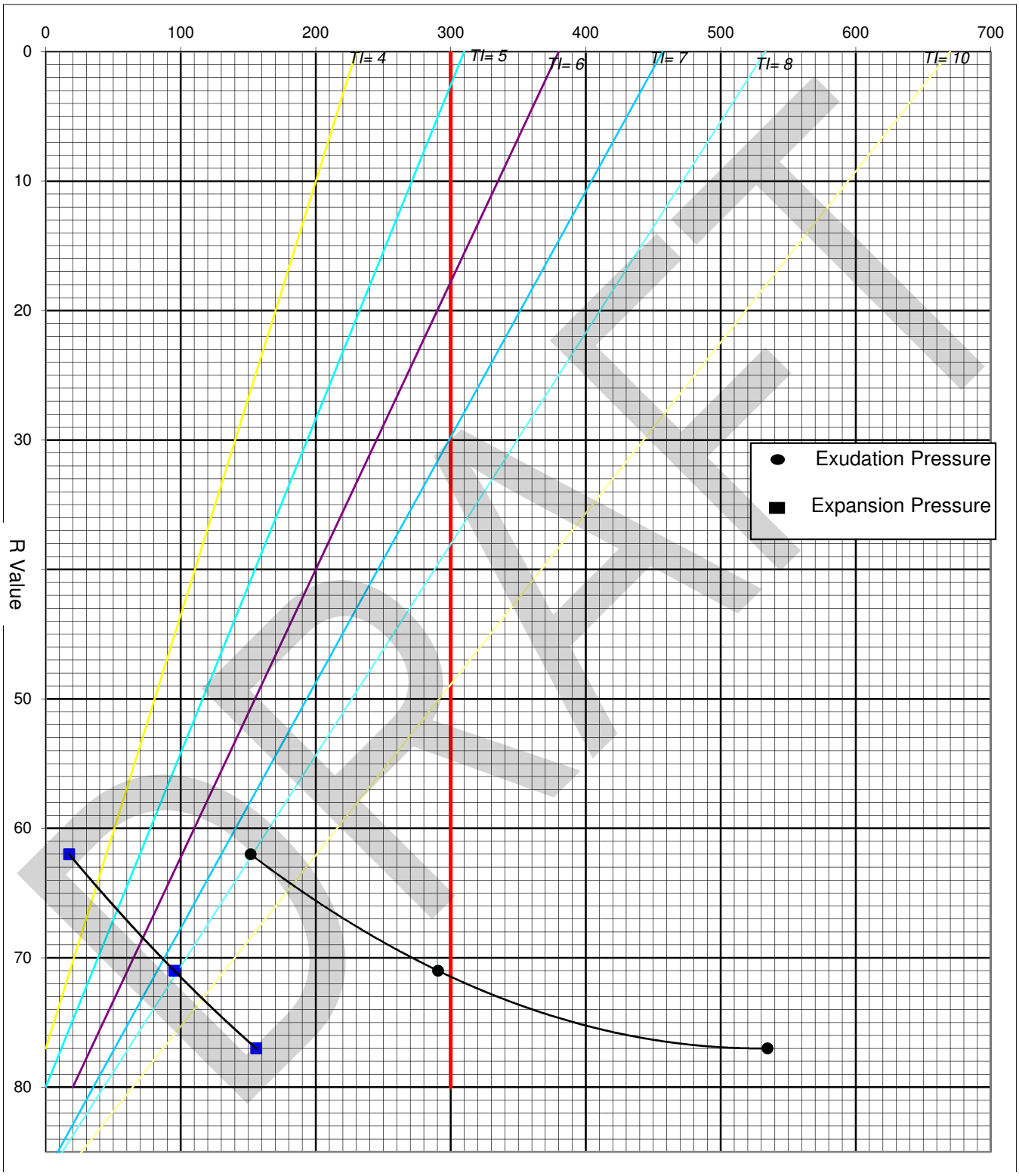
DRAFT

Geo-Logic ASSOCIATES

'R' VALUE CA 301

Job No. 2011-0104 Client# 60185017
Sample: P-22 / Bulk
1.104403

Exudation Pressure



Geo-Logic ASSOCIATES

'R' VALUE CA 301

Client: Terracon / Gancho

Date: 5/4/18

By: LD

Client's Job No.: 60185017

Sample No.: P-24 / Bulk

GLA Reference: 2011-0104

Soil Type: Brown, Clayey Sand

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	**250**	**350**	**300**	
Initial Moisture Content	%	**8.2**	**8.2**	**8.2**	
Water Added	ml	**40**	**30**	**35**	
Moisture at Compaction	%	11.8	10.9	11.3	
Sample & Mold Weight	gms	**3172**	**3198**	**3168**	
Mold Weight	gms	**2105**	**2101**	**2096**	
Net Sample Weight	gms	1067	1097	1072	
Sample Height	in.	**2.48**	**2.472**	**2.466**	
Dry Density	pcf	116.6	121.3	118.3	
Pressure	lbs	**2270**	**6795**	**4050**	
Exudation Pressure	psi	181	541	322	
Expansion Dial	x 0.0001	**3**	**20**	**12**	
Expansion Pressure	psf	13	87	52	
Ph at 1000lbs	psi	**22**	**15**	**18**	
Ph at 2000lbs	psi	**41**	**29**	**34**	
Displacement	turns	**3.95**	**3.9**	**3.92**	
R' Value		65	74	70	
Corrected 'R' Value		**65**	**74**	**70**	

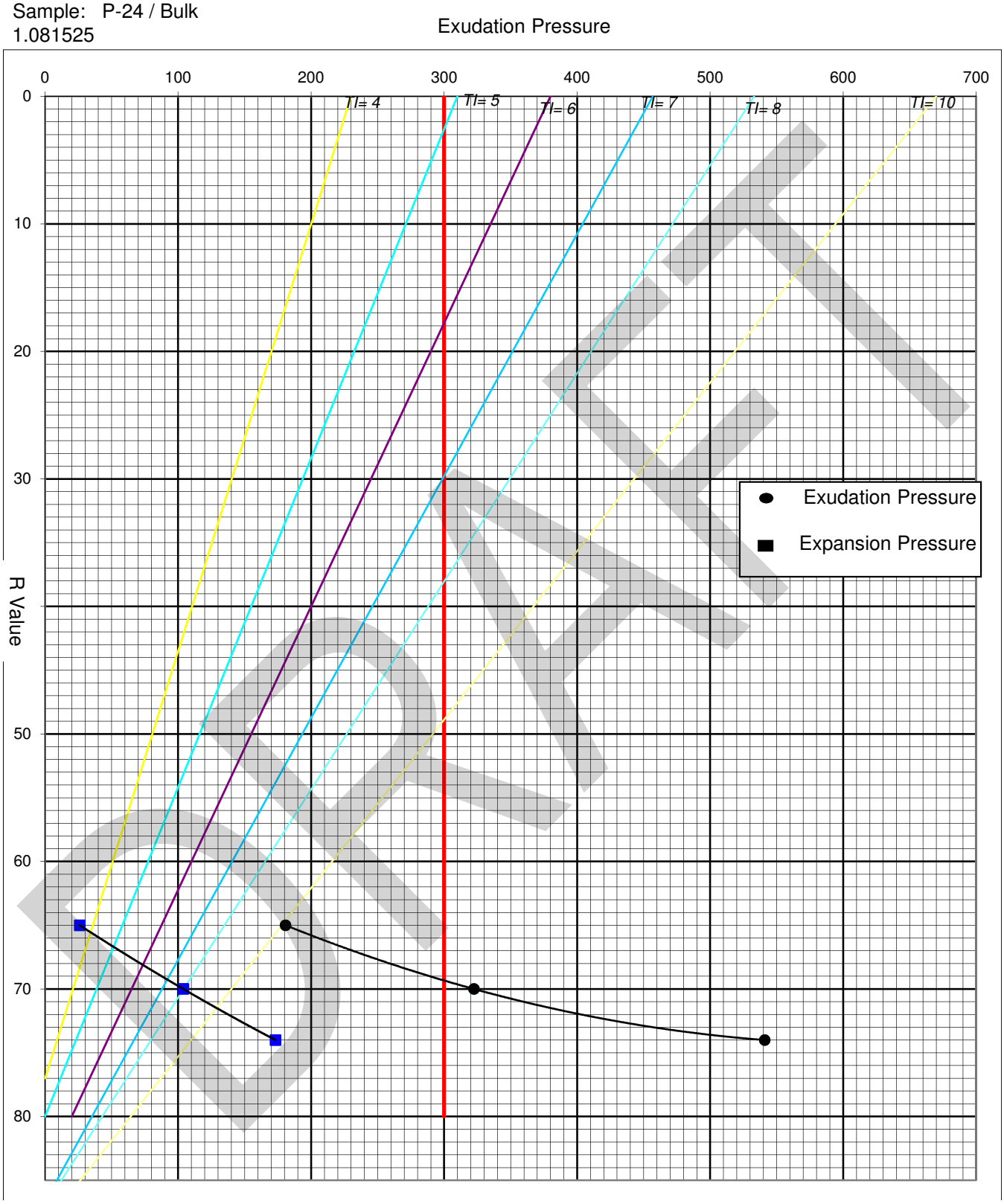
FINAL 'R' VALUE		
By Exudation Pressure (@ 300 psi):		**69**
By Epansion Pressure	:	**69**
TI =	5	

DRAFT

Geo-Logic ASSOCIATES

'R' VALUE CA 301

Job No. 2011-0104 Client# 60185017
Sample: P-24 / Bulk
1.081525



Geo-Logic ASSOCIATES

'R' VALUE CA 301

Client: Terracon / Gancho

Date: 5/4/18

By: LD

Client's Job No.: 60185017

Sample No.: R-2 / Bulk

GLA Reference: 2011-0104

Soil Type: Brown, Clayey Sand

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	**250**	**350**	**300**	
Initial Moisture Content	%	**8.9**	**8.9**	**8.9**	
Water Added	ml	**30**	**20**	**25**	
Moisture at Compaction	%	11.6	10.7	11.2	
Sample & Mold Weight	gms	**3173**	**3179**	**3169**	
Mold Weight	gms	**2102**	**2104**	**2099**	
Net Sample Weight	gms	1071	1075	1070	
Sample Height	in.	**2.462**	**2.435**	**2.448**	
Dry Density	pcf	118.1	120.8	119.2	
Pressure	lbs	**2860**	**7855**	**4120**	
Exudation Pressure	psi	228	625	328	
Expansion Dial	x 0.0001	**2**	**14**	**7**	
Expansion Pressure	psf	9	61	30	
Ph at 1000lbs	psi	**21**	**15**	**18**	
Ph at 2000lbs	psi	**40**	**25**	**33**	
Displacement	turns	**3.95**	**3.61**	**3.88**	
R' Value		66	79	71	
Corrected 'R' Value		**66**	**79**	**71**	

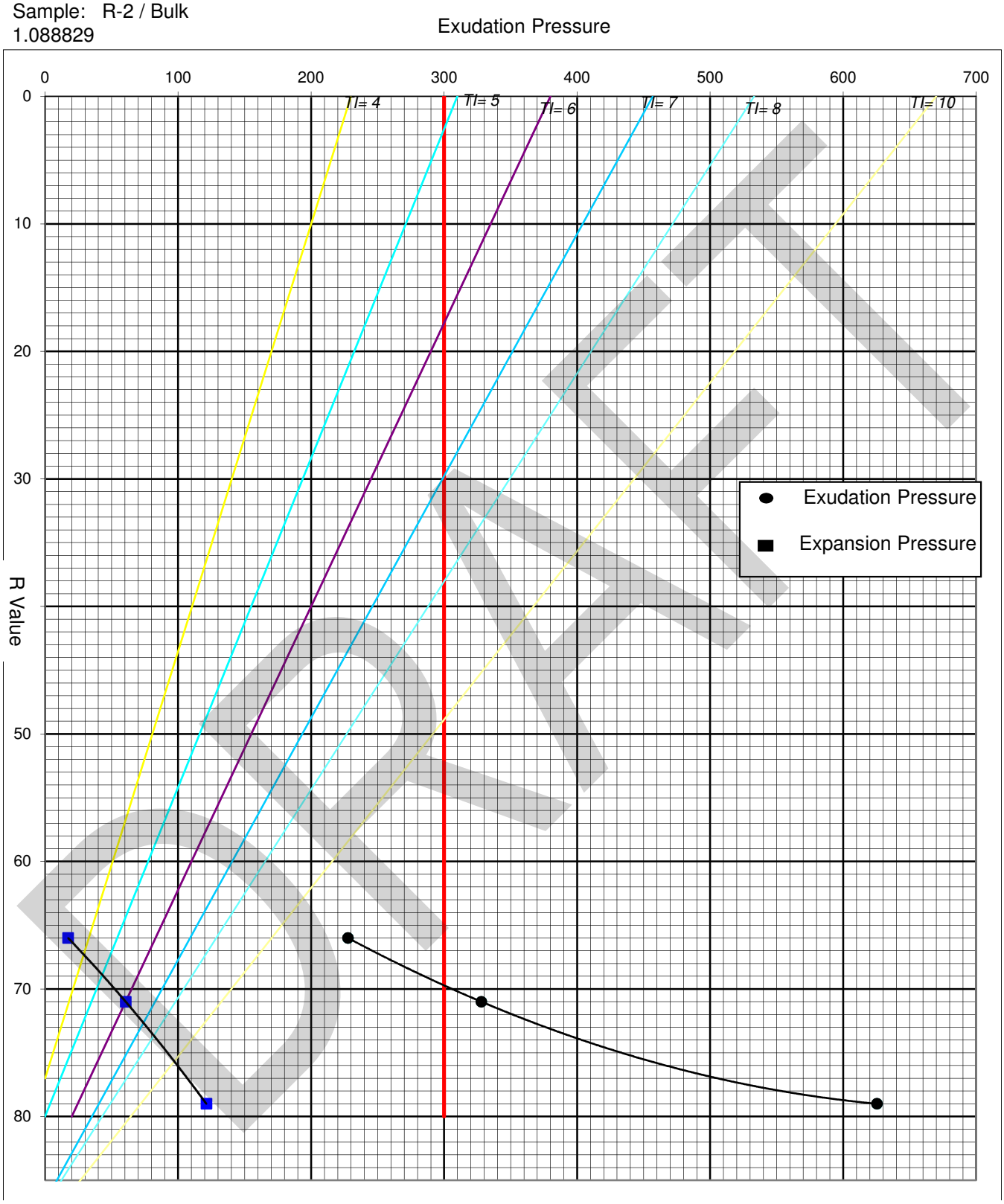
FINAL 'R' VALUE		
By Exudation Pressure (@ 300 psi):		**70**
By Epansion Pressure	:	**73**
TI =	5	

DRAFT

Geo-Logic ASSOCIATES

'R' VALUE CA 301

Job No. 2011-0104 Client# 60185017
Sample: R-2 / Bulk
1.088829



Geo-Logic ASSOCIATES

APPENDIX C

SUPPORTING DOCUMENTS

DRAFT

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING

Auger	Shelby Tube	Split Spoon
Rock Core	Macro Core	Modified California Ring Sampler
Grab Sample	No Recovery	Modified Dames & Moore Ring Sampler

WATER LEVEL

- Water Initially Encountered
- Water Level After a Specified Period of Time
- Water Level After a Specified Period of Time

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

(HP)	Hand Penetrometer
(T)	Torvane
(b/f)	Standard Penetration Test (blows per foot)
N	N value
(PID)	Photo-Ionization Detector
(OVA)	Organic Vapor Analyzer
(WOH)	Weight of Hammer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels and sands.			CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance Includes silts and clays.			
Descriptive Term (Density)	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.	Descriptive Term (Consistency)	Unconfined Compressive Strength, Qu, psf	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.
Very Loose	0 - 3	0 - 6	Very Soft	less than 500	0 - 1	< 3
Loose	4 - 9	7 - 18	Soft	500 to 1,000	2 - 4	3 - 4
Medium Dense	10 - 29	19 - 58	Medium-Stiff	1,000 to 2,000	4 - 8	5 - 9
Dense	30 - 50	59 - 98	Stiff	2,000 to 4,000	8 - 15	10 - 18
Very Dense	> 50	≥ 99	Very Stiff	4,000 to 8,000	15 - 30	19 - 42
			Hard	> 8,000	> 30	> 42

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

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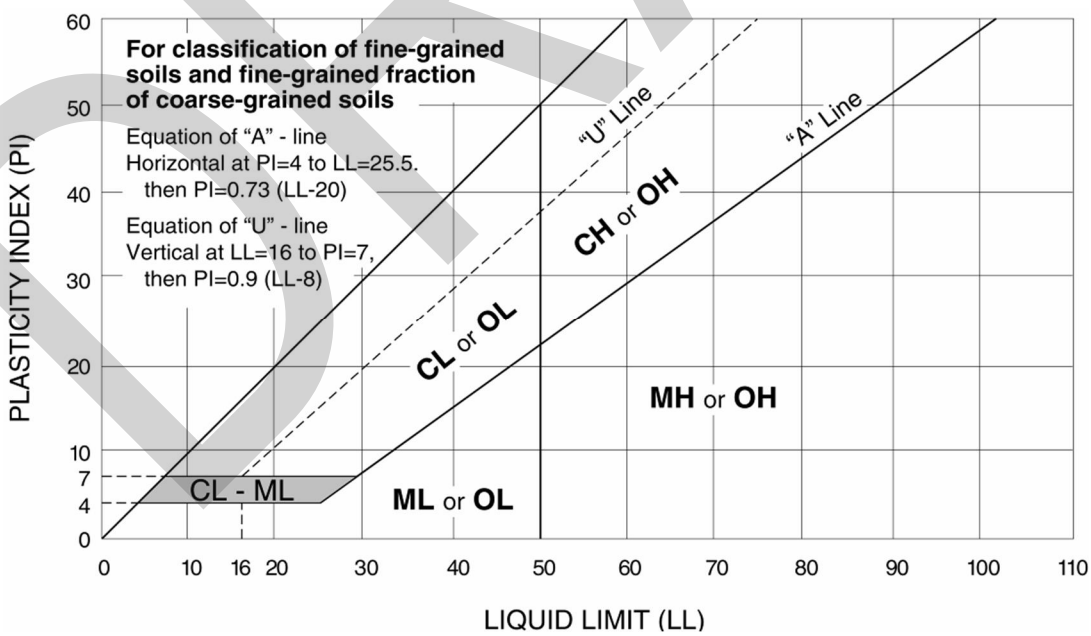
UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel [F,G,H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G,H,I]
			Fines classify as CL or CH		SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]		CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OL	Organic clay [K,L,M,N]
						Organic silt [K,L,M,O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K,L,M]
			PI plots below "A" line		MH	Elastic Silt [K,L,M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OH	Organic clay [K,L,M,P]
						Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve
[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.
[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.
[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.
[H] If fines are organic, add "with organic fines" to group name.
[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.
[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.
[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.
[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.
[N] PI ≥ 4 and plots on or above "A" line.
[O] PI < 4 or plots below "A" line.
[P] PI plots on or above "A" line.
[Q] PI plots below "A" line.



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Terracon

Exhibit C-2

USGS Design Maps Detailed Report

ASCE 7-10 Standard (34.2138°N, 119.1309°W)

Site Class E – "Soft Clay Soil", Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_S) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From Figure 22-1 [1] S_S = 2.641 g

From Figure 22-2 [2] S_1 = 0.954 g

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class E, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\bar{v}_s$	$\bar{N}$ or $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index PI > 20, • Moisture content w ≥ 40%, and • Undrained shear strength $\bar{s}_u$ < 500 psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

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Section 11.4.3 — Site Coefficients and Risk–Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4–1: Site Coefficient F_a

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at Short Period				
	$S_S \leq 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_S

For Site Class = E and S_S = 2.641 g, F_a = 0.900

Table 11.4–2: Site Coefficient F_v

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at 1–s Period				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_1

For Site Class = E and S_1 = 0.954 g, F_v = 2.400

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Equation (11.4–1): $S_{MS} = F_a S_S = 0.900 \times 2.641 = 2.377$ g

Equation (11.4–2): $S_{M1} = F_v S_1 = 2.400 \times 0.954 = 2.290$ g

Section 11.4.4 — Design Spectral Acceleration Parameters

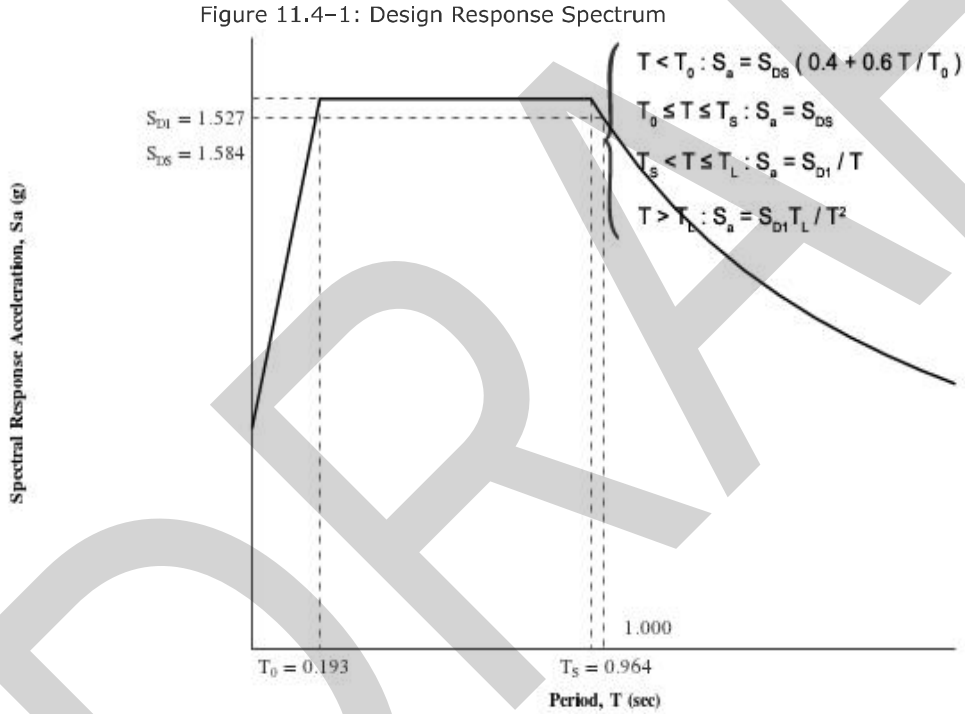
Equation (11.4–3): $S_{DS} = ⅔\ S_{MS} = ⅔ \times 2.377 = 1.584$ g

Equation (11.4–4): $S_{D1} = ⅔\ S_{M1} = ⅔ \times 2.290 = 1.527$ g

Section 11.4.5 — Design Response Spectrum

From Figure 22-12 [3] $T_L = 8$ seconds

Figure 11.4–1: Design Response Spectrum



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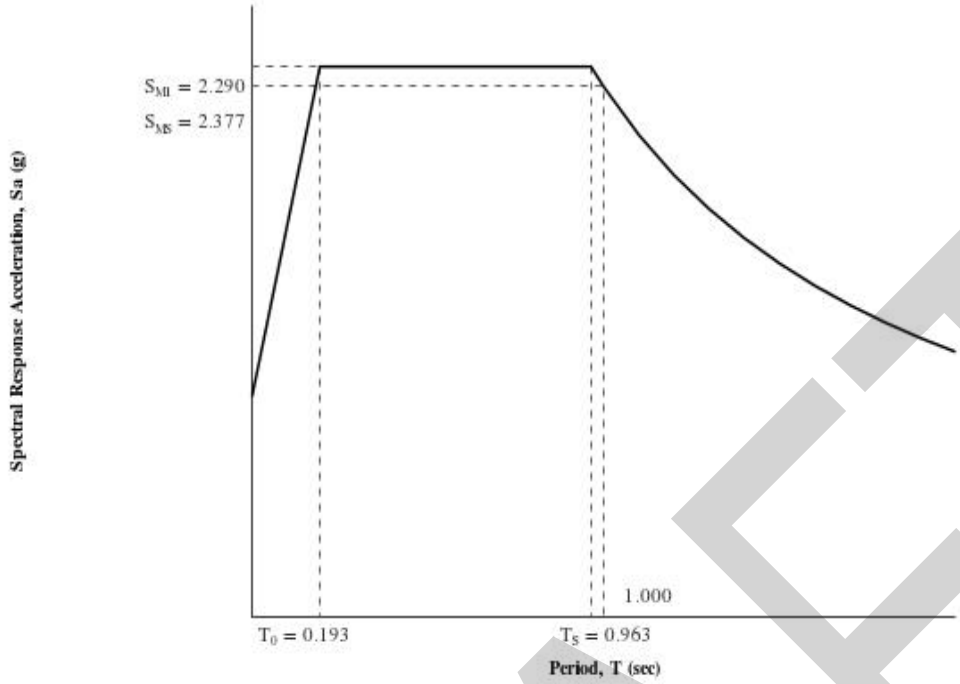
Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



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Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From Figure 22-7 [4] PGA = 1.039

Equation (11.8–1): $PGA_M = F_{PGA}PGA = 0.900 \times 1.039 = 0.935$ g

Table 11.8–1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of PGA

For Site Class = E and PGA = 1.039 g, F_{PGA} = 0.900

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From Figure 22-17 [5] C_{RS} = 0.908

From Figure 22-18 [6] C_{R1} = 0.908

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Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 1.584 g, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 1.527 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = E

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

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APPENDIX D

LIQUEFACTION ANALYSIS

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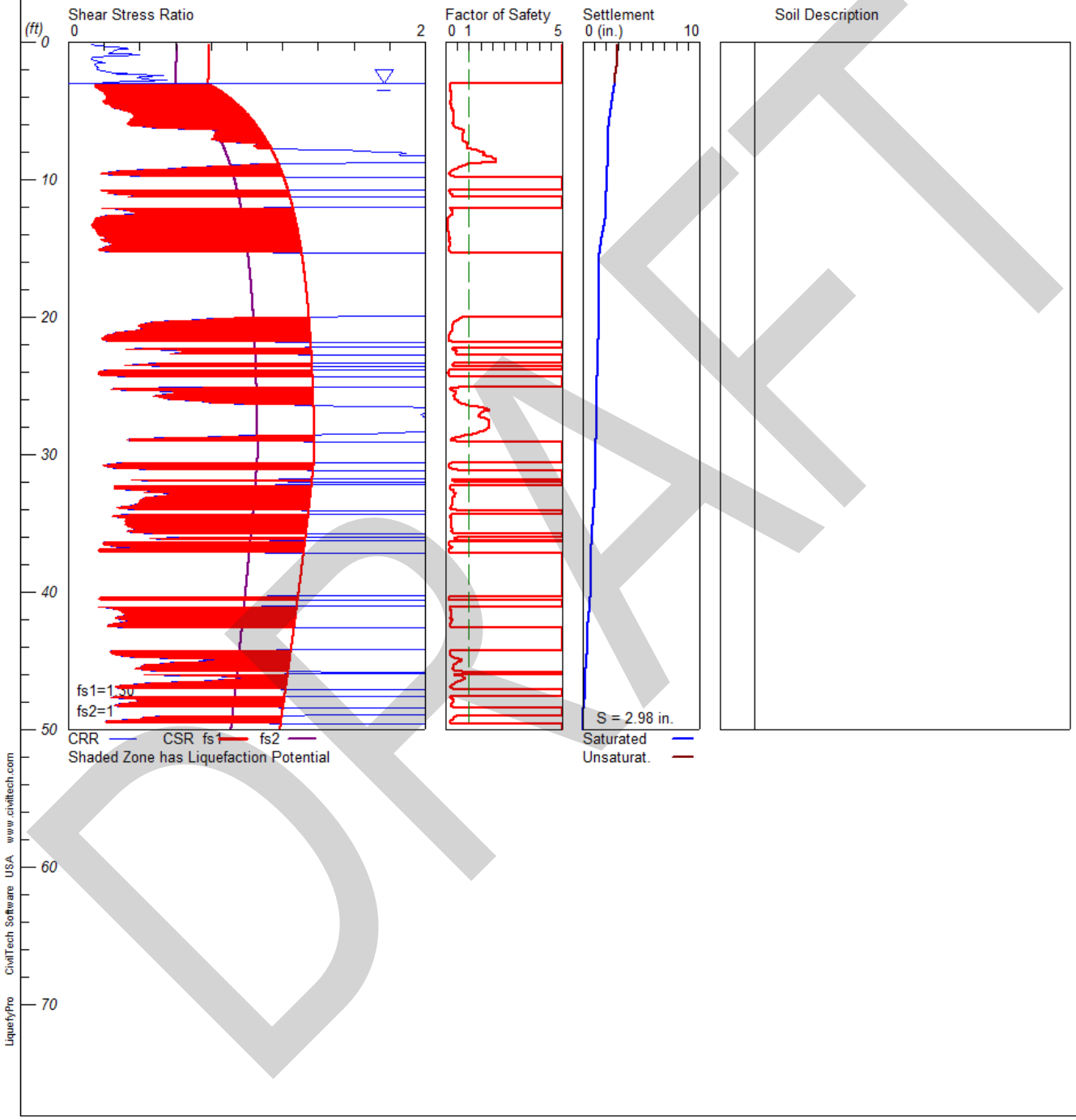
LIQUEFACTION ANALYSIS

Oxnard Warehouse

Hole No.=CPT-16 Water Depth=3 ft

Magnitude=6.89
Acceleration=0.935g



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LIQUEFACTION ANALYSIS SUMMARY
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Input File Name: N:\Projects\2018\60185017\Working Files\Calculations-Analyses\CPT-16.liq
Title: Oxnard Warehouse
Subtitle: 60185017

Surface Elev.=
Hole No.=CPT-16
Depth of Hole= 50.00 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration= 0.94 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=CPT-16
Depth of Hole=50.00 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration=0.94 g
Earthquake Magnitude=6.89
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot two CSR (fs1=User, fs2=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines	D50 mm
0.16	2.60	0.03	1.15	120.00	0.00	0.50
1.15	6.80	0.07	1.03	120.00	0.00	0.50
2.13	11.00	0.22	2.00	120.00	0.00	0.50
3.12	17.10	0.22	1.29	120.00	0.00	0.50
4.10	32.80	0.39	1.19	120.00	0.00	0.50
5.09	61.20	0.25	0.41	120.00	0.00	0.50
6.07	65.20	0.29	0.44	120.00	0.00	0.50
7.05	96.50	0.68	0.70	120.00	0.00	0.50
8.04	138.60	0.41	0.30	120.00	0.00	0.50
9.02	105.10	0.67	0.64	120.00	0.00	0.50
10.00	5.80	0.22	3.79	120.00	0.00	0.50
10.99	20.00	0.41	2.05	120.00	0.00	0.50
11.97	7.10	0.09	1.27	120.00	0.00	0.50
12.95	23.90	0.31	1.30	120.00	0.00	0.50
13.94	45.20	0.33	0.73	120.00	0.00	0.50
14.92	54.60	0.46	0.84	120.00	0.00	0.50
15.91	6.80	0.13	1.91	120.00	0.00	0.50
16.89	6.40	0.11	1.72	120.00	0.00	0.50
17.88	6.80	0.10	1.47	120.00	0.00	0.50
18.86	11.30	0.22	1.95	120.00	0.00	0.50
19.84	22.30	0.88	3.95	120.00	0.00	0.50
20.83	46.50	1.42	3.05	120.00	0.00	0.50
21.81	23.10	0.69	2.99	120.00	0.00	0.50
22.80	20.90	0.67	3.21	120.00	0.00	0.50
23.78	19.10	0.65	3.40	120.00	0.00	0.50

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24.77	14.20	0.31	2.18	120.00	0.00	0.50
25.75	75.20	2.06	2.74	120.00	0.00	0.50
26.73	254.20	2.12	0.83	120.00	0.00	0.50
27.72	273.10	2.21	0.81	120.00	0.00	0.50
28.70	159.10	1.46	0.92	120.00	0.00	0.50
29.69	14.10	0.43	3.05	120.00	0.00	0.50
30.67	31.00	0.63	2.03	120.00	0.00	0.50
31.66	21.80	0.78	3.58	120.00	0.00	0.50
32.64	51.20	1.79	3.50	120.00	0.00	0.50
33.62	92.90	1.79	1.93	120.00	0.00	0.50
34.61	98.70	1.29	1.31	120.00	0.00	0.50
35.59	64.50	1.56	2.42	120.00	0.00	0.50
36.58	46.60	0.88	1.89	120.00	0.00	0.50
37.56	14.60	0.42	2.88	120.00	0.00	0.50
38.54	13.30	0.37	2.78	120.00	0.00	0.50
39.53	14.50	0.41	2.83	120.00	0.00	0.50
40.51	35.50	0.55	1.55	120.00	0.00	0.50
41.50	116.70	1.10	0.94	120.00	0.00	0.50
42.48	53.00	1.07	2.02	120.00	0.00	0.50
43.47	16.20	0.50	3.09	120.00	0.00	0.50
44.45	68.90	1.32	1.92	120.00	0.00	0.50
45.43	138.60	1.53	1.10	120.00	0.00	0.50
46.42	203.80	1.89	0.93	120.00	0.00	0.50
47.40	17.90	0.91	5.08	120.00	0.00	0.50
48.39	51.70	1.54	2.98	120.00	0.00	0.50
49.37	63.20	1.12	1.77	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=2.72 in.
Settlement of Unsaturated Sands=0.25 in.
Total Settlement of Saturated and Unsaturated Sands=2.98 in.
Differential Settlement=1.488 to 1.964 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.16	0.13	0.79	5.00	2.72	0.25	2.98
1.16	0.13	0.79	5.00	2.72	0.25	2.97
2.16	0.22	0.79	5.00	2.72	0.08	2.81
3.16	0.15	0.80	0.19*	2.69	0.00	2.69
4.16	0.20	0.91	0.22*	2.51	0.00	2.51
5.16	0.35	1.00	0.35*	2.34	0.00	2.34
6.16	0.44	1.06	0.41*	2.18	0.00	2.18
7.16	0.84	1.11	0.75*	2.12	0.00	2.12
8.16	1.85	1.15	1.61	2.11	0.00	2.11
9.16	0.60	1.19	0.51*	2.10	0.00	2.10
10.16	2.00	1.22	5.00	2.02	0.00	2.02
11.16	0.36	1.24	0.29*	1.97	0.00	1.97
12.16	0.28	1.26	0.22*	1.96	0.00	1.96
13.16	0.14	1.28	0.11*	1.84	0.00	1.84
14.16	0.20	1.29	0.15*	1.62	0.00	1.62
15.16	0.17	1.31	0.13*	1.44	0.00	1.44
16.16	2.00	1.32	5.00	1.42	0.00	1.42
17.16	2.00	1.33	5.00	1.42	0.00	1.42
18.16	2.00	1.34	5.00	1.42	0.00	1.42
19.16	2.00	1.34	5.00	1.42	0.00	1.42
20.16	0.74	1.35	0.55*	1.42	0.00	1.42
21.16	0.25	1.36	0.19*	1.39	0.00	1.39
22.16	2.00	1.36	5.00	1.29	0.00	1.29
23.16	2.00	1.36	5.00	1.28	0.00	1.28
24.16	0.17	1.37	0.12*	1.23	0.00	1.23
25.16	0.26	1.37	0.19*	1.20	0.00	1.20
26.16	0.76	1.37	0.56*	1.14	0.00	1.14
27.16	1.98	1.38	1.44	1.14	0.00	1.14
28.16	2.38	1.38	1.73	1.14	0.00	1.14
29.16	2.00	1.38	5.00	1.11	0.00	1.11
30.16	2.00	1.38	5.00	1.11	0.00	1.11

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31.16	2.00	1.37	5.00	1.06	0.00	1.06
32.16	2.00	1.36	5.00	1.05	0.00	1.05
33.16	0.42	1.35	0.31*	0.99	0.00	0.99
34.16	2.00	1.35	5.00	0.92	0.00	0.92
35.16	0.32	1.34	0.24*	0.82	0.00	0.82
36.16	0.52	1.33	0.39*	0.76	0.00	0.76
37.16	2.00	1.32	5.00	0.64	0.00	0.64
38.16	2.00	1.31	5.00	0.64	0.00	0.64
39.16	2.00	1.30	5.00	0.64	0.00	0.64
40.16	2.00	1.29	5.00	0.64	0.00	0.64
41.16	0.23	1.28	0.18*	0.58	0.00	0.58
42.16	0.31	1.27	0.24*	0.44	0.00	0.44
43.16	2.00	1.26	5.00	0.38	0.00	0.38
44.16	2.00	1.25	5.00	0.38	0.00	0.38
45.16	0.54	1.24	0.43*	0.29	0.00	0.29
46.16	0.89	1.23	0.73*	0.22	0.00	0.22
47.16	2.00	1.22	5.00	0.15	0.00	0.15
48.16	0.27	1.21	0.22*	0.08	0.00	0.08
49.16	0.40	1.19	0.34*	0.05	0.00	0.05

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

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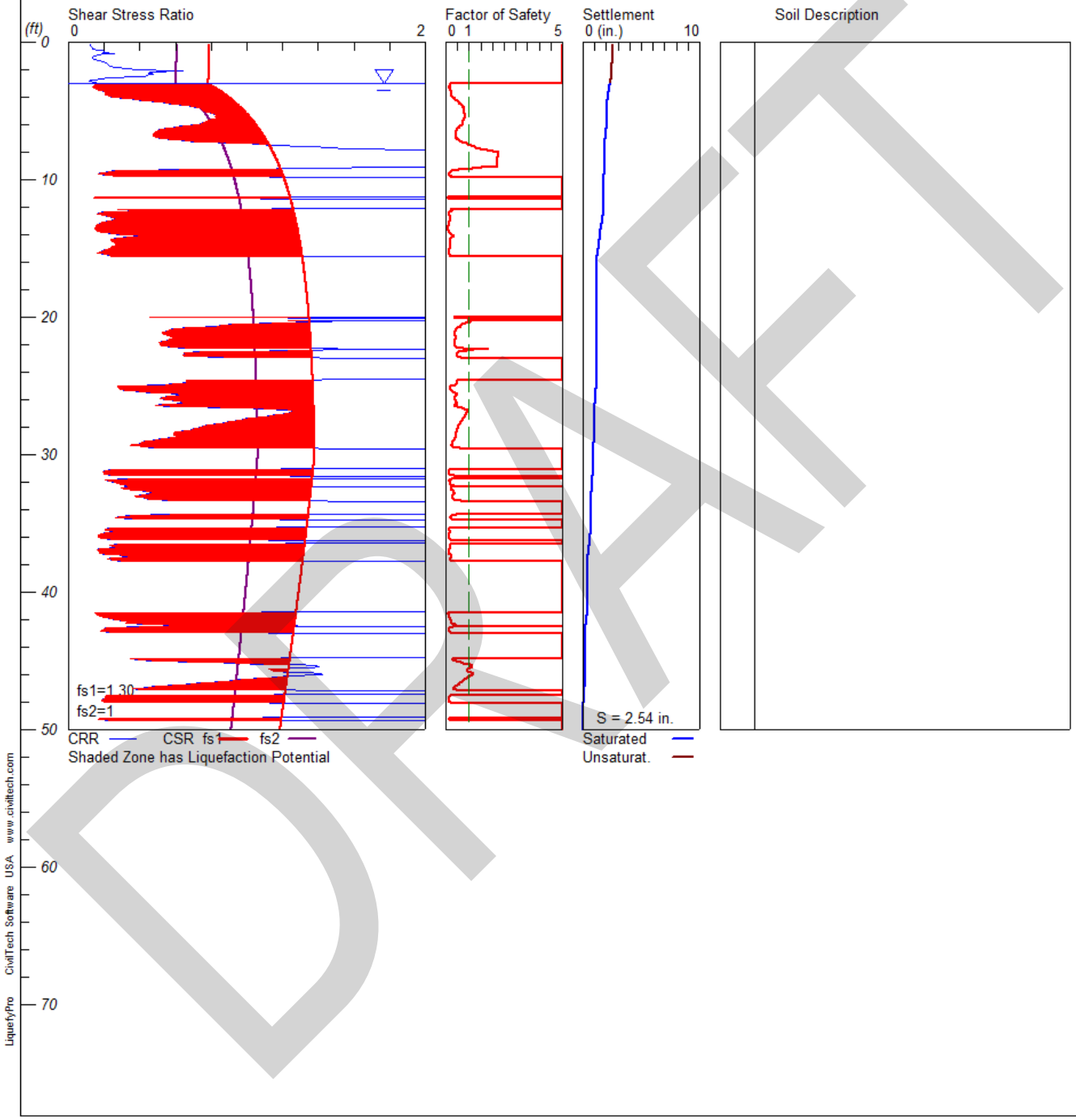
LIQUEFACTION ANALYSIS

Oxnard Warehouse

Hole No.=CPT-18 Water Depth=3 ft

Magnitude=6.89
Acceleration=0.935g



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LIQUEFACTION ANALYSIS SUMMARY
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Input File Name: N:\Projects\2018\60185017\Working Files\Calculations-Analyses\CPT-18.liq
Title: Oxnard Warehouse
Subtitle: 60185017

Surface Elev.=
Hole No.=CPT-18
Depth of Hole= 50.00 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration= 0.94 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=CPT-18
Depth of Hole=50.00 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration=0.94 g
Earthquake Magnitude=6.89
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot two CSR (fs1=User, fs2=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines mm	D50
0.16	2.00	0.02	1.00	120.00	0.00	0.50
1.15	11.50	0.10	0.87	120.00	0.00	0.50
2.13	12.10	0.39	3.22	120.00	0.00	0.50
3.12	9.10	0.12	1.32	120.00	0.00	0.50
4.10	45.60	0.58	1.27	120.00	0.00	0.50
5.09	76.40	1.01	1.32	120.00	0.00	0.50
6.07	85.90	0.30	0.35	120.00	0.00	0.50
7.05	83.90	0.25	0.30	120.00	0.00	0.50
8.04	167.50	0.60	0.36	120.00	0.00	0.50
9.02	166.50	0.42	0.25	120.00	0.00	0.50
10.00	5.90	0.11	1.86	120.00	0.00	0.50
10.99	6.30	0.08	1.27	120.00	0.00	0.50
11.97	7.70	0.14	1.82	120.00	0.00	0.50
12.95	63.40	0.44	0.69	120.00	0.00	0.50
13.94	25.80	0.62	2.40	120.00	0.00	0.50
14.92	72.30	0.30	0.41	120.00	0.00	0.50
15.91	8.70	0.15	1.72	120.00	0.00	0.50
16.89	9.30	0.22	2.37	120.00	0.00	0.50
17.88	9.30	0.19	2.04	120.00	0.00	0.50
18.86	12.90	0.24	1.86	120.00	0.00	0.50
19.84	15.50	0.33	2.13	120.00	0.00	0.50
20.83	68.60	2.21	3.22	120.00	0.00	0.50
21.81	100.40	1.59	1.58	120.00	0.00	0.50
22.80	76.30	2.39	3.13	120.00	0.00	0.50
23.78	24.50	0.94	3.84	120.00	0.00	0.50

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24.77	36.80	1.24	3.37	120.00	0.00	0.50
25.75	125.10	1.45	1.16	120.00	0.00	0.50
26.73	190.30	2.06	1.08	120.00	0.00	0.50
27.72	165.20	1.57	0.95	120.00	0.00	0.50
28.70	145.10	1.31	0.90	120.00	0.00	0.50
29.69	17.10	0.64	3.74	120.00	0.00	0.50
30.67	18.40	0.70	3.80	120.00	0.00	0.50
31.66	21.60	0.85	3.94	120.00	0.00	0.50
32.64	67.60	1.91	2.83	120.00	0.00	0.50
33.62	32.10	1.34	4.17	120.00	0.00	0.50
34.61	39.60	0.91	2.30	120.00	0.00	0.50
35.59	38.60	0.91	2.36	120.00	0.00	0.50
36.58	52.60	1.05	2.00	120.00	0.00	0.50
37.56	50.60	1.00	1.98	120.00	0.00	0.50
38.54	13.60	0.41	3.01	120.00	0.00	0.50
39.53	12.10	0.34	2.81	120.00	0.00	0.50
40.51	13.60	0.43	3.16	120.00	0.00	0.50
41.50	42.60	0.56	1.31	120.00	0.00	0.50
42.48	43.80	1.47	3.36	120.00	0.00	0.50
43.47	14.50	0.40	2.76	120.00	0.00	0.50
44.45	14.10	0.30	2.13	120.00	0.00	0.50
45.43	259.90	2.38	0.92	120.00	0.00	0.50
46.42	216.00	2.08	0.96	120.00	0.00	0.50
47.40	31.40	1.33	4.24	120.00	0.00	0.50
48.39	16.80	0.55	3.27	120.00	0.00	0.50
49.37	36.80	0.99	2.69	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=2.31 in.
Settlement of Unsaturated Sands=0.23 in.
Total Settlement of Saturated and Unsaturated Sands=2.54 in.
Differential Settlement=1.270 to 1.676 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.16	0.12	0.79	5.00	2.31	0.23	2.54
1.16	0.14	0.79	5.00	2.31	0.21	2.53
2.16	0.46	0.79	5.00	2.31	0.13	2.44
3.16	0.14	0.80	0.17*	2.29	0.00	2.29
4.16	0.37	0.91	0.41*	2.11	0.00	2.11
5.16	0.80	1.00	0.80*	2.07	0.00	2.07
6.16	0.61	1.06	0.57*	2.02	0.00	2.02
7.16	0.66	1.11	0.59*	1.89	0.00	1.89
8.16	2.58	1.15	2.24	1.87	0.00	1.87
9.16	1.36	1.19	1.15	1.87	0.00	1.87
10.16	2.00	1.22	5.00	1.78	0.00	1.78
11.16	2.00	1.24	5.00	1.78	0.00	1.78
12.16	0.28	1.26	0.22*	1.76	0.00	1.76
13.16	0.18	1.28	0.14*	1.61	0.00	1.61
14.16	0.33	1.29	0.25*	1.44	0.00	1.44
15.16	0.19	1.31	0.15*	1.28	0.00	1.28
16.16	2.00	1.32	5.00	1.21	0.00	1.21
17.16	2.00	1.33	5.00	1.21	0.00	1.21
18.16	2.00	1.34	5.00	1.21	0.00	1.21
19.16	2.00	1.34	5.00	1.21	0.00	1.21
20.16	2.00	1.35	5.00	1.21	0.00	1.21
21.16	0.52	1.36	0.39*	1.20	0.00	1.20
22.16	0.57	1.36	0.42*	1.15	0.00	1.15
23.16	2.00	1.36	5.00	1.15	0.00	1.15
24.16	2.00	1.37	5.00	1.15	0.00	1.15
25.16	0.29	1.37	0.21*	1.12	0.00	1.12
26.16	0.64	1.37	0.46*	1.03	0.00	1.03
27.16	1.13	1.38	0.82*	1.02	0.00	1.02
28.16	0.69	1.38	0.50*	1.00	0.00	1.00
29.16	0.40	1.38	0.29*	0.91	0.00	0.91
30.16	2.00	1.38	5.00	0.89	0.00	0.89

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31.16	0.20	1.37	0.15*	0.88	0.00	0.88
32.16	0.29	1.36	0.21*	0.77	0.00	0.77
33.16	0.43	1.35	0.32*	0.71	0.00	0.71
34.16	2.00	1.35	5.00	0.71	0.00	0.71
35.16	2.00	1.34	5.00	0.69	0.00	0.69
36.16	0.24	1.33	0.18*	0.56	0.00	0.56
37.16	0.18	1.32	0.13*	0.45	0.00	0.45
38.16	2.00	1.31	5.00	0.38	0.00	0.38
39.16	2.00	1.30	5.00	0.38	0.00	0.38
40.16	2.00	1.29	5.00	0.38	0.00	0.38
41.16	2.00	1.28	5.00	0.38	0.00	0.38
42.16	0.33	1.27	0.26*	0.26	0.00	0.26
43.16	2.00	1.26	5.00	0.18	0.00	0.18
44.16	2.00	1.25	5.00	0.18	0.00	0.18
45.16	0.93	1.24	0.75*	0.17	0.00	0.17
46.16	1.17	1.23	0.95*	0.17	0.00	0.17
47.16	2.00	1.22	5.00	0.13	0.00	0.13
48.16	2.00	1.21	5.00	0.03	0.00	0.03
49.16	0.18	1.19	0.15*	0.03	0.00	0.03

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

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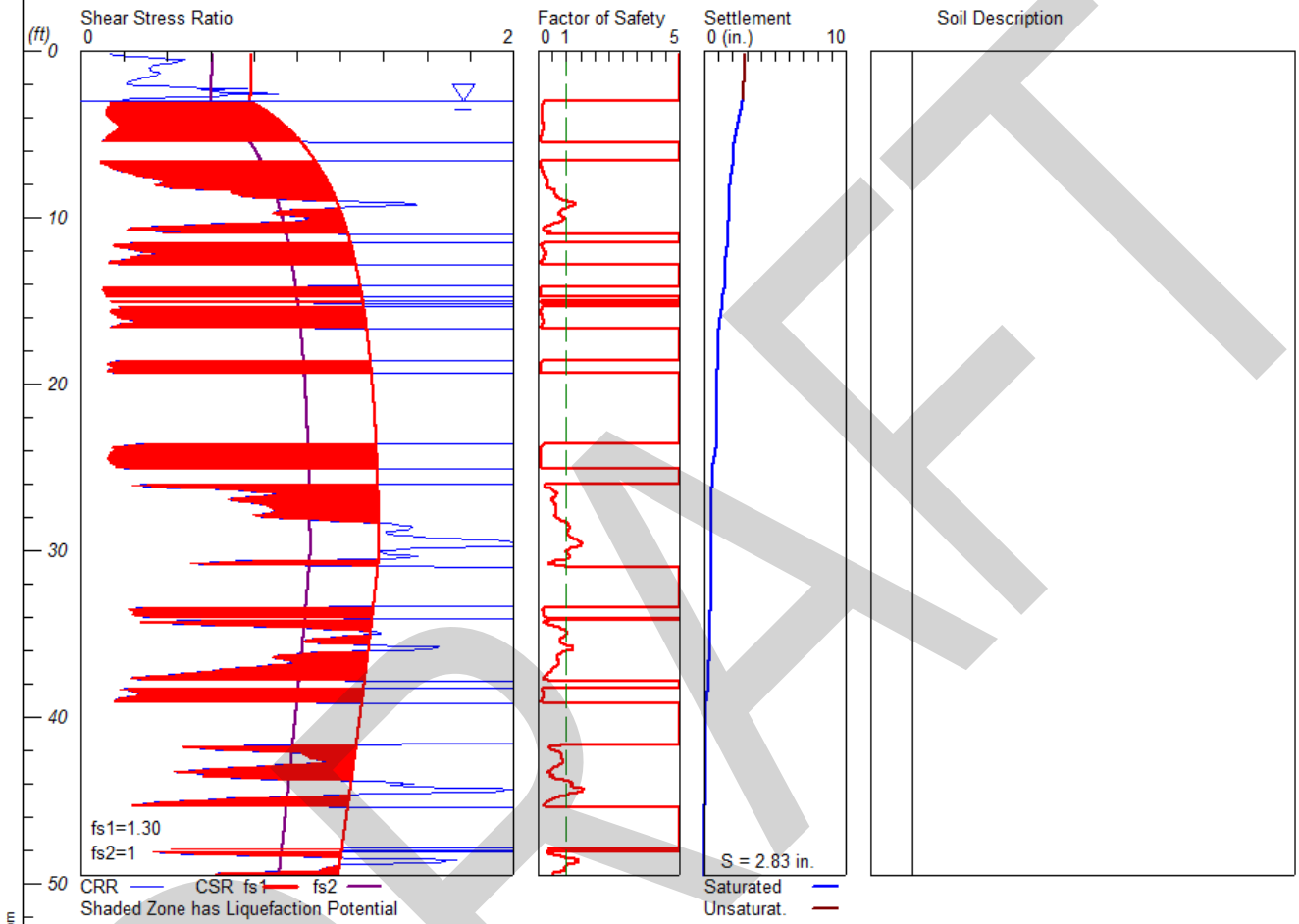
LIQUEFACTION ANALYSIS

Oxnard Warehouse

Hole No.=CPT-19 Water Depth=3 ft

Magnitude=6.89
Acceleration=0.935g



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Input File Name: N:\Projects\2018\60185017\Working Files\Calculations-Analyses\CPT-19.liq
Title: Oxnard Warehouse
Subtitle: 60185017

Surface Elev.=
Hole No.=CPT-19
Depth of Hole= 49.50 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration= 0.94 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=CPT-19
Depth of Hole=49.50 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration=0.94 g
Earthquake Magnitude=6.89
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot two CSR (fs1=User, fs2=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines	D50 mm
0.16	3.50	0.04	1.14	120.00	0.00	0.50
1.15	22.30	0.38	1.70	120.00	0.00	0.50
2.13	13.50	0.40	2.96	120.00	0.00	0.50
3.12	11.90	0.15	1.26	120.00	0.00	0.50
4.10	29.20	0.07	0.24	120.00	0.00	0.50
5.09	17.80	0.13	0.73	120.00	0.00	0.50
6.07	4.10	-0.01	-0.24	120.00	0.00	0.50
7.05	17.70	0.25	1.41	120.00	0.00	0.50
8.04	55.30	0.76	1.37	120.00	0.00	0.50
9.02	125.10	0.75	0.60	120.00	0.00	0.50
10.00	123.70	0.53	0.43	120.00	0.00	0.50
10.99	10.10	0.30	2.97	120.00	0.00	0.50
11.97	31.40	0.76	2.42	120.00	0.00	0.50
12.95	7.20	0.10	1.39	120.00	0.00	0.50
13.94	4.40	0.01	0.23	120.00	0.00	0.50
14.92	7.00	0.06	0.86	120.00	0.00	0.50
15.91	12.90	0.17	1.32	120.00	0.00	0.50
16.89	5.80	0.10	1.72	120.00	0.00	0.50
17.88	6.80	0.12	1.76	120.00	0.00	0.50
18.86	11.70	0.08	0.68	120.00	0.00	0.50
19.84	6.60	0.11	1.67	120.00	0.00	0.50
20.83	7.80	0.09	1.15	120.00	0.00	0.50
21.81	9.50	0.19	2.00	120.00	0.00	0.50
22.80	15.00	0.46	3.07	120.00	0.00	0.50
23.78	29.90	0.37	1.24	120.00	0.00	0.50

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24.77	53.20	0.30	0.56	120.00	0.00	0.50
25.75	15.30	0.47	3.07	120.00	0.00	0.50
26.73	159.10	1.50	0.94	120.00	0.00	0.50
27.72	173.00	1.18	0.68	120.00	0.00	0.50
28.70	215.10	1.65	0.77	120.00	0.00	0.50
29.69	246.00	1.68	0.68	120.00	0.00	0.50
30.67	122.00	2.27	1.86	120.00	0.00	0.50
31.66	15.00	0.56	3.73	120.00	0.00	0.50
32.64	23.00	0.57	2.48	120.00	0.00	0.50
33.62	66.80	1.16	1.74	120.00	0.00	0.50
34.61	200.40	1.73	0.86	120.00	0.00	0.50
35.59	213.40	1.81	0.85	120.00	0.00	0.50
36.58	200.00	1.75	0.88	120.00	0.00	0.50
37.56	93.90	1.21	1.29	120.00	0.00	0.50
38.54	95.30	1.21	1.27	120.00	0.00	0.50
39.53	15.70	0.44	2.80	120.00	0.00	0.50
40.51	15.50	0.45	2.90	120.00	0.00	0.50
41.50	48.40	1.87	3.86	120.00	0.00	0.50
42.48	194.50	3.18	1.63	120.00	0.00	0.50
43.47	74.10	2.76	3.72	120.00	0.00	0.50
44.45	286.10	2.55	0.89	120.00	0.00	0.50
45.43	31.40	1.02	3.25	120.00	0.00	0.50
46.42	19.10	0.74	3.87	120.00	0.00	0.50
47.40	23.00	0.77	3.35	120.00	0.00	0.50
48.39	220.20	2.80	1.27	120.00	0.00	0.50
49.37	177.00	2.08	1.18	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=2.69 in.
Settlement of Unsaturated Sands=0.14 in.
Total Settlement of Saturated and Unsaturated Sands=2.83 in.
Differential Settlement=1.415 to 1.868 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.16	0.14	0.79	5.00	2.69	0.14	2.83
1.16	0.32	0.79	5.00	2.69	0.14	2.83
2.16	0.47	0.79	5.00	2.69	0.05	2.74
3.16	0.14	0.80	0.17*	2.66	0.00	2.66
4.16	0.14	0.91	0.16*	2.41	0.00	2.41
5.16	0.12	1.00	0.12*	2.18	0.00	2.18
6.16	2.00	1.06	5.00	2.09	0.00	2.09
7.16	0.17	1.11	0.15*	1.94	0.00	1.94
8.16	0.39	1.15	0.34*	1.79	0.00	1.79
9.16	1.54	1.19	1.30	1.73	0.00	1.73
10.16	1.03	1.22	0.84*	1.71	0.00	1.71
11.16	2.00	1.24	5.00	1.64	0.00	1.64
12.16	0.34	1.26	0.27*	1.54	0.00	1.54
13.16	2.00	1.28	5.00	1.43	0.00	1.43
14.16	0.10	1.29	0.08*	1.43	0.00	1.43
15.16	2.00	1.31	5.00	1.23	0.00	1.23
16.16	0.24	1.32	0.18*	1.10	0.00	1.10
17.16	2.00	1.33	5.00	1.02	0.00	1.02
18.16	2.00	1.34	5.00	1.02	0.00	1.02
19.16	0.12	1.34	0.09*	0.91	0.00	0.91
20.16	2.00	1.35	5.00	0.87	0.00	0.87
21.16	2.00	1.36	5.00	0.87	0.00	0.87
22.16	2.00	1.36	5.00	0.87	0.00	0.87
23.16	2.00	1.36	5.00	0.87	0.00	0.87
24.16	0.13	1.37	0.10*	0.77	0.00	0.77
25.16	2.00	1.37	5.00	0.55	0.00	0.55
26.16	0.33	1.37	0.24*	0.54	0.00	0.54
27.16	0.80	1.38	0.58*	0.49	0.00	0.49
28.16	1.10	1.38	0.80*	0.46	0.00	0.46
29.16	1.56	1.38	1.13	0.46	0.00	0.46
30.16	1.39	1.38	1.01	0.46	0.00	0.46

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31.16	2.00	1.37	5.00	0.46	0.00	0.46
32.16	2.00	1.36	5.00	0.46	0.00	0.46
33.16	2.00	1.35	5.00	0.46	0.00	0.46
34.16	0.56	1.35	0.42*	0.38	0.00	0.38
35.16	1.18	1.34	0.88*	0.35	0.00	0.35
36.16	1.03	1.33	0.77*	0.35	0.00	0.35
37.16	0.62	1.32	0.47*	0.33	0.00	0.33
38.16	2.00	1.31	5.00	0.26	0.00	0.26
39.16	2.00	1.30	5.00	0.11	0.00	0.11
40.16	2.00	1.29	5.00	0.11	0.00	0.11
41.16	2.00	1.28	5.00	0.11	0.00	0.11
42.16	1.02	1.27	0.80*	0.10	0.00	0.10
43.16	0.53	1.26	0.42*	0.10	0.00	0.10
44.16	1.54	1.25	1.23	0.08	0.00	0.08
45.16	0.31	1.24	0.25*	0.06	0.00	0.06
46.16	2.00	1.23	5.00	0.02	0.00	0.02
47.16	2.00	1.22	5.00	0.02	0.00	0.02
48.16	0.39	1.21	0.32*	0.02	0.00	0.02
49.16	1.11	1.19	0.93*	0.01	0.00	0.01

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

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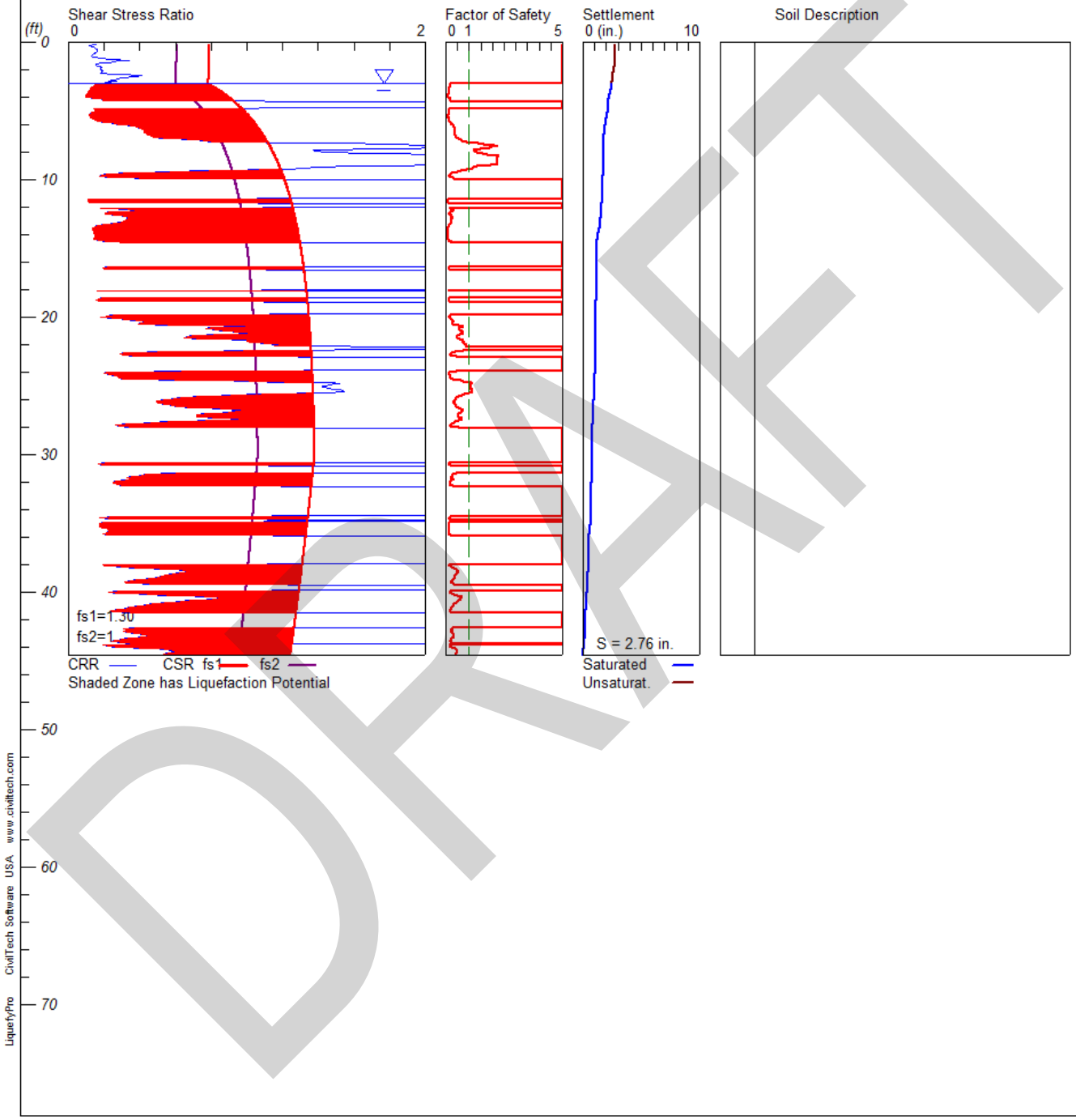
LIQUEFACTION ANALYSIS

Oxnard Warehouse

Hole No.=CPT-20 Water Depth=3 ft

Magnitude=6.89
Acceleration=0.935g



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LIQUEFACTION ANALYSIS SUMMARY
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Font: Courier New, Regular, Size 8 is recommended for this report.
Licensed to , 5/11/2018 3:50:48 PM

Input File Name: N:\Projects\2018\60185017\Working Files\Calculations-Analyses\CPT-20.liq
Title: Oxnard Warehouse
Subtitle: 60185017

Surface Elev.=
Hole No.=CPT-20
Depth of Hole= 44.60 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration= 0.94 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=CPT-20
Depth of Hole=44.60 ft
Water Table during Earthquake= 3.00 ft
Water Table during In-Situ Testing= 3.00 ft
Max. Acceleration=0.94 g
Earthquake Magnitude=6.89
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot two CSR (fs1=User, fs2=1)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines mm	D50
0.16	1.70	0.02	1.18	120.00	0.00	0.50
1.15	7.60	0.13	1.71	120.00	0.00	0.50
2.13	24.70	0.26	1.05	120.00	0.00	0.50
3.12	10.30	0.14	1.36	120.00	0.00	0.50
4.10	5.90	0.07	1.19	120.00	0.00	0.50
5.09	5.40	0.05	0.93	120.00	0.00	0.50
6.07	65.50	0.20	0.31	120.00	0.00	0.50
7.05	79.40	1.01	1.27	120.00	0.00	0.50
8.04	128.80	0.57	0.44	120.00	0.00	0.50
9.02	132.30	0.37	0.28	120.00	0.00	0.50
10.00	9.30	0.28	3.01	120.00	0.00	0.50
10.99	4.30	0.03	0.70	120.00	0.00	0.50
11.97	7.00	0.08	1.14	120.00	0.00	0.50
12.95	45.90	1.05	2.29	120.00	0.00	0.50
13.94	37.00	0.28	0.76	120.00	0.00	0.50
14.92	10.20	0.23	2.25	120.00	0.00	0.50
15.91	9.40	0.18	1.91	120.00	0.00	0.50
16.89	10.20	0.17	1.67	120.00	0.00	0.50
17.88	9.70	0.11	1.13	120.00	0.00	0.50
18.86	12.40	0.15	1.21	120.00	0.00	0.50
19.84	16.00	0.28	1.75	120.00	0.00	0.50
20.83	49.50	1.91	3.86	120.00	0.00	0.50
21.81	44.10	1.81	4.10	120.00	0.00	0.50
22.80	30.70	0.79	2.57	120.00	0.00	0.50
23.78	17.00	0.75	4.41	120.00	0.00	0.50

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24.77	202.70	1.80	0.89	120.00	0.00	0.50
25.75	149.30	1.42	0.95	120.00	0.00	0.50
26.73	180.50	1.02	0.57	120.00	0.00	0.50
27.72	104.50	1.13	1.08	120.00	0.00	0.50
28.70	12.70	0.37	2.91	120.00	0.00	0.50
29.69	17.50	0.57	3.26	120.00	0.00	0.50
30.67	36.00	0.56	1.56	120.00	0.00	0.50
31.66	57.00	1.46	2.56	120.00	0.00	0.50
32.64	16.30	0.53	3.25	120.00	0.00	0.50
33.62	30.80	0.89	2.89	120.00	0.00	0.50
34.61	33.10	0.55	1.66	120.00	0.00	0.50
35.59	47.20	0.98	2.08	120.00	0.00	0.50
36.58	17.00	0.41	2.41	120.00	0.00	0.50
37.56	13.70	0.33	2.41	120.00	0.00	0.50
38.54	184.00	1.26	0.68	120.00	0.00	0.50
39.53	34.30	1.35	3.94	120.00	0.00	0.50
40.51	189.80	1.91	1.01	120.00	0.00	0.50
41.50	35.80	1.26	3.52	120.00	0.00	0.50
42.48	29.70	1.31	4.41	120.00	0.00	0.50
43.47	79.70	1.47	1.84	120.00	0.00	0.50
44.45	150.20	1.99	1.32	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=2.47 in.
Settlement of Unsaturated Sands=0.29 in.
Total Settlement of Saturated and Unsaturated Sands=2.76 in.
Differential Settlement=1.381 to 1.823 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.16	0.15	0.79	5.00	2.47	0.29	2.76
1.16	0.18	0.79	5.00	2.47	0.27	2.74
2.16	0.19	0.79	5.00	2.47	0.12	2.59
3.16	0.14	0.80	0.17*	2.45	0.00	2.45
4.16	0.19	0.91	0.21*	2.18	0.00	2.18
5.16	0.13	1.00	0.13*	2.09	0.00	2.09
6.16	0.38	1.06	0.36*	1.88	0.00	1.88
7.16	0.75	1.11	0.68*	1.76	0.00	1.76
8.16	2.05	1.15	1.78	1.75	0.00	1.75
9.16	1.33	1.19	1.12	1.75	0.00	1.75
10.16	2.00	1.22	5.00	1.67	0.00	1.67
11.16	2.00	1.24	5.00	1.67	0.00	1.67
12.16	0.34	1.26	0.27*	1.58	0.00	1.58
13.16	0.25	1.28	0.20*	1.47	0.00	1.47
14.16	0.14	1.29	0.11*	1.25	0.00	1.25
15.16	2.00	1.31	5.00	1.18	0.00	1.18
16.16	2.00	1.32	5.00	1.18	0.00	1.18
17.16	2.00	1.33	5.00	1.15	0.00	1.15
18.16	2.00	1.34	5.00	1.14	0.00	1.14
19.16	2.00	1.34	5.00	1.10	0.00	1.10
20.16	0.31	1.35	0.23*	1.06	0.00	1.06
21.16	1.01	1.36	0.74*	1.05	0.00	1.05
22.16	2.00	1.36	5.00	1.05	0.00	1.05
23.16	2.00	1.36	5.00	1.03	0.00	1.03
24.16	0.22	1.37	0.16*	1.01	0.00	1.01
25.16	1.45	1.37	1.06	0.95	0.00	0.95
26.16	0.50	1.37	0.36*	0.91	0.00	0.91
27.16	0.72	1.38	0.52*	0.85	0.00	0.85
28.16	2.00	1.38	5.00	0.79	0.00	0.79
29.16	2.00	1.38	5.00	0.79	0.00	0.79
30.16	2.00	1.38	5.00	0.79	0.00	0.79
31.16	2.00	1.37	5.00	0.76	0.00	0.76
32.16	0.27	1.36	0.20*	0.70	0.00	0.70
33.16	2.00	1.35	5.00	0.69	0.00	0.69
34.16	2.00	1.35	5.00	0.69	0.00	0.69
35.16	0.17	1.34	0.13*	0.62	0.00	0.62

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36.16	2.00	1.33	5.00	0.51	0.00	0.51
37.16	2.00	1.32	5.00	0.51	0.00	0.51
38.16	0.29	1.31	0.22*	0.48	0.00	0.48
39.16	0.34	1.30	0.26*	0.37	0.00	0.37
40.16	0.44	1.29	0.34*	0.31	0.00	0.31
41.16	0.32	1.28	0.25*	0.26	0.00	0.26
42.16	2.00	1.27	5.00	0.21	0.00	0.21
43.16	0.44	1.26	0.35*	0.16	0.00	0.16
44.16	0.54	1.25	0.43*	0.04	0.00	0.04

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

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APPENDIX E

NATIONAL RESOURCES CONSERVATION SERVICES (NRCS)

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Ventura Area, California

February 25, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Pa—Pacheco silty clay loam.....16
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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

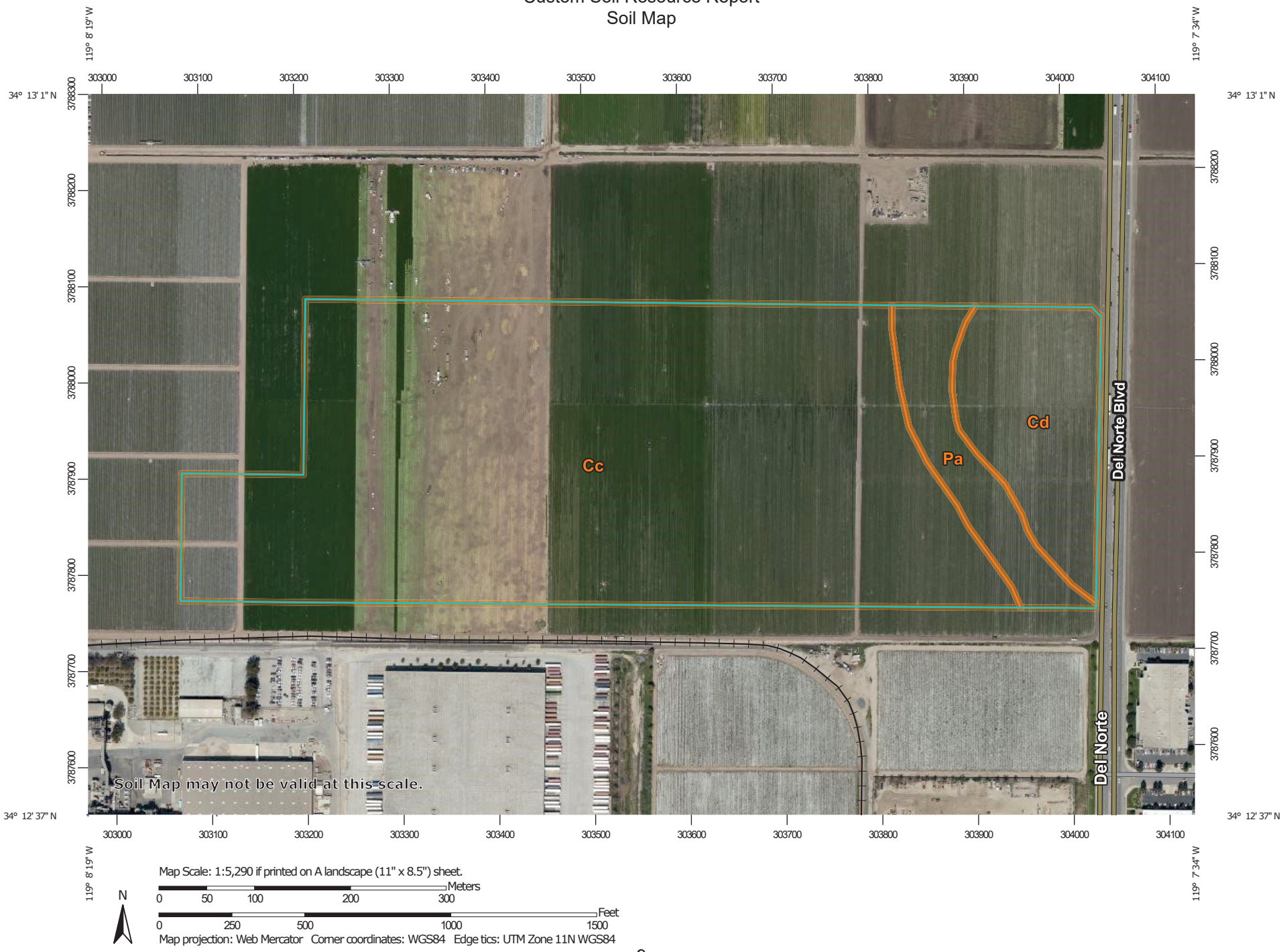
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:5,290 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ventura Area, California
Survey Area Data: Version 14, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 9, 2018—Jun 1, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Cc	Camarillo sandy loam, 0 to 2 percent slopes, MLRA 19	55.8	81.0%
Cd	Camarillo loam	8.2	12.0%
Pa	Pacheco silty clay loam	4.8	7.0%
Totals for Area of Interest		**68.8**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the

development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Ventura Area, California

Cc—Camarillo sandy loam, 0 to 2 percent slopes, MLRA 19

Map Unit Setting

National map unit symbol: 2tyzg
Elevation: 0 to 140 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 61 to 62 degrees F
Frost-free period: 330 to 360 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Camarillo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Camarillo

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock

Typical profile

A - 0 to 24 inches: sandy loam
Ckyg - 24 to 44 inches: stratified sandy loam to sandy clay loam
Cg - 44 to 80 inches: stratified sand to fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 1.98 in/hr)
Depth to water table: About 24 to 60 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Camarillo, hydric

Percent of map unit: 10 percent
Landform: Tidal flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Hueneme, hydric

Percent of map unit: 2 percent
Landform: Tidal flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Mocho

Percent of map unit: 1 percent
Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Aquic xerofluvents, hydric

Percent of map unit: 1 percent
Landform: Alluvial flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Pacheco, hydric

Percent of map unit: 1 percent
Landform: Tidal flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Cd—Camarillo loam

Map Unit Setting

National map unit symbol: hc7m
Elevation: 10 to 200 feet
Mean annual precipitation: 12 to 20 inches
Mean annual air temperature: 59 degrees F
Frost-free period: 275 to 350 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Camarillo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Camarillo

Setting

Landform: Alluvial flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 24 inches: loam
H2 - 24 to 50 inches: stratified sandy loam to sandy clay loam
H3 - 50 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 24 to 60 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Available water storage in profile: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B

Hydric soil rating: No

Minor Components

Mocho

Percent of map unit: 4 percent
Hydric soil rating: No

Pacheco

Percent of map unit: 3 percent
Landform: Tidal flats
Hydric soil rating: Yes

Hueneme

Percent of map unit: 3 percent
Landform: Tidal flats
Hydric soil rating: Yes

Camarillo, sandy loam

Percent of map unit: 3 percent
Landform: Tidal flats
Hydric soil rating: Yes

Unnamed

Percent of map unit: 2 percent
Landform: Alluvial flats
Hydric soil rating: Yes

Pa—Pacheco silty clay loam

Map Unit Setting

National map unit symbol: hcb5
Elevation: 400 feet
Mean annual precipitation: 15 inches
Mean annual air temperature: 59 degrees F
Frost-free period: 250 to 330 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Pacheco and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pacheco

Setting

Landform: Alluvial flats
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Stratified alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 17 inches: silty clay loam
H2 - 17 to 46 inches: silt loam
H3 - 46 to 60 inches: stratified sand to silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 24 to 60 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Pacheco

Percent of map unit: 10 percent
Landform: Tidal flats
Hydric soil rating: Yes

Camarillo

Percent of map unit: 3 percent
Landform: Tidal flats
Hydric soil rating: Yes

Hueneme

Percent of map unit: 1 percent
Landform: Tidal flats
Hydric soil rating: Yes

Cropley variant

Percent of map unit: 1 percent
Hydric soil rating: No

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APPENDIX F

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)

NOAA Atlas 14, Volume 6, Version 2
Location name: Oxnard, California, USA*
Latitude: 34.2143°, Longitude: -119.1321°
Elevation: 65.11 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.127 (0.106-0.153)	0.162 (0.135-0.195)	0.205 (0.171-0.248)	0.238 (0.197-0.291)	0.281 (0.224-0.356)	0.312 (0.243-0.404)	0.342 (0.260-0.455)	0.372 (0.274-0.510)	0.409 (0.288-0.588)	0.437 (0.296-0.651)
10-min	0.182 (0.152-0.219)	0.232 (0.194-0.279)	0.293 (0.245-0.355)	0.341 (0.282-0.417)	0.403 (0.321-0.510)	0.447 (0.348-0.580)	0.490 (0.372-0.653)	0.533 (0.392-0.731)	0.587 (0.413-0.842)	0.626 (0.425-0.933)
15-min	0.220 (0.184-0.265)	0.280 (0.234-0.338)	0.355 (0.296-0.430)	0.413 (0.341-0.504)	0.487 (0.388-0.617)	0.541 (0.421-0.701)	0.593 (0.450-0.789)	0.644 (0.474-0.884)	0.710 (0.500-1.02)	0.757 (0.514-1.13)
30-min	0.324 (0.271-0.390)	0.413 (0.345-0.498)	0.523 (0.436-0.633)	0.608 (0.503-0.743)	0.717 (0.572-0.909)	0.797 (0.621-1.03)	0.874 (0.663-1.16)	0.949 (0.699-1.30)	1.05 (0.736-1.50)	1.12 (0.757-1.66)
60-min	0.504 (0.423-0.608)	0.643 (0.538-0.776)	0.814 (0.679-0.986)	0.947 (0.783-1.16)	1.12 (0.891-1.42)	1.24 (0.967-1.61)	1.36 (1.03-1.81)	1.48 (1.09-2.03)	1.63 (1.15-2.34)	1.74 (1.18-2.59)
2-hr	0.735 (0.616-0.886)	0.933 (0.781-1.13)	1.18 (0.983-1.43)	1.37 (1.13-1.67)	1.61 (1.28-2.04)	1.79 (1.39-2.32)	1.96 (1.49-2.61)	2.12 (1.56-2.91)	2.34 (1.65-3.35)	2.49 (1.69-3.71)
3-hr	0.915 (0.767-1.10)	1.16 (0.972-1.40)	1.47 (1.22-1.78)	1.70 (1.41-2.08)	2.01 (1.60-2.54)	2.22 (1.73-2.88)	2.44 (1.85-3.24)	2.64 (1.95-3.63)	2.91 (2.05-4.17)	3.10 (2.10-4.62)
6-hr	1.30 (1.09-1.56)	1.65 (1.38-1.99)	2.09 (1.75-2.53)	2.43 (2.01-2.97)	2.87 (2.29-3.63)	3.18 (2.48-4.12)	3.48 (2.64-4.64)	3.78 (2.78-5.19)	4.16 (2.93-5.97)	4.44 (3.01-6.61)
12-hr	1.68 (1.40-2.02)	2.16 (1.81-2.61)	2.77 (2.31-3.35)	3.23 (2.67-3.94)	3.82 (3.04-4.84)	4.24 (3.31-5.50)	4.65 (3.53-6.19)	5.05 (3.72-6.93)	5.56 (3.92-7.98)	5.93 (4.02-8.84)
24-hr	2.08 (1.85-2.40)	2.74 (2.42-3.16)	3.55 (3.13-4.10)	4.16 (3.64-4.86)	4.95 (4.19-5.97)	5.52 (4.57-6.79)	6.06 (4.90-7.65)	6.60 (5.19-8.56)	7.28 (5.49-9.84)	7.77 (5.66-10.9)
2-day	2.54 (2.25-2.93)	3.42 (3.02-3.94)	4.50 (3.97-5.20)	5.33 (4.66-6.22)	6.40 (5.42-7.72)	7.18 (5.95-8.84)	7.93 (6.41-10.0)	8.66 (6.81-11.2)	9.61 (7.25-13.0)	10.3 (7.51-14.4)
3-day	2.83 (2.51-3.27)	3.87 (3.43-4.47)	5.17 (4.56-5.98)	6.18 (5.40-7.21)	7.48 (6.33-9.03)	8.44 (6.99-10.4)	9.37 (7.58-11.8)	10.3 (8.10-13.4)	11.5 (8.67-15.5)	12.4 (9.02-17.3)
4-day	3.08 (2.72-3.55)	4.23 (3.74-4.89)	5.69 (5.02-6.58)	6.83 (5.97-7.97)	8.32 (7.04-10.0)	9.41 (7.80-11.6)	10.5 (8.48-13.2)	11.6 (9.10-15.0)	13.0 (9.78-17.5)	14.0 (10.2-19.6)
7-day	3.58 (3.17-4.12)	4.91 (4.34-5.66)	6.60 (5.82-7.64)	7.95 (6.95-9.27)	9.73 (8.23-11.7)	11.1 (9.16-13.6)	12.4 (10.0-15.6)	13.7 (10.8-17.8)	15.5 (11.7-20.9)	16.8 (12.3-23.5)
10-day	3.87 (3.43-4.46)	5.30 (4.68-6.11)	7.13 (6.29-8.25)	8.60 (7.53-10.0)	10.6 (8.95-12.8)	12.1 (9.99-14.9)	13.5 (11.0-17.1)	15.1 (11.8-19.5)	17.1 (12.9-23.1)	18.6 (13.6-26.1)
20-day	4.57 (4.04-5.26)	6.25 (5.53-7.22)	8.47 (7.47-9.80)	10.3 (8.99-12.0)	12.7 (10.8-15.4)	14.6 (12.1-18.0)	16.5 (13.4-20.9)	18.5 (14.6-24.0)	21.2 (16.0-28.7)	23.3 (17.0-32.6)
30-day	5.43 (4.81-6.26)	7.43 (6.57-8.58)	10.1 (8.89-11.7)	12.3 (10.7-14.3)	15.3 (12.9-18.4)	17.6 (14.6-21.7)	20.0 (16.2-25.2)	22.5 (17.7-29.2)	25.9 (19.5-35.0)	28.6 (20.8-40.0)
45-day	6.43 (5.70-7.42)	8.77 (7.75-10.1)	11.9 (10.5-13.8)	14.5 (12.7-16.9)	18.1 (15.3-21.8)	20.9 (17.3-25.7)	23.8 (19.2-30.0)	26.8 (21.1-34.8)	31.0 (23.4-41.9)	34.3 (25.0-48.0)
60-day	7.37 (6.53-8.50)	9.99 (8.84-11.5)	13.5 (11.9-15.6)	16.4 (14.4-19.2)	20.5 (17.3-24.7)	23.7 (19.6-29.2)	27.0 (21.8-34.1)	30.5 (24.0-39.5)	35.3 (26.6-47.7)	39.1 (28.5-54.7)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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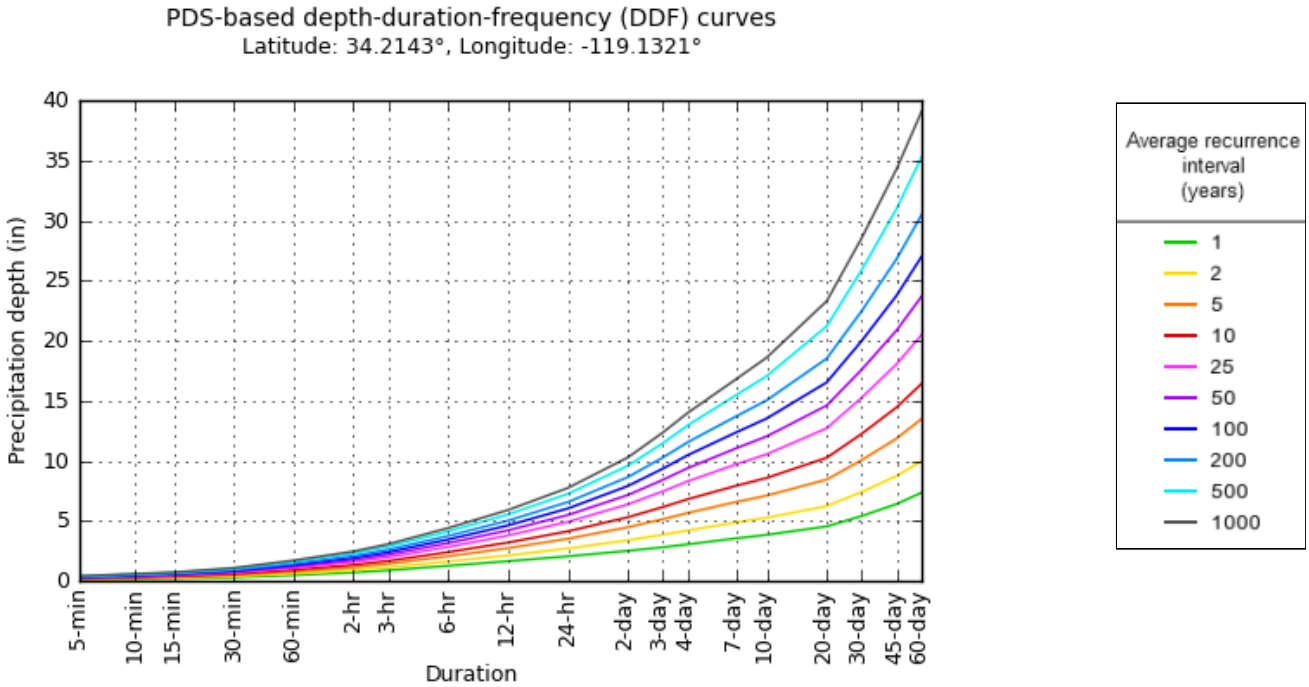
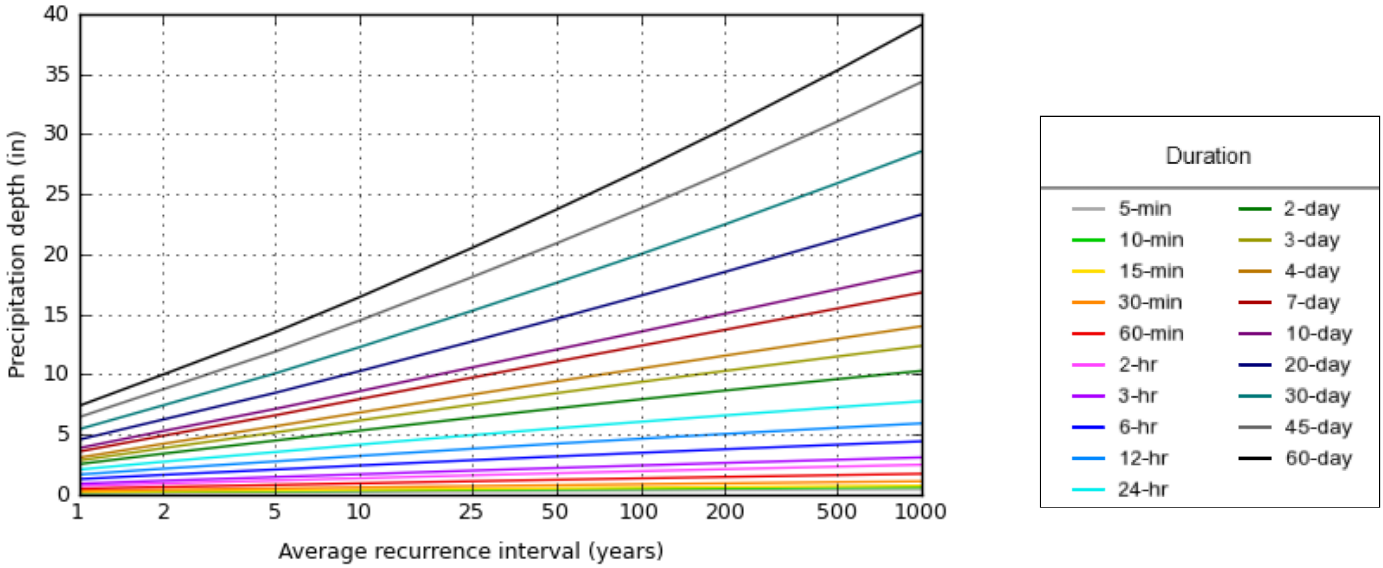
PF graphical





NOAA Atlas 14, Volume 6, Version 2 Created (GMT): Wed Feb 12 21:30:14 2020

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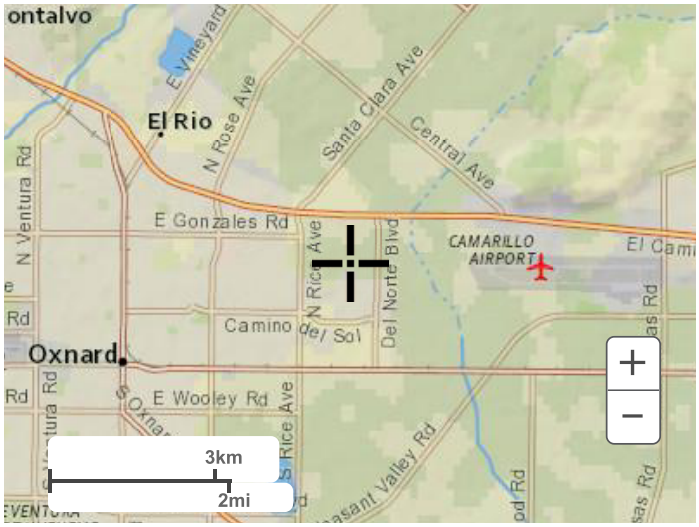
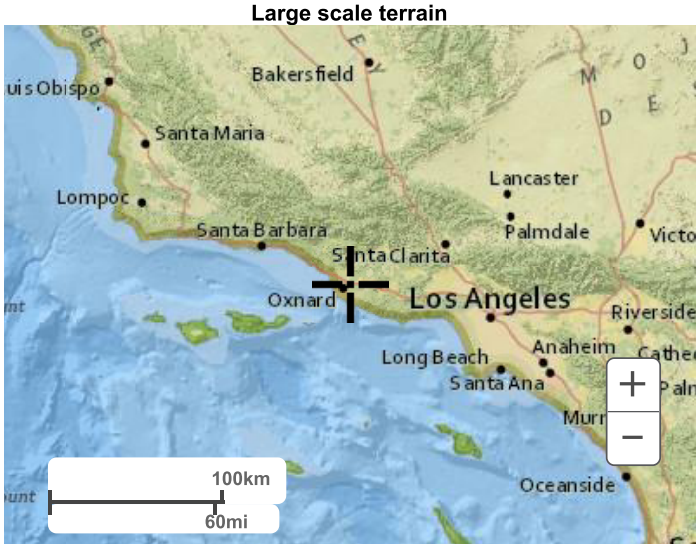
Maps & aerials

Small scale terrain



Large scale terrain



Large scale map

Large scale aerial

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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

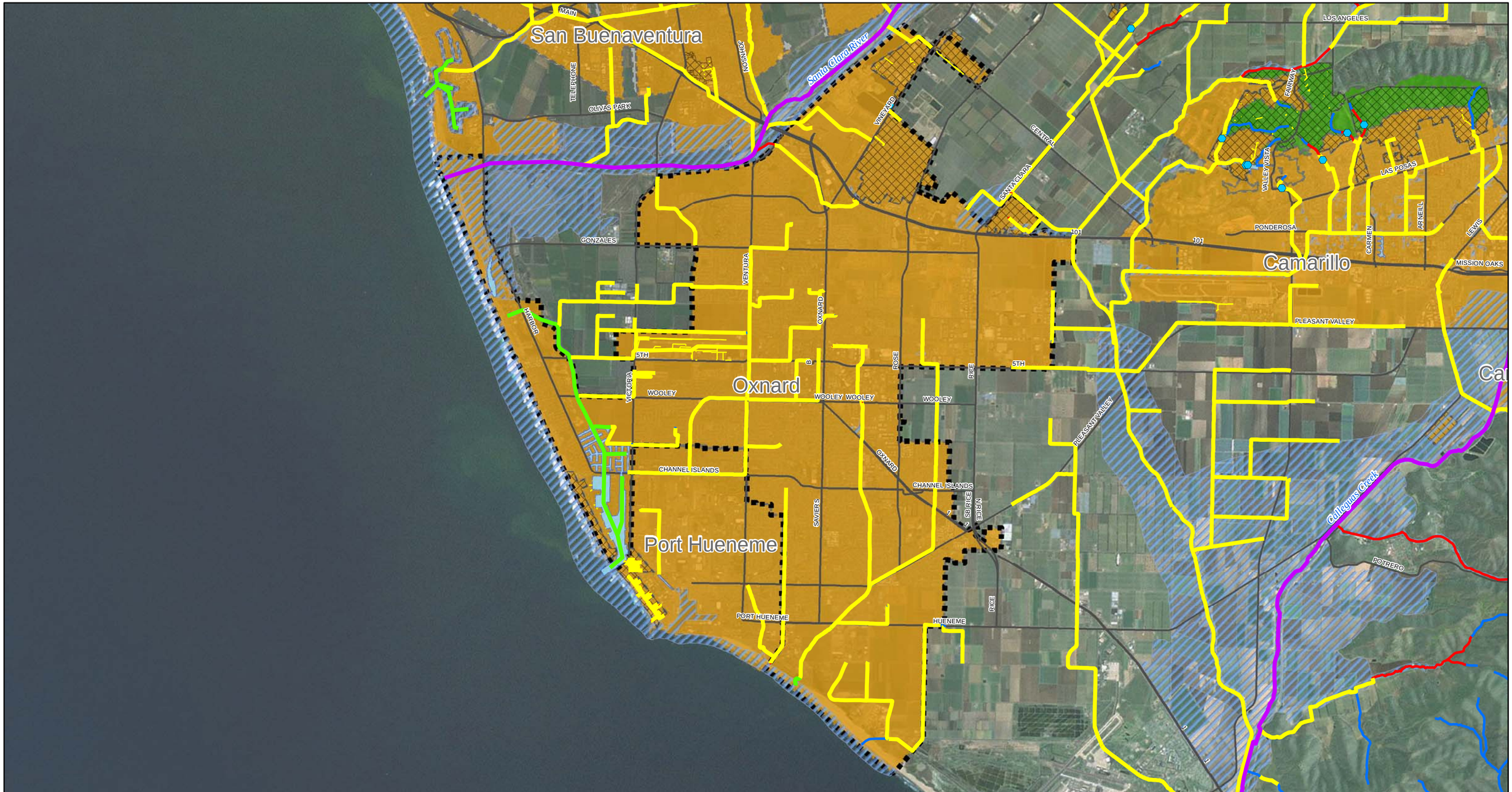
Disclaimer

APPENDIX G

STORMWATER QUALITY MANAGEMENT PLAN

APPENDIX H

HYDROMODIFICATION CONTROL PLAN APPLICABILITY MAP



Legend

- Large Channel (Q100>25,000 cfs) - Not Susceptible
- Modified Channel - Not Susceptible
- Storm Drain - Not Susceptible
- Tidal Channel - Not Susceptible
- Natural Redline Channel - Susceptible
- Natural Blueline Channel - Susceptible
- Lakes
- 100 Year Floodplain
- Urban County
- Street
- Basins

Hydromod Applicability
- Applicable
- Exempt
- Undetermined

Note: Applicability maps are provided for illustrative purposes. Determination of applicability is based on the requirements of the MS4 Permit and will be made by the land development permitting agency.

