Appendix A
Air Quality Assumptions and Modeling

ESA

APPENDIX A
Air Quality Assumptions and Modeling

1. Assumptions
    a. Construction Assumptions
    b. Schedule
    c. Equipment List
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1. Assumptions
a. Construction Assumptions

Lift Station
Assumptions

CalEEMod Inputs (Non-Default information only)

Project Location			
County	Orange County		
Air District	SCAQMD		
Climate Zone	8		
Construction Year start	2021		
Operational Year Project	2024		
Utility Provider	Southern California Edison		
Source Receptor Area (SCAQMD)	20	Central Orange County Costal	

	2021	2022	2024
CO intensity	483.27	462.58	421.21
% renewable	35.75%	38.50%	44.00%

1 Southern California Edison, 2018. ESG/Sustainability Template. Report date: September 27, 2018. Available: https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf. Accessed April 5, 2019.

2 SCE 2017 Power Content Label https://www.sce.com/sites/default/files/inline-files/2017PCL_0.pdf

3 SB-100 California Renewables Portfolio Standard Program: Emissions of Greenhouse Gases, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180

Project Description

The proposed project includes the removal of an existing water well and the construction of a new water well approximately 40 feet southwest of the existing well within the existing fenced well facility. The following is a description of the facilities proposed to be removed and the construction of the proposed facilities.

Land Use	Building SQFT	Building KFS	Units/ Spaces	Acres	CalEEMod Category
Lift Station	5,666			1.50	Light Industrial

Site Buildings:

1,006	Generator Building	
520	Electrical Building	
4,139	Lift Station	
1,294	Existing	To Be demolished

Lift Station
Assumptions

Construction Schedule

Phase Name	Start Date	End Date		
Emergency Intertie Valve Vault and Piping	9/6/2021	11/19/2021	**32**	**Months**
Overhead Power Relocation	10/4/2021	11/19/2021		
Sewer Grinder Vault	11/1/2021	7/4/2023		
Storm Drain and Creek Outlet Structure	11/22/2021	2/6/2024		
Country Club Drive Relocation	1/24/2022	4/8/2022		
Temporary Sewer Relocation	4/11/2022	4/27/2022		
New Lift Station Site Demolition	4/11/2022	4/20/2022		
Wetwell/Drywell Construction	5/23/2022	3/17/2023		
Perimeter Wall Construction	3/13/2023	5/30/2023		
2'X3' RCB Construction	6/5/2023	7/10/2023		
Slope Grading Behind Perimeter Wall	8/7/2023	9/15/2023		
Influent Sewer Extension	8/15/2022	1/13/2023		
Generator Building Construction	4/3/2023	7/10/2023		
Pump Building Construction	4/24/2023	7/28/2023		
Generator Building Mechanical	8/14/2023	8/15/2023		
Pump Building Mechanical	7/3/2023	7/3/2023		
Scrubber Installation	5/23/2023	3/11/2024		
Miscellaneous Pump Station Site Improvements	10/6/2023	4/26/2024		
Existing Pump Station Demolition	1/22/2024	2/16/2024		
Miscellaneous Items	9/6/2021	2/16/2024		

Note:

The above schedule contains the start and end date for each construction phase. However, subphases and equipment use may be intermittentb between these dates. It is not intended that construction of these phases will occur on every day, or even every work day, within the start and end date listed. See the detailed phasing below for numer of days per sub phase and the accompanying construction schedule for detaild days of activities per phase and subphase.