N

0 3,250 6,500 13,000 Feet

Basemap Source: ESRI

Hydromodification Control Applicability Map

Oxnard, CA

Geosyntec consultants

WW1717 | September 2013

Figure 3-6

P:\GIS\Ventura_County_HCP\Projects\Cities\Figure3-6Oxnard.mxd

APPENDIX I

STORM WATER MANAGEMENT MODEL (SWMM) OUTPUT DATA

Name	Description	Runoff Method	Outlet	Area (ac)	Imperv. (%)	TC Method	Time of Concentration (min)	SCS Curve Number	Return Period (y)	Version	Rainfall Zone	Soil Type	Hydrograph Fattening	Runoff Depth (in)	Total Rainfall (in)	Precipitation (in)	Infiltration (in)	Runoff Depth (in)	Runoff Volume (MG)	Peak Runoff (cfs)	Runoff Coefficient
DMA01	Parking Lot Runoff	Ventura County Rational	DMA01	1.581	88	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.814	0.25	5.819	0.956
DMA02A	Parking Lot Runoff	Ventura County Rational	DMA02A	0.632	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.801	0.1	2.366	0.954
DMA02B	Parking Lot Runoff	Ventura County Rational	DMA02B	0.36	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	6.122	0.06	1.348	1.007
DMA02C	Parking Lot Runoff	Ventura County Rational	DMA02C	0.256	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	6.494	0.045	0.958	1.068
DMA02D	Parking Lot Runoff	Ventura County Rational	DMA02D	0.249	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	6.531	0.044	0.932	1.074
DMA02E	Parking Lot Runoff	Ventura County Rational	DMA02E	0.413	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	10.845	0.122	1.546	1.783
DMA02F	Parking Lot Runoff	Ventura County Rational	DMA02F	0.82	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.808	0.129	3.07	0.955
DMA03A	Parking Lot Runoff	Ventura County Rational	DMA03A	0.801	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.809	0.126	2.998	0.955
DMA03B	Parking Lot Runoff	Ventura County Rational	DMA03B	0.466	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.917	0.075	1.744	0.973
DMA03C	Parking Lot Runoff	Ventura County Rational	DMA03C	0.486	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.884	0.078	1.819	0.968
DMA03D	Parking Lot Runoff	Ventura County Rational	DMA03D	0.505	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	9.819	0.135	1.89	1.615
DMA03E	Parking Lot Runoff	Ventura County Rational	DMA03E	0.485	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	10.008	0.132	1.816	1.646
DMA03F	Parking Lot Runoff	Ventura County Rational	DMA03F	0.412	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	10.858	0.121	1.542	1.786
DMA04A	Parking Lot Runoff	Ventura County Rational	DMA04A	0.68	100	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	9.082	0.168	2.673	1.494
DMA04B	Parking Lot Runoff	Ventura County Rational	DMA04B	1.176	100	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	7.646	0.244	4.623	1.257
DMA04C	Parking Lot Runoff	Ventura County Rational	DMA04C	1.448	100	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.899	0.232	5.692	0.97
DMA04D	Parking Lot Runoff	Ventura County Rational	DMA04D	1.272	100	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.932	0.205	5	0.975
DMA05A	Parking Lot Runoff	Ventura County Rational	DMA05A	1.642	99	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.821	0.26	6.421	0.957
DMA05B	Parking Lot Runoff	Ventura County Rational	DMA05B	1.46	99	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.847	0.232	5.709	0.962
DMA05C	Parking Lot Runoff	Ventura County Rational	DMA05C	1.26	99	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.883	0.201	4.927	0.967
DMA06	Parking Lot Runoff	Ventura County Rational	DMA06	0.312	95	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	6.468	0.055	1.194	1.064
DMA07	Parking Lot Runoff	Ventura County Rational	DMA07	0.466	94	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	10.351	0.131	1.774	1.702
DMA08	Parking Lot Runoff	Ventura County Rational	DMA08	0.63	90	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.802	0.099	2.345	0.954
DMA09	Parking Lot Runoff	Ventura County Rational	DMA09	0.128	100	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.234	0.029	0.503	1.354
DMA10	Parking Lot Runoff	Ventura County Rational	DMA10	0.618	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.804	0.097	2.313	0.954
DMA11	Parking Lot Runoff	Ventura County Rational	DMA11	0.491	94	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	6.031	0.08	1.869	0.992
DMA12	Parking Lot Runoff	Ventura County Rational	DMA12	0.312	94	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	6.417	0.054	1.187	1.055
DMA13	Parking Lot Runoff	Ventura County Rational	DI13	0.625	91	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.934	0.152	2.34	1.469
DMA14	Parking Lot Runoff	Ventura County Rational	DMA14	0.685	85	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.803	0.108	2.479	0.954
DMA15	Parking Lot Runoff	Ventura County Rational	DMA15	1.186	90	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.811	0.187	4.415	0.956
DMA16	Parking Lot Runoff	Ventura County Rational	DMA16	0.543	73	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.799	0.086	1.829	0.954
DMA17	Parking Lot Runoff	Ventura County Rational	DMA17	1.238	90	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.812	0.195	4.609	0.956
DMA18	Parking Lot Runoff	Ventura County Rational	DMA18	0.557	78	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.801	0.088	1.934	0.954
DMA19	Parking Lot Runoff	Ventura County Rational	DMA19	0.673	79	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.072	0.148	2.351	1.327
DMA20	Parking Lot Runoff	Ventura County Rational	DMA20	0.686	93	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.702	0.162	2.597	1.431
DMA21	Parking Lot Runoff	Ventura County Rational	DMA21	0.359	59	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	10.175	0.099	1.104	1.673
DMA22	Parking Lot Runoff	Ventura County Rational	DMA22	0.199	65	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	15.753	0.085	0.815	2.591
DMA23	Parking Lot Runoff	Ventura County Rational	DMA23	0.658	78	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.101	0.145	2.285	1.332
DMA24	Parking Lot Runoff	Ventura County Rational	DMA24	0.671	95	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.88	0.162	2.568	1.46
DMA25	Parking Lot Runoff	Ventura County Rational	DMA25	0.542	84	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	9.159	0.135	1.95	1.506
DMA26	Parking Lot Runoff	Ventura County Rational	DMA26	0.658	79	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.151	0.146	2.298	1.34
DMA27	Parking Lot Runoff	Ventura County Rational	DMA27	0.671	96	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.929	0.163	2.582	1.468
DMA28	Parking Lot Runoff	Ventura County Rational	DMA28	0.539	88	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	9.383	0.137	1.984	1.543
DMA29	Parking Lot Runoff	Ventura County Rational	DMA29	0.607	81	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.55	0.141	2.146	1.406
DMA30	Parking Lot Runoff	Ventura County Rational	DMA30	0.671	96	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.929	0.163	2.582	1.468
DMA31	Parking Lot Runoff	Ventura County Rational	DMA31	0.536	78	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.912	0.13	1.861	1.466
DMA32	Parking Lot Runoff	Ventura County Rational	DMA32	0.498	81	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	9.393	0.127	1.76	1.545
DMA33	Parking Lot Runoff	Ventura County Rational	DMA33	0.283	80	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	12.917	0.099	0.994	2.124
DMA34	Detention/Driveway	Ventura County Rational	SE_SDB	1.371	26	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.815	0.216	3.273	0.956
DMA35	Pervious Area	Ventura County Rational	S_DB_OF	0.773	0	SCS	5	80	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.809	0.122	1.462	0.955
DMA36	Pervious Area	Ventura County Rational	SW_SDB	6.305	0	SCS	30	80	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	3.835	6.06	5.98	0	3.835	0.657	5.965	0.641

DMA37A	Driveway	Ventura County Rational	DMA37A	0.251	54	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	12.808	0.087	0.849	2.106
DMA37B	Driveway	Ventura County Rational	DMA37B	0.447	54	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	8.634	0.105	1.328	1.42
DMA37C	Detention/Driveway	Ventura County Rational	DMA37C	0.962	54	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.81	0.152	2.859	0.955
DMA37D	Detention/Driveway	Ventura County Rational	DMA37D	1.786	54	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.816	0.282	5.307	0.956
DMA38	Roof Runoff	Ventura County Rational	PC01	4.935	100	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	6.146	0.824	19.4	1.011
DMA39	Roof Runoff	Ventura County Rational	J62	4.928	100	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	6.143	0.822	19.373	1.01
DMA40	Roof Runoff	Ventura County Rational	SW_UDB19	4.918	100	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.82	0.777	19.333	0.957
DMA41	Roof Runoff	Ventura County Rational	S_UDB09	4.903	100	SCS	5	98	100	2017	Oxnard Plain - Nyeland Drain	4Rev_2017	CN/Rainfall	5.822	6.06	6.081	0	5.821	0.775	19.274	0.957

Name	Inflows	Treatment	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Initial Depth (ft)	Surcharge Depth (ft)	Avg. Depth (ft)	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Rep. Max. Depth (ft)	Max. Lat. Inflow (cfs)	Max. Total Inflow (cfs)	Total Lat. Inflow (MG)	Total Inflow (MG)	Flow Error (%)	Hours Surcharged (h)	Max. Surcharge (ft)	Min. Freeboard (ft)	Hours Flooded (h)	Max. Flood Rate (cfs)	Total Flood Vol. (MG)	Max. Ponded Depth (ft)
DI01	NO	NO	58.15	61.02	2.87	0	0.5	0.18	3.29	61.44	2/11/2020 19:29	2.19	0	4.45	0	0.255	0.005	0.5	1.286	0	0	0	0	0
DI02A	NO	NO	57	61.02	4.02	0	0.5	0.46	4.52	61.52	2/11/2020 18:45	3.39	0	3.9	0	0.106	-0.153	1.59	2.52	0	0.01	3.16	0	0.5
DI02B	NO	NO	57	61.02	4.02	0	0.5	0.42	4.52	61.52	2/11/2020 18:49	3.97	0	3.5	0	0.067	-0.123	1.59	2.52	0	0.01	2.73	0	0.5
DI02C	NO	NO	57	61	4	0	0.5	0.38	4.1	61.1	2/11/2020 19:29	3.43	0	2.99	0	0.053	0.02	1.59	2.103	0	0	0	0	0
DI02D	NO	NO	57	61.02	4.02	0	0.5	0.34	4.02	61.02	2/11/2020 18:58	3.44	0	3.09	0	0.052	0.09	1.58	2.024	0	0	0	0	0
DI02E	NO	NO	57	61.02	4.02	0	0.5	0.33	3.93	60.93	2/11/2020 19:30	3.44	0	3.3	0	0.126	0.023	1.58	1.932	0.088	0	0	0	0
DI02F	NO	NO	57	61	4	0	0.5	0.32	4.5	61.5	2/11/2020 18:50	3.45	0	4.69	0	0.138	-0.019	1.58	2.5	0	0.01	3.6	0	0.5
DI03A	NO	NO	57	60.8	3.8	0	0.5	0.31	3.75	60.75	2/11/2020 19:29	3.45	0	2.28	0	0.128	0.017	1.58	1.748	0.052	0	0	0	0
DI03B	NO	NO	57	60.8	3.8	0	0.5	0.3	3.72	60.72	2/11/2020 19:29	3.45	0	1.33	0	0.076	0.007	1.59	1.72	0.08	0	0	0	0
DI03C	NO	NO	57	60.8	3.8	0	0.5	0.3	3.69	60.69	2/11/2020 19:29	3.45	0	1.39	0	0.079	-0.004	1.58	1.688	0.112	0	0	0	0
DI03D	NO	NO	57	60.8	3.8	0	0.5	0.31	3.65	60.65	2/11/2020 19:29	3.44	0	1.65	0	0.135	-0.007	1.57	1.651	0.149	0	0	0	0
DI03E	NO	NO	57	60.8	3.8	0	0.5	0.31	3.63	60.63	2/11/2020 19:29	3.42	0	1.59	0	0.132	-0.008	1.57	1.634	0.166	0	0	0	0
DI03F	NO	NO	57	60.8	3.8	0	0.5	0.31	3.67	60.67	2/11/2020 19:29	3.42	0	1.39	0	0.122	-0.006	1.56	1.668	0.132	0	0	0	0
DI04A	NO	NO	55.3	61.16	5.86	0	0.5	0.87	5.24	60.54	2/11/2020 19:29	5.2	0	2.23	0	0.169	-0.049	2.6	2.245	0.615	0	0	0	0
DI04B	NO	NO	59.97	60.8	0.83	0	0.5	0.07	0.76	60.73	2/11/2020 19:33	0.7	0	11.4	0	0.695	0.01	0	0	1.24	0	0	0	0
DI04C	NO	NO	60.07	60.8	0.73	0	0.5	0.23	1.17	61.24	2/11/2020 19:15	1.16	0	7.91	0	0.444	0.002	0	0	0.83	0	0	0	0
DI04D	NO	NO	60.17	60.8	0.63	0	0.5	0.2	1.18	61.35	2/11/2020 19:15	1.18	0	3.76	0	0.208	-0.009	0	0	0.82	0	0	0	0
DI05A	NO	NO	54.8	61.06	6.26	0	0.5	1.13	4.06	58.86	2/11/2020 19:31	4.05	0	4.82	0	0.264	-0.008	0	0	2.2	0	0	0	0
DI05B	NO	NO	54.8	61.06	6.26	0	0.5	1.13	4.06	58.86	2/11/2020 19:31	4.05	0	11.6	0	0.705	0.005	0	0	2.2	0	0	0	0
DI05C	NO	NO	54.8	61.06	6.26	0	0.5	1.13	4.06	58.86	2/11/2020 19:31	4.05	0	3.71	0	0.205	-0.005	0	0	2.2	0	0	0	0
DI06	NO	NO	62.28	64.85	2.57	0	0.5	0.05	0.27	62.55	2/11/2020 19:15	0.27	0	0.92	0	0.056	-0.003	0	0	2.3	0	0	0	0
DI07	NO	NO	61.7	65.17	3.47	0	0.5	0.09	0.45	62.15	2/11/2020 19:15	0.45	0	2.48	0	0.187	0.001	0	0	3.02	0	0	0	0
DI08	NO	NO	61.13	65.07	3.94	0	0.5	0.11	0.58	61.71	2/11/2020 19:15	0.58	0	4.24	0	0.288	-0.002	0	0	3.36	0	0	0	0
DI09	NO	NO	60.31	65.66	5.35	0	0.5	0.12	1.4	61.71	2/11/2020 19:16	1.28	0	4.63	0	0.317	0.003	0	0	3.95	0	0	0	0
DI10	NO	NO	59.62	63.92	4.3	0	0.5	0.13	1.08	60.7	2/11/2020 19:59	1.03	0	1.76	0	0.099	-0.01	0	0	3.22	0	0	0	0
DI11	NO	NO	59.33	63.88	4.55	0	0.5	0.18	1.37	60.7	2/11/2020 20:06	1.33	0	3.17	0	0.181	-0.003	0	0	3.18	0	0	0	0
DI12	NO	NO	59.04	63.96	4.92	0	0.5	0.23	1.64	60.68	2/11/2020 20:10	1.61	0	4.06	0	0.236	0.001	0	0	3.28	0	0	0	0
DI13	NO	NO	58.77	63.43	4.66	0	0.5	0.3	1.92	60.69	2/11/2020 20:07	1.89	1.98	5.96	0.153	0.389	-0.005	0	0	2.74	0	0	0	0
DI14	NO	NO	58.47	63.7	5.23	0	0.5	0.34	2.21	60.68	2/11/2020 20:07	2.19	0	7.7	0	0.498	-0.018	0.93	0.21	3.02	0	0	0	0
DI15	NO	NO	55.5	62.04	6.54	0	0.5	1.85	5.2	60.7	2/11/2020 19:49	5.14	0	3.36	0	0.19	0.015	10.81	3.197	1.343	0	0	0	0
DI16	NO	NO	56.4	61	4.6	0	0.5	1.08	4.27	60.67	2/11/2020 19:50	4.25	0	1.44	0	0.087	-0.023	6.91	2.265	0.335	0	0	0	0
DI17	NO	NO	57.5	61.9	4.4	0	0.5	0.57	3.18	60.68	2/11/2020 19:50	3.14	0	6.22	0	0.222	0.24	3.44	1.182	1.218	0	0	0	0
DI18	NO	NO	56.4	61.08	4.68	0	0.5	1.08	4.31	60.71	2/11/2020 19:49	4.25	0	1.51	0	0.089	-0.022	6.91	2.309	0.371	0	0	0	0
DI19	NO	NO	58.53	61.41	2.88	0	0.5	0.3	2.48	61.01	2/11/2020 19:50	2.12	0	1.99	0	0.149	-0.013	0.74	0.483	0.397	0	0	0	0
DI20	NO	NO	58.23	61.11	2.88	0	0.5	0.35	2.43	60.66	2/11/2020 20:04	2.41	0	5.23	0	0.171	-0.027	1.59	0.434	0.446	0	0	0	0
DI21	NO	NO	56.4	61.38	4.98	0	0.5	1.08	4.29	60.69	2/11/2020 19:49	4.25	0	1.06	0	0.106	0.009	6.91	2.291	0.689	0	0	0	0
DI22	NO	NO	58.2	61.11	2.91	0	0.5	0.35	2.54	60.74	2/11/2020 19:49	2.45	0	0.92	0	0.085	-0.026	1.66	0.537	0.373	0	0	0	0
DI23	NO	NO	58.13	61	2.87	0	0.5	0.41	2.81	60.94	2/11/2020 19:50	2.52	0	3.98	0	0.294	-0.035	1.89	0.809	0.061	0	0	0	0
DI24	NO	NO	57.1	61.5	4.4	0	0.5	0.74	3.65	60.75	2/11/2020 19:50	3.55	0	6.57	0	0.478	0.02	4.6	1.65	0.75	0	0	0	0
DI25	NO	NO	55.69	62.28	6.59	0	0.5	1.66	4.99	60.68	2/11/2020 19:50	4.96	0	1.69	0	0.145	0.033	9.78	2.992	1.598	0	0	0	0
DI26	NO	NO	56	61.08	5.08	0	0.5	1.38	5.58	61.58	2/11/2020 17:30	4.65	0	1.99	0	0.15	-0.065	8.41	3.58	0	0.01	0.6	0	0.5
DI27	NO	NO	55.68	61.42	5.74	0	0.5	1.67	5.07	60.75	2/11/2020 19:49	4.97	0	4.11	0	0.317	0.021	9.78	3.07	0.67	0	0	0	0
DI28	NO	NO	56.5	61	4.5	0	0.5	1.02	4.24	60.74	2/11/2020 19:50	4.15	0	2.03	0	0.176	0.082	6.57	2.244	0.256	0	0	0	0
DI29	NO	NO	57.91	61	3.09	0	0.5	0.47	3.59	61.5	2/11/2020 19:21	2.74	0	1.83	0	0.142	-0.024	2.42	1.59	0	0.01	0.42	0	0.5
DI30	NO	NO	57.61	61.82	4.21	0	0.5	0.54	3.15	60.76	2/11/2020 19:49	3.04	0	4.32	0	0.31	-0.004	3.15	1.153	1.057	0	0	0	0

DI31	NO	NO	56.3	61.41	5.11	0	0.5	1.15	4.46	60.76	2/11/2020 19:49	4.35	0	1.62	0	0.146	0.006	7.25	2.462	0.648	0	0	0	0
DI32	NO	NO	56.33	62.79	6.46	0	0.5	1.13	4.34	60.67	2/11/2020 19:50	4.32	0	2.28	0	0.167	0.165	7.16	2.338	2.122	0	0	0	0
DI33	NO	NO	56.2	61.3	5.1	0	0.5	1.22	4.46	60.66	2/11/2020 20:08	4.45	0	1.53	0	0.125	0.005	7.62	2.458	0.642	0	0	0	0
DI37A	NO	NO	58.3	62.78	4.48	0	0.5	0.15	3.3	61.6	2/11/2020 19:23	2.14	0	0.8	0	0.087	-0.033	0.31	1.303	1.177	0	0	0	0
DI37B	NO	NO	57.57	61.37	3.8	0	0.5	0.24	3.34	60.91	2/11/2020 19:23	2.91	0	1.23	0	0.105	-0.006	0.98	1.337	0.463	0	0	0	0
DI37C	NO	NO	55.15	61.23	6.08	0	0.5	0.93	5.39	60.54	2/11/2020 19:25	5.35	0	4.42	0	0.354	0.005	2.88	2.394	0.686	0	0	0	0
DI37D	NO	NO	55.09	61.12	6.03	0	0.5	0.96	5.44	60.53	2/11/2020 19:29	5.41	0	6.6	0	0.454	-0.024	2.12	1.943	0.587	0	0	0	0
J1	NO	NO	55.34	62.9	7.56	0	0.5	1.99	5.32	60.66	2/11/2020 20:08	5.31	0	2.73	0	0.184	0.124	11.8	3.318	2.242	0	0	0	0
J2	NO	NO	55.54	61.19	5.65	0	0.5	0.86	5.2	60.74	2/11/2020 19:29	4.88	0	42.68	0	2.13	-0.01	1.02	1.202	0.448	0	0	0	0
J210	NO	NO	55.87	61.79	5.92	0	0.5	1.48	4.8	60.67	2/11/2020 19:50	4.78	0	10.06	0	0.44	0.133	8.93	2.797	1.123	0	0	0	0
J3	NO	NO	55.54	61.19	5.65	0	0.5	0.86	5.2	60.74	2/11/2020 19:29	4.88	0	37.18	0	1.7	-0.01	1.02	1.197	0.453	0	0	0	0
J30	NO	NO	55.9	61.6	5.7	0	0.5	1.46	4.79	60.69	2/11/2020 19:49	4.75	0	2.36	0	0.195	-0.003	8.8	2.789	0.911	0	0	0	0
J4	NO	NO	55.54	61.19	5.65	0	0.5	0.86	5.2	60.74	2/11/2020 19:29	4.88	0	30	0	1.3	-0.006	1.02	1.199	0.451	0	0	0	0
J5	NO	NO	55.54	61.19	5.65	0	0.5	0.86	5.19	60.73	2/11/2020 19:29	4.87	0	22.01	0	0.848	-0.041	1.02	1.195	0.455	0	0	0	0
J6	NO	NO	55.54	61.18	5.64	0	0.5	0.85	5.13	60.67	2/11/2020 19:29	4.87	0	31.15	0	2.07	0.016	1.02	1.131	0.509	0	0	0	0
J62	NO	NO	59.9	67.29	7.39	0	0.5	0.25	1.8	61.7	2/11/2020 19:16	1.7	14.68	18.89	0.836	1.15	-0.046	0	0	5.59	0	0	0	0
J68	NO	NO	57.02	66.16	9.14	0	0.5	0.79	3.66	60.68	2/11/2020 19:49	3.63	0	18.12	0	1.18	0.03	4.88	1.663	5.477	0	0	0	0
J7	NO	NO	55.54	61.18	5.64	0	0.5	0.85	5.12	60.66	2/11/2020 19:29	4.87	0	21.66	0	1.21	-0.011	1.02	1.12	0.52	0	0	0	0
J73	NO	NO	56.3	63.3	7	0	0.5	0.22	2.5	58.8	2/11/2020 19:25	2.32	0	9.2	0	0.591	0	1.51	1.255	4.495	0	0	0	0
J8	NO	NO	55.54	61.18	5.64	0	0.5	0.85	5.12	60.66	2/11/2020 19:29	4.86	0	29.17	0	1.62	0	1.02	1.12	0.52	0	0	0	0
J9	NO	NO	55.54	61.18	5.64	0	0.5	0.85	5.15	60.69	2/11/2020 19:29	4.86	0	20.02	0	0.803	-0.043	1.02	1.15	0.49	0	0	0	0
MH01	NO	NO	56.57	62.05	5.48	0	0.5	0.48	4.22	60.79	2/11/2020 19:30	3.89	0	27.31	0	1.62	-0.011	0.99	1.217	1.263	0	0	0	0
MH02	NO	NO	56.46	61.5	5.04	0	0.5	0.51	4.26	60.72	2/11/2020 19:30	3.97	0	27.24	0	1.63	-0.002	1.09	1.259	0.781	0	0	0	0
MH03	NO	NO	55.43	62.33	6.9	0	0.5	0.89	5.24	60.67	2/11/2020 19:29	5.02	0	39.67	0	3.89	-0.007	0.14	0.238	1.662	0	0	0	0
MH04	NO	NO	55	62.21	7.21	0	0.5	1.04	5.6	60.6	2/11/2020 19:29	5.49	0	38.15	0	3.81	0.006	0.6	0.605	1.605	0	0	0	0
MH05	NO	NO	54.82	61.86	7.04	0	0.5	1.14	5.76	60.58	2/11/2020 19:29	5.67	0	37.87	0	3.82	0	0.76	0.763	1.277	0	0	0	0
PC01	NO	NO	57.34	62.09	4.75	0	0.5	0.38	4.09	61.43	2/11/2020 19:29	2.98	14.7	19.36	0.837	1.09	0.008	0.26	1.087	0.663	0	0	0	0
PC02	NO	NO	57.14	62.05	4.91	0.5	0.5	0.42	4.11	61.25	2/11/2020 19:29	3.21	0	19.38	0	1.09	-0.038	0.52	1.111	0.799	0	0	0	0
PC03	NO	NO	57.02	62.05	5.03	0	0.5	0.44	4.19	61.21	2/11/2020 19:41	3.37	0	21.12	0	1.2	0.003	0.65	1.187	0.843	0	0	0	0
PC04	NO	NO	56.93	62.05	5.12	0	0.5	0.46	4.22	61.15	2/11/2020 19:41	3.49	0	22.33	0	1.26	0.002	0.72	1.224	0.896	0	0	0	0
PC05	NO	NO	56.86	62.05	5.19	0	0.5	0.47	4.23	61.09	2/11/2020 19:29	3.57	0	23.01	0	1.31	-0.005	0.76	1.233	0.957	0	0	0	0
PC06	NO	NO	56.76	62.05	5.29	0	0.5	0.48	4.25	61.01	2/11/2020 19:29	3.68	0	23.77	0	1.36	-0.007	0.84	1.251	1.039	0	0	0	0
PC07	NO	NO	56.66	62.05	5.39	0	0.5	0.51	4.27	60.93	2/11/2020 19:30	3.77	0	25.05	0	1.48	0.005	0.92	1.267	1.123	0	0	0	0
PC08	NO	NO	56.31	61.19	4.88	0	0.5	0.51	4.44	60.75	2/11/2020 19:29	4.13	0	41.95	0	2.45	-0.021	0.29	0.436	0.444	0	0	0	0
PC09	NO	NO	56.16	61.19	5.03	0	0.5	0.57	4.55	60.71	2/11/2020 19:29	4.28	0	15.99	0	1.07	0.015	1.39	1.555	0.475	0	0	0	0
PC10	NO	NO	56.01	61.19	5.18	0	0.5	0.62	4.68	60.69	2/11/2020 19:29	4.44	0	19.89	0	1.09	0.012	1.57	1.678	0.502	0	0	0	0
PC11	NO	NO	55.85	61.19	5.34	0	0.5	0.68	5.65	61.5	2/11/2020 18:54	4.58	0	23.75	0	1.18	-0.017	1.77	2.65	0	0	0	0	0
PC12	NO	NO	55.69	61.18	5.49	0	0.5	0.74	5.96	61.65	2/11/2020 18:54	4.74	0	26.28	0	1.26	-0.024	1.97	2.963	0	0	0	0	0
PC13	NO	NO	55.54	61.18	5.64	0	0.5	0.83	5.13	60.67	2/11/2020 19:29	4.89	0	36.75	0	2.85	-0.029	1.02	1.13	0.51	0	0	0	0
PC14	NO	NO	57.51	61.59	4.08	0	0.5	0.24	3.38	60.89	2/11/2020 19:23	2.95	0	2.17	0	0.192	-0.067	1.03	1.383	0.697	0	0	0	0
PC15	NO	NO	57.61	62.44	4.83	0	0	0.23	3.31	60.92	2/11/2020 19:23	2.86	0	0.99	0	0.087	-0.022	0.94	1.307	1.523	0	0	0	0
PC16	NO	NO	57.71	64	6.29	0	0	0.23	3.45	61.16	2/11/2020 19:23	2.74	0	0.98	0	0.087	-0.035	0.86	1.455	2.835	0	0	0	0
S_UDB01	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:29	4.05	0	5.52	0	0.306	0.008	0	0	2.2	0	0	0	0
S_UDB02	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:29	4.05	0	5.13	0	0.309	-0.035	0	0	2.2	0	0	0	0
S_UDB03	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:29	4.05	0	2.65	0	0.247	-0.012	0	0	2.2	0	0	0	0
S_UDB04	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:29	4.05	0	2.61	0	0.212	-0.043	0	0	2.2	0	0	0	0
S_UDB05	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:29	4.06	0	4.63	0	0.281	-0.028	0	0	2.2	0	0	0	0
S_UDB06	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:29	4.06	0	6.66	0	0.392	-0.006	0	0	2.2	0	0	0	0
S_UDB07	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:29	4.06	0	8.9	0	0.51	-0.006	0	0	2.2	0	0	0	0

S_UDB08	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:29	4.06	0	11.48	0	0.655	-0.005	0	0	2.2	0	0	0	0
S_UDB09	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:29	4.06	14.44	14.44	0.789	0.789	-0.017	0	0	2.2	0	0	0	0
S_UDB10	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:30	4.06	0	1.84	0	0.139	0.102	0	0	2.2	0	0	0	0
S_UDB11	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:30	4.06	0	1.89	0	0.285	0.014	0	0	2.2	0	0	0	0
S_UDB12	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:30	4.06	0	2.63	0	0.399	0.008	0	0	2.2	0	0	0	0
S_UDB13	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:30	4.06	0	3.43	0	0.51	0.006	0	0	2.2	0	0	0	0
S_UDB14	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:30	4.06	0	4.02	0	0.594	0.016	0	0	2.2	0	0	0	0
S_UDB15	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:30	4.06	0	4.99	0	0.698	0.015	0	0	2.2	0	0	0	0
S_UDB16	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:30	4.06	0	6.5	0	0.889	0.004	0	0	2.2	0	0	0	0
S_UDB17	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:30	4.06	0	7.3	0	1.04	0.016	0	0	2.2	0	0	0	0
S_UDB18	NO	NO	54.8	61.06	6.26	0	0.5	1.12	4.06	58.86	2/11/2020 19:30	4.06	0	7.79	0	1.05	-0.034	0	0	2.2	0	0	0	0
S_UDB19	NO	NO	54.8	61.06	6.26	0	0.5	1.08	4.05	58.85	2/11/2020 19:30	4.05	0	9.99	0	1.5	0.008	0	0	2.21	0	0	0	0
S_UDB20	NO	NO	54.8	61.06	6.26	0	0.5	1.13	4.06	58.86	2/11/2020 19:30	4.05	0	10.32	0	0.741	-0.006	0	0	2.2	0	0	0	0
SE_UDB01	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 19:50	5.24	0	15.69	0	1.07	0.009	1.11	0.266	1.154	0	0	0	0
SE_UDB02	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:05	5.24	0	15.6	0	1.08	0.07	1.11	0.265	1.155	0	0	0	0
SE_UDB03	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:05	5.24	0	13.94	0	0.94	0.083	1.11	0.265	1.155	0	0	0	0
SE_UDB04	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:05	5.24	0	12.72	0	0.898	0.089	1.11	0.265	1.155	0	0	0	0
SE_UDB05	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:01	5.24	0	11.67	0	0.89	0.089	1.11	0.265	1.155	0	0	0	0
SE_UDB06	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:01	5.24	0	10.29	0	0.86	0.098	1.11	0.266	1.154	0	0	0	0
SE_UDB07	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:01	5.24	0	8.65	0	0.779	0.108	1.11	0.266	1.154	0	0	0	0
SE_UDB08	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:01	5.24	0	6.44	0	0.613	0.143	1.11	0.266	1.154	0	0	0	0
SE_UDB09	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:01	5.24	0	5.35	0	0.353	0.238	1.11	0.266	1.154	0	0	0	0
SE_UDB10	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:04	5.24	0	21.9	0	1.84	0.057	1.11	0.265	1.155	0	0	0	0
SE_UDB11	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:04	5.24	0	18.48	0	1.47	0.054	1.11	0.265	1.155	0	0	0	0
SE_UDB12	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:04	5.24	0	18.04	0	1.17	0.069	1.11	0.265	1.155	0	0	0	0
SE_UDB13	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:04	5.24	0	15.9	0	0.969	0.084	1.11	0.265	1.155	0	0	0	0
SE_UDB14	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:05	5.24	0	16.18	0	0.866	0.092	1.11	0.266	1.154	0	0	0	0
SE_UDB15	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:05	5.24	0	15.22	0	0.822	0.101	1.11	0.266	1.154	0	0	0	0
SE_UDB16	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 20:05	5.24	0	13.62	0	0.785	0.108	1.11	0.266	1.154	0	0	0	0
SE_UDB17	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 19:50	5.24	0	11.58	0	0.732	0.118	1.11	0.272	1.148	0	0	0	0
SE_UDB18	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 19:50	5.24	0	10.35	0	0.602	0.067	1.11	0.273	1.147	0	0	0	0
SE_UDB19	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.28	60.68	2/11/2020 19:49	5.24	0	18.12	0	1.21	0.1	1.11	0.276	1.144	0	0	0	0
SE_UDB20	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.29	60.69	2/11/2020 19:50	5.24	0	15.99	0	1.09	0.078	1.1	0.287	1.133	0	0	0	0
SE_UDB21	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 19:49	5.24	0	6.64	0	0.589	0.021	1.11	0.273	1.147	0	0	0	0
SE_UDB22	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 19:49	5.24	0	8.18	0	0.881	0.097	1.11	0.266	1.154	0	0	0	0
SE_UDB23	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:05	5.24	0	8.87	0	1.04	0.082	1.11	0.263	1.157	0	0	0	0
SE_UDB24	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:05	5.24	0	8.88	0	1.1	0.077	1.11	0.263	1.157	0	0	0	0
SE_UDB25	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:08	5.24	0	8.66	0	1.1	0.076	1.11	0.263	1.157	0	0	0	0
SE_UDB26	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:08	5.24	0	7.76	0	1.05	0.078	1.11	0.263	1.157	0	0	0	0
SE_UDB27	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:08	5.24	0	6.94	0	0.922	0.087	1.11	0.263	1.157	0	0	0	0
SE_UDB28	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:08	5.24	0	5.15	0	0.713	0.108	1.11	0.263	1.157	0	0	0	0
SE_UDB29	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.27	60.67	2/11/2020 19:49	5.24	0	3.23	0	0.416	0.177	1.11	0.266	1.154	0	0	0	0
SE_UDB30	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.24	0	21.03	0	2.3	0.048	1.11	0.263	1.157	0	0	0	0
SE_UDB31	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:08	5.24	0	19.42	0	1.85	0.045	1.11	0.263	1.157	0	0	0	0
SE_UDB32	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:08	5.24	0	18.18	0	1.52	0.055	1.11	0.263	1.157	0	0	0	0
SE_UDB33	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:08	5.24	0	16.15	0	1.3	0.065	1.11	0.263	1.157	0	0	0	0
SE_UDB34	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:08	5.24	0	17.06	0	1.18	0.069	1.11	0.263	1.157	0	0	0	0
SE_UDB35	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:04	5.24	0	17	0	1.21	0.067	1.11	0.263	1.157	0	0	0	0
SE_UDB36	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:04	5.24	0	18.58	0	1.41	0.057	1.11	0.263	1.157	0	0	0	0

SE_UDB37	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:04	5.24	0	20.64	0	1.74	0.048	1.11	0.264	1.156	0	0	0	0
SE_UDB38	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.26	60.66	2/11/2020 20:04	5.24	0	22.09	0	1.86	0.031	1.11	0.264	1.156	0	0	0	0
SE_UDB39	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.28	60.68	2/11/2020 19:50	5.24	0	9.3	0	0.476	0.024	1.11	0.276	1.144	0	0	0	0
SE_UDB40	NO	NO	55.4	61.82	6.42	0	0.5	1.95	5.29	60.69	2/11/2020 19:49	5.24	0	6.59	0	0.602	0.091	1.11	0.291	1.129	0	0	0	0
SE_UDB41	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	2.88	0	0.299	0.292	1.11	0.265	1.155	0	0	0	0
SE_UDB42	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	3.71	0	0.327	0.262	1.11	0.265	1.155	0	0	0	0
SE_UDB43	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	4.17	0	0.223	0.382	1.11	0.265	1.155	0	0	0	0
SE_UDB44	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	4.43	0	0.178	0.479	1.11	0.265	1.155	0	0	0	0
SE_UDB45	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	4.08	0	0.185	0.452	1.11	0.265	1.155	0	0	0	0
SE_UDB46	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	3.6	0	0.201	0.423	1.11	0.265	1.155	0	0	0	0
SE_UDB47	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	3.13	0	0.193	0.44	1.11	0.265	1.155	0	0	0	0
SE_UDB48	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	3.32	0	0.167	0.498	1.11	0.265	1.155	0	0	0	0
SE_UDB49	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	3.01	0	0.128	0.091	1.11	0.265	1.155	0	0	0	0
SE_UDB50	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	2.4	0	0.131	0.575	1.11	0.265	1.155	0	0	0	0
SE_UDB51	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.3	60.7	2/11/2020 19:50	5.25	0	2.92	0	0.122	0.692	1.1	0.302	1.118	0	0	0	0
SE_UDB52	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:12	5.25	0	3.93	0	0.279	0.128	1.11	0.264	1.156	0	0	0	0
SE_UDB53	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:12	5.25	0	4	0	0.294	0.246	1.11	0.264	1.156	0	0	0	0
SE_UDB54	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:12	5.25	0	5.64	0	0.338	0.219	1.11	0.264	1.156	0	0	0	0
SE_UDB55	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:12	5.25	0	7.13	0	0.42	0.179	1.11	0.263	1.157	0	0	0	0
SE_UDB56	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	8.45	0	0.519	0.144	1.11	0.263	1.157	0	0	0	0
SE_UDB57	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	10.12	0	0.64	0.12	1.11	0.263	1.157	0	0	0	0
SE_UDB58	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	11.62	0	0.783	0.102	1.11	0.263	1.157	0	0	0	0
SE_UDB59	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.25	0	19.51	0	2.75	0.092	1.11	0.263	1.157	0	0	0	0
SE_UDB60	NO	NO	55.4	61.82	6.42	0	0.5	1.94	5.26	60.66	2/11/2020 20:08	5.24	0	19.8	0	2.31	0.036	1.11	0.263	1.157	0	0	0	0
SE_UDB61	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	22.78	0	3.06	0.136	1.68	0.462	1.808	0	0	0	0
SE_UDB62	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	18.63	0	2.48	0.081	1.68	0.462	1.808	0	0	0	0
SE_UDB63	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	16.11	0	2.2	0.094	1.68	0.462	1.808	0	0	0	0
SE_UDB64	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	14.8	0	2.01	0.104	1.68	0.462	1.808	0	0	0	0
SE_UDB65	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.46	60.66	2/11/2020 20:08	5.45	0	12.47	0	1.87	0.108	1.68	0.462	1.808	0	0	0	0
SE_UDB66	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.46	60.66	2/11/2020 20:08	5.45	0	10.46	0	1.7	0.113	1.67	0.461	1.809	0	0	0	0
SE_UDB67	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.46	60.66	2/11/2020 20:08	5.45	0	9.1	0	1.41	0.136	1.67	0.461	1.809	0	0	0	0
SE_UDB68	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.46	60.66	2/11/2020 20:08	5.45	0	6.88	0	0.897	0.221	1.67	0.461	1.809	0	0	0	0
SE_UDB69	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.46	60.66	2/11/2020 19:50	5.45	0	4.87	0	0.432	0.008	1.68	0.463	1.807	0	0	0	0
SE_UDB70	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.47	60.67	2/11/2020 19:50	5.45	0	5.01	0	0.478	0.184	1.67	0.469	1.801	0	0	0	0
SE_UDB71	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.53	60.73	2/11/2020 19:50	5.45	0	5.01	0	0.511	0.24	1.67	0.532	1.738	0	0	0	0
SE_UDB72	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.55	60.75	2/11/2020 19:49	5.45	0	4.94	0	0.604	0.226	1.67	0.553	1.717	0	0	0	0
SE_UDB73	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.46	60.66	2/11/2020 20:08	5.45	0	5.92	0	0.786	0.07	1.68	0.458	1.812	0	0	0	0
SE_UDB74	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.46	60.66	2/11/2020 20:08	5.45	0	11.92	0	1.38	0.152	1.68	0.458	1.812	0	0	0	0
SE_UDB75	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.46	60.66	2/11/2020 20:08	5.45	0	23.78	0	4.65	0.067	1.68	0.458	1.812	0	0	0	0
SE_UDB76	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.46	60.66	2/11/2020 20:08	5.45	0	17.31	0	2.96	0.061	1.68	0.459	1.811	0	0	0	0
SE_UDB77	NO	NO	55.2	62.47	7.27	0	0.5	2.13	5.46	60.66	2/11/2020 20:08	5.45	0	15.97	0	2.5	0.082	1.68	0.459	1.811	0	0	0	0
SE_UDB78	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	14.7	0	2.26	0.091	1.68	0.46	1.81	0	0	0	0
SE_UDB79	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	13.27	0	2.18	0.09	1.68	0.46	1.81	0	0	0	0
SE_UDB80	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	12.55	0	2.04	0.094	1.68	0.46	1.81	0	0	0	0
SE_UDB81	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	12.18	0	1.79	0.116	1.67	0.461	1.809	0	0	0	0
SE_UDB82	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	10.84	0	1.48	0.139	1.67	0.461	1.809	0	0	0	0
SE_UDB83	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	10.9	0	1.22	-0.012	1.68	0.461	1.809	0	0	0	0
SE_UDB84	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.55	60.75	2/11/2020 19:49	5.45	0	7.26	0	0.598	0.26	1.67	0.553	1.717	0	0	0	0
SE_UDB85	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.54	60.74	2/11/2020 19:49	5.45	0	4.46	0	0.452	0.369	1.67	0.541	1.729	0	0	0	0

SE_UDB86	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.47	60.67	2/11/2020 19:49	5.45	0	9.18	0	0.732	0.14	1.67	0.467	1.803	0	0	0	0
SE_UDB87	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	9.57	0	0.685	0.004	1.68	0.462	1.808	0	0	0	0
SE_UDB88	NO	NO	55.2	62.47	7.27	0	0.5	2.14	5.46	60.66	2/11/2020 20:08	5.45	0	9.69	0	0.877	0.243	1.67	0.462	1.808	0	0	0	0
SW_UDB01	NO	NO	55.53	61.06	5.53	0	0.5	0.85	5.08	60.61	2/11/2020 19:29	4.96	0	15.32	0	1.36	0.003	0.01	0.081	0.449	0	0	0	0
SW_UDB02	NO	NO	55.53	61.06	5.53	0	0.5	0.85	5.09	60.62	2/11/2020 19:29	4.97	0	18.79	0	1.34	0.004	0.01	0.085	0.445	0	0	0	0
SW_UDB03	NO	NO	55.53	61.06	5.53	0	0.5	0.85	5.05	60.58	2/11/2020 19:29	4.95	0	19.68	0	1.12	0.008	0.01	0.046	0.484	0	0	0	0
SW_UDB04	NO	NO	55.53	61.06	5.53	0	0.5	0.85	5.07	60.6	2/11/2020 19:29	4.93	0	17.91	0	0.973	0.006	0.01	0.074	0.456	0	0	0	0
SW_UDB05	NO	NO	55.53	61.06	5.53	0	0.5	0.85	5.05	60.58	2/11/2020 19:33	4.93	0	16.39	0	0.86	0.007	0.01	0.048	0.482	0	0	0	0
SW_UDB06	NO	NO	55.53	61.06	5.53	0	0.5	0.85	5.05	60.58	2/11/2020 19:28	4.93	0	15.88	0	0.742	0.003	0.01	0.046	0.484	0	0	0	0
SW_UDB07	NO	NO	55.53	61.06	5.53	0	0.5	0.85	5.03	60.56	2/11/2020 19:28	4.94	0	15.46	0	0.6	0.001	0.01	0.03	0.5	0	0	0	0
SW_UDB08	NO	NO	55.53	61.06	5.53	0	0.5	0.86	5.05	60.58	2/11/2020 19:28	4.94	0	15.45	0	0.464	0.004	0.01	0.045	0.485	0	0	0	0
SW_UDB09	NO	NO	55.53	61.06	5.53	0	0.5	0.86	5.1	60.63	2/11/2020 19:28	4.94	0	12.21	0	0.396	0	0.01	0.097	0.433	0	0	0	0
SW_UDB10	NO	NO	55.53	61.06	5.53	0	0.5	0.86	6.03	61.56	2/11/2020 19:28	4.98	0	13.7	0	0.734	-0.032	0.03	1.03	0	0.01	5.73	0	0.5
SW_UDB11	NO	NO	55.53	61.06	5.53	0	0.5	0.86	5.03	60.56	2/11/2020 19:27	4.96	0	7.24	0	0.371	0.019	0.01	0.032	0.498	0	0	0	0
SW_UDB12	NO	NO	55.53	61.06	5.53	0	0.5	0.86	5.03	60.56	2/11/2020 19:27	4.96	0	9.45	0	0.405	0.004	0.01	0.025	0.505	0	0	0	0
SW_UDB13	NO	NO	55.53	61.06	5.53	0	0.5	0.85	5.02	60.55	2/11/2020 19:27	4.95	0	10.15	0	0.405	0.002	0.01	0.022	0.508	0	0	0	0
SW_UDB14	NO	NO	55.53	61.06	5.53	0	0.5	0.85	5.02	60.55	2/11/2020 19:29	4.95	0	10.85	0	0.381	-0.01	0.01	0.02	0.51	0	0	0	0
SW_UDB15	NO	NO	55.53	61.06	5.53	0	0.5	0.85	5.01	60.54	2/11/2020 19:27	4.95	0	11.08	0	0.381	-0.015	0.01	0.012	0.518	0	0	0	0
SW_UDB16	NO	NO	55.53	61.06	5.53	0	0.5	0.86	5.02	60.55	2/11/2020 19:27	4.95	0	10.68	0	0.427	-0.019	0.01	0.022	0.508	0	0	0	0
SW_UDB17	NO	NO	55.53	61.06	5.53	0	0.5	0.86	5.03	60.56	2/11/2020 19:27	4.94	0	11.54	0	0.516	-0.017	0.01	0.028	0.502	0	0	0	0
SW_UDB18	NO	NO	55.53	61.06	5.53	0	0.5	0.86	5.02	60.55	2/11/2020 19:27	4.95	0	13.43	0	0.625	-0.012	0.01	0.024	0.506	0	0	0	0
SW_UDB19	NO	NO	55.53	61.06	5.53	0	0.5	0.86	5.04	60.57	2/11/2020 19:27	4.94	14.49	14.49	0.791	0.861	-0.007	0.01	0.039	0.491	0	0	0	0
SW_UDB20	NO	NO	55.53	61.06	5.53	0	0.5	0.82	5.12	60.65	2/11/2020 19:29	4.93	0	17.37	0	1.74	0.002	0.01	0.119	0.411	0	0	0	0

Name	Inflows	Treatment	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Surcharge Depth (ft)	Ponded Area (ft²)	Diverted Link	Type	Curve Name	Avg. Depth (ft)	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Max. Lat. Inflow (cfs)	Max. Total Inflow (cfs)	Total Lat. Inflow (MG)	Total Inflow (MG)	Hours Surcharged (h)	Max. Surcharge (ft)	Min. Freeboard (ft)
DMA01	NO	NO	61.02	61.52	0.5	0	0	DC01	TABULAR	CurbInlet	0	0	61.02	2/11/2020 0:00	4.45	4.45	0.254	0.254	48	0	0.5
DMA02A	NO	NO	61.02	61.52	0.5	0	0	DC02A	TABULAR	GrateInlet	0	0	61.02	2/11/2020 0:00	1.8	1.8	0.101	0.101	48	0	0.5
DMA02B	NO	NO	61.02	61.52	0.5	0	0	DC02B	TABULAR	GrateInlet	0	0	61.02	2/11/2020 0:00	1.04	1.04	0.061	0.061	48	0	0.5
DMA02C	NO	NO	61	61.5	0.5	0	0	DC02C	TABULAR	GrateInlet	0	0	61	2/11/2020 0:00	0.75	0.75	0.046	0.046	48	0	0.5
DMA02D	NO	NO	61.02	61.52	0.5	0	0	DC02D	TABULAR	GrateInlet	0	0	61.02	2/11/2020 0:00	0.73	0.73	0.045	0.045	48	0	0.5
DMA02E	NO	NO	61.02	61.52	0.5	0	0	DC02E	TABULAR	GrateInlet	0	0	61.02	2/11/2020 0:00	1.39	1.39	0.122	0.122	48	0	0.5
DMA02F	NO	NO	61	61.5	0.5	0	0	DC02F	TABULAR	GrateInlet	0	0	61	2/11/2020 0:00	2.33	2.33	0.131	0.131	48	0	0.5
DMA03A	NO	NO	60.8	61.3	0.5	0.5	0	DC03A	TABULAR	GrateInlet	0	0	60.8	2/11/2020 0:00	2.28	2.28	0.128	0.128	48	0	0.5
DMA03B	NO	NO	60.8	61.3	0.5	0.5	0	DC03B	TABULAR	GrateInlet	0	0	60.8	2/11/2020 0:00	1.33	1.33	0.076	0.076	48	0	0.5
DMA03C	NO	NO	60.8	61.3	0.5	0	0	DC03C	TABULAR	GrateInlet	0	0	60.8	2/11/2020 0:00	1.39	1.39	0.079	0.079	48	0	0.5
DMA03D	NO	NO	60.8	61.3	0.5	0	0	DC03D	TABULAR	GrateInlet	0	0	60.8	2/11/2020 0:00	1.65	1.65	0.135	0.135	48	0	0.5
DMA03E	NO	NO	60.8	61.3	0.5	0	0	DC03E	TABULAR	GrateInlet	0	0	60.8	2/11/2020 0:00	1.59	1.59	0.132	0.132	48	0	0.5
DMA03F	NO	NO	60.8	61.3	0.5	0	0	DC03F	TABULAR	GrateInlet	0	0	60.8	2/11/2020 0:00	1.39	1.39	0.122	0.122	48	0	0.5
DMA04A	NO	NO	61.16	61.66	0.5	0	0	DC04A	TABULAR	CurbInlet	0	0	61.16	2/11/2020 0:00	2.23	2.23	0.169	0.169	48	0	0.5
DMA04B	NO	NO	60.8	61.3	0.5	0	0	DC04B	TABULAR	GrateInlet	0	0	60.8	2/11/2020 0:00	3.69	3.69	0.247	0.247	48	0	0.5
DMA04C	NO	NO	60.8	61.3	0.5	0	0	DC04C	TABULAR	GrateInlet	0	0	60.8	2/11/2020 0:00	4.28	4.28	0.236	0.236	48	0	0.5
DMA04D	NO	NO	60.8	61.3	0.5	0	0	DC04D	TABULAR	GrateInlet	0	0	60.8	2/11/2020 0:00	3.76	3.76	0.208	0.208	48	0	0.5
DMA05A	NO	NO	61.06	61.56	0.5	0	0	DC05A	TABULAR	GrateInlet	0	0	61.06	2/11/2020 0:00	4.82	4.82	0.264	0.264	48	0	0.5
DMA05B	NO	NO	61.06	61.56	0.5	0	0	DI05B	TABULAR	GrateInlet	0	0	61.06	2/11/2020 0:00	4.29	4.29	0.236	0.236	48	0	0.5
DMA05C	NO	NO	61.06	61.56	0.5	0	0	DC05C	TABULAR	GrateInlet	0	0	61.06	2/11/2020 0:00	3.71	3.71	0.205	0.205	48	0	0.5
DMA06	NO	NO	65.14	65.64	0.5	0	0	DC06	TABULAR	CurbInlet	0	0	65.14	2/11/2020 0:00	0.92	0.92	0.056	0.056	48	0	0.5
DMA07	NO	NO	0	0	0	0	0	DC07	TABULAR	GrateInlet	0	0	0	2/11/2020 0:00	1.56	1.56	0.132	0.132	48	0	0
DMA08	NO	NO	63.56	64.06	0.5	0	0	DC08	TABULAR	GrateInlet	0	0	63.56	2/11/2020 0:00	1.79	1.79	0.101	0.101	48	0	0.5
DMA09	NO	NO	65.66	66.16	0.5	0	0	DC09	TABULAR	CurbInlet	0	0	65.66	2/11/2020 0:00	0.41	0.41	0.029	0.029	48	0	0.5
DMA10	NO	NO	63.92	64.42	0.5	0	0	DC10	TABULAR	CurbInlet	0	0	63.92	2/11/2020 0:00	1.76	1.76	0.099	0.099	48	0	0.5
DMA11	NO	NO	63.88	64.38	0.5	0	0	DC11	TABULAR	CurbInlet	0	0	63.88	2/11/2020 0:00	1.43	1.43	0.082	0.082	48	0	0.5
DMA12	NO	NO	63.96	64.46	0.5	0	0	DC12	TABULAR	CurbInlet	0	0	63.96	2/11/2020 0:00	0.92	0.92	0.055	0.055	48	0	0.5
DMA13	NO	NO	63.43	63.93	0.5	0	0	DC13	TABULAR	CurbInlet	0	0	63.43	2/11/2020 0:00	0	0	0	0	48	0	0.5
DMA14	NO	NO	63.7	64.2	0.5	0	0	DC14	TABULAR	CurbInlet	0	0	63.7	2/11/2020 0:00	1.91	1.91	0.11	0.11	48	0	0.5
DMA15	NO	NO	62.04	62.54	0.5	0	0	DC15	TABULAR	CurbInlet	0	0	62.04	2/11/2020 0:00	3.36	3.36	0.19	0.19	48	0	0.5
DMA16	NO	NO	61	61.5	0.5	0	0	DC16	TABULAR	GrateInlet	0	0	61	2/11/2020 0:00	1.44	1.44	0.087	0.087	48	0	0.5
DMA17	NO	NO	61.9	62.4	0.5	0	0	DC17	TABULAR	CurbInlet	0	0	61.9	2/11/2020 0:00	3.51	3.51	0.199	0.199	48	0	0.5
DMA18	NO	NO	61.08	61.58	0.5	0	0	DC18	TABULAR	CurbInlet	0	0	61.08	2/11/2020 0:00	1.51	1.51	0.089	0.089	48	0	0.5
DMA19	NO	NO	61.41	61.91	0.5	0	0	DC19	TABULAR	GrateInlet	0	0	61.41	2/11/2020 0:00	1.99	1.99	0.149	0.149	48	0	0.5
DMA20	NO	NO	61.11	61.61	0.5	0	0	DC20	TABULAR	CurbInlet	0	0	61.11	2/11/2020 0:00	2.17	2.17	0.163	0.163	48	0	0.5
DMA21	NO	NO	60	60.5	0.5	0	0	DC21	TABULAR	CurbInlet	0	0	60	2/11/2020 0:00	1.06	1.06	0.099	0.099	48	0	0.5
DMA22	NO	NO	61.11	61.61	0.5	0	0	DC22	TABULAR	CurbInlet	0	0	61.11	2/11/2020 0:00	0.73	0.73	0.085	0.085	48	0	0.5
DMA23	NO	NO	61	61.5	0.5	0	0	DC23	TABULAR	GrateInlet	0	0	61	2/11/2020 0:00	1.94	1.94	0.146	0.146	48	0	0.5
DMA24	NO	NO	61.5	62	0.5	0	0	DC24	TABULAR	GrateInlet	0	0	61.5	2/11/2020 0:00	2.15	2.15	0.163	0.163	48	0	0.5
DMA25	NO	NO	60.33	60.83	0.5	0	0	DC25	TABULAR	CurbInlet	0	0	60.33	2/11/2020 0:00	1.69	1.69	0.136	0.136	48	0	0.5
DMA26	NO	NO	62.28	62.78	0.5	0	0	DC26	TABULAR	GrateInlet	0	0	62.28	2/11/2020 0:00	1.95	1.95	0.147	0.147	48	0	0.5
DMA27	NO	NO	62.2	62.7	0.5	0	0	DC27	TABULAR	GrateInlet	0	0	62.2	2/11/2020 0:00	2.16	2.16	0.164	0.164	48	0	0.5

DMA28	NO	NO	61	61.5	0.5	0	0	DC28	TABULAR	GrateInlet	0	0	61	2/11/2020 0:00	1.72	1.72	0.138	0.138	48	0	0.5
DMA29	NO	NO	61	61.5	0.5	0	0	DC29	TABULAR	GrateInlet	0	0	61	2/11/2020 0:00	1.83	1.83	0.142	0.142	48	0	0.5
DMA30	NO	NO	56.91	59.46	2.55	0	0	DC30	TABULAR	GrateInlet	0	0	56.91	2/11/2020 0:00	2.16	2.16	0.164	0.164	48	0	2.55
DMA31	NO	NO	61.41	61.91	0.5	0	0	DC31	TABULAR	GrateInlet	0	0	61.41	2/11/2020 0:00	1.62	1.62	0.13	0.13	48	0	0.5
DMA32	NO	NO	62.79	63.29	0.5	0	0	DC32	TABULAR	CurbInlet	0	0	62.79	2/11/2020 0:00	1.55	1.55	0.128	0.128	48	0	0.5
DMA33	NO	NO	60.34	60.84	0.5	0	0	DC33	TABULAR	CurbInlet	0	0	60.34	2/11/2020 0:00	0.98	0.98	0.099	0.099	48	0	0.5
DMA37A	NO	NO	62.78	63.28	0.5	0	0	DC37A	TABULAR	CurbInlet	0	0	62.78	2/11/2020 0:00	0.8	0.8	0.087	0.087	48	0	0.5
DMA37B	NO	NO	61.37	61.87	0.5	0	0	DC37B	TABULAR	CurbInlet	0	0	61.37	2/11/2020 0:00	1.23	1.23	0.105	0.105	48	0	0.5
DMA37C	NO	NO	61.21	61.71	0.5	0	0	DC37C	TABULAR	CurbInlet	0	0	61.21	2/11/2020 0:00	2.36	2.36	0.153	0.153	48	0	0.5
DMA37D	NO	NO	60.82	61.32	0.5	0	0	DC37D	TABULAR	CurbInlet	0	0	60.82	2/11/2020 0:00	4.37	4.37	0.285	0.285	48	0	0.5

Name	Invert Elev. (ft)	Rim Elev. (ft)	Depth (ft)	Storage Curve	Curve Name	Avg. Depth (ft)	Max. Depth (ft)	Max. HGL (ft)	Time Max. HGL (M/D/Y)	Rep. Max. Depth (ft)	Max. Lat. Inflow (cfs)	Max. Total Inflow (cfs)	Total Lat. Inflow (MG)	Total Inflow (MG)	Flow Error (%)	Hours Surcharged (h)	Max. Surcharge (ft)	Min. Freeboard (ft)	Avg. Volume (1000 ft³)	Avg. Percent Full (%)	Max. Volume (1000 ft³)	Max. Percent Full (%)	Max. Outflow (cfs)
SW_SDB	54.8	62	7.2	TABULAR	SouthwestBasin	1.04	5.7	60.5	2/11/2020 19:29	5.7	5.82	52.24	0.657	5.23	0.002	0	0	1.5	12.905	12	79.005	74	35.04
SE_SDB	54.8	62	7.2	TABULAR	SoutheastBasin	2.52	5.85	60.65	2/11/2020 20:10	5.85	2.95	26.64	0.218	4.39	0.057	9.24	2.85	1.35	35.472	28	95.647	76	15.3

Name	Inflows	Treatment	Invert Elev. (ft)	Rim Elev. (ft)	Tide Gate	Route To	Type	Series Name	Avg. Depth (ft)	Max. Depth (ft)	Time Max. HGL (M/D/Y)	Rep. Max. Depth (ft)	Max. Total Inflow (cfs)	Total Lat. Inflow (MG)	Total Inflow (MG)	Flow Error (%)	Flow Frequency	Avg. Flow (cfs)	Max. Flow (cfs)	Total Flow (MG)
S_DB_OF	NO	NO	56	63	NO		TIMESERIES	Tailwater	0.53	5	2/11/2020 19:00	5	9.77	0.122	0.713	0	63.05	1.46	9.77	0.713
SW_DB_OF	NO	NO	56	63	NO		TIMESERIES	Tailwater	0.63	5	2/11/2020 19:00	5	30.04	0	2.16	0	23.52	12.07	30.04	2.164
SE_DB_OF	NO	NO	56	63	NO		TIMESERIES	Tailwater	0.78	5	2/11/2020 19:00	5	14.8	0	3.65	0	74.94	5.44	14.8	3.654
SE_PUMP_OF	NO	NO	56	63	NO		TIMESERIES	Tailwater	0.52	5	2/11/2020 19:00	5	0.5	0	0.64	0	100	0.5	0.5	0.64
S_PUMP_OF	NO	NO	56	63	NO		TIMESERIES	Tailwater	0.52	5	2/11/2020 19:00	5	1.03	0	0.903	0	99.74	0.8	1.03	0.903
SW_PUMP_OF	NO	NO	56	63	NO		TIMESERIES	Tailwater	0.52	5	2/11/2020 19:00	5	5	0	3.05	0	88	3.35	5	3.047

Name	Inlet Node	Outlet Node	Length (ft)	Roughness	Inlet Offset (ft)	Outlet Offset (ft)	Entry Loss Coeff.	Exit Loss Coeff.	Avg. Loss Coeff.	Flap Gate	Cross-Section	Geom1 (ft)	Barrels	Slope (ft/ft)	Max. |Flow| (cfs)	Time Max. Flow (M/D/Y)	Max. |Velocity| (ft/s)	Max/Full Flow	Max/Full Depth	Full Both Ends (h)	Full Upstream (h)	Full Downstream (h)	Above Full Normal (h)	Dry (fraction)	Subcritical (fraction)	Supercritical (fraction)	Normal Limited (fraction)
C1	DI01	PC01	94.002	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00862	6.41	2/11/2020 19:06	3.82	0.23	1	0.5	0.5	1.24	0.01	0	1	0	0.95
C10	MH02	PC08	104.495	0.01	0	0	0	0	0	NO	CIRCULAR	3	2	0.00144	27.29	2/11/2020 19:15	3.99	0.42	1	1.09	1.09	1.24	0.01	0	0.68	0.32	0.02
C100	DI18	SE_UDB51	124.637	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00802	1.51	2/11/2020 19:15	1.19	0.06	1	6.91	6.91	11.41	0.01	0	0.81	0	0.5
C101	DI16	SE_UDB50	124.037	0.01	0	0	0	0	0	YES	CIRCULAR	2	1	0.00806	1.44	2/11/2020 19:15	1.15	0.05	1	6.91	6.91	11.41	0.01	0	0.81	0	0.5
C105	SE_UDB15	SE_UDB14	7.463	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	15.43	2/11/2020 19:12	1.42	0.39	1	1.11	1.11	1.11	0.01	0	1	0	0
C106	DI08	DI09	135.807	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00604	4.23	2/11/2020 19:15	4.56	0.19	0.49	0	0	0	0	0	0.41	0.59	0.99
C107	DI09	J62	64.4	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00637	4.74	2/11/2020 19:16	2.86	0.2	0.8	0	0	0	0	0.29	0.61	0	0.98
C108	J62	J68	592.103	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00486	18.12	2/11/2020 19:15	5.9	0.88	0.95	0.01	0.01	4.88	0.01	0.27	0.37	0.34	0.61
C109	S_UDB01	S_UDB20	167.366	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	5.52	2/11/2020 19:14	0.84	0.67	0.81	0	0	0	0	0	1	0	0
C11	PC08	PC09	95.757	0.01	0	0	0	0	0	NO	CIRCULAR	3	2	0.00157	22.24	2/11/2020 18:49	2.51	0.32	1	1.24	1.24	1.39	0.01	0.37	0.63	0	0.8
C113	SE_SDB	SE_DB_OF	52.237	0.01	0	0	0	0	0	YES	CIRCULAR	1.083	1	-0.02298	14.8	2/11/2020 20:29	16.07	1.7	1	4.23	4.23	43.2	7.13	0	0.83	0.11	0
C114	S_UDB20	S_UDB19	361.342	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.63	2/11/2020 19:15	0.93	0.65	0.81	0	0	0	0	0	1	0	0
C115	DI05B	S_UDB20	19.292	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	10.32	2/11/2020 19:15	1.01	0.42	0.81	0	0	0	0	0	1	0	0
C116	S_UDB08	S_UDB07	7.384	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	8.9	2/11/2020 19:15	1.8	0.23	0.81	0	0	0	0	0	1	0	0
C117	S_UDB11	S_UDB12	7.502	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.02	2/11/2020 20:20	0.48	0.05	0.81	0	0	0	0	0	1	0	0
C118	S_UDB09	S_UDB10	811.568	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.18	2/11/2020 19:15	0.36	0.31	0.81	0	0	0	0	0	1	0	0
C119	S_UDB08	S_UDB11	300.036	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.89	2/11/2020 19:15	0.5	0.31	0.81	0	0	0	0	0	1	0	0
C12	PC09	PC10	88.158	0.01	0	0	0	0	0	NO	CIRCULAR	3	2	0.0017	15.83	2/11/2020 18:25	2.03	0.22	1	1.39	1.39	1.57	0.01	0.36	0.63	0	0.79
C120	S_UDB07	S_UDB12	299.938	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.55	2/11/2020 19:15	0.44	0.25	0.81	0	0	0	0	0	1	0	0
C121	S_UDB06	S_UDB13	299.958	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.34	2/11/2020 19:15	0.39	0.22	0.81	0	0	0	0	0	1	0	0
C122	S_UDB05	S_UDB14	876.986	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	0.6	2/11/2020 19:15	0.25	0.17	0.81	0	0	0	0	0	1	0	0
C123	S_UDB04	S_UDB15	876.682	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	0.6	2/11/2020 19:15	0.27	0.17	0.81	0	0	0	0	0	1	0	0
C124	S_UDB03	S_UDB16	300.035	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.25	2/11/2020 19:15	0.47	0.2	0.81	0	0	0	0	0	1	0	0
C125	S_UDB02	S_UDB17	876.751	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	0.65	2/11/2020 20:15	0.31	0.18	0.81	0	0	0	0	0	1	0	0
C126	SE_UDB69	SE_UDB68	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	4.93	2/11/2020 17:27	0.96	0.13	1	1.67	1.67	1.67	0.01	0	1	0	0
C127	SE_UDB68	SE_UDB67	7.43	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	6.88	2/11/2020 17:28	1.08	0.18	1	1.67	1.67	1.67	0.01	0	1	0	0
C128	SE_UDB67	SE_UDB66	7.572	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	9.1	2/11/2020 15:25	1.57	0.23	1	1.67	1.67	1.67	0.01	0	1	0	0
C129	SE_UDB66	SE_UDB65	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	10.46	2/11/2020 19:18	1.53	0.27	1	1.67	1.67	1.68	0.01	0	1	0	0
C13	PC10	PC11	104.027	0.01	0	0	0	0	0	NO	CIRCULAR	3	2	0.00154	19.89	2/11/2020 18:36	1.91	0.29	1	1.57	1.57	1.77	0.01	0.36	0.64	0	0.78
C130	SE_UDB65	SE_UDB64	7.476	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	12.47	2/11/2020 19:19	1.5	0.32	1	1.67	1.68	1.68	0.01	0	1	0	0
C131	S_UDB09	S_UDB08	8.147	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	11.48	2/11/2020 19:15	1.87	0.31	0.81	0	0	0	0	0	1	0	0
C132	S_UDB02	S_UDB01	7.437	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	5.13	2/11/2020 19:15	1.1	0.13	0.81	0	0	0	0	0	1	0	0
C133	S_UDB03	S_UDB02	5.175	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.65	2/11/2020 19:15	0.72	0.06	0.81	0	0	0	0	0	1	0	0
C134	S_UDB04	S_UDB03	7.089	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	0.92	2/11/2020 20:48	0.89	0.02	0.81	0	0	0	0	0	1	0	0
C135	S_UDB05	S_UDB04	7.034	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.12	2/11/2020 19:17	1.55	0.05	0.81	0	0	0	0	0	1	0	0
C136	S_UDB06	S_UDB05	7.124	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	4.63	2/11/2020 19:15	1.82	0.12	0.81	0	0	0	0	0	1	0	0
C137	S_UDB07	S_UDB06	7.378	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	6.66	2/11/2020 19:15	1.76	0.17	0.81	0	0	0	0	0	1	0	0
C138	S_UDB17	S_UDB18	7.437	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	7.79	2/11/2020 20:20	2.62	0.2	0.81	0	0	0	0	0	1	0	0
C139	S_UDB16	S_UDB17	7.553	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	6.67	2/11/2020 20:20	1.71	0.17	0.81	0	0	0	0	0	1	0	0
C14	PC11	PC12	95.97	0.01	0	0	0	0	0	NO	CIRCULAR	3	2	0.00167	23.18	2/11/2020 18:47	1.91	0.33	1	1.77	1.77	1.97	0.01	0.34	0.64	0	0.77
C140	S_UDB15	S_UDB16	7.437	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	5.49	2/11/2020 20:20	1.23	0.14	0.81	0	0	0	0	0	1	0	0
C141	S_UDB14	S_UDB15	7.547	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	4.53	2/11/2020 20:20	1.26	0.12	0.81	0	0	0	0	0	1	0	0
C142	S_UDB13	S_UDB14	7.547	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.62	2/11/2020 20:20	1.44	0.09	0.81	0	0	0	0	0	1	0	0
C143	S_UDB12	S_UDB13	7.437	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.83	2/11/2020 20:20	0.89	0.07	0.81	0	0	0	0	0	1	0	0
C144	SE_UDB64	SE_UDB63	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	14.8	2/11/2020 19:19	1.51	0.38	1	1.68	1.68	1.68	0.01	0	1	0	0
C145	SE_UDB63	SE_UDB62	7.534	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	16.11	2/11/2020 19:18	1.57	0.41	1	1.68	1.68	1.68	0.01	0	1	0	0
C146	SE_UDB62	SE_UDB61	7.527	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	18.63	2/11/2020 19:19	1.72	0.48	1	1.68	1.68	1.68	0.01	0	1	0	0
C147	SE_UDB88	SE_UDB61	7.482	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	9.97	2/11/2020 17:44	1.65	0.25	1	1.67	1.67	1.68	0.01	0	1	0	0
C148	SE_UDB87	SE_UDB88	7.592	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	9.69	2/11/2020 17:44	1.65	0.25	1	1.67	1.68	1.67	0.01	0	1	0	0
C149	S_UDB10	S_UDB11	7.469	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.17	2/11/2020 19:56	0.6	0.03	0.81	0	0	0	0	0	1	0	0
C15	PC12	PC13	95.994	0.01	0	0	0	0	0	NO	CIRCULAR	3	2	0.00156	25.72	2/11/2020 18:48	1.89	0.38	1	1.97	1.97	2.2	0.01	0	0.66	0	0.72
C150	SE_UDB73	SE_UDB74	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	6.47	2/11/2020 17:23	1.11	0.17	1	1.67	1.68	1.68	0.01	0	1	0	0
C151	SE_UDB14	SE_UDB13	7.502	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	14.88	2/11/2020 19:10	1.36	0.38	1	1.11	1.11	1.11	0.01	0	1	0	0
C152	SE_UDB13	SE_UDB12	7.502	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	16.46	2/11/2020 19:12	1.26	0.42	1	1.11	1.11	1.11	0.01	0	1	0	0
C153	SE_UDB12	SE_UDB11	7.502	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	15.84	2/11/2020 19:12	1.57	0.41	1	1.11	1.11	1.11	0.01	0	1	0	0
C154	SE_UDB11	SE_UDB10	7.502	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	18.74	2/11/2020 17:55	1.89	0.48	1	1.11	1.11	1.11	0.01	0	1	0	0

C155	SE_UDB10	SE_UDB38	38.972	0.01	0	0	0	0	0	NO	CIRCULAR	5	3	0	22.09	2/11/2020 17:58	0.73	0.43	1	1.11	1.11	1.11	0.01	0	1	0	0
C156	SE_UDB30	SE_UDB60	29.974	0.01	0	0	0	0	0	NO	CIRCULAR	5	3	0	19.8	2/11/2020 19:19	0.94	0.34	1	1.11	1.11	1.11	0.01	0	1	0	0
C157	SW_SDB	SW_DB_OF	46.854	0.01	1.2	0	0	0	0	YES	CIRCULAR	1.5	1	0	30.04	2/11/2020 19:48	17	47.62	1	3.38	4.39	4.13	6.02	0.37	0.35	0	0
C159	DI37A	PC16	166.055	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00355	0.98	2/11/2020 19:22	1.84	0.06	1	0.31	0.31	0.86	0.01	0	0.61	0	0.95
C16	PC13	MH03	44.738	0.01	0	0	0	0	0	NO	CIRCULAR	3	2	0.00246	36.92	2/11/2020 19:15	2.7	0.43	1	2.2	2.2	2.38	0.01	0	1	0	0.4
C160	PC16	PC15	142.677	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.0007	0.99	2/11/2020 19:15	1.5	0.13	1	0.86	0.86	0.94	0.01	0	1	0	0.48
C161	PC15	PC14	87.322	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00115	0.98	2/11/2020 19:15	1.74	0.1	1	0.94	0.94	1.03	0.01	0.34	0.63	0	0.48
C162	SE_UDB59	SE_UDB61	154.37	0.01	0	0	0	0	0	NO	CIRCULAR	5	3	0.0013	15.82	2/11/2020 19:18	0.96	0.04	1	1.11	1.11	1.68	0.01	0	1	0	0.04
C163	DI20	SE_UDB37	61.941	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.04574	6.62	2/11/2020 19:08	2.59	0.11	1	1.59	1.59	31.28	0.01	0	0.62	0	0.85
C165	SE_UDB38	SE_UDB37	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	19.06	2/11/2020 19:18	1.74	0.49	1	1.11	1.11	1.11	0.01	0	1	0	0
C166	SE_UDB37	SE_UDB36	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	18.58	2/11/2020 19:12	1.54	0.48	1	1.11	1.11	1.11	0.01	0	1	0	0
C167	SE_UDB36	SE_UDB35	7.553	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	17	2/11/2020 19:19	1.4	0.44	1	1.11	1.11	1.11	0.01	0	1	0	0
C168	SE_UDB35	SE_UDB34	7.508	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	16.69	2/11/2020 19:12	1.29	0.43	1	1.11	1.11	1.11	0.01	0	1	0	0
C169	SE_UDB34	SE_UDB33	7.463	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	15.3	2/11/2020 19:18	1.22	0.39	1	1.11	1.11	1.11	0.01	0	1	0	0
C17	SW_UDB20	MH03	60.765	0.01	0	0	0	0	0	NO	CIRCULAR	5	2	0.00165	16.15	2/11/2020 19:35	1.37	0.06	1	0.01	0.01	0.14	0.01	0	1	0	0.44
C170	SE_UDB33	SE_UDB32	7.45	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	17.25	2/11/2020 19:12	1.37	0.44	1	1.11	1.11	1.11	0.01	0	1	0	0
C171	SE_UDB32	SE_UDB31	7.553	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	18.05	2/11/2020 19:13	1.63	0.46	1	1.11	1.11	1.11	0.01	0	1	0	0
C172	SE_UDB31	SE_UDB30	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	18.89	2/11/2020 19:18	2.09	0.48	1	1.11	1.11	1.11	0.01	0	1	0	0
C174	DI17	SE_UDB39	26.927	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.07823	6.84	2/11/2020 18:36	2.85	0.08	1	3.44	3.44	31.28	0.01	0	0.67	0	0.78
C175	J30	SE_UDB52	64.277	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00778	2.37	2/11/2020 18:53	1.18	0.09	1	8.8	8.8	11.4	0.01	0	0.98	0	0.15
C176	DI22	J30	83.273	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.02763	1.57	2/11/2020 18:53	1.11	0.03	1	1.66	1.66	30.13	0.01	0.02	0.55	0.08	0.84
C177	S_UDB19	J73	19.84	0.01	0	0	0	0	0	NO	CIRCULAR	1	1	-0.07582	9.2	2/11/2020 20:20	11.71	0.72	1	2.07	2.07	31.67	0.01	0.25	0.28	0.06	0.45
C18	MH03	MH04	231.707	0.01	0	0	0	0	0	NO	CIRCULAR	5	2	0.00186	38.15	2/11/2020 19:18	2.98	0.13	1	0.14	0.14	0.6	0.01	0	1	0	0.03
C181	SE_UDB21	SE_UDB40	38.875	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	6.64	2/11/2020 19:12	0.81	0.39	1	1.11	1.11	1.11	0.01	0	1	0	0
C182	SE_UDB40	SE_UDB39	138.072	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	4.23	2/11/2020 17:55	0.42	0.46	1	1.1	1.11	1.11	0.01	0	1	0	0
C183	SE_UDB39	SE_UDB38	102.535	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	4.63	2/11/2020 17:58	0.66	0.44	1	1.1	1.11	1.11	0.01	0	1	0	0
C184	SE_UDB22	SE_UDB37	279.645	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.5	2/11/2020 17:55	0.35	0.55	1	1.11	1.11	1.11	0.01	0	1	0	0
C185	SE_UDB23	SE_UDB36	279.542	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3	2/11/2020 17:55	0.3	0.47	1	1.11	1.11	1.11	0.01	0	1	0	0
C186	SE_UDB24	SE_UDB35	279.654	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.7	2/11/2020 17:58	0.27	0.42	1	1.11	1.11	1.11	0.01	0	1	0	0
C187	SE_UDB25	SE_UDB34	279.51	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.78	2/11/2020 18:00	0.28	0.43	1	1.11	1.11	1.11	0.01	0	1	0	0
C188	SE_UDB26	SE_UDB33	279.442	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.93	2/11/2020 18:00	0.29	0.46	1	1.11	1.11	1.11	0.01	0	1	0	0
C189	SE_UDB27	SE_UDB32	279.474	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.15	2/11/2020 18:00	0.31	0.49	1	1.11	1.11	1.11	0.01	0	1	0	0
C19	MH04	MH05	59.808	0.01	0	0	0	0	0	NO	CIRCULAR	5	2	0.00301	37.87	2/11/2020 19:18	2.82	0.1	1	0.6	0.6	0.76	0.01	0	0.99	0	0.45
C190	SE_UDB28	SE_UDB31	279.536	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.41	2/11/2020 17:50	0.35	0.53	1	1.11	1.11	1.11	0.01	0	1	0	0
C191	SE_UDB29	SE_UDB30	279.377	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.89	2/11/2020 17:50	0.5	0.61	1	1.11	1.11	1.11	0.01	0	1	0	0
C192	SE_UDB21	SE_UDB22	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	6.71	2/11/2020 19:12	1.06	0.17	1	1.11	1.11	1.11	0.01	0	1	0	0
C193	SE_UDB22	SE_UDB23	7.527	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	8.33	2/11/2020 19:12	0.99	0.21	1	1.11	1.11	1.11	0.01	0	1	0	0
C194	SE_UDB23	SE_UDB24	7.45	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	8.59	2/11/2020 19:16	1.12	0.22	1	1.11	1.11	1.11	0.01	0	1	0	0
C195	SE_UDB24	SE_UDB25	7.527	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	8.66	2/11/2020 19:16	1.18	0.22	1	1.11	1.11	1.11	0.01	0	1	0	0
C196	SE_UDB25	SE_UDB26	7.527	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	7.76	2/11/2020 19:14	1.17	0.2	1	1.11	1.11	1.11	0.01	0	1	0	0
C197	SE_UDB26	SE_UDB27	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	6.94	2/11/2020 19:16	1.09	0.18	1	1.11	1.11	1.11	0.01	0	1	0	0
C198	SE_UDB27	SE_UDB28	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	5.15	2/11/2020 19:16	0.9	0.13	1	1.11	1.11	1.11	0.01	0	1	0	0
C199	SE_UDB28	SE_UDB29	7.527	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.12	2/11/2020 19:19	0.51	0.08	1	1.11	1.11	1.11	0.01	0	1	0	0
C2	PC01	PC02	90.277	0.01	0	0	0	0	0	NO	CIRCULAR	3	1	0.00222	19.38	2/11/2020 19:15	4.12	0.47	1	0.26	0.26	0.52	0.01	0.39	0.61	0	0.72
C20	Di37C	SW_SDB	128.308	0.01	0	0	0	0	0	NO	CIRCULAR	3	1	0.00273	4.42	2/11/2020 19:15	3.98	0.1	1	2.88	2.88	3.6	0.01	0	0.76	0.24	0.02
C200	SE_UDB52	SE_UDB53	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.86	2/11/2020 19:32	0.86	0.1	1	1.1	1.11	1.11	0.01	0	1	0	0
C201	SE_UDB53	SE_UDB54	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	5.12	2/11/2020 19:32	0.78	0.13	1	1.1	1.11	1.11	0.01	0	1	0	0
C202	SE_UDB54	SE_UDB55	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	6.13	2/11/2020 18:13	0.72	0.16	1	1.11	1.11	1.11	0.01	0	1	0	0
C203	SE_UDB55	SE_UDB56	7.534	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	7.25	2/11/2020 18:13	0.74	0.19	1	1.1	1.11	1.11	0.01	0	1	0	0
C204	SE_UDB56	SE_UDB57	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	8.55	2/11/2020 17:55	0.88	0.22	1	1.11	1.11	1.11	0.01	0	1	0	0
C205	SE_UDB57	SE_UDB58	7.508	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	10.12	2/11/2020 17:53	1.03	0.26	1	1.11	1.11	1.11	0.01	0	1	0	0
C206	SE_UDB58	SE_UDB59	7.527	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	11.62	2/11/2020 17:53	1.26	0.3	1	1.11	1.11	1.11	0.01	0	1	0	0
C207	SE_UDB60	SE_UDB59	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	19.12	2/11/2020 19:19	3.57	0.49	1	1.11	1.11	1.11	0.01	0	0.98	0.02	0.01
C21	MH05	SW_SDB	126.069	0.01	0	0	0	0	0	NO	CIRCULAR	5	2	0.00016	38.59	2/11/2020 19:18	6.46	0.45	1	0.76	0.76	0.78	0.01	0	0.72	0.28	0
C210	SE_UDB49	SE_UDB50	37.816	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.01	2/11/2020 19:10	0.53	0.17	1	1.1	1.11	1.1	0.01	0	1	0	0
C211	SE_UDB50	SE_UDB51	138.362	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.29	2/11/2020 18:26	0.11	0.14	1	1.09	1.1	1.1	0.01	0	1	0	0
C212	SE_UDB51	SE_UDB52	103.429	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.34	2/11/2020 19:11	0.27	0.22	1	1.09	1.1	1.11	0.01	0	1	0	0
C213	SE_UDB48	SE_UDB53	279.562	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.28	2/11/2020 17:57	0.13	0.2	1	1.1	1.11	1.11	0.01	0	1	0	0
C214	SE_UDB47	SE_UDB54	279.566	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.29	2/11/2020 17:57	0.13	0.2	1	1.1	1.11	1.11	0.01	0	1	0	0
C215	SE_UDB46	SE_UDB55	279.6	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.34	2/11/2020 17:56	0.13	0.21	1	1.1	1.11	1.11	0.01	0	1	0	0
C216	SE_UDB45	SE_UDB56	279.683	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.45	2/11/2020 17:56	0.15	0.23	1	1.1	1.11	1.11	0.01	0	1	0	0

C217	SE_UDB44	SE_UDB57	279.571	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.6	2/11/2020 17:56	0.2	0.25	1	1.1	1.11	1.11	0.01	0	1	0	0
C218	SE_UDB43	SE_UDB58	279.554	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.79	2/11/2020 17:56	0.27	0.28	1	1.1	1.11	1.11	0.01	0	1	0	0
C219	SE_UDB42	SE_UDB59	279.601	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.04	2/11/2020 17:56	0.38	0.32	1	1.1	1.11	1.11	0.01	0	1	0	0
C22	DI37D	SW_SDB	126.118	0.01	0	0	0	0	0	NO	CIRCULAR	3.5	1	0.0023	6.61	2/11/2020 19:15	4.35	0.11	1	2.12	2.12	2.61	0.01	0	0.76	0.24	0.02
C220	SE_UDB41	SE_UDB60	279.56	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.88	2/11/2020 17:56	0.84	0.45	1	1.1	1.11	1.11	0.01	0	1	0	0
C222	SE_UDB74	SE_UDB75	7.502	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	14.26	2/11/2020 16:22	2.13	0.36	1	1.67	1.68	1.68	0.01	0	1	0	0
C223	SE_UDB83	SE_UDB82	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	10.59	2/11/2020 15:12	1.61	0.27	1	1.67	1.67	1.67	0.01	0	1	0	0
C225	SE_UDB49	SE_UDB48	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.96	2/11/2020 19:10	0.64	0.08	1	1.11	1.11	1.11	0.01	0	1	0	0
C226	SE_UDB48	SE_UDB47	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.08	2/11/2020 18:39	0.67	0.08	1	1.11	1.11	1.11	0.01	0	1	0	0
C227	SE_UDB47	SE_UDB46	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.27	2/11/2020 18:39	0.68	0.08	1	1.11	1.11	1.11	0.01	0	1	0	0
C228	SE_UDB46	SE_UDB45	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.37	2/11/2020 18:39	0.67	0.09	1	1.11	1.11	1.11	0.01	0	1	0	0
C229	SE_UDB45	SE_UDB44	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.86	2/11/2020 18:39	0.66	0.07	1	1.11	1.11	1.11	0.01	0	1	0	0
C23	DI15	SE_UDB40	26.734	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00374	3.37	2/11/2020 19:15	1.26	0.19	1	10.81	10.81	11.41	0.01	0	1	0	0.01
C230	SE_UDB44	SE_UDB43	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.97	2/11/2020 17:57	0.62	0.08	1	1.11	1.11	1.11	0.01	0	1	0	0
C231	SE_UDB43	SE_UDB42	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.51	2/11/2020 17:57	0.73	0.06	1	1.11	1.11	1.11	0.01	0	1	0	0
C232	SE_UDB42	SE_UDB41	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.08	2/11/2020 19:16	1.06	0.05	1	1.11	1.11	1.11	0.01	0	1	0	0
C234	DI37B	PC14	27.836	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00216	1.25	2/11/2020 19:12	2.2	0.09	1	0.98	0.98	1.03	0.01	0.34	0.61	0	0.5
C235	PC14	Di37C	282.683	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00835	2.12	2/11/2020 19:15	1.77	0.08	1	1.03	1.03	5.5	0.01	0	0.66	0	0.92
C237	DI04A	DI37D	180.87	0.01	0	0	0	0	0	NO	CIRCULAR	3	1	0.00116	2.23	2/11/2020 19:15	1.01	0.08	1	2.6	2.6	3.01	0.01	0	0.66	0	0.74
C24	DI02A	PC03	68.484	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	-0.00029	4.18	2/11/2020 18:41	1.71	0.83	1	1.57	1.58	1.59	0.01	0	1	0	0
C246	DI04D	DI04C	300.554	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00033	3.68	2/11/2020 19:15	1.92	0.69	0.59	0	0	0	0	0	0.66	0	0.49
C247	DI04C	DI04B	299.329	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00033	7.83	2/11/2020 19:15	6.83	1.46	0.4	0.01	0.01	0.01	0.24	0	0.44	0.56	0
C248	DI05A	DI05B	300.207	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	4.24	2/11/2020 19:15	0.44	0.69	0.81	0	0	0	0	0	1	0	0
C249	DI05C	DI05B	299.636	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.12	2/11/2020 19:15	0.3	0.5	0.81	0	0	0	0	0	1	0	0
C25	DI02B	PC04	68.447	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00102	3.53	2/11/2020 18:40	1.48	0.38	1	1.59	1.59	1.69	0.01	0	0.62	0	0.48
C250	SW_UDB09	SW_UDB08	7.534	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	14.11	2/11/2020 19:34	1.72	0.36	1	0.01	0.01	0.01	0.01	0	1	0	0
C251	SW_UDB08	SW_UDB07	7.521	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	15.45	2/11/2020 19:32	1.48	0.4	1	0.01	0.01	0.01	0.01	0	1	0	0
C252	SW_UDB07	SW_UDB06	7.305	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	15.6	2/11/2020 18:49	1.36	0.39	1	0.01	0.01	0.01	0.01	0	1	0	0
C253	SW_UDB06	SW_UDB05	7.687	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	15.53	2/11/2020 18:42	1.42	0.4	1	0.01	0.01	0.01	0.01	0	1	0	0
C254	SW_UDB05	SW_UDB04	7.502	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	16.51	2/11/2020 19:29	1.59	0.42	1	0.01	0.01	0.01	0.01	0	1	0	0
C255	SW_UDB04	SW_UDB03	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	18.02	2/11/2020 19:29	1.67	0.46	1	0.01	0.01	0.01	0.01	0	1	0	0
C256	SW_UDB03	SW_UDB02	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	16.82	2/11/2020 19:29	1.63	0.43	1	0.01	0.01	0.01	0.01	0	1	0	0
C257	SW_UDB02	SW_UDB01	7.482	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	15.32	2/11/2020 19:29	2.01	0.39	1	0.01	0.01	0.01	0.01	0	1	0	0
C258	SW_UDB11	SW_UDB12	7.527	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	9.45	2/11/2020 19:32	0.64	0.24	1	0.01	0.01	0.01	0.01	0	1	0	0
C259	SW_UDB12	SW_UDB13	7.482	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	10.15	2/11/2020 19:32	0.52	0.26	1	0.01	0.01	0.01	0.01	0	1	0	0
C26	DI02C	pc05	68.511	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00204	2.75	2/11/2020 18:40	1.34	0.21	1	1.59	1.59	1.76	0.01	0	0.61	0	0.5
C260	SW_UDB13	SW_UDB14	7.508	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	10.85	2/11/2020 19:39	1.19	0.28	1	0.01	0.01	0.01	0.01	0	1	0	0
C261	SW_UDB14	SW_UDB15	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	11.08	2/11/2020 19:40	1.37	0.28	1	0.01	0.01	0.01	0.01	0	1	0	0
C262	SW_UDB15	SW_UDB16	7.54	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	10.68	2/11/2020 19:42	1.47	0.27	1	0.01	0.01	0.01	0.01	0	1	0	0
C263	SW_UDB16	SW_UDB17	7.463	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	9.39	2/11/2020 19:13	1.57	0.24	1	0.01	0.01	0.01	0.01	0	1	0	0
C264	SW_UDB17	SW_UDB18	7.54	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	11.54	2/11/2020 19:14	1.69	0.3	1	0.01	0.01	0.01	0.01	0	1	0	0
C265	SW_UDB18	SW_UDB19	7.411	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	13.43	2/11/2020 19:15	1.81	0.34	1	0.01	0.01	0.01	0.01	0	1	0	0
C266	SW_UDB11	SW_UDB10	424.462	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	7.24	2/11/2020 19:36	0.64	1.39	1	0.01	0.01	0.03	0.04	0	1	0	0
C267	SW_UDB10	SW_UDB09	139.325	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	12.21	2/11/2020 19:34	0.98	1.35	1	0.01	0.03	0.01	0.03	0	1	0	0
C268	DI04B	SW_UDB10	19.039	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.23982	12.18	2/11/2020 19:35	5.79	0.08	0.69	0.01	0.01	4.3	0.01	0	0.4	0.29	1
C269	SW_UDB12	SW_UDB08	563.76	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.11	2/11/2020 18:40	0.14	0.25	1	0.01	0.01	0.01	0.01	0	1	0	0
C27	DI02D	PC06	68.468	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00351	2.8	2/11/2020 18:46	1.42	0.16	1	1.58	1.58	1.89	0.01	0.38	0.61	0	0.5
C270	SW_UDB13	SW_UDB07	563.676	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.61	2/11/2020 19:34	0.17	0.36	1	0.01	0.01	0.01	0.01	0	1	0	0
C271	SW_UDB14	SW_UDB06	563.723	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.75	2/11/2020 19:34	0.22	0.39	1	0.01	0.01	0.01	0.01	0	1	0	0
C272	SW_UDB15	SW_UDB05	563.786	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.86	2/11/2020 19:34	0.28	0.41	1	0.01	0.01	0.01	0.01	0	1	0	0
C273	SW_UDB16	SW_UDB04	563.784	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2	2/11/2020 19:34	0.33	0.44	1	0.01	0.01	0.01	0.01	0	1	0	0
C274	SW_UDB17	SW_UDB03	563.796	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.19	2/11/2020 19:34	0.38	0.49	1	0.01	0.01	0.01	0.01	0	1	0	0
C275	SW_UDB18	SW_UDB02	563.794	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.46	2/11/2020 19:34	0.43	0.55	1	0.01	0.01	0.01	0.01	0	1	0	0
C276	SW_UDB19	SW_UDB20	535.026	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.02	2/11/2020 19:34	0.73	0.65	1	0.01	0.01	0.01	0.01	0	1	0	0
C277	SW_UDB01	SW_UDB20	28.671	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	14.94	2/11/2020 19:29	2.17	0.75	1	0.01	0.01	0.01	0.01	0	1	0	0
C278	SE_UDB82	SE_UDB81	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	11.67	2/11/2020 15:12	1.77	0.3	1	1.67	1.67	1.67	0.01	0	1	0	0
C279	SE_UDB81	SE_UDB80	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	12.55	2/11/2020 16:29	1.61	0.32	1	1.67	1.67	1.68	0.01	0	1	0	0
C28	DI02E	PC07	68.485	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00496	2.72	2/11/2020 18:52	1.26	0.13	1	1.58	1.58	2.03	0.01	0	0.61	0	0.83
C280	SE_UDB79	SE_UDB78	7.54	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	14.34	2/11/2020 19:18	1.62	0.37	1	1.67	1.68	1.68	0.01	0	1	0	0
C281	SE_UDB80	SE_UDB79	7.489	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	12.8	2/11/2020 19:18	1.69	0.33	1	1.67	1.68	1.68	0.01	0	1	0	0
C282	SE_UDB78	SE_UDB77	7.463	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	15.33	2/11/2020 19:18	1.81	0.39	1	1.68	1.68	1.68	0.01	0	1	0	0

C283	SE_UDB77	SE_UDB76	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	16.28	2/11/2020 19:19	2.1	0.42	1	1.68	1.68	1.68	0.01	0	1	0	0
C284	SE_UDB76	SE_UDB75	7.521	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	18.03	2/11/2020 19:19	3.54	0.46	1	1.68	1.68	1.68	0.01	0	0.99	0.01	0.01
C289	SE_UDB87	SE_UDB86	12.869	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	9.57	2/11/2020 17:44	1.3	0.32	1	1.67	1.68	1.67	0.01	0	1	0	0
C29	DI02F	MH01	68.414	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00629	3.81	2/11/2020 18:52	1.87	0.16	1	1.58	1.58	2.16	0.01	0	0.61	0	0.89
C290	SE_UDB88	SE_UDB82	394.48	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.82	2/11/2020 19:18	0.28	0.52	1	1.66	1.67	1.67	0.01	0	1	0	0
C291	SE_UDB61	SE_UDB81	394.657	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.99	2/11/2020 19:18	0.3	0.56	1	1.66	1.68	1.67	0.01	0	1	0	0
C292	SE_UDB62	SE_UDB80	394.724	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.6	2/11/2020 19:18	0.2	0.48	1	1.66	1.68	1.68	0.01	0	1	0	0
C293	SE_UDB63	SE_UDB79	394.604	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.38	2/11/2020 19:18	0.13	0.44	1	1.66	1.68	1.68	0.01	0	1	0	0
C294	SE_UDB64	SE_UDB78	394.608	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.45	2/11/2020 19:18	0.13	0.46	1	1.66	1.68	1.68	0.01	0	1	0	0
C295	SE_UDB65	SE_UDB77	394.753	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.68	2/11/2020 19:18	0.18	0.5	1	1.66	1.68	1.68	0.01	0	1	0	0
C296	SE_UDB66	SE_UDB76	394.726	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.03	2/11/2020 19:18	0.28	0.56	1	1.66	1.67	1.68	0.01	0	1	0	0
C297	SE_UDB67	SE_UDB75	394.715	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.54	2/11/2020 19:18	0.78	0.66	1	1.66	1.67	1.68	0.01	0	1	0	0
C298	SE_UDB68	SE_UDB74	394.686	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.22	2/11/2020 19:18	0.72	0.6	1	1.66	1.67	1.68	0.01	0	1	0	0
C299	SE_UDB86	SE_UDB85	133.899	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	4.45	2/11/2020 19:04	0.36	0.48	1	1.66	1.67	1.67	0.01	0	1	0	0
C3	PC02	PC03	73.238	0.01	0	0	0	0	0	NO	CIRCULAR	3	1	0.00164	19.41	2/11/2020 19:13	4.39	0.55	1	0.52	0.52	0.65	0.01	0	0.61	0	0.5
C30	DI03A	PC08	40.306	0.01	0	0	0	0	0	YES	CIRCULAR	2	1	0.01712	2.28	2/11/2020 19:15	2.07	0.06	1	1.58	1.58	2.57	0.01	0.37	0.6	0	0.89
C300	SE_UDB85	SE_UDB84	134.069	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.52	2/11/2020 18:19	0.29	0.38	1	1.66	1.67	1.67	0.01	0	1	0	0
C301	SE_UDB84	SE_UDB83	113.562	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	6.02	2/11/2020 19:16	0.68	0.6	1	1.66	1.67	1.67	0.01	0	1	0	0
C302	SE_UDB69	SE_UDB70	13.186	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	4.87	2/11/2020 17:25	0.77	0.17	1	1.67	1.67	1.67	0.01	0	1	0	0
C303	SE_UDB70	SE_UDB71	133.938	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	4.36	2/11/2020 17:25	0.51	0.47	1	1.66	1.67	1.67	0.01	0	1	0	0
C304	SE_UDB71	SE_UDB72	133.932	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.46	2/11/2020 19:17	0.67	0.37	1	1.65	1.67	1.67	0.01	0	1	0	0
C305	SE_UDB72	SE_UDB73	113.585	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	5.15	2/11/2020 17:29	0.9	0.51	1	1.66	1.67	1.68	0.01	0	1	0	0
C307	DI32	J210	203.326	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00226	2.61	2/11/2020 17:39	1.88	0.19	1	7.16	7.16	8.93	0.01	0.01	0.77	0.08	0.36
C308	J210	SE_UDB83	20.634	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.03249	10.64	2/11/2020 16:26	4.39	0.2	1	8.93	8.93	12.93	0.01	0	0.99	0	0.13
C31	DI03B	PC09	40.082	0.01	0	0	0	0	0	YES	CIRCULAR	2	1	0.02096	2	2/11/2020 18:54	1.53	0.05	1	1.59	1.59	2.83	0.01	0.37	0.6	0	0.88
C310	DI23	DI24	201.197	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00512	3.74	2/11/2020 19:15	3.15	0.18	1	1.89	1.89	4.6	0.01	0.28	0.35	0.32	0.5
C311	DI24	SE_UDB86	110.845	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.01714	7.71	2/11/2020 18:06	3.22	0.2	1	4.6	4.6	12.92	0.01	0	0.71	0	0.74
C312	DI25	SE_UDB70	63.313	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00774	1.69	2/11/2020 19:14	1.16	0.07	1	9.78	9.78	12.94	0.01	0	1	0	0.08
C313	DI28	SE_UDB71	63.308	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.02054	2.3	2/11/2020 15:51	1.51	0.05	1	6.57	6.57	12.91	0.01	0	0.78	0	0.54
C314	DI27	SE_UDB85	110.744	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00433	4.11	2/11/2020 19:15	1.31	0.21	1	9.78	9.78	12.92	0.01	0	1	0	0.08
C315	DI29	DI30	202.852	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00148	2.32	2/11/2020 19:02	2.34	0.21	1	2.42	2.42	3.15	0.01	0.32	0.67	0	0.45
C316	DI30	SE_UDB84	111.167	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.02168	4.5	2/11/2020 18:25	2.11	0.1	1	3.15	3.15	32.1	0.01	0	0.68	0	0.8
C317	DI31	SE_UDB72	100.153	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.01098	1.62	2/11/2020 19:15	1.26	0.05	1	7.25	7.25	12.92	0.01	0	0.83	0	0.45
C32	DI03C	PC10	40.285	0.01	0	0	0	0	0	YES	CIRCULAR	2	1	0.02458	1.8	2/11/2020 18:50	1.57	0.04	1	1.58	1.58	3.11	0.01	0.36	0.6	0	0.88
C33	DI03D	PC11	40.257	0.01	0	0	0	0	0	YES	CIRCULAR	2	1	0.02858	2.47	2/11/2020 18:54	1.72	0.05	1	1.57	1.57	3.47	0.01	0.36	0.6	0	0.88
C34	DI03E	PC12	40.251	0.01	0	0	0	0	0	YES	CIRCULAR	2	1	0.03256	2.6	2/11/2020 18:48	1.72	0.05	1	1.57	1.57	3.86	0.01	0.34	0.6	0	0.88
C35	DI03F	PC13	40.256	0.01	0	0	0	0	0	YES	CIRCULAR	2	1	0.03629	2.13	2/11/2020 19:00	1.57	0.04	1	1.56	1.56	4.28	0.01	0	0.6	0	0.88
C36	DI33	J1	85.89	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.01001	1.89	2/11/2020 15:14	1.4	0.06	1	7.62	7.62	11.8	0.01	0	0.84	0.02	0.39
C37	J1	SE_UDB73	22.24	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.0063	2.39	2/11/2020 11:51	1.04	0.1	1	11.8	11.8	12.91	0.01	0	1	0	0.02
C38	SE_UDB75	SE_SDB	102.967	0.01	0	0	0	0	0	NO	CIRCULAR	3	3	0.00388	24.06	2/11/2020 19:19	4.14	0.15	1	7.63	7.63	9.24	0.01	0	0.98	0.02	0.02
C39	J5	J9	480.974	0.01	0	0	0	0	0	NO	CIRCULAR	4	2	0	11.84	2/11/2020 18:43	0.69	2.2	1	1.02	1.02	1.02	1.04	0	1	0	0
C4	PC03	PC04	53.323	0.01	0	0	0	0	0	NO	CIRCULAR	3	1	0.00169	21.32	2/11/2020 19:15	3.94	0.6	1	0.65	0.65	0.72	0.01	0	1	0	0.5
C40	J4	J7	480.725	0.01	0	0	0	0	0	NO	CIRCULAR	4	1	0	6.49	2/11/2020 18:36	0.74	2.41	1	1.02	1.02	1.02	0.74	0	1	0	0
C41	J3	J8	480.816	0.01	0	0	0	0	0	NO	CIRCULAR	4	1	0	7.54	2/11/2020 18:19	1.02	2.8	1	1.02	1.02	1.02	1.16	0	1	0	0
C42	J2	J6	480.975	0.01	0	0	0	0	0	NO	CIRCULAR	4	1	0	7.96	2/11/2020 18:30	1.06	2.96	1	1.02	1.02	1.02	1.28	0	1	0	0
C43	J9	J7	8.063	0.01	0	0	0	0	0	NO	CIRCULAR	4	1	0	18.63	2/11/2020 18:57	1.89	0.9	1	1.02	1.02	1.02	0.01	0	1	0	0
C44	J7	J8	6.681	0.01	0	0	0	0	0	NO	CIRCULAR	4	1	0	24.14	2/11/2020 18:53	2.64	1.06	1	1.02	1.02	1.02	0.01	0	1	0	0
C45	J6	PC13	36.618	0.01	0	0	0	0	0	NO	CIRCULAR	4	1	0	31.74	2/11/2020 18:41	3.76	3.25	1	1.02	1.02	1.02	1.82	0	1	0	0
C46	J8	J6	6.353	0.01	0	0	0	0	0	NO	CIRCULAR	4	1	0	28.76	2/11/2020 18:41	3.16	1.23	1	1.02	1.02	1.02	0.03	0	1	0	0
C47	J5	J4	7.096	0.01	0	0	0	0	0	NO	CIRCULAR	4	1	0	22.01	2/11/2020 18:42	2.62	0.99	1	1.02	1.02	1.02	0.01	0	1	0	0
C48	J4	J3	5.869	0.01	0	0	0	0	0	NO	CIRCULAR	4	1	0	30	2/11/2020 18:50	3.28	1.23	1	1.02	1.02	1.02	0.05	0	1	0	0
C49	J3	J2	6.839	0.01	0	0	0	0	0	NO	CIRCULAR	4	1	0	37.18	2/11/2020 18:50	3.81	1.65	1	1.02	1.02	1.02	0.17	0	1	0	0
C5	PC04	pc05	51.947	0.01	0	0	0	0	0	NO	CIRCULAR	3	1	0.00135	22.29	2/11/2020 19:15	4.03	0.7	1	0.71	0.72	0.76	0.01	0	1	0	0.48
C50	J2	PC08	44.364	0.01	0	0	0	0	0	NO	CIRCULAR	4	1	-0.01736	42.68	2/11/2020 18:52	5.46	0.17	1	0.29	0.29	1.02	0.01	0	0.55	0.08	0.84
C6	pc05	PC06	53.286	0.01	0	0	0	0	0	NO	CIRCULAR	3	1	0.00188	23.06	2/11/2020 19:15	4.08	0.61	1	0.76	0.76	0.84	0.01	0	1	0	0.5
C66	DI06	DI07	96.089	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00604	0.92	2/11/2020 19:15	2.35	0.04	0.18	0	0	0	0	0	1	0	1
C67	DI07	DI08	95.868	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00595	2.47	2/11/2020 19:15	3.83	0.11	0.26	0	0	0	0	0	0.57	0.43	0.99
C68	DI11	DI12	96.731	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.003	3.16	2/11/2020 19:15	3.25	0.2	0.75	0	0	0	0	0	1	0	0.91
C69	DI10	DI11	92.161	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00315	1.75	2/11/2020 19:15	2.59	0.11	0.61	0	0	0	0	0	1	0	0.94
C7	PC06	PC07	47.261	0.01	0	0	0	0	0	NO	CIRCULAR	3	1	0.00212	23.69	2/11/2020 19:15	3.93	0.59	1	0.84	0.84	0.92	0.01	0	0.62	0	0.5
C70	DI12	DI13	92.467	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00292	4.01	2/11/2020 19:15	3.14	0.25	0.89	0	0	0	0	0	1	0	0.9

C71	DI13	DI14	99.095	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00303	5.84	2/11/2020 19:15	4.43	0.36	0.98	0.01	0.01	0.93	0.01	0.34	0.23	0.39	0.61
C72	DI14	SE_UDB20	268.967	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.01141	7.44	2/11/2020 19:15	2.7	0.24	1	0.93	0.93	31.27	0.01	0	0.65	0	0.87
C73	SE_UDB01	SE_UDB20	39.007	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	15.69	2/11/2020 19:16	1.42	0.92	1	1.1	1.11	1.1	0.01	0	1	0	0
C74	J68	SE_UDB19	153.527	0.01	0	0	0	0	0	NO	CIRCULAR	2	2	0.01055	18.12	2/11/2020 19:15	2.88	0.3	1	4.88	4.88	11.41	0.01	0	0.73	0	0.73
C75	SE_UDB20	SE_UDB19	111.87	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	8.57	2/11/2020 19:16	0.75	0.85	1	1.1	1.1	1.11	0.01	0	1	0	0
C76	SE_UDB19	SE_UDB18	128.646	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	10.35	2/11/2020 19:10	1.03	1.1	1	1.1	1.11	1.11	0.04	0	1	0	0
C77	S_UDB18	S_UDB19	30.44	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	7.82	2/11/2020 20:20	7.33	0.4	0.81	0	0	0	0	0	0.86	0.14	0
C78	DI19	DI23	83.273	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.0048	2.09	2/11/2020 19:15	2.55	0.1	1	0.74	0.74	1.89	0.01	0.33	0.61	0	0.87
C79	SE_UDB02	SE_UDB17	279.447	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.86	2/11/2020 17:49	0.2	0.29	1	1.11	1.11	1.11	0.01	0	1	0	0
C8	PC07	MH01	71.036	0.01	0	0	0	0	0	NO	CIRCULAR	3	1	0.00127	25.05	2/11/2020 19:15	4.88	0.81	1	0.92	0.92	0.99	0.01	0	0.64	0.36	0
C80	DI26	DI27	202.976	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00158	2.03	2/11/2020 17:29	0.9	0.17	1	8.41	8.41	9.78	0.01	0	0.95	0	0.26
C81	SE_UDB03	SE_UDB16	279.588	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.76	2/11/2020 17:49	0.18	0.27	1	1.11	1.11	1.11	0.01	0	1	0	0
C82	SE_UDB04	SE_UDB15	279.743	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.76	2/11/2020 18:01	0.18	0.28	1	1.11	1.11	1.11	0.01	0	1	0	0
C83	SE_UDB05	SE_UDB14	279.531	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	1.91	2/11/2020 18:01	0.19	0.3	1	1.11	1.11	1.11	0.01	0	1	0	0
C84	SE_UDB06	SE_UDB13	279.662	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.2	2/11/2020 18:01	0.22	0.34	1	1.11	1.11	1.11	0.01	0	1	0	0
C85	SE_UDB07	SE_UDB12	279.629	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	2.6	2/11/2020 18:01	0.25	0.41	1	1.11	1.11	1.11	0.01	0	1	0	0
C86	SE_UDB08	SE_UDB11	279.578	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.15	2/11/2020 18:01	0.3	0.49	1	1.11	1.11	1.11	0.01	0	1	0	0
C87	SE_UDB09	SE_UDB10	279.52	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	3.57	2/11/2020 17:49	0.37	0.56	1	1.11	1.11	1.11	0.01	0	1	0	0
C88	SE_UDB01	SE_UDB02	7.45	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	15.6	2/11/2020 19:16	1.94	0.4	1	1.11	1.11	1.11	0.01	0	1	0	0
C89	SE_UDB02	SE_UDB03	7.45	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	13.94	2/11/2020 19:14	1.82	0.36	1	1.11	1.11	1.11	0.01	0	1	0	0
C9	MH01	MH02	55.167	0.01	0	0	0	0	0	NO	CIRCULAR	3	2	0.00199	27.24	2/11/2020 19:15	3.13	0.35	1	0.99	0.99	1.09	0.01	0	1	0	0.5
C90	SE_UDB03	SE_UDB04	7.521	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	12.72	2/11/2020 19:13	1.71	0.33	1	1.11	1.11	1.11	0.01	0	1	0	0
C91	SE_UDB05	SE_UDB06	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	10.29	2/11/2020 19:13	1.4	0.26	1	1.11	1.11	1.11	0.01	0	1	0	0
C92	SE_UDB04	SE_UDB05	7.521	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	11.67	2/11/2020 19:13	1.55	0.3	1	1.11	1.11	1.11	0.01	0	1	0	0
C93	SE_UDB06	SE_UDB07	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	8.65	2/11/2020 19:15	1.23	0.22	1	1.11	1.11	1.11	0.01	0	1	0	0
C94	SE_UDB07	SE_UDB08	7.45	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	6.44	2/11/2020 19:15	1.04	0.16	1	1.11	1.11	1.11	0.01	0	1	0	0
C95	SE_UDB08	SE_UDB09	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	5.35	2/11/2020 19:39	0.63	0.14	1	1.11	1.11	1.11	0.01	0	1	0	0
C96	SE_UDB18	SE_UDB17	7.502	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	10.47	2/11/2020 19:14	1.44	0.27	1	1.11	1.11	1.11	0.01	0	1	0	0
C97	SE_UDB16	SE_UDB15	7.54	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	14.69	2/11/2020 19:12	1.49	0.38	1	1.11	1.11	1.11	0.01	0	1	0	0
C98	SE_UDB17	SE_UDB16	7.515	0.01	0	0	0	0	0	NO	CIRCULAR	5	1	0	12.89	2/11/2020 19:10	1.48	0.33	1	1.11	1.11	1.11	0.01	0	1	0	0
C99	DI21	J30	60.451	0.01	0	0	0	0	0	NO	CIRCULAR	2	1	0.00827	1.07	2/11/2020 19:15	1.18	0.04	1	6.91	6.91	8.8	0.01	0.02	0.72	0.08	0.5
DC01	DMA01	DI01	11.188	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.26541	4.45	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC02A	DMA02A	DI02A	14.086	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.29777	1.8	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC02B	DMA02B	DI02B	11.407	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.37657	1.04	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC02C	DMA02C	DI02C	11.144	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.38456	0.75	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC02D	DMA02D	DI02D	10.475	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.41559	0.73	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC02E	DMA02E	DI02E	10.673	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.4066	1.39	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC02F	DMA02F	DI02F	9.656	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.45514	2.33	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC03A	DMA03A	DI03A	17.665	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.22027	2.28	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC03B	DMA03B	DI03B	13.962	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.28284	1.33	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC03C	DMA03C	DI03C	15.474	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.25333	1.39	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC03D	DMA03D	DI03D	15.913	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.24591	1.65	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC03E	DMA03E	DI03E	17.543	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.22188	1.59	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC03F	DMA03F	DI03F	16.352	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.23893	1.39	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC04A	DMA04A	DI04A	14.376	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.44639	2.23	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC04B	DMA04B	DI04B	16.646	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.04992	3.69	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC04C	DMA04C	DI04C	13.448	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.05436	4.28	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC04D	DMA04D	DI04D	13.801	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.0457	3.76	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC05A	DMA05A	DI05A	13.741	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.51176	4.82	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC05C	DMA05C	DI05C	10.682	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.72324	3.71	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC06	DMA06	DI06	16.287	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.17837	0.92	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC07	DMA07	DI07	11.886	0.01	0	0	0	0	0	NO	DUMMY	0	1	-999	1.56	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC08	DMA08	DI08	13.127	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.18837	1.79	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC09	DMA09	DI09	6.81	0.01	0	0	0	0	0	NO	DUMMY	0	1	1.26973	0.41	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC10	DMA10	DI10	12.295	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.37331	1.76	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC11	DMA11	DI11	12.626	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.38632	1.43	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC12	DMA12	DI12	8.002	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.77962	0.92	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC13	DMA13	DI13	13.881	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.35639	0	2/11/2020 0:00	0	0	0	0	0	0	0	0	0	0	0
DC14	DMA14	DI14	11.149	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.53117	1.91	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC15	DMA15	DI15	37.884	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.17526	3.36	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC16	DMA16	DI16	7.706	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.74404	1.44	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0

DC17	DMA17	DI17	17.921	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.25327	3.51	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC18	DMA18	DI18	45.1	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.10433	1.51	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC19	DMA19	DI19	18.947	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.15379	1.99	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC20	DMA20	DI20	17.524	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.16661	2.17	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC21	DMA21	DI21	8.705	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.45422	1.06	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC22	DMA22	DI22	12.993	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.2298	0.73	2/11/2020 19:00	0	0	0	0	0	0	0	0	0	0	0
DC23	DMA23	DI23	30.536	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.09441	1.94	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC24	DMA24	DI24	38.511	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.11501	2.15	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC25	DMA25	DI25	12.413	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.40302	1.69	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC26	DMA26	DI26	8.92	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.99137	1.95	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC27	DMA27	DI27	11.721	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.66939	2.16	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC28	DMA28	DI28	13.885	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.34258	1.72	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC29	DMA29	DI29	13.595	0.01	0	0	0	0	0	NO	DUMMY	1	1	0.2334	1.83	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC30	DMA30	DI30	8.576	0.01	0	0	0	0	0	NO	DUMMY	1	1	-0.0819	2.16	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC31	DMA31	DI31	10.517	0.01	0	0	0	0	0	NO	DUMMY	1	1	0.55591	1.62	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC32	DMA32	DI32	9.209	0.01	0	0	0	0	0	NO	DUMMY	1	1	0.98429	1.55	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC33	DMA33	DI33	6.489	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.82854	0.98	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC37A	DMA37A	DI37A	10.736	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.45918	0.8	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC37B	DMA37B	DI37B	11.918	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.3364	1.23	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC37C	DMA37C	Di37C	11.105	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.65121	2.36	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DC37D	DMA37D	DI37D	18.317	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.32935	4.37	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
DI05B	DMA05B	DI05B	11.886	0.01	0	0	0	0	0	NO	DUMMY	0	1	0.61956	4.29	2/11/2020 19:15	0	0	0	0	0	0	0	0	0	0	0
OL1	J73	S_DB_OF	24.983	0.01	0	0	0	0	0	YES	CIRCULAR	1.25	1	0.01201	9.2	2/11/2020 20:20	8.52	1	1	1.51	1.51	3.71	0.01	0.36	0.39	0.2	0.03

Name	Inlet Node	Outlet Node	Pump Curve	Initial Status	Startup Depth (ft)	Shutoff Depth (ft)	Control Rules	Max. |Flow| (cfs)	Time Max. Flow (M/D/Y)	Max/Full Flow	Utilized (%)	Start-Ups (num)	Min. Flow (cfs)	Avg. Flow (cfs)	Total Vol. (MG)	Power Usage
SW_Pump	SW_SDB	SW_PUMP_OF	SouthwestPump	ON	0	0	NO	5	2/11/2020 12:02	1	81.44	1	0	3.35	3.047	11.78
S_Pump	S_UDB19	S_PUMP_OF	SouthPump	ON	0	0	NO	1.03	2/11/2020 4:12	1.03	99.47	1	0	0.8	0.903	2.55
SE_Pump	SE_SDB	SE_PUMP_OF	SoutheastPump	ON	0	0	NO	0.5	2/11/2020 0:39	1	99.99	1	0	0.5	0.64	1.53

Grate Inlet Diversion Curve	
Inflow (cfs)	**Outflow (cfs)**
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	11
13	11
14	11
15	11
20	11

Curb Inlet Diversion Curve	
Inflow (cfs)	**Outflow (cfs)**
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
8.6	8.6
9	8.6
10	8.6
15	8.6

Southwest Detention Basin	
Stage Storage Curve	
Depth (ft)	Area (ft2)
0	10453
0.2	10665
1	11756
2	12872
3	14014
4	15180
5	16372
6	17588
7	18830

Southeast Detention Basin	
Stage Storage Curve	
Depth (ft)	Area (ft2)
0	10882
0.2	11225
1	12951
2	14703
3	16480
4	18282
5	20110
6	21962
7	23840

Southwest Pump	
Depth (ft)	**Flow (cfs)**
0	5
1	5
2	5
3	5
4	5
5	5
6	5
7	5

South Pump	
Depth (ft)	**Flow (cfs)**
0	1
1	1
2	1
3	1
4	1
5	1
6	1
7	1

Southeast Pump	
Depth (ft)	**Flow (cfs)**
0	0.5
1	0.5
2	0.5
3	0.5
4	0.5
5	0.5
6	0.5
7	0.5

Tailwater Time Series								
Date (M/D/Y)	Time (H:M)	Value	Date (M/D/Y)	Time (H:M)	Value	Date (M/D/Y)	Time (H:M)	Value
2/11/2020	0:00:00	56.041	2/11/2020	11:00:00	56.524	2/11/2020	22:00:00	56.537
2/11/2020	0:15:00	56.109	2/11/2020	11:15:00	56.529	2/11/2020	22:15:00	56.502
2/11/2020	0:30:00	56.153	2/11/2020	11:30:00	56.532	2/11/2020	22:30:00	56.473
2/11/2020	0:45:00	56.222	2/11/2020	11:45:00	56.536	2/11/2020	22:45:00	56.449
2/11/2020	1:00:00	56.256	2/11/2020	12:00:00	56.539	2/11/2020	23:00:00	56.445
2/11/2020	1:15:00	56.275	2/11/2020	12:15:00	56.542	2/11/2020	23:15:00	56.428
2/11/2020	1:30:00	56.286	2/11/2020	12:30:00	56.546	2/11/2020	23:30:00	56.415
2/11/2020	1:45:00	56.292	2/11/2020	12:45:00	56.549	2/11/2020	23:45:00	56.406
2/11/2020	2:00:00	56.295	2/11/2020	13:00:00	56.553	2/12/2020	0:00	56.000
2/11/2020	2:15:00	56.297	2/11/2020	13:15:00	56.600			
2/11/2020	2:30:00	56.299	2/11/2020	13:30:00	56.665			
2/11/2020	2:45:00	56.300	2/11/2020	13:45:00	56.695			
2/11/2020	3:00:00	56.300	2/11/2020	14:00:00	56.712			
2/11/2020	3:15:00	56.301	2/11/2020	14:15:00	56.723			
2/11/2020	3:30:00	56.301	2/11/2020	14:30:00	56.732			
2/11/2020	3:45:00	56.302	2/11/2020	14:45:00	56.742			
2/11/2020	4:00:00	56.302	2/11/2020	15:00:00	56.830			
2/11/2020	4:15:00	56.302	2/11/2020	15:15:00	56.941			
2/11/2020	4:30:00	56.303	2/11/2020	15:30:00	56.984			
2/11/2020	4:45:00	56.303	2/11/2020	15:45:00	57.028			
2/11/2020	5:00:00	56.304	2/11/2020	16:00:00	57.051			
2/11/2020	5:15:00	56.304	2/11/2020	16:15:00	57.078			
2/11/2020	5:30:00	56.305	2/11/2020	16:30:00	57.190			
2/11/2020	5:45:00	56.306	2/11/2020	16:45:00	57.320			
2/11/2020	6:00:00	56.306	2/11/2020	17:00:00	57.404			
2/11/2020	6:15:00	56.307	2/11/2020	17:15:00	57.455			
2/11/2020	6:30:00	56.308	2/11/2020	17:30:00	57.618			
2/11/2020	6:45:00	56.308	2/11/2020	17:45:00	57.830			
2/11/2020	7:00:00	56.309	2/11/2020	18:00:00	57.949			
2/11/2020	7:15:00	56.310	2/11/2020	18:15:00	58.301			
2/11/2020	7:30:00	56.311	2/11/2020	18:30:00	58.907			
2/11/2020	7:45:00	56.312	2/11/2020	18:45:00	59.488			
2/11/2020	8:00:00	56.313	2/11/2020	19:00:00	61.000			
2/11/2020	8:15:00	56.326	2/11/2020	19:15:00	59.519			
2/11/2020	8:30:00	56.345	2/11/2020	19:30:00	58.524			
2/11/2020	8:45:00	56.354	2/11/2020	19:45:00	57.941			
2/11/2020	9:00:00	56.360	2/11/2020	20:00:00	57.631			
2/11/2020	9:15:00	56.363	2/11/2020	20:15:00	57.329			
2/11/2020	9:30:00	56.366	2/11/2020	20:30:00	57.069			
2/11/2020	9:45:00	56.368	2/11/2020	20:45:00	56.946			
2/11/2020	10:00:00	56.410	2/11/2020	21:00:00	56.874			
2/11/2020	10:15:00	56.472	2/11/2020	21:15:00	56.807			
2/11/2020	10:30:00	56.501	2/11/2020	21:30:00	56.712			
2/11/2020	10:45:00	56.516	2/11/2020	21:45:00	56.596			

APPENDIX J

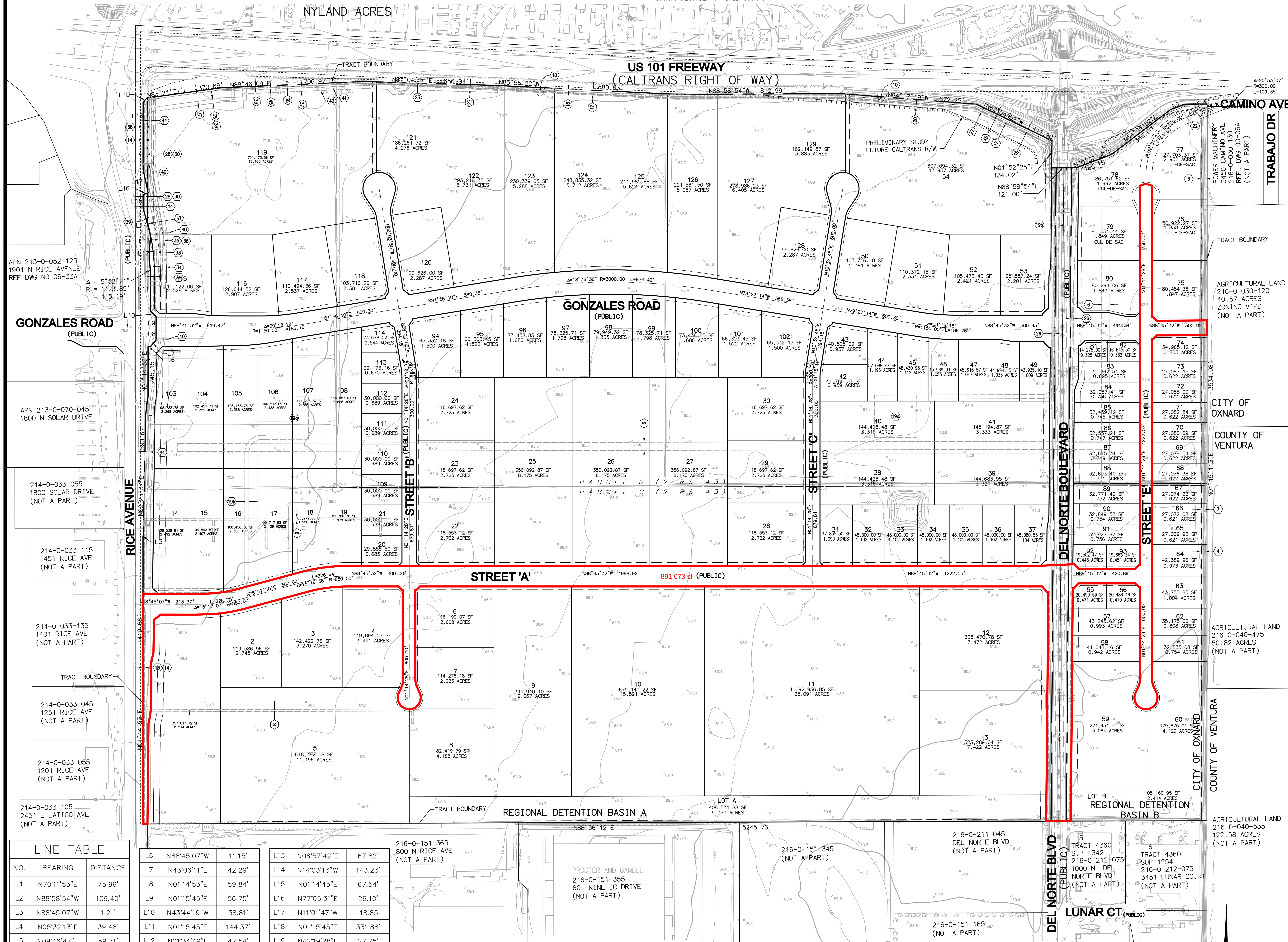
SAKIOKA FARMS BUSINESS PARK MASTER DRAINAGE REPORT

APPENDIX K

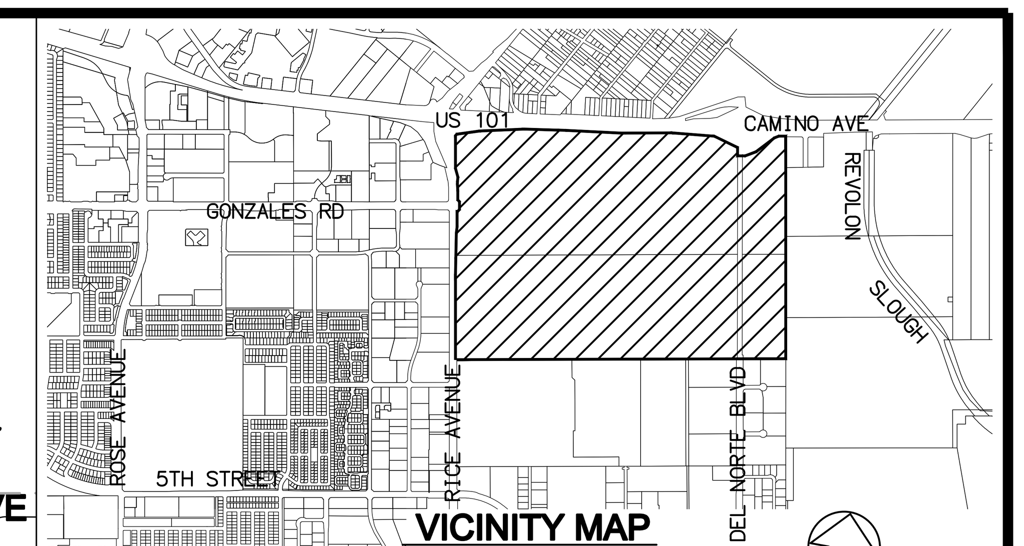
SAKIOKA FARMS TENTATIVE TRACT MAP NO. 5996

TENTATIVE TRACT MAP NO. 5996

PARCELS 2 AND 3 OF PARCEL MAP NO. LD-S-303, IN THE CITY OF SIMI VALLEY, COUNTY OF VENTURA, STATE OF CALIFORNIA, AS SHOWN ON A MAP FILED IN BOOK 42, PAGES 35 AND 36 OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY



LINE TABLE		
NO.	BEARING	DISTANCE
L1	N70°11'53"E	75.96'
L2	N88°58'54"W	109.40'
L3	N88°45'07"W	1.21'
L4	N05°32'13"E	39.48'
L5	N09°46'47"E	59.71'
L6	N88°45'07"W	11.15'
L7	N43°06'11"E	42.29'
L8	N01°14'53"E	59.84'
L9	N01°15'45"E	56.75'
L10	N43°44'19"W	38.81'
L11	N01°15'45"E	144.37'
L12	N01°34'49"E	42.54'
L13	N06°57'42"E	67.82'
L14	N14°03'13"W	143.23'
L15	N01°14'45"E	67.54'
L16	N77°05'31"E	26.10'
L17	N11°01'47"W	118.85'
L18	N01°15'45"E	331.88'
L19	N42°19'28"E	27.75'



VICINITY MAP

SCALE: 1"=2000'

EXISTING EASEMENTS (#)

(3) 20' WIDE EASEMENT FOR PIPELINES FOR THE TRANSPORTATION OF OIL, PETROLEUM, GAS, GASOLINE, WATER OR OTHER SUBSTANCES, GRANTED TO STANDARD OIL COMPANY OF CALIFORNIA, AND STANDARD GASOLINE COMPANY PER DOCUMENTS RECORDED DECEMBER 20, 1954, AS INSTRUMENT No. 39968 IN BOOK 1252, PAGE 288 AND MARCH 29, 1955, AS INSTRUMENT No. 11039 IN BOOK 1277, PAGE 76, BOTH OF OFFICIAL RECORDS OF VENTURA COUNTY.

(4) 20' WIDE EASEMENT FOR PIPELINES PURPOSES, GRANTED TO STANDARD OIL COMPANY OF CALIFORNIA, AND STANDARD GASOLINE COMPANY PER DOCUMENT RECORDED APRIL 5, 1955, AS INSTRUMENT No. 12021 IN BOOK 1279, PAGE 194 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(6) 40' WIDE EASEMENT FOR CONDUITS, DITCHES AND DRAINAGE PURPOSES, GRANTED TO OXNARD DRAINAGE DISTRICT No. 2 PER DOCUMENT RECORDED JUNE 7, 1956, AS INSTRUMENT No. 24449 IN BOOK 1412, PAGE 492 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(7) 20' WIDE EASEMENT FOR PIPELINES PURPOSES, GRANTED TO STANDARD OIL COMPANY OF CALIFORNIA, AND STANDARD GASOLINE COMPANY PER DOCUMENT RECORDED JANUARY 14, 1957, AS INSTRUMENT No. 1725 IN BOOK 1474, PAGE 195 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(8) 10' AND 2' WIDE EASEMENT FOR ELECTRIC LINE, CONSISTING OF POLES, NECESSARY GUYS AND ANCHORS, CROSSARMS, WIRES AND OTHER FIXTURES AND APPLIANCES, GRANTED TO SOUTHERN CALIFORNIA EDISON COMPANY PER GRANT OF EASEMENT RECORDED AUGUST 20, 1957, AS INSTRUMENT No. 36580 IN BOOK 1543, PAGE 456 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(9) 10' AND 2' WIDE EASEMENT FOR ELECTRIC LINE, CONSISTING OF POLES, NECESSARY GUYS AND ANCHORS, CROSSARMS, WIRES AND OTHER FIXTURES AND APPLIANCES, GRANTED TO SOUTHERN CALIFORNIA EDISON COMPANY PER GRANT OF EASEMENT RECORDED NOVEMBER 21, 1958, AS INSTRUMENT No. 50689 IN BOOK 1675, PAGE 199 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(10) 10' WIDE EASEMENT FOR UTILITIES PURPOSES, RESERVED BY THE STATE OF CALIFORNIA PER DIRECTOR'S DEED RECORDED OCTOBER 10, 1963, AS INSTRUMENT No. 59658 IN BOOK 2407, PAGE 59 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(13) EASEMENT FOR PUBLIC UTILITIES PURPOSES, GRANTED TO SOUTHERN CALIFORNIA EDISON COMPANY PER GRANT OF EASEMENT RECORDED JULY 31, 1964, AS INSTRUMENT No. 52910 IN BOOK 2594, PAGE 209 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(14) EASEMENT FOR PUBLIC UTILITIES PURPOSES, GRANTED TO SOUTHERN CALIFORNIA EDISON COMPANY PER GRANT OF EASEMENT RECORDED AUGUST 5, 1964, AS INSTRUMENT No. 53967 IN BOOK 2596, PAGE 568 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(16) 10' WIDE EASEMENT FOR POLE LINES PURPOSES, GRANTED TO THE STATE OF CALIFORNIA PER EASEMENT DEED RECORDED OCTOBER 21, 1964, AS INSTRUMENT No. 76051 IN BOOK 2654, PAGE 31 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(17) 20' WIDE EASEMENT FOR WATER PIPELINES AND SEWER PIPELINE PURPOSES, GRANTED TO THE CITY OF OXNARD PER CONTRACT AND GRANT OF EASEMENT RECORDED JULY 27, 1966, AS INSTRUMENT No. 38364 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(19a) 1 ACRE DRILL SITE EASEMENTS, AS RESERVED PER THE DOCUMENTS RECORDED DECEMBER 22, 1969, AS INSTRUMENT No. 66767 IN BOOK 3596, PAGE 320, INSTRUMENT No. 66768 IN BOOK 3596, PAGE 354, INSTRUMENT No. 66769 IN BOOK 3596, PAGE 380, INSTRUMENT No. 66770 IN BOOK 3596, PAGE 413, INSTRUMENT No. 66771 IN BOOK 3596, PAGE 447, AND INSTRUMENT No. 66772 IN BOOK 3596, PAGE 483, ALL OF OFFICIAL RECORDS OF VENTURA COUNTY.

(19b) 20' WIDE EASEMENTS FOR INGRESS AND EGRESS AND FOR UTILITY AND PIPELINE PURPOSES, AS RE- SERVED PER THE DOCUMENTS RECORDED DECEMBER 22, 1969, AS INSTRUMENT No. 66767 IN BOOK 3596, PAGE 320, INSTRUMENT No. 66768 IN BOOK 3596, PAGE 354, INSTRUMENT No. 66769 IN BOOK 3596, PAGE 380, INSTRUMENT No. 66770 IN BOOK 3596, PAGE 413, INSTRUMENT No. 66771 IN BOOK 3596, PAGE 447, AND INSTRUMENT No. 66772 IN BOOK 3596, PAGE 483, ALL OF OFFICIAL RECORDS OF VENTURA COUNTY.

(20) 20' AND 10' WIDE EASEMENT FOR OVERHEAD AND/OR UNDERGROUND ELECTRICAL SUPPLY SYSTEMS AND COMMUNICATION SYSTEMS, GRANTED TO GENERAL TELEPHONE COMPANY PER THE GRANT OF EASEMENT RECORDED JANUARY 2, 1976, AS INSTRUMENT No. 143 IN BOOK 4518, PAGE 619 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(22) EASEMENT FOR SUBSURFACE WATER PIPELINES AND RELATED PURPOSES, GRANTED TO UNITED WATER CONSERVATION DISTRICT PER THE EASEMENT DEED RECORDED SEPTEMBER 9, 1982, AS INSTRUMENT No. 82-083853 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(23) EASEMENT FOR PUBLIC UTILITIES PURPOSES, GRANTED TO SOUTHERN CALIFORNIA EDISON COMPANY PER THE GRANT OF EASEMENT RECORDED DECEMBER 3, 1982, AS INSTRUMENT No. 82-113697 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(26) EASEMENT FOR SLOPES PURPOSES, GRANTED TO THE CITY OF OXNARD PER GRANT DEED RECORDED APRIL 29, 1988, AS INSTRUMENT No. 88-058919 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(27) 7' WIDE EASEMENT FOR WATER PIPELINES PURPOSES, GRANTED TO THE CITY OF OXNARD PER GRANT DEED RECORDED APRIL 29, 1988, AS INSTRUMENT No. 88-058919 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(28) 15' WIDE EASEMENT FOR PUBLIC UTILITIES PURPOSES, GRANTED TO GTE CALIFORNIA INCORPORATED PER GRANT OF EASEMENT RECORDED FEBRUARY 9, 1989, AS INSTRUMENT No. 89-021551 OF OFFICIAL RE- CORDS OF VENTURA COUNTY.

(30) 15' WIDE EASEMENT FOR PUBLIC UTILITIES PURPOSES, GRANTED TO SOUTHERN CALIFORNIA EDISON COMPANY PER GRANT OF EASEMENT RECORDED FEBRUARY 9, 1989, AS INSTRUMENT No. 89-021551 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(33) 9.84' WIDE EASEMENT FOR UTILITY PURPOSES, PER PARCEL 6 OF THE FINAL ORDER OF CONDEMNATION RECORDED MARCH 2, 2011, AS INSTRUMENT No. 20110302-00036886 OF OFFICIAL RECORDS OF VENTURA COUNTY. (CONVEYED TO SOUTHERN CALIFORNIA EDISON COMPANY PER ASSIGNMENT OF EASEMENT RE- CORDED JULY 12, 2011, AS INSTRUMENT No. 20110712-00101329 OF OFFICIAL RECORDS OF VENTURA COUNTY.)

(34) 20' AND 3' WIDE EASEMENT FOR UTILITY PURPOSES, PER PARCEL 7 OF THE FINAL ORDER OF CONDEM- 20' AND 3' WIDE EASEMENT FOR UTILITY PURPOSES, PER PARCEL 7 OF THE FINAL ORDER OF CONDEM- NATION RECORDED MARCH 2, 2011, AS INSTRUMENT No. 20110302-00036886 OF OFFICIAL RECORDS OF NATION RECORDED MARCH 2, 2011, AS INSTRUMENT No. 20110302-00036886 OF OFFICIAL RECORDS OF VENTURA COUNTY. (CONVEYED TO SOUTHERN CALIFORNIA EDISON COMPANY PER ASSIGNMENT OF EASE- MENT RECORDED JULY 12, 2011, AS INSTRUMENT No. 20110712-00101329 OF OFFICIAL RECORDS OF VENTURA COUNTY.)

(35) 19.69' WIDE EASEMENT FOR UTILITY PURPOSES, PER PARCEL 8 OF THE FINAL ORDER OF CONDEMNATION RECORDED MARCH 2, 2011, AS INSTRUMENT No. 20110302-00036886 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(36) 19.69' WIDE EASEMENT FOR GAS LINE PURPOSES, GRANTED TO SOUTHERN CALIFORNIA GAS COMPANY PER TRANSFER DEED RECORDED DECEMBER 16, 2011, AS INSTRUMENT No. 20111216-00192509 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(37) EASEMENT FOR UTILITY PURPOSES, PER PARCEL 9 OF THE FINAL ORDER OF CONDEMNATION RECORDED MARCH 2, 2011, AS INSTRUMENT No. 20110302-00036886 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(38) EASEMENT FOR UTILITY PURPOSES, PER PARCEL 10 OF THE FINAL ORDER OF CONDEMNATION RECORDED MARCH 2, 2011, AS INSTRUMENT No. 20110302-00036886 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(39) EASEMENT FOR SLOPE PURPOSES, PER PARCEL 11 OF THE FINAL ORDER OF CONDEMNATION RECORDED MARCH 2, 2011, AS INSTRUMENT No. 20110302-00036886 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(40) 3' WIDE EASEMENTS FOR UTILITY PURPOSES, PER PARCEL 13 OF THE FINAL ORDER OF CONDEMNATION RECORDED MARCH 2, 2011, AS INSTRUMENT No. 20110302-00036886 OF OFFICIAL RECORDS OF VENTURA COUNTY. (CONVEYED TO SOUTHERN CALIFORNIA EDISON COMPANY PER ASSIGNMENT OF EASEMENT RE- CORDED JULY 12, 2011, AS INSTRUMENT No. 20110712-00101329 OF OFFICIAL RECORDS OF VENTURA COUNTY.)

(41) EASEMENT FOR UTILITY PURPOSES, PER PARCEL 15 OF THE FINAL ORDER OF CONDEMNATION RECORDED MARCH 2, 2011, AS INSTRUMENT No. 20110302-00036886 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(42) EASEMENT FOR UTILITY PURPOSES, PER PARCEL 16 OF THE FINAL ORDER OF CONDEMNATION RECORDED MARCH 2, 2011, AS INSTRUMENT No. 20110302-00036886 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(44) 10' WIDE EASEMENT FOR PROPOSED ROADWAY PURPOSES, GRANTED TO SOUTHERN CALIFORNIA EDISON COMPANY PER ROAD EASEMENT RECORDED DECEMBER 24, 2013, AS INSTRUMENT No. 20131224-00204605 OF OFFICIAL RECORDS OF VENTURA COUNTY.

(45) 10' WIDE AND VARIABLE WIDTH EASEMENT FOR OVERHEAD ELECTRICAL SUPPLY SYSTEMS AND COMMUNICATION SYSTEMS, GRANTED TO SOUTHERN CALIFORNIA EDISON COMPANY PER GRANT OF EASEMENT RE- CORDED APRIL 22, 2016, AS INSTRUMENT No. 20160422-00054912 OF OFFICIAL RECORDS OF VENTURA COUNTY.

LEGAL DESCRIPTION

THE LAND REFERRED TO IN THIS COMMITMENT IS SITUATED IN THE CITY OF OXNARD, COUNTY OF VENTURA, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

PARCEL "C", AND THAT PORTION OF PARCEL "D" OF THE RESUBDIVISION OF THE SUBDIVISIONS 45, 46 AND PART OF 49, RANCHO EL RIO DE SANTA CLARA O' LA COLONIA, IN THE CITY OF OXNARD, COUNTY OF VENTURA, STATE OF CALIFORNIA, AS PER MAP FILED IN BOOK 2, PAGE 43 OF RECORD OF SURVEYS IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY, DESCRIBED AS A WHOLE AS FOLLOWS:

BEGINNING AT A POINT IN THE EASTERLY LINE OF RICE ROAD, 50 FEET WIDE, AS SHOWN ON SAID MAP AT THE SOUTHWESTERLY TERMINUS OF THAT CERTAIN COURSE IN THE SOUTHERLY BOUNDARY OF THE STATE HIGHWAY RECITED AS "N. 70° 33' 43" E., 157.48 FEET", IN THE DEED TO THE STATE OF CALIFORNIA, RECORDED DECEMBER 23, 1963 IN BOOK 2450, PAGE 16 OF OFFICIAL RECORDS AS DOCUMENT NO. 76087, IN SAID OFFICE OF THE COUNTY RECORDER
EXCEPT THAT PORTION CONVEYED TO THE CITY OF OXNARD IN DEED RECORDED APRIL 29, 1988 AS DOCUMENT NO. 88-58919, OF OFFICIAL RECORDS.

ALSO EXCEPTING THAT PORTION CONVEYED TO THE CITY OF OXNARD, A MUNICIPAL CORPORATION IN FINAL ORDER OF CONDEMNATION RECORDED MARCH 02, 2011 AS INSTRUMENT NO. 2011-00036886, OF OFFICIAL RECORDS.

ALSO EXCEPT ALL OIL, GAS, PETROLEUM, HYDROCARBONS AND MINERAL SUBSTANCES LYING IN, ON, OR UNDER SAID LAND, BUT WITHOUT THE RIGHT TO ENTER UPON AND USE THE SURFACE AND THE SUBSURFACE OF SAID LAND TO A DEPTH OF 500 FEET BELOW THE SURFACE EXCEPT UPON THOSE CERTAIN DRILL SITE EASEMENTS AND EASEMENTS FOR INGRESS AND EGRESS AND FOR UTILITY AND PIPELINE PURPOSES AS PARTICULARLY DESCRIBED IN THOSE CERTAIN AGREEMENTS EXECUTED BY FRANCES M. CONWAY, ET AL., AND BY XEROX CORPORATION RECORDED DECEMBER 22, 1969 AS DOCUMENT NOS. 66767, 66768, 66769, 66770, 66771 AND 66772, ALL OF OFFICIAL RECORDS.

APN(S): 216-0-030-145, 216-0-030-155, 216-0-030-075 AND 216-0-030-105

PROJECT INFORMATION	
PROJECT NAME	SAKIOKA BUSINESS PARK
OWNER/SUBDIVIDER	SAKIOKA FARMS RICE AVE, TIC 1451 N. RICE AVE, OXNARD, CA 93030 CRAIG KAIHARA CRAIG@AMSCRAIGLLC.COM (805) 278-1703
THOMAS GUIDE	MAP PG 523 GRID C3,C4 - D3,D4
FLOOD ZONE	ZONE X, MAP NUMBER 06111C0910E
ZONING	M-1-PD - LIGHT MANUFACTURING - PLANNED DEVELOPMENT BRP - BUSINESS RESEARCH PARK SAKIOKA SPECIFIC PLAN (14,235)

BENCHMARK

COUNTY OF VENTURA BENCHMARK : 7-79 RM2

DESCRIPTION = CITY OF OXNARD DISK ON TOP OF CURB AT THE SOUTHWEST CORNER OF RICE AVE AND GONZALES RD

ELEVATION = 74.03'

BASIS OF BEARING

THE BASIS OF BEARINGS FOR THIS SURVEY IS

CENTERLINE OF RICE AVE BEARING N 1°14'52" E

EARTHWORK

CUT: 436,042 CY
FILL: 1,774,353 CY

IMPORT: 1,338,311 CY

SHEET INDEX

1	TITLE SHEET
2	TYPICAL SECTIONS AND PHASING
3-6	ENGINEERING SITE PLAN
7	SECTIONS AND DETAILS
8	PAVEMENT DELINEATION
9	INTERSECTION DETAILS
10	UTILITY SITE PLAN

SCALE: 1"=200'

PREPARED BY

DELANE ENGINEERING
400 W VENTURA BLVD, SUITE 265
CAMARILLO, CA 93010
PHONE: 310.546.5711-DELANEENGINEERING.COM

SCOTT D. UHLES RCE No. 72391 DATE

TENTATIVE TRACT No 5996

SAKIOKA BUSINESS PARK
TITLE SHEET

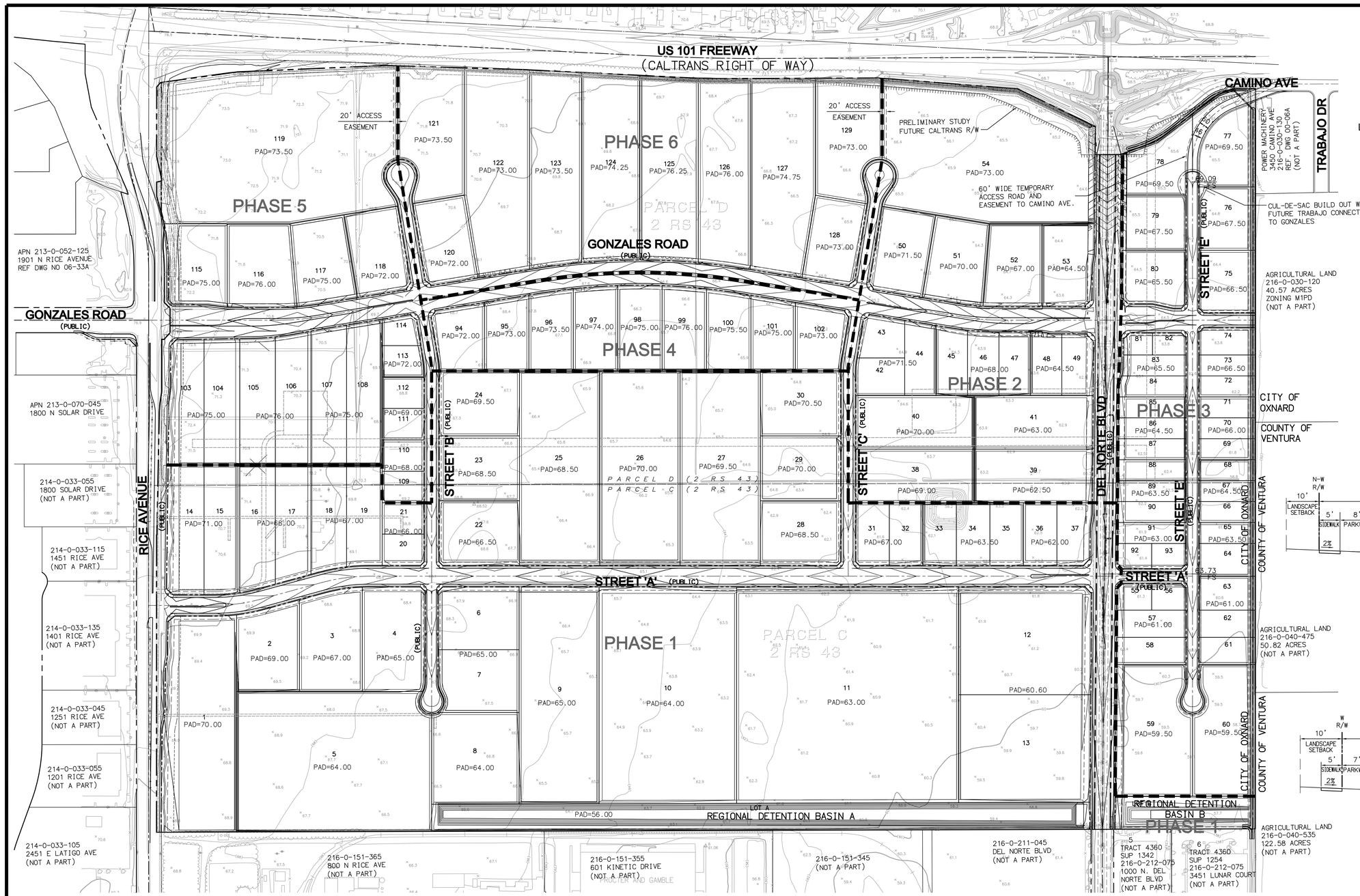
SHEET 1 OF 10 SHEETS

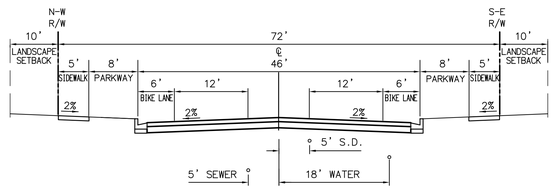
PLOT DATE: 2/7/20 11:09 AM FILE NAME: H:\HROOT\PDATA\0110033\CAD\LAND\DLV\TTM\033-TTM-001.DWG

SAVE DATE: 2/6/20 STEVEDOWNS

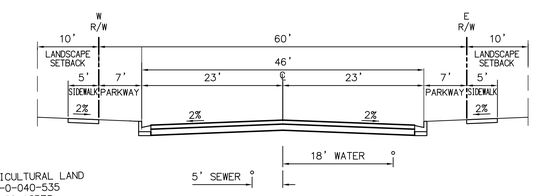
EXISTING SITE			
LOT	AREA (AC)	AREA (SF)	LAND USE
216-0-030-145	199.24	8,679.079.69	BRP
216-0-030-155	170.46	7,425,105.24	M-1-PD
216-0-030-075	26.80	1,167,237.70	BRP
216-0-030-105	26.10	1,137,048.84	M-1-PD
TOTAL	422.60	18,408,471.47	

LANDSCAPE NOTE:
ENHANCED LANDSCAPING SHALL BE INSTALLED AT ALL INTERSECTIONS PER THE DESIGN GUIDELINES IN THE SAKIOKA FARMS SPECIFIC PLAN.

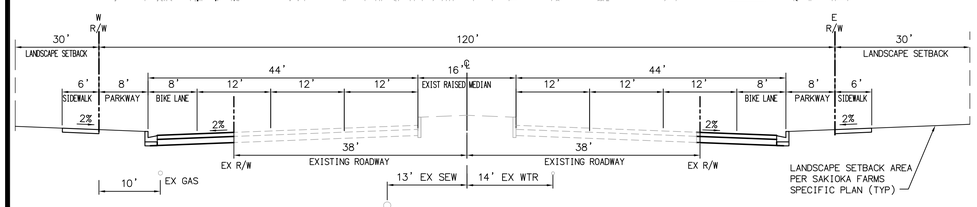




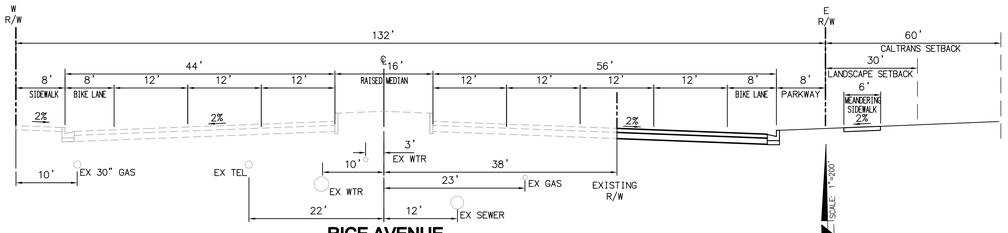
STREET 'B' AND 'C'
NTS
(PUBLIC)



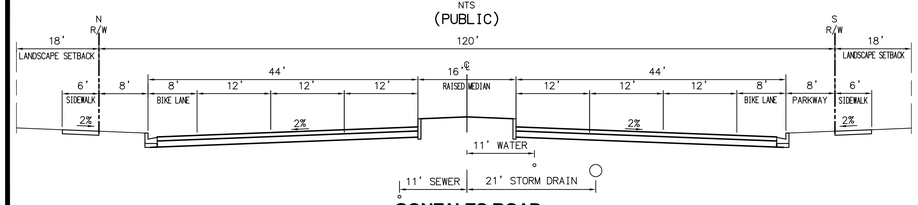
STREET 'B' (SOUTH OF STREET 'A') AND STREET 'E'
NTS
(PUBLIC)



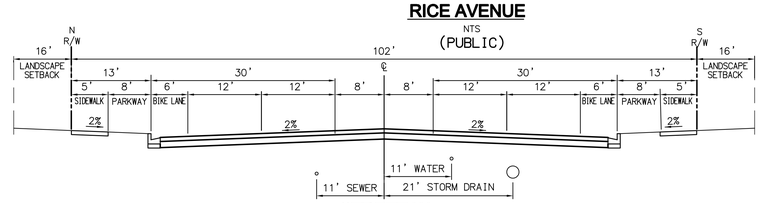
DEL NORTE BLVD
NTS
(PUBLIC)



RICE AVENUE
NTS
(PUBLIC)



GONZALES ROAD
NTS
(PUBLIC)



STREET 'A'
NTS
(PUBLIC)

SCALE: 1"=200'

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PHONE: 310.546.5711-DELANEENGINEERING.COM
SCOTT D. UHLES RCE No. 72391 DATE

TENTATIVE TRACT No 5996

SAKIOKA BUSINESS PARK
TYPICAL SECTIONS
AND PHASING

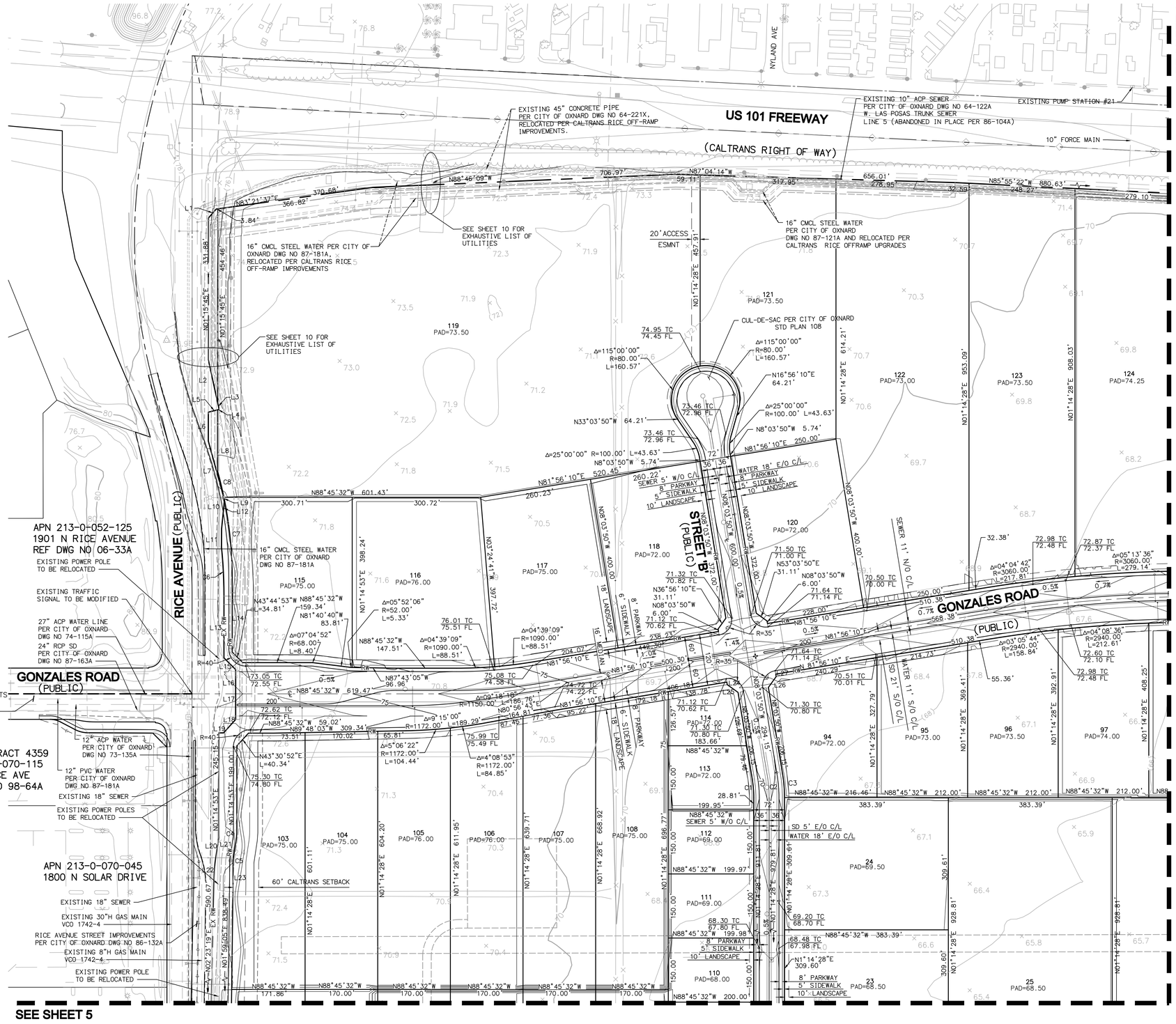
SHEET 2 OF 10 SHEETS

PLOT DATE: 2/7/20 11:44 AM FILE NAME: H:\VRDOT\DATA\2010033\CAD\LAND\U\A\TTM\033-TTM-002.DWG

SAVE DATE: 2/7/20 DEBBIE TALAM

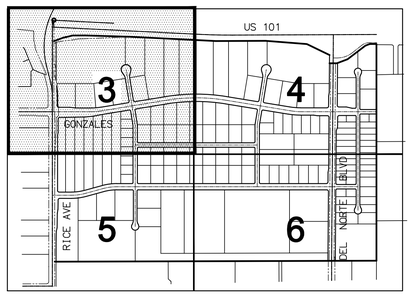
GENERAL NOTES:

1. ALL OVERHEAD UTILITY LINES ON AND ADJACENT TO THE PROPOSED PROJECT THAT CONDUCT LESS THAN 66KV SHALL BE PLACED UNDERGROUND.



CURVE TABLE				
NO.	DELTA	RADIUS	LENGTH	TANGENT
C1	9°18'18"	264.00'	42.87'	21.48'
C2	9°18'18"	300.00'	48.72'	24.41'
C3	9°18'18"	336.00'	54.57'	27.34'
C4	8°31'50"	128.00'	19.06	9.55'
C5	8°31'50"	112.00'	16.68'	8.35'
C6	5°52'21"	1123.85'	115.19'	57.64'
C7	11°41'49"	938.00'	191.49'	96.07'
C8	3°46'36"	938.00'	61.83''	30.93'

LINE TABLE		
NO.	BEARING	DISTANCE
L1	N43°44'19"W	38.81'
L2	N43°06'11"E	42.29'
L3	N88°45'07"W	11.15'
L4	N09°46'47"E	59.71'
L5	N09°46'42"E	51.64'
L6	N05°32'13"E	39.48'
L7	N14°03'13"W	143.23'
L8	N01°15'45"E	153.60'
L9	N14°03'13"W	6.69'
L10	N06°52'42"E	67.82'
L11	N01°34'49"E	42.54'
L12	N06°57'42"E	37.31'
L13	N01°15'45"E	144.37'
L14	N01°15'45"E	172.21'
L15	N43°44'19"W	38.81'
L16	N01°15'45"E	56.75'
L17	N01°14'53"E	59.84'
L18	N43°06'11"E	42.29'
L19	N88°45'07"W	11.15'
L20	N08°09'55"E	94.97'
L21	N09°46'42"E	42.77'
L22	N05°32'13"E	39.48'
L23	N01°14'53"E	48.71'
L24	N08°03'50"W	6.00'
L25	N53°03'50"W	31.11'
L26	N36°56'11"E	31.11'
L27	N08°03'50"W	6.00'



SHEET INDEX MAP
NTS

SCALE: 1"=100'

REFERENCE PAGES

SEE SHEETS FOR:

SECTIONS AND DETAILS	SHEET	7
PAVEMENT DELINEATION	SHEET	8
INTERSECTION DETAILS	SHEET	9
UTILITY SITE PLAN	SHEET	10

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SCOTT D. UHLES RCE No. 72391 DATE

TENTATIVE TRACT No 5996

SAKIOKA BUSINESS PARK
ENGINEERING SITE
PLAN

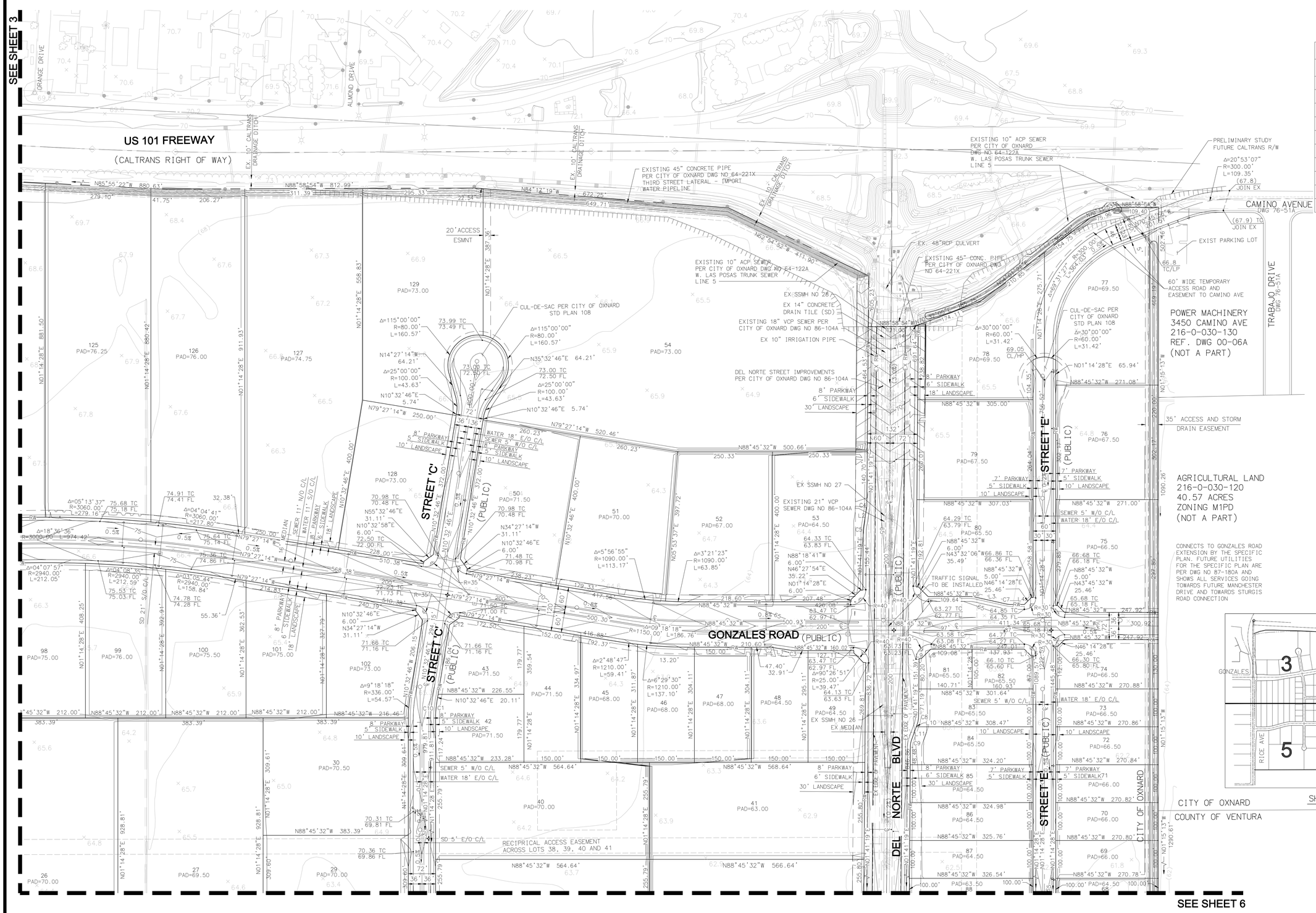
SHEET 3 OF 10 SHEETS

PLOT DATE: 2/7/20 11:09 AM FILE NAME: H:\VROOT\PDATA\D110031\CAD\LAND\DLA\TTM\033-TTM-003-006.DWG

SAVE DATE: 2/7/20 DEBBIE TALAMAN

GENERAL NOTES:

1. ALL OVERHEAD UTILITY LINES ON AND ADJACENT TO THE PROPOSED PROJECT THAT CONDUCT LESS THAN 66KV SHALL BE PLACED UNDERGROUND.



CURVE TABLE				
NO.	DELTA	RADIUS	LENGTH	TANGENT
C1	9°18'18"	264.00'	42.87'	21.48'
C2	8°31'51"	52.00'	7.74'	3.88'
C3	8°31'51"	68.00'	10.13'	5.07'
C4	8°29'35"	52.00'	7.71'	3.86'
C5	8°29'35"	68.00'	10.08'	5.05'
C6	12°30'19"	73.00'	15.93'	8.00'
C7	12°30'19"	47.00'	10.26'	5.15'
C8	19°14'27"	68.00'	22.84'	11.53'
C9	19°14'27"	52.00'	17.46'	8.81'
C10	9°18'18"	300.00'	48.72'	24.41'

LINE TABLE		
NO.	BEARING	DISTANCE
L1	N80°13'41"W	52.47'
L2	N10°10'54"E	52.03'
L3	N76°15'13"W	83.84'
L4	N88°45'32"W	37.06'
L5	N88°45'32"W	5.00'
L6	N88°45'32"W	5.00'
L7	N43°45'32"W	25.46'
L8	N46°27'54"E	35.22'
L9	N88°45'32"W	6.00'
L10	N20°55'46"E	6.83'
L11	N20°55'46"E	36.55'
L12	N55°32'46"E	30.11'
L13	N10°32'46"E	6.00'
L14	N70°32'05"E	11.65'

SHEET INDEX MAP
NTS

CITY OF OXNARD
COUNTY OF VENTURA

REFERENCE PAGES

SEE SHEETS FOR:

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INTERSECTION DETAILS	SHEET	9
UTILITY SITE PLAN	SHEET	10

SCALE: 1"=200'

100 50 0 100 200 300
SCALE: 1"=100'

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SCOTT D. UHLES RCE No. 72391 DATE

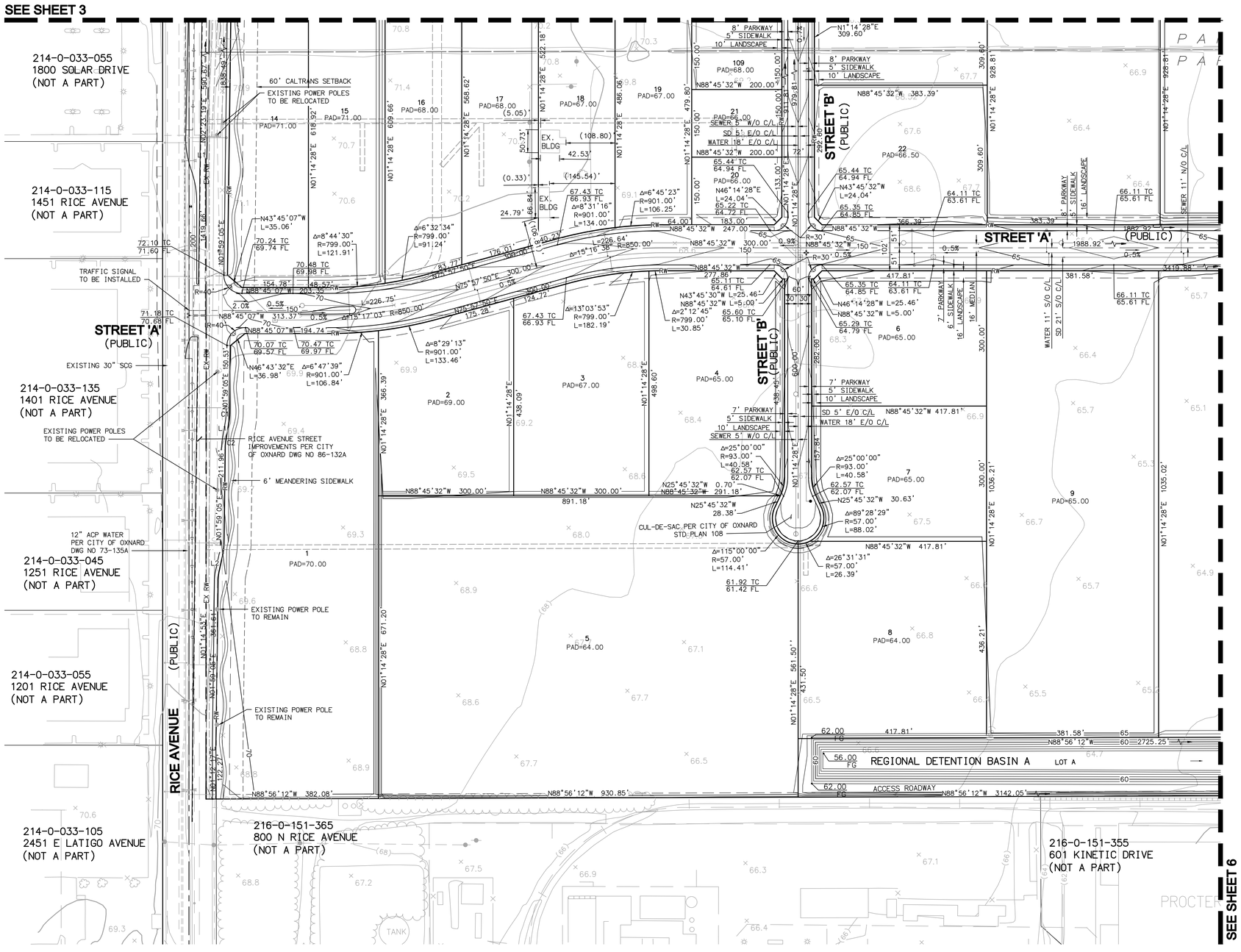
TENTATIVE TRACT No 5996

SAKIOKA BUSINESS PARK
ENGINEERING SITE
PLAN

SHEET 4 OF 10 SHEETS

PLOT DATE: 2/7/20 11:09 AM FILE NAME: H:\#9001\PDATA\D110133\CAD\LAND\DLA\TM\U33-TTM-003-006.DWG

SAVE DATE: 2/7/20 DEBBIE TALAMAN

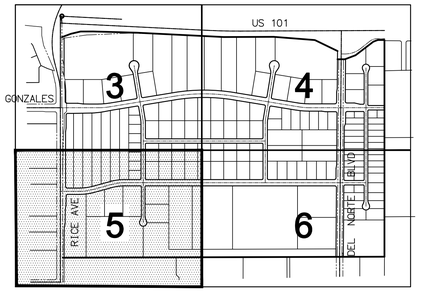


GENERAL NOTES:

1. ALL OVERHEAD UTILITY LINES ON AND ADJACENT TO THE PROPOSED PROJECT THAT CONDUCT LESS THAN 66KV SHALL BE PLACED UNDERGROUND.

CURVE TABLE				
NO.	DELTA	RADIUS	LENGTH	TANGENT
C1	8°43'36"	128.00'	19.50'	9.77'
C2	8°43'36"	112.00'	17.06'	8.55'
C3	11°23'07"	128.00'	25.44'	12.76'
C4	11°23'07"	112.00'	22.26'	11.16'

LINE TABLE		
NO.	BEARING	DISTANCE
L1	N10°42'41"E	41.01'
L2	N13°22'12"E	36.87'



SHEET INDEX MAP

NTS

SCALE 1"=100'

100 50 0 100 200 300

SCALE: 1"=100'

REFERENCE PAGES

SEE SHEETS FOR:

SECTIONS AND DETAILS	SHEET	7
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SCOTT D. UHLES RCE No. 72391 DATE

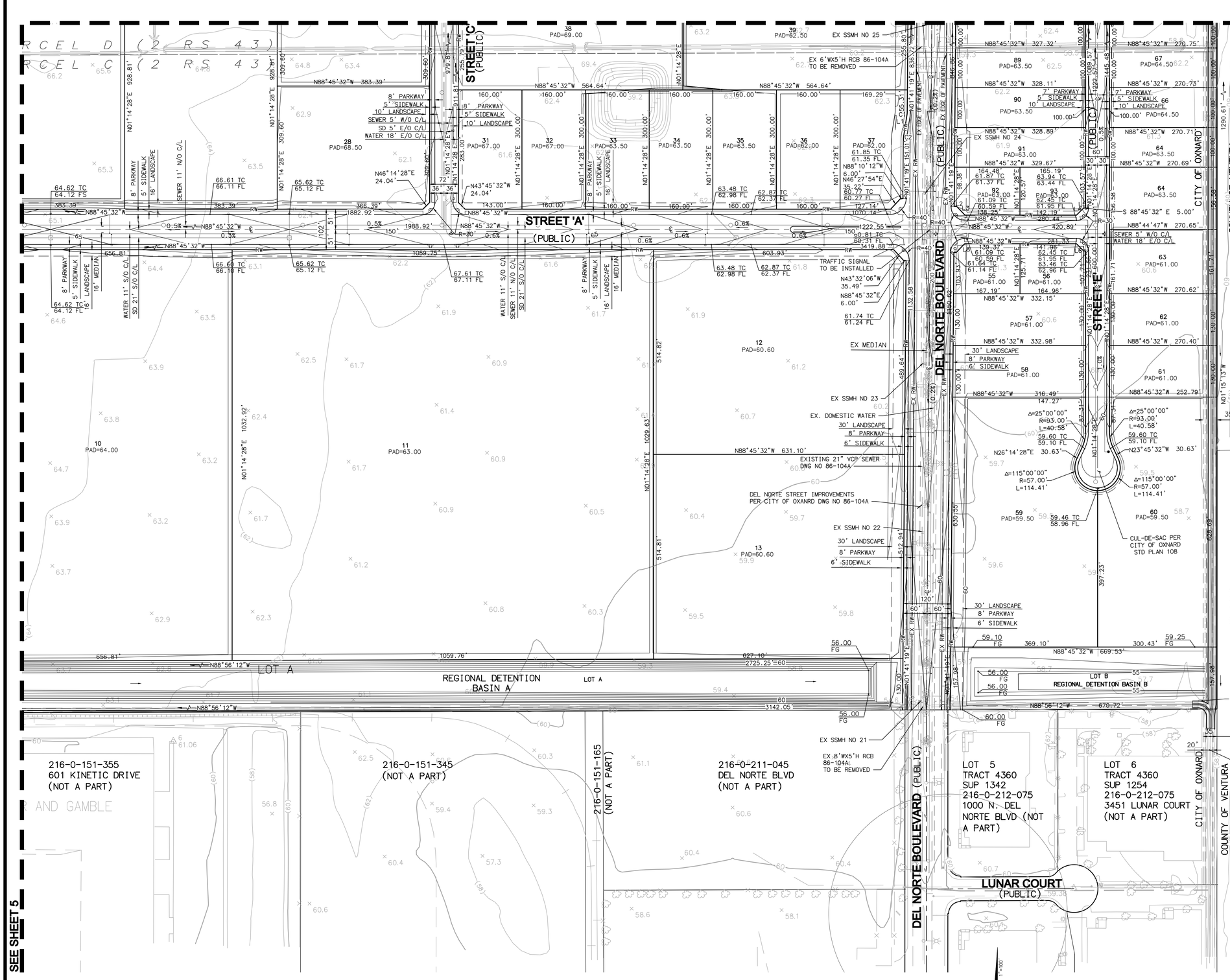
TENTATIVE TRACT No 5996

SAKIOKA BUSINESS PARK
ENGINEERING SITE
PLAN

SHEET 5 OF 10 SHEETS

PLOT DATE: 2/7/20 11:09 AM FILE NAME: H:\VPROOT\PDATA\01\0033\CAD\LAND\DLV\TM\033-TTM-003-006.DWG

SAVE DATE: 2/7/20 DEBBIE TALAMAN

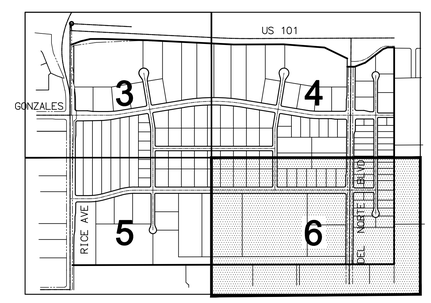


GENERAL NOTES:

1. ALL OVERHEAD UTILITY LINES ON AND ADJACENT TO THE PROPOSED PROJECT THAT CONDUCT LESS THAN 66KV SHALL BE PLACED UNDERGROUND.