Lift Station
Assumptions

Phase Name	Days	Haul Trips	Concrete	Vendor
Emergency Intertie Valve Vault and Piping				
Dewatering Wells	2	0	0	0
Vault and Tapping Sleeve Excavation /Shoring	10	2	0	0
Line Stop Installation/Removal	1	0	0	2
Subgrade Preparation	2	0	0	1
Vault Delivery and Placement	1	0	0	1
Vault Backfill and Compaction	5	0	0	0
Valve and Pipe Installation	15	2	0	0
Overhead Power Relocation				
Power Conduit installation	10	1	0	0
Communication Conduit Installation	15	1	0	0
Pavement Repair	2	0	0	2
Sewer Grinder Vault				
Dewatering Wells	1	0	0	0
Excavation/Shoring	10	2	0	0
Subgrade Preparation	2	0	0	1
Vault Base Forming/Rebar/Concrete	5	0	3	0
Vault Placement/Backfill	3	0	0	1
Set Grinder	1	0	0	0
Storm Drain and Creek Outlet Structure				
Outlet Structure Excavation	3	1	0	0
Subgrade Preparation	1	0	0	0
Outlet Structure Forming/Rebar/Concrete	3	0	1	0
Outlet Structure Backfill	1	0	0	0
Rip Rap Excavation and Placement	3	1	0	3
4'x1' RCB Excavation	2	2	0	0
4'x1' RCB Subgrade Preparation	1	0	0	0
4'x1' RCB Concrete	1	0	2	0
42 inch RCP Excavation	2	1	0	0
42 inch RCP Subgrade Preparation	1	0	0	0
42 Inch RCP Installation/Backfill	2	0	0	0
Catch Basin Excavation	1	1	0	0
Catch Basin Concrete	1	0	1	0
Catch Basin Backfill	1	0	0	0
18 Inch RCP Excavation	5	1	0	0
18 Inch RCP Subgrade Preparation	2	0	0	0
18 Inch RCP Installation Backfill	13	0	0	0
Country Club Drive Relocation				
Road Grading/Subgrade Preparation	15	1	0	0
Road Base and Compaction	10	0	0	3
AC Pavement	20	0	0	1
DG Pedestrian Path	10	0	0	2

Lift Station
Assumptions

Phase Name	Days	Haul Trips	Concrete	Vendor
Temporary Sewer Relocation				
Manhole Excavation/Shoring	1	2	0	0
Manhole Base Placement	1	0	1	0
Manhole Riser Placement/Backfill	2	0	0	1
8-inch Pipe Excavation/Shoring	2	1	0	0
8-inch Pipe Subgrade Preparation	1	0	0	0
8-inch Pipe Installation/Backfill	5	0	0	0
New Lift Station Site Demolition				
Building Demolition	5	3	0	0
Pipe Removals	3	0	0	0
Wetwell/Drywell Construction				
Deep Soil Mixing	35	4	6	0
Dewatering Wells	3	0	0	0
Excavation/Shoring	25	20	0	0
Subgrade Preparation	5	0	0	3
Wetwell/Drywell Base Construction	10	0	35	0
Wetwell/Drywell Wall Construction	30	0	11	0
Wetwell/Drywell Deck Construction	30	0	9	0
Backfill/Compaction	20	0	0	13
Stair Installation	5	0	0	0
Perimeter Wall Construction				
Footing Excavation	5	0	0	0
Footing Construction	1	0	6	0
Wall Construction	30	0	4	0
2'X3' RCB Construction				
Fill to Subgrade	5	0	0	5
2'x3' RCB Construction	2	0	3	0
Slope Grading Behind Perimeter Wall				
Fill Placement	5	0	0	4
Rip Rap Placement	2	0	1	2
Concrete Maintenance Walk	5	0	2	0
Influent Sewer Extension				
Dewatering Wells	5	0	0	0
Jacking and Receiving Pit Excavation/shoring	15	5	0	0
Jack and Bore 42 inch Casing	10	4	1	0
Jacking Pit Backfill/Compaction	10	0	0	2
Sewer Open Cut Excavation	10	2	0	0
Pipe Subgrade Preparation	4	0	0	0
Pipe Installation/Backfill	15	0	1	2
Manhole Excavation/Shoring	5	1	0	0
Manhole Base Placement	1	0	2	0
Manhole Shaft Placement/Backfill	3	0	0	1