CURVE TABLE				
NO.	DELTA	RADIUS	LENGTH	TANGENT
C1	8°31'51"	52.00'	7.74'	3.88'
C2	8°31'51"	68.00'	10.13'	5.07'

LINE TABLE		
NO.	BEARING	DISTANCE
L1	N10°13'10"E	51.72'
L2	N88°45'32"W	6.00'
L3	N42°09'08"W	30.57'
L4	N46°14'28"E	25.46'
L5	N88°45'32"W	5.00'
L6	N43°45'32"W	25.46'
L7	N88°45'32"W	5.00'
L8	N45°11'38"E	30.27'
L9	N88°45'32"W	6.00'



SHEET INDEX MAP
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100 50 0 100 200 300
SCALE: 1"=100'

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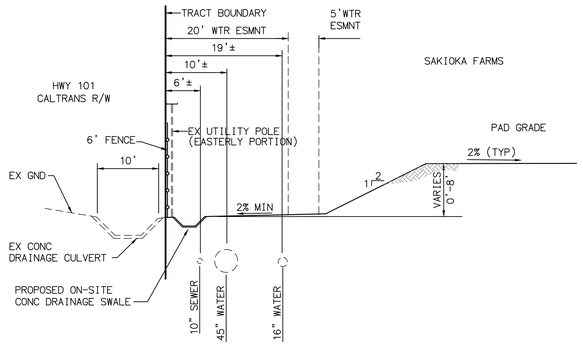
PHONE: 310.546.5711•DELANEENGINEERING.COM
SCOTT D. UHLES RCE No. 72391 DATE

TENTATIVE TRACT No 5996

SAKIOKA BUSINESS PARK ENGINEERING SITE PLAN

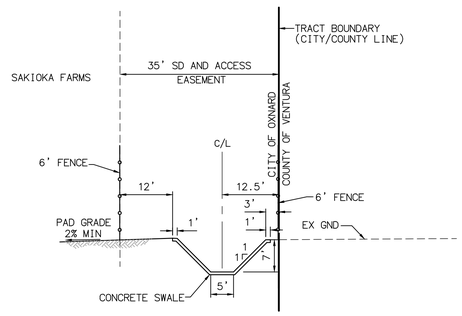
SHEET 6 OF 10 SHEETS

PLOT DATE: 2/7/20 11:10 AM FILE NAME: H:\PROJ\TV\DATA\J110033\CAD\LAND\DLA\TTM\U33-TTM-003-006.DWG
SAVE DATE: 2/7/20 DEBBIE TALAMAN



EASTERLY NORTH TRACT BOUNDARY

NTS



EAST TRACT BOUNDARY

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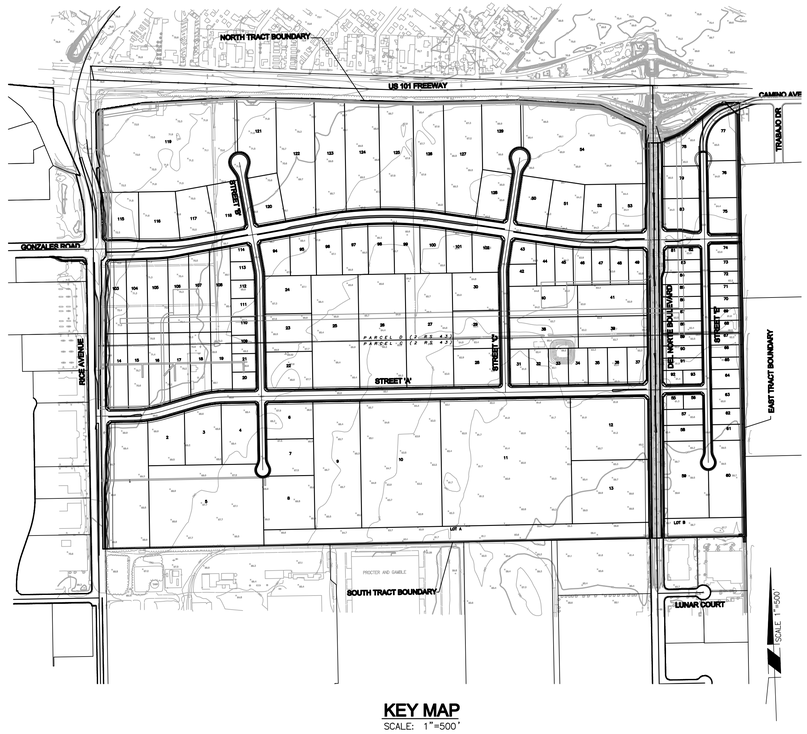
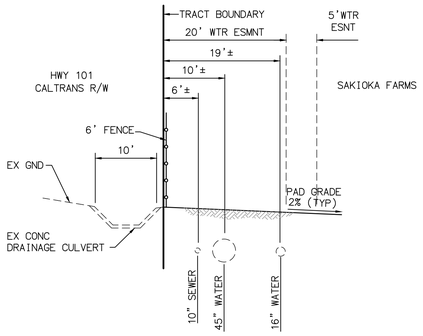


KEY MAP

SCALE: 1"=500'



WESTERLY NORTH TRACT BOUNDARY

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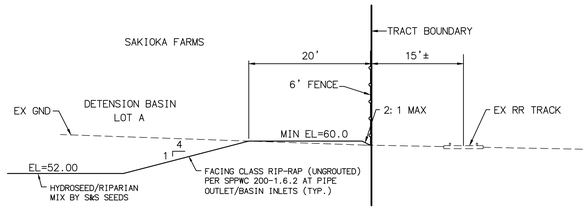

SOUTH TRACT BOUNDARY

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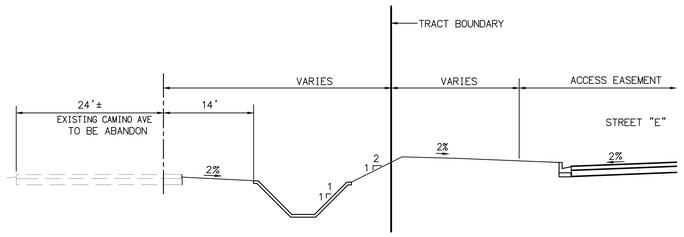
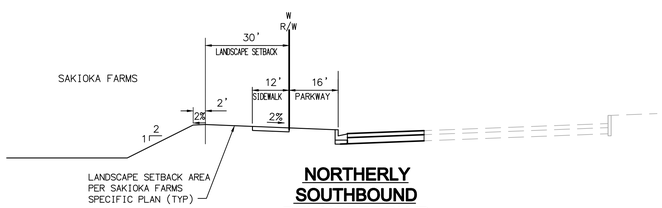


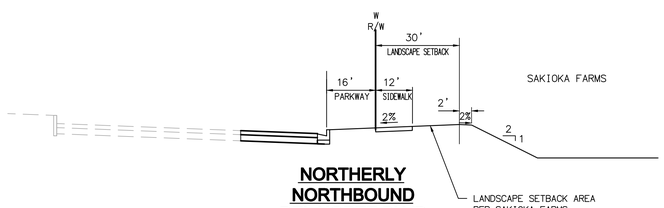
NORTH TRACT BOUNDARY AT CAMINO AVE

NTS



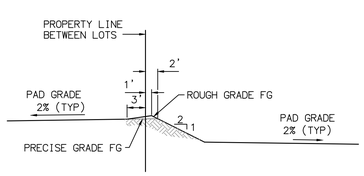
NORTHERLY SOUTHBOUND DEL NORTE BLVD

NTS



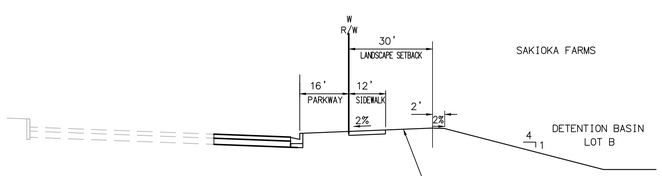
NORTHERLY NORTHBOUND DEL NORTE BLVD

NTS



TYPICAL SLOPE AT PROPERTY LINE

NTS



SOUTHERLY NORTHBOUND DEL NORTE BLVD

NTS

PREPARED BY

DELANE ENGINEERING
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CAMARILLO, CA 93010
PHONE: 310.546.5711-DELANEENGINEERING.COM

SCOTT D. UHLES RCE No. 72391 DATE

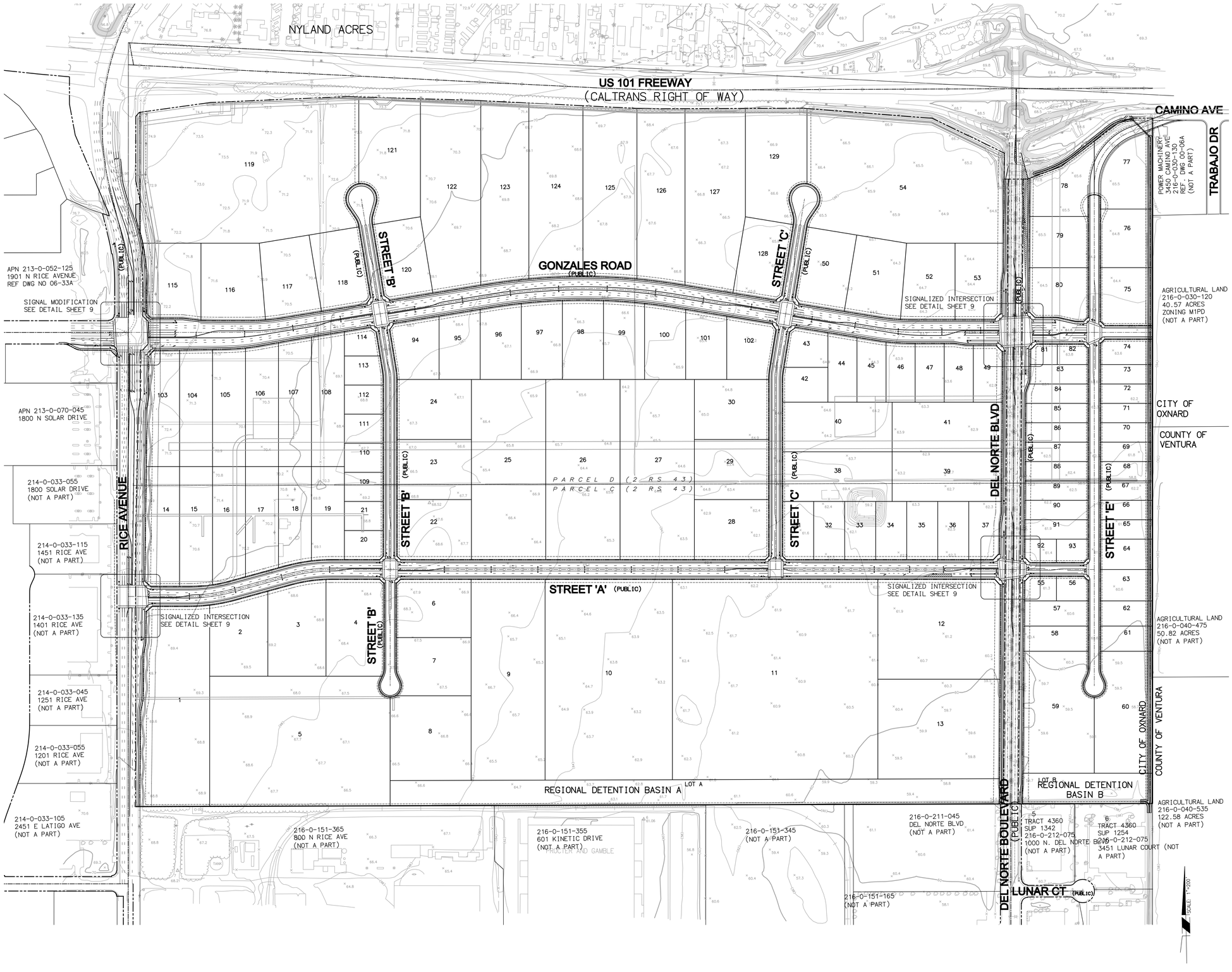
TENTATIVE TRACT No 5996

SAKIOKA BUSINESS PARK SECTIONS AND DETAILS

SHEET 7 OF 10 SHEETS

PLOT DATE: 2/7/20 11:10 AM FILE NAME: H:\PROJ\PDATA\01003\CAD\LAND\DLV\TTM\03-TTM-007.DWG

SAVE DATE: 2/7/20 DEBBIE TALAMAN



200 100 0 200 400 600

SCALE: 1"=200'

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SCOTT D. UHLES RCE No. 72391 DATE

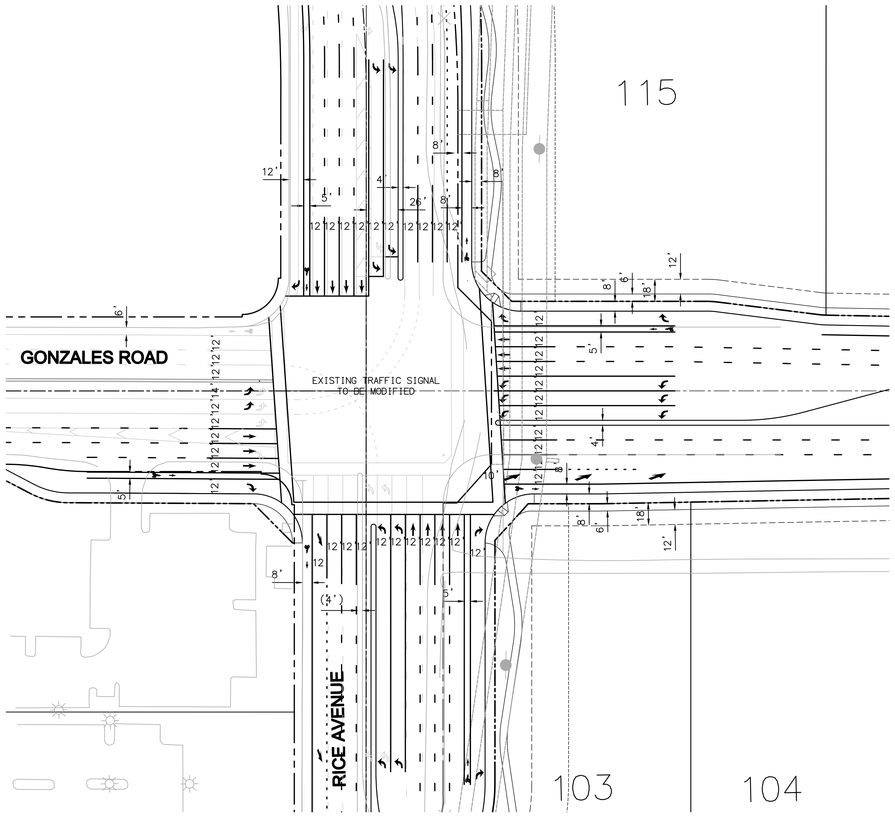
TENTATIVE TRACT No 5996

SAKIOKA BUSINESS PARK PAVEMENT DELINEATION

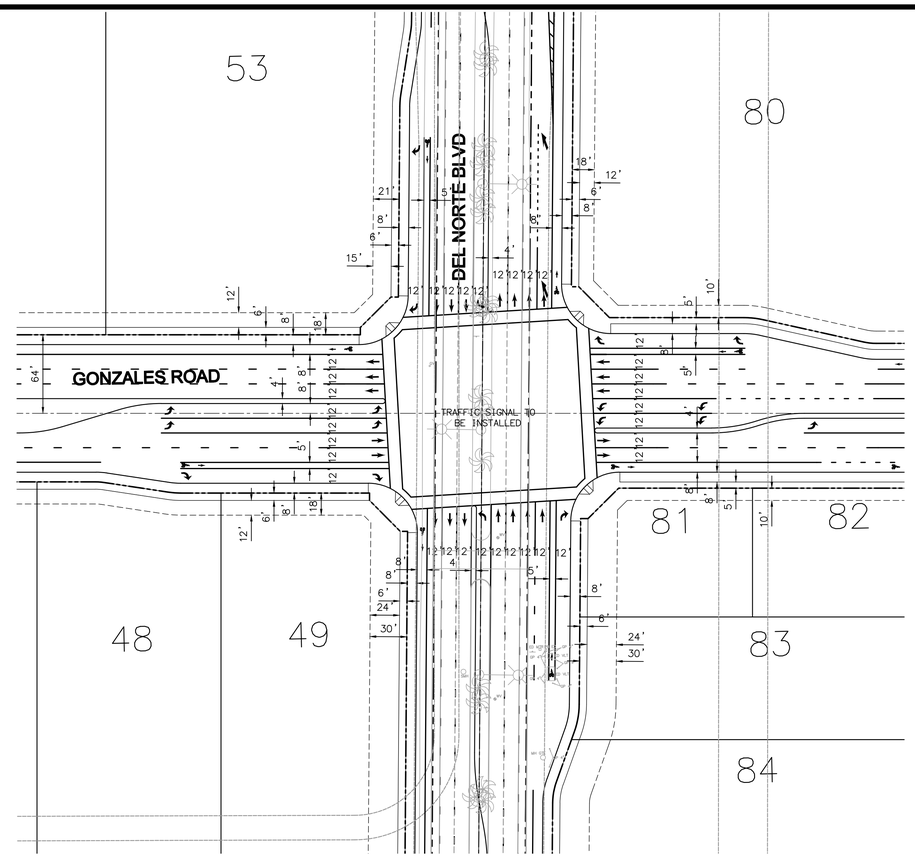
SHEET 8 OF 10 SHEETS

PLOT DATE:2/7/20 11:10 AM FILE NAME: H:\PROOT\PDATA\D100331\CAD\LAND\DLX\TTM\D33-TTM-008.DWG

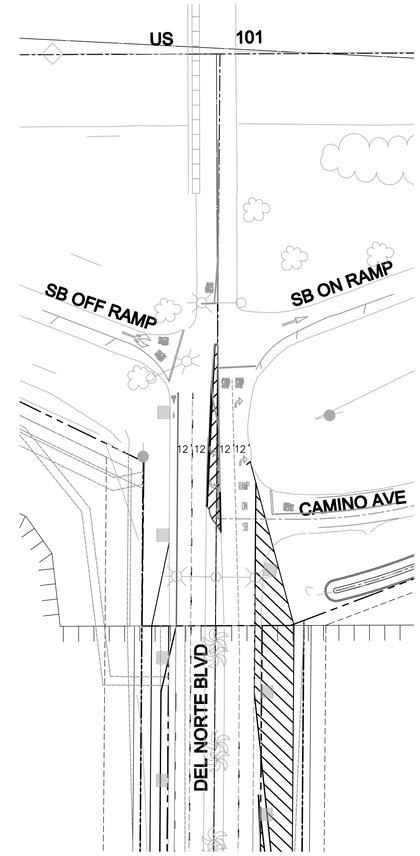
SAVE DATE:2/7/20 DEBBIE TALAMAN



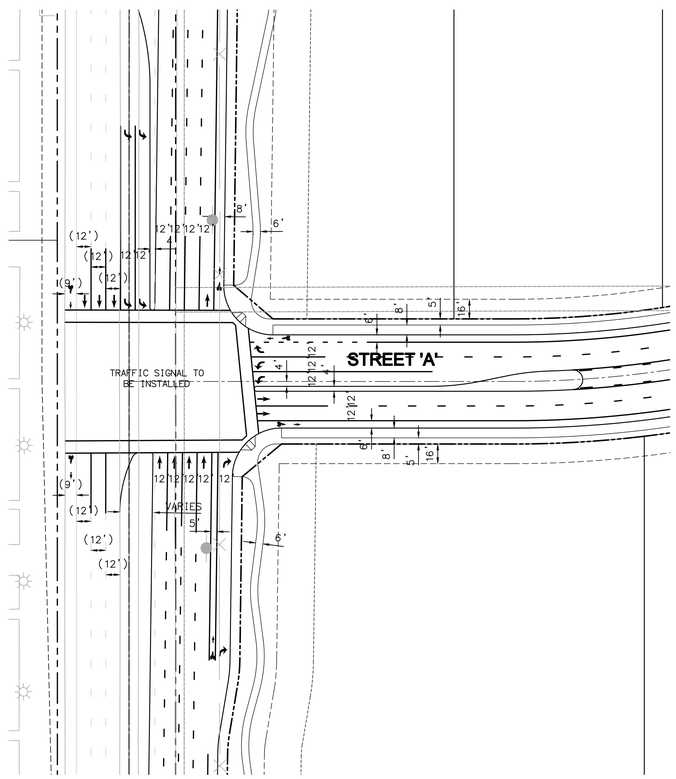
GONZALES AND RICE INTERSECTION



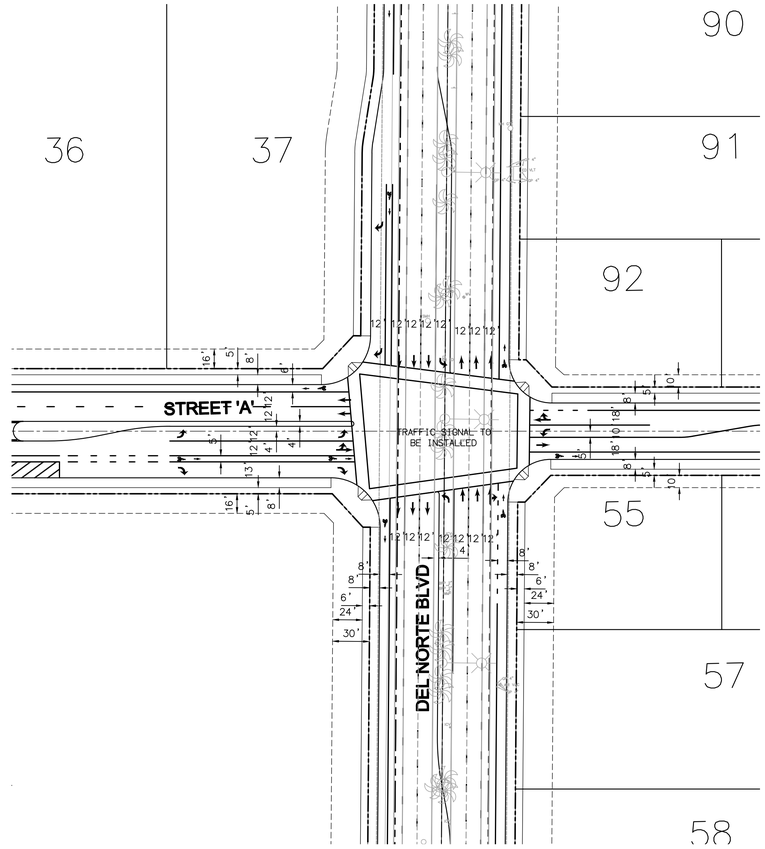
DEL NORTE AND GONZALES INTERSECTION



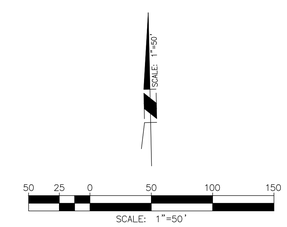
DEL NORTE BRIDGE AT US 101



RICE AND STREET 'A' INTERSECTION



DEL NORTE AND STREET 'A' INTERSECTION



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SCOTT D. UHLES RCE No. 72391 DATE

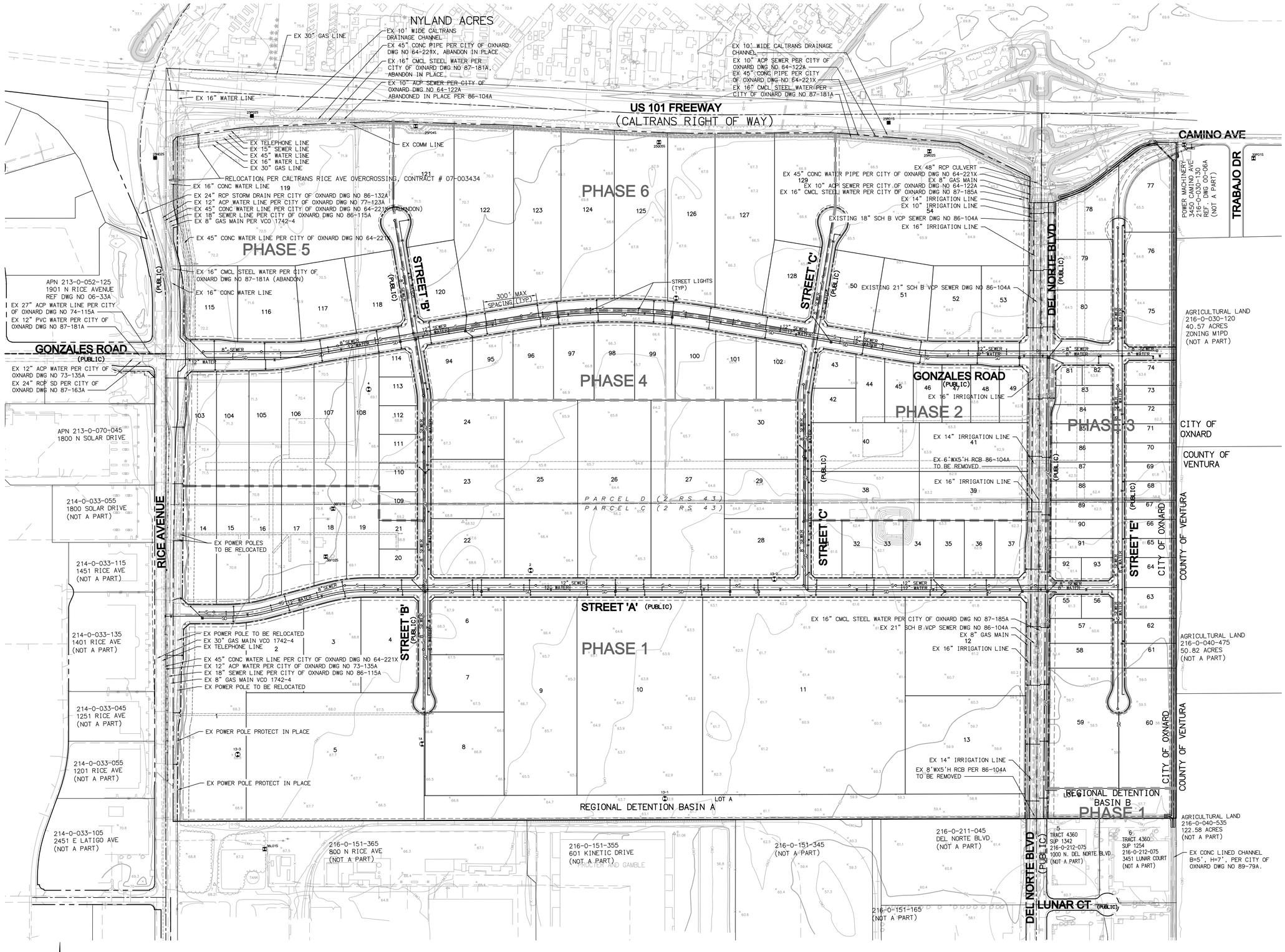
TENTATIVE TRACT No 5996

SAKIOKA BUSINESS PARK
INTERSECTION
DETAILS

SHEET 9 OF 10 SHEETS

PLOT DATE: 2/7/20 11:10 AM FILE NAME: H:\PROJ01\DATA\2010033\CAD\LAND\DA\TM\033-TM-009.DWG

SAVE DATE: 2/7/20 DEBBIE TALAMAN



LEGEND:

- ABANDONED OIL WELL
- ACTIVE WATER WELL
- DESTROYED WATER WELL

PREPARED BY

DELANE ENGINEERING
400 W VENTURA BLVD, SUITE 265
CAMARILLO, CA 93010
PHONE: 310.546.5711-DELANEENGINEERING.COM

SCOTT D. UHLES RCE No. 72391 DATE

TENTATIVE TRACT No 5996

SAKIOKA BUSINESS PARK
UTILITY SITE PLAN

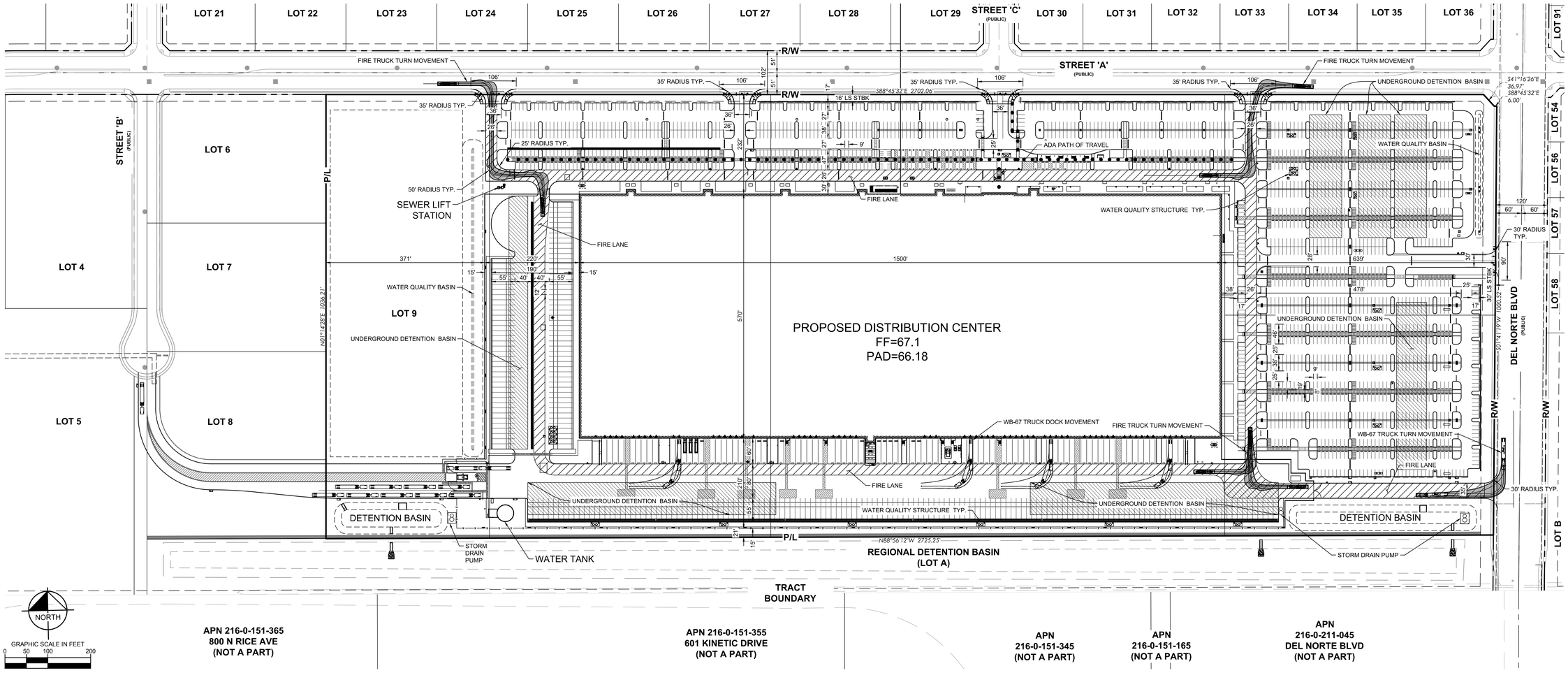
SHEET 10 OF 10 SHEETS

PLOT DATE: 2/7/20 11:31 AM FILE NAME: H:\PROJ\DATA\P210033\CAD\LAND\SJ\TTM\033-TTM-010.DWG

SAVE DATE: 2/7/20 DEBBIE TALAMAN

APPENDIX L

PROJECT BRUIN CIVIL ENGINEERING PLANS



PROJECT STATISTICS

LOT SIZE (ACRES)	64.65
GROSS (SF)	2,816,200
NET (SF)	2,816,200
LAND USE	INDUSTRIAL
EXISTING ZONING	M-1
SPECIFIC PLAN	SAKIOKA FARMS

PROJECT AREA

AREA	SF	%
BUILDING AREA	857,173	30.44%
LANDSCAPE	656,820	23.32%
PAVED AREA	1,302,207	46.24%
TOTAL AREA	2,816,200	100%

LEGAL DESCRIPTION:

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF OXNARD, IN THE COUNTY OF VENTURA, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:
LOTS 8 THROUGH 12, INCLUSIVE, OF TRACT NO. 5996-1, BEING A PORTION OF PARCEL "C" IN THE CITY OF OXNARD, COUNTY OF VENTURA, STATE OF CALIFORNIA, AS PER MAP FILED IN BOOK 2, PAGE 43 OF RECORDS OF SURVEY, IN THE OFFICE OF THE COUNTY RECORDER OF VENTURA COUNTY, DESCRIBED AS A WHOLE AS FOLLOWS:
COMMENCING AT THE INTERSECTION OF THE CENTERLINE OF DEL NORTE BOULEVARD, 76.00 FEET WIDE, AS SHOWN ON THE RECORD OF SURVEY FILED IN BOOK 53, PAGES 64 THROUGH 66 INCLUSIVE OF RECORDS OF SURVEY, IN THE OFFICE OF SAID COUNTY RECORDER, WITH A LINE PARALLEL WITH AND 130.00 FEET NORTHERLY OF, MEASURED AT RIGHT ANGLES, THE SOUTHERLY LINE OF SAID PARCEL C;
THENCE ALONG SAID PARALLEL LINE SOUTH 89°47'40" WEST 60.00 FEET TO THE TRUE POINT OF BEGINNING;
THENCE CONTINUING SOUTH 89°47'40" WEST 2,725.30 FEET;
THENCE NORTH 00°01'40" WEST 1,036.28 FEET;
THENCE NORTH 89°58'20" EAST 2,708.12 FEET;
THENCE SOUTH 44°48'15" EAST 35.49 FEET;
THENCE SOUTH 89°34'49" EAST 6.00 FEET TO A LINE PARALLEL WITH AND 38.00 FEET WESTERLY OF THE CENTERLINE OF SAID DEL NORTE BOULEVARD;
THENCE ALONG SAID PARALLEL LINE, SOUTH 00°25'11" WEST 1,002.62 FEET TO THE TRUE POINT OF BEGINNING.

ABBREVIATIONS:

(X.XX)	EXISTING ELEVATION	POC	POINT OF CONNECTION
BLDG	BUILDING	PR	PROPOSED
BMP	BEST MANAGEMENT PRACTICES	RCP	REINFORCED CONCRETE PIPE
BW	BACK OF WALL	RET.	RETAINING
CL	CENTERLINE	RL	RIDGE LINE
EG	EXISTING GRADE	RW	RIGHT OF WAY
EP	EDGE OF PAVEMENT	SD	STORM DRAIN
EX	EXISTING	SF	SQUARE FEET
FF	FINISHED FLOOR ELEVATION	SDWK	SIDEWALK
		STBK	SETBACK
FG	FINISHED GRADE	STR	STRUCTURE
FH	FIRE HYDRANT	SS	SANITARY SEWER
FL	FLOW LINE	TC	TOP OF CURB
FS	FINISHED SURFACE	TG	TOP OF GRATE
FW	FIRE WATER	TP	TOP OF PAVEMENT
GB	GRADE BREAK	TW	TOP OF WALL
IE	INVERT ELEVATION	TYP	TYPICAL
LP	LOW POINT	WQ	WATER QUALITY
LS	LANDSCAPE		
MH	MANHOLE		
PL	PROPERTY LINE		

OWNER/DEVELOPER:

SEEFRIED INDUSTRIAL PROPERTIES
C/O SAKIOKA FARMS
2301 ROSECRANS AVENUE, SUITE 3165
EL SEGUNDO, CA 90245
WWW.SEEFFRIEDPROPERTIES.COM
CONTACT: SCOTT IRWIN
PH: 949.836.5678
SCOTTIRWIN@SEEFRIEDPROPERTIES.COM

ARCHITECT

WARE MALCOMB
4683 CHABOT DRIVE, SUITE 300,
PLEASANTON, CA 94588
PH: 949.244.9620 EXT 1285
CONTACT: PAUL NORCROSS

SURVEYOR:

KIMLEY-HORN AND ASSOCIATES, INC.
401 B STREET, SUITE 600,
SAN DIEGO, CA 92101
PH: 619.744.0144
CONTACT: DAVIE COWAN, P.E.

CIVIL ENGINEER:

KIMLEY-HORN AND ASSOCIATES, INC.
401 B STREET, SUITE 600,
SAN DIEGO, CA 92101
PH: 619.744.0144
CONTACT: DAVIE COWAN, P.E.

TOPOGRAPHY SOURCE

TENTATIVE TRACT NO. 5996
DELANE ENGINEERING
400 W VENTURA BLVD. SUITE 265
CAMARILLO, CA 93010
CONTACT: SCOTT UHLES

GEOTECHNICAL

TERRACON CONSULTANTS, INC.
1421 EDINGER AVENUE, SUITE C
TUSTIN, CA 92780
PROJECT NO. 60185017

UTILITY PROVIDERS:

CABLE: SPECTRUM
721 MULHARDT AVE.
OXNARD, CA 9303
PH: 805.4855.3888

WATER: CITY OF OXNARD
251 S. HAYES AVENUE
OXNARD, CA 93030
PH: 805.385.8154

WATER: CALLEGUAS MUNICIPAL WATER DISTRICT
2100 OLSEN ROAD
THOUSAND OAKS, CA 91360
PH: 805.526.9323

SEWER: CITY OF OXNARD
6001 S. PERKINS ROAD
OXNARD, CA 93030
PH: 805.488.3517

TELEPHONE: FRONTIER
201 FLYNN ROAD
CAMARILLO, CA 93012
PH: 805.445.9116
CONTACT: TOM PEARSO

ELECTRIC: SOUTHERN CALIFORNIA EDISON
10180 TELEGRAPH ROAD
VENTURA, CA. 93004
PH: 805.654.7437
CONTACT: ALISON PANCHE

GAS: SOUTHERN CALIFORNIA GAS CO.
9400 OAKDALE AVENUE
CHATSWORTH, CA 91313
PH: 805.701.3228
CONTACT: JACK RUSS

EARTHWORK

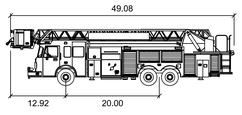
LOT SIZE (ACRES)	64.65
RAW CAD EARTHWORK	
CUT (CU. YD.)	84,606
FILL (CU. YD.)	180,028
CUT FACTOR	1
FILL FACTOR	1
NET (CU. YD.)	**(95,422.0)**

ADDITIONAL EARTHWORK

ITEM	QUANTITY	UNTI	CU. YD.
BUILDING AREA	857173	SF	18,519
BUILDING SLAB DEPTH	7.0	IN	
BUIILDING SLAB SUB-BASE	857,173	SF	10,582
Building Slab Compaction = 95%	4.0	IN	
Standard Duty Asphalt (TI=6.0, AC =3.0, AB = 6)	655,262.0	SF	18,202
Section	9.0	IN	
Heavy Duty Asphalt (TI=10, AC = 5, AB=11)	350,717.0	SF	17,319
Section	16.0	IN	
Heavy Duty Concrete (TI=10, PCC - 8"/10", AB = 4	236,138.5	SF	10,204
Section	14.0	IN	
Fire Tank (PCC = 7", AB =4")	2,500.0	SF	85
Section	11.0	IN	
Sidewalk (PCC = 4", AB =4")	137,717.3	SF	3,400
Section	8.0	IN	
Utility Spoils (FW, SS, & W)	273.1	CY	273
Storm System and Underground Detention Basins	476,495.0	CF	17,648
ADDITIONAL CUT SUM (CU. YD.)			**96233**
CUT FACTOR (SHRINKAGE)			**1.0**
NET CUT (CU. YD.)			**96,233**

ESTIMATED EARTHWORK RESULTS

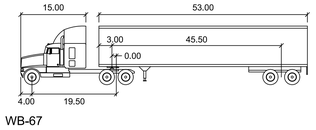
LOT SIZE (ACRES)	64.65
CUT (CU. YD.)	180,839
FILL (CU. YD.)	180,028
NET CUT (CU. YD.)	**800**



Smeal Platform RM 100ft

feet

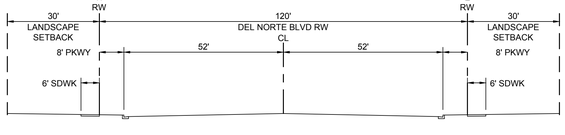
Width	: 8.33		
Track	: 7.83		
Lock to Lock Time	: 6.0		
Steering Angle	: 48.0		



WB-67

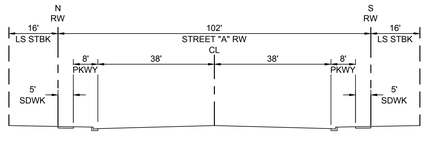
feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		



DEL NORTE BLVD

NTS



STREET "A"

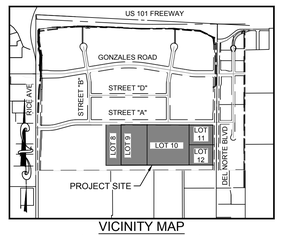
NTS

SHEET INDEX

Sheet Number	Sheet Title
1	ENGINEERING SITE PLAN
2	GRADING PLAN - 1
3	GRADING PLAN - 2
4	GRADING PLAN - 3
5	GRADING PLAN - 4
6	STORMWATER QUALITY MAP
7	UTILITY PLAN - 1
8	UTILITY PLAN - 2

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
FENCE CHAINLINK
ADA PATH OF TRAVEL
FIRE LANE
BUILDING OUTLINE
RETAINING WALL
STORM DRAIN MANHOLE
SEWER MANHOLE
STORM DRAIN CURB INLET
STORM DRAIN CLEAN OUT
GRATE INLET
STORM WATER QUALITY BMP
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION



VICINITY MAP

THOMAS GUIDE: MAP PG 523-BS-D3

NOT TO SCALE

No.	REVISIONS	DATE	BY

Kimley»Horn

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401 B STREET, SUITE 600, SAN DIEGO, CA 92101
PHONE: 619-744-0144
WWW.KIMLEY-HORN.COM

PRELIMINARY
FOR REVIEW ONLY
Prepared for Concept Plan submittal
Not for construction purposes or permit
Kimley»Horn
Engineer EUGENE D. COWAN III.
P.E. No. 86803 Date 3/5/2020

K/HA PROJECT 195170003	
DATE	3/5/2020
SCALE	AS SHOWN
DESIGNED BY	KS&DC
DRAWN BY	KS
CHECKED BY	DC

ENGINEERING SITE PLAN

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD CA

SHEET NUMBER
1 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Kha Layout:ENGINEERING SITE PLAN March 05, 2020 02:52:49pm K:\SND_LDEV\195170003 - Project Bruin\Design\PlanSheets - DDR Civil\OVERALL SITE PLAN.dwg
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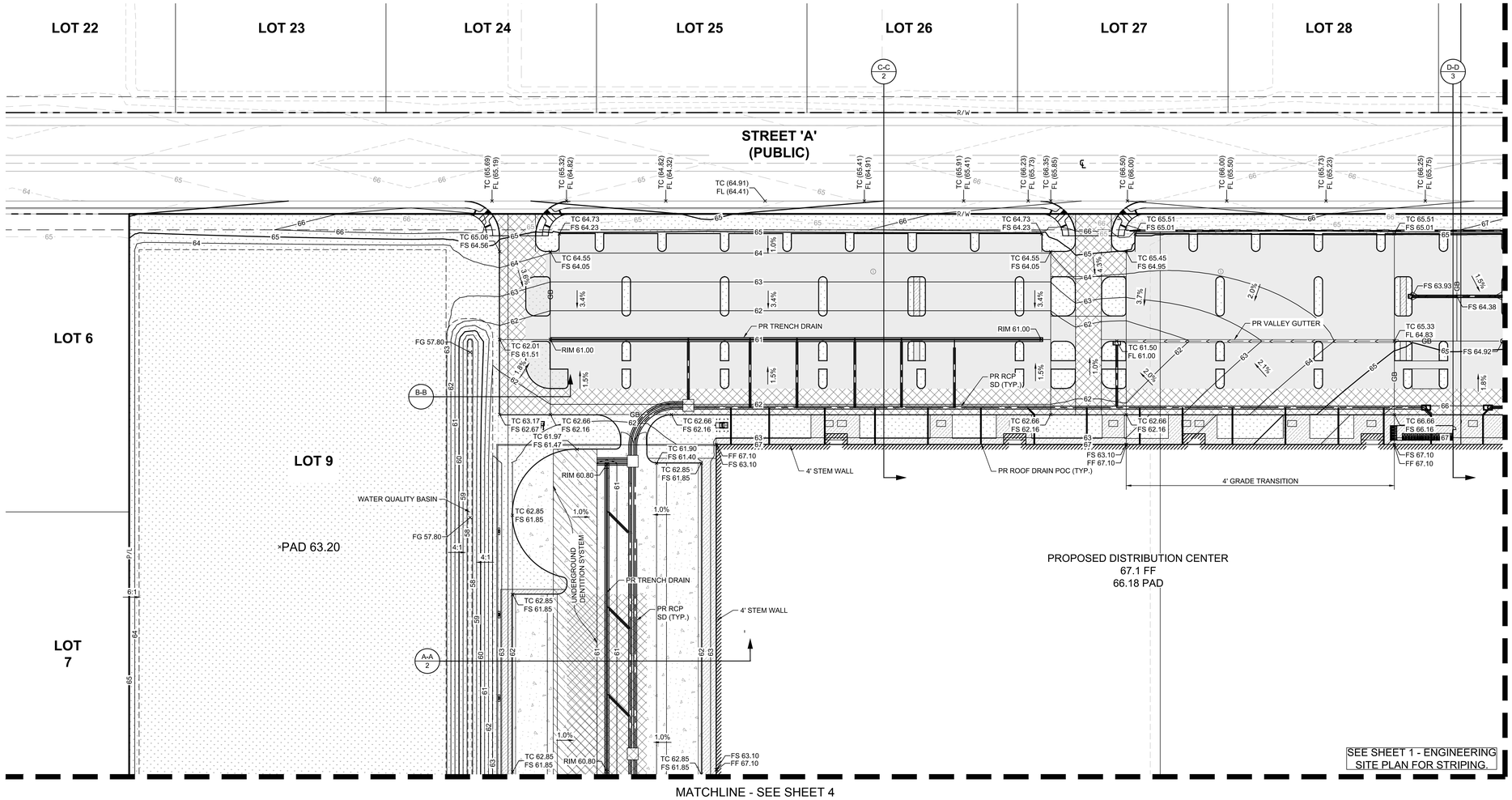


LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
PROPOSED CONTOUR — 100
EXISTING CONTOUR PER TTM 5996 — 100
GRADING LIMITS
GRADE BREAK LINE — GB
RIDGE LINE — R
RETAINING WALL
SLOPE — X.XX%
SPOT ELEVATION — XX 100.00
ASPHALT PAVEMENT (3" PCC / 6" AB)
HEAVY DUTY ASPHALT PAVEMENT (5" AC / 11" AB)
CONCRETE PAVEMENT (10" PCC / 4" AB)
CONCRETE SIDEWALK (4" PCC / 4" AB)
LANDSCAPE (SEE LANDSCAPE PLANS)
FENCE CHAINLINK — X
STORM LINE — SD
SEWER LINE — S
WATER LINE — W
FIRE WATER — FW
STORM DRAIN MANHOLE
SEWER MANHOLE
STORM DRAIN CURB INLET
STORM DRAIN CLEAN OUT
GRATE INLET
STORM WATER QUALITY BMP
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION

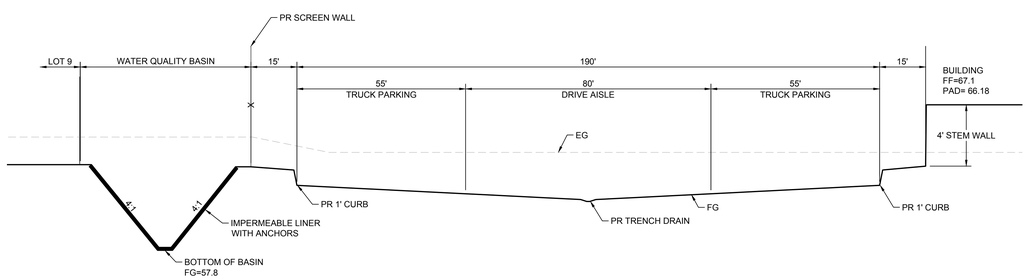
MATCHLINE - SEE SHEET 3

NOTES:

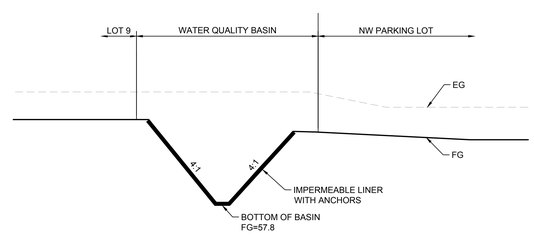
1. CONTRACTOR TO VERIFY ALL EXISTING TOPOGRAPHY AND STRUCTURES ON THE SITE AND IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING WORK.
2. ALL ELEVATIONS SHOWN DEPICT FINISHED GRADE OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED. GENERAL CONTRACTOR TO COORDINATE WITH EXCAVATION, LANDSCAPE AND PAVING SUBCONTRACTORS REGARDING TOPSOIL THICKNESS FOR LANDSCAPE AREAS AND PAVEMENT SECTION THICKNESS FOR PAVED AREAS TO PROPERLY ENSURE ADEQUATE CUT TO ESTABLISH SUBGRADE ELEVATIONS.
3. NO EARTHEN SLOPE SHALL BE GREATER THAN 2:1, UNLESS OTHERWISE NOTED.
4. MAXIMUM SLOPE IN ACCESSIBLE PARKING SPACES AND LOADING ZONES SHALL NOT EXCEED 2.0% IN ALL DIRECTIONS.
5. MAXIMUM RUNNING SLOPE SHALL NOT EXCEED 5% AND CROSS SLOPE SHALL NOT EXCEED 2% ON ALL SIDEWALKS AND ACCESSIBLE ROUTES.
6. MATCH EXISTING ELEVATIONS AT THE PROPERTY LIMITS.
7. ALL STORM DRAIN UTILITIES ARE PRELIMINARY AND SUBJECT TO CHANGE UPON FINAL DESIGN.
6. SEE ELECTRIC FOR SITE LIGHTING

ABBREVIATIONS:

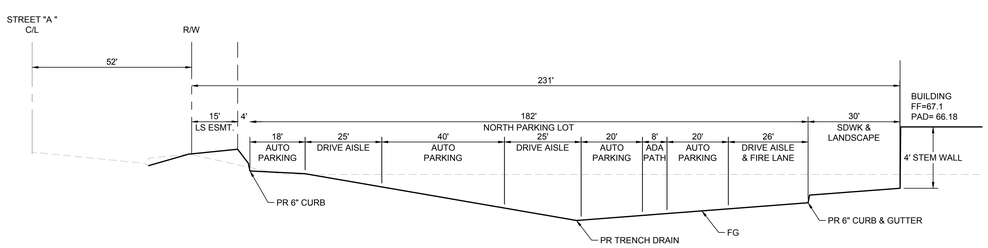
(X.XX)	EXISTING ELEVATION	POC	POINT OF CONNECTION
BLDG	BUILDING	PR	PROPOSED
BMP	BEST MANAGEMENT PRACTICES	RCP	REINFORCED CONCRETE PIPE
BW	BACK OF WALL	RET.	RETAINING
CL	CENTERLINE	RL	RIDGE LINE
EG	EXISTING GRADE	RW	RIGHT OF WAY
EP	EDGE OF PAVEMENT	SD	STORM DRAIN
EX	EXISTING	SF	SQUARE FEET
FF	FINISHED FLOOR ELEVATION	SDWK	SIDEWALK
		STBK	SETBACK
FG	FINISHED GRADE	STR	STRUCTURE
FH	FIRE HYDRANT	SS	SANITARY SEWER
FL	FLOW LINE	TC	TOP OF CURB
FS	FINISHED SURFACE	TG	TOP OF GRATE
FW	FIRE WATER	TP	TOP OF PAVEMENT
GB	GRADE BREAK	TW	TOP OF WALL
IE	INVERT ELEVATION	TYP	TYPICAL
LP	LOW POINT	WQ	WATER QUALITY
LS	LANDSCAPE		
MH	MANHOLE		
PL	PROPERTY LINE		



SECTION A-A
HORZ: 1"=20'
VERT: 1"=4'



SECTION B-B
HORZ: 1"=20'
VERT: 1"=4'



SECTION C-C
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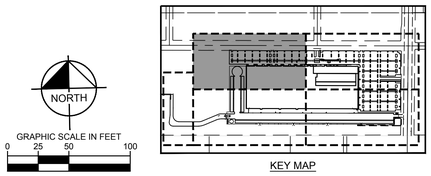
VERT: 1"=4'



KEY MAP

NORTH

GRAPHIC SCALE IN FEET
0 25 50 100

No.	REVISIONS	DATE	BY

Kimley»Horn
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401 B STREET, SUITE 600, SAN DIEGO, CA 92101
PHONE: 619-234-9411
WWW.KIMLEY-HORN.COM

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Kimley»Horn
Engineer EUGENE D. COWAN III
P.E. No. 86803 Date 3/5/2020

KHA PROJECT 195170003
DATE 3/5/2020
SCALE AS SHOWN
DESIGNED BY KS&DC
DRAWN BY KS
CHECKED BY DC

GRADING PLAN - 1

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD, CA

SHEET NUMBER
2 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Kha_Layout:GRADING PLAN - 1 March 05, 2020 02:53:02pm K:\SND_LDEV\195170003 - Project Bruin\Design\Plan\Sheets - EDR Civil\1-2 GRADING PLAN.dwg
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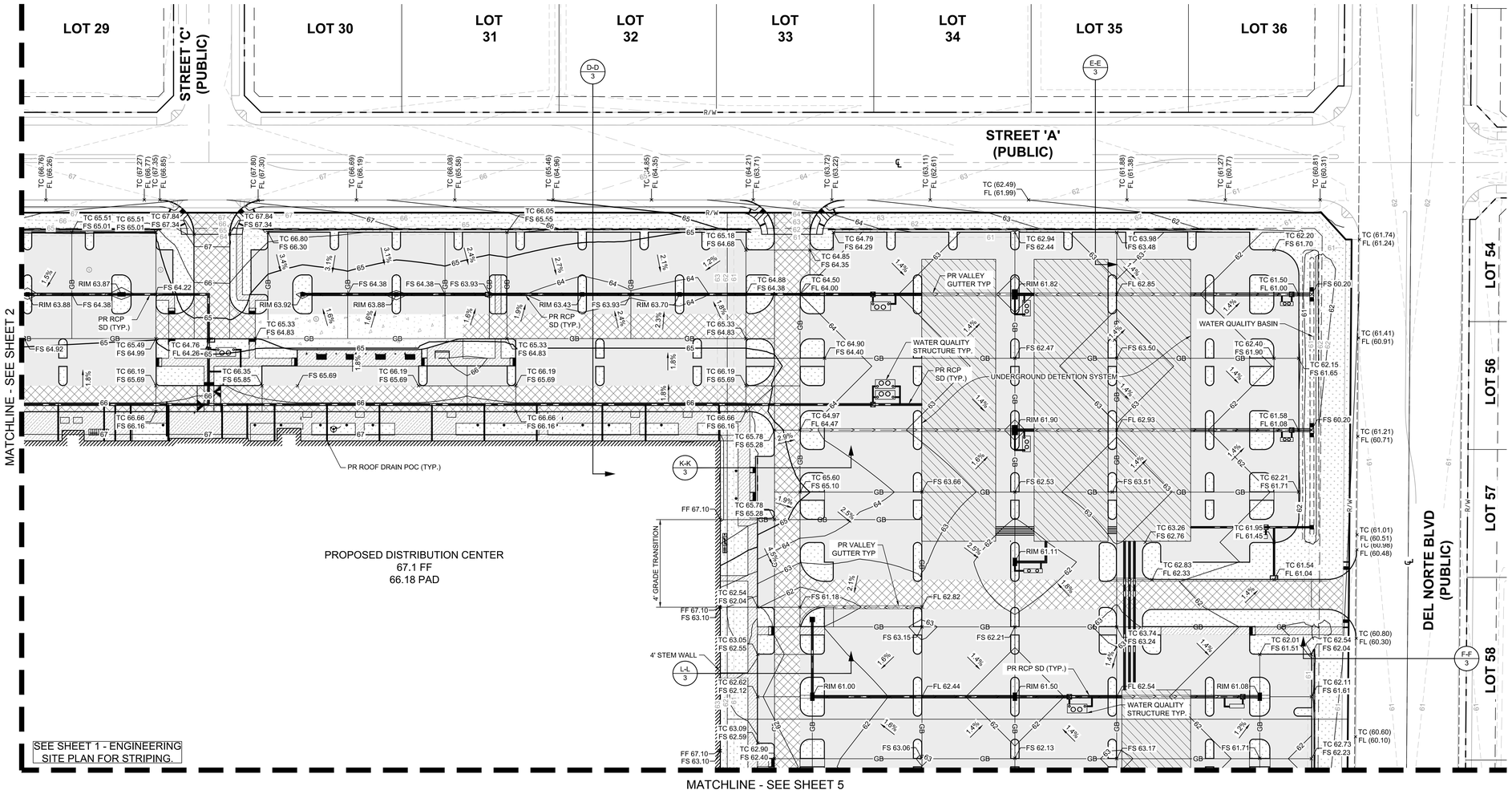
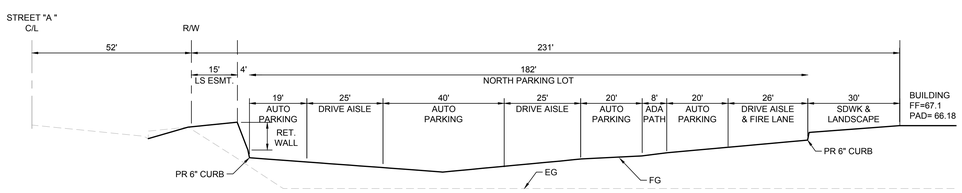
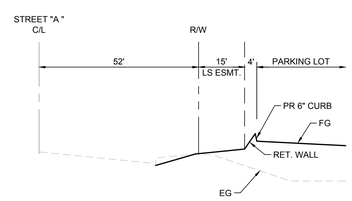




SECTION D-D
HORZ: 1"=20'
VERT: 1"=4'



SECTION E-E
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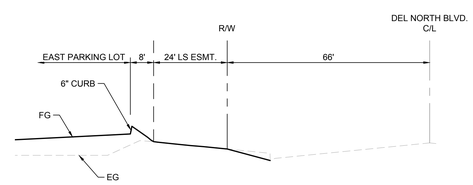
VERT: 1"=4'



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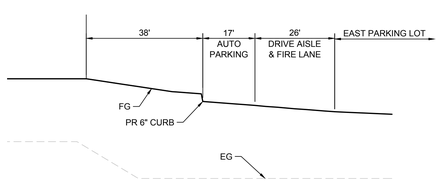

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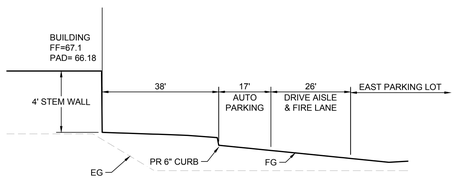
HORZ: 1"=20'
VERT: 1"=4'



SECTION L-L
HORZ: 1"=20'
VERT: 1"=4'

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
PROPOSED CONTOUR — 100
EXISTING CONTOUR PER TTM 5996 — 100
GRADING LIMITS
GRADE BREAK LINE — GB
RIDGE LINE — R
RETAINING WALL
SLOPE — X.XX%
SPOT ELEVATION — XX 100.00
ASPHALT PAVEMENT (3" PCC / 6" AB)
HEAVY DUTY ASPHALT PAVEMENT (5" AC / 11" AB)
CONCRETE PAVEMENT (10" PCC / 4" AB)
CONCRETE SIDEWALK (4" PCC / 4" AB)
LANDSCAPE (SEE LANDSCAPE PLANS)
FENCE CHAINLINK — X
STORM LINE — SD
SEWER LINE — S
WATER LINE — W
FIRE WATER — FW
STORM DRAIN MANHOLE
SEWER MANHOLE
STORM DRAIN CURB INLET
STORM DRAIN CLEAN OUT
GRATE INLET
STORM WATER QUALITY BMP
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION

NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING TOPOGRAPHY AND STRUCTURES ON THE SITE AND IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING WORK.
2. ALL ELEVATIONS SHOWN DEPICT FINISHED GRADE OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED. GENERAL CONTRACTOR TO COORDINATE WITH EXCAVATION, LANDSCAPE AND PAVING SUBCONTRACTORS REGARDING TOPSOIL THICKNESS FOR LANDSCAPE AREAS AND PAVEMENT SECTION THICKNESS FOR PAVED AREAS TO PROPERLY ENSURE ADEQUATE CUT TO ESTABLISH SUBGRADE ELEVATIONS.
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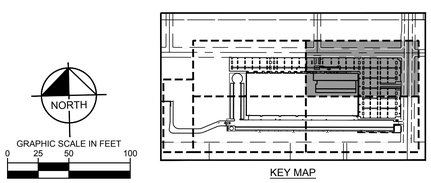
5. MAXIMUM RUNNING SLOPE SHALL NOT EXCEED 5% AND CROSS SLOPE SHALL NOT EXCEED 2% ON ALL SIDEWALKS AND ACCESSIBLE ROUTES.
6. MATCH EXISTING ELEVATIONS AT THE PROPERTY LIMITS.
7. ALL STORM DRAIN UTILITIES ARE PRELIMINARY AND SUBJECT TO CHANGE UPON FINAL DESIGN.
6. SEE ELECTRIC FOR SITE LIGHTING

ABBREVIATIONS:

(X.XX)	EXISTING ELEVATION	POC	POINT OF CONNECTION
BLDG	BUILDING	PR	PROPOSED
BMP	BEST MANAGEMENT PRACTICES	RCP	REINFORCED CONCRETE PIPE
BW	BACK OF WALL	RET.	RETAINING
CL	CENTERLINE	RL	RIDGE LINE
EG	EXISTING GRADE	RW	RIGHT OF WAY
EP	EDGE OF PAVEMENT	SD	STORM DRAIN
EX	EXISTING	SF	SQUARE FEET
FF	FINISHED FLOOR ELEVATION	SDWK	SIDEWALK
FG	FINISHED GRADE	STBK	SETBACK
FH	FIRE HYDRANT	STR	STRUCTURE
FL	FLOW LINE	SS	SANITARY SEWER
FS	FINISHED SURFACE	TC	TOP OF CURB
FW	FIRE WATER	TG	TOP OF GRATE
GB	GRADE BREAK	TP	TOP OF PAVEMENT
IE	INVERT ELEVATION	TW	TOP OF WALL
LP	LOW POINT	TYP	TYPICAL
LS	LANDSCAPE	WQ	WATER QUALITY
MH	MANHOLE		
PL	PROPERTY LINE		



KEY MAP

No.	REVISIONS	DATE	BY

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Kimley»Horn
Engineer EUGENE D. COWAN III
P.E. No. 86803 Date 3/5/2020

KHA PROJECT	195170003
DATE	3/5/2020
SCALE	AS SHOWN
DESIGNED BY	KS&DC
DRAWN BY	KS
CHECKED BY	DC

GRADING PLAN - 2

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD, CA

SHEET NUMBER
3 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Kha_Layout:GRADING PLAN - 2 March 05, 2020 02:53:14pm K:\SND_LDEV\195170003 - Project Bruin\Design\Plan\Sheets - EDR Civil\1-2 GRADING PLAN.dwg
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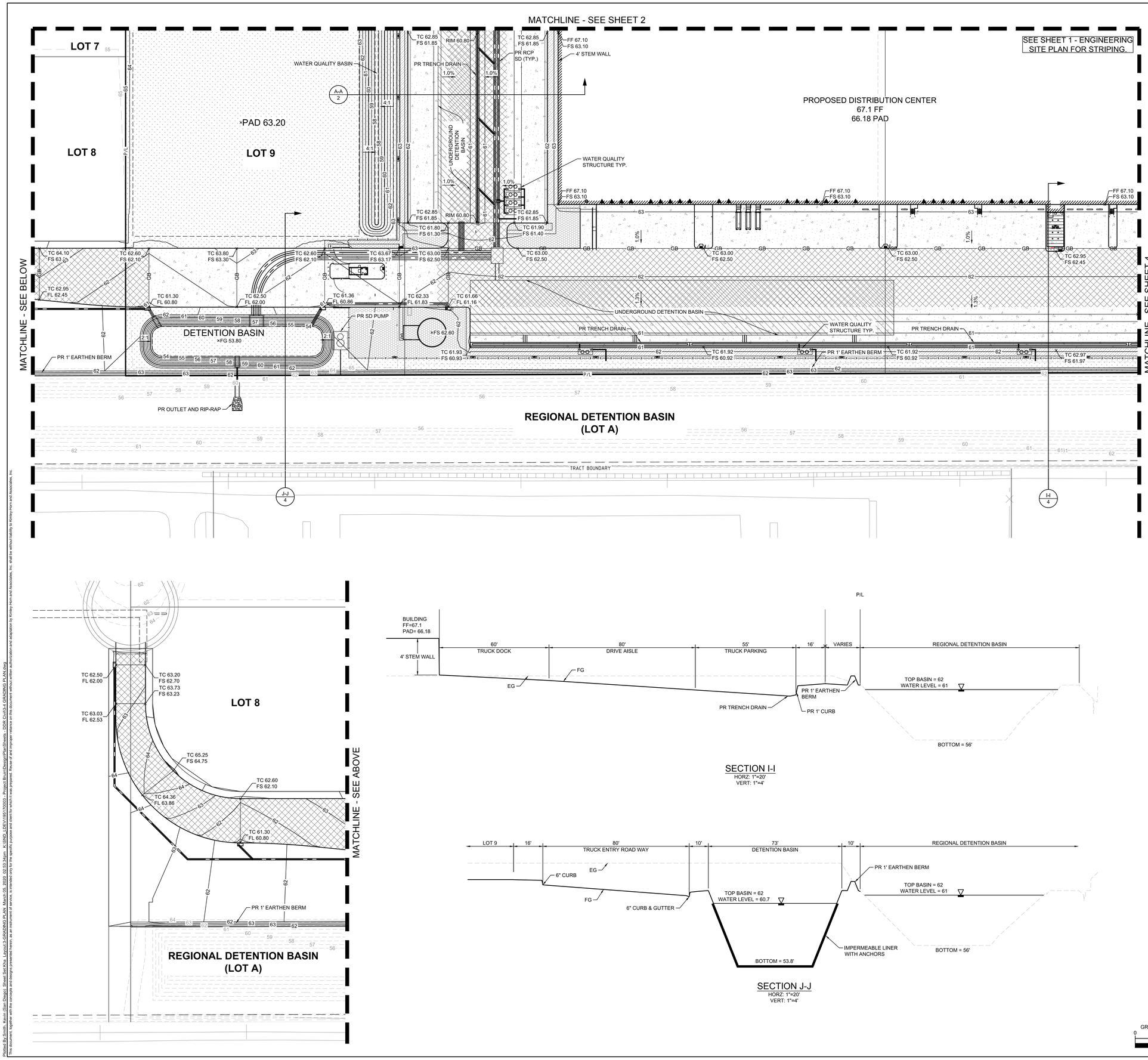

SECTION I-I
HORZ: 1"=20'
VERT: 1"=4'

SECTION J-J
HORZ: 1"=20'
VERT: 1"=4'

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
PROPOSED CONTOUR — 100
EXISTING CONTOUR PER TTM 5996 — 100
GRADING LIMITS
GRADE BREAK LINE — GB
RIDGE LINE — R
RETAINING WALL
SLOPE — X.XX%
SPOT ELEVATION — XX 100.00
ASPHALT PAVEMENT (3" PCC / 6" AB)
HEAVY DUTY ASPHALT PAVEMENT (5" AC / 11" AB)
CONCRETE PAVEMENT (10" PCC / 4" AB)
CONCRETE SIDEWALK (4" PCC / 4" AB)
LANDSCAPE (SEE LANDSCAPE PLANS)
FENCE CHAINLINK — X
STORM LINE — SD
SEWER LINE — S
WATER LINE — W
FIRE WATER — FW
STORM DRAIN MANHOLE
SEWER MANHOLE
STORM DRAIN CURB INLET
STORM DRAIN CLEAN OUT
GRATE INLET
STORM WATER QUALITY BMP
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION

NOTES:

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6. SEE SITE LIGHTING PLAN FOR LIGHT POLE LOCATIONS.

ABBREVIATIONS:

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BMP	BEST MANAGEMENT PRACTICES	RCP	REINFORCED CONCRETE PIPE
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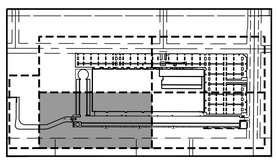
EX	EXISTING	SF	SQUARE FEET
FF	FINISHED FLOOR ELEVATION	SDWK	SIDEWALK
		STBK	SETBACK
FG	FINISHED GRADE	STR	STRUCTURE
FH	FIRE HYDRANT	SS	SANITARY SEWER
FL	FLOW LINE	TC	TOP OF CURB
FS	FINISHED SURFACE	TG	TOP OF GRATE
FW	FIRE WATER	TP	TOP OF PAVEMENT
GB	GRADE BREAK	TW	TOP OF WALL
IE	INVERT ELEVATION	TYP	TYPICAL
LP	LOW POINT	WQ	WATER QUALITY
LS	LANDSCAPE		
MH	MANHOLE		
PL	PROPERTY LINE		

NORTH
GRAPHIC SCALE IN FEET
0 25 50 100



KEY MAP

No.	REVISIONS	DATE	BY

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Kimley»Horn
Engineer EUGENE D. COWAN III
P.E. No. 86803 Date 3/5/2020

KHA PROJECT 195170003
DATE 3/5/2020
SCALE AS SHOWN
DESIGNED BY KS&DC
DRAWN BY KS
CHECKED BY DC

GRADING PLAN - 3

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.

CITY OF OXNARD CA

SHEET NUMBER
4 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Kha Layout:3-GRADING PLAN March 05, 2020 02:53:34pm K:\SND_LDEV\195170003 - Project Bruin\Design\PlanSheets - EDR\Civil\3-4 GRADING PLAN.dwg
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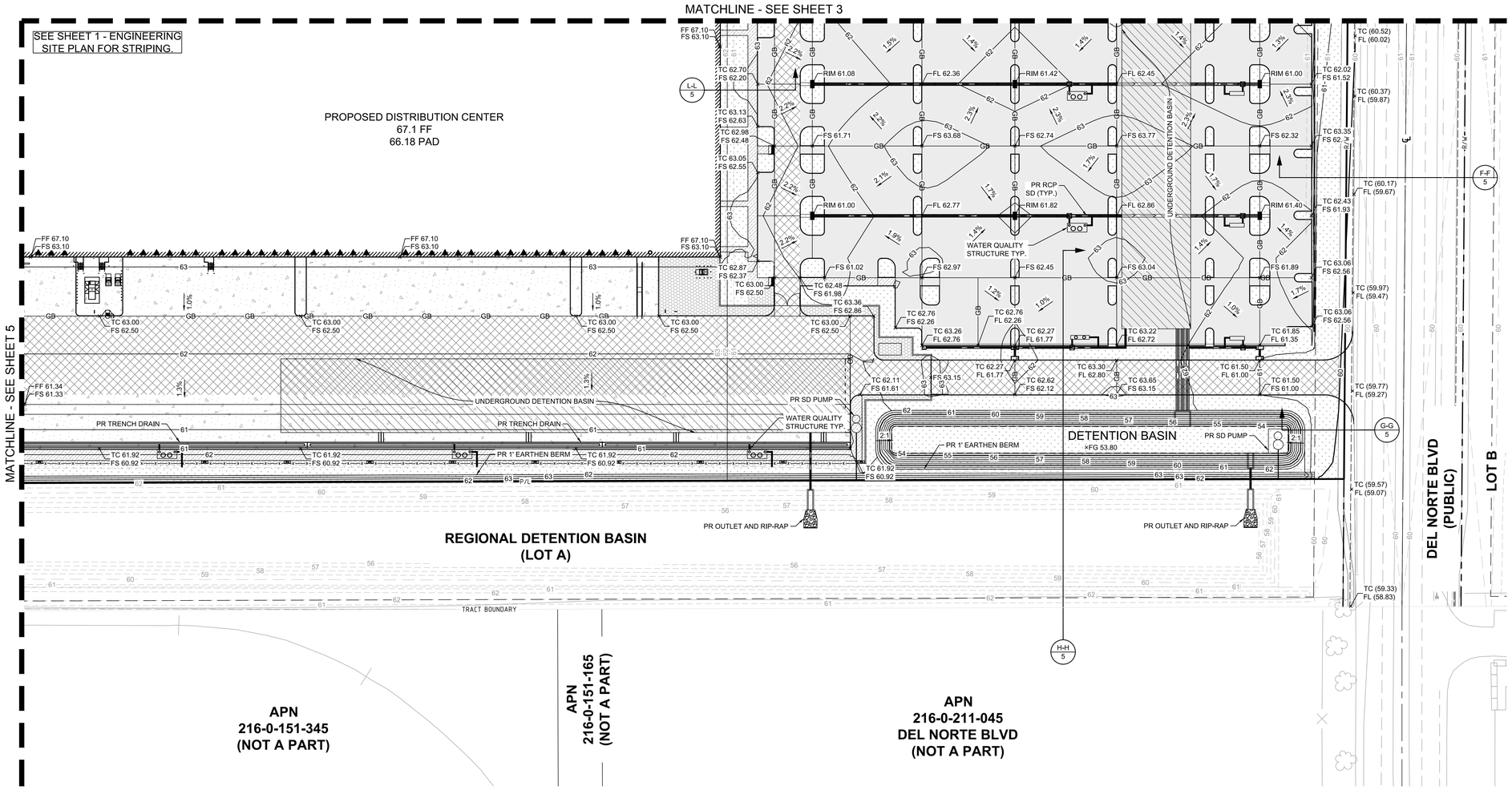
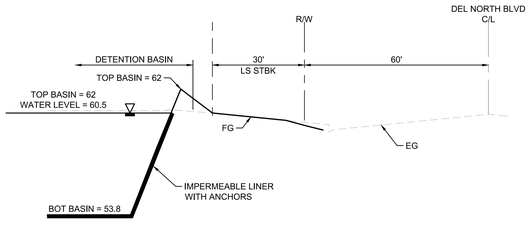
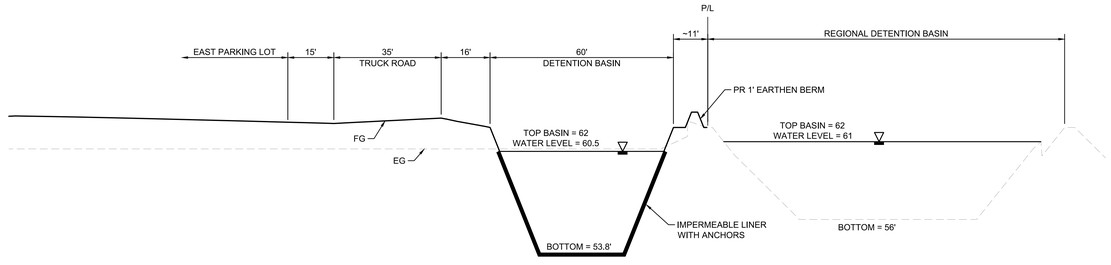




SECTION G-G
HORZ: 1"=20'
VERT: 1"=4'



SECTION H-H
HORZ: 1"=20'
VERT: 1"=4'

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
PROPOSED CONTOUR — 100
EXISTING CONTOUR PER TTM 5996 — 100
GRADING LIMITS
GRADE BREAK LINE — GB
RIDGE LINE — R
RETAINING WALL
SLOPE — X.XX%
SPOT ELEVATION — XX 100.00
ASPHALT PAVEMENT (3" PCC / 6" AB)
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CONCRETE PAVEMENT (10" PCC / 4" AB)
CONCRETE SIDEWALK (4" PCC / 4" AB)
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FENCE CHAINLINK — X
STORM LINE — SD
SEWER LINE — S
WATER LINE — W
FIRE WATER — FW
STORM DRAIN MANHOLE
SEWER MANHOLE
STORM DRAIN CURB INLET
STORM DRAIN CLEAN OUT
GRATE INLET
STORM WATER QUALITY BMP
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION

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ABBREVIATIONS:

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BLDG	BUILDING	PR	PROPOSED
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CL	CENTERLINE	RL	RIDGE LINE
EG	EXISTING GRADE	RW	RIGHT OF WAY
EP	EDGE OF PAVEMENT	SD	STORM DRAIN
EX	EXISTING	SF	SQUARE FEET
FF	FINISHED FLOOR ELEVATION	SDWK	SIDEWALK
		STBK	SETBACK
FG	FINISHED GRADE	STR	STRUCTURE
FH	FIRE HYDRANT	SS	SANITARY SEWER
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FW	FIRE WATER	TP	TOP OF PAVEMENT
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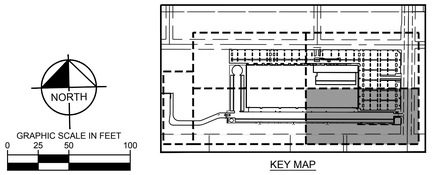
IE	INVERT ELEVATION	TYP	TYPICAL
LP	LOW POINT	WQ	WATER QUALITY
LS	LANDSCAPE		
MH	MANHOLE		
PL	PROPERTY LINE		



KEY MAP

NORTH

GRAPHIC SCALE IN FEET
0 25 50 100

No.	REVISIONS	DATE	BY

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P.E. No. 86803 Date 3/5/2020

KHA PROJECT 195170003
DATE 3/5/2020
SCALE AS SHOWN
DESIGNED BY KS&DC
DRAWN BY KS
CHECKED BY DC

GRADING PLAN - 4

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD CA

SHEET NUMBER
5 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Kha Layout:L4-GRADING PLAN March 05, 2020 02:53:46pm K:\SND_LDEV\195170003 - Project Bruin\Design\PlanSheets - DDR Civil\3-4 GRADING PLAN.dwg
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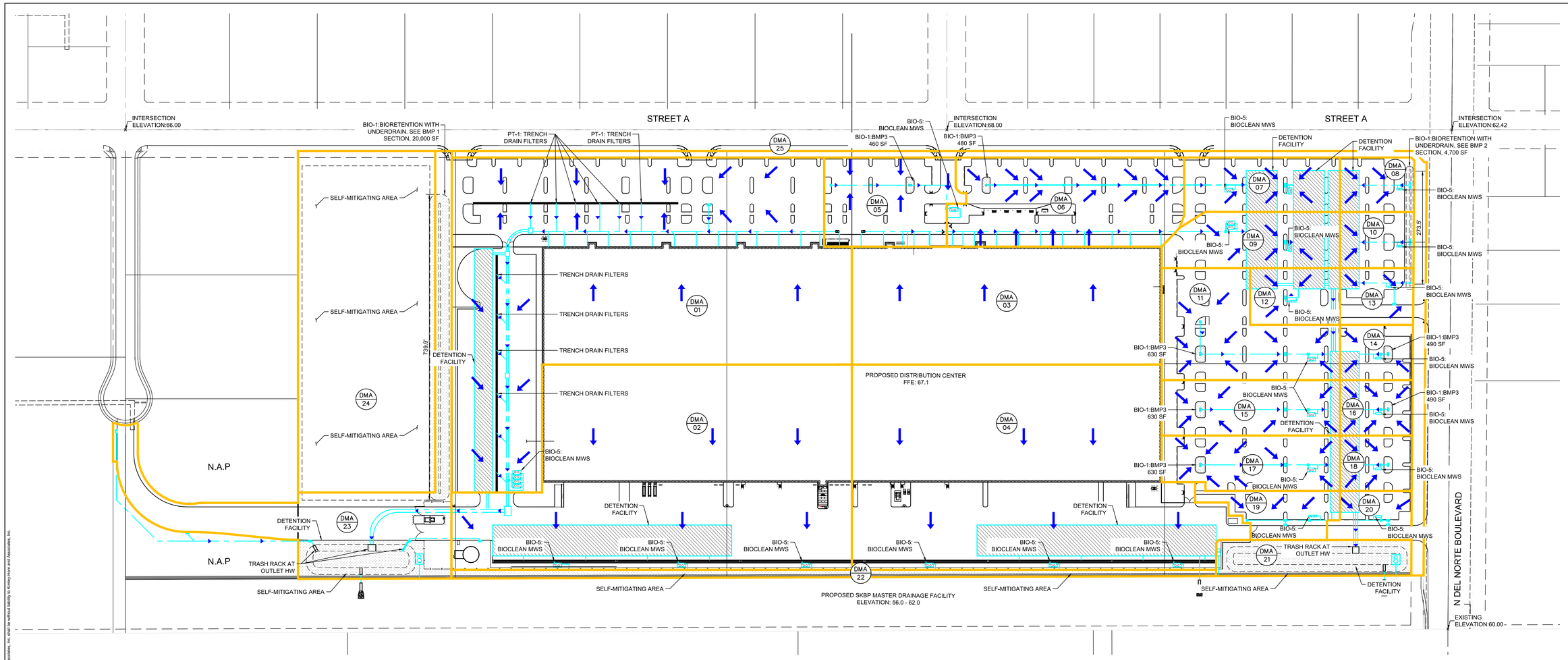
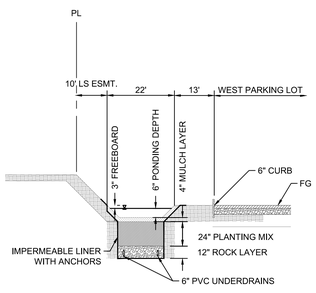
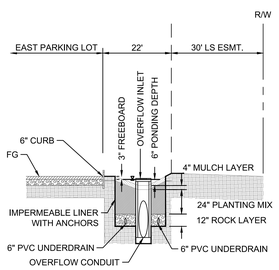
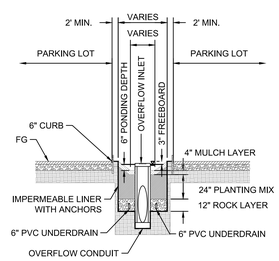




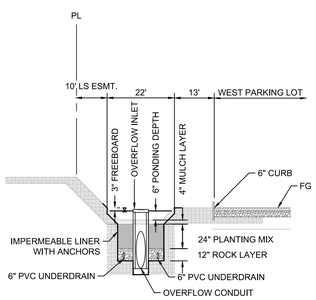
BIO-1: BMP 1
HORZ: 1"=20'
VERT: 1"=4'

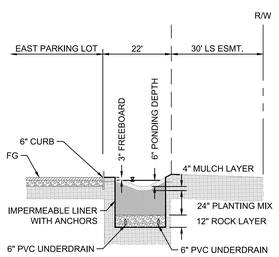


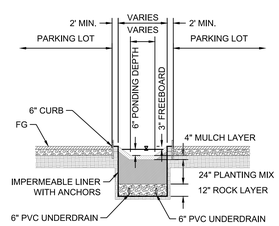
BIO-1: BMP 2
HORZ: 1"=20'
VERT: 1"=4'



BIO-1: TYP. PARKING LOT BMP 3
HORZ: 1"=20'
VERT: 1"=4'







SQDF TREATMENT FLOW SUMMARY TABLE

DMA ID	AREA (ac)	IMPERVIOUS AREA (ac)	C, WEIGHTED RUNOFF COEFFICIENT	SQDF (cfs)
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2	9.49	9.49	0.95	3.16
3	4.91	4.91	0.95	1.63
4	9.26	9.23	0.95	3.07
5	1.55	1.45	0.89	0.48
6	2.73	2.47	0.86	0.83
7	1.16	1.05	0.86	0.35
8	0.54	0.39	0.71	0.13
9	1.26	1.14	0.86	0.38
10	0.56	0.44	0.75	0.15
11	2.00	1.68	0.81	0.57
12	0.69	0.65	0.89	0.22
13	0.56	0.34	0.60	0.12
14	0.54	0.45	0.81	0.15
15	1.33	1.16	0.84	0.39
16	0.54	0.47	0.84	0.16
17	1.28	1.14	0.85	0.38
18	0.54	0.44	0.78	0.15
19	0.70	0.56	0.77	0.19
20	0.51	0.39	0.74	0.13
21	0.94	0.00	0.05	SELF MITIGATING
22	0.77	0.00	0.05	SELF MITIGATING
23	3.45	1.87	0.54	0.65
24	6.31	0.00	0.05	SELF MITIGATING
25	1.55	0.00	0.05	SELF MITIGATING

BIO-5: BIOCLEAN MWS
NTS

LEGEND

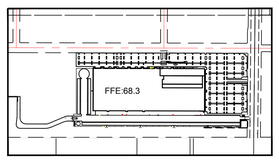
- DMA ID (XX / XX) — DMA ID NUMBER
- DMA BOUNDARY
- FLOW DIRECTION
- PROPERTY LINE
- PROPOSED STORM DRAIN LINE
- FLOWLINE

NOTES

1. PROJECT PROPOSES TO INSTALL CURB INLET INSERTS, TRENCH DRAIN FILTERS, AND TRASH RACKS AT DETENTION BASIN OUTLETS AS MEANS OF PRETREATMENT
2. DMAS COMPRISED OF 100% PERVIOUS AREA ARE CONSIDERING SELF MITIGATING AND DO NOT REQUIRE FURTHER WATER QUALITY MEASURES.

NORTH

GRAPHIC SCALE IN FEET
0 50 100 200



KEY MAP

No.	REVISIONS	DATE	BY

Kimley»Horn
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WWW.KIMLEY-HORN.COM

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Not for construction purposes or permits.
Kimley»Horn
Engineer EUGENE D. COWAN III
P.E. No. 86803 Date 3/5/2020

KHA PROJECT	195170003
DATE	3/5/2020
SCALE	AS SHOWN
DESIGNED BY	KS&DC
DRAWN BY	KS
CHECKED BY	DC

STORM WATER QUALITY MAP

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.

CITY OF OXNARD CA

SHEET NUMBER
7 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Khq Layout:STORM WATER QUALITY MAP March 05, 2020 02:54:56pm \\acdfp01\projects\SND_LDEV\195170003 - Project Bruin\Stormwater\Exhibit\STORM WATER QUALITY MAP.dwg
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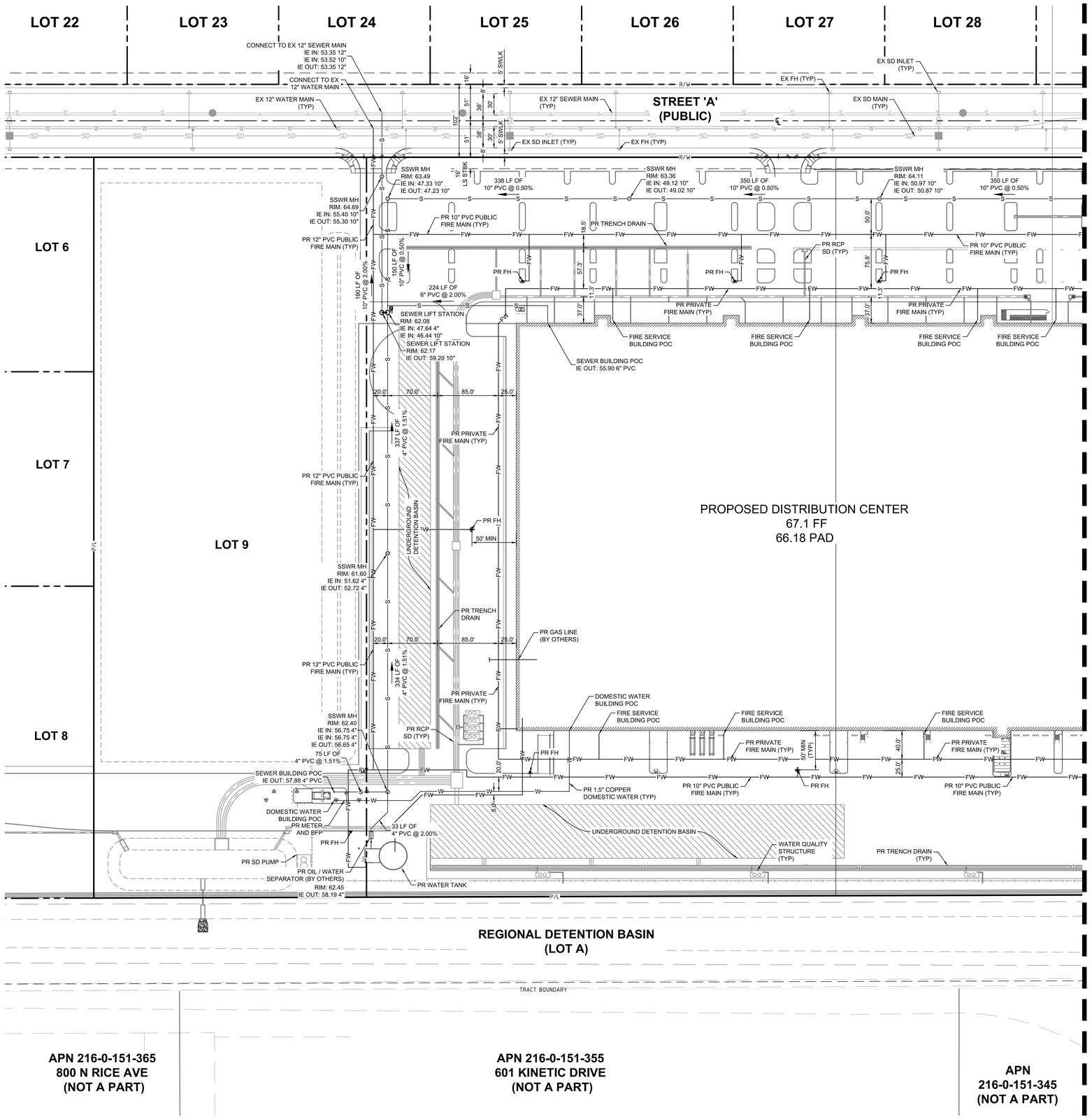

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
GAS LINE
STORM LINE
SEWER LINE
WATER LINE
FIRE WATER LINE
STORM DRAIN CLEAN OUT
STORM DRAIN CURB INLET
GRATE INLET
STORM WATER QUALITY BMP
SEWER MANHOLE
SEWER CLEANOUT
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION
METER
POINT OF CONNECTION

NOTES:

1. ALL UTILITY PIPE LENGTHS ON PLANS ARE SHOWN FOR REFERENCE AND COORDINATION. PIPE LENGTHS ARE NOT SHOWN FOR BIDDING OR ESTIMATING PURPOSES.
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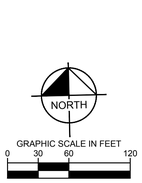
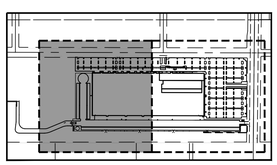
4. ALL FIRE, WATER, AND SANITARY SEWER SIZES ARE PRELIMINARY AND SUBJECT TO CHANGE UPON FINAL DESIGN.
5. PROPOSED STORM DRAIN IS SHOWN FOR REFERENCE. REFER TO GRADING PLAN SHEETS FOR FURTHER INFORMATION.

ABBREVIATIONS:

(X.XX)	EXISTING ELEVATION	POC	POINT OF CONNECTION
BLDG	BUILDING	PR	PROPOSED
BMP	BEST MANAGEMENT PRACTICES	RCP	REINFORCED CONCRETE PIPE
BW	BACK OF WALL	RET.	RETAINING
CL	CENTERLINE	RL	RIDGE LINE
EG	EXISTING GRADE	RW	RIGHT OF WAY
EP	EDGE OF PAVEMENT	SD	STORM DRAIN
EX	EXISTING	SF	SQUARE FEET
FF	FINISHED FLOOR ELEVATION	SDWK	SIDEWALK
		STBK	SETBACK
FG	FINISHED GRADE	STR	STRUCTURE
FH	FIRE HYDRANT	SS	SANITARY SEWER
FL	FLOW LINE	TC	TOP OF CURB
FS	FINISHED SURFACE	TG	TOP OF GRATE
FW	FIRE WATER	TP	TOP OF PAVEMENT
GB	GRADE BREAK	TW	TOP OF WALL
IE	INVERT ELEVATION	TYP	TYPICAL
LP	LOW POINT	WQ	WATER QUALITY
LS	LANDSCAPE		
MH	MANHOLE		
PL	PROPERTY LINE		





KEY MAP

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P.E. No. 86803 Date 3/5/2020

KHA PROJECT 189170003
DATE 3/5/2020
SCALE AS SHOWN
DESIGNED BY KSADC
DRAWN BY KS
CHECKED BY DC

UTILITY PLAN - 1

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD, CA

SHEET NUMBER
7 OF 8

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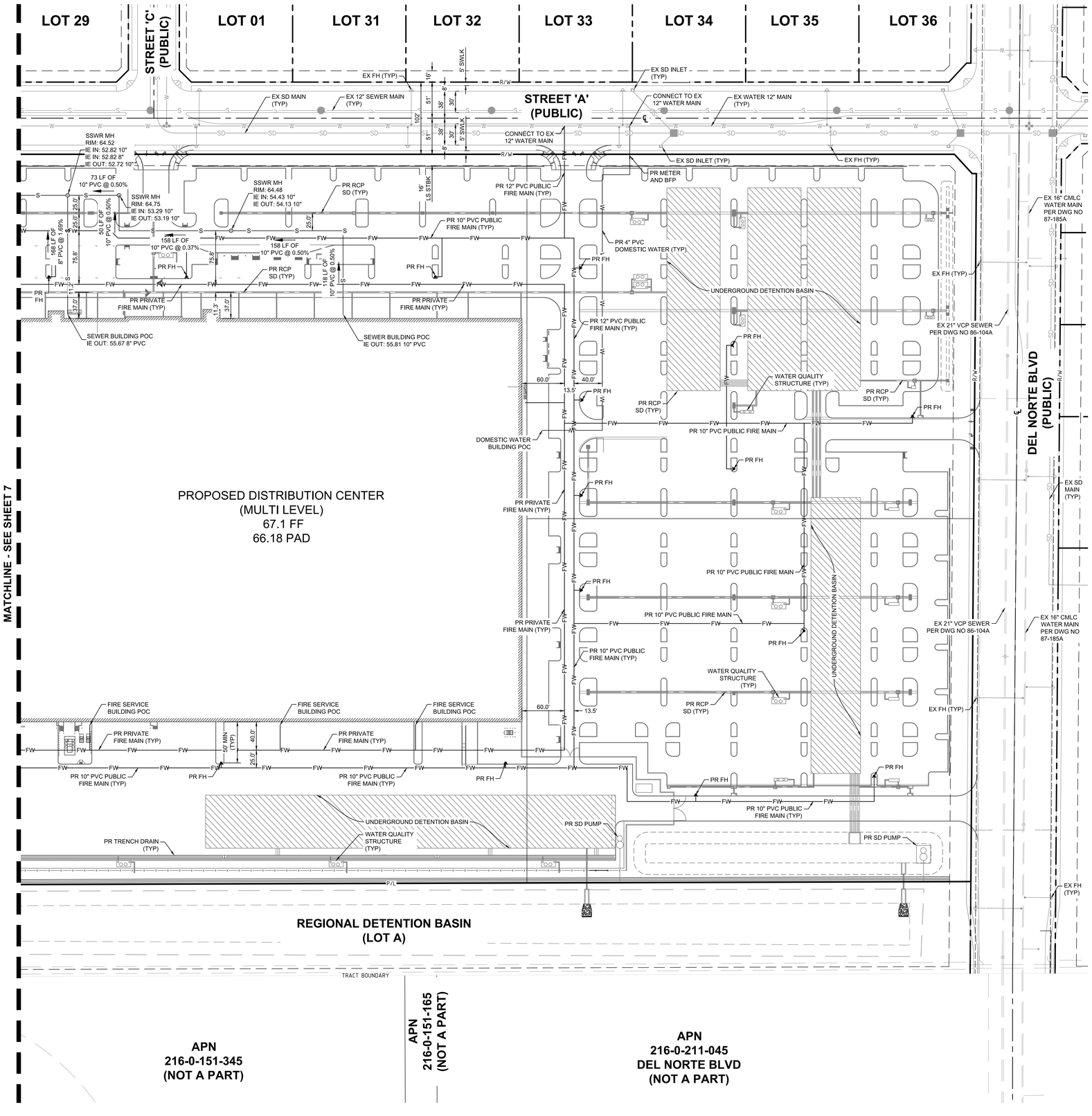

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
GAS LINE
STORM LINE
SEWER LINE
WATER LINE
FIRE WATER LINE
STORM DRAIN CLEAN OUT
STORM DRAIN CURB INLET
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LP	LOW POINT	WQ	WATER QUALITY
LS	LANDSCAPE		
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DATE 3/5/2020
SCALE AS SHOWN
DESIGNED BY KS&DC
DRAWN BY KS
CHECKED BY DC

UTILITY PLAN - 2

PROJECT BRUIN
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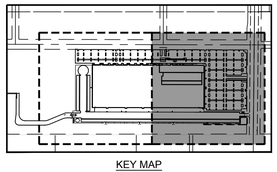
CITY OF OXNARD, CA

NORTH
GRAPHIC SCALE IN FEET
0 30 60 120



KEY MAP

SHEET NUMBER
8 OF 8

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APPENDIX M

SAKIOKA FARMS BUSINESS PARK SPECIFIC PLAN

SAKIOKA FARMS
BUSINESS PARK

OXNARD, CALIFORNIA

SPECIFIC PLAN
JUNE 2012

LANGDON WILSON ARCHITECTURE PLANNING INTERIORS

SAKIOKA FARMS
BUSINESS PARK SPECIFIC PLAN
OXNARD, CALIFORNIA

RESOLUTION NO. 14,235

ADOPTED: June 12, 2012

EFFECTIVE DATE: July 14, 2012

SAKIOKA FARMS
BUSINESS PARK SPECIFIC PLAN
OXNARD, CALIFORNIA

Prepared for:
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Costa Mesa, California 92626-4611
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Consultants:
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LSA - Traffic Engineers
SLA Studio Land - Landscape Architect
TBD - Signage Consultant

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The Sakioka Farms Specific Plan is intended to encourage and guide future projects within this important gateway to the City of Oxnard. The Specific Plan presents a Master Plan for orderly development with new guidelines and regulations, intended to implement the objectives of the Specific Plan. The following is a summary of the major objectives of the Sakioka Farms Specific Plan.

SUMMARY OF OBJECTIVES

Purpose and Intent

- To establish the planning concept, design theme, development regulations and administrative procedures necessary to achieve an orderly and compatible development of the project area.
- To implement the goals, policies and objectives of the Oxnard 2030 General Plan.
- To provide the framework and guidelines for a well planned phased business park development and achieve a high level of quality design.

Development Concept

- To prepare a development concept which provides for a large master planned industrial/business park complex.
- To establish the general type, location, parameters and character of all development within the site boundaries, while allowing for creative design ideas on individual projects consistent with an overall concept.
- To achieve flexibility in future project development and maintain consistency with the General Plan
- To allow for development in a manner that is both flexible and compatible with the surrounding neighborhood. The development concept approach recognizes that the area will be incrementally developed in phases over an extended period of time and provide an opportunity for a variety of quality uses.

Planning Areas

- To divide the site into seven Planning Areas. The purpose of identifying separate Planning Areas is to create distinct clusters of activities and allow for individual project development to occur in a manner consistent with the overall Master Plan Concept.

Master Plan

- To prepare a Master Plan that establishes the direction under which the Specific Plan will be developed. While land use flexibility is permitted, only one Circulation Plan is proposed. The Circulation Plan will be one of the primary controlling factors in the ultimate development of the project area.

- To prepare a Master Plan that permits a great number of options regulated through the comprehensive Specific Plan guidelines and standards.
- To prepare a Master Plan that recognizes the area adjacent to the Ventura Freeway as a gateway to the City and suggests a series of high profile, high quality office buildings.
- To implement the goals and policies of the Oxnard General Plan by defining the physical development of the Sakioka Farms Business Park site.
- To identify sufficient infrastructure and public facilities to adequately and efficiently support anticipated land uses and activities.

Circulation Plan

- To accommodate a number of different development scenarios. The overall circulation concept relies on a hierarchy of circulation features ranging from major arterials to local streets. The system is designed to accommodate traffic to the project area and around the project area while discouraging through traffic intrusion into individual Planning Areas.
- To provide for a phasing of street improvements to correspond to the phased development in each Planning Area.

Landscape Concept

- To create a unique character and identity for the project and community which reinforces the planning and architectural concepts.
- To create a hierarchy and organization of the landscape which assists in way-finding and imaging of the project while providing a visual asset to the community.
- To create a project area that:
    - Reflects the "macro-image" of the site through all levels of the project and acts as a unifying element that ties the individual plans together and weaves through the architecture and infrastructure.
    - Develops a pleasant "walkable" streetscape.
    - Creates a memorable vision of the project area and meets or exceeds the expectations of tenants and visitors.
    - Develops a hierarchy of spaces to assist in visitor and tenant way-finding and identification.
    - Ensures the long-term sustainability of the landscape through water conservation irrigation practices, use of drought -tolerant and low water usage materials, and through the limiting of turf use.
    - Ensures that individual project landscape proposals are feasible and compliment the public landscape areas.

- Considers long-term maintenance viability
- Provides shade and wind screening for pedestrian use areas
- Reduces the scale of buildings
- Becomes a visual asset to the community

- To establish a "California" theme, that includes an eclectic mix of indigenous plant and local materials which reflect the historical and cultural background of the area.

Public Facilities

- To identify existing and proposed infrastructure, including water, sewer, storm drain system and facility improvements to serve development within the Specific Plan area.

Phasing Plan

- To accommodate the anticipated intermittent development patterns, all required circulation, infrastructure and community improvements to accommodate each new development of the Specific Plan shall be completed prior to, or simultaneous with, individual projects.

Project Area Character

- To create Design Guidelines which establish the character and style for the development of a business park complex with buildings and streetscapes that have a distinct visual identity.
- To accommodate individual development identities and promote interrelationships between complementary land uses and community features
- To promote a high level of design quality while encouraging creativity on the part of individual project designers.

Site Planning Guidelines

- To create the measure by which basic concepts for coordinated site planning can be realized.
- To establish a strong outline and framework for guiding future individual development projects and to create a unique high quality business park.

Architectural Guidelines

- To establish a comparable character, style and quality for all development projects within the Sakioka Farms Business Park.
- To establish an architectural theme that reflects a contemporary research and development complex..