Lift Station
Assumptions

Phase Name	Days	Haul Trips	Concrete	Vendor
Generator Building Construction				
Footing and Equipment Bases	7	1	4	0
Masonry Building and Roof	35	0	2	0
Pump Building Construction				
Masonry Building and Roof	30	0	2	0
Generator Building Mechanical				
Set Generator and Diesel Pump	2	0	0	0
Pump Building Mechanical				
Set Pumps	1	0	0	0
Scrubber Installation				
Foul Air Piping Excavation	6	2	0	0
Foul Air Piping Subgrade Preparation	2	0	0	0
Piping Installation/Backfill	10	0	0	2
Scrubber Installation	1	0	1	0
Miscellaneous Pump Station Site Improvements				
Yard Paving	3	0	3	0
Yard Piping	10	0	0	0
Drain Boxes/Radio Antenna	10	0	1	0
Curb and Gutter/Drive Way	5	0	1	0
Existing Pump Station Site Paving	2	0	0	3
Old Country Club Drive Repaving	5	3	0	3
Existing Pump Station Demolition				
Remove Buildings/Paving and Structure 6 feet BGS	10	2	1	3
Miscellaneous Items				
Street Sweeping	360	0	0	0
Dust Control	360	0	0	0
Pneumatic Tools	360	0	0	0

Note: Onroad Emissions modeled Outside of CalEEMod using EMFAC2017. Due to the variety of vehicle trips per phase, each category (Haul Truck (Haul and Concrete Trucks), Vendor Truck, and Worker Vehicles) were only modeled for 1 vehicle. Modeling accounts for 2 one-way trips or 1 round trip.

Lift Station
Assumptions

Soil Import/Export

11,745	cubic yards excavation
7,869	cubic yards of backfill/compaction
4,176	cubic yards export

Equipment Used Onsite

The following equipment is used for various phases throughout the project. Due to the number of phases and the overlap of equipment, each piece of equimpent is only modeled once in CalEEMod. To determine accurate fugitive dust emissions from grading for 1.2 acres would be graded with a maximum of 1 acre per day. Default horse power and load factor are used where CalEEmod defautlts exist for the equpiment.

Type	#	Hrs/day	CalEEMod Designation
Backhoe	1	8	Tractor/Loader/Backhoe
Bobcat Loader	1	8	Skidsteer Loader
Boom Truck	1	8	Offhighway Truck
Compressor	1	8	Air Compressor
Concrete Pumper Truck	1	8	Offhighway Truck
Concrete Saw	1	8	Concrete/Industrial Saw
Concrete Truck		Modeled Outside CalEEMod	
Crane	1	8	Crane
Delivery Truck		Modeled Outside CalEEMod	
Delivery Truck with Boom		Modeled Outside CalEEMod	
Dozer	1	8	Rubber Tired Dozer
Drill Rig	1	8	Bore/Drill Rig
Excavator	1	8	Excavator
Forklift	1	8	Forklift
Grader	1	8	Grader
Haul Truck		Modeled Outside CalEEMod	
Industrial Saw	1	8	Concrete/Industrial Saw
Jacking Machine	1	8	Other Construction equipment
Loader	1	8	Tractor/Loader/Backhoe
Material Truck		Modeled Outside CalEEMod	
Paver	1	8	Paver
Rock Delivery Truck		Modeled Outside CalEEMod	
Roller/Compactor	1	8	Roller
Soil Mixing Drill Rig	1	8	Bore/Drill Rig
Sweeper Truck	1	8	Sweeper/Scrubber
Vibratory Plate Compactor	1	8	Plate Compactor
Vibratory Rammer	1	8	Plate Compactor
Water Truck	1	8	Water
Pneumatic Tools	1	8	Air Compressor

1. Assumptions
b. Schedule

Lift Station No. 2 Construction Equipment Estimate

Schedule by Main Phase	Compiled Schedule	Start	End
Emergency Intertie Valve Vault and Piping	9/6/2021 - 11/19/2021	9/6/2021	11/19/2021
Overhead Power Relocation	10/4/2021 - 11/19/2021	10/4/2021	11/19/2021
Sewer Grinder Vault	11/1/2021 - 7/4/2023	11/1/2021	7/4/2023
Storm Drain and Creek Outlet Structure	11/22/2021 - 2/26/2024	11/22/2021	2/6/2024
Country Club Drive Relocation	1/24/2022 - 4/8/2022	1/24/2022	4/8/2022
Temporary Sewer Relocation	4/11/2022 - 4/27/2022	4/11/2022	4/27/2022
New Lift Station Site Demolition	4/11/2022 - 4/20/2022	4/11/2022	4/20/2022
Wetwell/Drywell Construction	5/23/2022 - 3/17/2023	5/23/2022	3/17/2023
Perimeter Wall Construction	3/13/2023 - 5/30/2023	3/13/2023	5/30/2023
2'X3' RCB Construction	6/5/2023 - 7/10/2023	6/5/2023	7/10/2023
Slope Grading Behind Perimeter Wall	8/7/2023 - 9/15/2023	8/7/2023	9/15/2023
Influent Sewer Extension	8/15/2022 - 1/13/2023	8/15/2022	1/13/2023
Generator Building Construction	4/3/2023 - 7/10/2023	4/3/2023	7/10/2023
Pump Building Construction	4/24/2023 - 7/28/2023	4/24/2023	7/28/2023
Generator Building Mechanical	8/14/2023 - 8/15/2023	8/14/2023	8/15/2023
Pump Building Mechanical	7/3/2023	7/3/2023	7/3/2023
Scrubber Installation	5/23/2023 - 3/11/2024	5/23/2023	3/11/2024
Miscellaneous Pump Station Site Improvements	10/6/2023 - 4/26/2024	10/6/2023	4/26/2024
Existing Pump Station Demolition	1/22/2024 - 2/16/2024	1/22/2024	2/16/2024
Miscellaneous Items	9/6/2021 - 2/16/2024	9/6/2021	2/16/2024

Lift Station No. 2 Construction Equipment Estimate

				Schedule Dates
A	**Emergency Intertie Valve Vault and Piping**			**9/6/2021 - 11/19/2021**
1	Dewatering Wells	Drill Rig	2 Days	9/6/21-9/7/21
2	Vault and Tapping Sleeve Excavation /Shoring	Excavator	10 Days	9/8/21-9/14/21;9/30/21-10/8/21
		Haul Truck	4 Trips	9/8/21-10/8/21
3	Line Stop Installation/Removal	Delivery Truck	2 Trips	9/16/21;10/29/21
		Boom Truck	8 hours	9/16/21;10/29/21
4	Subgrade Preparation	Excavator	1 Day	10/13/2021
		Material Truck	1 trip	10/13/2021
		Vibratory Plate Compactor	2 Days	10/14/21-10/15/21
5	Vault Delivery and Placement	Delivery Truck with Boom	1Trip/1Day	10/18/2021
6	Vault Backfill and Compaction	Excavator	5 Days	11/1/21-11/5/21
		Vibratory Rammer	5 Days	11/1/21-11/6/21
7	Valve and Pipe Installation	Excavator	15 days	10/25/21-10/28/21;11/8/21-11/19/21
		Vibratory Rammer	5 Days	11/14/21-11/19/21
		Haul Truck	2 Trips	11/11/21;11/16/21
		Crane	1 Day	10/25/2021
B	**Overhead Power Relocation**			**10/4/2021 - 11/19/2021**
8	Power Conduit installation	Industrial Saw	1 Day	10/4/2021
		Backhoe	10 days	10/5/21-10/18/21
		Vibratory Rammer	5 Days	10/12/21-10/18/21
		Haul Truck	1 Trip	10/11/2021
9	Communication Conduit Installation	Industrial Saw	1 Day	10/25/2021
		Backhoe	15 days	10/26/21-11/15/21
		Vibratory Rammer	5 Days	10/13/21-10/16/21;11/16/21-11/17/21
		Haul Truck	1 Trip	11/8/2021
10	Pavement Repair	Material Truck	2 trips	11/18/21-11/19/21
		Roller/Compactor	2 Day	11/18/21-11/19/21
C	**Sewer Grinder Vault**			**11/1/2021 - 7/4/2023**
11	Dewatering Wells	Drill Rig	1 Day	11/1/2021
12	Excavation/Shoring	Excavator	10 Days	11/4/21-11/17/21
		Haul Truck	12 Trips	11/8/21-11/19/21
13	Subgrade Preparation	Excavator	1 Day	11/18/2021
		Material Truck	1 Trip	11/18/2019
		Vibratory Plate Compactor	2 Days	11/18/21-11/19/21
14	Vault Base Forming/Rebar/Concrete	Excavator	5 Days	11/22/2021-11/26/21
		Concrete Truck	3 Trips	11/29/2021
		Concrete Pumper Truck	1 Day	11/29/2021
15	Vault Placement/Backfill	Delivery Truck with Boom	1 Day/1Trip	12/20/2021
		Excavator	3 Days	1/5/22-1/7/22
		Vibratory Rammer	3 Days	1/5/22-1/7/22
16	Set Grinder	Crane	1 Day	7/24/2023
D	**Storm Drain and Creek Outlet Structure**			**11/22/2021 - 2/26/2024**
17	Outlet Structure Excavation	Excavator	3 Days	11/22/21-11/24/21
		Haul Truck	3 Trips	11/22/21-11/24/21
18	Subgrade Preparation	Excavator	1 Day	
		Vibratory Plate Compactor	1 Day	11/30/2021
19	Outlet Structure Forming/Rebar/Concrete	Excavator	3 Days	12/1/21-12/3/21
		Concrete Truck	2 Trips	11/29/21,12/6/21
		Concrete Pumper Truck	2 Days	11/29/21;12/6/21
20	Outlet Structure Backfill	Excavator	1 Day	12/20/2021
		Vibratory Rammer	1 Day	12/20/2021