- To establish policies that create:
  - A unifying theme or common denominator that will be used in the various components of design.
  - Harmonious design elements that complement each other and are common to all projects.
  - Building designs shall reflect an industrial/business office park theme.
  - Building scale, location massing and orientation on the individual sites, shall provided a balance in form and composition
  - Building proportions and inner relationships shall be designed with consideration to adjust projects and activities. Special attention shall be given to maintain the highest quality design harmony and compatibility, especially between new proposals and existing activities.
  - Rhythm and balance in building design shall be obtained through site layout and clustering of activities.
  - Building material chosen should be consistent with the architectural style and theme for the area, and may be a combination of materials.
  - Building finishes and colors shall be chosen form a palette of subtle tones; projects are encouraged to use color accents. The selected finishes should respect the architectural style of the building and surrounding development.
  - Pedestrian sensitivity needs to be carefully considered when designing street level activities.
  - Mechanical equipment shall be screened from view of adjacent property. Mechanical equipment shall not be exposed on the wall surface or roof of a building.
  - Sustainable green building design, construction and operation of developments within the Specific Plan are encouraged.
  - Public art shall be included as part of all large projects within the Specific Plan area, smaller projects may contribute to the establishment and maintenance of a public art program within the common areas.

Landscape Guidelines

- To provide uniformity to the site and establish a "Sense of Place" with both aesthetic and functional considerations. The Landscape Guidelines establish the design and visual qualities for individual development in the project areas.
- To accommodate individual development identities and promote inter-relationship between complementary land uses and community features.
- To promote a high level of design quality while encouraging creativity on the part of individual project designers.
- To propose a continuation of the landscape and streetscape patterns currently surrounding the individual project areas. To develop a consistent and continuous streetscape design where all streets are improved and there are no gaps or areas without landscape improvements.

Signage Guidelines

- To provide a framework for the design and implementation of all exterior signage within the project. The Signage Guidelines contribute to the overall project design theme by requiring consistent solutions to the various categories of signage.
- To create and promote a quality visual environment by allowing only signs which are compatible with their surroundings and which effectively communicate their message.

Purpose and Intent

- To provide specific development regulations and standards that will be applied to individual development projects in each Planning Area of the Specific Plan. The Sakioka Farms Business Park will be the zoning for the project area.

Development Standards

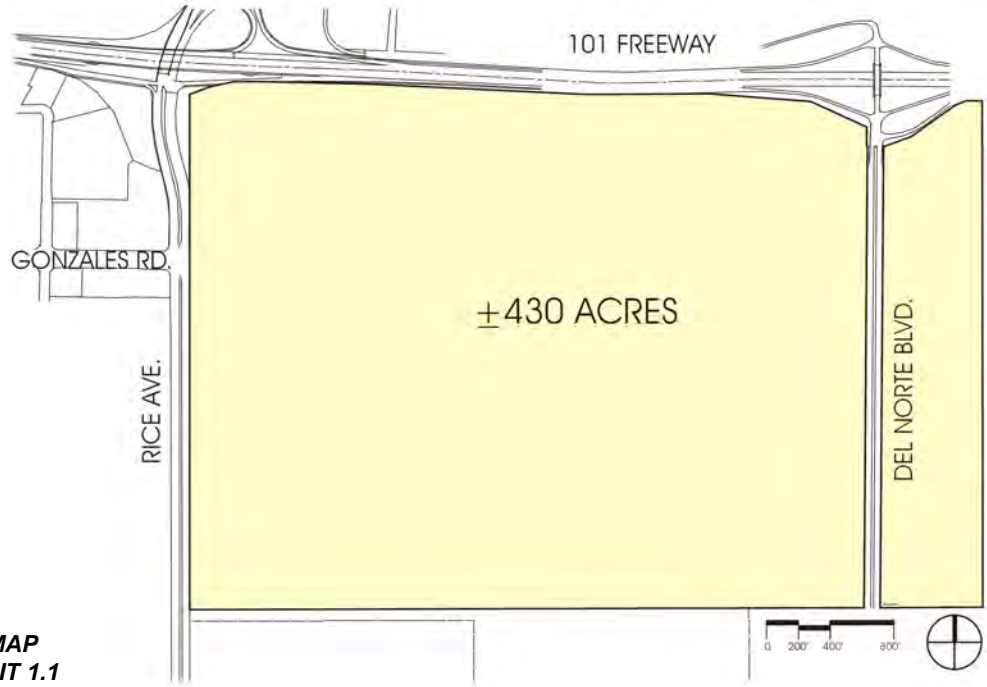
- To establish an orderly framework of land uses, amenities and building design criteria within the Specific Plan. The Development Standards are structured to allow a variety of compatible land uses, operations and activities that will create a desirable environment and effect a harmonious relationship with surrounding properties and the community in general.

Performance Standards

- To identify maximum permitted levels of operational characteristics resulting from any activity shall be called performance standards. Continued compliance with the performance standards as outlined in the Specific Plan shall be required of all permitted uses.

1

SECTION ONE



SITE MAP
EXHIBIT 1.1

1.0 PURPOSE AND INTENT

The Sakioka Farms Business Park Specific Plan establishes the planning concept, design theme, development regulations and administrative procedures necessary to achieve an orderly and compatible development of the project area; and to implement the goals, policies, and objectives of the Oxnard 2030 General Plan. The intent is to provide the framework and guidelines for a well planned phased business park development and achieve a high level of quality design.

The Sakioka Farms Business Park Specific Plan identifies the location, character and intensities of the planned development activities. The Specific Plan establishes the alignment and design of a circulation system, and all public facilities and infrastructure necessary to implement a master planned development over time. The Specific Plan creates a compatible design theme for the project area and defines the appropriate development regulations to accomplish the identified objectives.

The Specific Plan is regulatory in nature and serves as zoning for the Sakioka Farms Business Park area. Subsequent development plans, subdivisions and other entitlement requests for the project area must be consistent with both the Specific Plan and the Oxnard General Plan. An Environmental Impact Report, with identified mitigation measures, has been prepared as a companion report to the Specific Plan.

1.1 AUTHORITY AND PROCEDURE

California State law authorizes cities with complete General Plans to prepare and adopt Specific Plans (Government Code Sections 65450 et. seq.). Specific Plans are intended to be a bridge between the local General Plan and individual development proposals. Specific Plans contain both planning policies and regulations, and may combine zoning regulations, capital improvement programs, development standards and other regulatory methods into one document which can be tailored to meet the needs of a specific area.

Local planning agencies or their legislative bodies may designate areas within their jurisdiction as ones for which a Specific Plan is "necessary or convenient" (Government Code Section 65451). A Specific Plan may either be adopted by ordinance or resolution (Government Code Section 65507). Adoption by ordinance is common when the Specific Plan amends a development code, zoning ordinance, or other code, when specific regulatory measures are included and when local charters require adoption by ordinance. Resolutions are commonly used when the plan is more of a policy document. Should the legislative body wish to change a proposed Specific Plan recommended by the Planing Commission, the change must first be referred back to the Commission for consideration, if not previously considered (Government Code Section 65504).

Adoption or amendment of a Specific Plan constitutes a project under the California Environmental Quality Act (CEQA) and the State's Environmental Impact Report (EIR) guidelines. If the initial environmental review shows that the proposed or amended plan could significantly affect the environment, the jurisdiction must prepare an EIR and submit it in draft form for public review. The need for an EIR in a particular case is determined by the local government.

The preparation, adoption and implementation of the Sakioka Farms Business Park Specific Plan by the City of Oxnard is authorized by the California Government Code, Title 7, Division 1, Chapter 3, Article 8, Section 65450 through 65457.

The City of Oxnard 2030 General Plan was adopted by the City Council in October 2011. The General Plan designates the project area for industrial activities with a mixed-use overlay. The Sakioka Farms Business Park Specific Plan is consistent with the goals and policies of the Oxnard General Plan.

1.2 SCOPE AND FORMAT

The Sakioka Farms Business Park Specific Plan is divided into seven sequential sections.

Section One is the Introduction and describes the purpose and intent of the document along with a brief explanation of Specific Plan procedures and authorization.

Section Two is the Project Area Description and outlines the reasons why the Specific Plan process is logical and necessary for this portion of the City. This section presents a general description of the Specific Plan area including designated land uses, existing zoning and current activities.

Section Three is Implementation and discusses the process by which individual projects will be reviewed and approved. This section outlines the division of land and project entitlement procedures. This section also describes the methods by which the Specific Plan can be modified or amended.

Section Four describes the Master Plan Concept. The Master Plan evolves from the objectives outlined in Section One and the existing conditions discussed in Section Two, along with input from numerous meetings and special studies conducted by the property owner and the City. This section presents the development options proposed for various sites and the circulation, public facilities, infrastructure and landscaping which will support the Master Plan concept and reinforce the design theme. In addition, a Phasing Plan has been prepared as part of this section.

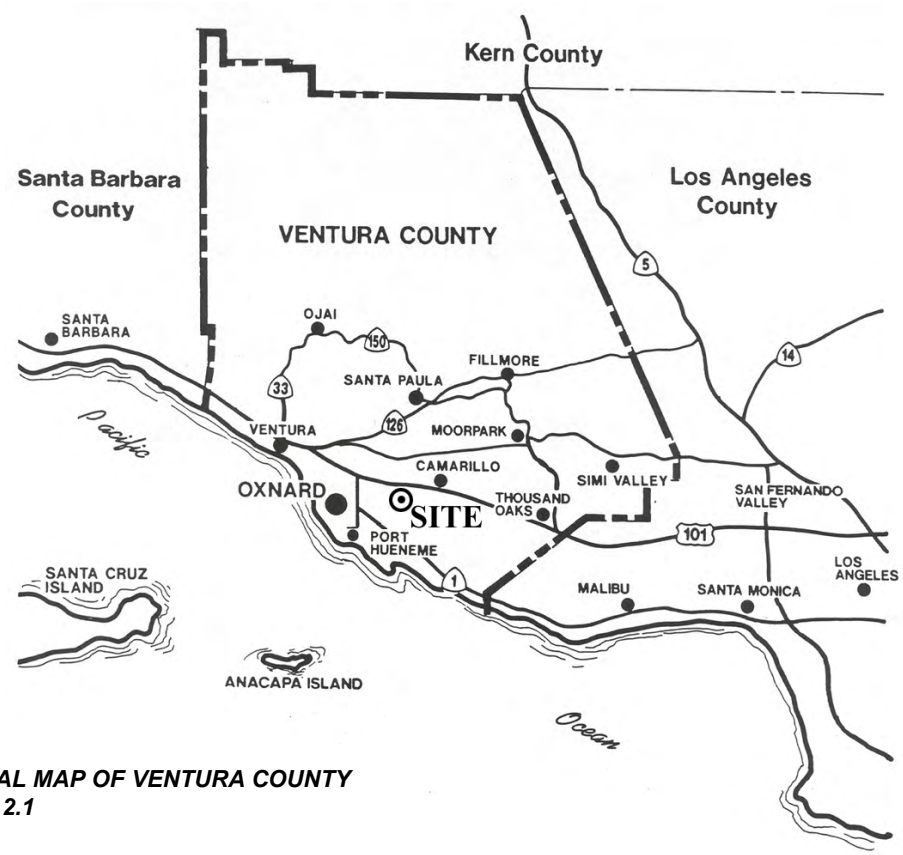
Section Five establishes Design Guidelines for the entire project area and for individual project development. This section identifies and describes the intended character for the area and provides a framework for project implementation.

Section Six presents a detailed description of the Development Regulations which are necessary to guide and control new projects and carry out the goals and policies of the Specific Plan and the City's General Plan.

Section Seven incorporates by reference the Apdaptive Mitigation and Monitoring Plan.

An **Appendix** will be compiled that will contain special studies and reports which have contributed to the formation of the Specific Plan. The Appendix will also include the Legal Description of the site, a General Plan Consistency Analysis and any Mitigation Measures identified in the Environmental Impact Report.

SECTION TWO 2



REGIONAL MAP OF VENTURA COUNTY
EXHIBIT 2.1

2.0 LOCATION

The City of Oxnard, California is located midway between Santa Barbara and Los Angeles, in the southern portion of Ventura County on a coastal plain of alluvial deposits, fronting the Pacific Ocean. The mild year-round temperature, clear air and open spaces provide the 200,000 residents with a relaxed seaside atmosphere and active business community environment. The City's economic base is very healthy, as demonstrated by a strong growth rate and a rapidly developing industrial community.

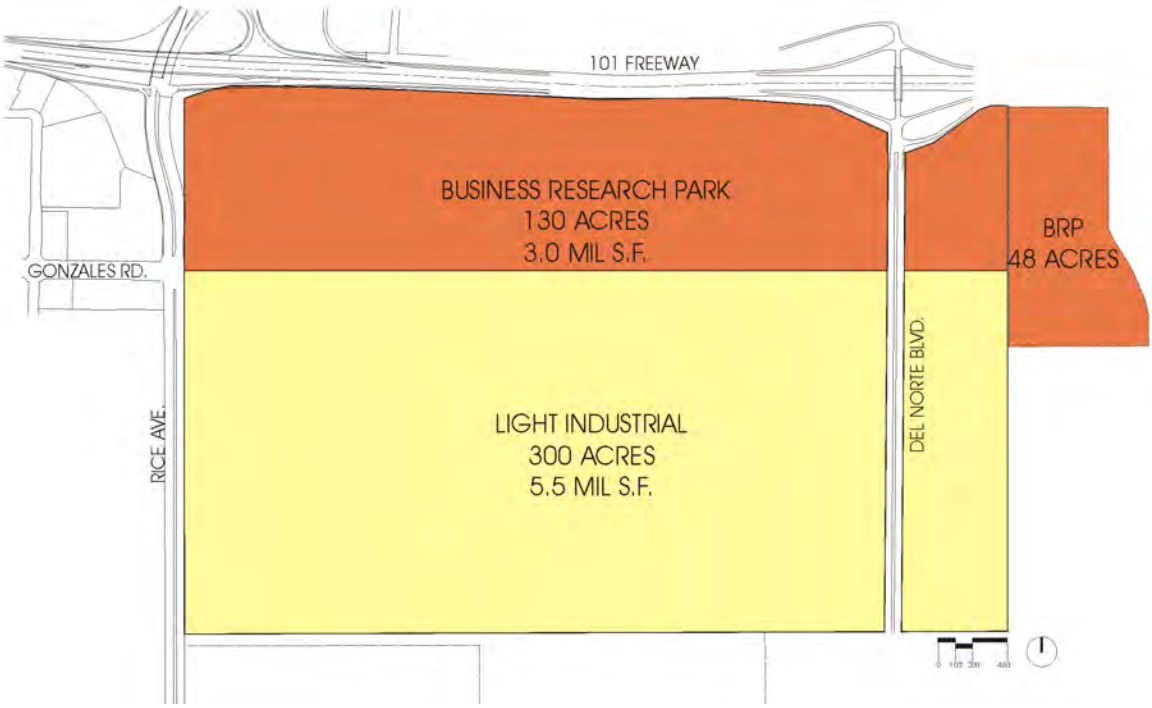
The Sakioka Farms site covers approximately 430 acres located in the northeastern portion of the City of Oxnard. The site is bounded on the north by the Ventura Freeway (U.S. Route 101); on the east by the Oxnard-Camarillo Greenbelt (agricultural preserve); on the south by the existing Procter & Gamble plant and portions of the McInnes Ranch Business Park, and on the west by Rice Avenue.

CITY SPECIFIC PLAN MAP
EXHIBIT 2.2

2.1 GENERAL PLAN DESIGNATION

In 2011, the City adopted the 2030 General Plan. The General Plan was carefully formulated over several years to reflect the City's vision to enhance the quality of life and build a strong financial base for the future. The General Plan was developed to assure the residents that the quality of services, public facilities and amenities, state of the economy, living environment and overall City image will remain strong. The General Plan is intended to guide each development project to assure that they contribute to the City's desires and become a source of pride for the community.

The General Plan sets in motion a logical sequence of specific actions to implement identified goals, policies and programs. Specific Plans augment The General Plan and are incorporated by reference to The General Plan.



2030 GENERAL PLAN LAND USES
EXHIBIT 2.3

The Sakioka Farms site is primarily surrounded by existing industrial/industrial-related uses and is designated for future Business and Research Park and Light Industrial use; an easterly extension of Gonzales Road divides the two designations in the City's General Plan.

The Sakioka site consists of approximately 430 acres of land, 300 acres are designated for Light Industrial activities and 130 acres for Business Research Park, all under a single ownership. Adjacent to the northeastern corner of the Sakioka Farms property is a forty-eight (48) acre area, owned by others, designated for Business Research Park (BRP) uses and is partially developed in that fashion. This property is not considered part of the area regulated by the Specific Plan.

The overall development intensity for the project area has been established in the General Plan. A total of 8,500,000 square feet of overall development activities is anticipated; 5,500,000 square feet of industrial uses and 3,000,000 square feet of business and research uses.

The Light Industrial designation will accommodate a range of general manufacturing and related service uses. In addition to traditional industrial uses, the area may develop industrial service centers; this concept recognizes that there may be a need for commercial services within industrial areas. The intent of providing commercial services is to meet the daily needs of employees within the industrial areas during their journey to and from work, while on breaks, and during lunch periods.

The Business and Research Park designation provides for a variety of business and employment opportunities such as professional, administrative, research and manufacturing uses along with limited commercial activities. This destination allows for a higher intensity of land use activities, relative to the overall project area.

The Specific Plan, as presented with industrial, office and support commercial uses, is intended to be consistent with the City's adopted General Plan.

2.2 ZONING REGULATIONS

The Sakioka Farms site is presently zoned Business Research Park (BRP) and Light Industrial (M-1); 130 acres and 300 acres respectively. The Specific Plan will supersede the existing zoning and establish a new set of development regulations. These regulations have been prepared consistent with the City's adopted guidelines and regulations, and tailored for this specific site.

2.3 2012 LAND USES

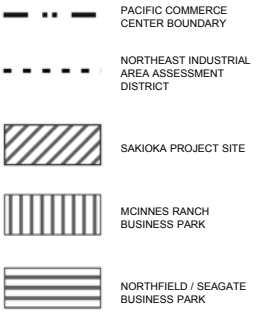
As of early 2012, The Sakioka Farms site consists of 430 acres of agricultural activities. There are no existing developments, the entire site is vacant, with the exception of a few farming related structures. No subdivision of the project area land has occurred. Although the City's General Plan contains policies to preserve agricultural lands it also recognizes the role these areas will play to enable Oxnard to achieve a better balance of community activities. New private developments have occurred over time on sites surrounding the project area, replacing the agricultural operations of the past.

THE NORTHEAST INDUSTRIAL AREA MAP
EXHIBIT 2.4

THE NORTHEAST INDUSTRIAL AREA

- 1,389 total acres
- 806 acres light industrial (zoned – M.1)
- 300 acres limited industrial (zoned – M.L.(245 ac.) and zoned – BRP (45 ac.)
- 280 acres business and research park (zoned – BRP)
- Anticipated Total Development:
  18.2 million sq. ft. of industrial uses
- 6.2 million sq. ft. of business & research uses

LEGEND



The project area is surrounded by development which is regulated by, the Northfield/Seagate Business Park Specific Plan and the McInnes Ranch Business Park Specific Plan.

The Northfield/Seagate Business Park Specific Plan (252 acres) is an industrial development; meeting adopted standards of site design, circulation, intensity of use and community character.

The McInnes Ranch Business Park Specific Plan (236 acres) provides a comprehensive set of plans, regulations, conditions, and programs for guiding the orderly development of a coordinated industrial / business park. Uses include a variety of manufacturing, research and development, professional and limited commercial uses integrated by planned vehicular circulation, landscaping, pedestrian walkways, and leisure spaces.

2.4 PLANNING HISTORY

During the late 1980's, the City embarked upon a planning program, which encouraged the preparation of numerous area plans, assessment districts, master plans and specific plans to provide guidelines for the orderly development of large project areas. The Sakioka Farms site is within one of these planning study areas, The Northeast Industrial Area Plan.

The Northeast Industrial Area consists of approximately 1,400 acres of property designated for Limited Industrial, Light Industrial and Business and Research Park uses. Originally part of a larger area referred to as the Pacific Commerce Center. The Northeast Industrial Area began development in 1985.

An Assessment District has been formed which provides for the major infrastructure improvements necessary to serve this area. In addition, the project area has been part of many formal agreements and studies directed by the City (i.e. the Xerox Annexation Agreement of 1969 and the Participation Agreement for inclusion in the Northeast Industrial Area Assessment District, 1986). The Northeast Industrial Area is one of four major industrial areas in the City that has been approved for development.

Large development projects within the Northeast Industrial Area are required to prepare Specific Plans to guide future development. The City currently has a number of active Specific Plans, two of which are within the Northeast Industrial Area. Along with the required Specific Plan, Sakioka Farms may enter into a Development Agreement with the City; however, neither the City nor the property owner are obligated to consider a Development Agreement.

2.5 STATE MANDATED REQUIREMENTS

To comply with the State of California legislated mandates, the City of Oxnard has adopted several plans to deal with regional issues including Air Quality, Congestion Management, Growth Management, Regional Housing and Transportation Demand Management.

SECTION THREE 3

3.0 ADMINISTRATION

The City's Development Services Director or designee shall administer the provisions of the Sakioka Farms Business Park Specific Plan in accordance with the State of California Government Code, Subdivision Map Act, the City of Oxnard Municipal Code, and the City's General Plan.

The Specific Plan development procedures, regulations, standards and specifications shall supersede the relevant provisions of the City's Zoning Code, as they currently exist or may be amended in the future. The Specific Plan shall be adopted by resolution. Any development regulation and building requirement not addressed in the Specific Plan shall be subject to the City's adopted regulations in place at the time of an individual request.

The Development Services Director or designee shall have the discretion to determine if requests for modifications to the Specific Plan are minor or major. Minor modifications or amendments may be accomplished administratively by the Development Services Director or designee. Major amendments to the Specific Plan will require the processing of a Specific Plan Amendment, subject to the City's processing regulations in place at the time of the request. Minor modifications to the Specific Plan include, but are not limited to:

- The addition of information to the exhibits or text which serve to clarify, but do not change the meaning or intent.
- Changes to the infrastructure (i.e., storm drain, water and sewer systems), as recommended by the City.
- The adjustment, addition and/or lot consolidation as addressed in this section of the Specific Plan.
- Modifications to the alignment of the Planning Area boundaries to coincide with specific development plans, as recommended by the City.

All modifications must be reviewed for compliance with the goals and policies of the City's General Plan, intent of the Sakioka Farms Business Park Specific Plan and consistency with the Environmental Impact Report.

3.1 DEVELOPMENT PHASING

The Sakioka Farms Business Park Specific Plan area is designed for maximum flexibility and anticipates that individual development projects will be constructed over a period of years, with no specific target date for completion. Development starts and occupancy will be dictated by market forces and phased accordingly.

A development Phasing Plan has been prepared identifying a program of the relative timing of development within each of the Planning Areas. The Phasing Plan provides a general guideline for the construction of community infrastructure and public improvements to adequately service new projects within the Specific Plan area.

3.2 METHODS AND PROCEDURES

The methods and procedures for implementation of the Specific Plan shall be on a project by project basis. The adoption of the Specific Plan alone will not require infrastructure improvements to the project area. Physical improvements will only coincide with the recordation of a Tract Map or Parcel Map and/or individual project development. The Specific Plan is a regulatory document and is not intended to be a Development Agreement.

3.3 MASTER PLAN

A Master Plan Concept for the project area identifying primary and alternative land uses, circulation system, infrastructure layout, public facilities and landscape scheme has been included within the Specific Plan. All proposed development projects shall be consistent with the intent of the Master Plan .

3.4 SUBDIVISION

The project area will be subdivided through a series of Tract and Parcel Maps. All Maps shall be prepared consistent with the Master Plan and in conformance with the City's adopted procedures and codes.

3.5 PROJECT PLAN REVIEW

Individual development projects within the Sakioka Farms Business Park Specific Plan area shall be implemented through a Development Design Review (DDR) permit approved by the Development Services Director or designee.

Prior to submitting the DDR application to the City, all proposed development projects shall be submitted to the project area's Architectural Review Committee. A special committee shall be established by the property owner for review of all proposed new and expanded developments to determine consistency with the established guidelines and intent of the Specific Plan. Following review and approval by the Architectural Review Committee, the project request may be submitted to the City for DDR review and permitting.

A Development Design Review Permit shall be required for all new development activity. Exceptions to this provision include interior improvements, general maintenance and repair or other minor construction activities that do not result in an intensification of the use. These exceptions may be subject to other Planning, Building and Public Works permits and approvals prior to commencement.

The Development Services Director or designee has the authority to approve, conditionally approve, or deny a Development Design Review Permit. The application may also require analysis and comments from various other departments of the City. Project denial shall be limited to finding of inconsistency with the Specific Plan. Applicants have the right of appeal through the normal City process.

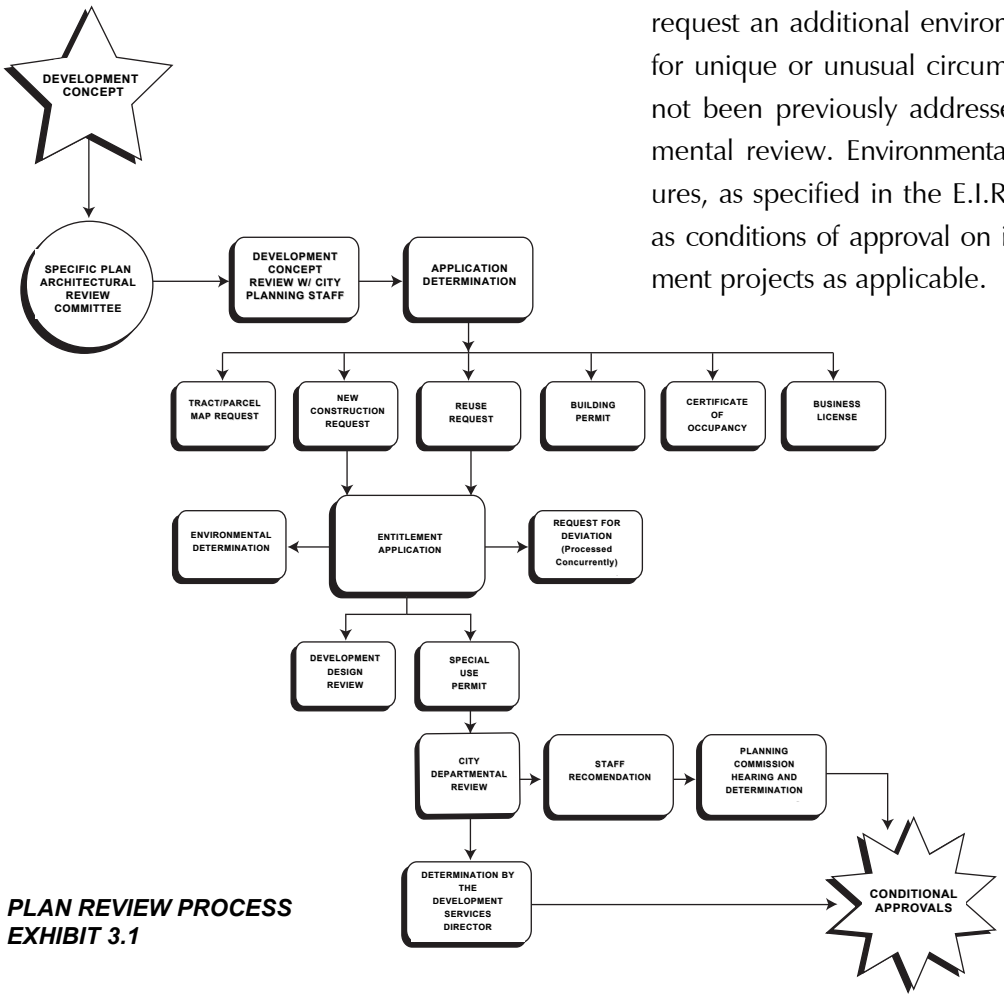
3.6 REUSE / CHANGE OF USE REVIEW

Any proposal to reuse and/or change the use of a previously approved and constructed development, within the project area, will be subject to additional review by the Development Services Department. In addition, any proposed physical modifications to the existing structures and/or site shall be subject to additional review and approval of the Development Services Director or designee prior to the issuance of building permits.

3.7 ENVIRONMENTAL DETERMINATION

The extent and intensity of all anticipated development activity for the Sakioka Farms Business Park area have been identified in the Specific Plan and analyzed in the Environmental Impact Report.

Development project requests consistent with the Specific Plan shall not be subject to additional environmental review unless otherwise required by C.E.Q.A. However, the Development Services Director or designee may request an additional environmental assessment for unique or unusual circumstances, that have not been previously addressed in the environmental review. Environmental mitigation measures, as specified in the E.I.R., will be imposed as conditions of approval on individual development projects as applicable.



PLAN REVIEW PROCESS
EXHIBIT 3.1

3.8 REQUEST FOR MODIFICATION

The Sakioka Farms Business Park Specific Plan Development Regulations are intended to encourage projects which create an aesthetically pleasing appearance, enhance the environment, and facilitate innovative quality architectural design.

Requests for Modification from the Development Regulations of the Specific Plan, which have been approved by the project's Architectural Review Committee, may be granted at the time of the Special Use Permit or Development Design Review request, for special circumstances and/or unique architectural features. Requests for Modification may include but are not limited to parcel size, building height, site coverage, setbacks, open space, parking, and landscaping.

All Modification requests will be considered by the Development Services Director or designee. Modification to the Master Plan Concept may require a Specific Plan Amendment, subject to the procedures outlined in the City's Zoning and Subdivision Ordinance.

Requests for Modification may be allowed when significantly greater benefits from the project can be provided than would occur if all the minimum requirements were met. Additional benefits which may make a project eligible for consideration include greater open space, greater setbacks, unique or innovative designs, public open space, and the use of energy conservation or innovative technology.

The Development Services Director or designee may approve the Request for Modification in whole or in part upon making the following findings:

- To promote better design, environmental and land planning techniques and contribute to the economic viability of the community, through aesthetically pleasing architecture, landscaping and site layout; and
- Will not be detrimental to the general health, welfare, safety and convenience of the neighborhood or City in general, nor detrimental or injurious to the value of property or improvements of the neighborhood or of the City in general; and
- To be consistent with objectives of the Specific Plan in achieving a project adapted to the area and compatible with the surrounding environment; and
- To be consistent with the goals and policies of the City's General Plan, and comply with State and Federal Law.

3.9 MINOR EXPANSIONS

Minor Expansions of use shall be considered up to ten (10) percent of an existing structure for a legally established use, and that the use of operation after expansion or modification is in compliance with the Specific Plan. Minor expansions may be permitted and require a Request for Modification and they are subject to review and approval by the Development Services Director or designee.

3.10 SPECIFIC PLAN AMENDMENTS

Specific Plan Amendments, other than a minor modification as previously described, shall be subject to consideration and approval of the Planning Commission and City Council in accordance with the provisions of the City's Zoning and Subdivision Ordinance. Amendments may include changes to the Master Plan Concept, Design Guidelines policies and the introduction of alternative Development Regulations.

3.11 CERTIFICATE OF OCCUPANCY

Application for a Certificate of Occupancy shall be made for any new use, or expansion of any permitted use. The Building Department may issue the Certificate only after approval of the new buildings and uses by the Planning Department. Any subsequent modification, change or changes in the use permitted by a Certificate of Occupancy shall occur only after the holder of such certificate has obtained an amendment from the Development Services Department allowing such change or changes. A Certificate of Occupancy may be revoked by the City Council, after a public hearing, if the Council finds that the holder of the Certificate has failed to comply with the conditions of approval.

3.12 SEVERABILITY

If any section, subsection, sentence, clause, phrase, or portion of this Specific Plan, or any future amendments or additions hereto, is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Specific Plan, or any future amendments or additions hereto. The City hereby declares that it would have adopted these titles and each sentence, subsection, clause, phrase, or portion or any future amendments or additions thereto, irrespective of the fact that any one or more sections, subsections, clauses, phrases, portions or any future amendments or additions thereto may be declared invalid or unconstitutional.

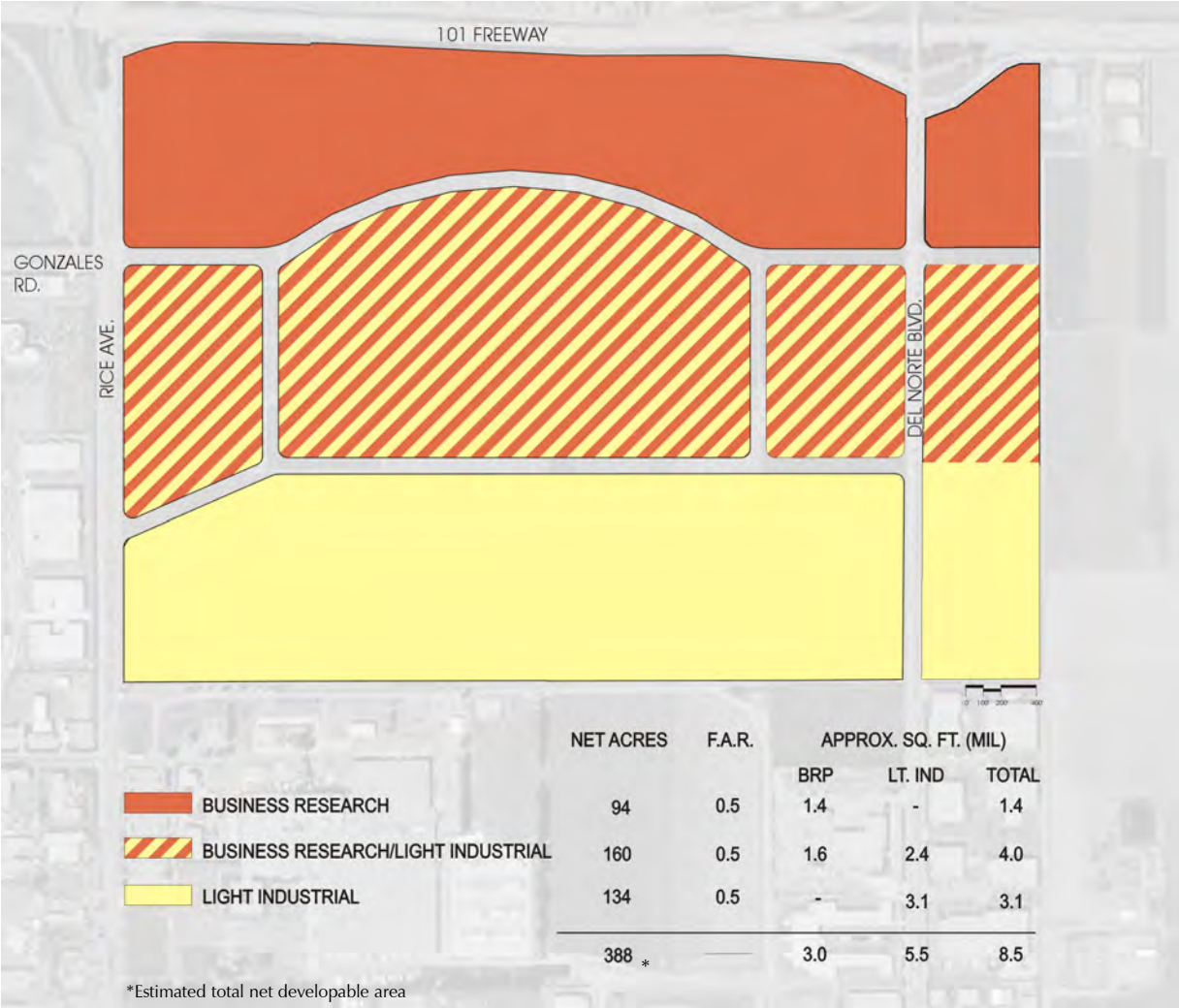
3.13 COMMUNITY FACILITIES DISTRICT / PROPERTY OWNERS ASSOCIATION

A Community Facilities District and/or Property Owners Association may be established to ensure appropriate maintenance and/or replacement as needed of common facilities such as, but not limited to, private streets, storm water retention and treatment facilities, and common area landscaping.

If a Community Facilities District and/or Property Owners Association is established, all property owners, individual project developers and tenants within the Specific Plan area shall participate, to the extent specified by the City with any subsequent approval.

4

SECTION FOUR



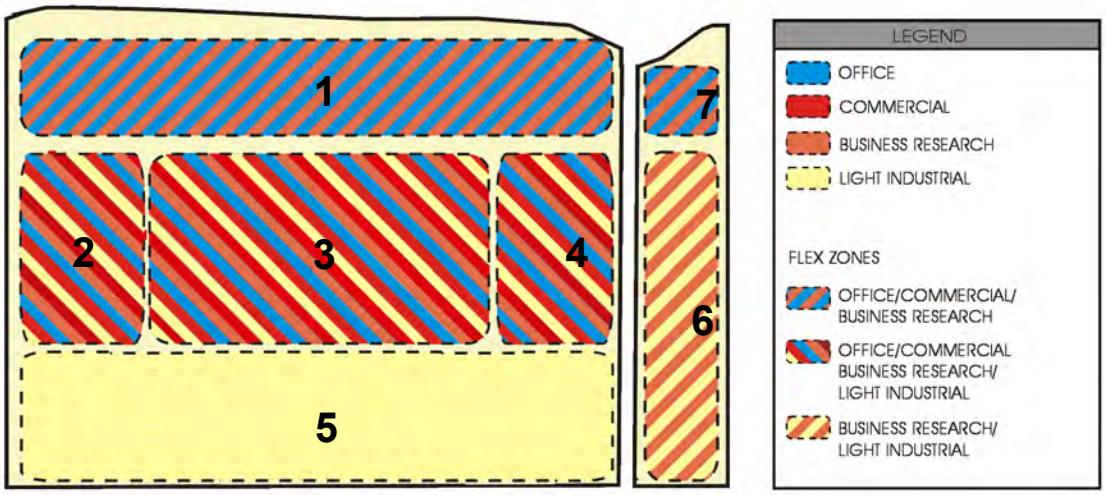
	NET ACRES	F.A.R.	APPROX. SQ. FT. (MIL)		
			BRP	LT. IND	TOTAL
BUSINESS RESEARCH	94	0.5	1.4	-	1.4
BUSINESS RESEARCH/LIGHT INDUSTRIAL	160	0.5	1.6	2.4	4.0
LIGHT INDUSTRIAL	134	0.5	-	3.1	3.1
	388 *		3.0	5.5	8.5

FLEX LAND USE PLAN
EXHIBIT 4.1

4.0 DEVELOPMENT CONCEPT

The Sakioka Farms Business Park Specific Plan development concept provides for a large master planned industrial/business park complex. The Specific Plan establishes the general type, location, parameters and character of all development within the sites boundaries, while allowing for creative design ideas on individual projects consistent with an overall concept.

In order to achieve flexibility in future project development and maintain consistency with the General Plan, a flexible land use plan has been prepared. The plan has its roots in the land use designations of the General Plan, and incorporates a recognition that ultimate development will likely be a blend of both traditional light industrial and business research facilities.



CONCEPT PLAN APPROACH
EXHIBIT 4.2

The development concept establishes the vision for the Specific Plan, and is designed to allow for development in a manner that is both flexible and compatible with the surrounding neighborhood. The development concept approach recognizes that the area will be incrementally developed in phases over an extended period of time and provide an opportunity for a variety of quality uses.

In order to provide for this flexibility and be able to propose a quantifiable plan for analysis, four primary uses have been identified. Each category of use has been limited to select portions of the Specific Plan area, with a maximum intensity of development identified. This will allow for the proper analysis of potential development impacts over an extended period of time. The flexibility is obtained through the identified overlapping of uses in the concept plans. Within the limits of total intensity, Flex Zones allow a use or activity the opportunity of being developed at a number of potential locations in response to market and development trends of the future.

The sites natural features and proximity to regional transportation systems make the area ideal for a variety of compatible business land uses and activities. The development concept is designed to address the area's surrounding industrial activities and the community need for a strong self-sufficient economy.

The Specific Plan will provide for a range of employment opportunities in the professional, retail, service and industrial fields; and will widen the employment base of the community.

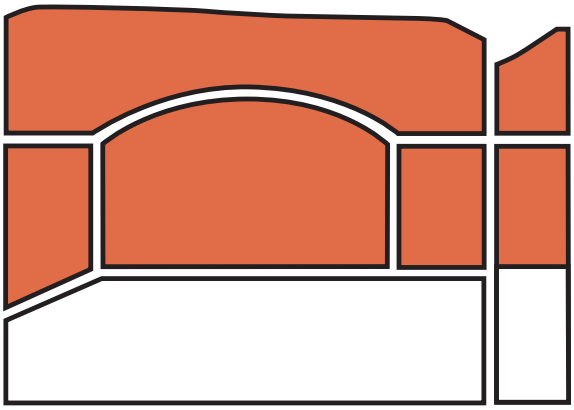
Approximately 42 acres are planned for the extension of Gonzales Road and interior streets.

CONCEPT LAND USE SUMMARY
EXHIBIT 4.3

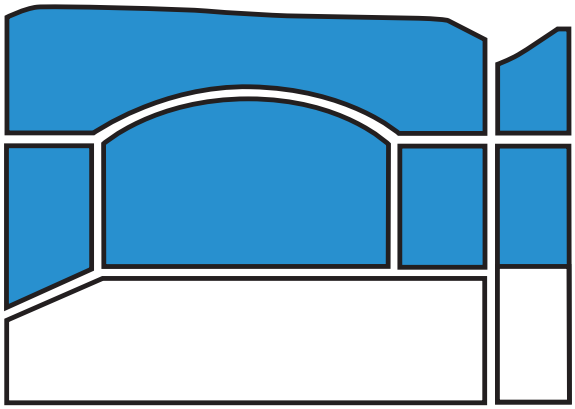
BUSINESS/ RESEARCH		OFFICE		INDUSTRIAL		COMMERCIAL		TOTAL	
SQ. FT.	AC	SQ. FT.	AC	SQ. FT.	AC	SQ. FT.	AC	SQ. FT.	AC
2.5 million	254	0.4 million	254	5.5 million	294	0.1 million	171	8.5 million	388*

*Estimated total net developable area

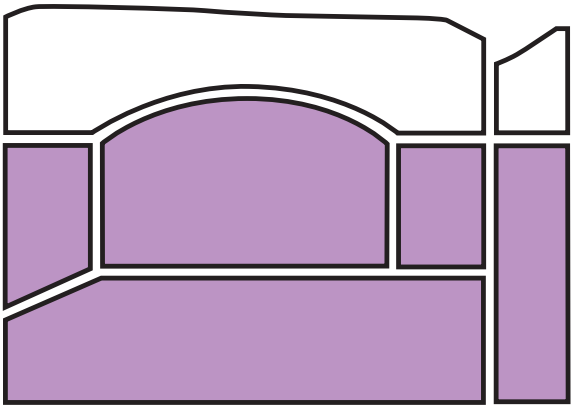
LAND USE AREA MAPS
EXHIBIT 4.4



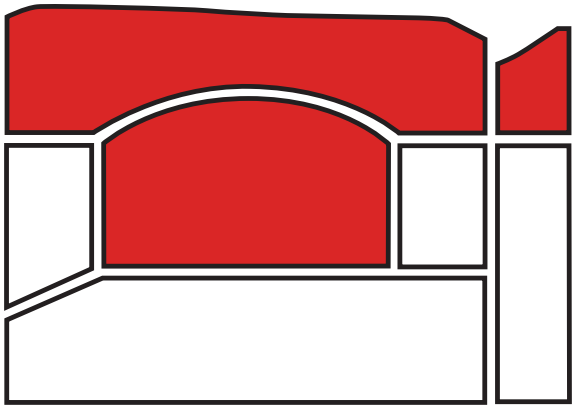
BUSINESS RESEARCH



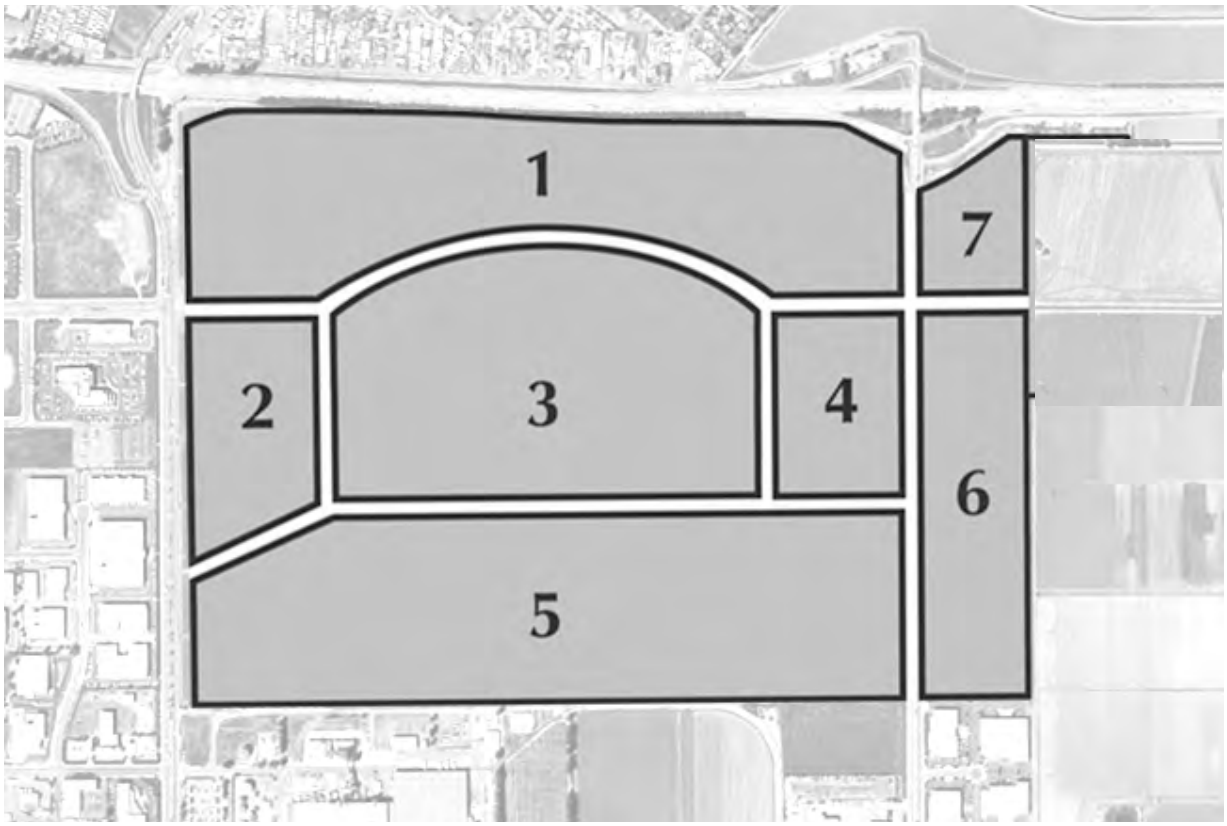
OFFICE



INDUSTRIAL



COMMERCIAL

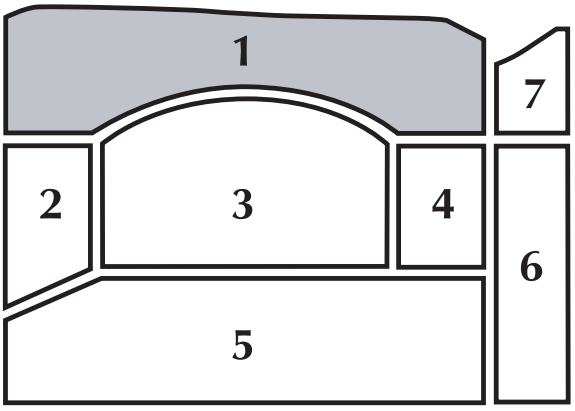


SPECIFIC PLAN PLANNING AREAS
EXHIBIT 4.5

4.1 PLANNING AREAS

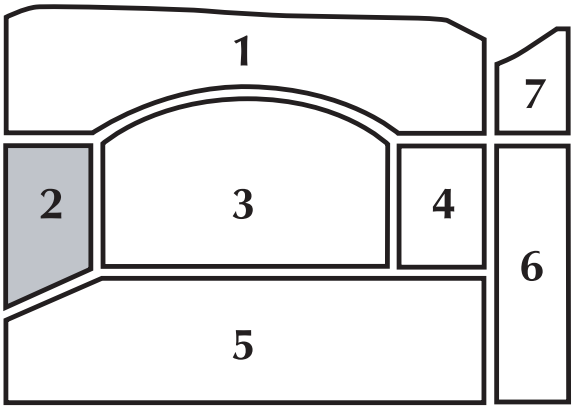
The Specific Plan divides the site into seven Planning Areas. The purpose of identifying separate Planning Areas is to create distinct clusters of activities and allow for individual project development to occur in a manner consistent with the overall Master Plan Concept. This approach recognizes development phasing patterns, market conditions and establishes sufficient flexibility to provide for the opportunity of a variety of activities within each Planning Area.

The Planning Areas are the logical result of the Circulation Plan and adjacent land use and development patterns. Ultimate development of the site will be controlled to a great extent by the amount of anticipated vehicular traffic created by the proposed activities. The Specific Plan area can accommodate a total development of 8,500,000 square feet, or as limited by the proposed circulation improvements and accounted for through a "Trip Generation Budget" (Exhibit 4.10).



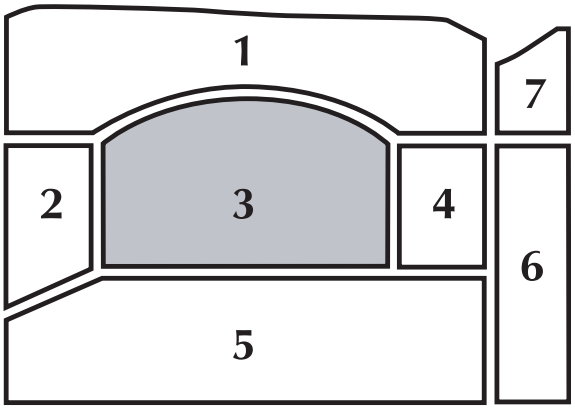
AREA 1

PLANNING AREA 1 is the highest profile portion of the project area located adjacent to the Ventura Freeway. Defined by an extension of Gonzales Road, this area will not only serve as the visual focus for the project, but also as a major eastern gateway to the City of Oxnard. High profile office and commercial development is anticipated for this portion of the project. The area consists of approximately 80 acres and can accommodate a high concentration of uses. Due to the Planning Area's location, it will establish the primary design image of the Specific Plan.



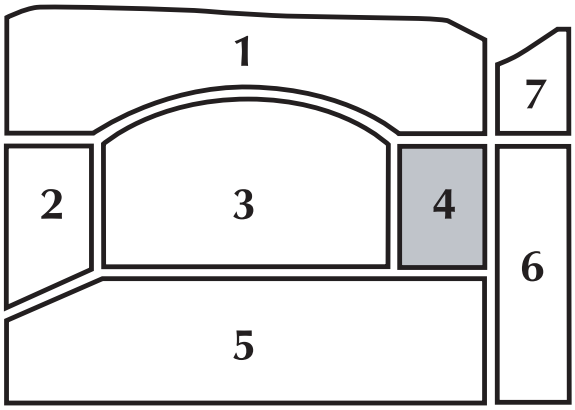
AREA 2

PLANNING AREA 2 fronts Rice Avenue, the westerly edge of the project. This Planning Area will provide opportunities for new office, business research, industrial and related development projects. The area comprises approximately 35 acres and will maintain the design theme established in Area 1 and transition into the more traditional industrial activities anticipated for Planning Area 5.



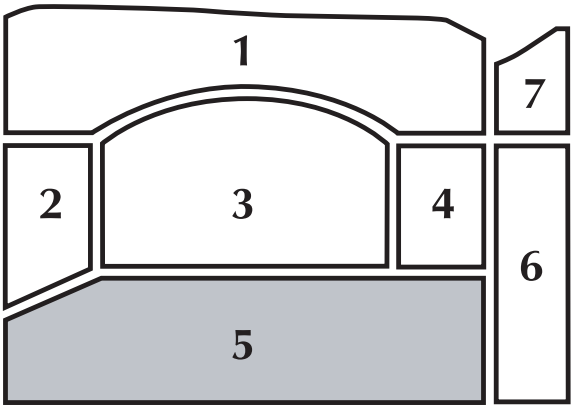
AREA 3

PLANNING AREA 3 is the central portion of the project area and as such a number of alternatives may be considered. One option proposes a high intensity core with larger office buildings, residential uses and integrated community facilities and commercial opportunities. This Planning Area may also become a continuation of the traditional industrial development to the south. A large undeveloped site is very desirable to major industrial tenants and this location, with convenient access to the freeway from two locations, may prove to be ideal. This area is approximately 77 acres in size and can accommodate a range of development options.



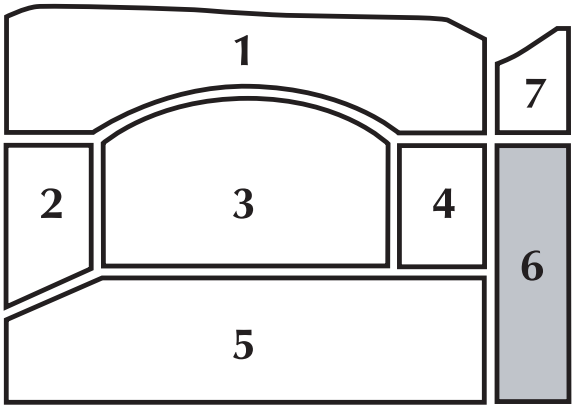
AREA 4

PLANNING AREA 4 is located along Del Norte Boulevard. This area may develop in a pattern very similar to Area 2, with an emphasis on new office, and business research facilities. The area may also develop in a manner similar to other industrial projects to the south and cater to smaller traditional industrial projects. Area 4 consists of 30 acres and will assist in establishing the project theme for the eastern portion of the project area.



AREA 5

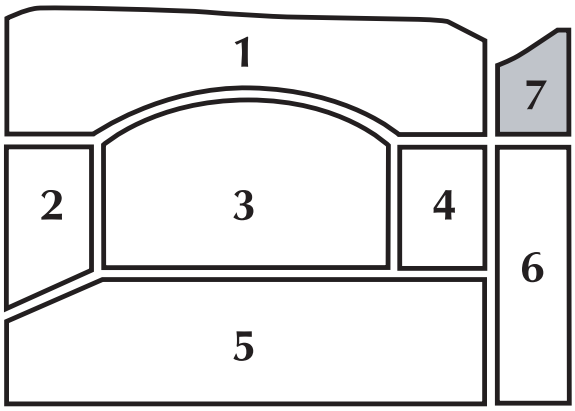
PLANNING AREA 5 is designated as the primary light industrial site. This area will cater to major industrial tenants desiring to relocate to the Oxnard area. Area 5 consists of 116 acres and will accommodate new industrial development that will maintain and reinforce the Master Plan concept for the Specific Plan area.



AREA 6

PLANNING AREA 6 is the eastern boundary of the project, with a significant amount of frontage on Del Norte Boulevard. This area consists of 36 acres and may be developed a number of different ways.

Future activities for the area will depend on market conditions and may include a combination of light industrial and research development uses. Future development activities may reflect an expansion of the existing activities to the south and west or present opportunities for independent new projects.



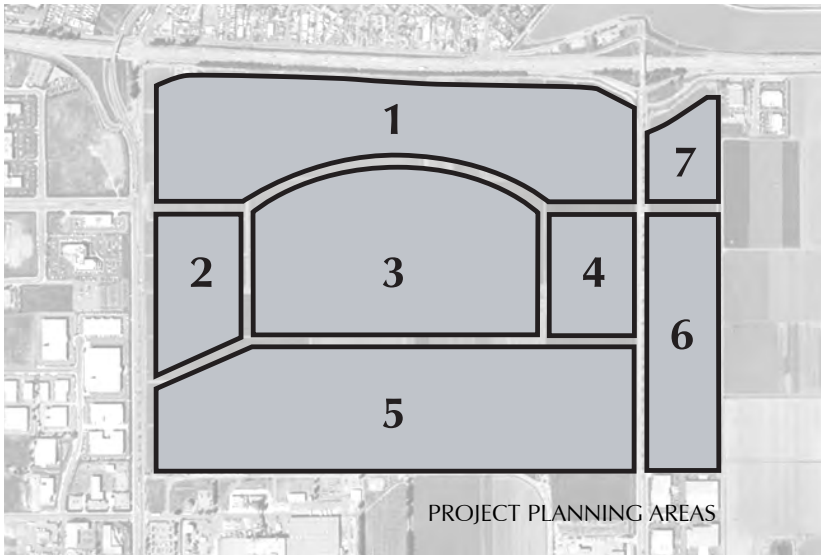
AREA 7

PLANNING AREA 7 is in the northeastern portion of the project. Although the smallest of all the Planning Areas, 14 acres in size, it may become one of the highest profile sites and is well situated for office and convenience commercial activities. This area will also include opportunities to enhance future planning and development activities on the adjacent property to the east of the project.

LAND USE / ZONING EQUIVALENCY

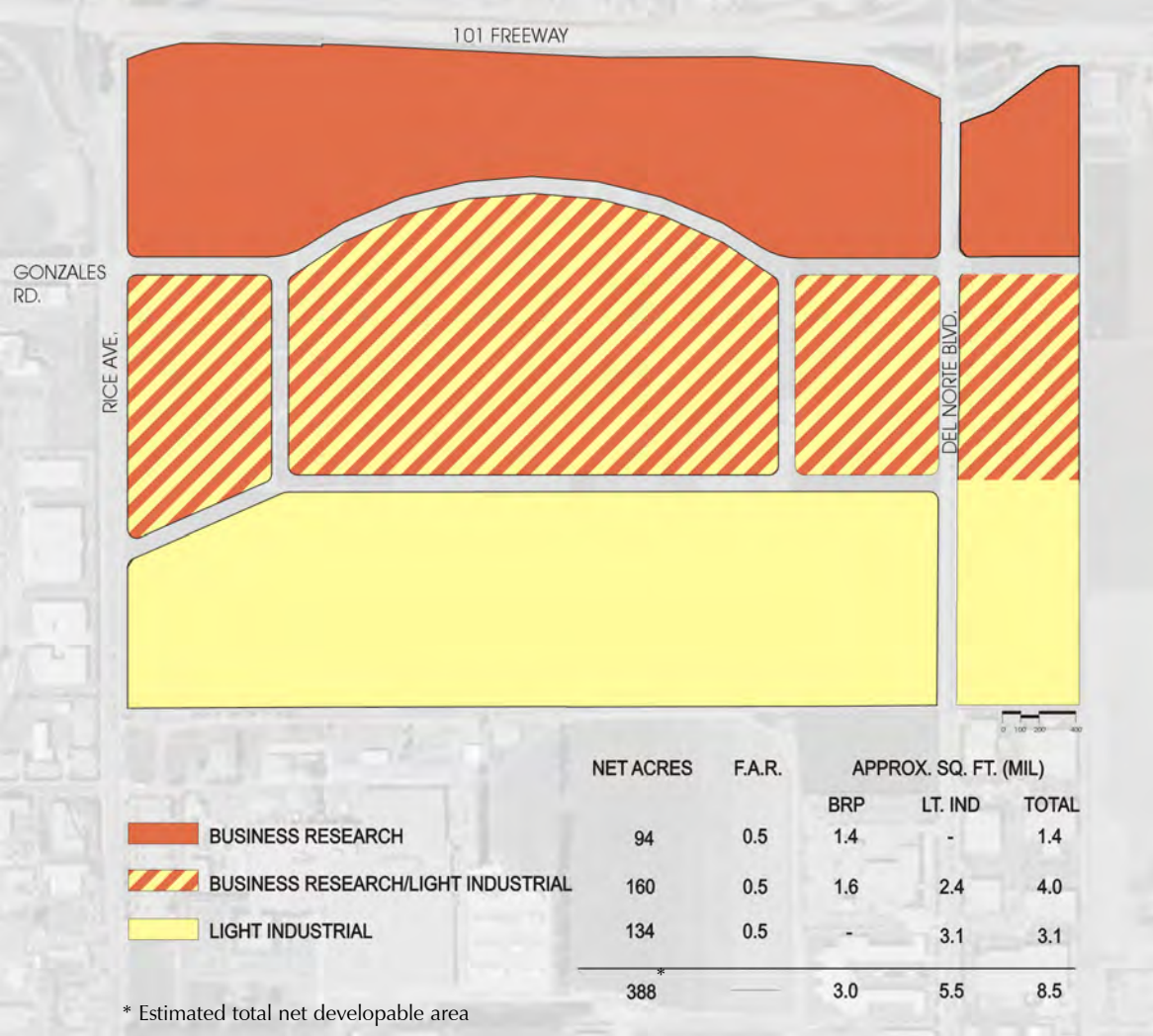
EXHIBIT 4.6

LAND USE	ZONE EQUIVALENT	PLANNING AREA						
		1	2	3	4	5	6	7
Light Industrial	M-1		●	●	●	●	●	
Business / Research	BRP	●	●	●	●		●	●
Commercial	C-2	●		●				●
Office	C-O & BRP	●	●	●	●			●
Public Facility (Fire Station)			●	●				
Transitional Agriculture		●	●	●	●	●	●	●
TOTAL NET ACRES	**388**	80	35	77	30	116	36	14



PROJECT PLANNING AREAS

MASTER PLAN
EXHIBIT 4.7



	NET ACRES	F.A.R.	APPROX. SQ. FT. (MIL)		
			BRP	LT. IND	TOTAL
BUSINESS RESEARCH	94	0.5	1.4	-	1.4
BUSINESS RESEARCH/LIGHT INDUSTRIAL	160	0.5	1.6	2.4	4.0
LIGHT INDUSTRIAL	134	0.5	-	3.1	3.1
	388*	——	3.0	5.5	8.5

4.2 MASTER PLAN

A Master Plan has been prepared that establishes the direction under which the Specific Plan will be developed. While land use flexibility is permitted, only one Circulation Plan is proposed. The Circulation Plan will be one of the primary controlling factors in the ultimate development of the project area. A number of conceptual circulation and land use configurations were evaluated for the site. From these studies, a single Master Plan and project description has been developed.

The Master Plan's flexibility will allow for the greatest variety of activities and accommodate different development phasing patterns and schedules. This flexibility in design will also allow for the creation of unique parcelization patterns with the ability to custom-fit a wide range of development scenarios within the project area.

The Master Plan permits a great number of options regulated through the comprehensive, Specific Plan guidelines and standards.

The Master Plan recognizes the area adjacent to the Ventura Freeway as a gateway to the City and suggests a series of high profile, high quality office buildings. The concept anticipates a core of high-rise office buildings, surrounded by lower profile office and office/business research uses. The dynamics of this approach may result in a greater demand for business and research activities over the project area. The central portion of the site allows for business research, light industrial or office activities. The areas south of the extension of Gonzales Rd. and immediately adjacent to Rice Ave. and Del Norte Blvd. is a flexible zone for business research and light industrial activities.

Retail activities are permitted in the northern portion of the site. This freeway adjacent location will allow for a variety of retail uses in a portion of the community currently with few services.

Traditional industrial uses will be accommodated in the central and southern portions of the project area. Large, medium and small parcels are anticipated for a variety of industrial users.

The objective of the Specific Plan is to implement the goals and policies of the Oxnard General Plan by defining the physical development of the Sakioka Farms Business Park site. Included in this approach are the establishment of land use, circulation, landscape, infrastructure, and architectural design characteristics for the project area. The Specific Plan consists of five major components which guide the development process: the Land Use Plan, Circulation Plan, Public Facilities Plan, Design Guidelines, and detailed Development Regulations.

The Specific Plan identifies and requires sufficient infrastructure and public facilities to adequately and efficiently support anticipated land uses and activities. These improvements will be phased to coincide with or precede individual development projects. This up-front effort will allow future development projects to obtain City approval in an expedited manner, providing the individual projects are consistent with the Specific Plan and the Environmental Impact Report.

REPRESENTATIVE LAND USE SCENARIO
EXHIBIT 4.8

	Business/ Research		Office		Light Industrial		Commercial		Fire	TOTAL	
	SQ. FT.	AC	SQ. FT.	AC	SQ. FT.	AC	SQ. FT.	AC	AC	SQ. FT.	AC
1	1,300,000	45	400,000	20			80,000	15		1,780,000	80
2	200,000	14			600,000	21				800,000	35
3	600,000	35			1,200,000	40.5			1.5	1,800,000	77
4	200,000	14			500,000	16				700,000	30
5					2,500,000	116				2,500,000	116
6	100,000	4			700,000	32				800,000	36
7	100000	4					20,000	10		120,000	14
TOTAL **	2,500,000	116	400,000	20	5,500,000	225.5	100,000	25	1.5	8,500,000	388*

* Estimated total net developable area
** Ultimate development governed by "Trip Generation Budget"

4.3 REPRESENTATIVE LAND USE PLAN

This representative Land Use Summary table has been prepared to reflect an anticipated build-out scenario. The table has been included in order to facilitate analysis of the potential impacts associated with the ultimate development of the project. The figures presented only reflect a potential development pattern. The intensity of development may shift from one Planning Area to another; the numbers represented in the table do not reflect a maximum for any individual Planning Area. The project area as a whole will be regulated by the Circulation Plan and the associated "Trip Generation Budget". Ultimate development must remain consistent with the City's 2030 General Plan anticipating a total of 8,500,000 square feet of industrial and business research park users and related activities. The Specific Plan identifies sufficient infrastructure and public facilities to adequately and efficiently support any and all anticipated land uses and activities permitted under the Specific Plan. These improvements will be phased to coincide with or precede individual development projects. The maximum permitted total floor area for all industrial, office and commercial developments within the Specific Plan Area shall not exceed the General Plan overall floor area allocations. The cumulative square footage of floor area for each of the allowed uses within the Specific Plan have been estimated for each Planning Area; however, these numbers may be modified and transferred as market conditions and / or development concepts dictate. Any modifications and/or adjustment to land use square footage ratios must comply with the "Trip Generation Budget" and other provisions identified in the E.I.R. and City's General Plan.

CIRCULATION PLAN
EXHIBIT 4.9

4.4 CIRCULATION PLAN

The Circulation Plan is designed to accommodate a number of different development scenarios. The overall circulation concept relies on a hierarchy of circulation features ranging from major arterials to local streets. The system is designed to accommodate traffic to the project area and around the area while discouraging through traffic intrusion into individual Planning Areas.

The Circulation Plan provides for a phasing of street improvements to correspond to the phased development in each Planning Area. All streets shown on the Circulation Plan are public streets unless otherwise indicated.

In order to efficiently facilitate new development parcels, the primary access will be from interior streets. Direct access from adjacent arterials will

be subject to review and approval by the City. Primary access locations into the project area have been located and designed to provide full turning movements. The locations relate to existing driveways and median designs, and are anticipated to adequately serve the projected traffic volumes for the project. Specific future development proposals may require modifications to these anticipated access locations.

The circulation system shall be master planned to accommodate the build-out of the Specific Plan. Incremental phased roadway construction shall be completed prior to occupancy of the facility(s) being served. The City shall approve phasing plans for street improvements, consistent with development construction phasing. Implementation will be through the Subdivision Mapping process.

Due to the variety of land use options, and types of development activity, the overall development intensity shall be regulated by a "Trip Generation Budget" (Exhibit 4.10) for the project with each land use assigned a trip generation factor. Therefore, development will be limited to the parameters analyzed by the current Specific Plan Environmental Impact Report.

The Trip Generation Budget in Exhibit 4.10 documents the maximum a.m. and p.m. peak hour trip generation approved for the overall Specific Plan as well as for each Planning Area. Subsequent traffic studies will not be required if the cumulative development, regardless of specific land use mixes, within each Planning Area does not exceed the peak hour directional maximums noted in Exhibit 4.10. If development is proposed that exceeds any Planning Area maximum but the overall Specific Plan is not exceeded then a focused traffic study approved by the Development Services Director shall be required that demonstrates no additional off-site mitigation measures are required. The intent of this provision is to allow future flexibility (to move trips from one Planning Area to another) in the evolving development of the Specific Plan. If additional off-site mitigation measures are required and/or if proposed development exceeds the overall Specific Plan trip generation budget, then formal traffic studies and CEQA requirements will be triggered.

The Circulation Plan illustrates the general alignments, classifications and location of major public streets within the project. The Circulation Plan is consistent with the Oxnard 2030 General Plan's Circulation Element.

Access to the City of Oxnard and the Sakioka Farms Business Park is provided by Interstate 101, the Ventura Freeway. The City's General Plan designates the intersection of Gonzales Road and Rice Avenue as a primary entry node to the City. Access to the project is provided by a system of arterial highways including:

- Rice Avenue, a north-south major arterial highway (6 travel lanes) designated as a truck route, business route, scenic highway and City Image Corridor. Based on a Memorandum of Understanding between the City and Caltrans, Rice Avenue is planned to be under the jurisdiction of Caltrans and subject to their regulations.

- Del Norte Boulevard, a north-south primary arterial highway (6 travel lanes) designated as a truck route and scenic highway.
- Gonzales Road, an east-west primary arterial highway (6 travel lanes) designated as a truck route, business route and scenic highway.

The Circulation Plan will require an extension of Gonzales Rd. into and through the project area. This will also necessitate the creation of a full, at grade, four-way intersection at Gonzales Road and Rice Avenue. The roadway design should include a moderate radius to not only add street character but to provide more acreage for development in the central core area of the project. A second west to east major arterial is proposed approximately 1200 feet to the south. This arterial intersecting Rice Ave. and Del Norte Blvd. is critical to relieving traffic demand at the Gonzales Road intersections. This roadway would better facilitate the large truck traffic associated with major industrial uses and create a clear division of business research and mixed use activities from more traditional industrial uses. The new roadway should be designed to intersect, at grade, with Rice Avenue midway between the two existing traffic signals. Secondary roadways are proposed to connect these west/east corridors and should be located to achieve the best parcelization patterns. Two major project entry nodes will occur where Gonzales Road meets Rice Avenue and Del Norte Boulevard. Two secondary entry nodes are planned for the new intersections of Rice Avenue and Del Norte Boulevard with the new east/west arterial.

Additional internal project circulation will be provided by a network of public and private streets serving as access to individual parcels within the project area. Circulation is further enhanced by a number of entry drives and public transportation facilities. There are currently signalized intersections at Rice Avenue and Gonzales Road, and Rice Avenue at the entrance to the Procter and Gamble facility, south of the project. Alternative forms of transportation should also receive careful consideration. The current bus route passes the project area on Rice Avenue with continuation west along Gonzales Road. The project Circulation Plan identifies existing and proposed bus turnout locations along the adjacent arterials. As a supplement to vehicular access to the project area, potential future access may be available from the rail line to the south of the project area.

In addition, the Master Plan Concept incorporates a public pedestrian walkway system. As a means of achieving a strong landscape image, landscape parkways and pedestrian walkways are required on both sides of the street and shall be provided in the street right-of-way adjacent to new development projects.

TRIP GENERATION BUDGET
EXHIBIT 4.10

Estimated Project Traffic Generation

TRIP RATES Land Use	Units	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	ADT
General Commercial	TSF	0.51	0.33	0.84	1.46	1.59	3.05	35.00
Office	TSF	1.66	0.23	1.89	0.31	1.51	1.82	13.50
Business Park/R&D Center	TSF	1.12	0.22	1.34	0.23	0.96	1.19	10.44
Light/General Industrial	TSF	0.58	0.18	0.76	0.25	0.61	0.85	6.50

AREA	LAND USE	Size	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	ADT
1	Office	400 TSF	664	92	756	124	604	728	5,400
	Business Park/R&D Center	1,300 TSF	1,456	286	1,742	299	1,248	1,547	13,572
	General Commercial	80 TSF	41	26	67	117	127	244	2,800
	SUBTOTAL		2,161	404	2,565	540	1,979	2,519	21,772
2	Business Park/R&D Center	200 TSF	224	44	268	46	192	238	2,088
	Light/General Industrial	600 TSF	348	108	456	150	366	516	3,900
	SUBTOTAL		572	152	724	196	558	754	5,988
3	Business Park/R&D Center	600 TSF	672	132	804	138	576	714	6,264
	Light/General Industrial	1,200 TSF	696	216	912	300	732	1,032	7,800
	SUBTOTAL		1,368	348	1,716	438	1,308	1,746	14,064
4	Business Park/R&D Center	200 TSF	224	44	268	46	192	238	2,088
	Light/General Industrial	500 TSF	290	90	380	125	305	430	3,250
	SUBTOTAL		514	134	648	171	497	668	5,338
5	Light/General Industrial	2.500 TSF	1,450	450	1,900	625	1,525	2,150	16,250
	SUBTOTAL		1,450	450	1,900	625	1,525	2,150	16,250
6	Business Park/R&D Center	100 TSF	112	22	134	23	96	119	1,044
	Light/General Industrial	700 TSF	406	126	532	175	427	602	4,550
	SUBTOTAL		518	148	666	198	523	721	5,594
7	Business Park/R&D Center	100 TSF	112	22	134	23	96	119	1,044
	General Commercial	20 TSF	10	7	17	29	32	61	700
	SUBTOTAL		122	29	151	52	128	180	1,744
		TOTAL	**6,705**	**1,665**	**8,370**	**2,220**	**6,518**	**8,738**	**70,750**
	Existing Sakioka Farms Trip Totals		**10**	**8**	**18**	**7**	**11**	**18**	**190**

Source: Austin-Foust and Associates, 2010.

4.4.0 CIRCULATION POLICIES

4.4.1 Gonzales Road shall be designed as an east/west primary arterial. Gonzales Road shall be improved and dedicated as a public street with an 120 foot right-of-way from Rice Avenue east to the new intersection with Del Norte Boulevard. Gonzales Road shall extend from Del Norte Boulevard to the east property line with a 72 foot right-of-way.

4.4.2 A new east/west secondary arterial, Street "A" shall be improved and dedicated as a public street with an 102 foot right-of-way from Rice Avenue east to a new intersection with Del Norte Boulevard. This new street will be located approximately 1200 feet south of the extension of Gonzales Road.

4.4.3 Two new north/south local arterials, Street "B" and "C" are proposed within the Specific Plan area to connect the two east/west arterials. Each street will be improved and dedicated as a public street with a 72 foot right-of-way.

4.4.4 Primary access to the project area shall be from the existing signalized intersection of Gonzales Road and Rice Avenue, and the proposed new signalized intersections of Gonzales Road and Del Norte Boulevard, and the new east/west arterial with Rice Avenue and Del Norte Boulevard.

4.4.5 Direct access to individual projects from the North/South arterial highways adjacent to the project area shall be limited and allowed only when the project, size, location or type of use, warrants such access, subject to review and approval of the City. No direct access will be allowed to individual parcels from Rice Avenue in accordance with the Memorandum of Understanding between the City and Caltrans.

4.4.6 Deceleration and acceleration lanes for individual developments may be required, depending on the location of the proposed access point. Right turn in and right turn out accesses to the arterial highways shall be considered on an individual project basis, subject to the review and approval by the City.

4.4.7 Trip reduction measures should be included in future development projects in an attempt to implement the Ventura County Congestion Management Program. Trip reduction measures may include providing for bicycle parking facilities and an adequate number of vanpool and carpool parking spaces. Alternative transportation forms including bus service and future rail access, shall be investigated with each development project. Where feasible and appropriate transit stops improvements, like bus pullouts, pads and shelter should be included in the plan. Future projects which employ fifty (50) or more employees may be required to provide basic transportation opportunities and options information to their employees through a Transportation Management Plan.

4.4.8 Pedestrian sidewalks shall be incorporated into each development project as a component of an individual project's landscape plan. Sidewalks shall be a minimum of five (5) feet wide and installed within the street right-of-way on both sides of the street adjacent to new development throughout the project area. Pedestrian walkways are encouraged to link development projects.

4.4.9 Public streets shall be developed to local street standards as shown in the Standard Plans of the City's Public Works Department, or as otherwise approved by the City Traffic engineer. Street patterns throughout the Specific Plan should link together; dead end and cul-de-sac terminations shall be discouraged.

4.4.10 On-street parking shall generally not be permitted along arterial streets in the project area.

4.4.11 The "Trip Generation Budget" identified in the E.I.R. shall be reviewed with each individual project request. Additional periodic reviews, by the Development Services Director, will also be necessary for overall compliance with the E.I.R.

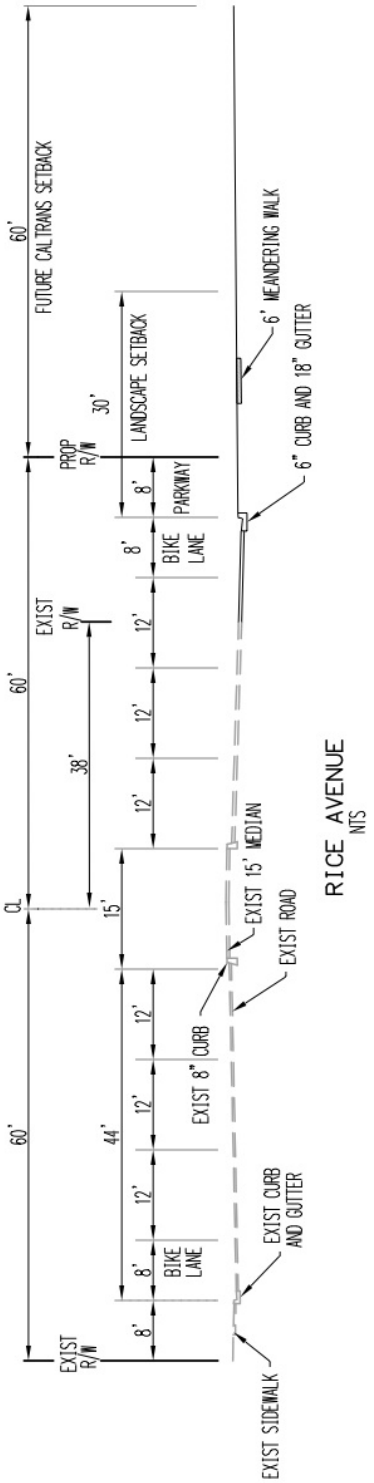
4.4.12 Circulation system improvements shall be master planned to accommodate ultimate build-out of the Specific Plan. On-site and off-site circulation improvements shall be completed prior to occupancy to provide appropriate vehicular, pedestrian and bicycle circulation to each parcel.

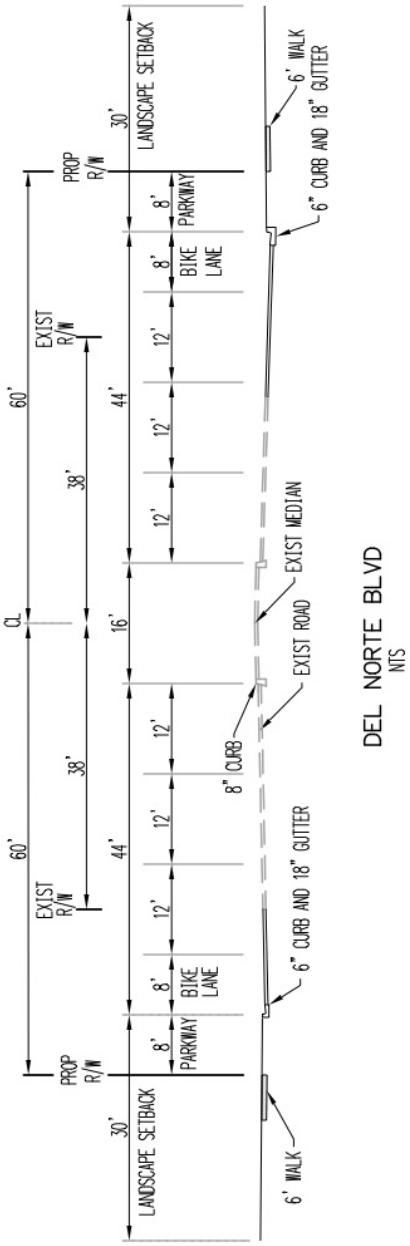
4.4.13 Phasing of public street improvements is permitted subject to review and approval by the City.

4.4.14 The secondary arterial (Street 'A') intersection with Del Norte Boulevard shall be a full movement three-way intersection with a median break plus the option to create a four-way intersection with a private drive or street entry to Planning Area 6. The Rice Avenue and Street"A" intersection shall also be a full movement three-way intersection with a median break.

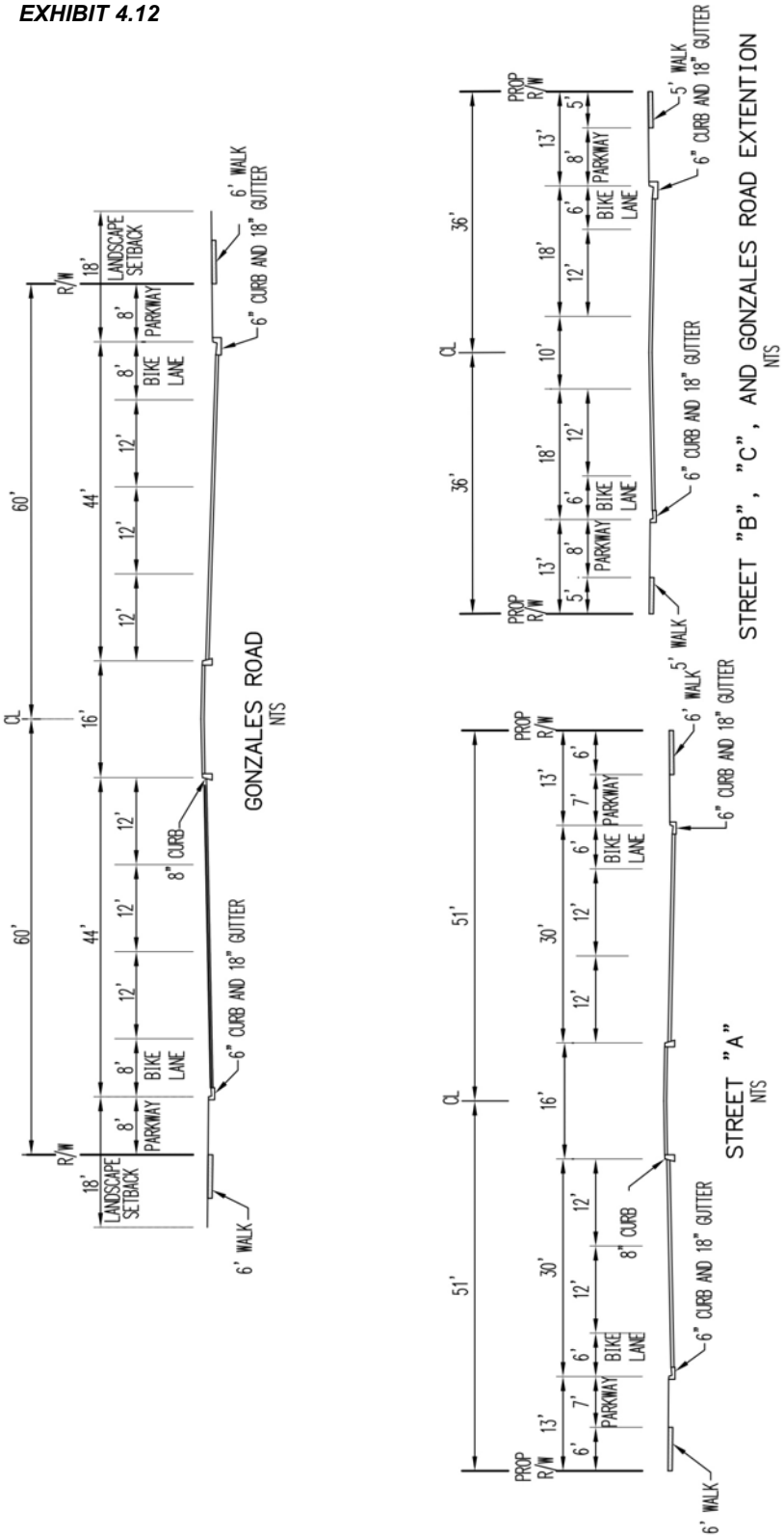
4.4.15 Street cross sections shown in figures 4.11, 4.12, 4.14 and 4.16 to 4.25 may be modified to reduce parkways and/or landscape-related water usage in order to comply with State-required water conservation goals and mandates.

STREET CROSS SECTIONS
EXHIBIT 4.11

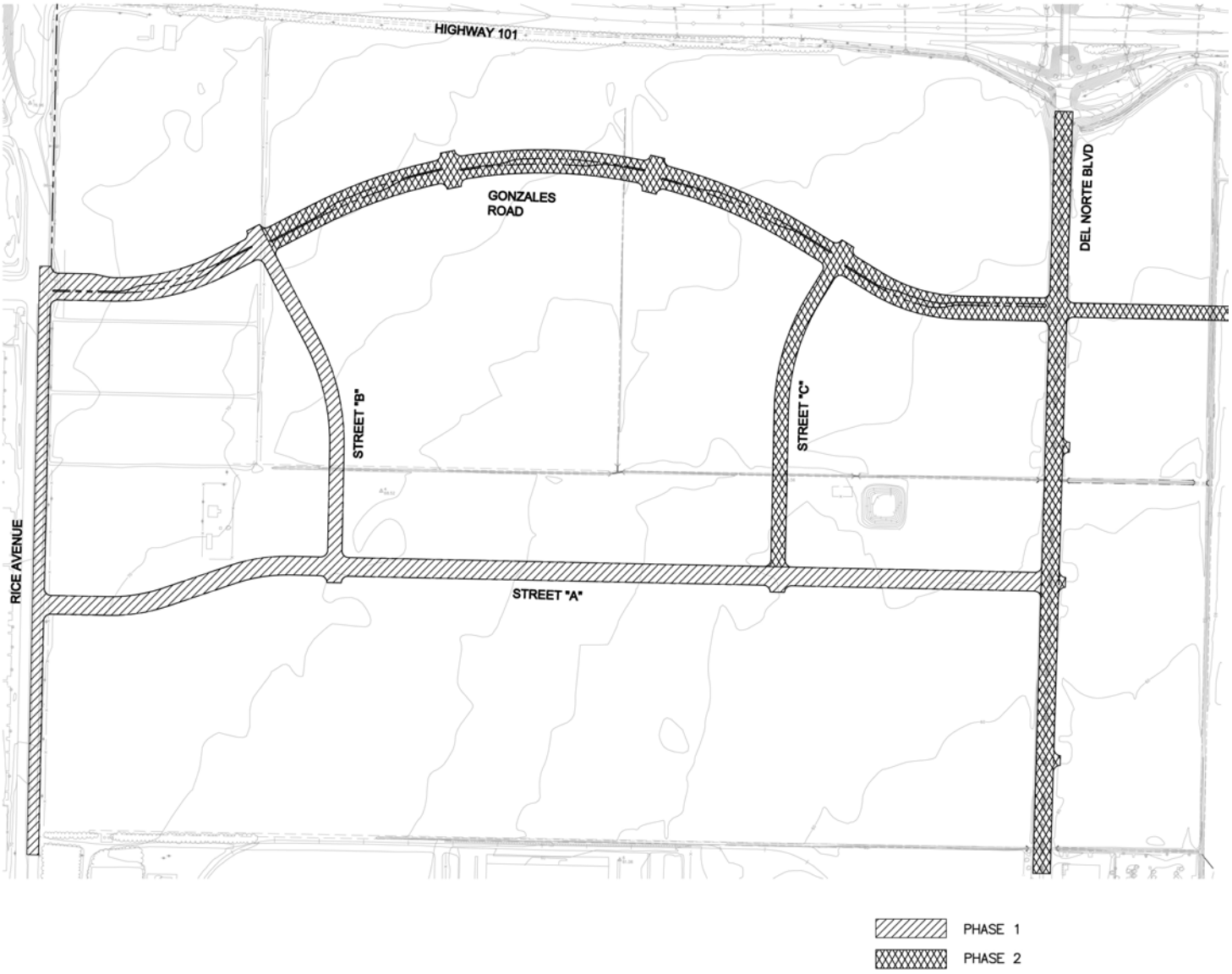


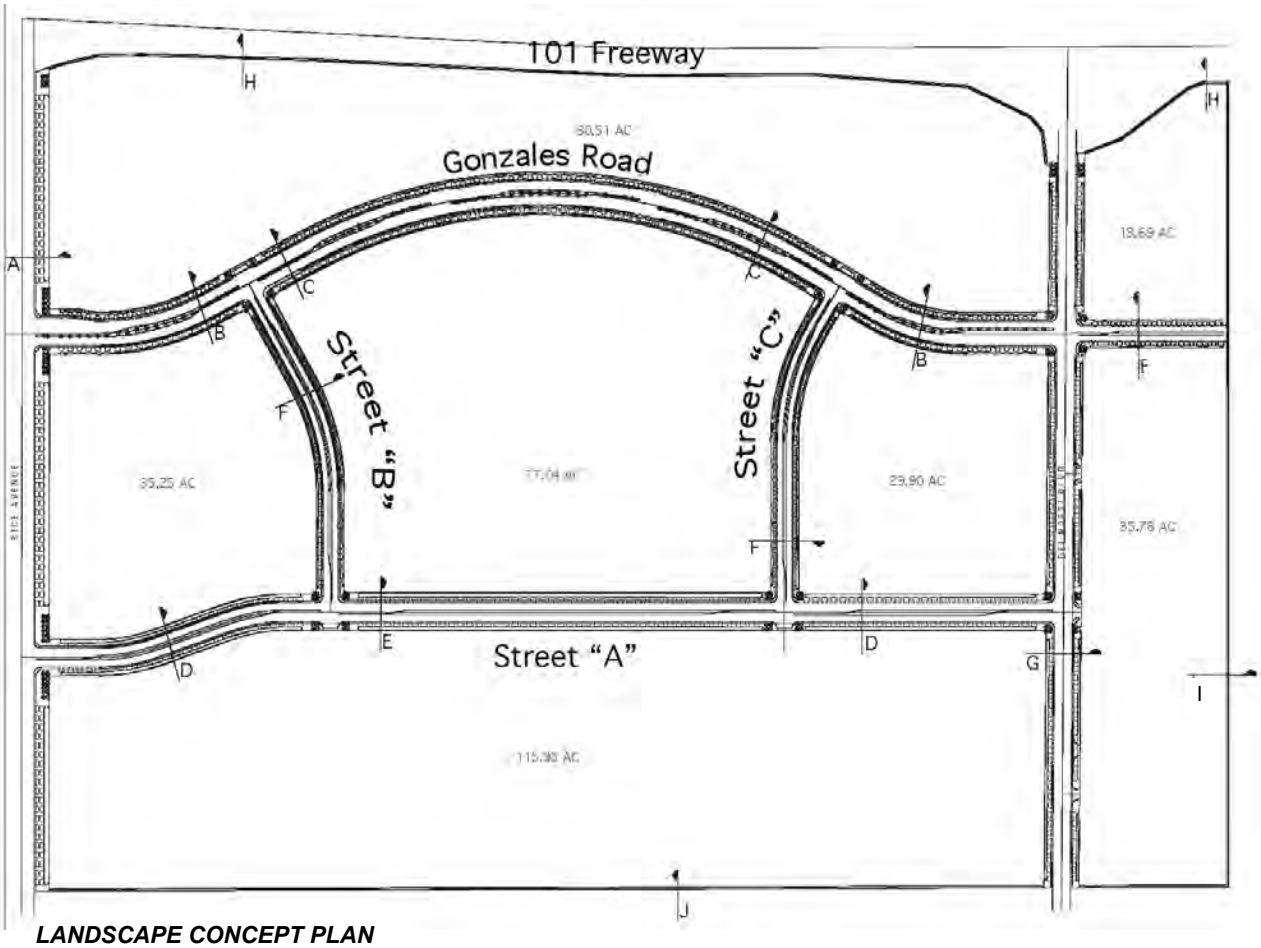


STREET CROSS SECTIONS
EXHIBIT 4.12



CONCEPTUAL STREET PHASING
EXHIBIT 4.13





LANDSCAPE CONCEPT PLAN
EXHIBIT 4.14

4.5 LANDSCAPE CONCEPT

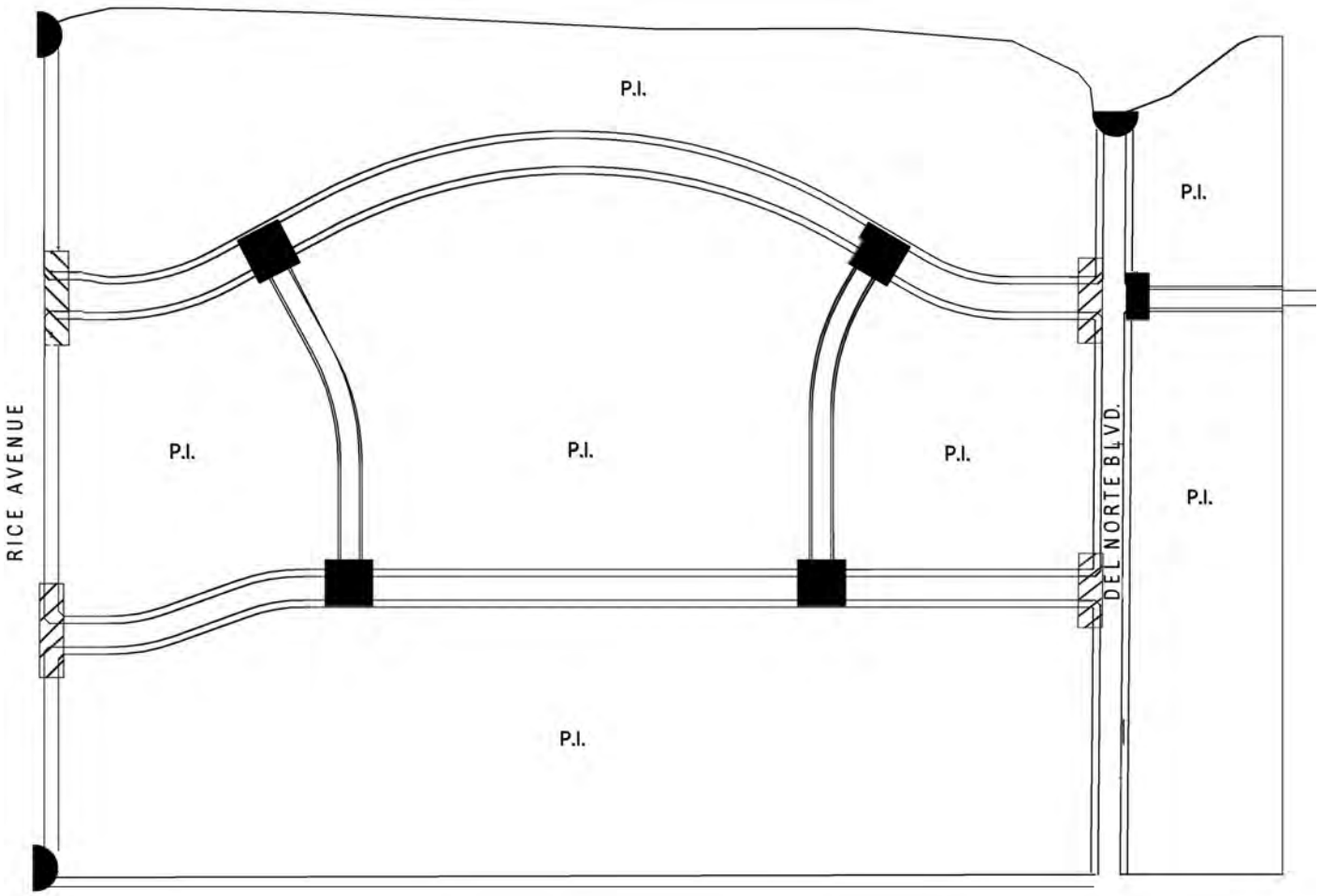
The Landscape Concept for the Sakioka Farms Business Park is intended to create a unique character and identity for the project and community which reinforces the planning and architectural concepts. It is also designed to create a hierarchy and organization of the landscape which assists in way-finding and imaging of the project while providing a visual asset to the community.