Lift Station No. 2 Construction Equipment Estimate

				Schedule Dates
A	**Emergency Intertie Valve Vault and Piping**			**9/6/2021 - 11/19/2021**
21	Rip Rap Excavation and Placement	Excavator	3 Days	12/21/21-12/24/21
		Haul Truck	3 Trips	12/21/2021-12/23/21
		Rock Delivery Truck	5 Trips	12/24/2021
22	4'x1' RCB Excavation	Backhoe	2 Days	12/27/21-12/28/21
		Haul Truck	4 Trips	12/27/21-12/28/21
23	4'x1' RCB Subgrade Preparation	Backhoe	1 Day	12/29/2021
		Vibratory Plate Compactor	1 Day	12/29/2021
24	4'x1' RCB Concrete	Concrete Truck	2 Trips	1/10/2022
25	42 inch RCP Excavation	Excavator	2 Day	12/7/21-12/8/21
		Haul Truck	1 Trip	12/8/2021
26	42 inch RCP Subgrade Preparation	Excavator	1 Day	12/9/2021
		Vibratory Plate Compactor	1 Day	12/9/2021
27	42 Inch RCP Installation/Backfill	Excavator	2 Days	12/10/21;12/23/21
		Vibratory Rammer	1 Days	12/23/2021
28	Catch Basin Excavation	Backhoe	1 Day	2/12/2024
		Haul Truck	1 Trip	2/12/2024
29	Catch Basin Concrete	Concrete Truck	1 Trip	2/19/2024
30	Catch Basin Backfill	Backhoe	1 Day	2/26/2024
		Vibratory Rammer	1 Day	2/26/2024
31	18 Inch RCP Excavation	Industrial Saw	1 Day	5/1/2023
		Backhoe	5 Days	5/2/23-5/8/23
		Haul Truck	1 Trip	5/8/2023
32	18 Inch RCP Subgrade Preparation	Backhoe	2 Days	5/15/23-5/16/23
		Vibratory Plate Compactor	2 Days	5/15/23-5/16/23
33	18 Inch RCP Installation Backfill	Backhoe	13 Days	5/17/23-5/26/23;5/29/23-6/2/23
		Vibratory Rammer	5 Days	5/29/23-6/2/23
E	**Country Club Drive Relocation**			**1/24/2022 - 4/8/2022**
34	Road Grading/Subgrade Preparation	Grader	10 Days	1/24/2022-2/4/22
		Loader	10 Days	1/24/2022-2/4/22
		Haul Truck	3 Trips	1/24/2022-2/4/22
		Water Truck	15 Days	1/24/2022-2/11/22
		Roller/Compactor	5 Days	2/7/22-2/11/22
35	Road Base and Compaction	Material Truck	30 Trips	2/14/22-2/25/22
		Roller/Compactor	10 Days	2/14/22-2/25/22
36	AC Pavement	Material Truck	18 Trips	2/28/22-3/25/22
		Paver	20 Days	2/28/22-3/25/22
		Roller/Compactor	20 Days	2/28/22-3/25/22
37	DG Pedestrian Path	Material Truck	2 Trips	3/28/2022;4/4/22
		Vibratory Plate Compactor	10 Days	3/28/22-4/8/22
		Backhoe	10 Days	3/28/22-4/8/22
F	**Temporary Sewer Relocation**			**4/11/2022 - 4/27/2022**
38	Manhole Excavation/Shoring	Backhoe	1 Day	4/11/2022
		Haul Truck	2 Trips	4/11/2022
39	Manhole Base Placement	Concrete Truck	1 Trip	4/12/2022
40	Manhole Riser Placement/Backfill	Delivery Truck with Boom	1Trip/1Day	4/14/2022
		Backhoe	2 Days	4/14/22-4/15/22
		Vibratory Rammer	2 Days	4/14/22-4/15/22
41	8-inch Pipe Excavation/Shoring	Backhoe	2 Days	4/18/22-4/19/22
		Haul Truck	1 Trip	4/19/2022
42	8-inch Pipe Subgrade Preparation	Backhoe	1 Day	4/20/2022
		Vibratory Plate Compactor	1 Day	4/20/2022

Lift Station No. 2 Construction Equipment Estimate

				Schedule Dates
A	**Emergency Intertie Valve Vault and Piping**			**9/6/2021 - 11/19/2021**
43	8-inch Pipe Installation/Backfill	Backhoe	5 Day	4/21/22-4/27/22
		Vibratory Rammer	3 Day	4/25/22-4/27/22
G	**New Lift Station Site Demolition**			**4/11/2022 - 4/20/2022**
44	Building Demolition	Concrete Saw	5 Days	4/11/22-4/15/22
		Dozer	5 Days	4/11/22-4/15/22
		Backhoe	5 Days	4/11/22-4/15/22
		Water Truck	5 Days	4/11/22-4/15/22
		Haul Truck	3 Trips	4/12/22;4/14/22;4/15/22
45	Pipe Removals	Backhoe	3 Days	4/18/22-4/20/22
H	**Wetwell/Drywell Construction**			**5/23/2022 - 3/17/2023**
46	Deep Soil Mixing	Soil Mixing Drill Rig	35 Days	5/23/22-7/8/22
		Concrete Truck	200 Trips	5/23/22-7/8/22
		Loader	35 Days	5/23/22-7/8/22
		Haul Truck	130 Trips	5/23/22-7/8/22
47	Dewatering Wells	Drill Rig	3 Days	6/16/22-6/18/22
48	Excavation/Shoring	Excavator	25 Days	7/11/22-8/12/22
		Haul Truck	500 Trips	7/11/22-8/12/22
		Crane	10 Days	7/25/22-8/12/22
49	Subgrade Preparation	Bobcat Loader	5 days	8/15/22-8/19/22
		Material Truck	12 Trips	8/15/22-8/19/22
		Roller/Compactor	5 Days	8/15/22-8/19/22
50	Wetwell/Drywell Base Construction	Crane	10 Days	8/22/22-9/2/22
		Concrete Truck	35 Trips	9/2/2022
		Concrete Pumper Truck	1 Day	9/2/2022
51	Wetwell/Drywell Wall Construction	Crane	30 Days	9/6/22-9/19/22; **9/28/22**;9/29/22-10/13/22; **10/20/22-10/21/22** ;11/7/22-11/11/22**; 11/14/22;** 12/5/22
		Concrete Truck	62 Trips	9/26/22-9/27/22; 10/24/22-10/25/22; 11/14/22-11/15/22
		Concrete Pumper Truck	6 Days	9/26/22-9/27/22; 10/24/22-10/25/22; 11/14/22-11/15/22
52	Wetwell/Drywell Deck Construction	Crane	30 Days	11/21/22-12/2/22; 12/19/22-1/3/23; 1/16/23-1/27/23
		Concrete Truck	25 Trips	12/12/22; 1/9/23; 2/6/23
		Concrete Pumper Truck	3 Days	12/12/22; 1/9/23; 2/6/23
53	Backfill/Compaction	Loader	20 Days	3/6/23-3/31/23
		Vibratory Plate Compactor	20 Days	3/6/23-3/31/23
		Material Truck	250 Trips	3/6/23-3/31/23
54	Stair Installation	Crane	5 Days	3/13/23-3/17/23
I	**Perimeter Wall Construction**			**3/13/2023 - 5/30/2023**
55	Footing Excavation	Backhoe	5 Days	3/13/23-3/17/23
56	Footing Construction	Concrete Truck	6 Trips	4/3/2023
		Concrete Pumper Truck	1 Day	4/3/2023
57	Wall Construction	Crane	30 Days	4/4/23-4/13/23; 4/18/23-4/27/23; 5/2/23-5/11/23; 5/16/23-5/17/23; 5/22/23-5/23/23; 5/29/23-5/30/23
		Concrete Truck	10 Trips	4/17/23; 5/1/23; 5/16/23
		Concrete Pumper Truck	3 Days	4/17/23; 5/1/23; 5/16/23