Because of the nature of the project, the landscape design will be key to creating the character of the project. The landscape will 'bridge' the varied architectural styles, land uses, and varied scale/massings into a cohesive whole, while visually organizing circulation and uses. The landscape will identify entries and intersections, while providing for a park-like image along the project streets.

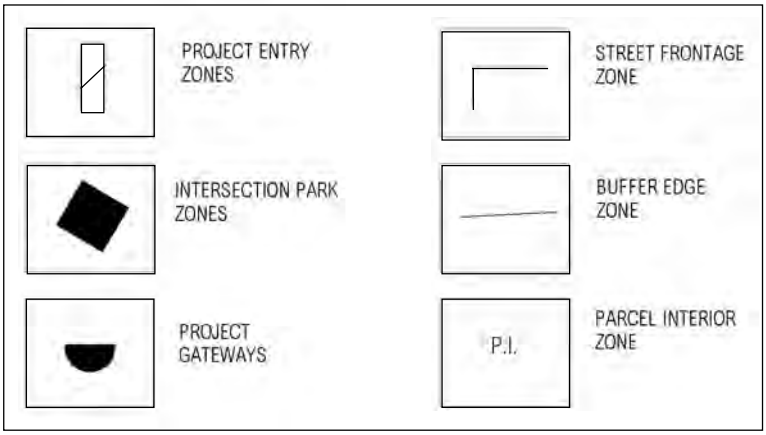
The landscaping objective for the Specific Plan is to create a project area that:

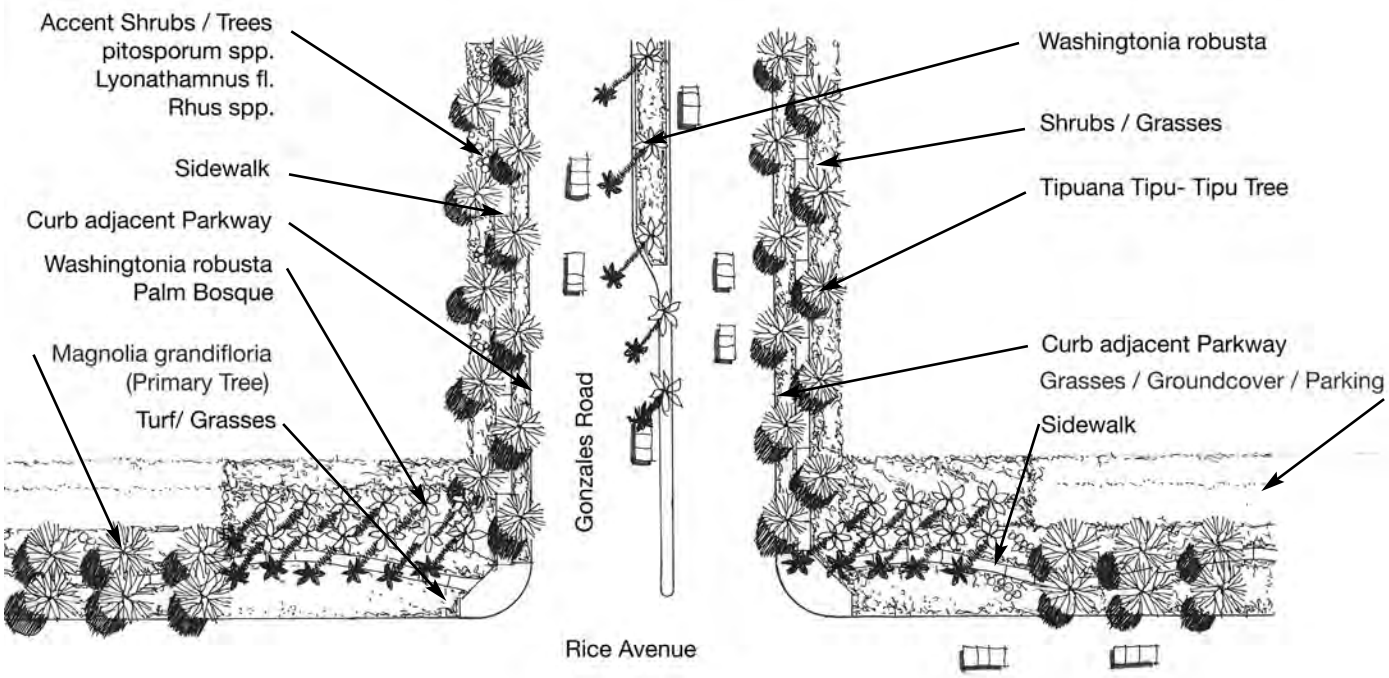
- Reflects the "macro-image" of the site through all levels of the project and acts as a unifying element that ties the individual plans together and weaves through the architecture and infrastructure.
- Develops a pleasant, 'walkable' streetscape
- Creates a memorable vision of the project area and meets or exceed the expectations of tenants and visitors.
- Develops a hierarchy of spaces to assist in visitor and tenant way-finding and identification.
- Ensures the long-term sustainability of the landscape through water conservation irrigation practices, use of drought-tolerant and low water usage materials, and through the limiting of turf use.
- Ensures that individual project landscape proposals are feasible and complement the public landscape areas.
- Considers long-term maintenance viability.
- Provides shade and wind screening for pedestrian use areas
- Reduces the scale of buildings
- Becomes a visual asset to the community
- Complies with Oxnard Resolution No. 2822

The landscape concept establishes a "California" theme, that includes an eclectic mix of indigenous plant and local materials which reflect the historical and cultural background of the area. These include perimeter landscaping, large landscape setbacks along both interior and perimeter streets, pedestrian walkways which unify the site, and intersection treatments which create a "park-like" atmosphere and assist in visitor way-finding. Street parkways maybe modified to reduce water usage to comply with State water conservation goals and mandates, and City of Oxnard Resolution No. 2822.



LANDSCAPE NODES
EXHIBIT 4.15





PROJECT ENTRIES AT RICE AVENUE
EXHIBIT 4.16

Project Entries

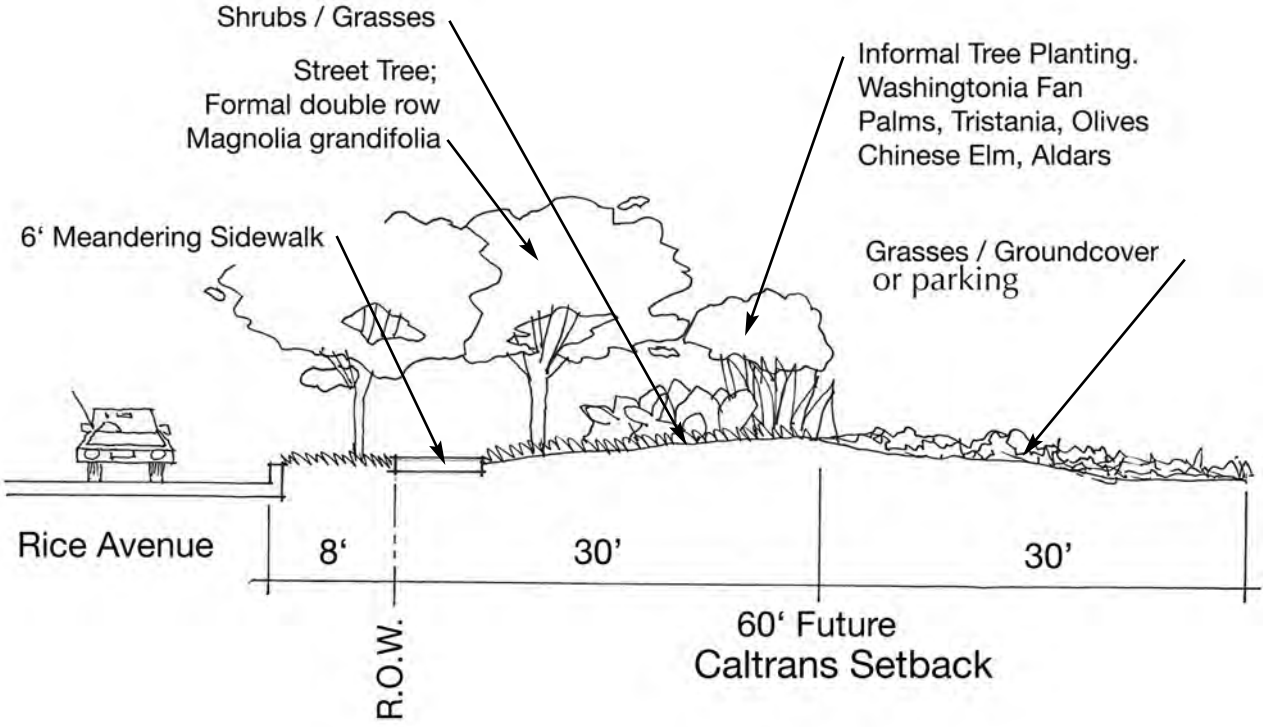
Project entry landscape shall provide a strong visual identity through formal double-row linear planting of hybrid Washingtonian palm bosques and formal shrub massing below. Business Park identification signs (5.4.8) may be incorporated into the entry landscape with a backdrop (and/or foreground) of flowering shrubs and annual color. Formal hedge plantings at the back of the entry landscaping shall screen views of parking and adjacent parcel developments.

The Gonzales/Rice entry landscape shall be approximately 60′ deep and extend approximately 175′ on each side of Gonzales along Rice as illustrated by Exhibit 4.16.

The Street 'A'/Rice entry landscape shall be approximately 30′ deep and extend approximately 75′ on each side of Street 'A' along Rice, similar to Exhibit 4.16.

The Gonzales and Street 'A'/Del Norte entries shall be approximately 30′ deep and extend approximately 75′ on each side of Gonzales and Street 'A' along Del Norte, similar to Exhibit 4.23.

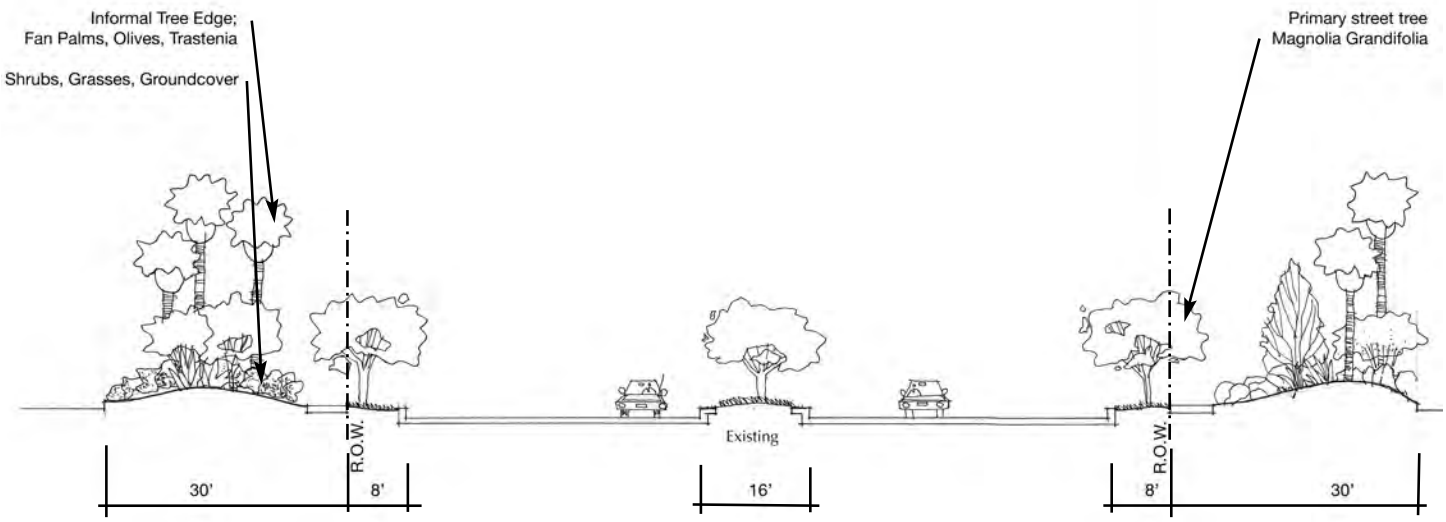
Rice and Del Norte/101 Freeway entries shall be landscaped approximately 100′ back from the property line edges. Exhibit 4.25 illustrates the general concept which shall be finalized in concert with the final Rice and Del Norte interchange design.



RICE AVENUE FRONTAGE SECTION
SECTION A
EXHIBIT 4.17

Project Frontages - Rice Avenue

The street frontage on the east side of Rice Avenue has a 60′ Caltrans setback that is consistant with the City of Oxnard’s Memorandum of Understanding with Caltrans. The curb adjacent parkway and a 30′ landscape setback will provide a double row of Magnolia grandiflora trees at 40′ on center with a background of informal Washingtonian palms and a mix of vertical screen trees and smaller flowering trees. Informal drifts of shrubs and grasses / groundcover will stretch along the entire Rice Avenue frontage. The internal 30′ of the Caltrans setback shall be planted in grass / groundcover and or surface parkingr. The Rice Avenue sidewalk is proposed to meander similar to the existing improvements to the south.

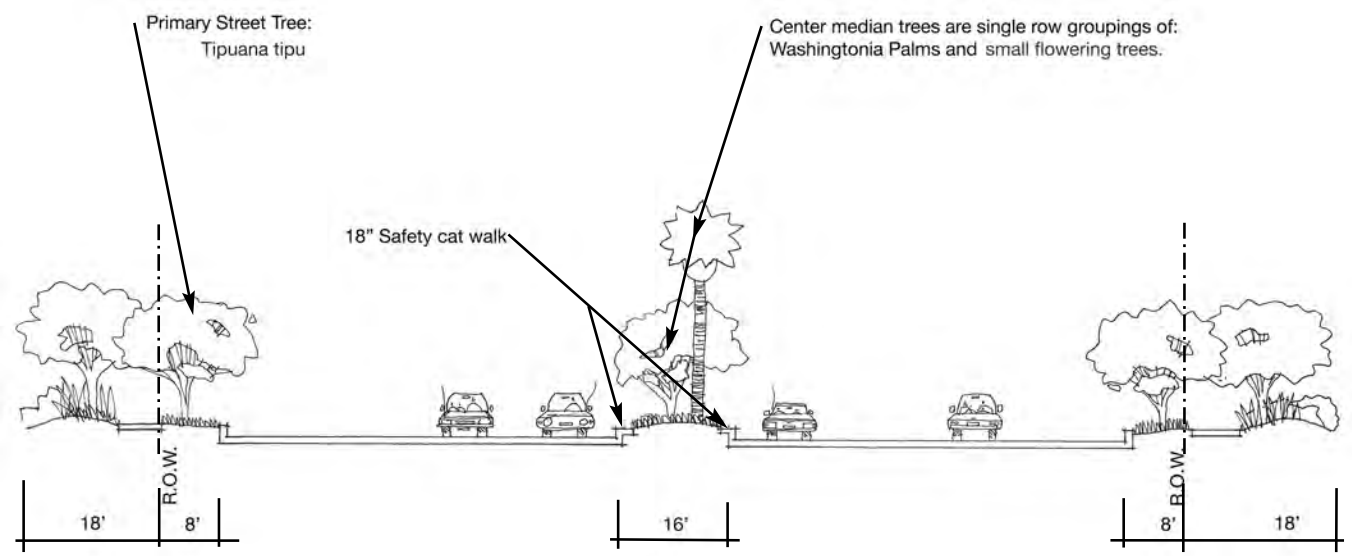


DEL NORTE BOULEVARD STREETSCAPE SECTION
SECTION G
EXHIBIT 4.18

Del Norte Boulevard Landscape

The parkway landscape along Del Norte Boulevard will be planted with a single row of Magnolia grandiflora trees at 40′ on center. The 30′ landscape setback shall create a backdrop consisting of informal groupings of Washingtonian palms and a mix of vertical screen trees and small flowering trees. Informal drifts of shrubs and grasses / groundcover will stretch along the entire length of the setback.

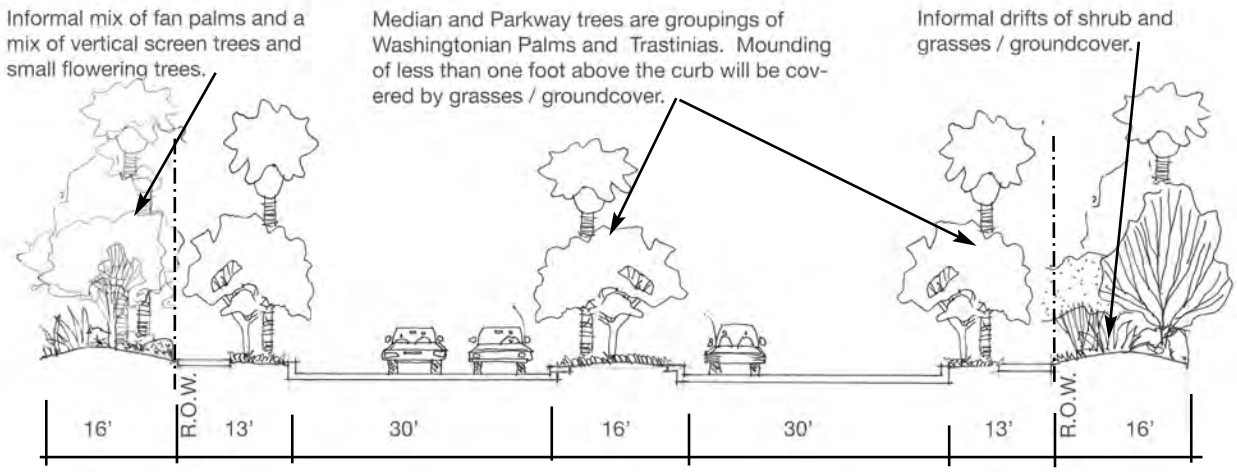
A 6′ sidewalk runs behind the 8′ curb adjacent parkway on both sides of the boulevard. All sidewalk and median improvements / alterations shall be consistent with the existing improvements to the south.



GONZALES ROAD STREETSCAPE SECTION
SECTION B & C
EXHIBIT 4.19

Gonzales Road Landscape

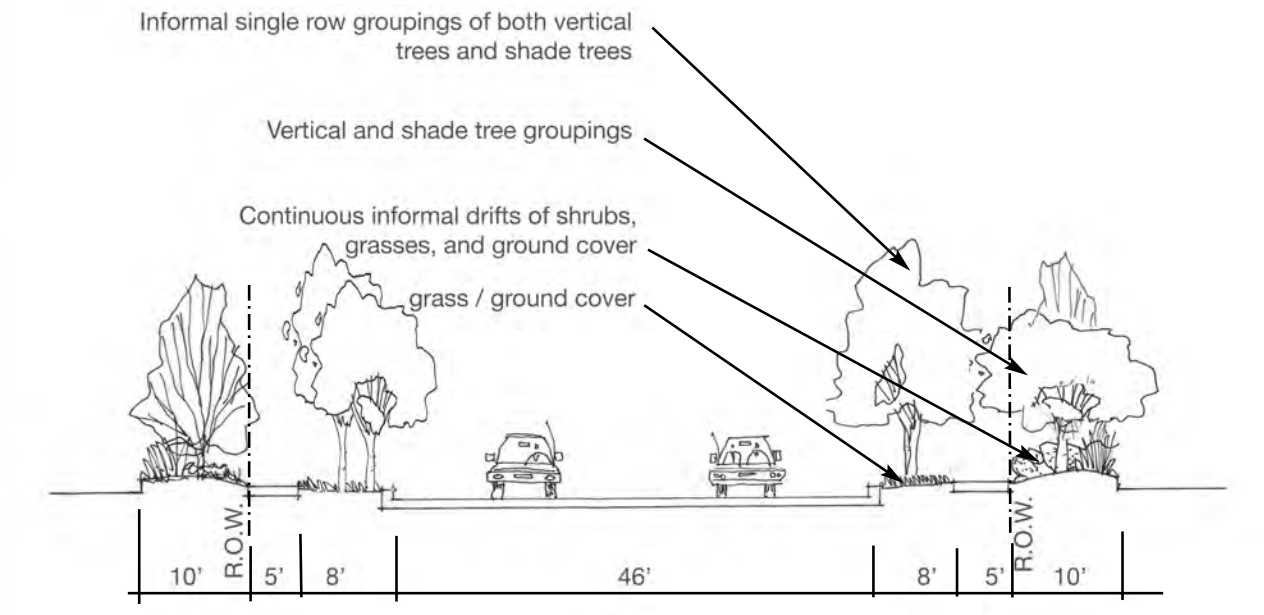
The extension of Gonzales Road, between Rice Avenue and Del Norte Boulevard, will have an 8′ curb adjacent parkway and an 18′ landscape setback on each side. A 6′ wide sidewalk seperates a double row of Tipuana trees that are triangular spaced at 40′ on-center. Informal groupings of Washingtonian palms and small flowering trees will provide a continuous backdrop above informal drifts of shrubs and grasses / ground cover. The medians will be planted with single row groupings of Washingtonian palms intersperced with groupings of a flowering tree. The median will be mounded to a maximum height of 12″ from the top of curb, be planted with grasses / ground cover and will have an 18″ catwalk on each side.



STREET "A" STREETSCAPE SECTION
SECTION D & E
EXHIBIT 4.20

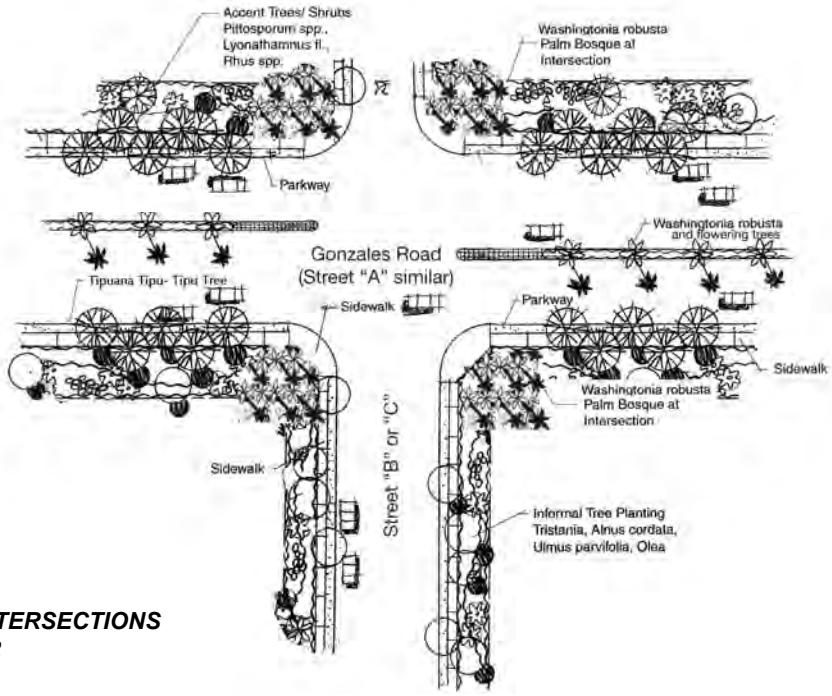
Street "A" Landscape

Street "A", the East-West Connector Street south of Gonzales Road,will have 16′ landscape setback, a 6′ sidewalk and an 8′ curb-adjacent parkway along both sides of the street. A 16′ center median separates two 30′ street sections. The median and parkway shall be planted with groupings of Washingtonian Palms and Trastinias, with a continuous grass / ground cover base. The 16′ landscape setback provides a background planting of informal groups of Washingtonian palms and a mix of vertical screen trees and small flowering trees. Informal drifts of shrub and grasses / ground cover will stretch along the entire Street "A" setback.. The median will be mounted, with a maximum height of no more than 12″ from the top of curb and will have an 18″ catwalk on each side.



STREET "B", "C" AND GONZALES ROAD EXTENSION
STREETSCAPE SECTION
SECTION F
EXHIBIT 4.21

Street "B", "C" and Gonzales Road Extension have an 8′ curb adjacent parkway, a 5′ sidewalk and a 10′ landscape setback along both sides of these streets. The parkway planting design features informal vertical and shade tree groupings with a grass / groundcover base. The 10′ setback is mounded and continues the parkway planting design of informal vertical and shade tree groupings. At their base are continuous iInformal drifts of shrubs, and grasses / groundcover.

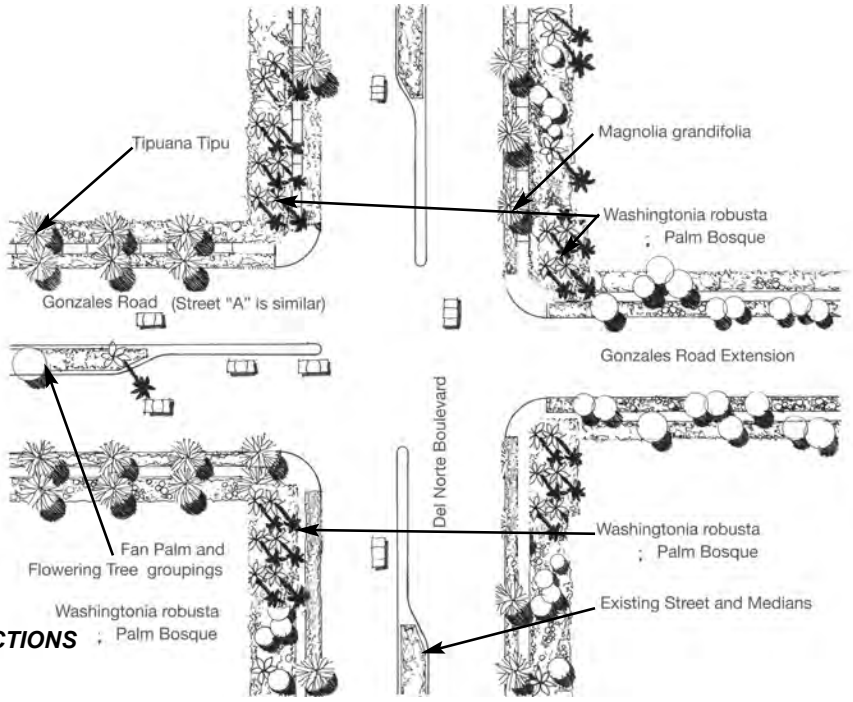


PRIMARY INTERSECTIONS
EXHIBIT 4.22

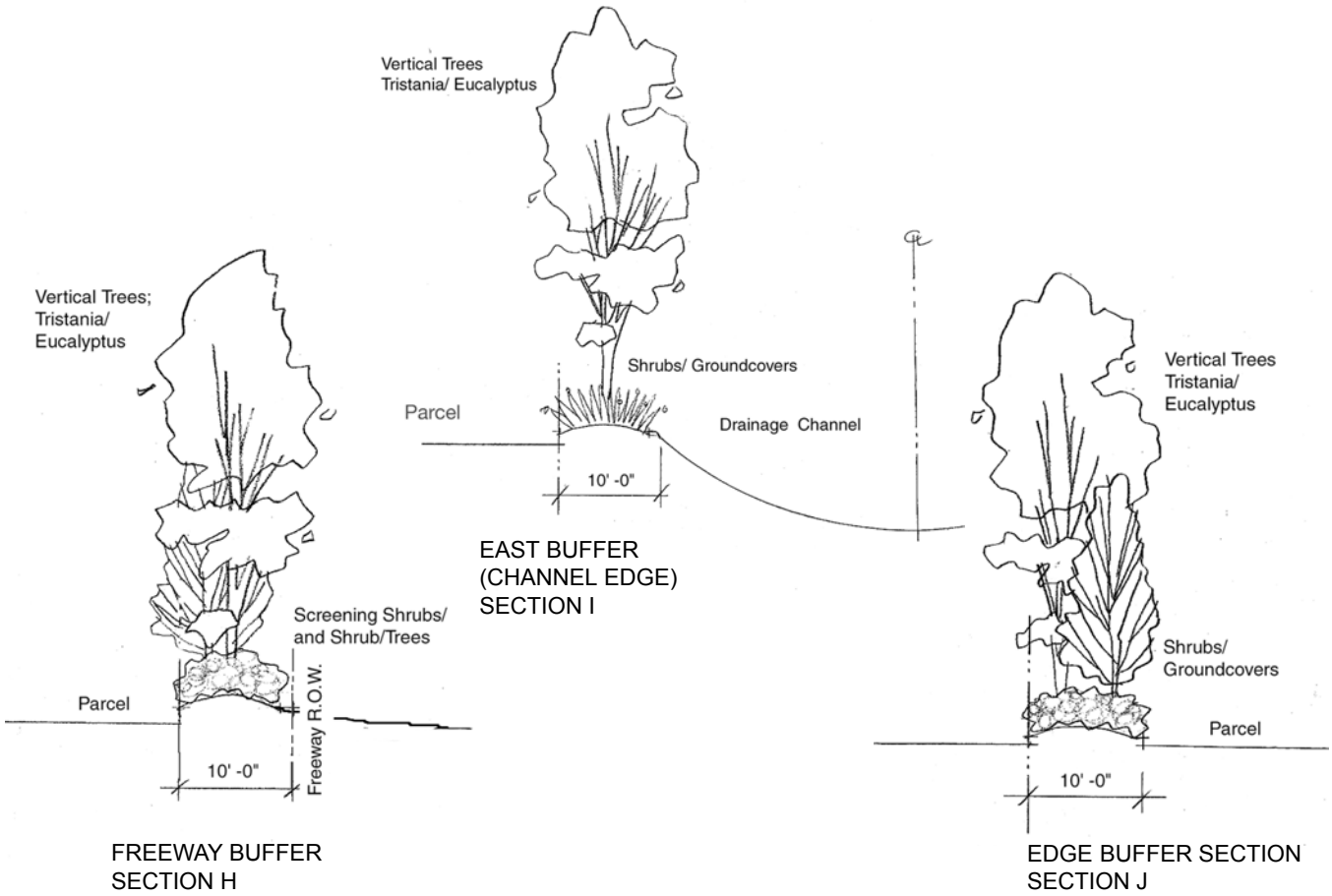
Intersection Treatments

The intersections at Gonzales Road, Street "A", and Streets "B" and "C" are intended to create park-like plantings that also identify the intersections and assist in way-finding.

Intersection orner plantings will create a palm bosque of hybrid Washingtonian palms with formal shrub and grasses/groundcover plantings below.



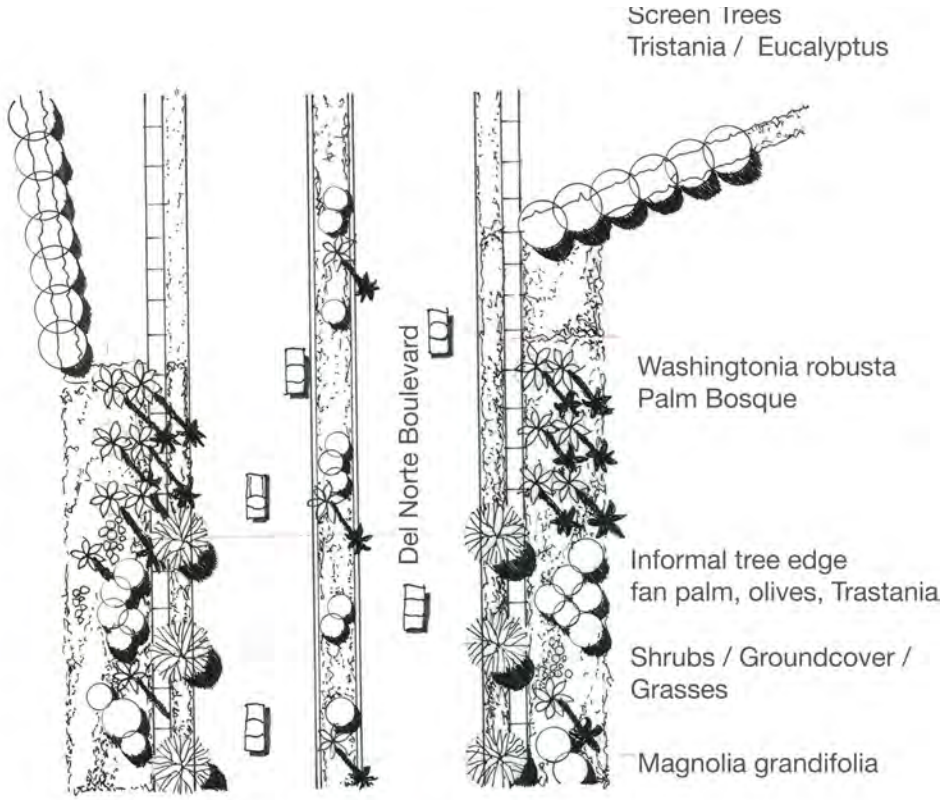
DEL NORTE INTERSECTIONS
EXHIBIT 4.23



BUFFER SECTIONS
EXHIBIT 4.24

Project Perimeters / Buffer Edges

The project perimeters which require landscaping occur along the north property line adjacent to the 101 Freeway, the east property line, and the south property line. The edge setbacks are 10′ typical, and will be planted with informal vertical tree plantings such as eucalyptus, pines, brisbane box, carob trees. Ground plane plantings shall consist of shrub/tree species and hedge material to screen rear parcel areas. Rear parking lot perimeter tree planting shall be 40′ on-center.



101 FREEWAY ENTRIES AT DEL NORTE AND SIMILAR ENTRIES AT THE N.E. CORNER OF RICE AVENUE

EXHIBIT 4.25

Parcel Entries

Individual parcel entries are to be installed by each parcel owner/developer but shall include landscape elements that transition and blend the streetscape design into the parcels. Plant material types and layouts shall be compatible with and complimentary to the adjacent streetscape setback plantings.

Parcel Interior

Parcel Interiors/Private Developer improvements shall be compatible with and complimentary to the overall project landscape theme.

4.6 PUBLIC FACILITIES PLANS

The Public Facilities Plans identify existing and proposed infrastructure, including water, wastewater, storm drain and facility improvements to serve development within the Specific Plan area. A specific analysis of infrastructure requirements and detailed design, construction and phasing plans will be identified in the Infrastructure Master Plan Technical Appendix to the E.I.R.

WATER SYSTEM PLAN

The Water System Plan for the site includes a system of water mains to be constructed in conjunction with the phased project build-out. This system will be contained in the streets and will connect to existing facilities in Del Norte Blvd. and Rice Ave. Water systems shall be looped to provide adequate water pressure and fire flow for each phase of the build-out. Stub outs shall be provided for each lot, and future on-site water mains shall be sized in accordance with the City of Oxnard Fire Department and Public Works Department requirements. Where the needs of future in-tract development exceed system capacity, additional upgrades such as tanks or pump stations may be required to achieve calculated demands.

The existing potable water supply facilities contained in Rice Ave. and Del Norte Blvd. are adequate to supply the projected needs of the site. A 16″ water main looped through the site will satisfy fire flow requirements, and the merging of two pressure zones serving the area will further improve the available pressure.

All anticipated water system connections should be constructed prior to or concurrently with each respective phase of the site improvements. In accordance with SB610, a water supply assessment was prepared by the City due to the development's size.

WASTEWATER PLAN

The Wastewater Plan for the site includes a system of gravity mains to be constructed in conjunction with the phases build-out, and will connect to existing facilities in Del Norte Boulevard and Rice Avenue. The proposed wastewater system will be constructed to accommodate the worst-case generation assuming the ultimate build-out of the project. The existing system in Del Norte Boulevard and Rice Avenue have locally sufficient capacity to accommodate the additional wastewater discharges anticipated from the site build-out. Proposed main sizes and layouts are generally consistent with the City of Oxnard Standard Plans for Public Works Construction (Standard Plans) and the Wastewater Master Plan. Wastewater mains were sized in accordance with the worst case discharge rates and peaking factors found in the City's Standard Plans.

STORM DRAIN PLAN

The Storm Drain Plan for the site proposes a system of storm drain lines to be constructed both within the streets and easements in accordance the anticipated drainage patterns of the developed site. The project site drains generally to the

southeast in both the existing and ultimate drainage conditions to a connection with the existing Sturgis Road Drain at the southeast corner of the site. Storm water discharges from the site are consistent with those envisioned by the City of Oxnard Master Storm Drain Plan.

The proposed Storm Drain Plan anticipates the construction of storm water detention facilities with outlet control structures to effectively limit peak storm water runoff discharge rates from the site to pre-development levels for each storm event (up to and including a 100-year event) with an overall maximum allowed runoff rate of 1 cfs/acre regardless of pre-development runoff rate. All new development projects will be required to implement hydraulic control measures to prevent accelerated downstream erosion by limiting the post-development peak storm water runoff discharge rates as previously described and construction of mitigation measures, such as but not necessarily limited to, energy dissipaters, flow spreaders, and check dams when determined effective in erosion prevention.

Runoff from the project shall comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) as described in the Ventura County Municipal Storm Water NPDES permit Order No. 00-108, as well as the provisions of the Ventura Countywide Storm Water Quality Urban Impact Mitigation Plan (SQUIMP) where applicable. The Project shall comply with the performance criteria set forth in the 2002 Technical Guidance Manual for Stormwater Quality Control Measures under Board Order 00-108 including the Best Management Practices (BMPs) specified in said manual or other equally effective methods proposed by the developer and approved by the City.

The on-site storm water conveyance system will be consistent with the City of Oxnard Master Storm Drain Plan, Ventura County Watershed Protection District discharge limitations for the Revolon Slough, and the Northeast Industrial Assessment District (NIAD) plans which considered future drainage configurations for the property. The existing trapezoidal channel which is the point of connection for the project (the Sturgis Road Drain) is anticipated to be extended to the north property line of the project along its current alignment. The existing earthen channel would be replaced by a concrete trapezoidal channel sized per future runoff quantity calculation.

Off-site drainage is contributed to the northerly section of the site from the adjacent southbound portion of the Route 101 interchange. Four box culverts transfer drainage from the 40 acres to the north of the project through the Route 101/Caltrans right-of-way. This drainage, together with contributions from permeable and impermeable portions of Route 101, is intercepted by the off-site earthen channel just north of the project, and then conveyed to the proposed trapezoidal channel extension.

STORM WATER QUALITY

The City of Oxnard requires all new development within the City to comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) by incorporating storm water quality control measures into the proposed improvement plans in compliance with the Ventura County Stormwater Quality Urban Impact Mitigation Plan (SQUIMP). Projects within this Specific Plan are subject to these requirements. Each site as it develops will be responsible to comply with the performance criteria set forth in the 2002 Technical Guidance Manual for Stormwater Quality Control Measures "2002 TGM" under Board Order 00-108 or other equally effective methods approved by the City for treating storm water runoff from that project site. BMPs implemented on private property shall be maintained by either the individual property owner on which the BMP is located or by a private association, public maintenance district and/or other form of financial arrangement satisfactory to the City.

BMPs designed in accordance with the 2002 TGM shall also be implemented to effectively treat runoff from public rights-of-way within the specific plan. Maintenance costs associated with BMPs implemented to treat runoff from the public right-of-way shall be fully funded by a Community Facilities District, Property Owners Association and/or other form of financial arrangement satisfactory to the City as elected by the property owner.

FIRE STATION

A new fire station, on a 1.5 acre site, is proposed within Planning Area 2 or 3. The Oxnard Fire Department is requesting that the fire station be fully constructed and operational prior to the issuance of building permits in excess of 1.7 million gross square feet. These estimates are based upon current deficiencies in service, future demands from other adjacent developments and projects within the Specific Plan area. The criteria for any future development limitations shall be provided by the Oxnard Fire Department. As part of the Sakioka Specific Plan EIR Adoptive Mitigation and Monitoring Plan mitigation measures, the Oxnard Fire Department shall conduct subsequent reviews to determine whether additional development may be allowed based on future fire protection capability. The fire station will front on the north/south arterial, (Street "B"), between Planning Areas 2 & 3, approximately equal distance between the Gonzales Road extension to the north and the proposed new southern east/west arterial (Street "A"), to the south. The final design and location area is subject to review and approval by the Oxnard Fire Department as part of the first Tenative Traact Map in Planning Areas 1, 2, or 3 when cumulative total development exceeds 1.0 million square feet, or as otherwise determined. Unless otherwise determined, the 1.5 acre fire station site shall be reserved for the fire station.

UTILITIES

There are several public utility service providers in the Sakioka Farms Business Park area.

Electricity

Electrical service to the area is provided by the Southern California Edison Company.

Natural Gas

Natural gas service in the Specific Plan area is provided by The Gas Company.

Telephone

Telephone service in the Specific Plan area is provided by GTE of California.

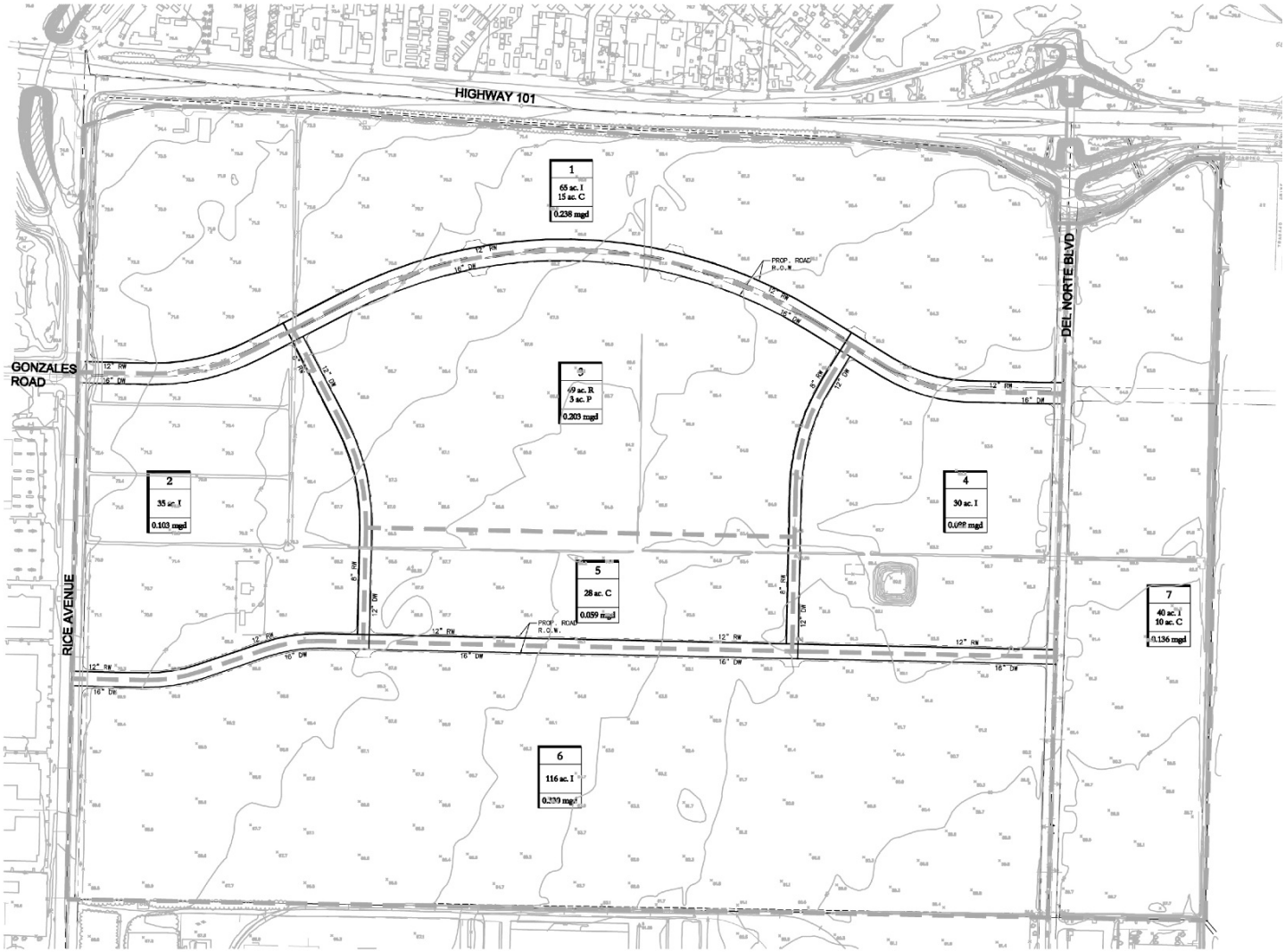
Cable Television

Cable television service within Oxnard is provided by Time Warner. Developers should coordinate with the cable company for the installation of new service.

Solid Waste Disposal

The City of Oxnard currently provides solid waste disposal services for the area. No solid waste disposal facilities are planned to be located in the Specific Plan area.

WATER SYSTEMS
EXHIBIT 4.26



LEGEND

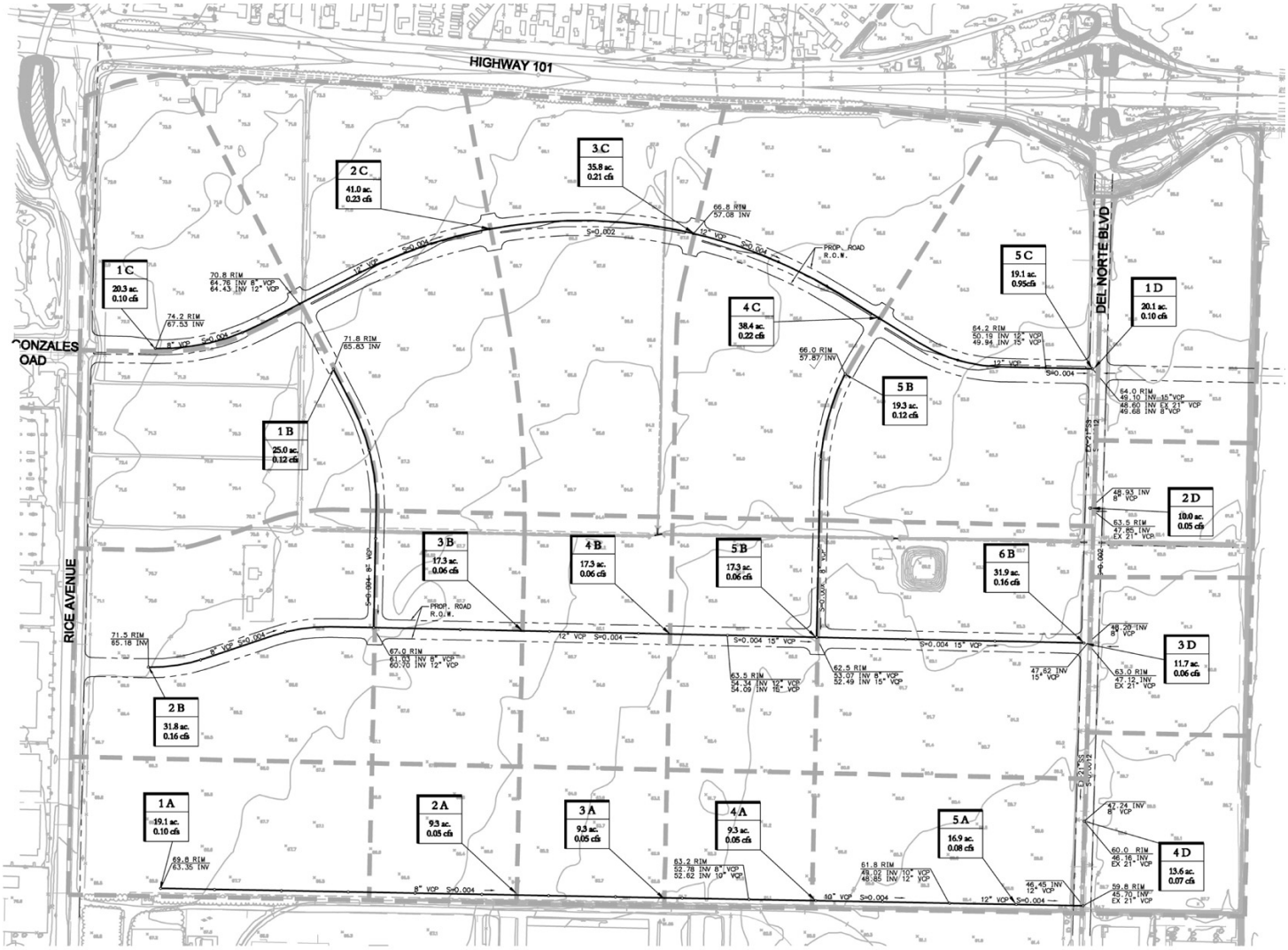
6	TRIBUTARY AREA DESIGNATION
69 ac. I	PLANNED LAND USE ACREAGE I=INDUSTRIAL C=COMMERCIAL R=RESIDENTIAL P=PARK
1.0 mgd	WATER DEMAND (IN MILLION GALLONS PER DAY)
— — —	TRIBUTARY AREA BOUNDARY
16" PVC	PROPOSED WATER LINE
EXIST. 16" PVC	EXISTING WATER LINE

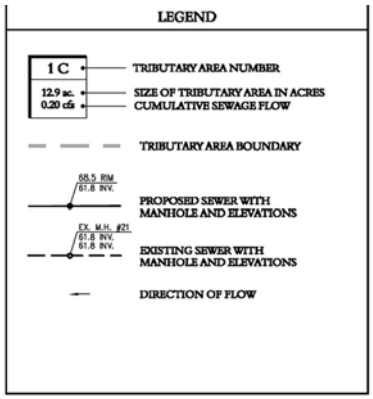
SAKIOKA FARMS,
CITY OF OXNARD

CONCEPTUAL MASTER PLAN
WATER SYSTEMS

RBF CONSULTING

SEWER SYSTEMS
EXHIBIT 4.27

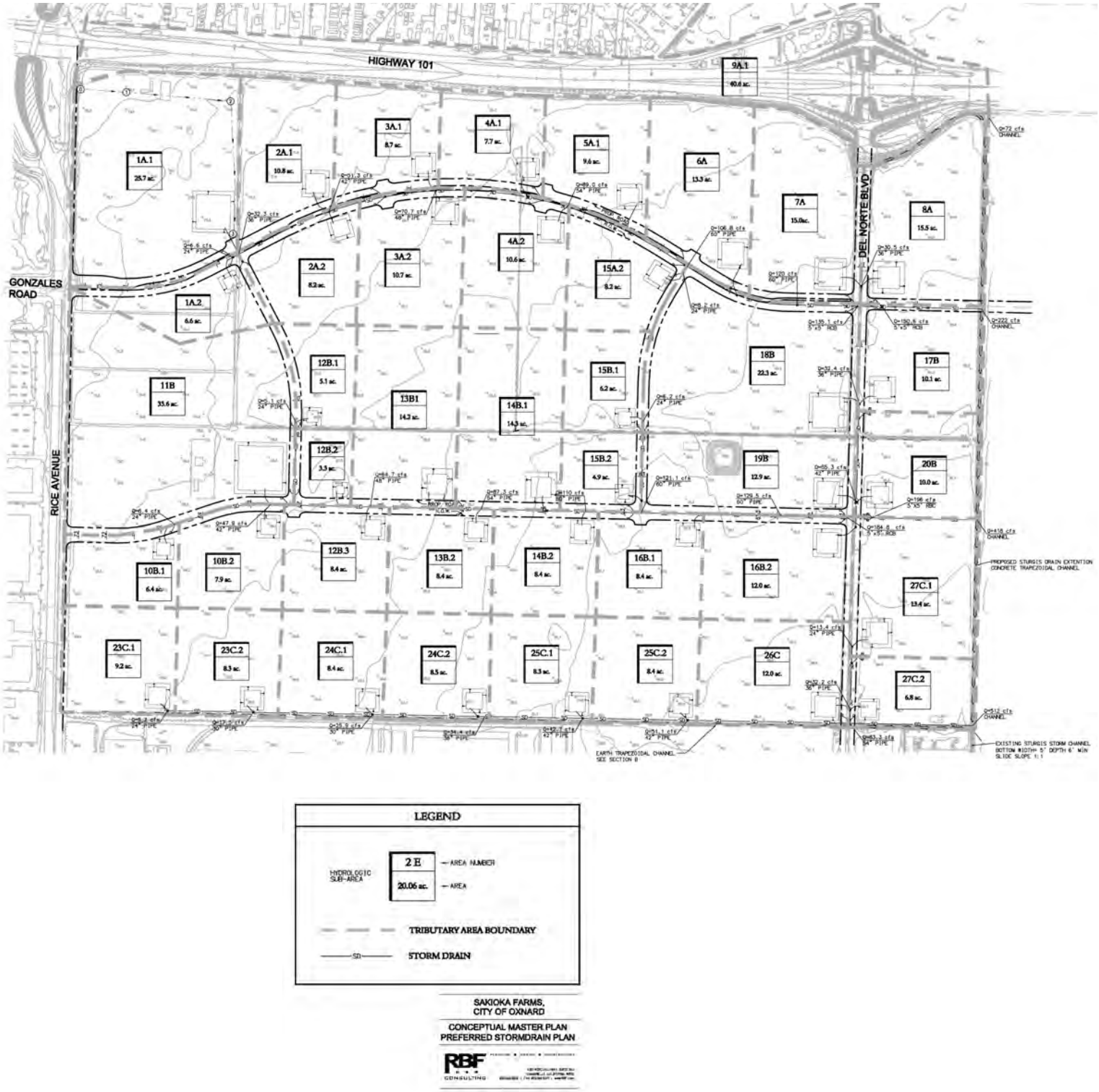




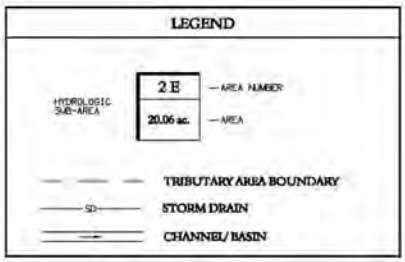
SAKIOKA FARMS,
CITY OF OXNARD
CONCEPTUAL MASTER PLAN
SEWER SYSTEM

RBF CONSULTING

PREFERRED STORMDRAIN PLAN
EXHIBIT 4.28



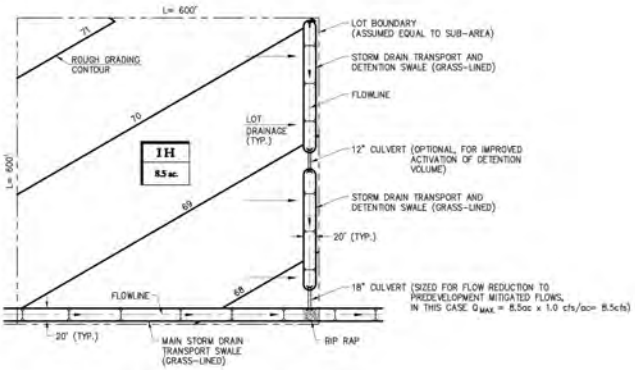
ALTERNATE STORMDRAIN PLAN
EXHIBIT 4.29



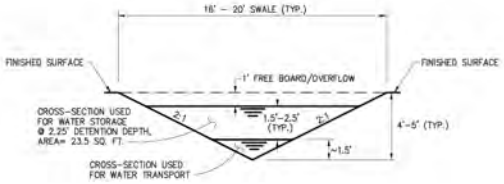
SAKIOKA FARMS,
CITY OF OXNARD
CONCEPTUAL MASTER PLAN
ALTERNATE STORMDRAIN PLAN

RBF CONSULTING

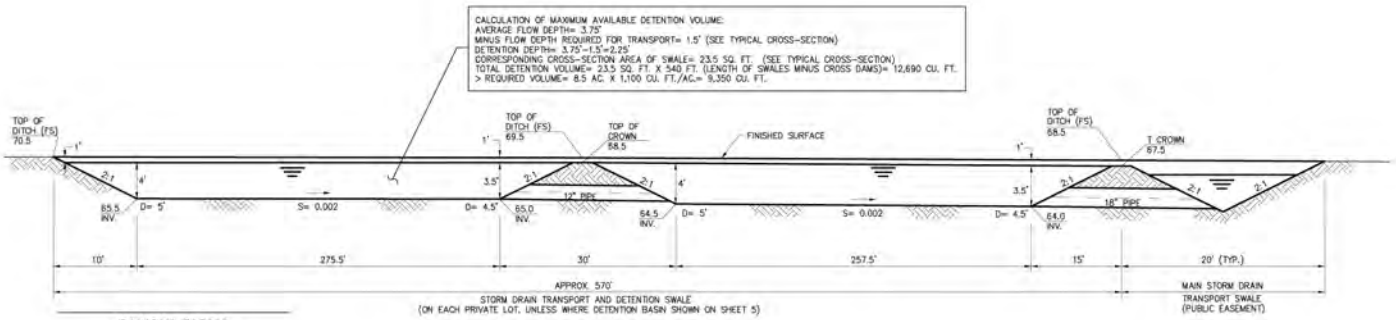
ALTERNATE STORMDRAIN PLAN
EXHIBIT 4.30



TYPICAL LOT DRAINAGE
PLAN VIEW
NTS



TYPICAL CROSS SECTION
STORM DRAIN AND DETENTION SWALE
NTS



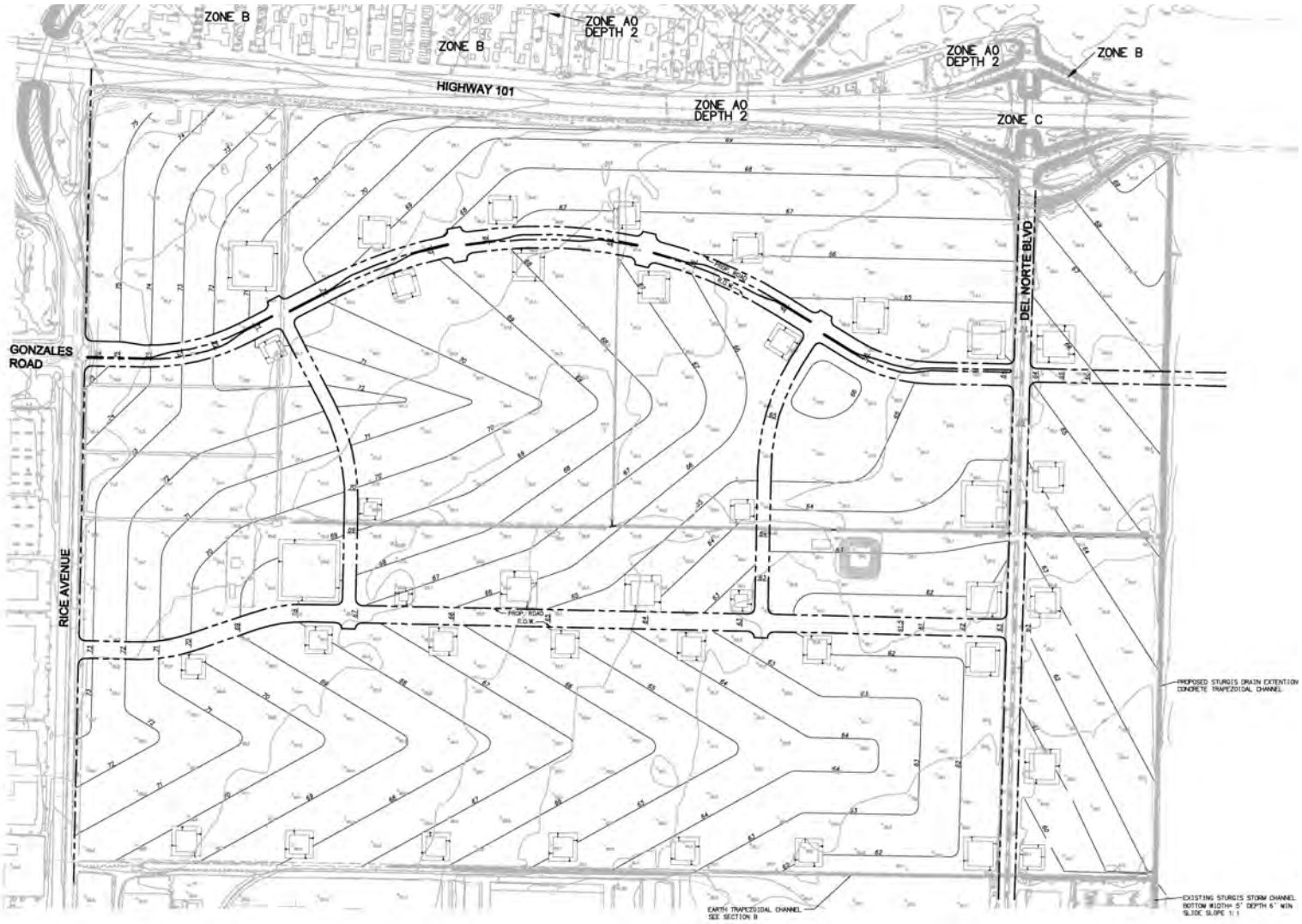
SAKIOKA FARMS,
CITY OF OXNARD

CONCEPTUAL MASTER PLAN
ALTERNATE STORMDRAIN PLAN

RBF CONSULTING

TYPICAL
PROFILE STORM DRAIN TRANSPORT
AND DETENTION SWALE
NTS

GRADING PLAN
EXHIBIT 4.31



LEGEND

- PROPOSED CONTOUR LINE
- PROPOSED FINISHED SURFACE
- PROPOSED SLOPE
- FLOOD ZONE LIMITS
- EXISTING ℄ ROAD AND R.O.W.
- PROPOSED ℄ ROAD AND R.O.W.

NOTES:

1. *THE PROPOSED ROAD ELEVATIONS ARE FINISHED SURFACE ELEVATIONS, WHEREAS THE CONTOURS DEPICT ROUGHT GRADES.*
2. *SOME OF THE ROAD ELEVATIONS ARE THEORETICAL, HOWEVER, AS THE MINIMUM ℄ GRADIENT IS 0.4%. IN CASES WHERE THE SHOWN ℄ GRADES ARE LESS THAN 0.4%, THE ACTUAL ELEVATIONS WILL REFLECT A SAW TOOTH PATTERN OF THE ℄ GOING UP AND DOWN TO PROVIDE THE MINIMUM GRADIENT. FOR THE PURPOSE OF THIS STUDY THE ACTUAL ELEVATIONS ARE NOT SHOWN.*

SAKIOKA FARMS,
CITY OF OXNARD

CONCEPTUAL MASTER PLAN
GRADING

RBF

PHASING MATRIX	PLANNING AREAS						
	1	2	3	4	5	6	7
2012-2015	25%	25%	25%	25%	33%		
2015-2020	25%	25%	50%	25%	33%	25%	
2020-2025	25%	25%	25%	25%	33%	25%	25%
2025-2030	25%	25%		25%		50%	75%

Years are approximate and contingent on thebeginning period

PHASING MATRIX
EXHIBIT 4.32

4.7 PHASING PLAN

The Sakioka Farms Business Park will be developed in various phases over several decades. In order to accommodate the anticipated intermittent development patterns, all required circulation, infrastructure and community improvements to accommodate each new development of the Specific Plan shall be completed prior to, or simultaneously with, individual projects. See Exhibit 4.13 for the Conceptual Street Phasing Plan.

The Specific Plan Planning Areas may be further divided into Subareas to better reflect the anticipated development pattern and infrastructure improvement phasing. The Phasing Plan presents a schedule of project development based on an incremental installation of infrastructure improvements.

The Phasing Plan recognizes that the project area is presently vacant with few infrastructure improvements. The development phasing schedule has been prepared to provide that adequate public facilities and services will be available for each new project.

The first phase of the infrastructure improvements will extend, install and upgrade the utilities necessary to provide for new projects in the affected Planning Area(s).

SECTION FIVE 5

5.0 PROJECT AREA CHARACTER

The Design Guidelines establish the character and style for the development of a business park complex with buildings and streetscapes that have a distinct visual identity. The Guidelines accommodate individual development identities and promote interrelationships between complementary land uses and community features. The major elements of the Design Guidelines include: site planning, architecture, streetscape, landscaping, and signage. All development proposals within the Specific Plan area shall conform to the Design Guidelines and shall incorporate appropriate theme elements.

The Design Guidelines are to be used by the private developer, the project's Architectural Review Committee and the City of Oxnard as part of the plan review process. The Design Guidelines are general and may be interpreted with some flexibility in their application to individual projects. Variations may be considered for projects with special design characteristics that still meet the objectives of the Guidelines. The Design Guidelines shall be used to promote a high level of design quality while encouraging creativity on the part of individual project designers.

5.1 SITE PLANNING GUIDELINES

The Specific Plan anticipates a combination of industrial, office and commercial buildings, each varying in parcel size, building height,and intensty of development. The Design Guidelines section provides the measure by which basic concepts for coordinated site planning can be realized. Care must be taken in the creation of each parcel in the project area to provide convenient access, and cluster common activities.

Effective site planning techniques will establish a strong outline and framework for guiding future individual development projects, and create a unique high quality business park. The successful integration of effective site planning techniques, with the basic design elements on individual projects, will enhance the visual experience in the Specific Plan area, and promote a true sense of place.

To facilitate the development of the Sakioka Farms Business Park into a unique resource for the community, the following site planning policies have been complied for the Specific Plan.

5.1.0 DESIGN POLICIES

5.1.1 Site layout for individual projects shall be designed to route people and vehicles through the site in a clear, identifiable, efficient and effective manner.

5.1.2 Building orientation should reflect an understanding and response to the sun, shade and wind conditions along with views into and from the project. Buildings shall be designed compatible with other approved projects in the area. Building entryways, administration areas

and other window areas shall front on to any adjacent street. Relationship to adjacent sites shall be considered concurrent with individual project layout. Projects shall be off-set to minimize views directly into opposing buildings.

5.1.3 Access to individual projects shall be compatible and enhance adjacent activities. Vehicle circulation shall be provided with an adequate turning radius and roadway widths for all drive aisles and fire lanes consistent with the adopted City standard. Additional fire and emergency considerations shall be addressed on a project by project basis, subject to review and approval by the City.

Entry drives shall be of a uniform size and design throughout the project area. Main and secondary entrances shall be a minimum of twenty-five (25) feet wide. Shared driveways and entry locations may be proposed. Driveways and entrances on opposite sides of a street shall align. Any proposed offset of driveways on opposite sides of a street shall be subject to review and approval by the City.

5.1.4 Project functions, activities and elements should be logically located, so that the business operates efficiently. The project should function well for people who work, shop and visit the area.

5.1.5 Transitional areas between the street and building should provide adequate landscaping, walkways and parking to create a visually pleasing and functional buffer.

5.1.6 Parking areas for individual projects shall be provided on-site in a manner that is convenient and compatible with the layout and design of the overall project area. In order to create larger building setback, surface parking facilities may be located between the main building front façade and adjacent street. Parking areas should be screened from public ways and divided with landscaping, walls, fences, berms and other elements.

5.1.7 Trash, loading and storage areas including truck access shall be in the rear and/or side portions of the lot, and screened from the street. All truck maneuvers (i.e. backing into truck loading areas) shall be performed within the project site. Service areas should be conveniently located and big enough to adequately function.

Trash enclosures for refuse containers and equipment shall be easily accessed by service vehicles and screened from public view. Refuse containers and equipment shall be located within a building's façade or within a screened enclosure, and reflect the architectural style of the main building, including the use of similar materials. Landscaping shall be provided on each side of all screened enclosures within parking areas.

Loading areas shall be designed to include attractive and durable materials, and conform with other guidelines pertaining to building features, materials and finishes. Fixed hardware for rolling doors shall be located on the inside of buildings to minimize visual clutter.

Loading dock areas shall be screened with a solid decorative wall or berm. Where views of these features are possible from streets or connecting walkways, they shall be screened through the use of walls, trellises, tall landscaping, or equivalent features. Loading docks shall be provided at a lower grade, where practical, to minimize views from the street and the need for tall walls or fencing.

Outdoor storage shall not exceed ten (10) feet in height. All outdoor storage areas must be screened consistent with the loading area provisions. The wall height shall be sufficient to screen the loading areas and vehicles and trailers from view of adjacent properties and streets and shall not exceed ten (10) feet in height.

Satellite structures (detached) can provide an effective variety in building layout and design; provided it can also be an efficient solution for company operations. Satellite structures must be designed to be compatible with the main structure and built with compatable materials.

5.1.8 Exterior Lighting shall be located and designed to minimize direct glare beyond the parking lot or service area. Light standards under thirty-five (35) feet in height are recommended throughout a project area and shall illuminate all sidewalks and connecting walk-ways. All light standards shall be consistent with respect to design, materials, color and color of light, and with the overall architectural style of the project. Illumination of buildings and landscaping can be indirect, to create a strong positive image. Concealing light fixtures within buildings and landscaping can highlight attractive features. Use of lighting is especially recommended at entries, plazas, parking lots, and other areas where evening activity is expected. All proposed lighting shall comply with the City's Outdoor Lighting Code & Guidelines and Title 24, Part 6 of the California Code of Regulations: California's Energy Efficiency Standards for Residential and Nonresidential Buildings. All exterior lighting shall be approved by the Police Department prior to issuance of a permit. Exterior lighting in public areas shall be independent from tenant control.

5.1.9 Handicap accessibility shall be incorporated into all individual project plans and must reflect sensitivity to the needs and requirements of handicapped employees and visitors. The California Accessibility Code (Title 24) requirements shall be considered as a minimum set of guidelines. All accessways and parking layouts shall be handicap accessible and convenient.

5.1.10 Security provisions, including lighting, building entrance visibility and drive locations, shall be carefully considered and subject to review and approval by the City.

5.1.11 Vehicle control gates shall be operable by City approved radio equipment.

5.2 ARCHITECTURAL GUIDELINES

The Architectural Guidelines are intended to establish a compatible character, style and quality for all development projects within the Sakioka Farms Business Park. This compatibility of character is not intended to discourage individual innovation and creativity, but to simply provide a framework within which an overall sense of community and place will be reinforced.

The architectural theme shall reflect a contemporary research and development complex. Each project shall be designed and sighted with sensitive regard to climate, context, and proper use of materials and form in an honest expression of function as well as aesthetics. Building design shall comply with the following architectural policies.

5.2.0 ARCHITECTURAL POLICIES

5.2.1 Unifying and harmonious design elements shall be incorporated into all projects. New elements should be compatible with existing elements and shall be updated to blend with new proposals. A unifying theme or common denominator should be used in the various components of design. This basic theme will serve as a guide for design details, choosing elements and selecting materials.

Building designs shall reflect an industrial/business office park theme and include a recognizable base and top. The base shall visually relate to the proportion and scale of the building. Contrasting materials, textures and color are encouraged on the base of buildings that face streets or connecting walkways, especially those adjacent to major entries. Building rooflines are encouraged to feature the potential visual prominence of thebuilding's silhouette. A buildings entry and office areas are encouraged to include cornice treatments, roof overhangs and architectural details that incorporate richly textured and/or different color materials.

5.2.2 Building scale, location, massing and orientation on the individual sites, shall provide a balance in form and composition. Building components should be appropriate in scale for the size and style of the building and its relation to the size of the lot. Building design shall avoid a single dominant mass. Substantial variations in massing should include changes in height and horizontal plane. The horizontal mass of the building elevations may be broken up with external treatment detached from the main building structure. Such massing breaks include: columns, colonnades, trellises, wall segment textures, materials, pattern or color and enhanced landscape treatment. The extent of massing breaks and building projections shall relate visually to the overall scale of the building.

5.2.3 Building proportions and inner relationships shall be designed with consideration to adjacent projects and activities. Special attention shall be give to maintain the highest quality of design, harmony and compatibility, especially between new proposals and existing activities.

5.2.4 Rhythm and balance in building design can be obtained through site layout and clustering of activities. Building articulation and fenestration are encouraged to avoid large flat building walls. Building elevations can also be enhanced with second story areas and/or vaulted areas establishing a variety in building volumes and composition.

Building walls shall avoid blank areas between massing breaks, especially along facades immediately visible from adjacent streets or walkways. This can be accomplished with a change in surface texture, revealed pilaster, a change in building planes, a vertical variation of the roof line, window placement and/or intensified accent landscaping.

Building entries shall be visible from public streets and incorporate interesting and attractive features. The entry feature treatment shall be an integral part of the building design and a monolithic appearance shall be avoided.

Building corner situations shall incorporate special architectural treatment on elevations, visible from a public street. Any special façade treatment shall be continued around the building corner to a logical point of terminus.

5.2.5 Building materials chosen should be consistent with the architectural style and theme for the area, and may be a combination of concrete, metal, glass and/or other contemporary composites. Concrete tilt-up construction can be an integral component of building design.

5.2.6 Building finishes and colors shall be chosen from a palette of subtle tones (white, off white, light gray and beige); projects are encouraged to use color accents. Glazing shall be tinted with high-performance materials. Glazing colors,shall be limited to green, blue and light gray shades. Clear,lightly tinted, and reflective coatings are acceptable. The selected finishes should respect the architectural style of the building and surrounding development.

5.2.7 Pedestrian sensitivity needs to be carefully considered when designing street level activities. Building design should make pedestrians feel comfortable when walking by. Pedestrian scale amenities should be incorporated within the transitional areas of the project.

Building entries shall be obvious. A clearly defined, primary pedestrian entry, with an enhanced hardscape foreground, is required for each building. Building entries shall be emphasized by design features such as overhangs, recesses, walls and roof forms that are integrated into the overall building design. Greater height can be used to highlight and accentuate entries. Building entrances should be easily accessible from pedestrian walkways which connect the building entrance and the public sidewalk.

5.2.8 Mechanical equipment, shall be screened from view of adjacent property. Mechanical equipment shall not be exposed on the wall surface or roof of a building. Screening material and color shall be compatible with the overall building design and colors. Backflow devices, electrical transformers and other mechanical equipment shall be screened from public view or undergrounded, with the exception of public safety features. Mechanical equipment such as ventilation devices, louvers, exposed flashing tanks, overhead doors, and other service doors shall be finished consistent with the color scheme of the building. Cyclone blowers shall be screened and located below the fascia or roofline of a building. These devices shall be located at the rear and painted to match the color scheme of the building.

Mechanical equipment, located adjacent to but detached from the main building, shall be screened with compatible building and/or landscape materials.

5.2.9 Sustainable green building design, construction and operation of developments within the Specific Plan are encouraged. Considerations shall include: increasing the efficiency with which buildings and their sites use energy, water and materials, as well as reducing building impacts on human health and the environment through siting, design, construction, operation, maintenance and waste removal through the complete building life cycle. Developments are encouraged to utilize established and evolving green building performance-oriented rating systems such as the U.S. Green Building Council's LEED portfolio, Green Globes, or similar state, federal and trade organization guidelines during project design, construction and operation.

Solar collection systems are encouraged and "solar farming" on rooftops and/or parking lots is a permitted activity within the Specific Plan.

5.2.10 Public art shall be included as part of all large projects within the Specific Plan area; smaller projects may contribute to the establishment and maintenance of a public art program within the common areas. The proposed art feature shall be located in an area which can be easily viewed and accessed by the public. The public art requirement may be satisfied in a number of ways; the City's, Cultural Arts Committee has established a formal approval process.

5.3 LANDSCAPE GUIDELINES

These Landscape Guidelines are intended to supplement the City of Oxnard Landscape Standards and the City of Oxnard Parking Ordinances. They are intended to provide uniformity to the site and establish a "Sense of Place" with both aesthetic and functional considerations. The Landscape Guidelines establish the design and visual qualities for

individual development in the project areas. In cases where these guidelines differ from those City standards or ordinances, these guidelines shall govern. In cases where these guidelines are silent on issues, the City of Oxnard's Landscape Standards shall govern.The landscape treatment for buildings and public right-of-ways should be designed with a compatible interpretation of the guidelines.

The Landscape Guidelines accommodate individual development identities and promote inter-relationships between complementary land uses and community features. All development proposals within the Master Plan area shall conform to the Landscape Guidelines and shall incorporate appropriate theme elements. The Landscape Guidelines create an overall theme, however, alternative approaches may be considered which preserve the intent of the guidelines while proposing modifications to the regulations.

The Landscape Guidelines are to be used by the private developer, the project's Architectural Review Committee and the City of Oxnard as part of the plan review process. The Landscape Guidelines are general and may be interpreted with some flexibility in their application to individual projects. Variations may be considered for projects with special design characteristics that still meet the objectives of the guidelines. The Landscape Guidelines shall be used to promote a high level of design quality while encouraging creativity on the part of individual project designers.

The Landscape Guidelines propose a continuation of the landscape and streetscape patterns currently surrounding the project area. The specific project establishes a "California" theme, which includes an eclectic mix of indigenous plant and local materials which reflect the historical and cultural background of the area. These include perimeter landscaping, large landscape setbacks along both interior and perimeter streets, pedestrian walkways which unify the site, and intersection treatments which create a "park-like" atmosphere and assist in visitor way-finding.

To develop a consistent streetscape design, all streets shall be improved with landscape as noted in the enclosed sketches. Individual developer parcel landscaping will be developed in a similar and complimentary manner as outlined in the following sections. Plant materials shall be drawn from the projects plant materials palette. The plant materials palette includes turf, shrubs, ground cover and trees which are compatible with the City's overall landscaping requirements and consistent with the existing adjacent streetscape.

5.3.0 LANDSCAPE POLICIES

5.3.1 Streetscapes/frontages, public areas, and development sites landscape design shall respect and compliment the natural and existing site features of the surrounding area. The landscaping should be in proportion with the whole development and integrated with the building design to enhance the appearance of the project, and soften the effect of buildings

and hardscape. The landscaping should be a combination of trees, shrubs, grasses, and ground cover plants; vines should be considered on exposed perimeter, screen and trash enclosure walls. A project's landscaping should blend with the adjacent property when appropriate. Turf shall be kept to a minimum.

A minimum of ten (10) percent of the net site area shall be landscaped. A maximum of five (5) percent of the minimum required landscape area may be improved with hardscape (entries, plazas, and walkways).

5.3.2 Public Right of Ways/Streetscapes:

- **Gonzales Road;** setbacks shall provide minimal turf, except between the sidewalk and curb when landscape parkways are present. Street trees shall be formal double-row plantings of Tipuana trees. Informal drifts of shrubs and ground-cover/indigenous grasses shall extend between the back of sidewalk and the property line. Informal plantings of palm trees and shrub/tree species shall also be planted continuousy in the 18′ setback.

  The medians shall have single row groupings of Mexican fan palms and flowering trees. Ground cover / grasses will create a continuous base.

- **STREET "A",** the East-West Connector Street south of Gonzales Road, will have 16′ landscape setback, a 6′ sidewalk and an 8′ curb-adjacent parkway along both sides of the street. A 16′ center median separates two 30′ street sections. The median and parkway are planted with groupings of Washingtonian Palms and Trastinia, with a continuous grass / ground cover base. The 16′ landscape setback provides a background planting of informal groups of Washingtonian palms and a mix of vertical screen trees and small flowering trees. Informal drifts of shrubs, grasses and-or ground cover will stretch along the entire Street "A" setback. The median will be mounded, with a maxi mum height of no more than 12″ from the top of curb and will have an 18″ catwalk on each side.

- **Street "B", "C" and Gonzales Road Extension** have an 8′ curb adjacent parkway, a 5′ sidewalk and a 10′ landscape setback. The parkway planting design features informal vertical and shade tree groupings with a grass and/or groundcover base. The 10′ setback is mounded and continues the parkway planting design of informal vertical and shade tree groupings. At their base are continuous informal drifts of shrubs, and grasses and/or groundcover.

- **Rice Avenue's** eastern street frontage has a 60′ Caltrans setback and a 30′ landscape set back that is consistent with the City of Oxnard's Memorandum of Understanding with Caltrans. The curb adjacent parkway and the first 30′of the setback will provide a double row of Magnolia grandiflora trees at 40′ on center with a background of informal Washingtonian palms and a mix of vertical screen trees and smaller flowering trees. Informal drifts of shrubs and grasses and/or

groundcover will stretch along the entire Rice Avenue frontage. The Rice Avenue sidewalk is proposed to meander similar to the existing improvements to the south.

- **Del Norte Boulevard;** the setback shall have a single formal row of Magnolia grandiflora trees with an informal background planting of palms and shrub/tree species. Ground plane plantings shall consist of shrub and ground cover/ grasses in informal drifts between the back of sidewalk and the property line.
- **Rice Avenue entry treatments;** the entries at Gonzales Road and Street "A" shall have entry planting treatments which identify and enhance the project arrival experience. These treatments shall consist of a linear,formal double-row planting of hybrid Mexican fan palms with formal linear plantings of flowering shrubs and groundcovers/grasses.
- **Del Norte Boulevard entry treatments;** the entries off of Del Norte Boulevard shall be a formal planting of hybrid Mexican fan palms and a formal, linear planting of shrubs and groundcovers/grasses.
- **All Landscape medians,** located in the roadways adjacent to the project area, shall be designed and constructed per City of Oxnard standards and shall be maintained by the City.

5.3.3 Perimeter Landscape planting along the project edges shall provide a consistent treatment using a limited number of plant materials, and shall meander in informal groupings around the site. Perimeter landscaping shall preserve or construct, a minimum ten (10) foot wide landscape buffer between off-site properties/ improvements and private project improvements, including buildings, walls, parking areas, etc. The landscape buffer shall be adjacent to the individual projects landscaping and off-site projects

Tree planting in these areas shall include a minimum of one (1) twenty-four (24) inch box tree for each twenty (20) feet of lineal frontage. Tree planting may include a combination with thirty-six (36) inch or larger box trees. Shrub plantings shall provide mid-height (5'-7') screening of off-site views.

5.3.4 Each Individual parcel shall provide a level of landscape and design in keeping with the overall master plan intent and planting theme. Private landscape improvements and adjacent right-of-way landscape improvements shall be constructed by individual project developers. On site landscape improvements shall be maintained by each adjacent / abutting property owner, consistent with the overall landscape theme.

A minimum of ten (10) percent of the net site area shall be landscaped. A maximum of five (5) percent of the minimum required landscape area may be improved with hardscape (entries, plazas, and walkways). Plant selections should consider the function of the material,i.e., shade, wind break, ornamental, groundcover, accent, structural aesthetic and layering or materials to achieve a cohesive design.

landscaped in accordance with the City's Parking Regulations and Standards for Parking Lot Design. Perimeter parking lots adjacent to arterial streets, shall be provided with a continuous visual screen 36″ high at installation. Berming in these areas is encouraged and shall be a maximum of 30″ high and have natural continuous contoured appearance. Shrub hedges shall be planted along the perimeter of all parking areas. Hedges shall be trimmed in a formal manner and shall be maintained between 36″ and 42″ in height. Where cars overhang the curbs, ground cover planting shall be required at a minimum width of two (2) feet (inside dimension). The overhang area shall not be considered as part of the required minimum percentage of on-site landscaping. A 6" concrete curb/mowstrip is required to separate all on-site private landscape from association/project streetscapes. Where cars overhang a sidewalk, the sidewalk width shall be a minimum of 7′.

Parking lots shall be planted at a rate of one (1) tree for every six (6) parking stalls for parking areas fronting public streets. For parking lots at the rear of the parcel or not visible from the street, the rate shall be one (1) tree for every ten (10) parking stalls to accommodate industrial uses. Trees for rear parking areas may be planted at site perimeters when large open turnaround or truck areas are required. Parking lot trees shall be minimum twenty-four (24) inch box trees. All tree planting areas shall be a minimum net width of five (5) feet and provide no less than 25 square feet of planting area. All finger landscape areas shall have a minimum width of 9 feet. Rear parking lot perimeter planting is to include a minimum of one tree every 40′. Foundation plantings at the building edges consisting of hedges or medium height shrubs are encouraged where possible.

Parking lot treatments shall be consistent and contribute to the project landscaping unity. Parking lots shall be planted with trees in such a manner as to provide maximum shade. An alternative which clusters or groups parking lot trees adjacent to the building may be considered. Larger trees may also be substituted for a number of smaller trees, subject to review and approval by the City.

5.3.6 Entry drives shall be designed to provide entering and exiting with adequate views of approaching pedestrians and vehicles. Entry drives shall provide convenient access to parking lots at various site locations. In addition to street trees and on-site landscaping, each entry shall be designated by ground cover and a minimum of two thirty-six (36) inch box specimen trees, on both sides of the entry. These trees shall be located behind setbacks or a minimum of ten (10) feet back from the face of the street, whichever is greater.

5.3.7 Pedestrian walkway systems within private parcels shall be designed to unify the entire project area and provide pedestrian site access to buildings, parking and site activity areas. Pedestrian walkways shall be provided on each parcel and within the adjacent public right-of-way. Walks shall be a minimum of five (5) feet in width, except those walkways directly adjacent to parking areas with overhangs. In these areas a minimum walk width shall be seven (7) feet. Pedestrian walkway improvements shall be installed concurrent with the landscape improvements.

5.3.8 Entry plaza areas and courtyards shall be provided as focal points and for employee use.

provided as focal points and for employee use. These areas shall be an integral part of the building architecture and be connected by a walkway system to the public pedestrian walkways. They shall include such amenities as special paving, walls, gateways, seating areas, shade structures, fountains, and specimen plantings. Hardscape is excluded from the 10% landscape requirement.

5.3.9 Walls and Screening of project areas and walls, screening and fencing along the perimeter arterials shall be compatible with adjacent projects and provide project identity, privacy and noise control. Individual wall treatments shall reflect the architectural character of the adjacent main buildings and be compatible with other buildings throughout the project area.

5.3.10 Trash enclosure areas shall be provided with walled enclosures a minimum of 6' high and shall include tree and shrub planting screens to soften the enclosure. Roofing of trash enclosures with architectural treatment complimentary to the building design is encouraged. Mechanical equipment and transformer areas shall have landscape screening and/or low-level screen walls. Valves, meters, back flow preventors, etc. shall also be screened by shrub plantings and/or low-level screen walls.

5.3.11 Landscape lighting shall be provided to aesthetically enhance the site, as well as providing for the safety and security of motorists and pedestrians throughout the project area. Pedestrian walkways shall include adequate night lighting for public safety.
Pedestrian pole light fixtures should be complementary to the building design vernacular and the master plan lighting. Poles should not exceed 20 feet in height.

Low-level lighting includes wall lights, bollard lights, ground-mounted uplights. Fixtures should be in the same family and should match any pole fixtures. Colors are as noted above. Low level wall or step light fixtures should include either opal or sandblasted glass or grills to minimize glare.

Bollard lights should be of the same family or vernacular as other light fixtures and should provide area lighting with minimal glare. Sandblasted or opal glass fixtures are recommended.

Ground-mounted uplights for trees can be either in-ground or pedestal mounted types, but should have grills to minimize glare. Tree up/downlighting is allowed for specimen trees and palms.

Lamp types should be quartz, metal halide, fluorescent, or incandescent types. High pressure sodium is approved only for use in parking lots or service areas. Specimen tree uplighting is encouraged for site entries, building entries, and plaza areas.

5.3.12 Plant materials surrounding individual projects shall be selected to create an informal pattern of landscaping with a more formal pattern of landscaping created at the project entries. Landscaping should include a variety of deciduous and evergreen shade trees, flowering shrubs and ground cover. Trees shall be of even size and

shape at time of installation. Trees shall be selected based upon the size of the planting area, to allow for mature growth without causing future damage to the improvements.

All plant materials are to be heat and drought-tolerant. Plant materials that are salt-tolerant are also recommended. Perimeter areas/project edges should be planted with low water use shrubs and groundcover. Lawns and moderate-water-use shrubs and groundcovers should be restricted to feature areas and podium decks and limited in area to minimize water use. Shrubs should be used in massings interspersed with accent or specimen plantings. The use of unmowed perennial grasses such as Pennisetum, miscanthus, or Carex spp. as a foreground or middle ground material is encouraged.

Large spreading trees should be selected to provide the maximum shading of ground level and deck areas, with palm plantings used to create outdoor 'rooms' and feature plazas. Informal palm plantings and vertical tree species are to be used to reduce the scale of buildings and screen views and architecture.

Trees shall have comparatively straight trunks, well-developed leaders, and tops and roots characteristic of the species or variety. All plants must be free of insects, disease, mechanical injuries, and other objectionable features at the time of planting. Shrubs and vines shall be 5-gallon size (minimum) and drought-tolerant species. Ground cover shall be evergreen and colorful, drought -tolerant species and planted from flats (minimum) at 12" O.C. (maximum) spacing. Ground cover may be a container plant at approved spacing. All landscape areas shall be mulched with a minimum of 2" of composited bark mulch to minimize evapotranspiration.

5.3.13 Root barriers are required for all trees planted within 6 feet of, driveways, public roadways, sidewalks or plaza/courtyard hardscape areas. The root barriers will help to minimize potential lifting and cracking of the adjacent pavement.

5.3.14 Water Conservation measures shall be incorporated into the landscape design of the public areas as well as the private developer parcels. Drought tolerant and other low water using plants should be considered. Xeriscape plant material and design may be appropriate for select projects. Use of mowed turf should be kept to a minimum; the majority of landscape areas should be planted with shrubs and ground cover/ indigenous grasses. All plant material selections shall be made from the approved plant materials list. Additional materials with similar characteristics may be approved by the Architectural Review Committee.

5.3.15 Automatic irrigation shall be drip, bubbler or pop-up spray or rotor head irrigation system. The design of such a system shall minimize overspray onto paved areas. The design shall provide water use calculations per A.B. 25. For spray systems, pop-up heads shall be used in all areas adjacent to paving , parking lots and plazas. For shrub areas, pop-up shall be 6" minimum, with 12" preferred. Turf pop-ups shall be 4" high. All irrigation systems shall provide automatic operation, with pressure regulation as necessary. Quick couplers for manual watering or wash-down shall be provided at 150' on-center maximum.

5.3.16 Maintenance responsibility for all landscaping shall be by the individual projects and kept free from weeds and debris. All vegetation shall be maintained free of physical damage or injury arising from lack of water, chemical damage, insects, diseases or other causes. Vegetation showing such damage shall be replaced with the same or similar vegetation which will be comparable at full growth. Whenever any person fails to conform to this section, the Parks Superintendent shall require compliance upon thirty (30) days written notice. This notice may be appealed to the City Council. In the event non-compliance continues thereafter, the Park Superintendent shall cause work to be done and plantings to be made to bring the landscaped area into compliance. The work will be done at the property owner's expense.

5.3.17 Plant List

Plantings for site public landscapes/streetscape and private development parcels shall be selected from the following list. Additional plant species may be considered for approval by City's Planning Landscape Architect. All Street and Median Trees shall be a minimum 36" box size.

A. Frontages/ Streetscapes Trees:

1. Rice Avenue/Del Norte Boulevard;

a. Formal Street Trees
Magnolia grandiflora

b. Background Informal Trees

Washingtonia robusta-Mexican fan Palm
Syagrus romanzoffiana - Queen Palm
Washington hybrid- Hybrid Fan Palm
Tristania conferta-Brisbane Box
Eucalyptus spp.
Pittosporum spp.
Metrosideros excelsus
Ulmus parvifolia - Chinese Elm

2. Del Norte Avenue;

a. Formal Street Trees
Magnolia grandiflora

b. Background Informal Trees

Washingtonia robusta- Mexican fan Palm
Syagrus romanzoffiana - Queen Palm
Washington hybrid - Hybrid Fan Palm
Tristania conferta -Brisbane Box
Eucalyptus spp.
Pittosporum spp.
Ulmus parvifolia - Chinese Elm
Metrosideros excelsus

3. Gonzales Avenue;

a. Formal Street Trees
Tipuana Tipu- Tipu Tree

b. Background Informal Trees
Washingtonia robusta-Mexican fan Palm
Syagrus romanzoffiana - Queen Palm
Washington hybrid - Hybrid Fan Palm
Tristania conferta - Brisbane Box
Eucalyptus spp.
Pittosporum spp.
Alnus cordata - Italian Alder
Chorisia speciosa (thornless)
Metrosideros excelsus

4. Streets"B", "C"& Gonzales Extension

Informal Trees-
Washington hybrid -Hybrid Fan Palm
Syagrus romanzoffiana - Queen Palm

Tristania conferta - Brisbane Box
Eucalyptus spp.
Fraxinus spp. - Ash Tree
Alnus cordata - Italian Alder
Olea europea - Olive
Metrosideros excelsus

5. Project Perimeter Trees;
Eucalyptus spp. - Euclayptus
Ceratonia siliqua - Carob tree
Fraxinus spp. - Ash Tree
Populus alba - White Poplar
Metrosideros excelsus

B. Shrubs;
Ligustrum japonicum 'texanum' - Ligustrum/Privet (hedges)
Raphiolepis spp. - Indian Hawthorn
Rhus integrifolia - Lemonade Berry
Phormium tenax - Flax
Agave spp. - Agave
Aloe spp. - Aloes
Alyogene hueglii - Blue Hibiscus
Dasilyrion wheeleri - Sotol
Arctostaphylos spp -
Pittosporum spp - Pittosporum
Xylosma congestum - Shiny Xylosma
Thevetia peruviana - Yellow Oleander
Lavendula spp. - Lavender
Heteromeles arbutifolia - Toyon
Grevillea spp. - Grevillea
Garrya elliptica - Silktassel
Echium fastuosum - Pride of Maderia
Cytisus racemosus - Broom
Cistus spp. - Rockrose
Coleonema pulchrum - Pink Breath of Heaven
Myoporum laetum - Myoporum
Strelitzia reginae - Bird of Paradise
Dietes bicolor - Yellow Fortnite Lily
Ribes viburnifolium - Catalina Currant
Bougainvillea spp - Bougainvillea
Leptospermum laevigatum - Tea Tree
Salvia clevelandii -Blue Sage

C. Groundcovers/ Grasses;
Rosmarinus officianalis - Rosemary
Miscanthus spp; - Silvergrass
Festuca maieri - Fescue
Calamagrostis spp. - Reedgrass
Pennisetum spp. - Fountain Grass
Baccharis pilularis - Coyote Bush
Oenothera berlandieri -Mexican Primrose
Kniphofia uvaria - Red-Hot Poker
Senecio mandraliscae - Blue Senecio
Vinca major - Periwinkle
Juniperus spp - Prostrate Junipers
Turf - In Parkways only, subject to City of Oxnard Ordinance No. 2822

5.4 SIGNAGE GUIDELINES

The Signage Guidelines provide a framework for the design and implimentation of all exterior signage within the project. The Signage Guidelines contribute to the overall project design theme by requireng consistent solutions to the various catagories of signage. The guidelines help asure that quality materials are used and that appropriate color, size and placement of signs occur. The intent is to create and promote a quality visual environment by allowing only signs which are compatible with their surroundings and which effectively communicate their message.

Signs shall be designed to be architecturally compatible with the colors and materials of the adjacent building. All signs shall be subject to the provisions and procedures of the Oxnard Zoning Ordinance, and comply with the following policies.

5.4.0 SIGNAGE POLICIES

5.4.1 Signage design shall be an integral element of all projects. Proposed sign materials, size, color, lettering, location and arrangements must be carefully considered as part of the site and building design and must be compatible with the surroundings.

5.4.2 Wall signs and logos shall be located on the building for optimum visibility from the adjacent street and shall be limited to identify tenants within each building. These signs shall be restricted to the name of the firm, company or corporation only. The colors and materials of the sign structure shall be compatible with the building architectural colors and materials; sign face materials and colors may contrast.

Wall signs and logos attached to the building shall be individual letters and surface mounted.

No signs shall be painted directly on the building. No signs shall be boxed with internal lighting and attached to a building.

Wall signs shall not exceed an area equal to one square foot for each lineal foot of building frontage. Maximum size sign for each building façade adjacent to a street shall be one hundred (100) square feet for industrial projects, two hundred (200) square feet for commercial projects. Maximum letter height shall be thirty (30) inches.

Wall signs shall be limited to one (1) sign per building elevation with a maximum of two (2) wall signs per primary tenant on non-adjacent building facades. These signs shall be internally illuminated or non-illuminated.

Wall signs shall be limited for secondary tenants to a maximum of one (1) sign per tenant. In no event shall there be more than four (4) secondary tenant wall signs permitted per building and no more than two (2) per building elevation. Additional wall signs shall be permitted at the primary entry to a building. The maximum size shall be ten (10) square feet with the maximum letter height of twelve (12) inches.

5.4.3 Freestanding signs for business identification shall be limited to perimeter locations within the street landscape setback area and shall be of a monument design. These signs shall not exceed five (5) feet in height, as measured from the adjacent grade, and not more than one-hundred twenty (120) square feet in area. Freestanding signs for tenant identification may be installed within or adjacent to a private entry driveway. Entry signs must be located and sized so as to not interfere with vehicular visibility and/or movement. Entry signs shall be limited to thirty-two (32) square feet and shall not exceed four (4) feet in height. Entry signs may be placed on a berm not exceeding eighteen (18) inches in height. Entry signs shall include the building address.

All freestanding signs shall be of a monument design, including: business identification, business directory, and information/ directional identification. Street-side signs, at access driveways, shall be used to identify a building address/tenant, and to direct traffic to that building. Internal, on-site signs shall be utilized to provide information and location to pedestrian and automobile traffic. Freestanding retail commercial signs shall be a minimum of two hundred and fifty (250) feet apart.

5.4.4 Business directory signs which are freestanding shall be located near the primary entry and access drive. These signs shall be limited to identifying the building address and tenants, and shall be visible from the intersection of a private driveway and a public street. These signs shall not be allowed elsewhere within the landscape setback area or along street frontages. Business directory signs shall not exceed a maximum area of twelve (12) square feet per face, may be double faced adjacent to a street front and single faced adjacent to a building, and shall not exceed three (3) feet in vertical height. Signs shall be limited to one sign per building. More than one building address may be identified on one sign. Signs shall be consistent with the overall building architecture.

5.4.5 Information/directional signs shall be used to provide direction to on-site automobile traffic or pedestrians and not visible from off-site areas. Informational/directional signs shall be limited to six (6) square feet per face, double faced. This sign shall not exceed three (3) feet in vertical height.

Informational/directional signs shall be limited to the identification of function and/or service and shall not contain the name of the business, company or corporation providing the function and/or service. When appropriate, such signs shall contain a directional arrow and provide direction to functions and/or services or information such as Authorized Vehicles Only, Handicapped Parking Only, and Loading zone.

5.4.6 Temporary signs shall be allowed to provide information and facilitate information during the construction and leasing. Such signs shall be limited to one per lot, with a maximum of sixty-four (64) square feet and eight (8) feet in overall height.

Temporary directory signs shall be permitted on construction sites, and limited to one (1) for all contractors. The sign shall not exceed thirty-two (32) square feet, unless legally required by government contracts to be larger. The sign shall not exceed eight (8) feet in overall height and shall be located no less than ten (10) feet from any property line. These signs shall be removed upon completion of the project.

5.4.7 Future tenant signs may be placed on vacant or developing property to advertise the future use of the property and where additional information may be obtained. Such signs shall be limited to one per street frontage and to a maximum of thirty-two (32) square feet in area and eight (8) feet in overall height. These signs shall be placed no less than ten (10) feet from the property line. Any such sign shall be removed upon occupancy of the project.

5.4.8 Business Park identification signs may also be installed at key intersections, in landscaped areas within the right-of-way or landscaped street medians. Park identification signs shall be limited to an area of one hundred fifty (150) square feet and shall not exceed five (5) feet in vertical height. They shall only identify the overall business park.

5.4.9 City Monument Sinage

The Del Norte Boulevard corridor provides an ideal location for a City of Oxnard Entry Monument Sign in the median of Del Norte Boulevard just south of the future reconstruction of the Del Norte Boulevard / 101 intersection . The City of Oxnard Park's and Facilities Division shall be consulted for review and approval of a Entry Monument Sign that shall be developed in conjunction with the Del Norte Street Design and Construction Level Landscape Plans for that area.

SECTION SIX 6

6.0 PURPOSE AND INTENT

The purpose of this section is to provide specific development regulations and standards that will be applied to individual development projects in each Planning Area of the Specific Plan. Upon adoption by the City of Oxnard, the Sakioka Farms Business Park Specific Plan will be the zoning for the project area.

6.1 GENERAL PROVISIONS

The provisions contained herein shall govern the design and development of the Sakioka Farms Business Park Specific Plan area. Standards and/or criteria for development and activities not specifically addressed in this Specific Plan may require referral to the current provisions of the Oxnard Zoning Ordinance and Municipal Code.

Whenever a use has not been specifically listed as being a permitted use in a particular Planning Area of the Specific Plan, it shall be the duty of the Development Services Director or designee to determine if the use is consistent with the intent of this Specific Plan and compatible with other permitted uses. In the case of any conflicting provisions, the regulation and policies of the Specific Plan shall prevail. In addition, all projects must comply with the following policies.

6.1.0 POLICIES

6.1.1 Grading Plans shall be approved by both the Development Services Director or designee and Director of Public Works, unless there are provisions to the contrary.

6.1.2 All construction shall comply with published, applicable, Federal, State, and Municipal laws, rules, regulations and codes in effect at the time of the work, and the interpretations of the agencies having jurisdiction thereof for that period of time.

6.1.3 Construction may commence only after the Development Services Director or designee finds that the project is consistent with the regulations, and applicable policies and guidelines of the Specific Plan.

6.1.4 Existing farming and related activities at the time of plan adoption shall be deemed in conformance with the Specific Plan. In addition, all existing facilities are deemed to be in conformance with the Specific Plan.

6.2 DEFINITIONS

For the purposes of the Specific Plan, words, phrases and terms shall have the meanings as defined below. Terms not specifically defined in the Specific Plan shall have the same definition as used in the City of Oxnard Zoning Ordinance at the time of Specific Plan adoption.

When not inconsistent with the context, words used in the present tense include the future tense; words used in the singular number include the plural number; and words of the masculine gender include the feminine and neuter gender. The word "shall" is always mandatory and the word "may" is permissive.

6.2.1 Accessory building. A detached building on the same site as a main building, the use of which is incidental to that of the main building such as a storage shed, etc., and which is used exclusively by the occupants of the main building. May also be referred to as satellite structures.

6.2.2 Antenna, satellite dish. An apparatus capable of receiving communications from a transmitter or transmitter relay.

6.2.3 Architectural projections or appurtenances. Features on buildings which provide visual variation and/or relief but do not serve as interior or exterior living or working space.

6.2.4 Building height. The vertical dimension measured from the top of the highest roofline to the finished pad elevation shown on the approved grading plan.

6.2.5 Building, main. A building in which the principal use of the lot is conducted.

6.2.6 Director. Development Services Director or designee for the City of Oxnard.

6.2.7 Entryway. The point of ingress and egress from a public or private street to individual projects may also serve as shared entryway to multiple parcels or projects.

6.2.8 Final approval. Ten (10) days after approval by the discretionary body and no appeal of that decision has been filed.

6.2.9 Grade. The surface of the ground or pavement at a stated location as it exists prior to disturbance in preparation for a project.

6.2.10 Gross floor area. The area included within the surrounding exterior walls of a building.

6.2.11 Line of sight. A visual path emanating from an average eye level adjudged to be five (5) feet above ground level.

6.2.12 Local street. A low-speed, low-volume public thoroughfare used primarily for access to individual properties.

6.2.13 Lot. Any numbered or lettered parcel shown on a recorded tract map, a record of survey pursuant to an approved division of land, or a parcel map. A lot includes any area of land under one ownership abutting upon at least one street, alley, common area lot or recorded easement.

6.2.14 Lot area. See net lot area.

6.2.15 Lot depth. The average horizontal distance between the front and rear property lines, measured in the mean direction of the side property lines.

6.2.16 Lot frontage. The linear length of a lot measured along the property line adjacent to a street or easement.

6.2.17 Lot line. Any line bounding a lot. "Property line" means the same as "lot line."

6.2.18 Lot line, front. On an interior lot, the front lot line is the property line abutting the street. On a corner or reverse corner lot, the front lot line is the shorter property line abutting a street, except in those cases where the subdivision or parcel map specified another line as the front lot line. On a through lot, or a lot with three or more sides abutting a street, or a corner or a reverse corner lot with lot lines of equal length, the Development Services Director or designee shall determine which property line shall be the front lot line for the purposes of compliance with yard and setback provisions of this division. On a private street or easement, the front and/or exterior lot line shall be designed as the edge of the easement.

6.2.19 Lot line, interior. A lot line not abutting a street.

6.2.20 Lot line, rear. A lot line not abutting a street which is opposite and most distant from the front lot line; in the case of an irregularly shaped lot, the rear lot line shall be determined by the Development Services Director or designee. A lot which is bounded on all sides by streets may have no rear lot lines.

6.2.21 Lot width. Lot width shall be calculated as indicated for the following types of lots:

(a) Rectangular lot shall be measured along a line equidistant to and twenty (20) feet from the front property line.

(b) Cul-de-sac and knuckle lots shall be measured twenty (20) feet from the front property line along a line perpendicular to the bisector of the front property line.

(c) Cul-de-sac lots siding on another street, or similar properties, shall be measured along a line perpendicular to the interior side property line and twenty (20) feet from the front property line.

6.2.22 Net lot area. The total horizontal area within the property lines of a parcel of land exclusive of all rights-of-way, easements or dedications which physically prohibit the surface use of that portion of the property for other than vehicular ingress and egress, parking, and/or landscaping.

6.2.23 Open space. Any part of a lot or parcel unobstructed from the ground upward, excepting architectural features extending no more than thirty-six (36) inches from the structure. Driveways and other parking areas shall not be considered open space.

6.2.24 Parking structure. A structure used for parking of vehicles where parking spaces, turning radii and drive aisles are incorporated within the structure.

6.2.25 Person. The word "person" includes association, company, firm, corporation, partnership, co-partnership or joint venture.

6.2.26 Private street. A privately owned and maintained roadway used to provide vehicle access to abutting properties.

6.2.27 Retail commercial use. Permitted uses within this designation include restaurants, hotels, entertainment and general merchandise establishments.

6.2.28 Setback line. The line which defines the width or depth of the required yard. Such line shall be parallel to the property line and removed there from by the perpendicular distance described as the setback.

6.2.29 Site. Any legally created parcel of land bounded by property lines after dedication

6.2.30 Site coverage. The footprint building area of all structures on a site, as measured from all exterior building surfaces. Architectural features such as bay windows, eaves and canopies that do not project more than thirty-six (36) inches, and decks that do not exceed more than forty-eight (48) inches in height are excluded.

6.2.31 Site plan. A plan prepared to scale, showing accurate and complete dimensions of all: buildings, structures, landscaping, parking, drive aisles, uses, etc. and the exact manner of development proposed for a specific parcel of land.

6.2.32 Story. That portion of a building, excluding basements, included between the surface of any floor and the surface of the floor next above it or the finished under surface of the roof directly above.

6.2.33 Street. A public or approved private thoroughfare or road easement which affords the principal means of access to abutting property.

6.2.34 Structure. Any building or portion thereof, wall, fence, etc., extending forty-eight (48) inches in height above the grade.

6.2.35 Structural alteration. Any change in, or alterations to, the structure of a building involving: the bearing wall, column, beam or ceiling joints, roof rafters, roof diaphragms, foundations, retaining walls or similar components.

6.2.36 Ultimate right-of-way. The adopted maximum width for any street, alley or thoroughfare as established by: the General Plan, a precise plan of street, alley or private street alignment, a recorded parcel map, or a standard plan of the department of Public Works. Such thoroughfares shall include any adjacent public easement used as a walkway and/or utility easement.

6.2.37 Yard. An open, unoccupied space on a lot on which a building is situated and, except where provided in the ordinance code, is completely unobstructed from the ground to the sky.

6.2.38 Yard, front. A yard extending across the full width of the lot between the side lot lines and between the front lot line and either the nearest line of the main building or the nearest line of any enclosed or covered entry. The front lot line shall be deemed to be the existing nearest right-of-way line of the abutting street, road or highway, unless a different right-of-way line for future use shall have been precisely fixed by formal action of the City Council pursuant to law or ordinance.

6.2.39 Yard, rear. A yard extending across the full width of the lot between the side lot lines and measured between the rear lot line and the nearest rear line of the main building or the nearest line of any enclosed or covered entry.

6.2.40 Yard, side. A yard extending from the front yard to the rear yard between the side property line and the nearest line of the main building or any accessory building.

6.3 DEVELOPMENT STANDARDS

The Development Standards shall serve as the mechanism for the implementation of the Sakioka Farms Business Park land uses. The standards set forth in this section will assure that future development within the Specific Plan is implemented in a manner consistent with the intent of the Master Plan. The standards contained herein provide flexible mechanisms to anticipate future needs and achieve compatibility between land uses and the surrounding community. The standards and guidelines are designed to be compatible with the existing land use categories of the City. The primary land uses in the Sakioka Farms Business Park shall be industrial, research and development and office; commercial, public and semi-public uses are secondary and may be permitted in certain Planning Areas.

The Development Standards establish an orderly framework of land uses, amenities and building design criteria within the Specific Plan. They are structured to allow a variety of compatible land uses, operations and activities that will create a desirable environment and effect a harmonious relationship with surrounding properties and the community in general.

6.3.1 Permitted Uses

The Specific Plan's permitted uses shall comply with these Development Regulations and, when not addressed by these Regulations, the City of Oxnard Zoning Code.

The list of permitted uses is typical of the types of uses which shall be allowed in each Planning Area. Uses listed which do not reasonably comply with the performance standards of this zone shall not be permitted. All permitted uses and activities shall be within an enclosed building unless otherwise approved. Storage or ancillary activities may be conducted outside if adequately screened from view and approved.

Accessory Structures incidental to a permitted principal use or structure, may be erected on any parcel containing a main building provided that such structures conform with all requirements of the Specific Plan.

Parking Structures may be constructed in each Planning Area and subject to all the development regulations of the Planning Area with the exception of maximum floor area ratio and maximum site coverage; no maximums shall be established for these provisions.

Accessory Uses intended to augment and support the primary activity are permitted within each Planning Area. Such activities may include administrative and corporate offices within industrial uses, governmental facilities within public/semi-public uses, employee cafeteria, service and recreational facilities, along with repair, maintenance and storage facilities related to the primary permitted use.

Prohibited Uses not allowed within the Specific Plan shall include:

- Adult Businesses

PERMITTED USES MATRIX
EXHIBIT 6.1

PERMITTED USES	PLANNING AREA						
	1	2	3	4	5	6	7
INDUSTRIAL							
MANUFACTURING		○	○	○	○	○	
FABRICATION		○	○	○	○	○	
ASSEMBLY		○	○	○	○	○	
PROCESSING MATERIALS		○	○	○	○	○	
AGRICULTURAL PRODUCE		○	○	○	○	○	
MAINTENANCE AND REPAIR		○	○	○	○	○	
WAREHOUSE AND STORAGE		○	○	○	○	○	
PACKAGING		○	○	○	○	○	
OFFICES (not exceeding 20% of the primary use)		○	○	○	○	○	
BUSINESS AND RESEARCH							
RESEARCH AND DEVELOPMENT	○	○	○	○		○	
LABORATORIES	○	○	○	○		○	
OFFICES	○	○	○	○			○
LIGHT INDUSTRIAL		○	○	○	○	○	
PROFESSIONAL SERVICES	○	○	○	○		○	
PERSONAL SERVICES	○	○	○	○		○	
SUPPORT COMMERCIAL (not exceeding 15% of the primary use)	○	○	○	○			○
COMMERCIAL							
BANKS & FINANCIAL INSTITUTIONS		○	○	○			○
EATING AND DRINKING ESTABLISHMENTS	○	○	○	○			○
RETAIL SALES		○	○	○			○
MAINTENANCE AND REPAIR							○
PERSONAL SERVICES		○	○	○			○
HOTEL, MOTEL AND ANCILLARY RETAIL	○						
AUTOMOBILE SERVICE STATIONS	○						○
HEALTH CLUB / RECREATION	○						
PUBLIC / SEMI PUBLIC							
CONFERENCE FACILITIES	○		○				
DAY CARE FACILITIES	○	○	○	○			
CHURCH/RELIGIOUS FACILITIES	○	○	○	○			
GOVERNMENT FACILITIES		○	○	○			
COMMUNITY PARK FACILITIES		○	○	○			
PUBLIC RECREATION FACILITIES		○	○	○			
COMMUNITY UTILITY FACILITIES					○	○	

6.3.2 Division of Property

The development of all permitted uses shall take place only on legally constituted building sites of record. Where the division or reversion to acreage of property is required, the regulations and procedures of the City of Oxnard subdivision ordinance shall be followed.

6.3.3 Lot Area, Width & Depth

Minimum lot area width and depth, exclusive of any public right-of-way dedicated for road purposes or proposed road purposes, shall be established in each Planning Area when subdivisions are approved.

6.3.4 Maximum Building Height

The maximum allowable building height shall be established in each Planning Area. An additional fifteen (15) feet in height will be allowed for roofline treatment, architectural features and special equipment or mechanical devices. Building height may also be increased by fifteen (15) feet for buildings 3 stories or less and twenty (20) for buildings over 3 stories to allow roof top mechanical equipment.

6.3.5 Intensity

The overall intensity for the Specific Plan area has been established by the City's 2030 General Plan. The maximum floor area ratio (F.A.R.) for each Planning Area varies in accordance with the anticipated uses.

6.3.6 Site Coverage

The maximum ground floor area of all buildings and structures shall be established in each Planning Area, and measured by the maximum ground floor area of all buildings and structures.

6.3.7 Setbacks

The minimum setbacks for all buildings and structures shall be as follows:

Front yard setbacks adjacent to a public roadway shall not be less than twenty (20) feet from the property line. A minimum of thirty (30) feet shall be required adjacent to an arterial highway.

Side yard setbacks on interior property lines shall not be less than ten (10) feet from the property line. The side yard adjacent to the public street shall meet the front yard setback requirements.

A common building wall with a zero setback may be established by a development plan, which shall provide documentation describing the exchange and recordation of necessary documents to insure adequate access, parking and easements to serve the development.

Rear yard setbacks shall be not less than ten (10) feet from the property line.

DEVELOPMENT REGULATIONS MATRIX
EXHIBIT 6.2

		PLANNING AREA						
		1	2	3	4	5	6	7
MINIMUM LOT AREA (1)		60,000 s.f.	15,000 s.f.	40,000 s.f.	15,000 s.f.	100,000 s.f.	10,000 s.f.	80,000 s.f.
MINIMUM LOT		250′	100′	200′	100′	300′	100′	250′
MINIMUM LOT		250′	150′	200′	150′	300′	100′	250′
MAXIMUM BUILDING HEIGHT (2)		175′ (12 stories)	90′ (6 stories)	175′ (12 stories)	90′ (6 stories)	50′ (3 stories)	35′ (2 stories)	90′ (6 stories)
MAXIMUM INTENSITY		1.0	0.7	1.0	0.7	0.5	0.5	0.8
MAXIMUM SITE COVERAGE (3)		50%	50%	50%	50%	60%	60%	50%
MINIMUM SETBACKS NG	FRONT	30′	30′	30′	25′	30′	25′	25′
	SIDE*	10′	10′	10′	10′	10′	10′	10′
	REAR*	10′	10′	10′	10′	10′	10′	10′
MINIMUM LANDSCAPING		10%	10%	10%	10%	10%	10%	10%

*** Zero (0) setback permitted between parcels of the same land use and developed concurrently.**

(1) Footprint lots may be smaller than the minimum lot area and shall have all required appurtenant are contiguous thereto and the sum of these areas shall not be less than the minimum lot area.

(2) Maximum height measured to main roofline with equipment, equipment rooms and roof screen permitted to extend beyond maximum building height.

(3) Parking structures are excluded from Maximum Site Coverage.

6.3.8 Landscaping

Project landscaping is intended to enhance, conserve and stabilize property values by encouraging a pleasant and attractive environment. Landscaped areas shall be considered those areas of lawn, trees, planter boxes, shrubs or other plants. Courtyards, plazas, water ponds, fountains, decks, kiosks, walkways and similar areas may be part of the landscaped area. A minimum portion of each project site must be landscaped with a combination of landscape materials and hardscape walkways and plazas, the extent of required landscaping shall be established in each Planning Area.

A landscape plan shall be prepared and submitted with all requests for development. All other setback and parking lot areas fronting on, or visible from, adjacent public streets shall be landscaped and permanently maintained in an attractive manner, consistent with the Landscape Guidelines contained in the Specific Plan and City Standard Landscape Plans.

A minimum five (5) foot wide landscape setback to parking is required at interior property lines.

Plant materials used for screening purposes shall consist of compact evergreen plants, together with evergreen trees. They shall be of a kind, or used in such a manner, so as to provide an opaque screen within eighteen (18) months after initial installation. This requirement shall be located on the second parcel developed.

6.3.9 Parking

Parking requirements have been established for the Specific Plan based on the City of Oxnard's Parking Regulations and Standards Ordinance adopted in October of 1994. Administrative relief from the parking provisions of the Specific Plan may be requested subject to the provisions outlined in the City's Zoning Code (Sec. 36-7.1, 31).

In order to provide suitable off-street parking facilities for various property uses and to ensure the safe movement of traffic on public streets and to protect adjacent properties from adverse impacts; all developments will be required to meet the minimum on-site parking standards outlined in the Specific Plan. On-street parking will not be permitted on any arterial.

Vehicle and bicycle parking facilities shall be provided off-street for any new building constructed, for any new use established and for any change in use in an existing building that would result in additional parking spaces being required.

Standard parking spaces shall be an unobstructed rectangle of not less than nine (9) feet in width by nineteen (19) feet in depth, and shall meet City's striping standards.

Parking lots need to be designed to City Standards with a minimum 25′ wide drive aisles and 48′ turning radius

REQUIRED PARKING MATRIX
EXHIBIT 6.3

USE	REQUIRED PARKING
INDUSTRIAL	
LIGHT MANUFACTURING	1 sp. / 500 sq. ft. *
HEAVY MANUFACTURING	1 sp. / 500 sq. ft. *
WAREHOUSING (first 20,000 sq. ft.)	1 sp. / 1000 sq. ft. *
WAREHOUSING (second20,000 sq. ft.)	1 sp. / 2000 sq. ft. *
WAREHOUSING (40,000+ sq. ft.)	1 sp. / 4000 sq. ft. *
BUSINESS AND RESEARCH	
RESEARCH AND DEVELOPMENT	1 sp. / 350 sq. ft. *
OFFICES	1 sp. / 250 sq. ft.
MEDICAL OFFICES	1 sp. / 200 sq. ft.
PROFESSIONAL SERVICES	1 sp. / 250 sq. ft.
COMMERCIAL	
SHOPPING CENTER	1 sp. / 250 sq. ft.
RETAIL GENERAL	1 sp. / 300 sq. ft.
RETAIL NEIGHBORHOOD	1 sp. / 250 sq. ft.
RETAIL FURNITURE / APPLIANCE	1 sp. / 300 sq. ft. (display) 1 sp. / 800 sq. ft. (warehouse)
AUTO REPAIR / SERVICE	1 sp. / 300 sq. ft. + 3sp / service bay
BANKS / FINANCIAL	1 sp. / 250 sq. ft.
HOTEL / MOTEL	1 sp. / room
RESTAURANT	1 sp. / 75 sq. ft. (first 6,000 sq. ft.) 1 sp. / 180 sq. ft. (+6,000 sq. ft.)
RESTAURANT (fast food)	1 sp. / 50 sq. ft.
HEALTH CLUB	1 sp. / 200 sq. ft.
PUBLIC / SEMI PUBLIC	
DAY CARE FACILITY	1 sp. / 10 children (must be provided w/ drop-off area)
PUBLIC ASSEMBLY	1 sp. / 35 sq. ft.

* Plus the required parking for gross floor area devoted to other uses

Handicap accessible parking spaces shall be as required by Federal and State laws and codes.

Multiple Uses developed in combination on a site shall provide parking for each of the uses according to the schedules given. Uses not listed on the parking schedule shall have the required parking determined by the approval body on the basis of requirements for similar uses, or any appropriate traffic engineering or planning data with recommended minimum requirements.

Shared parking may be permitted for combined office and commercial uses. A shared parking program may allow for a reduction of code required parking by up to twenty-five (25) percent, based upon a shared parking analysis. Shared off-site parking facilities may also be permitted for adjacent office and industrial uses, and unique uses such as churches or other community facilities.

Phasing required parking may be permitted and installed, as needed, provided sufficient parking for employee projections can be met. The initial phase of required parking shall be a minimum of fifty (50) percent of the required parking. A covenant shall be recorded on the property prior to occupancy to insure provision of all parking as necessary. All areas set aside for future parking facilities shall be landscaped consistent with other on-site landscaping and may not be used for building development or expansion.

Bicycle parking shall be provided as required by California Building Code and/or City Code, whichever is greater.

Bicycle racks shall be located in a visible area from the street or building entrance. Safe and convenient access for bicyclists from the external circulation system to on-site buildings or internal streets shall be provided. However, separate bicycle paths shall not be required. Bicycle parking areas must be separated from motor vehicle parking areas by at least a curb barrier in order to prevent vehicles from damaging bicycles.

Motorcycle parking shall be provided in required parking facilities at the rate of one (1) parking space per fifty (50) automobile parking spaces. Motorcycle spaces shall be a minimum of four and one-half (4 ½) feet in width by seven (7) feet in length.

Loading spaces shall be provided and maintained off-street within the project at the following rate:

Use	**Requirements**
gross floor area	# of loading spaces
Commercial & Industrial	
0-15,000	1
15,001-40,000	2
40,000-90,000	3
90,000-150,000	4
150,000 and over	5
Offices	
0-50,000	1
50,001-100,000	2
100,000 and over	3
Hotels, motels, and restaurants	1

Loading spaces shall be at least twelve (12) feet in width, thirty-eight (38) feet in length, and with fourteen (14) feet in vertical clearance. Loading zone requirements shall be subject to individual project reviews.

Drive-thru facilities may be approved subject to individual project review. Drive-thru lanes shall be separated from the circulation routes necessary for ingress or egress to the property and parking access. The principal pedestrian access to the entrance of the drive-thru facility shall not cross the drive-thru lane. The vehicle stacking capacity for uses containing drive-thru facilities shall be as follows:

Use	Requirements
Fast-food restaurant	Stacking for three (3) cars between the order board and the pick-up window and stacking for five (5) cars behind the order board.
Bank drive-thru windows	Stacking for five (5) cars for each window.

Vehicle stacking areas may be used as credit for required parking up to thirty (30) percent but shall not exceed twenty (20) spaces.

Finishes and surfacing for all parking spaces and maneuvering areas shall be paved and permanently maintained with asphalt, concrete, or any other all-weather method. Curbs/wheel stops shall be provided to prevent vehicle encroachment into landscape and access areas.

A curb shall consist of a continuous six (6) inch high concrete installed above the parking lot level and serve as an edging for planting areas, islands, protection for walls and for entrances and exits. Where concrete curbs are not installed adjacent to public sidewalks, wheel stops or bollards shall be installed to prevent vehicles from encroaching into or onto a public right-of-way.

Vehicle overhangs may be permitted up to two (2) feet adjacent to walkways and landscape areas providing that a minimum seven (7) foot wide walkway (five foot clear) and the minimum landscape setback width is maintained beyond the two (2) foot overhang.

6.3.10 Signs

All signs in the project area shall conform to the provisions of the City's Zoning and Subdivision Ordinance and shall be consistent with the Guidelines of the Specific Plan.

6.3.11 Lighting

All illumination of streets, parking areas, and project sites, shall be coordinated to provide a consistent illumination intensity and shielded from abutting streets and adjoining properties. Emphasis shall be placed on areas of high vehicular and pedestrian activity. Light fixtures and standards shall be consistent with building architectural style.

6.3.12 Walls and Fencing

Walls and fences are encouraged as means of providing security and screening. Walls shall be constructed of masonry or concrete materials

consistent with, and complimentary to, building architecture. Fencing shall be restricted to ornamental iron; chain-link fencing shall not be used. Decorative masonry walls a minimum of six (6) feet in height or other type of visual buffering such as landscaping, architectural treatment, or a combination thereof, shall be provided and maintained on a property line which abuts or is across a public street or alley from a residential zone. Such wall or visual buffering shall be placed in the location to provide the necessary screening from the public right-of-way. Screening walls surrounding outdoor storage and other activity areas may be constructed up to ten (10) feet in height.

6.4 Performance Standards

The maximum permitted levels of operational characteristics resulting from any activity shall be called performance standards. Continued compliance with the performance standards as outlined in the Specific Plan shall be required of all permitted uses.

All sites and structures within the Specific Plan area shall not be used or occupied in any manner so as to create any dangerous, noxious, injurious, or otherwise objectionable situation. Dangerous or objectionable substances, conditions or elements, shall not be used in a manner or amount as to adversely affect the environment or surrounding community. More restrictive performance standards or regulations enacted by an authorized governmental agency having jurisdiction on such matter shall take precedence over the provisions of the Specific Plan.

6.4.1 Noise

Baffling or muffling devices or other precautionary means shall be employed with the processes or operations causing objectionable noise characteristics to prevent their being objectionable when measured at the property line during normal operation.

6.4.2 Smoke and Particulates

Visible emissions of smoke will not be permitted which exceed Ringlemann No. 1 on the Ringlemann Chart of the U.S. Bureau of Mines, except for exhausts emitted by motor vehicles or other transportation facilities. This requirement shall also be applicable to the disposal of trash and waste materials. Wind-borne dust, dirt, fly ash, airborne solids, sprays and mists (except water vapor) originating from any use will not be permitted.

6.4.3 Toxic or Noxious Matter

Toxic gases or noxious matter shall not be emitted which can cause any damage to health, animals, vegetation or other forms of property, or which can cause any excessive soiling beyond the lot lines of the use.

6.4.4 Odorous Matter

Operations, processes or products which emit odors that are detectable at any point beyond the property line from any use are not to be permitted.

6.4.5 Glare or Heat

Any operation producing intense glare or heat shall be performed within an enclosed or screened area in such a manner that the glare or heat emitted will not be discernable from the property line.

6.4.6 Vibration

All activities shall be operated so that the ground vibration generated by the use is not harmful or injurious to the use of the surrounding properties. No vibration shall be permitted which is perceptible without instruments at any point along the property line.

6.4.7 Electricity and Radio Activity

No activity shall be permitted which causes electrical disturbances affecting the operation of any equipment located beyond the property line of such activity.

Radio and television transmitters shall be operated at the regularly assigned wave lengths (or within the authorized tolerances) as assigned by the appropriate governmental agency. Any exception must be suitably wired, shielded and controlled so that in operation they shall not emit electrical impulses or waves beyond the lot lines which adversely affect the operation and control of any domestic household equipment or any other electronic devices and equipment.

6.4.8 Liquid and Solid Wastes

Liquid or solid wastes discharged from the premises shall be properly treated prior to discharge so as not to contaminate or pollute any watercourse or groundwater supply or interfere with bacterial processes in sewage treatment. Such operations shall comply with authorized governmental health and safety regulations of agencies having jurisdiction over such disposal activities. The disposal or dumping of solid wastes, such as slag, paper or fiber wastes, or other industrial wastes, shall not be permitted on any premises unless otherwise provided for.

6.4.9 Fire and Explosive Hazards

All activities involving the use or storage of combustible, flammable or explosive materials shall be in compliance with nationally recognized standards, and shall be provided with adequate firefighting and fire-suppression equipment and devices in compliance with the current edition of the National Fire Protection Association regulations. Burning of waste materials in open fires is prohibited.

6.4.10 Exceptions

The outlined Performance Standards do not apply to unexpected brief periods where the standards are exceeded, if based upon a reasonable cause, such as equipment testing, breakdown of equipment, modification or cleaning of equipment, or other similar reason when it is evident that such cause was not reasonably preventable.

SECTION SEVEN

7

Adaptive Management Mitigation Monitoring and Reporting Program

for the Sakioka Farms Business Park Specific Plan

Incorporating Mitigation Measures from the Certified Sakioka Farms Business Park Specific Plan Final EIR

Adaptive Management shall be applicable to any Mitigation Measure which states that it is an Adaptive Management Mitigation Measure. Adaptive Management allows for the continuing consideration of mitigation measures based an evaluation of environmental conditions at the actual time of their proposed implementation, and their effectiveness in achieving the adopted objectives of the Final EIR which are an impact level of less than significant, unless otherwise stated. Adaptive management would not require exceeding the level or extent of stated mitigation measures as specified in the Final EIR unless established by subsequent CEQA review.

This Adaptive Management Mitigation Monitoring and Reporting Program shall be incorporated in the Sakioka Farms Business Park Specific Plan document as Section 7 under said title.

Mitigation Measure	Action Required	Timing	Enforcement Agency
A - CULTURAL RESOURCES			
A-1 This is an adaptive management mitigation measure. The Project developer and/or subsequent responsible parties shall contract with a qualified archaeologist to monitor initial grading and excavation in excess of three feet. In the event that any historic or prehistoric cultural resources are discovered, they will be evaluated in accordance with the procedures set forth in CEQA Section 15064.5. If the evaluation determines that such resources are either unique or significant archaeological, paleontological, or historic resources and that the Project would result in significant effects on those resources, then further mitigation would be required. In cases where the resources are unique, then avoidance, capping, or other measures, including data recovery, would be appropriate mitigation. If the resources are not unique, then recovery, without further mitigation, would be appropriate.	Project developers shall provide a copy of a contract for services to the City for review and approval as part of each planning and/or building permit application unless an active contract is on file. Developers shall provide reports to the City for review in the event that any historic or prehistoric cultural resources are discovered during periods of actual grading and/or trenching deeper than three feet.	Contract provided or on file as part of the determination of a complete application. Reports provided as warranted during site grading activities and finalized prior to approval of final building certificate(s) of occupancy signature.	City of Oxnard Planning Division and Engineering Services Division.
A-2 This is an adaptive management mitigation measure. The Project developer and/or subsequent responsible parties shall contract with a Native American monitor to be present during all subsurface grading, trenching, or construction activities in excess of three feet on the Project site. The monitor shall provide a monthly report to the Planning Division summarizing the activities during the reporting period. If any qualifying cultural materials are encountered during this phase of project construction, construction activities on the project site shall be halted immediately, and the Project developer shall notify the City. If any find were determined to be significant by the Native American	Project developers shall provide a copy of a contract for services to the City for review and approval as part of each planning and/or building permit application unless an active contract is on file. Developers shall provide reports to the City for review in the event that cultural materials or human remains are discovered during grading and/or trenching deeper than three feet. If materials are	Contract provided or on file as part of the determination of a complete application. Reports provided as warranted during site grading activities and finalized prior to approval of final building certificate(s) of occupancy signature.	City of Oxnard Planning Division and Engineering Services Division.

Mitigation Measure	Action Required	Timing	Enforcement Agency
monitor, the City and the Native American monitor would meet to determine the appropriate course of action. A copy of the contract for these services shall be submitted to the Planning Division Manager for review and approval prior to issuance of any grading permits. A final monitoring report(s) shall be provided to the Planning Division prior to approval of final building certificate(s) of occupancy signature.	encountered, construction activities shall be halted immediately so as to not disturb the remains and the Developer shall notify the City for further consultation.		
B - LAND USE AND PLANNING			
B-1 If the Oxnard 2030 General Plan is adopted before the Final Sakioka Farms EIR is certified or the Development Services Director determines that the Sakioka Farms Specific Plan final adoption actions are likely to occur after adoption of the Oxnard 2030 General Plan, a 2030 General Plan consistency analysis shall be completed by the City and reimbursed by the Applicant. The 2030 General Plan consistency analysis shall, at a minimum, be prepared as an Addendum to the Draft or Final Sakioka Farms EIR, whichever is applicable. If the 2030 General Plan consistency analysis identifies significant impacts and/or new or modified mitigations, the appropriate CEQA required actions shall be taken, the costs of which are to be reimbursed by the Applicant consistent with the City's CEQA review policies and practices.	If determined to be required, a 2030 General Plan consistency analysis shall be completed by the City and reimbursed by the Project applicant.	Prior to adoption of the Project Specific Plan and Final EIR.	City of Oxnard Planning Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
C - AGRICULTURAL RESOURCES			
The Project together with other pending urban development projects in the City, even after application of the following mitigation measures, will result in a cumulative effect on agricultural resources that is considered significant and unavoidable. Accordingly, a Statement of Overriding Considerations was prepared in accordance with CEQA and included within the resolution approving the Specific Plan.			
C-1 This is an adaptive management mitigation measure. The Project developer shall offer, at cost, the top 12 inches of the Prime Farmland soils (at 100 acres) for relocation to a farm site or farm sites that have lower quality soils. The cost will include the suitable replacement soil, if needed for site improvements. This mitigation may occur in phases as the areas with Prime Farmland are incrementally developed.	The Project developer shall provide a copy of the published advertisement offering, at cost, the top 12 inches of the Prime Farmland soils for relocation to a farm site or farm sites that have lower quality soils to the City.	At least 30 days prior to issuance of grading permits for the area subject to the mitigation.	City of Oxnard Planning Division
C-2 This is an adaptive management mitigation measure. The Project developer shall install a fence or wall with a minimum height of eight (8) feet along the eastern perimeter of the project site that abuts the unincorporated portion of Ventura County when developed is proposed east of Del Norte Boulevard. Fencing may be required between developed phases of the Project and continuing agricultural operations on the remaining Project site based on subsequent entitlement actions.	Project developer shall provide a copy of the building plans that show the specifications and location for the perimeter wall or other buffer fencing as needed during phased development.	Prior to approval of grading permits	City of Oxnard Planning Division, Engineering Services, or Public Works depending on the type of permit.
C-3 This is an adaptive management mitigation measure. In order to buffer on- or off-site agricultural land uses and on-site non-agricultural uses either of the following measures may be undertaken to allow scheduled Restricted Materials applications by an on- or off-site farmer; 1) closure of the buildings during periods when restricted materials will be used on the adjacent farmland parcels or 2) notification, consistent with common-practice in Ventura County, of	The Project developer shall prepare a pamphlet regarding the potential of nearby farming activities to impact Sakioka Farms development and distribute it to purchasers and/or developers of individual building sites and to new building occupants within the	Pamphlet prepared prior to final approval of the first subdivision tract map and available to all subsequent property owners, developers, and agents.	City of Oxnard Planning Division with the invited review by the Office of the Ventura County Agricultural Commissioner.

Mitigation Measure	Action Required	Timing	Enforcement Agency
building occupants and/or building managers that normal farming activities will occur nearby from time to time which can include noise, mild dust, and odors; that inert and non-toxic substances are frequently used by farmers which should be of no concern to people nearby, and that actual chemical spray drift from farms is rare and should not be misperceived.	proposed project area whose parcels could be impacted by this activity. The Sakioka Farms Specific Plan Covenants, Conditions and Restrictions (CC&Rs) shall require the Project developer provide the pamphlet to subsequent buyers and occupants of buildings on those parcels.		
E - BIOLOGICAL RESOURCES			
E-1 This is an adaptive management mitigation measure. In order to avoid adverse impacts to nesting birds, including nesting migratory birds known to exist in the trees (if any) on the Project site, during construction activities, ground vegetation removal activities must take place outside of the nesting season recognized by the California Department of Fish and Game for species in this area. If vegetation removal activities occur during the nesting season, a qualified ecologist/biologist must be present to monitor the removal activities to ensure that no active nests will be impacted. If nests are found, a 300 foot (500 feet for raptors) buffer radius shall be established until the young have fledged. If nests are observed and lesser buffer distances are desired, the biological monitor shall confer with Planning and Fish and Game staff to determine an appropriate buffer distance based on species specific requirements. This measure does not apply to agricultural row crops.	The Project developer shall limit site grading activities to September 1st through February 14th or as recognized by the California Department of Fish and Game for species in this area. This mitigation measure shall be printed on project grading plans. Developer shall provide a copy of a survey report from a recognized biologist monitor if non-agricultural vegetation removal occurs during the specified period .	Prior to issuance of grading permits unless the entire grading area was in active agriculture production within the previous 30 days.	City of Oxnard Planning Division, Engineering Services Division, or Public Works depending on type of grading permit.

Mitigation Measure	Action Required	Timing	Enforcement Agency
E-2 This is an adaptive management mitigation measure. Prior to processing the initial tract map for a planning area that could lead to construction activities that may result in the placement of fill material into the potentially jurisdictional irrigation drainage features, prepare and submit to the Corps for verification a "Preliminary Delineation Report for Waters of the U.S." and a Streambed Alteration Notification package to CDFG for the irrigation drainage features. If these agencies determine that the feature is not regulated under their jurisdiction, then no further mitigation is necessary. However, if the Corps considers the feature to be jurisdictional through a "significant nexus" test per recent Corps and EPA guidance,[1] then a Clean Water Act Section 404 permit shall be obtained from the Corps, and any permit conditions shall be agreed to, prior to the start of construction activities in the affected area. If CDFG determines that the drainage is a regulated "streambed", then a Streambed Alteration Agreement shall be entered into with CDFG and any associated conditions shall be agreed to prior to the start of construction in the affected area.	The Project developer shall provide a copy of the Preliminary Delineation Report for Waters of the U.S. and either verification by the U.S. Army Corps of Engineers and the CDFG that the drainage feature is not regulated or a copy of the Clean Water Act Section 404 permit and the Streambed Alteration Agreement to the Planning Division to keep with the project files.	Prior to processing the initial tract map for a planning area containing potentially jurisdictional irrigation drainage features, or, as an alternative, a verification document for the entire Specific Plan area acceptable to the Director of Public Works.	City of Oxnard Planning Division, Engineering Services Division, or Public Works depending on type of grading permit.
E-3 This is an adaptive management mitigation measure. In order to prevent unauthorized impacts to jurisdictional features, the following permits shall be issued and/or reports approved (or exemptions issued) by the respective resource agency, and any associated conditions of approval shall be agreed upon, prior to processing the initial tract map for a planning area that could lead to construction activities that may result in the placement of fill material into the	The Project developer shall provide a copy of the Preliminary Delineation Report for Waters of the U.S. and either verification by the U.S. Army Corps of Engineers and the CDFG that the drainage feature is not regulated or provision of the approved	Prior to processing the initial tract map for a planning area containing potentially jurisdictional irrigation drainage features, or, as an alternative, a	City of Oxnard Planning Division, Engineering Services Division, or Public Works depending on type of grading permit.

1 *U.S. Environmental Protection Agency and U.S. Department of the Army. 2007. Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States. June 5, 2007.*

Mitigation Measure	Action Required	Timing	Enforcement Agency
potentially jurisdictional irrigation drainage features, subsequent to adoption of the Project (i.e. Specific Plan): • Clean Water Act Section 404 Permit from the Corps, • Streambed Alteration Agreement under Section 1600 of the Fish and Game Code from CDFG, • Clean Water Act Section 401 Water Quality Certification or Waste Discharge Requirements from the RWQCB. If the irrigation ditches are determined as jurisdictional by the Corps, it will be necessary to insure adequate compensation for adverse impacts to jurisdictional features from Project development. If applicable, a Mitigation Plan shall be prepared by a qualified biologist. The Mitigation Plan shall describe and justifying the (1) formal delineation; (2) proposed methods including timing, materials, and erosion control measures; (3) the proposed location for the replacement areas; and (4) habitat protection measures (including a mechanism for permanent preservation of the area supporting the replacement habitat). The Mitigation Plan shall be submitted to and approved by the County, Corps, CDFG, and RWQCB prior to initiation of construction activities.	Mitigation Plan, the Clean Water Act Section 404 permit, the Clean Water Act Section 401 permit, the Streambed Alteration Agreement and the RWQCB Waste Discharge Requirements to the Planning Division submitted to the County along with copies to keep with the project files.	verification document for the entire Specific Plan area acceptable to the Director of Public Works.	

Mitigation Measure	Action Required	Timing	Enforcement Agency
E-4 This is an adaptive management mitigation measure. If required to compensate for riparian habitat loss by the Corps, the project applicant will place under conservation easement in a manner acceptable to the Corps and the California Department of Fish and Game an area of riparian habitat that will accommodate constructed replacement at a ratio to be determined during the formulation of a Lake and Stream Alteration Agreement (i.e. a number of acres of constructed riparian habitat). This conserved riparian habitat must be of the same or higher quality as the habitat that is to be removed as a result of the Project. -- or -- The Project applicant will purchase the requisite number of credits from a qualified conservation bank. The Project applicant can only purchase credits from those banks that sell credits covering the riparian species to be affected by the proposed Project or as approved by the Corps or agency of jurisdiction.	If required, the Project developer shall provide a copy of the conservation easement or proof of the purchase of the requisite number of credits from a nearby qualified conservation bank to the Planning Division to keep with the project files.	Prior to processing the initial tract map for a planning area containing potentially jurisdictional irrigation drainage features, or, as an alternative, a verification document for the entire Specific Plan area acceptable to the Director of Public Works.	City of Oxnard Planning Division, Engineering Services Division, or Public Works depending on type of grading permit.
E-5 This is an adaptive management mitigation measure. Prior to construction of the Planning Area 1, located adjacent to the Ventura Freeway, a qualified ecologist/biologist shall determine the presence and extent/absence of monarch butterfly activity surrounding the proposed construction area if any mature windrow trees are present. If temporary aggregation activity is observed within this area, construction shall be halted until after the temporary aggregation season (September – December) or until the monarchs have left the vicinity.	The Project developer shall limit site grading activities in Planning Area 1 to January 1st through February 14th as specified in project grading plans; or provide a copy of the survey report and the contract for biologist monitor contract to the City for review and approval.	Prior to issuance of grading permits and/or planning permits, whichever occur first, within each planning area in Planning Area 1.	City of Oxnard Planning Division, Engineering Services Division, or Public Works depending on type of grading permit.

Mitigation Measure	Action Required	Timing	Enforcement Agency
F - GEOLOGY AND SOILS			
F-1 This is an adaptive management mitigation measure. *Conduct Geotechnical Investigations and Adhere to Recommendations:* Detailed design level geotechnical investigations shall be performed by qualified licensed professionals for each individual proposed project/phase of the Sakioka Farms Business Park Specific Plan project. These geotechnical investigations shall include, but not be limited to: • identification of unsuitable soils including expansive, corrosive, and collapsible soils, • identification presence and extent of liquefiable soils, • calculation of site-specific seismic design criteria, • a fault evaluation study to confirm the presence or absence of the Springville and Camarillo segments of the Simi-Santa Rosa fault across the southern half of the Proposed Project site. Recommendations shall be provided in these reports for design of project structures and facilities and for mitigation of any unsuitable conditions encountered. These reports shall be provided to the City and other reviewing agencies for review. These recommendations shall be implemented, as deemed appropriate by the City and the Applicant's engineering design consultant.	The Project developer shall provide copies of the applicable geotechnical investigations incorporating the recommendations to the City for review and approval as part of the applicable planning, grading, and/or building permit application process.	Prior to issuance of grading, and/or building permits.	City of Oxnard Planning Division, Engineering Services Division, or Public Works depending on type of grading permit.

Mitigation Measure	Action Required	Timing	Enforcement Agency
G - HAZARDS AND HAZARDOUS MATERIALS			
G-1 All miscellaneous vehicles, maintenance equipment and materials, construction/irrigation materials, miscellaneous stockpiled debris, dumpsters, pesticide application equipment, ASTs, 55-gallon drums, and 5-gallon buckets should be removed offsite consistent with the phased development described within the Specific Plan, and properly disposed of. Once removed, a visual inspection of the areas beneath the removed materials should be performed. Any stained soils observed underneath the removed materials should be sampled. Results of the sampling would indicate the level of remediation efforts that may be required.	Project developer shall provide reports of site sampling following removal of debris to the City for review and any remediation efforts should they be required demonstrating that all hazardous materials have been appropriately abated.	Prior to issuance of grading and demolition permits and during demolition	City of Oxnard Engineering Services Division
G-2 A visual inspection of all storage structures shall be performed prior to demolition activities. In the event that hazardous materials are encountered, the materials shall be tested and properly disposed of pursuant to Local, State and Federal regulations.	Project developer shall provide reports of site sampling to the City for review and any remediation efforts should they be required demonstrating that all hazardous materials have been appropriately abated.	Prior to issuance of grading and demolition permits	City of Oxnard Engineering Services Division
G-3 Due to visible evidence of dark surface soil staining of oil/petroleum products located within Area 5, soil shall be excavated to determine the exact vertical extent of the contamination. If during soil removal, staining appears to continue below the ground surface, sampling shall be performed to identify the extent of contamination and appropriate remedial measures shall be taken.	Project developer shall provide reports of site sampling to the City for review and any remediation efforts should they be required demonstrating that all hazardous materials have been appropriately abated.	Prior to issuance of grading and demolition permits	City of Oxnard Engineering Services Division
G-4 Areas of exposed soil five feet from the expanded Caltrans Right-of-Way along the Ventura Freeway after completion	Project developer shall provide reports of site sampling to the City	Prior to issuance of grading and	City of Oxnard Engineering Services Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
of the Rice Avenue/101 Freeway interchange reconstruction, which will be disturbed during any excavation/grading activities, shall be sampled and tested for lead. In the unlikely event that unacceptable levels of lead materials are encountered, the materials shall be disposed of pursuant to State and Federal regulations.	for review and any remediation efforts should they be required demonstrating that all hazardous materials have been appropriately abated.	demolition permits	
G-5 This is an adaptive management mitigation measure. Soil sampling shall occur throughout the Project site concurrent with phased development, including the pesticide mixing areas within Areas 1 and 3. The sampling will determine if pesticide concentrations exceed established regulatory requirements and will identify proper handling procedures that may be required.	Project developer shall provide reports of site sampling to the City for review and any remediation efforts should they be required demonstrating that all hazardous materials have been appropriately abated.	Prior to issuance of grading and demolition permits	City of Oxnard Engineering Services Division
G-6 Padre & Associates findings regarding residual soil contamination associated with the historical operation of oil/gas extraction wells should be reviewed and appropriate remedial recommendations (if any) should be administered. In addition to recommendations provided by Padre & Associates, the California Department of Oil, Gas and Geothermal Resources (DOGGR) well abandonment procedures shall be followed and formal verification of closure be received by DOGGR.	Project developer shall provide appropriate documentation to the City and the DOGGR demonstrating that the recommendations provided by Padre & Associates have been followed.	Prior to issuance of grading permits and approval of final building permits	City of Oxnard Engineering Services Division and the DOGGR
G-7 A qualified lead-paint abatement consultant shall be employed to comply with applicable state and federal rules and regulations governing lead paint abatement if any remaining structures are suspected of containing lead-based paint.	Project developer shall provide a copy of the contract for services to the City for review and approval.	Prior to issuance of grading and demolition permits	City of Oxnard Engineering Services Division
G-8 This is an adaptive management mitigation measure. Consistent with the Airport Comprehensive Land Use Plan for Ventura County (ACLUP) and the Sakioka Farms	Project developer shall provide copies of the applicable grading and construction plans	Prior to approval of planning permits or building permits if no	City of Oxnard Planning Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
Specific Plan, commercial/industrial development is permitted within the Extended Traffic Pattern Zone and residential development, should it be incorporated into future plans, is permitted within the Extended Traffic Pattern Zone subject to avigation easements and appropriate recorded disclosures.	demonstrating compliance with the ACLUP and evidence of appropriate avigation easements to the City for review and approval.	planning permit is required.	
I - TRANSPORTATION/TRAFFIC			
The following Transportation/Traffic mitigation measures are part of an adaptive management mitigation program. The traffic improvements listed below as I-1 through I-34, inclusive, are intended to maintain Level of Service C with the development of the Project unless excepted by the City Council based upon the traffic modeling completed in February 2010 for the Draft EIR. Subsequent traffic studies required by the Specific Plan may change the number and type of improvements based upon phasing of development, traffic counts and future travel behavior. Adaptive management will allow consideration of such subsequent traffic studies in the implementation of the Transportation/Traffic mitigation measures. The February 2010 traffic modeling does not take into account the City's Intelligent Transportation Systems (ITS) project under construction in 2011. Similar ITS projects have improved travel time and speed by 12%-16% and decreased delay by 32%-44% (ATSAC evaluation study, 1994). As part of the adaptive management of the Transportation/Traffic mitigation measures, the implementation of such mitigation measures shall take into account when feasible the ITS, future traffic counts and updated trip generation data which may reduce, change or make unnecessary the mitigation measures while still achieving the City's adopted Level of Service, unless modified by City Council. The Developer's payment of applicable City and County traffic impact fees in the amount agreed to by the City, County and Developer or, if there is no agreement, in the amount in effect at the time of issuance of a building permit, satisfies in full the action required by Developer in connection with the implementation of the Transportation/Traffic mitigation measures. Developer may also contribute additional funds towards the traffic improvements subject to reimbursement from the City in the form of credits against future City traffic impact fees or repayment by the City.			
Phase 1 (2010)			
I-1 *Rose Avenue & Gonzales Road:* The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and developer towards implementing improvements to the Rose Avenue & Gonzales Road intersection that adds a fourth westbound thru lane which will mitigate both Project and cumulative (2010 no Project) impacts.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to recordation of the final map or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
I-2 *Rose Avenue & Camino Del Sol:* The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and developer towards implementing improvements to the Rose Avenue & Camino Del Sol intersection that adds a third northbound thru lane by removing the existing northbound right-turn lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to recordation of the final map or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-3 *Rice Avenue & Fifth Street:* The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and developer towards implementing improvements to the Rice Avenue & Fifth Street intersection that adds a third southbound thru lane by removing the existing southbound right turn lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to recordation of the final map or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-4 *Del Norte Boulevard & Ventura Freeway NB Ramps:* The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and developer towards providing signalization.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to recordation of the final map or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-5 *Del Norte Boulevard & Ventura Freeway SB Ramps:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to signalize and add a northbound right turn lane which will mitigate both Project and cumulative (2010 no Project) impacts.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
Phase 2 (2015)			
I-6 *Ventura Road & Wooley Road:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Ventura Road & Wooley Road intersection that adds a third northbound thru lane and a third southbound thru lane which will mitigate both Project and cumulative (2010 no Project) impacts.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-7 *Oxnard Boulevard & Gonzales Road:* The Project	The Project developer shall pay	Prior to issuance of	City of Oxnard Engineering

Mitigation Measure	Action Required	Timing	Enforcement Agency
developer shall pay applicable City and County traffic impact fees toward improvements adding a third eastbound thru lane at the Oxnard Boulevard & Gonzales Road intersection	applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	building permits or as otherwise agreed upon with the City	Services Division
I-8 *Rose Avenue & Gonzales Road:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rose Avenue & Gonzales Road intersection that adds a fourth southbound thru lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer..	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-9 *Rose Avenue & Fifth Street:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rose Avenue & Fifth Street intersection that adds a second eastbound thru lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-10 *Rice Avenue & Fifth Street:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rice Avenue & Fifth Street intersection that adds a second westbound left turn lane which will mitigate both Project and cumulative (2010 no Project) impacts.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-11 *Rice Avenue & Channel Islands Boulevard:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rice Avenue & Channel Islands Boulevard intersection that changes the southbound defacto right turn lane to a free right turn lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-12 *Del Norte Boulevard & Ventura Freeway NB Ramps:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Del Norte Boulevard & Ventura Freeway NB Ramps intersection that adds a second northbound thru lane, adds a separate northbound left turn lane, adds a second southbound thru lane, adds a separate southbound right turn lane, and adds a separate	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
westbound left turn lane.			
I-13 *Del Norte Boulevard & Ventura Freeway SB Ramps*: The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Del Norte Boulevard & Ventura Freeway SB Ramps intersection that adds a second northbound thru lane, adds a separate northbound free-right turn lane, adds a second southbound thru lane, adds a separate southbound left turn lane, and adds a separate eastbound left turn lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-14 *Oxnard Boulevard & Vineyard Avenue:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Oxnard Boulevard & Vineyard Avenue intersection that adds a third northbound thru lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
Phase 3 (2020)			
I-15 *Oxnard Boulevard & Vineyard Avenue:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Oxnard Boulevard & Vineyard Avenue intersection that adds a fourth southbound thru lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-16 *Rose Avenue & Gonzales Road:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rose Avenue & Gonzales Road intersection that adds a second westbound left turn lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-17 *Rose Avenue & Fifth Street:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rose Avenue & Fifth Street intersection that adds a second westbound left turn lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
I-18 *Rice Avenue & Fifth Street:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rice Avenue & Fifth Street intersection that completes the grade separation / bypass which will mitigate both Project and cumulative (2020 no Project) impacts.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-19 *Rice Avenue & Wooley Road:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rice Avenue & Wooley Road intersection that adds a third northbound thru lane and a third southbound thru lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-20 *Ventura Road & Wooley Road:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Ventura Road & Wooley Road intersection that adds a second southbound left lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-21 *Rose Avenue & Camino Del Sol:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rose Avenue & Camino Del Sol intersection that adds a second eastbound left lane and a second westbound left lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-22 *Del Norte Blvd & Fifth Street:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Del Norte Blvd & Fifth Street intersection that adds a second westbound thru lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City.	City of Oxnard Engineering Services Division
Phase 4 (2025)			
I-23 *Ventura Road & Gonzales Road:* The Project developer	The Project developer shall pay	Prior to issuance of	City of Oxnard Engineering

Mitigation Measure	Action Required	Timing	Enforcement Agency
shall pay applicable City and County traffic impact fees toward implementing improvements to the Ventura Road & Gonzales Road intersection that adds a second northbound left turn lane and a third northbound thru lane which will mitigate both Project and cumulative (2025 no Project) impacts.	applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	building permits or as otherwise agreed upon with the City	Services Division
I-24 *Ventura Road & Wooley Road:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Ventura Road & Wooley Road intersection that adds a third eastbound thru lane and a third westbound thru lane which will mitigate both Project and cumulative (2025 no Project) impacts.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-25 *Rose Avenue & Camino Del Sol:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rose Avenue & Camino Del Sol intersection that removes the southbound free right turn lane, adds a third southbound thru lane and adds an eastbound right turn lane which will mitigate both Project and cumulative (2025 no Project) impacts.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-26 *Rose Avenue & Fifth Street:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rose Avenue & Fifth Street intersection that adds a southbound right turn lane or grade separation.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-27 *Rose Avenue & Channel Islands Boulevard:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rose Avenue & Channel Islands Boulevard intersection that adds a third northbound thru lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-28 *Rose Avenue & Bard Road:* The Project developer shall	The Project developer shall pay	Prior to issuance of	City of Oxnard Engineering

Mitigation Measure	Action Required	Timing	Enforcement Agency
pay applicable City and County traffic impact fees toward implementing improvements to the Rose Avenue & Bard Road intersection that adds a third northbound thru lane and a third southbound thru lane by removing the existing northbound and southbound right turn lanes.	applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	building permits or as otherwise agreed upon with the City	Services Division
I-29 *Rice Avenue & Camino Del Sol:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rice Avenue & Camino Del Sol intersection that adds a second eastbound left turn lane which will mitigate both Project and cumulative (2025 no Project) impacts.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-30 *Rose Avenue & Wooley Road:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rose Avenue & Wooley Road intersection that adds a third southbound thru lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-31 *Rose Avenue & Pleasant Valley Road:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the Rose Avenue & Pleasant Valley Road intersection that adds a third northbound thru lane and a third southbound thru lane by removing existing northbound and southbound right turn lanes.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
I-32 *SR-1/Rice NB & Pleasant Valley Road:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements to the SR- 1/Rice NB & Pleasant Valley Road intersection that adds a westbound right turn lane.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
Year 2030			

Mitigation Measure	Action Required	Timing	Enforcement Agency
I-33 *Rice Avenue & Gonzales Road:* The Project developer shall pay applicable City and County traffic impact fees and dedicate additional land to accommodate improvements to the Rice Avenue & Gonzales Road intersection to achieve LOS C, unless the City Council decides this mitigation is infeasible and accepts LOS D for this intersection with an accompanying Statement of Overriding Consideration.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
Ventura Freeway			
I-34 *101 (Ventura) Freeway:* The Project developer shall pay applicable City and County traffic impact fees toward implementing improvements that are, or are subsequently included, component(s) of the Oxnard Traffic Capital Improvement Program which: 1) extend and connect north- and south-bound Ventura Freeway exit and entrance ramps between Oxnard Blvd and Del Norte Blvd. and/or 2) extend Gonzales Road and/or Ventura Road to Central Avenue.	The Project developer shall pay applicable City and County traffic impact fees in the amount agreed to by the City and Developer.	Prior to issuance of building permits or as otherwise agreed upon with the City	City of Oxnard Engineering Services Division
J - AIR QUALITY			
The Project together with other pending urban development projects in the City which, even after application of the following mitigation measures, will result in a cumulative effect on greenhouse gas emissions and continuing Basin air quality non-attainment that is considered significant and unavoidable. Accordingly, a Statement of Overriding Considerations was prepared in accordance with CEQA and included within the resolution approving the Specific Plan.			
Construction			
J-1 This is an adaptive management mitigation measure. The	Measures shall be included in	Prior to issuance of	City of Oxnard Planning Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
Project developer shall implement fugitive dust control measures throughout all phases of construction. The Project developer shall include in construction contracts the control measures required and recommended by the VCAPCD at the time of development. These measures, like all EIR mitigation measures, are binding on subsequent parties and developers. Examples of the types of measures currently required and recommended include the following: • Minimize the area disturbed on a daily basis by clearing, grading, earthmoving, and/or excavation operations. • Pre-grading/excavation activities shall include watering the area to be graded or excavated before the commencement of grading or excavation operations. Application of water should penetrate sufficiently to minimize fugitive dust during these activities. • All trucks shall be required to cover their loads as required by California Vehicle Code §23114. • All graded and excavated material, exposed soil areas, and active portions of the construction site, including unpaved on-site roadways, shall be treated to prevent fugitive dust. Treatment shall include, but not necessarily be limited to, periodic watering, application of environmentally-safe soil stabilization materials, and/or roll-compaction as appropriate. Watering shall be done as often as necessary. • Material stockpiles shall be enclosed, covered, stabilized, or otherwise treated, to prevent blowing fugitive dust offsite.	construction documents and implemented during grading and construction.	grading permits and during grading and construction	and Engineering Services Division (building inspectors)

Mitigation Measure	Action Required	Timing	Enforcement Agency
• Graded and/or excavated inactive areas of the construction site shall be monitored by a City-designated monitor at least weekly for dust stabilization. Soil stabilization methods, such as water and roll-compaction, and environmentally-safe control materials, shall be periodically applied to portions of the construction site that are inactive for over four days. If no further grading or excavation operations are planned for the area, the area should be seeded and watered until grass growth is evident, or periodically treated with environmentally-safe dust suppressants, to prevent excessive fugitive dust. • Signs shall be posted on-site limiting on-site traffic to 15 miles per hour or less. • During periods of high winds (i.e., wind speed sufficient to cause fugitive dust to impact adjacent properties), all clearing, grading, earth moving, and excavation operations shall be curtailed to the degree necessary to prevent fugitive dust created by on-site activities and operations from being a nuisance or hazard, either off-site or on-site. The site superintendent/supervisor shall use his/her discretion in conjunction with the VCAPCD is determining when winds are excessive. • Adjacent streets and roads shall be swept at least once per day, preferably at the end of the day, if visible soil material is carried over to adjacent streets and roads. • Personnel involved in grading operations, including contractors and subcontractors should be advised to wear respiratory protection in accordance with			

Mitigation Measure	Action Required	Timing	Enforcement Agency
California Division of Occupational Safety and Health regulations.			
J-2 The Project developer shall implement measures to reduce the emissions of pollutants generated by heavy-duty diesel-powered equipment operating at the Project site throughout the Project construction phases. The Project developer shall include in construction contracts the control measures required and recommended by the VCAPCD at the time of development. Examples of the types of measures currently required and recommended include the following: • Maintain all construction equipment in good condition and in proper tune in accordance with manufacturer's specifications. • Limit truck and equipment idling time to five minutes or less. • Minimize the number of vehicles and equipment operating at the same time during the smog season (May through October). • Use alternatively fueled construction equipment, such as compressed natural gas (CNG), liquefied natural gas (LNG), or electric, to the extent feasible.	Measures shall be included in construction documents and implemented during grading and construction.	Prior to issuance of grading permits and during grading and construction	City of Oxnard Planning Division and Engineering Services Division (building inspectors)
Operations			
J-3 This is an adaptive management mitigation measure. The Project developer shall include in construction and building management contracts one or more of the following requirements or other measures shown to be equally effective: • Use solar or low-emission water heaters in new buildings where feasible and as in common practice in similar new construction in the Oxnard area.	The development review process will condition planning and/or discretionary building projects with these or similar requirements.	Prior to recording of Final Map of first subdivision action.	City of Oxnard Planning Division and Engineering Services Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
• Require that commercial landscapers providing services at the common areas of project site use electric or battery-powered equipment, or other internal combustion equipment that is either certified by the California Air Resources Board or is three years old or less at the time of use, to the extent that such equipment is reasonably available and competitively priced in Ventura County (meaning that the equipment can be easily purchased at stores in Ventura County and the cost of the equipment is not more than 20 percent greater than the cost of standard equipment). • Provide bus stops pull-out areas, and/or shelters at locations along and within the Project site. The number and location of bus stops shall be determined in consultation with Gold Coast Transit and the City Traffic Engineer. Cumulative air quality impact fees (see Mitigation J-6) paid by the Project developer or subsequent interests may be used for some or all of these structures or as credits against the fee and/or to be funded from the fee fund consistent with the City's practice with other projects with similar transit-oriented mitigation requirements.			
J-4 This is an adaptive management mitigation measure. A Project-wide Transportation Demand Management (TDM) program shall be prepared by a qualified consultant for review by the Development Services Director within one year of the recordation of the first Final Tract Map and implemented on a phase by phase basis thereafter. The TDM program shall incorporate best and commonly used trip-reduction incentives, programs, and practices found in	The Project developer will prepare a Project-wide TDM program document for City review and approval.	Within one year of the recordation of the first Final Tract Map and implemented on a phase by phase basis thereafter.	City of Oxnard Planning Division with invited cooperation by Gold Coast Transit.

Mitigation Measure	Action Required	Timing	Enforcement Agency
TDMs of similar projects in terms of allowed uses, size, and transportation and transit service context. The TDM shall, to the maximum extent financially feasible or practical, be coordinated and consistent with Gold Coast Transit service planning, development and/or final adoption of a regional and/or Oxnard Sustainable Communities Strategy (under SB 375), and TDMs or similar efforts of surrounding businesses and organized business and commercial organizations, including but not limited to, the Camino Real Business Park; Proctor and Gamble; Riverpark (The Collections); The Esplanade; The Village; Oxnard Auto Center Dealers Associations; and the McGinnes Ranch, Northgate, and Seagate business parks. The TDM shall include an estimate of Project vehicular trips; a target reduction; a strategy and timeline to achieve the target; and one or more means of an independent sustainable funding program to administer, monitor, and routinely update the TDM program. At the discretion of the City Traffic Engineer based on applicable professional practice, documented and sustained TDM-attributable trip reductions shall be incorporated into future Project-related traffic studies and/or analyses for purposes of calculating traffic fees and/or modifying traffic-related mitigations. The TDM may be implemented on a phase-by-phase basis.			
J-5 This is an adaptive management mitigation measure. The Specific Plan shall include a requirement that all structures with a flat or nearly flat roof area of over 10,000 square feet shall be designed with roof systems capable of supporting equipment that generates electricity from sunlight and/or wind if economically feasible and subject to review by the Fire Department. The roof systems may be designed to	The Specific Plan will be amended with this or similar language in an appropriate section.	Prior to recording of Final Map of first subdivision action.	City of Oxnard Planning Division and Engineering Services Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
service the building and/or enter into a commercially reasonable public or private utility agreement for purposes of generating energy or transmission.			
J-6 This is an adaptive management mitigation measure. The Project developer shall contribute to a cumulative impacts mitigation "buy-down" fund managed by the City based on the Ventura County Air Pollution Control District fee schedule effective at the time a building permit is issued. The fee contribution shall be assessed and paid incrementally as individual buildings are developed. The fee is allocated based on each development's share of average daily trips (ADT) for the Project buildout. The ADT shall be recalculated annually by the City Traffic Engineer or upon request of the Project developer with a payment of a fee determined by the City Traffic Engineer that covers actual time and material costs to the City. The City shall consider transit and traffic demand management improvements and programs suggested by the Project developer, in excess of those otherwise required, as credits against the fee and/or to be funded from the fee fund.	The Project developer(s) shall provide payment as agreed between the developer(s) and the City.	Prior to issuance of applicable building permits to which the buy down mitigation applies	City of Oxnard Engineering Services Division
K - NOISE			
The Project together with other pending urban development projects in the City will result in cumulative roadway noise impacts along Gonzales Road between Rice Avenue and Rose Avenue for which no mitigation measures are feasible and that are considered significant and unavoidable. Accordingly, a Statement of Overriding Considerations was prepared in accordance with CEQA and included within the resolution approving the Specific Plan.			

Mitigation Measure	Action Required	Timing	Enforcement Agency
L - POPULATION AND HOUSING			
L-1 If there is a housing component within the Project of over 10 units, ten percent of the total units within each project or a percentage determined by an economic impact assessment that estimates the need for very low and low income housing created by actual and anticipated development with the Specific Plan, whichever percentage is higher but not to exceed 23 percent, would be developed as affordable housing in a manner consistent with the City's inclusionary housing program for qualified low and moderate income households, to be determined by an economic impact assessment that estimates the need for very low and low income housing created by the actual and anticipated development and the wages paid to their employees. This information shall also be reflected in the Specific Plan document under section 4.7, Affordable Housing.	The development review process for any housing will check for consistency with the Specific Plan and this mitigation.	Prior to approval of the applicable planning permit for housing.	City of Oxnard Planning Division in conjunction with the Oxnard Housing Department.

Mitigation Measure	Action Required	Timing	Enforcement Agency
M - PUBLIC SERVICES			
Fire Station			
M.1-1 The Specific Plan permits the development of 1.7 million square feet of development (approximately 20 percent of allowed development by the Specific Plan) prior to the completion of a fully operational fire station. The exact location of an approximately 1.5-acre site near Rice Avenue and the easterly extension of Gonzales Road and construction of the fire station are subject to a future agreement among City, Oxnard Fire Department (OFD) and Developer.	The Project developer shall reserve an approximately 1.5-acre site for a new fire station within the Project site near Rice Avenue and the easterly extension of Gonzales Road and pay applicable City fees in the amount agreed to by the City, the OFD and Developer.	Prior to the issuance of building permits for projects that would exceed an aggregated total of 1.7 million square feet within the Specific Plan Area.	City of Oxnard Planning Division
Police – Construction			
M.2-1 During all construction activities, the Project or subsequent developer shall ensure that all onsite areas of active development, material and equipment storage, and vehicle staging, be secured with temporary fences to prevent trespass.	Project developer shall obtain a temporary use permit and/or fence permit.	Prior to issuance of building permit	City of Oxnard Engineering Services Division or Public Works Department, depending on type of permit.
Police – Operation			
M.2-2 The building and site design of subsequent developments under the Specific Plan program shall include crime deterrence and prevention features, building security systems, architectural design modifications, surveillance systems, and secure parking facilities. In addition, industrial businesses may be required to enroll into existing Oxnard Police crime prevention programs, depending on the nature of the business.	The development review process incorporates these topics.	Prior to approval of building permits	City of Oxnard Planning Division and/or Engineering Services Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
Schools			
M.3-1 This is an adaptive management mitigation measure. The subsequent developer(s) under the specific plan would be required to pay all applicable school fees to offset the impact of additional student enrollment at schools. No other mitigation measures are required as part of the environmental review process unless State Law changes so as to allow subsequent environmental reviews to identify appropriate feasible mitigations to reduce a significant impact on schools to a level below the significance threshold.	Project developer to provide CC&Rs and other necessary legal language that binds future developers to this mitigation – to be reviewed by the City Attorney – prior to recording of first Final Map.	Prior to recording of first Final Map	City of Oxnard Planning Division
N - UTILITIES			
Water			
N-1 The on-site domestic water system shall include the following: • A public pipeline systems which feed into separate water meters for each ownership. In addition, there shall be separate water meters for each multi-family unit townhouses, but not apartment units. The high-rise residential towers may be master-metered. • A separate water meter (1) for the common landscape areas that would be connected to the future recycled water system. • All domestic water pipelines shall adhere to Division of Occupational Health and Safety (DOHS) requirements for separation between water and recycled water/wastewater pipelines. • The Project developer shall be responsible for	Project developer to incorporate the required water features in the application and provide dedications, connection fees, and related documents and studies as required and requested.	Prior to issuance of building permits.	City of Oxnard Planning Division, Engineering Services Division, and the Public Works Department

Mitigation Measure	Action Required	Timing	Enforcement Agency
payment of capital improvement/connection fees, including all related "installation fees." • The Project developer shall provide the City any approvals necessary to dedicate to the City all FCGMA allocation associated with the Project site, on a phase-by-phase basis and upon the conversion of land from agricultural to urban uses.			
N-2 This is an adaptive management mitigation measure. The Project developer shall provide a recycled water system that serves all practical irrigated areas and which is: (1) separated from the domestic water system, (2) constructed per the City's Recycled Water Construction Standards (being developed), (3) irrigated at night, and (4) properly signed once the system is fully operational. • The portion of the irrigation intended for the future recycled water system shall be separately metered from that portion of the system that will not be connected to the future recycled water system, if any. • Until the recycled water system is operational, the common area irrigation system shall be connected to the domestic system. Once recycled water is available, and connection to the recycled water system is made, the Project developer shall remove the connection to the domestic water system. No domestic water back-up is needed, since the City will provide such back-up including an appropriate air gap facility as part of the City's system. • Prior to the availability of recycled water, the Project developer shall be responsible for payment of the Recycled Water Connection Fee or the water	Project developer to incorporate the required water features in the application and provide dedications, connection fees, and related documents and studies as required and requested. Project developer to provide CC&Rs and other necessary legal language that binds future developers to this mitigation – to be reviewed by the City Attorney – prior to recording of first Final Map.	Prior to issuance of building permits.	City of Oxnard Planning Division, Engineering Services Division, and the Public Works Department

Mitigation Measure	Action Required	Timing	Enforcement Agency
connection fee, whichever is greater for facilities constructed. • At such time as recycled water is available, the Project developer shall be responsible for all costs involved with the re-connection of the applicable portions of the irrigation system to the public recycled water system, including appropriate signage. Credits for connection fees shall be given by the City based on the size of the meter(s). Under no circumstance will there be a refund of water connection fees already paid. • The Project developer shall be responsible for appropriate Sakioka Farms Specific Plan Covenants, Conditions and Restrictions (CC&Rs) covering the use of recycled water and for proper disclosures.			
N-3 This is an adaptive management mitigation measure. The Project developer shall, to the extent feasible, incorporate exterior water conservation features, as recommended by the State Department of Water Resources at the time of adoption or in common practice in the future, into the Project. These shall include, but are not limited to: • Landscaping of common areas with low water-using plants, • Minimizing the use of turf by limiting it to lawn dependent uses, and • Wherever turf is used, installing warm season grasses.	Project developer(s) shall provide landscape plans showing low-water- consuming plant varieties, minimization of turf areas and the appropriate selection of warm season grasses.	Prior to issuance of final building permits and prior to certificates of occupancy	City of Oxnard Planning Division and Engineering Services Division
N-4 This is an adaptive management mitigation measure. The Project developer shall, to the extent feasible, use reclaimed water for irrigation of landscaping and other uses if or when such water is available at the project site.	Project developer(s) shall provide construction plans showing recycled water landscape irrigation design, if and when applicable.	Prior to approval of final building permits.	City of Oxnard Planning Division and Engineering Services Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
N-5 The Project developer shall predominantly use vegetation that requires minimal irrigation (i.e., drought tolerant plant species) in all site landscaping where feasible for new plantings.	Project developer(s) shall provide landscape plans showing low-water- consuming plant varieties.	Prior to approval of final building permits and prior to certificates of occupancy	City of Oxnard Planning Division and Engineering Services Division
N-6 The future water system shall be designed in a loop configuration with connections to the existing 16-inch water line on Del Norte Boulevard.	Project developer(s) shall provide construction plans showing a loop-configuration water system.	Prior to issuance of building permits	City of Engineering Services Division
N-7 The use of a 14-inch line would be feasible and should only be connected to mainlines of 14- inches or larger.	Project developer(s) shall provide construction plans showing appropriate water system connections.	Prior to approval of final building permits	City of Oxnard Engineering Services Division
N-8 Rice Avenue is planned to become a state highway; therefore, no new utilities shall be installed along this roadway.	Project developer(s) construction plans will not show utilities installed in Rice Avenue.	Prior to approval of final building permits that involve frontage along Rice Avenue	City of Oxnard Engineering Services Division
N-9 The Project developer shall ensure that the landscape irrigation system be designed, installed, and tested to provide uniform irrigation coverage. Sprinkler head patterns shall be adjusted to minimize over spray onto walkways and streets.	The Project developer to provide CC&Rs and other necessary legal language that binds future developers to this mitigation – to be reviewed by the City Attorney – prior to recording of first Final Map. The Project developer(s) shall provide construction plans showing the landscape irrigation design.	Prior to recording of first Final Map Prior to approval of final building permits and prior to certificates of occupancy	City of Oxnard Planning Division City of Oxnard Engineering Services Division
N-10 The Project developer shall, to the extent feasible, install a "smart sprinkler" system to provide irrigation for the landscaped areas. Irrigation run times for all zones shall be	Project developer(s) shall provide construction plans showing the landscape irrigation design.	Prior to approval of building permits	City of Oxnard Engineering Services Division

Mitigation Measure	Action Required	Timing	Enforcement Agency
adjusted seasonally, reducing water times and frequency in the cooler months (fall, winter, spring). Sprinkler timer run times shall be automatically adjusted by a state-of-the-art system that relies on local weather forecasts.			
N-11 The Project developer shall install low-flush water toilets in all new construction at the project site. Low-flow faucet aerators shall be installed on all new sink faucets.	Project developer(s) shall provide construction plans meeting the requirements for low-flush toilets and low-flow faucets.	Prior to approval of final building permits	City of Oxnard Engineering Services Division
N-12 This is an adaptive management mitigation measure. The Project's annual water supply deficit of 330 acre feet was estimated using 2010 water use estimates for the theoretical buildout of the entire project. Actual water demand over the buildout of the Project is likely to change as actual development and uses occur and changing water consumption. Subsequent water demand/supply analyses required by subsequent CEQA review may change water supply needs relative to the City's future water supply. The Draft 2010 Urban Water Management Plan (UWMP) incorporates the Project's water demand as proposed. Should subsequent project development incur water demand in excess of that anticipated by the adopted 2010 UWMP and/or the City's water supplies are reduced below those anticipated by the adopted 2010 UWMP, the Project shall, to the extent feasible, implement one or more, but not limited to, the following adaptive measures to remain water neutral to the City's available and projected supply at the time of subsequent project approvals that involve a Negative Declaration, Mitigated Negative Declaration, or Subsequent EIR: **N-12.1** The Project developer shall provide to the City	Project developer shall work with the Public Works Department, Water Section, to review existing and anticipated water demand relative to the City's existing and anticipated supply and choose, if necessary, one or more of the listed mitigations to eliminate a water supply shortage, if identified. This analysis and selection of mitigations, if needed, shall occur during reviews of the master subdivision maps of each Planning Area unless an alternative approach is agreed to in a Development Agreement.	Prior to recordation of the final map for each Planning Area or as otherwise agreed upon with the City	City of Oxnard Planning Division and Engineering Services Division with input from the Public Works Department, Water Section

Mitigation Measure	Action Required	Timing	Enforcement Agency
additional water rights of at least the shortage amount. **N-12.2** The Project developer shall provide to the City water supplies equal to the shortage amount until City supply is adequate. **N-12.3** The Project developer shall provide to the City permanent quantified water offsets in the form of recycled water facilities or conservation retrofits. **N-12.4** The Project developer shall provide to the City financial contributions towards City programs which generate in-City water conservation or recycled water capacity or conveyance. **N-12.5** The Project developer shall participation in other similar programs with cumulatively result in an adequate water supply contribution.			
N-13 The Project developer shall, in a manner as agreed to in the development agreement, participate in an assessment district or similar financing instrument for the construction of a recycled water supply pipeline that will connect into the Project's recycled internal pipelines required by mitigation, or pay applicable connection fees to connect to the City's recycled water line when requested.	Project developer shall in a manner as agreed to in the development agreement provide applicable payment and/or participate in an assessment district.	Prior to recordation of the final tract map or as otherwise required if an assessment district is formed.	City of Oxnard Engineering Services Division
Note: The "Project developer" is defined in this Mitigation Monitoring and Reporting Program as Sakioka Farms, the Project applicant, as well as the eventual individual developers of each parcel within the project site.			

APPENDICES

LIST OF REFERENCE DOCUMENTS

1. City Council Resolution No.14234
   Final EIR (FEIR No. 06-01) Certification, findings of Fact, and Adaptive Mitigation and Monitoring Program

2. City Council Resolution No.14,235
   Specific Plan Adoption (PZ No. 02-640-01)

3. City Council Ordinance No.2858
   Approving Zone Change (PZ No. 02-570-04)

4. Planning Commission Final Resolution Nos. 2011-34/-35/-36

5. Final Environmental Impact Report (FEIR No. 06-01) July 2011
   Sakioka Farms Business Park Specific Plan
   State Clearinghouse No. 2002011070

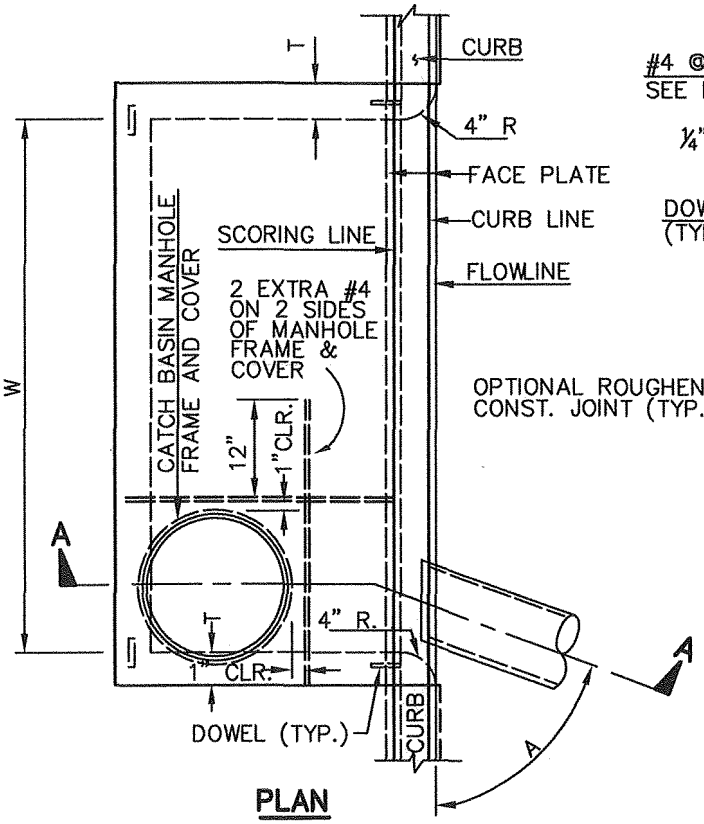
6. Draft Environmental Impact Report (DEIR) September 2010
   Sakioka Farms Business Park Specific Plan

7. Detention Basin Analysis March 3, 2009

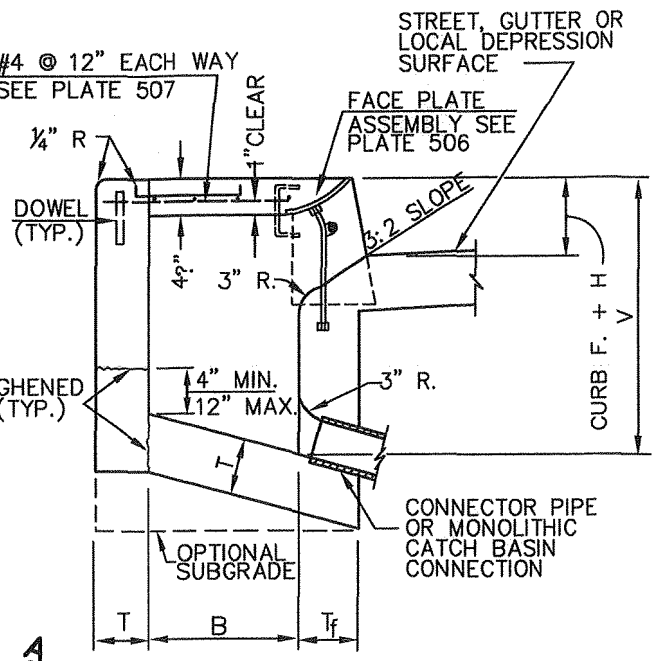
8. Los Angeles Regional Water Quality Board letter, dated 5/12/2012, addressed to the City of Oxnard stating that Sakioka Farms Business Park is subject to the 2002 TGM MS4 permit.

APPENDIX N

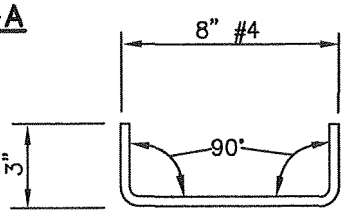
CITY OF OXNARD STANDARD PLATES



PLAN



SECTION A–A



DOWEL DETAIL

STRUCTURAL DATA

WALL AND SLAB DIMENSIONS AND REINFORCEMENT REQUIREMENTS

MAX. W	MAX. V	T	T_f	REINFORCEMENT REQUIRED IN: FRONT WALL	REAR WALL	BOTTOM SLAB	END WALL
3.5'	8'	6"	6"	NO REINFORCEMENT REQUIRED			
3.5'	12'	8"	8"				
7'	6'	6"	6"				
7'	12'	8"	8"				
14'	4'	6"	6"	REINFORCEMENT REQUIRED			
14'	8'	6"	8"				
14'	12'	8"	10"				
21' AND 28'	4'	6"	6"			REQUIRED	
	6'	6"	8"				
	8'	8"	8"				
	10'	8"	10"				
	12'	8"	10"		SEE PLATE 507		

FOR W > 28', V > 12' OR B > 4' SEE PROJECT PLANS

REV.	APPR. BY	DATE

REV.	APPR. BY	DATE

CITY OF Oxnard
Department of Public Works

CURB OPENING CATCH BASIN

DRAWN: STAFF CKD.: PAUL WENDT

APPR. L. Balderrama, PE, City Engineer

STANDARD PLAN 2002

PLATE 501

SHEET 1 OF 2

NOTES:

1. WHERE THE BASIN IS TO BE CONSTRUCTED WITHIN THE LIMITS OF EXISTING OR PROPOSED SIDEWALK OR IS CONTIGUOUS TO SUCH SIDEWALK, THE TOP SLAB OF THE BASIN MAY BE POURED EITHER MONOLITHIC WITH THE SIDEWALK OR SEPARATELY, USING THE SAME CLASS OF CONCRETE AS THE BASIN. WHEN POURED MONOLITHICALLY, THE SIDEWALK SHALL BE PROVIDED WITH A WEAKENED PLANE OR A 1" DEEP SAWCUT CONTINUOUSLY AROUND THE EXTERNAL PERIMETER OF THE CATCH BASIN WALLS, INCLUDING ACROSS THE FULL WIDTH OF THE SIDEWALK. SURFACE OF ALL EXPOSED CONCRETE SHALL CONFORM IN SLOPE, GRADE, COLOR, FINISH, AND SCORING TO EXISTING OR PROPOSED CURB AND WALK ADJACENT TO THE BASIN.

2. ALL CURVED CONCRETE SURFACES SHALL BE FORMED BY CURVED FORMS, AND SHALL NOT BE SHAPED BY PLASTERING.

3. FLOOR OF BASIN SHALL BE GIVEN A STEEL TROWEL FINISH AND SHALL HAVE A LONGITUDINAL AND LATERAL SLOPE OF 1:12 MINIMUM AND 1:3 MAXIMUM, EXCEPT WHERE THE GUTTER GRADE EXCEEDS 8 PERCENT, IN WHICH CASE THE LONGITUDINAL SLOPE OF THE FLOOR SHALL BE THE SAME AS THE GUTTER GRADE. SLOPE FLOOR FROM ALL DIRECTIONS TO THE OUTLET.

4. DIMENSIONS:

   B = 3'-2"

   V = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT OF THE CATCH BASIN AT THE OUTLET = 4.5'.

   V_U = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT AT THE UPSTREAM END OF THE BASIN . V_U SHALL BE DETERMINED BY THE REQUIREMENTS OF NOTE 3, BUT SHALL NOT BE LESS THAN CURB FACE PLUS 12".

   V_I = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT OF THE INLET, NOTED ON THE PROJECT PLANS.

   H =2" UNLESS NOTED ON THE PROJECT PLANS.

   W = NOTED ON THE PROJECT PLANS AND SHALL BE 3.5', 7', 10, 14, OR 21'.

   A = THE ANGLE, IN DEGREES, INTERCEPTED BY THE CENTERLINE OF THE CONNECTOR PIPE AND THE CATCH BASIN WALL TO WHICH THE CONNECTOR PIPE IS ATTACHED.

5. PLACE CONNECTOR PIPES AS INDICATED ON THE PROJECT PLANS. UNLESS OTHERWISE SPECIFIED, THE CONNECTOR PIPE SHALL BE LOCATED AT THE DOWNSTREAM END OF THE BASIN. WHERE THE CONNECTOR PIPE IS SHOWN AT A CORNER, THE CENTERLINE OF THE PIPE SHALL INTERSECT THE INSIDE CORNER OF THE BASIN. THE PIPE MAY BE CUT AND TRIMMED AT A SKEW NECCESSARY TO INSURE MINIMUM 3" PIPE EMBEDMENT, ALL AROUND, WITHIN THE CATCH BASIN WALL, AND 3" RADIUS OF ROUNDING OF STRUCTURE CONCRETE, ALL AROUND, ADJACENT TO PIPE ENDS. A MONOLITHIC CATCH BASIN CONNECTION SHALL BE USED TO JOIN THE CONNECTOR PIPE TO THE CATCH BASIN WHENEVER ANGLE "A" IS LESS THAN 70 DEGREES OR GREATER THAN 110 DEGREES, OR WHENEVER THE CONNECTOR PIPE IS LOCATED IN A CORNER. THE OPTIONAL USE OF A MONOLITHIC CATCH BASIN CONNECTION IN ANY CASE IS PERMITTED. MONOLITHIC CATCH BASIN CONNECTIONS MAY BE CONSTRUCTED TO AVOID CUTTING STANDARD LENGTHS OF PIPE.

6. DOWELS ARE REQUIRED AT EACH CORNER AND AT 7' ON CENTER (MAX.) ALONG THE BACKWALL.

7. ALL CATCH BASINS SHALL INCLUDE INSTALLATION OF A PLACARD STATING "NO DUMPING – DRAINS TO OCEAN" (or WETLANDS or WATERWAYS as applicable). PLACARD SHALL BE PLACED ON THE TOP OF CURB ON THE LEFT SIDE OF THE OPENING ORIENTED SO READABLE FROM THE SIDEWALK. PLACARDS ARE AVAILABLE FROM STORMWATER QUALITY PROGRAM.

8. THE FOLLOWING STANDARD PLANS ARE INCORPORATED HEREIN:
   508 MONOLITHIC CATCH BASIN CONNECTION
   507 CATCH BASIN REINFORCEMENT
   506 CATCH BASIN FACE PLATE ASSEMBLY AND PROTECTION BAR
   510 CATCH BASIN MANHOLE FRAME AND COVER

REV.	APPR. BY	DATE

REV.	APPR. BY	DATE
1	L. Balderrama	08/02/11

CITY OF Oxnard
Department of Public Works

CURB OPENING CATCH BASIN

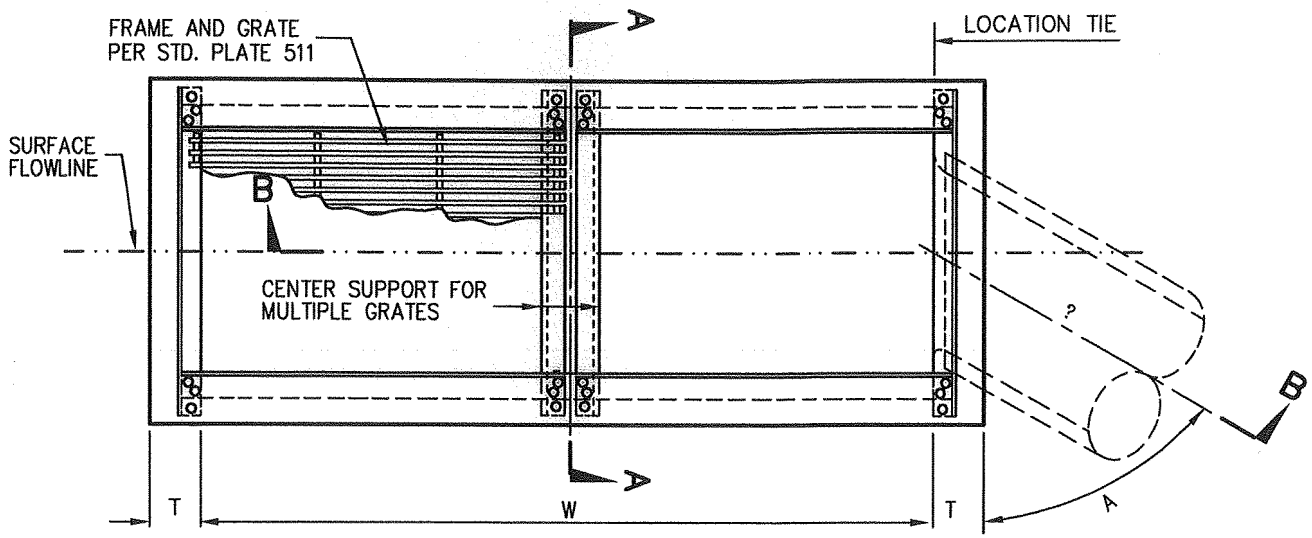
DRAWN: STAFF CKD.: PAUL WENDT

APPR. L. Balderrama, PE, City Engineer

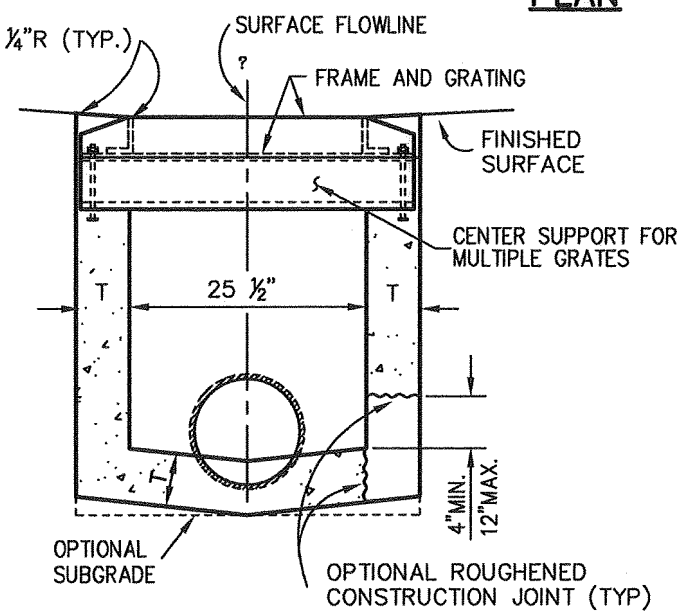
STANDARD PLAN 2002

PLATE 501

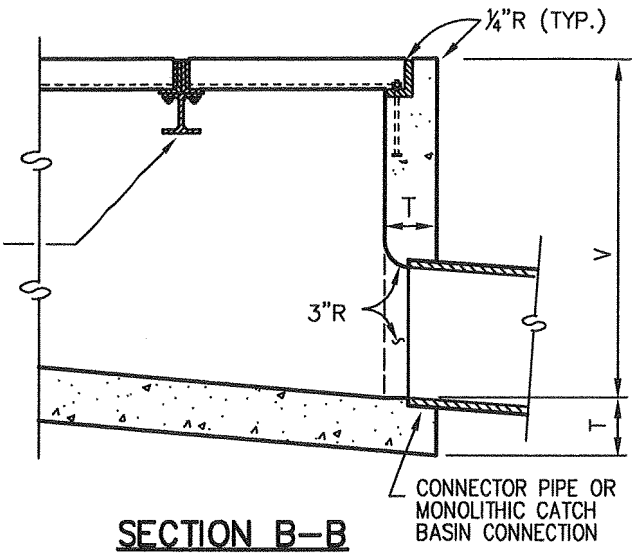
SHEET 2 OF 2



PLAN



SECTION A–A



SECTION B–B

STRUCTURAL DATA			
WALL AND SLAB DIMENSIONS AND REINFORCEMENT REQUIREMENTS			
NO. OF GRATES	MAX. V	T	REINFORCEMENT FOR WALLS AND SLABS
1–2	4'	6"	NOT REQUIRED
1–2	8'	8"	
1–2	10'	10"	
1–2	12'	10"	REQUIRED
3–4	4'	6"	NOT REQUIRED
3–4	7'	8"	
3–4	8'	8"	REQUIRED
3–4	12'	10"	
5–6	4'	6"	NOT REQUIRED
5–6	6'	8"	
5–6	8'	8"	REQUIRED
5–6	12'	10"	
>6	4'	6"	
>6	8'	8"	
>6	12'	10"	

REV.	APPR. BY	DATE

REV.	APPR. BY	DATE

CITY OF Oxnard
Department of Public Works

GRATED CATCH BASIN–ALLEY (LONGITUDINAL)

DRAWN: STAFF CKD.: PAUL WENDT

APPR. L. Balderrama, PE, City Engineer

STANDARD PLAN 2002

PLATE 504

SHEET 1 OF 2

NOTES:

1. ALL CURVED CONCRETE SURFACES SHALL BE FORMED BY CURVED FORMS, AND SHALL NOT BE SHAPED BY PLASTERING.

2. FLOOR OF BASIN SHALL BE GIVEN A STEEL TROWEL FINISH AND SHALL HAVE A LONGITUDINAL AND LATERAL SLOPE OF 1:12 MINIMUM AND 1:3 MAXIMUM, EXCEPT WHERE THE GUTTER GRADE EXCEEDS 8 PERCENT, IN WHICH CASE THE LONGITUDINAL SLOPE OF THE FLOOR SHALL BE THE SAME AS THE GUTTER GRADE. SLOPE FLOOR FROM ALL DIRECTIONS TO THE OUTLET.

3. DIMENSIONS:

   V = 3.5 FT.

   V_U = THE DEPTH AT THE UPSTREAM END OF THE BASIN AND SHALL BE DETERMINED BY THE REQUIREMENTS OF NOTE 2, BUT SHALL NOT BE LESS THAN 2.5'.

   V_I = THE DEPTH AT THE INVERT OF THE INLET. NOTED ON PLANS.

   W = 2'–11 ⅜" FOR ONE GRATING ADD 3'–5 ⅜" FOR EACH ADDITIONAL GRATING.

   A = THE ANGLE, IN DEGREES, INTERCEPTED BY THE CENTERLINE OF THE CONNECTOR PIPE AND THE CATCH BASIN WALL TO WHICH THE CONNECTOR PIPE IS ATTACHED.

4. PLACE CONNECTOR PIPES AS INDICATED ON THE PROJECT PLANS. UNLESS OTHERWISE SPECIFIED, THE CONNECTOR PIPE SHALL BE LOCATED AT THE DOWNSTREAM END OF THE BASIN. WHERE THE CONNECTOR PIPE IS SHOWN AT A CORNER, THE CENTERLINE OF THE PIPE SHALL INTERSECT THE INSIDE CORNER OF THE BASIN. THE PIPE MAY BE CUT AND TRIMMED AT A SKEW NECCESSARY TO INSURE MINIMUM 3" PIPE EMBEDMENT, ALL AROUND, WITHIN THE CATCH BASIN WALL, AND 3" RADIUS OF ROUNDING OF STRUCTURE CONCRETE, ALL AROUND, ADJACENT TO PIPE ENDS. A MONOLITHIC CATCH BASIN CONNECTION SHALL BE USED TO JOIN THE CONNECTOR PIPE TO THE CATCH BASIN WHENEVER ANGLE "A" IS LESS THAN 70 DEGREES OR GREATER THAN 110 DEGREES, OR WHENEVER THE CONNECTOR PIPE IS LOCATED IN A CORNER. THE OPTIONAL USE OF A MONOLITHIC CATCH BASIN CONNECTION IN ANY CASE IS PERMITTED. MONOLITHIC CATCH BASIN CONNECTIONS MAY BE CONSTRUCTED TO AVOID CUTTING STANDARD LENGTHS OF PIPE.

1 5. ALL CATCH BASINS SHALL INCLUDE INSTALLATION OF A PLACARD STATING "NO DUMPING – DRAINS TO OCEAN" (or WETLANDS or WATERWAYS as applicable). PLACARD SHALL BE PLACED ON THE TOP OF CURB ON THE LEFT SIDE OF THE OPENING ORIENTED SO READABLE FROM THE SIDEWALK. PLACARDS ARE AVAILABLE FROM STORMWATER QUALITY PROGRAM.

6. THE FOLLOWING STANDARD PLANS ARE INCORPORATED HEREIN:
   508 MONOLITHIC CATCH BASIN CONNECTION
   507 CATCH BASIN REINFORCEMENT
   511 FRAME AND GRATING FOR CATCH BASINS

7. ONE GRATING IS REQUIRED UNLESS OTHERWISE SHOWN ON THE PROJECT PLANS.

REV.	APPR. BY	DATE

REV.	APPR. BY	DATE
1	L. Balderrama	08/02/11

CITY OF Oxnard
Department of Public Works

GRATED CATCH BASIN–ALLEY (LONGITUDINAL)

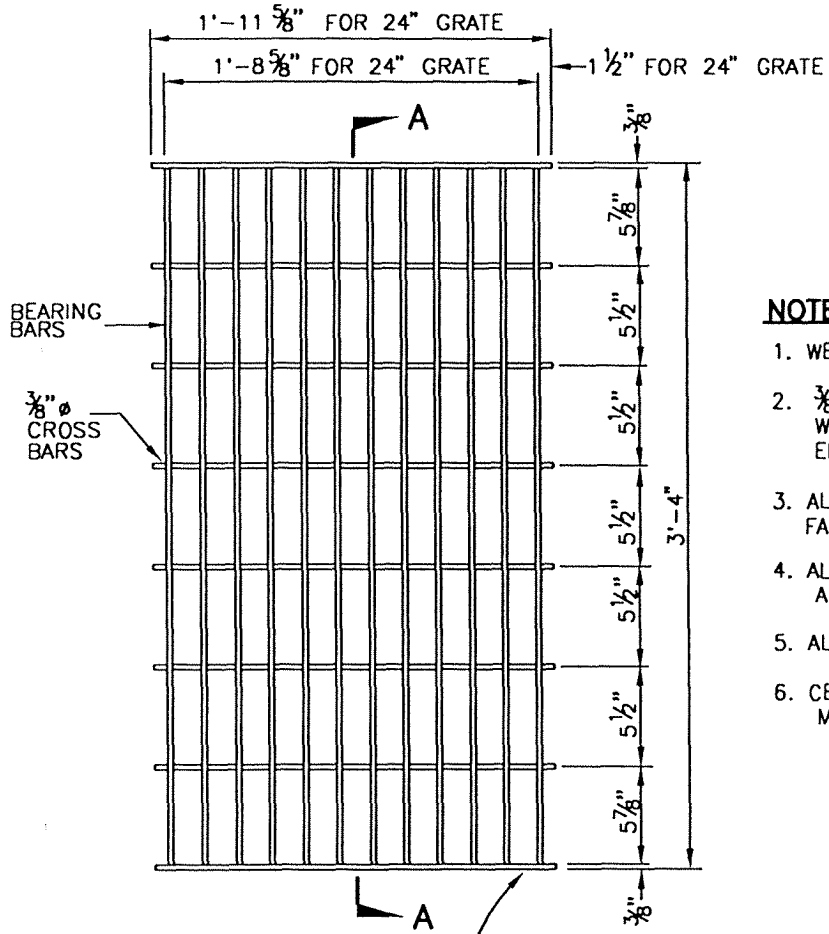
DRAWN: STAFF CKD.: PAUL WENDT

APPR. L. Balderrama, PE, City Engineer

STANDARD PLAN 2002

PLATE 504

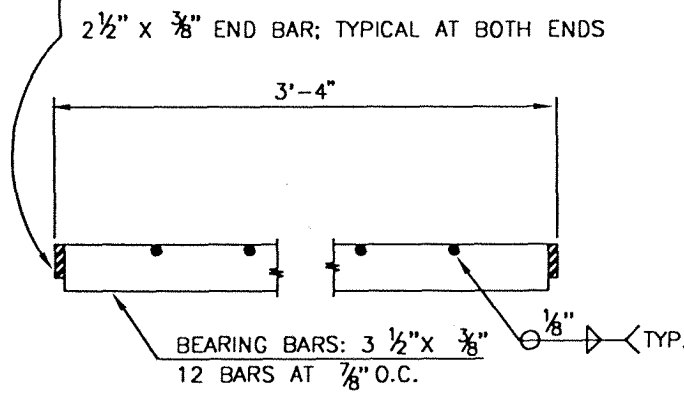
SHEET 2 OF 2



PLAN

NOTES:

1. WEIGHT OF 24" GRATE = 192 LBS.
2. 3/8"ø CROSS BARS MAY BE FILLET WELDED, RESISTANCE WELDED, OR ELECTRO-FORGED TO BEARING BARS.
3. ALL PARTS ARE TO BE GALVANIZED AFTER FABRICATION.
4. ALL DIMENSIONS ARE FINISHED DIMENSIONS, AND INCLUDE GALVANIZING.
5. ALL THREADS SHALL BE NATIONAL COARSE.
6. CENTER SUPPORT ASSEMBLY REQUIRED WHEN MORE THAN ONE GRATE IS CALLED FOR.



SECTION A-A

REV.	APPR. BY	DATE

REV.	APPR. BY	DATE

ATTENTION: PREFER CURB OPENING C.B., NO C.B. WITH GRATES IS PERMITTED WITHOUT PRIOR APPROVAL.

CITY OF Oxnard

Department of Public Works

BICYCLE PROOF GRATE DETAILS

DRAWN: STAFF CKD.: STAFF

APPR. Granville M. Bowman

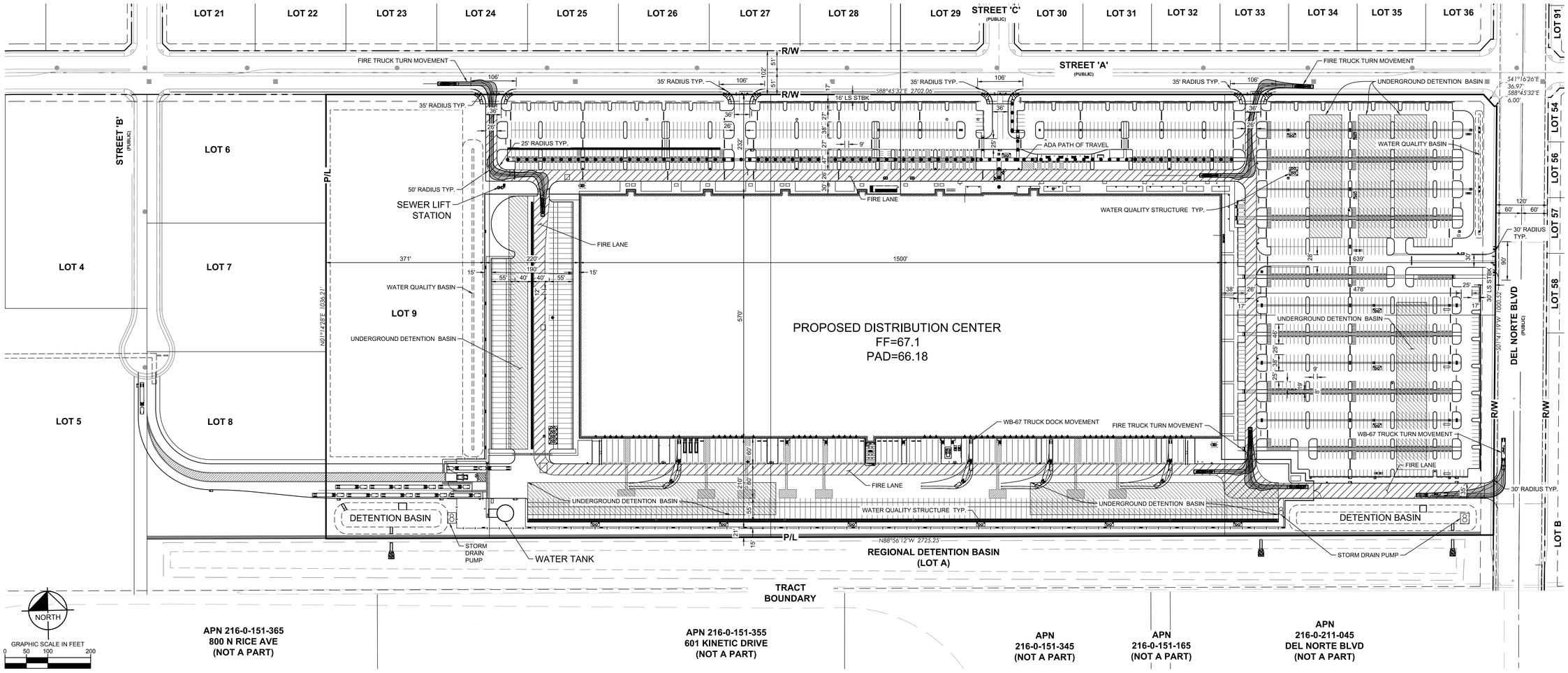
STANDARD PLAN 2002

PLATE 511

SHEET 1 OF 1

Appendix I Project Bruin Civil Engineering Plans

Attachment by Kimley-Horn and Associates, Inc.



PROJECT STATISTICS

LOT SIZE (ACRES)	64.65
GROSS (SF)	2,816,200
NET (SF)	2,816,200
LAND USE	INDUSTRIAL
EXISTING ZONING	M-1
SPECIFIC PLAN	SAKIOKA FARMS

PROJECT AREA

AREA	SF	%
BUILDING AREA	857,173	30.44%
LANDSCAPE	656,820	23.32%
PAVED AREA	1,302,207	46.24%
TOTAL AREA	2,816,200	100%

LEGAL DESCRIPTION:

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF OXNARD, IN THE COUNTY OF VENTURA, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:
LOTS 8 THROUGH 12, INCLUSIVE, OF TRACT NO. 5996-1, BEING A PORTION OF PARCEL "C" IN THE CITY OF OXNARD, COUNTY OF VENTURA, STATE OF CALIFORNIA, AS PER MAP FILED IN BOOK 2, PAGE 43 OF RECORDS OF SURVEY, IN THE OFFICE OF THE COUNTY RECORDER OF VENTURA COUNTY, DESCRIBED AS A WHOLE AS FOLLOWS:
COMMENCING AT THE INTERSECTION OF THE CENTERLINE OF DEL NORTE BOULEVARD, 76.00 FEET WIDE, AS SHOWN ON THE RECORD OF SURVEY FILED IN BOOK 53, PAGES 64 THROUGH 66 INCLUSIVE OF RECORDS OF SURVEY, IN THE OFFICE OF SAID COUNTY RECORDER, WITH A LINE PARALLEL WITH AND 130.00 FEET NORTHERLY OF, MEASURED AT RIGHT ANGLES, THE SOUTHERLY LINE OF SAID PARCEL C;
THENCE ALONG SAID PARALLEL LINE SOUTH 89°47'40" WEST 60.00 FEET TO THE TRUE POINT OF BEGINNING;
THENCE CONTINUING SOUTH 89°47'40" WEST 2,725.30 FEET;
THENCE NORTH 00°01'40" WEST 1,036.28 FEET;
THENCE NORTH 89°58'20" EAST 2,708.12 FEET;
THENCE SOUTH 44°48'15" EAST 35.49 FEET;
THENCE SOUTH 89°34'49" EAST 6.00 FEET TO A LINE PARALLEL WITH AND 38.00 FEET WESTERLY OF THE CENTERLINE OF SAID DEL NORTE BOULEVARD;
THENCE ALONG SAID PARALLEL LINE, SOUTH 00°25'11" WEST 1,002.62 FEET TO THE TRUE POINT OF BEGINNING.

ABBREVIATIONS:

(X.XX)	EXISTING ELEVATION	POC	POINT OF CONNECTION
BLDG	BUILDING	PR	PROPOSED
BMP	BEST MANAGEMENT PRACTICES	RCP	REINFORCED CONCRETE PIPE
BW	BACK OF WALL	RET.	RETAINING
CL	CENTERLINE	RL	RIDGE LINE
EG	EXISTING GRADE	RW	RIGHT OF WAY
EP	EDGE OF PAVEMENT	SD	STORM DRAIN
EX	EXISTING	SF	SQUARE FEET
FF	FINISHED FLOOR ELEVATION	SDWK	SIDEWALK
		STBK	SETBACK
FG	FINISHED GRADE	STR	STRUCTURE
FH	FIRE HYDRANT	SS	SANITARY SEWER
FL	FLOW LINE	TC	TOP OF CURB
FS	FINISHED SURFACE	TG	TOP OF GRATE
FW	FIRE WATER	TP	TOP OF PAVEMENT
GB	GRADE BREAK	TW	TOP OF WALL
IE	INVERT ELEVATION	TYP	TYPICAL
LP	LOW POINT	WQ	WATER QUALITY
LS	LANDSCAPE		
MH	MANHOLE		
PL	PROPERTY LINE		

OWNER/DEVELOPER:

SEEFRIED INDUSTRIAL PROPERTIES
C/O SAKIOKA FARMS
2301 ROSECRANS AVENUE, SUITE 3165
EL SEGUNDO, CA 90245
WWW.SEEFFRIEDPROPERTIES.COM
CONTACT: SCOTT IRWIN
PH: 949.836.5678
SCOTTIRWIN@SEEFRIEDPROPERTIES.COM

ARCHITECT

WARE MALCOMB
4683 CHABOT DRIVE, SUITE 300,
PLEASANTON, CA 94588
PH: 949.244.9620 EXT 1285
CONTACT: PAUL NORCROSS

SURVEYOR:

KIMLEY-HORN AND ASSOCIATES, INC.
401 B STREET, SUITE 600,
SAN DIEGO, CA 92101
PH: 619.744.0144
CONTACT: DAVIE COWAN, P.E.

CIVIL ENGINEER:

KIMLEY-HORN AND ASSOCIATES, INC.
401 B STREET, SUITE 600,
SAN DIEGO, CA 92101
PH: 619.744.0144
CONTACT: DAVIE COWAN, P.E.

TOPOGRAPHY SOURCE

TENTATIVE TRACT NO. 5996
DELANE ENGINEERING
400 W VENTURA BLVD. SUITE 265
CAMARILLO, CA 93010
CONTACT: SCOTT UHLES

GEOTECHNICAL

TERRACON CONSULTANTS, INC.
1421 EDINGER AVENUE, SUITE C
TUSTIN, CA 92780
PROJECT NO. 60185017

UTILITY PROVIDERS:

CABLE: SPECTRUM
721 MULHARDT AVE.
OXNARD, CA 9303
PH: 805.4855.3888

WATER: CITY OF OXNARD
251 S. HAYES AVENUE
OXNARD, CA 93030
PH: 805.385.8154

WATER: CALLEGUAS MUNICIPAL WATER DISTRICT
2100 OLSEN ROAD
THOUSAND OAKS, CA 91360
PH: 805.526.9323

SEWER: CITY OF OXNARD
6001 S. PERKINS ROAD
OXNARD, CA 93030
PH: 805.488.3517

TELEPHONE: FRONTIER
201 FLYNN ROAD
CAMARILLO, CA 93012
PH: 805.445.9116
CONTACT: TOM PEARSO

ELECTRIC: SOUTHERN CALIFORNIA EDISON
10180 TELEGRAPH ROAD
VENTURA, CA. 93004
PH: 805.654.7437
CONTACT: ALISON PANCHE

GAS: SOUTHERN CALIFORNIA GAS CO.
9400 OAKDALE AVENUE
CHATSWORTH, CA 91313
PH: 805.701.3228
CONTACT: JACK RUSS

EARTHWORK

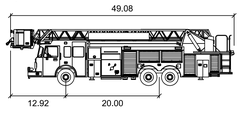
LOT SIZE (ACRES)	64.65
RAW CAD EARTHWORK	
CUT (CU. YD.)	84,606
FILL (CU. YD.)	180,028
CUT FACTOR	1
FILL FACTOR	1
NET (CU. YD.)	**(95,422.0)**

ADDITIONAL EARTHWORK

ITEM	QUANTITY	UNTI	CU. YD.
BUILDING AREA	857173	SF	18,519
BUILDING SLAB DEPTH	7.0	IN	
BUIILDING SLAB SUB-BASE	857,173	SF	10,582
Building Slab Compaction = 95%	4.0	IN	
Standard Duty Asphalt (TI=6.0, AC =3.0, AB = 6)	655,262.0	SF	18,202
Section	9.0	IN	
Heavy Duty Asphalt (TI=10, AC = 5, AB=11)	350,717.0	SF	17,319
Section	16.0	IN	
Heavy Duty Concrete (TI=10, PCC - 8"/10", AB = 4	236,138.5	SF	10,204
Section	14.0	IN	
Fire Tank (PCC = 7", AB =4")	2,500.0	SF	85
Section	11.0	IN	
Sidewalk (PCC = 4", AB =4")	137,717.3	SF	3,400
Section	8.0	IN	
Utility Spoils (FW, SS, & W)	273.1	CY	273
Storm System and Underground Detention Basins	476,495.0	CF	17,648
ADDITIONAL CUT SUM (CU. YD.)			**96233**
CUT FACTOR (SHRINKAGE)			**1.0**
NET CUT (CU. YD.)			**96,233**

ESTIMATED EARTHWORK RESULTS

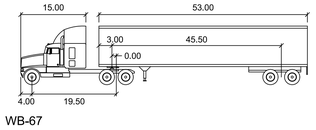
LOT SIZE (ACRES)	64.65
CUT (CU. YD.)	180,839
FILL (CU. YD.)	180,028
NET CUT (CU. YD.)	**800**



Smeal Platform RM 100ft

feet

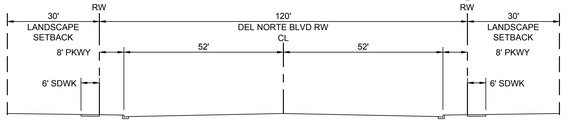
Width	: 8.33		
Track	: 7.83		
Lock to Lock Time	: 6.0		
Steering Angle	: 48.0		



WB-67

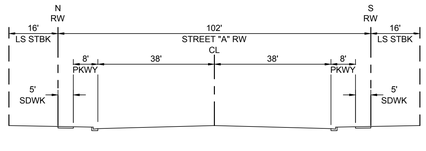
feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		



DEL NORTE BLVD

NTS



STREET "A"

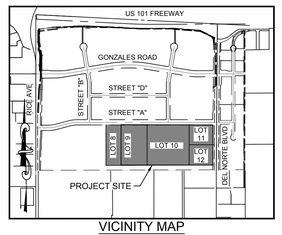
NTS

SHEET INDEX

Sheet Number	Sheet Title
1	ENGINEERING SITE PLAN
2	GRADING PLAN - 1
3	GRADING PLAN - 2
4	GRADING PLAN - 3
5	GRADING PLAN - 4
6	STORMWATER QUALITY MAP
7	UTILITY PLAN - 1
8	UTILITY PLAN - 2

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
FENCE CHAINLINK
ADA PATH OF TRAVEL
FIRE LANE
BUILDING OUTLINE
RETAINING WALL
STORM DRAIN MANHOLE
SEWER MANHOLE
STORM DRAIN CURB INLET
STORM DRAIN CLEAN OUT
GRATE INLET
STORM WATER QUALITY BMP
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION



VICINITY MAP

THOMAS GUIDE: MAP PG 523-BS-D3

NOT TO SCALE

No.	REVISIONS	DATE	BY

Kimley»Horn

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401 B STREET, SUITE 600, SAN DIEGO, CA 92101
PHONE: 619-744-0144
WWW.KIMLEY-HORN.COM

PRELIMINARY
FOR REVIEW ONLY
Prepared for Concept Plan submittal
Not for construction purposes or permit
Kimley»Horn
Engineer EUGENE D. COWAN III.
P.E. No. 86803 Date 3/5/2020

K/HA PROJECT 195170003	
DATE	3/5/2020
SCALE	AS SHOWN
DESIGNED BY	KS&DC
DRAWN BY	KS
CHECKED BY	DC

ENGINEERING SITE PLAN

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD CA

SHEET NUMBER
1 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Kha Layout:ENGINEERING SITE PLAN March 05, 2020 02:52:49pm K:\SND_LDEV\195170003 - Project Bruin\Design\PlanSheets - DDR Civil\OVERALL SITE PLAN.dwg
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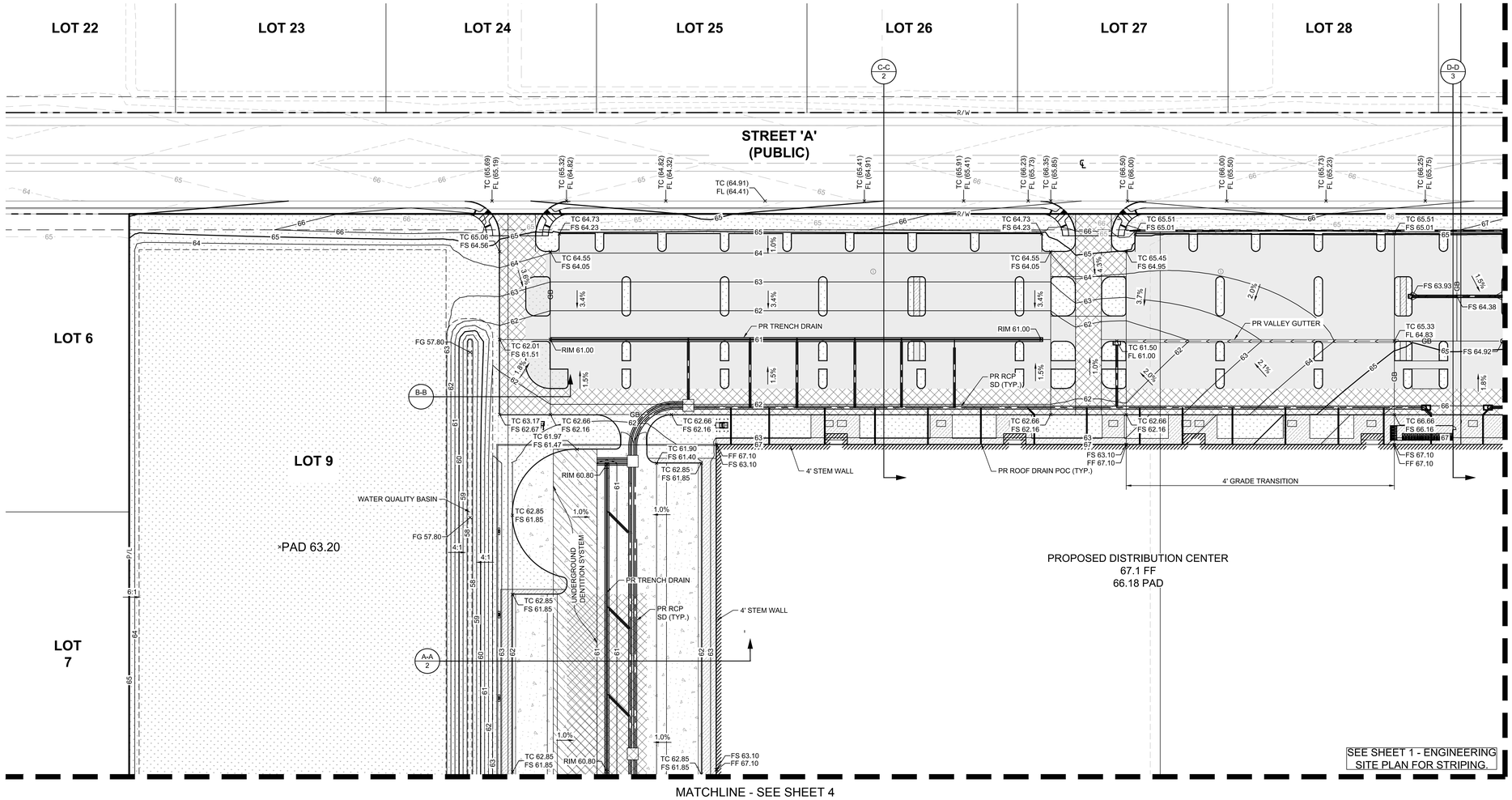


LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
PROPOSED CONTOUR — 100
EXISTING CONTOUR PER TTM 5996 — 100
GRADING LIMITS
GRADE BREAK LINE — GB
RIDGE LINE — R
RETAINING WALL
SLOPE — X.XX%
SPOT ELEVATION — XX 100.00
ASPHALT PAVEMENT (3" PCC / 6" AB)
HEAVY DUTY ASPHALT PAVEMENT (5" AC / 11" AB)
CONCRETE PAVEMENT (10" PCC / 4" AB)
CONCRETE SIDEWALK (4" PCC / 4" AB)
LANDSCAPE (SEE LANDSCAPE PLANS)
FENCE CHAINLINK — X
STORM LINE — SD
SEWER LINE — S
WATER LINE — W
FIRE WATER — FW
STORM DRAIN MANHOLE
SEWER MANHOLE
STORM DRAIN CURB INLET
STORM DRAIN CLEAN OUT
GRATE INLET
STORM WATER QUALITY BMP
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION

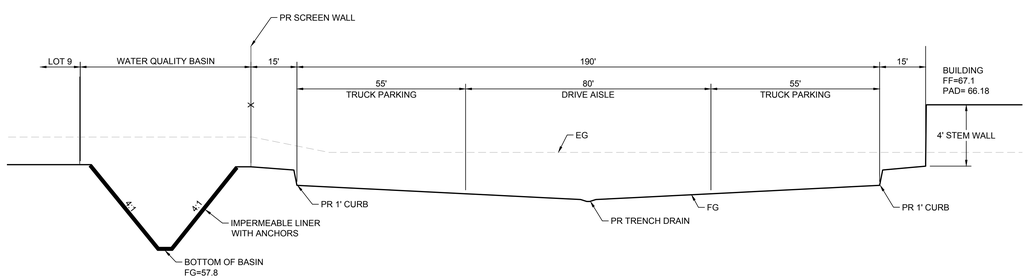
MATCHLINE - SEE SHEET 3

NOTES:

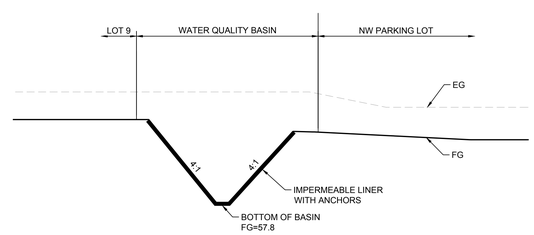
1. CONTRACTOR TO VERIFY ALL EXISTING TOPOGRAPHY AND STRUCTURES ON THE SITE AND IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING WORK.
2. ALL ELEVATIONS SHOWN DEPICT FINISHED GRADE OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED. GENERAL CONTRACTOR TO COORDINATE WITH EXCAVATION, LANDSCAPE AND PAVING SUBCONTRACTORS REGARDING TOPSOIL THICKNESS FOR LANDSCAPE AREAS AND PAVEMENT SECTION THICKNESS FOR PAVED AREAS TO PROPERLY ENSURE ADEQUATE CUT TO ESTABLISH SUBGRADE ELEVATIONS.
3. NO EARTHEN SLOPE SHALL BE GREATER THAN 2:1, UNLESS OTHERWISE NOTED.
4. MAXIMUM SLOPE IN ACCESSIBLE PARKING SPACES AND LOADING ZONES SHALL NOT EXCEED 2.0% IN ALL DIRECTIONS.
5. MAXIMUM RUNNING SLOPE SHALL NOT EXCEED 5% AND CROSS SLOPE SHALL NOT EXCEED 2% ON ALL SIDEWALKS AND ACCESSIBLE ROUTES.
6. MATCH EXISTING ELEVATIONS AT THE PROPERTY LIMITS.
7. ALL STORM DRAIN UTILITIES ARE PRELIMINARY AND SUBJECT TO CHANGE UPON FINAL DESIGN.
6. SEE ELECTRIC FOR SITE LIGHTING

ABBREVIATIONS:

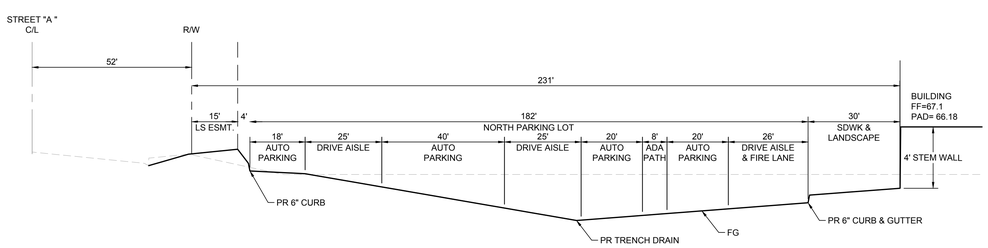
(X.XX)	EXISTING ELEVATION	POC	POINT OF CONNECTION
BLDG	BUILDING	PR	PROPOSED
BMP	BEST MANAGEMENT PRACTICES	RCP	REINFORCED CONCRETE PIPE
BW	BACK OF WALL	RET.	RETAINING
CL	CENTERLINE	RL	RIDGE LINE
EG	EXISTING GRADE	RW	RIGHT OF WAY
EP	EDGE OF PAVEMENT	SD	STORM DRAIN
EX	EXISTING	SF	SQUARE FEET
FF	FINISHED FLOOR ELEVATION	SDWK	SIDEWALK
		STBK	SETBACK
FG	FINISHED GRADE	STR	STRUCTURE
FH	FIRE HYDRANT	SS	SANITARY SEWER
FL	FLOW LINE	TC	TOP OF CURB
FS	FINISHED SURFACE	TG	TOP OF GRATE
FW	FIRE WATER	TP	TOP OF PAVEMENT
GB	GRADE BREAK	TW	TOP OF WALL
IE	INVERT ELEVATION	TYP	TYPICAL
LP	LOW POINT	WQ	WATER QUALITY
LS	LANDSCAPE		
MH	MANHOLE		
PL	PROPERTY LINE		



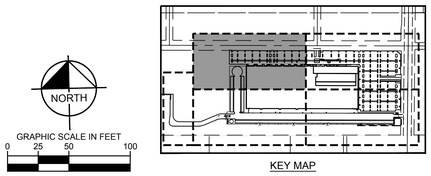
SECTION A-A
HORZ: 1"=20'
VERT: 1"=4'



SECTION B-B
HORZ: 1"=20'
VERT: 1"=4'



SECTION C-C
HORZ: 1"=20'
VERT: 1"=4'



KEY MAP

NORTH

GRAPHIC SCALE IN FEET
0 25 50 100

No.	REVISIONS	DATE	BY

Kimley»Horn
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401 B STREET, SUITE 600, SAN DIEGO, CA 92101
PHONE: 619-234-9411
WWW.KIMLEY-HORN.COM

PRELIMINARY
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Kimley»Horn
Engineer EUGENE D. COWAN III
P.E. No. 86803 Date 3/5/2020

KHA PROJECT 195170003
DATE 3/5/2020
SCALE AS SHOWN
DESIGNED BY KS&DC
DRAWN BY KS
CHECKED BY DC

GRADING PLAN - 1

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD, CA

SHEET NUMBER
2 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Kha_Layout:GRADING PLAN - 1 March 05, 2020 02:53:02pm K:\SND_LDEV\195170003 - Project Bruin\Design\Plan\Sheets - EDR Civil\1-2 GRADING PLAN.dwg
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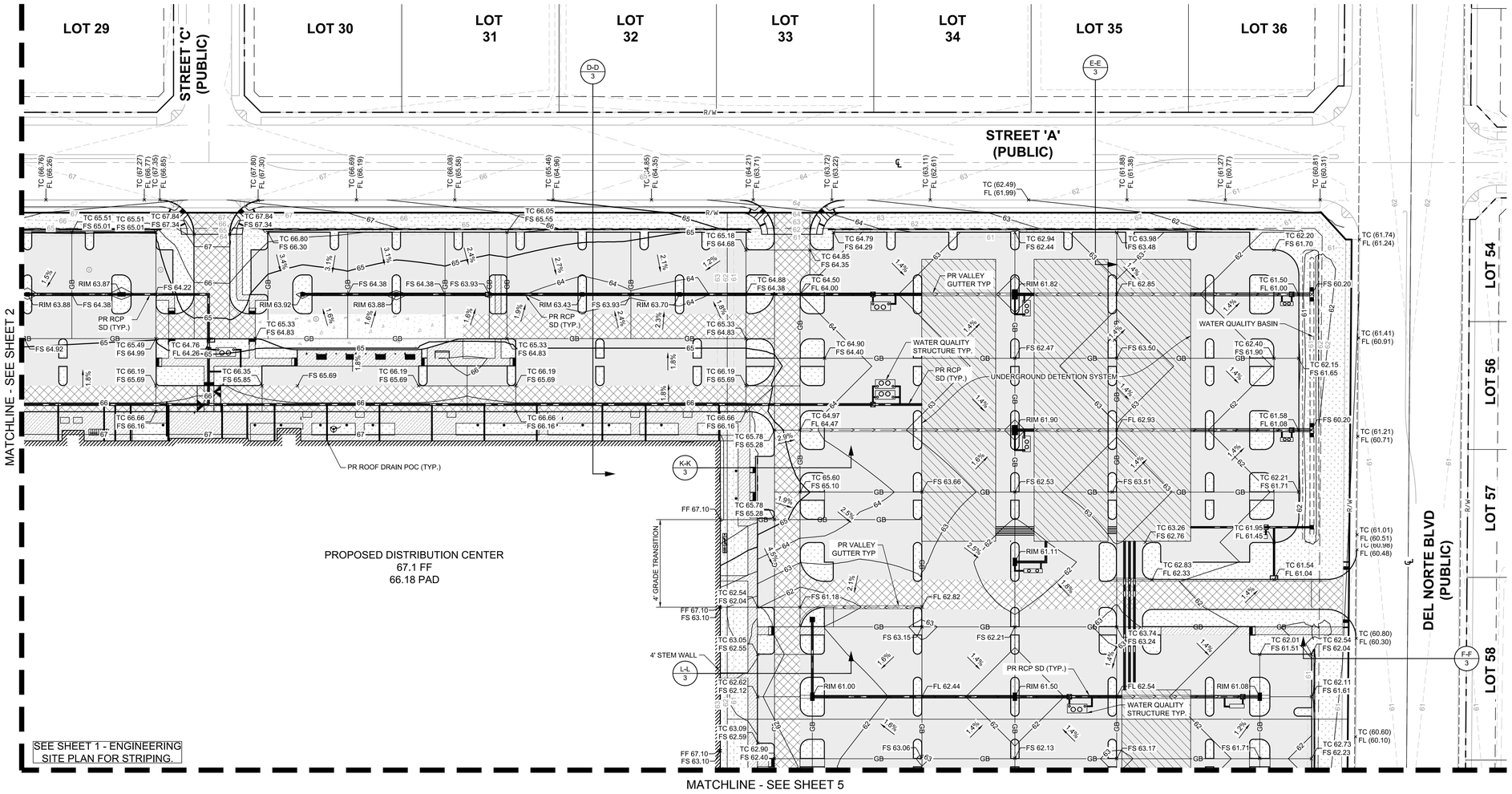
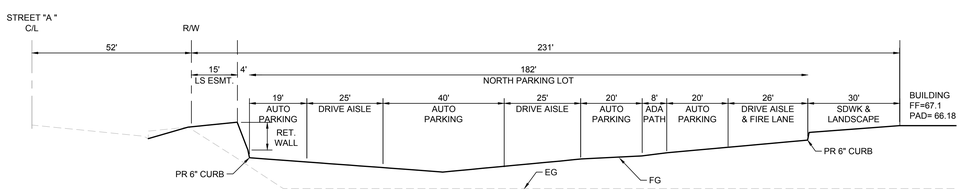
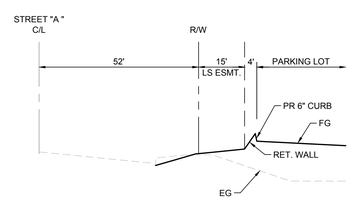




SECTION D-D
HORZ: 1"=20'
VERT: 1"=4'



SECTION E-E
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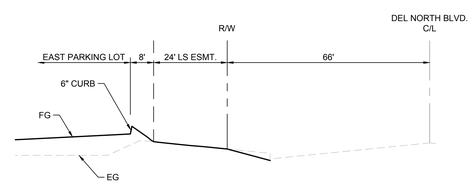
VERT: 1"=4'



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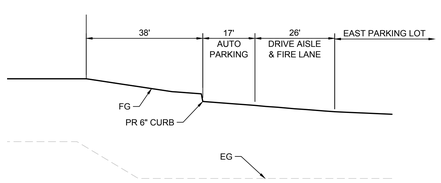
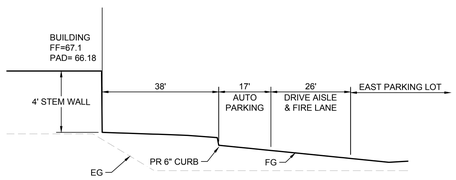
VERT: 1"=4'



SECTION K-K
HORZ: 1"=20'
VERT: 1"=4'



SECTION L-L
HORZ: 1"=20'
VERT: 1"=4'

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
PROPOSED CONTOUR — 100
EXISTING CONTOUR PER TTM 5996 — 100
GRADING LIMITS
GRADE BREAK LINE — GB
RIDGE LINE — R
RETAINING WALL
SLOPE — X.XX%
SPOT ELEVATION — XX 100.00
ASPHALT PAVEMENT (3" PCC / 6" AB)
HEAVY DUTY ASPHALT PAVEMENT (5" AC / 11" AB)
CONCRETE PAVEMENT (10" PCC / 4" AB)
CONCRETE SIDEWALK (4" PCC / 4" AB)
LANDSCAPE (SEE LANDSCAPE PLANS)
FENCE CHAINLINK — X
STORM LINE — SD
SEWER LINE — S
WATER LINE — W
FIRE WATER — FW
STORM DRAIN MANHOLE
SEWER MANHOLE
STORM DRAIN CURB INLET
STORM DRAIN CLEAN OUT
GRATE INLET
STORM WATER QUALITY BMP
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION

NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING TOPOGRAPHY AND STRUCTURES ON THE SITE AND IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING WORK.
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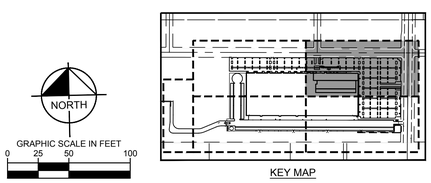
3. NO EARTHEN SLOPE SHALL BE GREATER THAN 2:1, UNLESS OTHERWISE NOTED.
4. MAXIMUM SLOPE IN ACCESSIBLE PARKING SPACES AND LOADING ZONES SHALL NOT EXCEED 2.0% IN ALL DIRECTIONS.
5. MAXIMUM RUNNING SLOPE SHALL NOT EXCEED 5% AND CROSS SLOPE SHALL NOT EXCEED 2% ON ALL SIDEWALKS AND ACCESSIBLE ROUTES.
6. MATCH EXISTING ELEVATIONS AT THE PROPERTY LIMITS.
7. ALL STORM DRAIN UTILITIES ARE PRELIMINARY AND SUBJECT TO CHANGE UPON FINAL DESIGN.
6. SEE ELECTRIC FOR SITE LIGHTING

ABBREVIATIONS:

(X.XX)	EXISTING ELEVATION	POC	POINT OF CONNECTION
BLDG	BUILDING	PR	PROPOSED
BMP	BEST MANAGEMENT PRACTICES	RCP	REINFORCED CONCRETE PIPE
BW	BACK OF WALL	RET.	RETAINING
CL	CENTERLINE	RL	RIDGE LINE
EG	EXISTING GRADE	RW	RIGHT OF WAY
EP	EDGE OF PAVEMENT	SD	STORM DRAIN
EX	EXISTING	SF	SQUARE FEET
FF	FINISHED FLOOR ELEVATION	SDWK	SIDEWALK
FG	FINISHED GRADE	STBK	SETBACK
FH	FIRE HYDRANT	STR	STRUCTURE
FL	FLOW LINE	SS	SANITARY SEWER
FS	FINISHED SURFACE	TC	TOP OF CURB
FW	FIRE WATER	TG	TOP OF GRATE
GB	GRADE BREAK	TP	TOP OF PAVEMENT
IE	INVERT ELEVATION	TW	TOP OF WALL
LP	LOW POINT	TYP	TYPICAL
LS	LANDSCAPE	WQ	WATER QUALITY
MH	MANHOLE		
PL	PROPERTY LINE		



KEY MAP

No.	REVISIONS	DATE	BY

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Kimley»Horn
Engineer EUGENE D. COWAN III
P.E. No. 86803 Date 3/5/2020

KHA PROJECT	195170003
DATE	3/5/2020
SCALE	AS SHOWN
DESIGNED BY	KS&DC
DRAWN BY	KS
CHECKED BY	DC

GRADING PLAN - 2

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD, CA

SHEET NUMBER
3 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Kha_Layout:GRADING PLAN - 2 March 05, 2020 02:53:14pm K:\SND_LDEV\195170003 - Project Bruin\Design\Plan\Sheets - EDR Civil\1-2 GRADING PLAN.dwg
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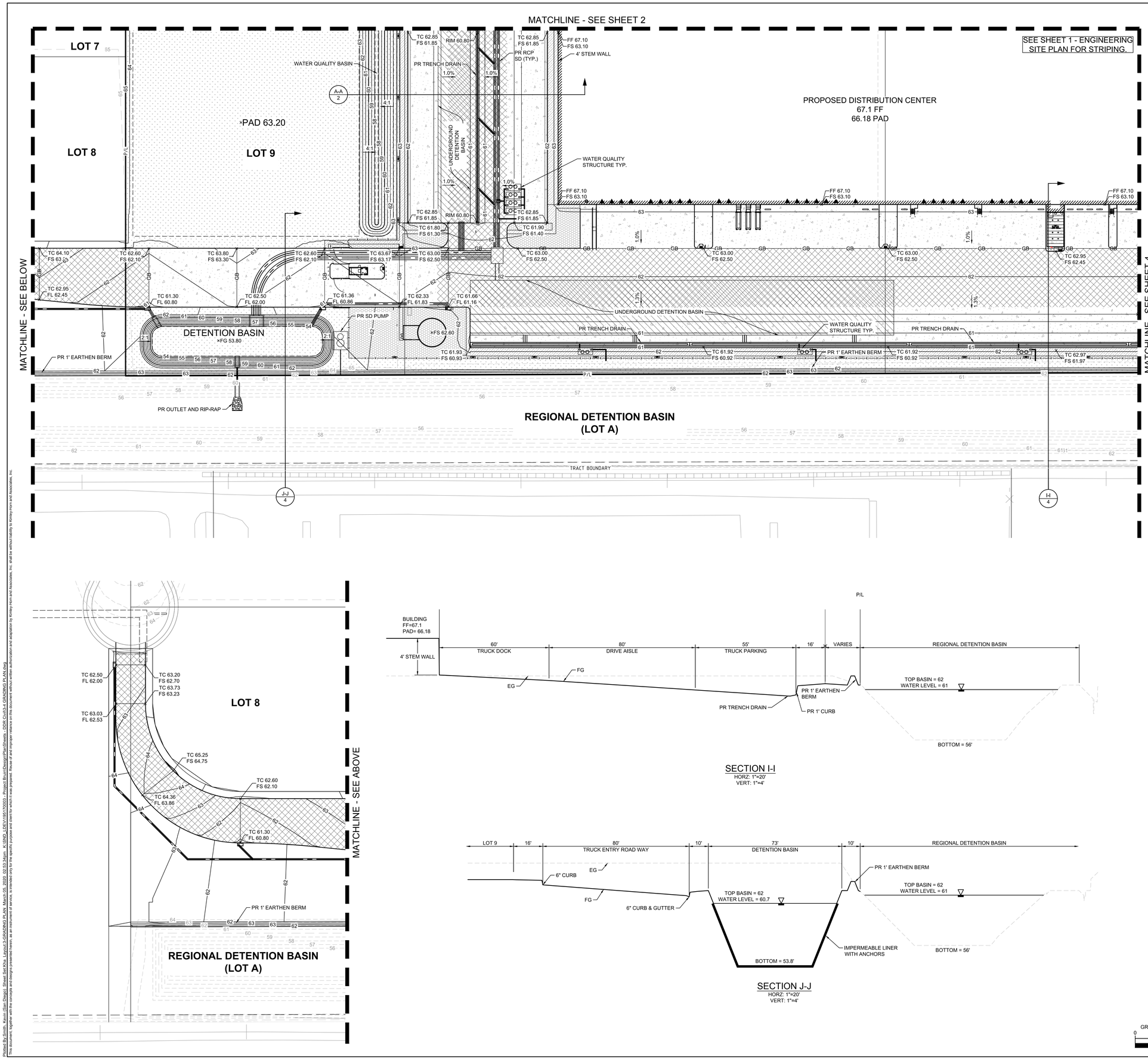

SECTION I-I
HORZ: 1"=20'
VERT: 1"=4'

SECTION J-J
HORZ: 1"=20'
VERT: 1"=4'

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
PROPOSED CONTOUR — 100
EXISTING CONTOUR PER TTM 5996 — 100
GRADING LIMITS
GRADE BREAK LINE — GB
RIDGE LINE — R
RETAINING WALL
SLOPE — X.XX%
SPOT ELEVATION — XX 100.00
ASPHALT PAVEMENT (3" PCC / 6" AB)
HEAVY DUTY ASPHALT PAVEMENT (5" AC / 11" AB)
CONCRETE PAVEMENT (10" PCC / 4" AB)
CONCRETE SIDEWALK (4" PCC / 4" AB)
LANDSCAPE (SEE LANDSCAPE PLANS)
FENCE CHAINLINK — X
STORM LINE — SD
SEWER LINE — S
WATER LINE — W
FIRE WATER — FW
STORM DRAIN MANHOLE
SEWER MANHOLE
STORM DRAIN CURB INLET
STORM DRAIN CLEAN OUT
GRATE INLET
STORM WATER QUALITY BMP
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION

NOTES:

1. CONTRACTOR TO VERIFY ALL EXISTING TOPOGRAPHY AND STRUCTURES ON THE SITE AND IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING WORK.
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6. MATCH EXISTING ELEVATIONS AT THE PROPERTY LIMITS.
7. ALL STORM DRAIN UTILITIES ARE PRELIMINARY AND SUBJECT TO CHANGE UPON FINAL DESIGN.
6. SEE SITE LIGHTING PLAN FOR LIGHT POLE LOCATIONS.

ABBREVIATIONS:

(X.XX)	EXISTING ELEVATION	POC	POINT OF CONNECTION
BLDG	BUILDING	PR	PROPOSED
BMP	BEST MANAGEMENT PRACTICES	RCP	REINFORCED CONCRETE PIPE
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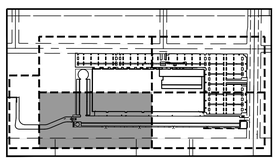
CL	CENTERLINE	RL	RIDGE LINE
EG	EXISTING GRADE	RW	RIGHT OF WAY
EP	EDGE OF PAVEMENT	SD	STORM DRAIN
EX	EXISTING	SF	SQUARE FEET
FF	FINISHED FLOOR ELEVATION	SDWK	SIDEWALK
		STBK	SETBACK
FG	FINISHED GRADE	STR	STRUCTURE
FH	FIRE HYDRANT	SS	SANITARY SEWER
FL	FLOW LINE	TC	TOP OF CURB
FS	FINISHED SURFACE	TG	TOP OF GRATE
FW	FIRE WATER	TP	TOP OF PAVEMENT
GB	GRADE BREAK	TW	TOP OF WALL
IE	INVERT ELEVATION	TYP	TYPICAL
LP	LOW POINT	WQ	WATER QUALITY
LS	LANDSCAPE		
MH	MANHOLE		
PL	PROPERTY LINE		

NORTH
GRAPHIC SCALE IN FEET
0 25 50 100



KEY MAP

No.	REVISIONS	DATE	BY

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Kimley»Horn
Engineer EUGENE D. COWAN III
P.E. No. 86803 Date 3/5/2020

KHA PROJECT 195170003
DATE 3/5/2020
SCALE AS SHOWN
DESIGNED BY KS&DC
DRAWN BY KS
CHECKED BY DC

GRADING PLAN - 3

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.

CITY OF OXNARD CA

SHEET NUMBER
4 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Kha Layout:3-GRADING PLAN March 05, 2020 02:53:34pm K:\SND_LDEV\195170003 - Project Bruin\Design\PlanSheets - EDR\Civil\3-4 GRADING PLAN.dwg
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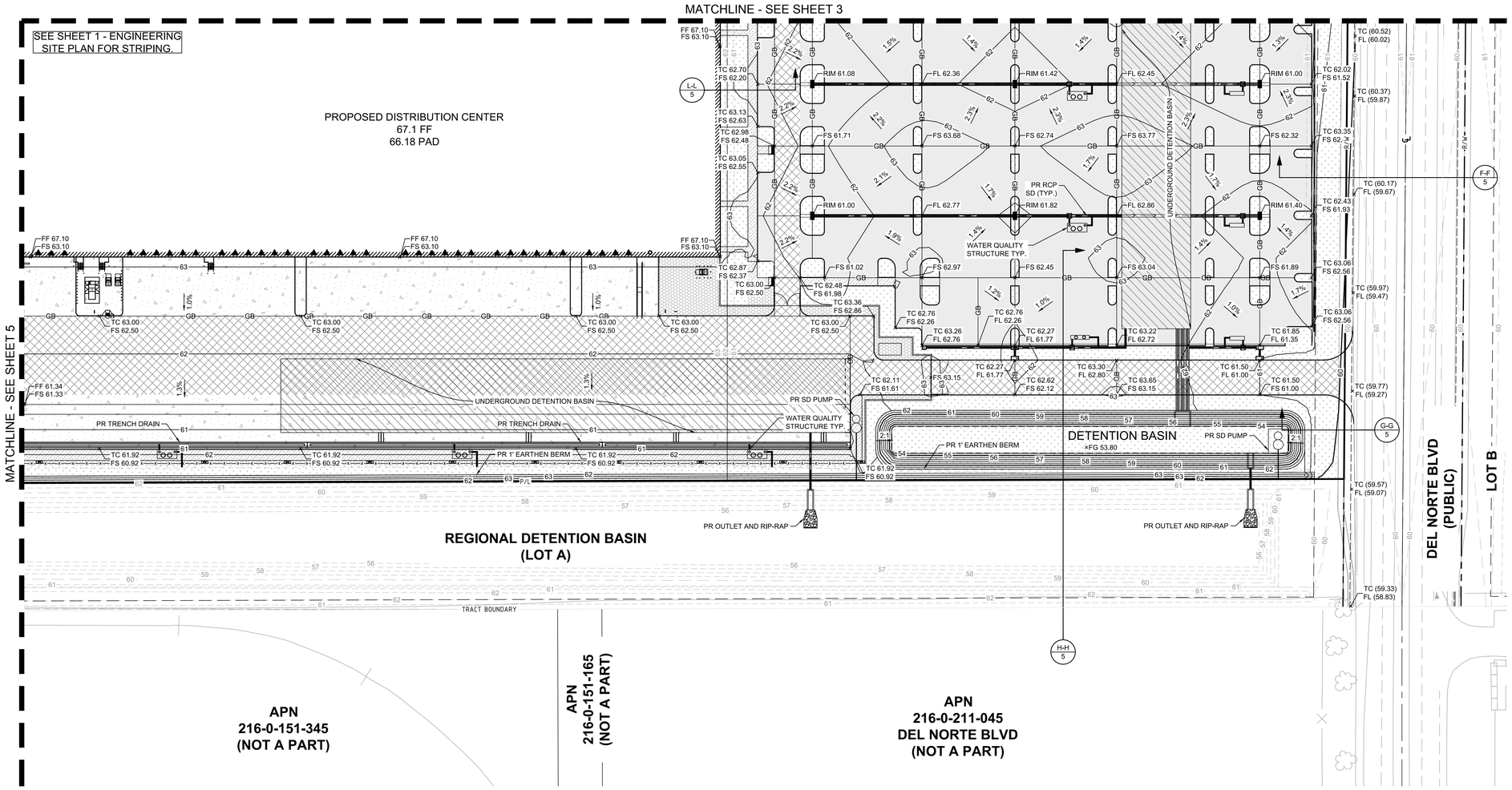
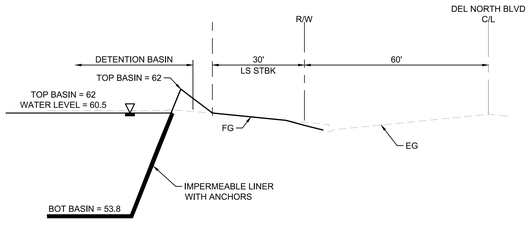
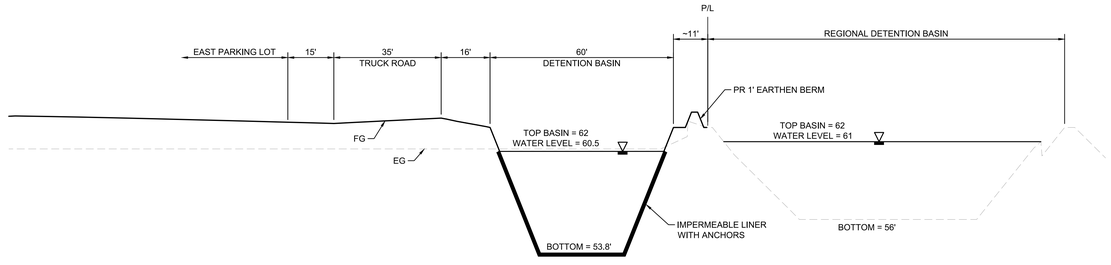




SECTION G-G
HORZ: 1"=20'
VERT: 1"=4'



SECTION H-H
HORZ: 1"=20'
VERT: 1"=4'

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
PROPOSED CONTOUR — 100
EXISTING CONTOUR PER TTM 5996 — 100
GRADING LIMITS
GRADE BREAK LINE — GB
RIDGE LINE — R
RETAINING WALL
SLOPE — X.XX%
SPOT ELEVATION — XX 100.00
ASPHALT PAVEMENT (3" PCC / 6" AB)
HEAVY DUTY ASPHALT PAVEMENT (5" AC / 11" AB)
CONCRETE PAVEMENT (10" PCC / 4" AB)
CONCRETE SIDEWALK (4" PCC / 4" AB)
LANDSCAPE (SEE LANDSCAPE PLANS)
FENCE CHAINLINK — X
STORM LINE — SD
SEWER LINE — S
WATER LINE — W
FIRE WATER — FW
STORM DRAIN MANHOLE
SEWER MANHOLE
STORM DRAIN CURB INLET
STORM DRAIN CLEAN OUT
GRATE INLET
STORM WATER QUALITY BMP
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION

NOTES:

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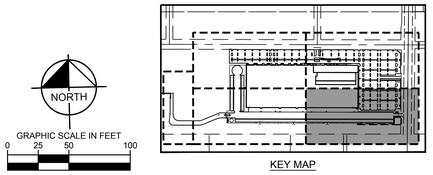
6. SEE SITE LIGHTING PLAN FOR LIGHT POLE LOCATIONS.

ABBREVIATIONS:

(X.XX)	EXISTING ELEVATION	POC	POINT OF CONNECTION
BLDG	BUILDING	PR	PROPOSED
BMP	BEST MANAGEMENT PRACTICES	RCP	REINFORCED CONCRETE PIPE
BW	BACK OF WALL	RET.	RETAINING
CL	CENTERLINE	RL	RIDGE LINE
EG	EXISTING GRADE	RW	RIGHT OF WAY
EP	EDGE OF PAVEMENT	SD	STORM DRAIN
EX	EXISTING	SF	SQUARE FEET
FF	FINISHED FLOOR ELEVATION	SDWK	SIDEWALK
		STBK	SETBACK
FG	FINISHED GRADE	STR	STRUCTURE
FH	FIRE HYDRANT	SS	SANITARY SEWER
FL	FLOW LINE	TC	TOP OF CURB
FS	FINISHED SURFACE	TG	TOP OF GRATE
FW	FIRE WATER	TP	TOP OF PAVEMENT
GB	GRADE BREAK	TW	TOP OF WALL
IE	INVERT ELEVATION	TYP	TYPICAL
LP	LOW POINT	WQ	WATER QUALITY
LS	LANDSCAPE		
MH	MANHOLE		
PL	PROPERTY LINE		



KEY MAP

NORTH

GRAPHIC SCALE IN FEET
0 25 50 100

No.	REVISIONS	DATE	BY

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KHA PROJECT 195170003
DATE 3/5/2020
SCALE AS SHOWN
DESIGNED BY KS&DC
DRAWN BY KS
CHECKED BY DC

GRADING PLAN - 4

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD CA

SHEET NUMBER
5 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Kha Layout:L4-GRADING PLAN March 05, 2020 02:53:46pm K:\SND_LDEV\195170003 - Project Bruin\Design\PlanSheets - DDR Civil\3-4 GRADING PLAN.dwg
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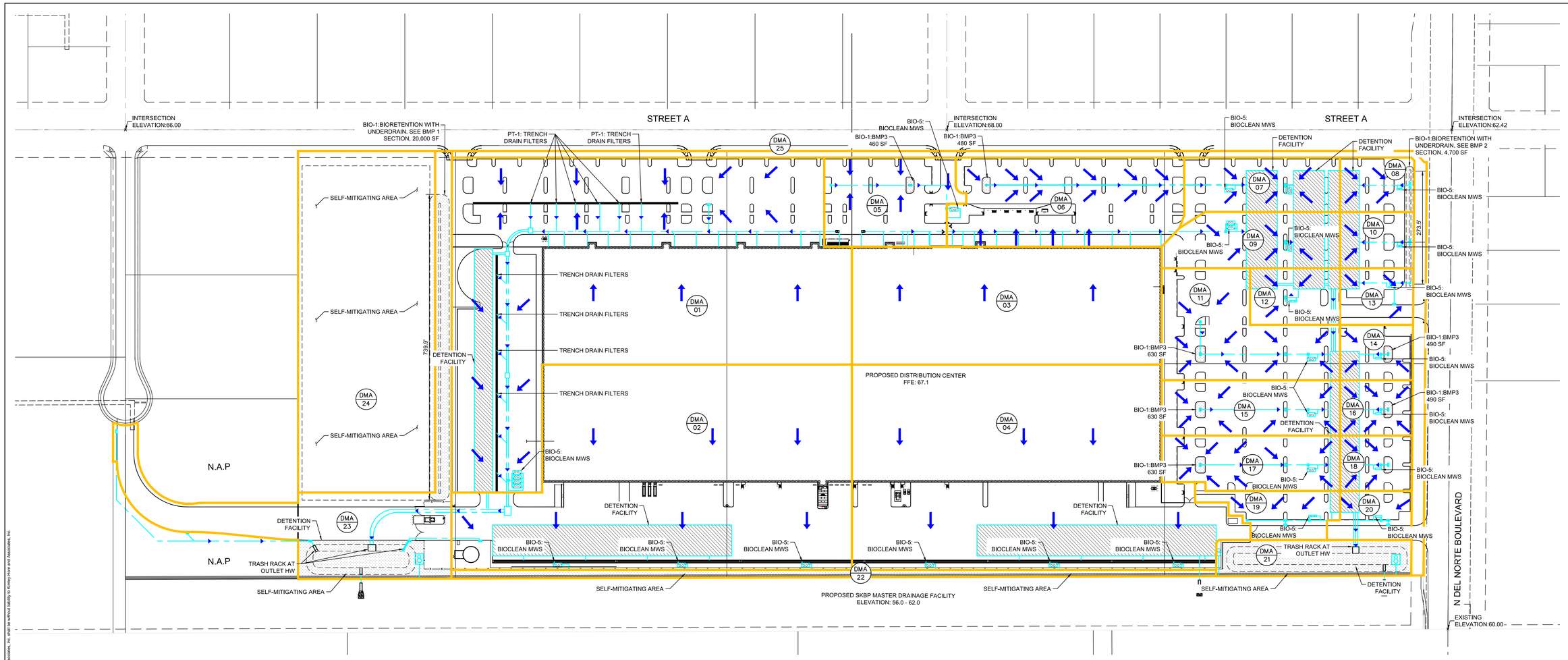

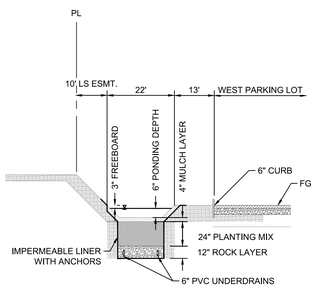

BIO-1: BMP 1
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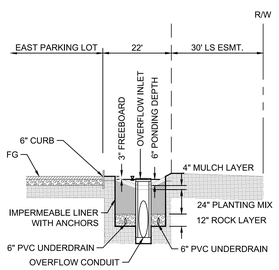
VERT: 1"=4'



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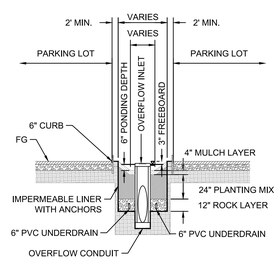
VERT: 1"=4'



BIO-1: TYP. PARKING LOT BMP 3
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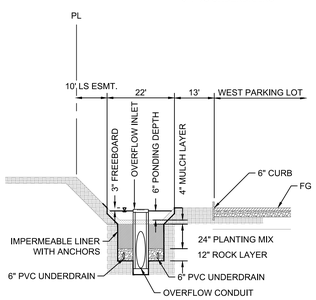
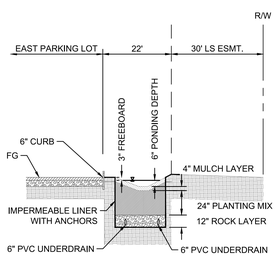
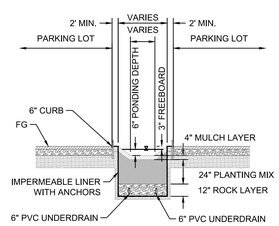
VERT: 1"=4'







SQDF TREATMENT FLOW SUMMARY TABLE

DMA ID	AREA (ac)	IMPERVIOUS AREA (ac)	C, WEIGHTED RUNOFF COEFFICIENT	SQDF (cfs)
1	12.40	11.55	0.89	3.86
2	9.49	9.49	0.95	3.16
3	4.91	4.91	0.95	1.63
4	9.26	9.23	0.95	3.07
5	1.55	1.45	0.89	0.48
6	2.73	2.47	0.86	0.83
7	1.16	1.05	0.86	0.35
8	0.54	0.39	0.71	0.13
9	1.26	1.14	0.86	0.38
10	0.56	0.44	0.75	0.15
11	2.00	1.68	0.81	0.57
12	0.69	0.65	0.89	0.22
13	0.56	0.34	0.60	0.12
14	0.54	0.45	0.81	0.15
15	1.33	1.16	0.84	0.39
16	0.54	0.47	0.84	0.16
17	1.28	1.14	0.85	0.38
18	0.54	0.44	0.78	0.15
19	0.70	0.56	0.77	0.19
20	0.51	0.39	0.74	0.13
21	0.94	0.00	0.05	SELF MITIGATING
22	0.77	0.00	0.05	SELF MITIGATING
23	3.45	1.87	0.54	0.65
24	6.31	0.00	0.05	SELF MITIGATING
25	1.55	0.00	0.05	SELF MITIGATING

BIO-5: BIOCLEAN MWS
NTS

LEGEND

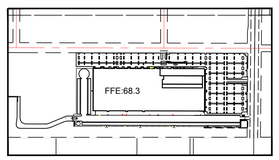
- DMA ID (XX / XX) — DMA ID NUMBER
- DMA BOUNDARY
- FLOW DIRECTION
- PROPERTY LINE
- PROPOSED STORM DRAIN LINE
- FLOWLINE

NOTES

1. PROJECT PROPOSES TO INSTALL CURB INLET INSERTS, TRENCH DRAIN FILTERS, AND TRASH RACKS AT DETENTION BASIN OUTLETS AS MEANS OF PRETREATMENT
2. DMAS COMPRISED OF 100% PERVIOUS AREA ARE CONSIDERING SELF MITIGATING AND DO NOT REQUIRE FURTHER WATER QUALITY MEASURES.

NORTH

GRAPHIC SCALE IN FEET
0 50 100 200



KEY MAP

No.	REVISIONS	DATE	BY

Kimley»Horn
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Kimley»Horn
Engineer EUGENE D. COWAN III
P.E. No. 86803 Date 3/5/2020

KHA PROJECT	195170003
DATE	3/5/2020
SCALE	AS SHOWN
DESIGNED BY	KS&DC
DRAWN BY	KS
CHECKED BY	DC

STORM WATER QUALITY MAP

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.

CITY OF OXNARD CA

SHEET NUMBER
7 OF 8

Plotted By:Smith, Kevin (San Diego) Sheet Set:Khq Layout:STORM WATER QUALITY MAP March 05, 2020 02:54:56pm \\acdfp01\projects\SND_LDEV\195170003 - Project Bruin\Stormwater\Exhibit\STORM WATER QUALITY MAP.dwg
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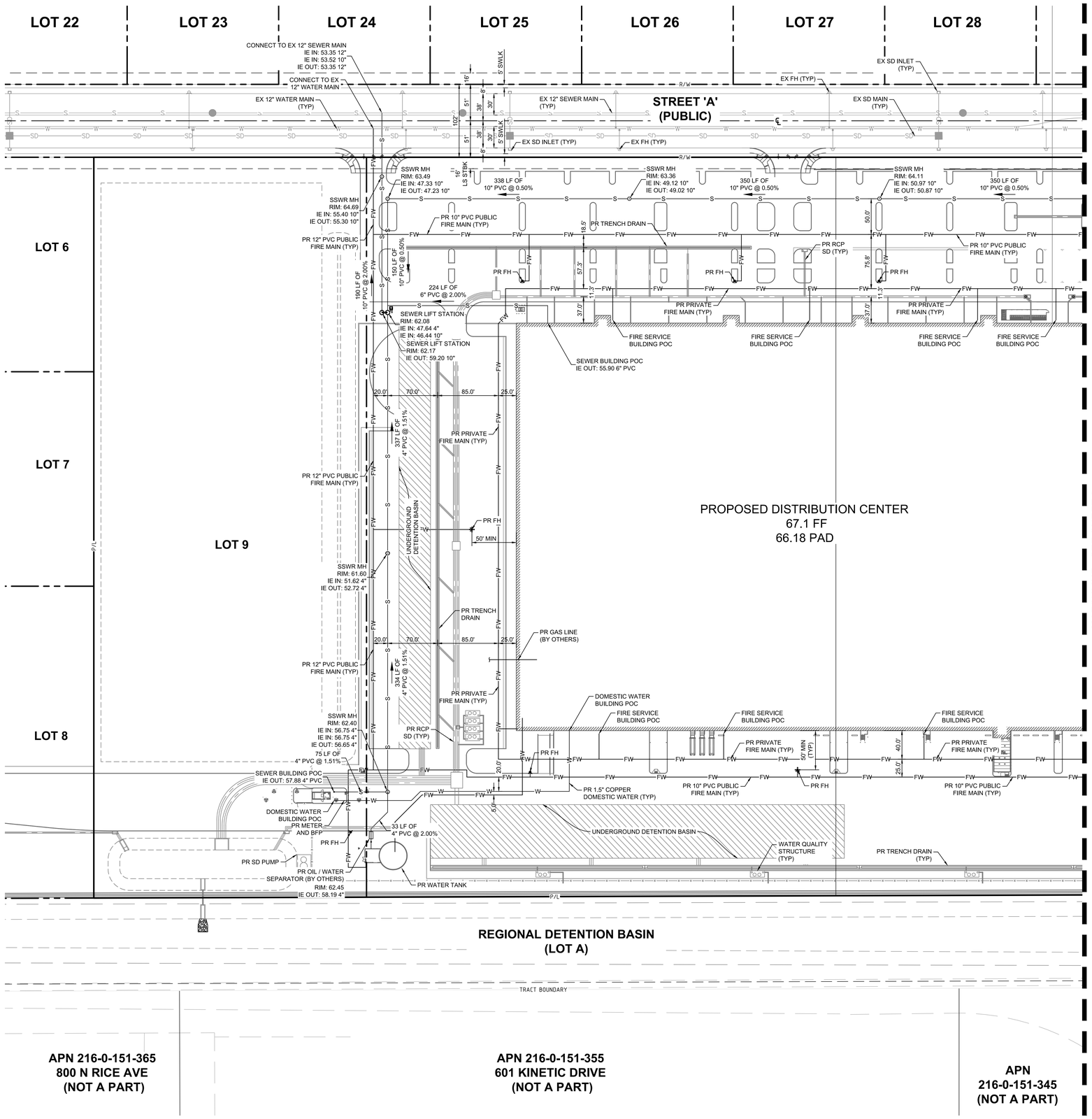


LEGEND

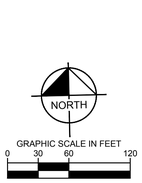
PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
GAS LINE
STORM LINE
SEWER LINE
WATER LINE
FIRE WATER LINE
STORM DRAIN CLEAN OUT
STORM DRAIN CURB INLET
GRATE INLET
STORM WATER QUALITY BMP
SEWER MANHOLE
SEWER CLEANOUT
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION
METER
POINT OF CONNECTION

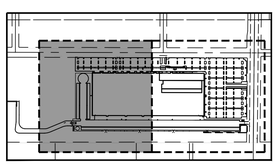
NOTES:

1. ALL UTILITY PIPE LENGTHS ON PLANS ARE SHOWN FOR REFERENCE AND COORDINATION. PIPE LENGTHS ARE NOT SHOWN FOR BIDDING OR ESTIMATING PURPOSES.
2. THE EXISTING UTILITIES SHOWN ARE BASED ON AVAILABLE RECORDS. THE CONTRACTOR MUST FIELD DETERMINE THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO ANY CONSTRUCTION. REPORT DISCREPANCIES AND POTENTIAL CONFLICTS WITH PROPOSED UTILITIES TO ENGINEER PRIOR TO INSTALLATION OF ANY PIPING.
3. ALL DIMENSIONS ARE SHOWN FROM CENTER OF PIPE TO CENTER OF PIPE UNLESS OTHER WISE NOTED.
4. ALL FIRE, WATER, AND SANITARY SEWER SIZES ARE PRELIMINARY AND SUBJECT TO CHANGE UPON FINAL DESIGN.
5. PROPOSED STORM DRAIN IS SHOWN FOR REFERENCE. REFER TO GRADING PLAN SHEETS FOR FURTHER INFORMATION.

ABBREVIATIONS:

(X.XX)	EXISTING ELEVATION	POC	POINT OF CONNECTION
BLDG	BUILDING	PR	PROPOSED
BMP	BEST MANAGEMENT PRACTICES	RCP	REINFORCED CONCRETE PIPE
BW	BACK OF WALL	RET.	RETAINING
CL	CENTERLINE	RL	RIDGE LINE
EG	EXISTING GRADE	RW	RIGHT OF WAY
EP	EDGE OF PAVEMENT	SD	STORM DRAIN
EX	EXISTING	SF	SQUARE FEET
FF	FINISHED FLOOR ELEVATION	SDWK	SIDEWALK
		STBK	SETBACK
FG	FINISHED GRADE	STR	STRUCTURE
FH	FIRE HYDRANT	SS	SANITARY SEWER
FL	FLOW LINE	TC	TOP OF CURB
FS	FINISHED SURFACE	TG	TOP OF GRATE
FW	FIRE WATER	TP	TOP OF PAVEMENT
GB	GRADE BREAK	TW	TOP OF WALL
IE	INVERT ELEVATION	TYP	TYPICAL
LP	LOW POINT	WQ	WATER QUALITY
LS	LANDSCAPE		
MH	MANHOLE		
PL	PROPERTY LINE		





KEY MAP

No.	REVISIONS	DATE	BY

Kimley»Horn

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Kimley»Horn
Engineer EUGENE D. COWAN III.
P.E. No. 86803 Date 3/5/2020

KHA PROJECT 189170003
DATE 3/5/2020
SCALE AS SHOWN
DESIGNED BY KSADC
DRAWN BY KS
CHECKED BY DC

UTILITY PLAN - 1

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD, CA

SHEET NUMBER
7 OF 8

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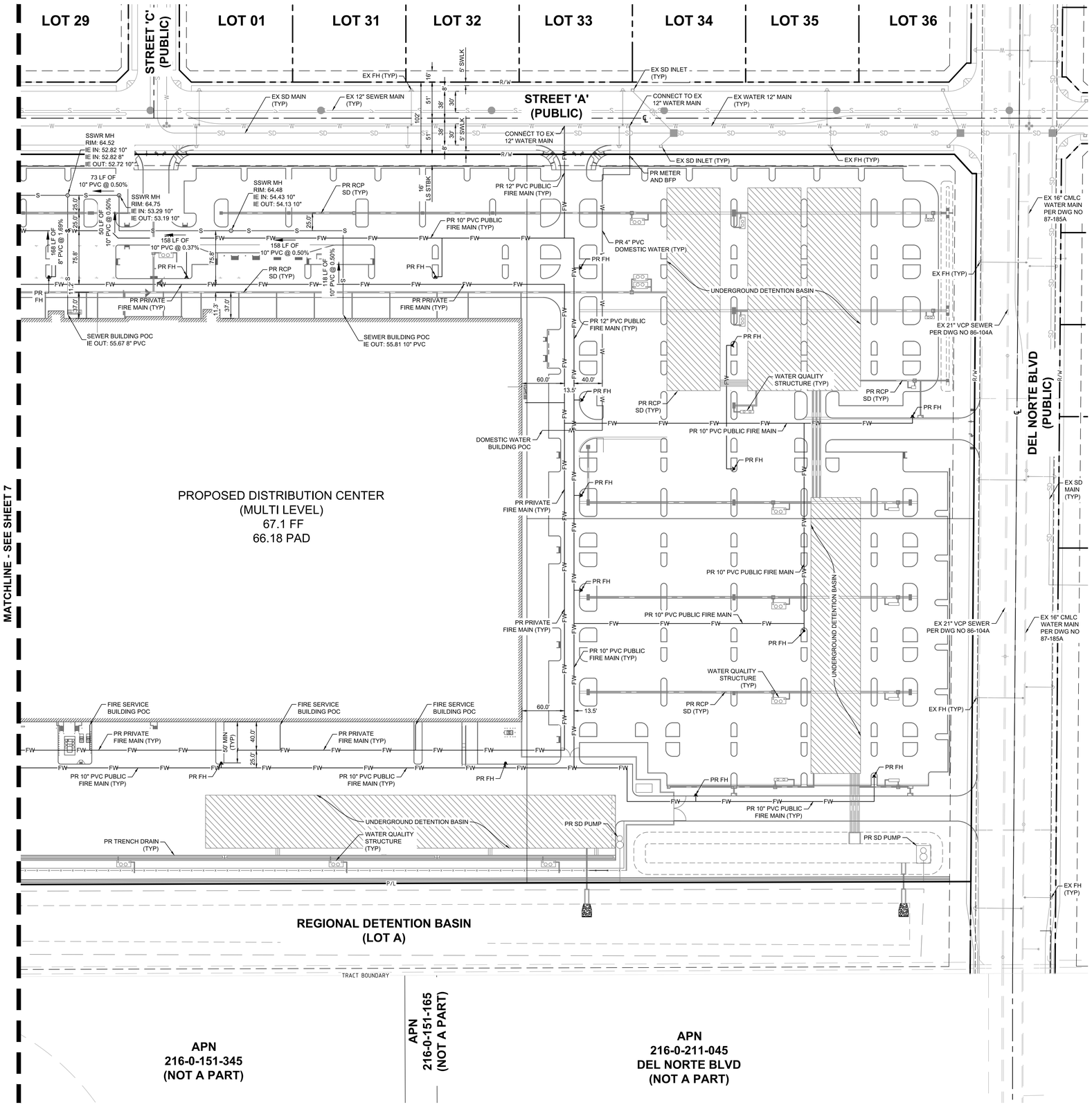

LEGEND

PROPERTY BOUNDARY
PROPERTY LINE / RIGHT-OF-WAY
CENTERLINE
SETBACK
EASEMENT
GAS LINE
STORM LINE
SEWER LINE
WATER LINE
FIRE WATER LINE
STORM DRAIN CLEAN OUT
STORM DRAIN CURB INLET
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STORM WATER QUALITY BMP
SEWER MANHOLE
SEWER CLEANOUT
FIRE HYDRANT
FIRE DEPARTMENT CONNECTION
METER
POINT OF CONNECTION

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FG	FINISHED GRADE	STR	STRUCTURE
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PL	PROPERTY LINE		

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Engineer EUGENE D. COWAN III.
P.E. No. 86803 Date 3/5/2020

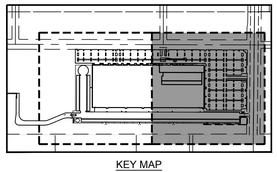
No.	REVISIONS	DATE	BY

KHA PROJECT 195170003
DATE 3/5/2020
SCALE AS SHOWN
DESIGNED BY KS&DC
DRAWN BY KS
CHECKED BY DC

UTILITY PLAN - 2

PROJECT BRUIN
PREPARED FOR
SEEFRRIED INDUSTRIAL PROPERTIES, INC.
CITY OF OXNARD, CA

NORTH
GRAPHIC SCALE IN FEET
0 30 60 120



KEY MAP

SHEET NUMBER
8 OF 8

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Appendix J Sakioka Farms Business Park Master Drainage Report

Attachment by Delane Engineering

F.3 - Preliminary Engineering Water Study

draft

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PROJECT BRUIN PRELIMINARY ENGINEERING WATER STUDY

1. INTRODUCTION & PURPOSE

Project Bruin (Project or Proposed Project) is proposing to develop 65-acres of existing agricultural land into an 857,173 SF "light-industrial" facility. The Project is located in Oxnard, CA and is part of the Sakioka Farms Specific Plan (Specific Plan). The Specific Plan area is approximately 430-acres and is bounded by U.S. 101 to the north, Rice Avenue to the west, North Del Norte Boulevard to the east, and Latigo Avenue to the south. The Specific Plan area is shown in **Figure 1** below. There is some additional area east of North Del Norte Boulevard that is included in the Specific Plan, which is shown in **Figure 1.**

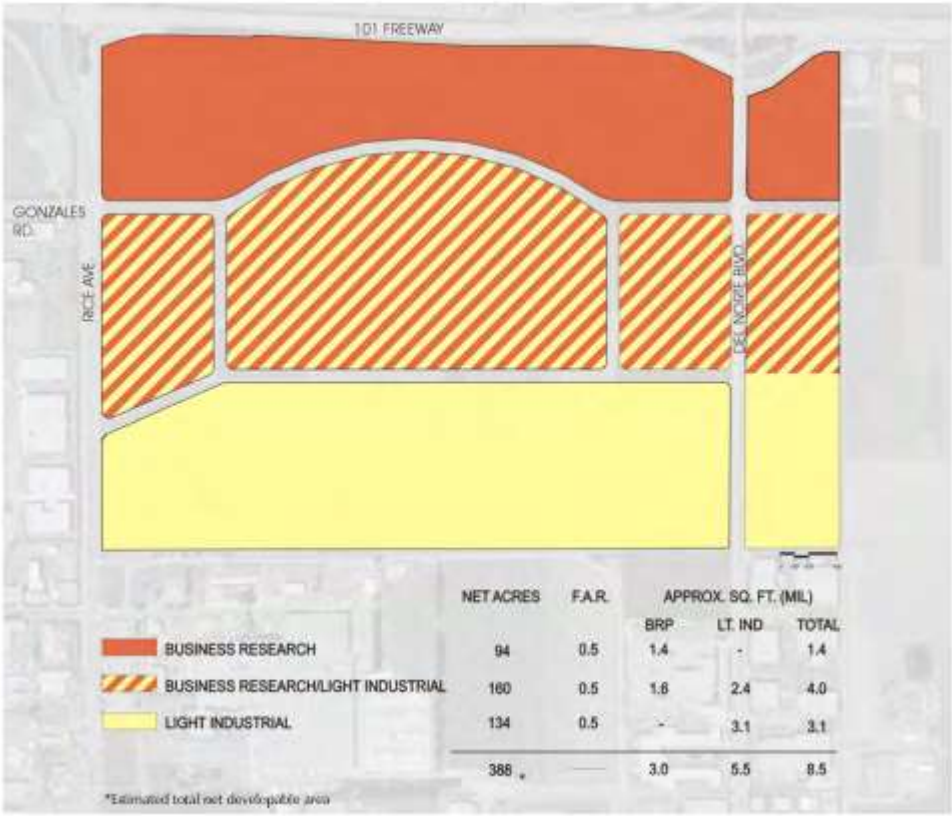

Figure 1: Sakioka Farms Specific Plan Area

Project Bruin is situated along North Del Norte Boulevard, approximately 2,500-feet south of U.S. 101. A proposed road (as described in the Specific Plan) will allow for access to the site from North Del Norte Boulevard.

A Water Supply Assessment (WSA) was performed for the Specific Plan to identify the total domestic water demand for the Specific Plan area. The WSA used a flow per unit acre approach

to determine the demand for each land use. Project Bruin is categorized as “light industrial” and is only a portion of the total acreage for this land use. The total “light-industrial” acreage as stated in the Specific Plan is 250.5-acres, while Project Bruin is 64.65-acres. The Proposed Project is allotted 25.8% of the planned demand.

This memo determined if the domestic water demand for the Proposed Project was less than or equal to the allotted amount as determined by WSA. Additionally, this memo determined the required pipe size for the domestic water line.

2. PROJECT ANALYSIS

Project Bruin will utilize a prototypical building for the industrial facility. The prototypical plans and specifications were reviewed, and it was determined that the peak domestic water demand is 250-Gallons Per Minute (GPM). The approximate monthly and yearly usages are 1.2 Million Gallons (MG) and 14.4 MG, respectively. 14.4 MG converts to 44 Acre-Feet per Year (AFY) This number represents the total annual water demand for the building. This number was compared to what the WSA determined.

The WSA determined the annual water demand for the Specific Plan area. Table 3-10 of the WSA summarized the annual demands. The table lists land usage, area, unit demand, and total demand. A screenshot of this table is included below.

TABLE 3-10
DEMAND ESTIMATE FOR THE SAKIOKA DEVELOPMENT WITHOUT RESIDENTIAL UNITS

Sector	Building Space or No. of Units	Unit Measure[a]	Unit Demand[b]	Total Demand (AFY)[c]
Commercial	100,000 sq. ft	25 acres total	1,500 gpd/ac total	40
Office	400,000 sq.ft	20 acres total	1,500 gpd/ac total	35
Business Research	2,500,000 sq.ft	91 acres total	1,500 gpd/ac total	155
Light Industrial	5,500,000 sq.ft	250.5 acres total	2,800 gpd/ac total	790
Multifamily Residential	0 units	0 acres total	2,800 gpd/ac total	0
Fire Station	1 Station	1.5 acres total	3 AFY	5
Total Potable Water Demand Without Landscaping				**1,025**
Park	---	0 acres total	3.0 AFY/ac total	0
Total Landscaping Water Demand[d]				**0**
Total Demand (AFY)				**1,025**

Notes: Values rounded to the nearest 5.
(a) Total acreage as provided in the draft Sakioka Farms Specific Plan dated July 2008.
(b) af=acre-feet, ac=acre. Unit demand factors from the 2005 Master Plan.
(c) Demand determined by multiplying the unit measure by the unit demand to get total demand in gpd. (e.g. 25 acres total * 1,500 gpd/acres total = 37,500 gpd.) Then, total demand is converted to AFY and rounded to the nearest 5. (e.g. 37,500 gpd * 365 days/year / 325,851 gals per AF = 40 AFY.)
(d) Recycled water will not be available until mid 2010 at the earliest. Therefore, the developer will need to plan for landscaping to be served by domestic water up to the time when recycled water is available.

Figure 2: WSA Table 3-10

The total demand for the “light industrial” sector is 790 AFY. Since Project Bruin is 25.8% of the total “light industrial” sector, it is allotted 204 AFY of the 790 AFY. This number is greater than the

prototypical building demand (44 AFY), meaning the Project is within the annual allotted usage per the WSA and Specific Plan.

Bentley's Flowmaster program was utilized to size the domestic water pipeline. The program's inputs consist of beginning and end elevations, beginning pressure, length, Hazen-William's coefficient (C value), pipe diameter, and flowrate. The pipe was assumed to be Polyvinyl Chloride (PVC), which has a C value of 150. However, this analysis used a C value of 130 to account for minor losses.

Pressure losses through a 3-inch meter and a 4-inch backflow preventer were also accounted for. Upon review of technical data sheets, it was determined that a 3-inch meter and a 4-inch backflow preventer will cause 2 Pounds per Square Inch (PSI) and 8 PSI of additional pressure loss, respectively. **Table 1** below summarizes the domestic water line calculations.

Table 1: Pressure Loss Summary

Item	Pressure (PSI)
Static Pressure	62
Major and Minor Losses	(9)
3-Inch Meter Losses	(2)
4-Inch Backflow Preventer Losses	(8)
Residual Pressure at Building	43

A 4-inch PVC pipe is recommended to service the prototypical building. The Flowmaster worksheet is included as an attachment.

It should be noted that this residual pressure at the face of the building may not be enough to supply adequate pressure for the fixtures in the building. The MEP should determine if a booster pump is necessary for the building.

REGISTERED PROFESSIONAL ENGINEER
SAMUEL LAKE MCWHORTER
No 61788
Exp 6/30/21
CIVIL
STATE OF CALIFORNIA

Samuel Lake McWhorter

Samuel Lake McWhorter, P.E.
C 61788 Exp. 6/30/21

ATTACHMENTS

Worksheet for Domestic Water Line

Project Description	
Friction Method	Hazen-Williams Formula
Solve For	Pressure at 2

Input Data		
Pressure 1	62	psi
Elevation 1	63.40	ft
Elevation 2	64.78	ft
Length	500.0	ft
Roughness Coefficient	130.000	
Diameter	4.0	in
Discharge	250.00	gal/min

Results		
Pressure 2	53	psi
Headloss	20.51	ft
Energy Grade 1	207.04	ft
Energy Grade 2	186.53	ft
Hydraulic Grade 1	206.41	ft
Hydraulic Grade 2	185.90	ft
Flow Area	0.1	ft^2
Wetted Perimeter	1.0	ft
Velocity	6.38	ft/s
Velocity Head	0.63	ft
Friction Slope	0.041	ft/ft

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