Lift Station No. 2 Construction Equipment Estimate

				Schedule Dates
A	**Emergency Intertie Valve Vault and Piping**			**9/6/2021 - 11/19/2021**
J	**2'X3' RCB Construction**			**6/5/2023 - 7/10/2023**
58	Fill to Subgrade	Material Truck	25 Trips	6/5/23-6/9/23
		Loader	5 Days	6/5/23-6/9/23
		Roller/Compactor	5 Days	6/5/23-6/9/23
		Water Truck	5 Days	6/5/23-6/9/23
59	2'x3' RCB Construction	Concrete Truck	5 Trips	6/26/23; 7/10/23
		Concrete Pumper Truck	2 Days	6/26/23; 7/10/23
K	**Slope Grading Behind Perimeter Wall**			**8/7/2023 - 9/15/2023**
60	Fill Placement	Material Truck	20 Trips	8/7/23-8/11/23
		Dozer	5 Days	9/4/23-9/8/23
		Backhoe	5 Days	8/7/23-8/11/23
61	Rip Rap Placement	Material Truck	2 Trips	9/1/2023
		Concrete Truck	1 Trip	9/1/2023
		Excavator	2 Days	8/28/23; 9/1/23
62	Concrete Maintenance Walk	Concrete Truck	2 Trips	9/22/2023
		Backhoe	5 Day	9/11/23-/9/15/23
L	**Influent Sewer Extension**			**8/15/2022 - 1/13/2023**
63	Dewatering Wells	Drill Rig	5 Days	8/15/22-8/19/22
64	Jacking and Receiving Pit Excavation/shoring	Excavator	15 days	8/29/22-9/16/22
		Haul Truck	20 trips	8/29/22-9/16/22
		Crane	5 Days	9/12/22-9/16/22
65	Jack and Bore 42 inch Casing	Jacking Machine	10 Days	9/19/22-9/23/22; 9/26/22-9/30/22
		Boom Truck	10 Days	9/19/22-9/23/22; 9/26/22-9/30/22
		Haul Truck	4 Trips	9/19/22-9/23/22
		Concrete Truck	1 Trip	9/30/2022
		Concrete Pumper Truck	1 Day	9/30/2022
66	Jacking Pit Backfill/Compaction	Excavator	10 Days	10/24/22-11/4/22
		Vibratory Plate Compactor	10 Days	10/24/22-11/4/22
		Material Truck	20 Trips	10/24/22-11/4/22
67	Sewer Open Cut Excavation	Excavator	10 Days	10/3/22-10/4/22; 11/7/22-11/9/22; 11/28/22-11/30/22;12/29/22-12/30/22
		Haul Truck	12 trips	10/3/22-10/4/22; 11/7/22-11/9/22; 11/28/22-11/30/22;12/29/22-12/30/22
68	Pipe Subgrade Preparation	Excavator	4 Days	10/5/22 ;11/10/22; 12/1/22; 1/3/23
		Vibratory Plate Compactor	4 Days	10/6/22; 11/11/22; 12/2/22; 1/4/23
69	Pipe Installation/Backfill	Excavator	15 Days	11/14/22-11/18/22; 11/21/22-11/22/22; 12/5/22-12/7/22; 12/8/22-12/9/22; 1/4/23-1/6/23
		Material Truck	10 Trips	11/21/22; 12/8/22;1/6/23
		Vibratory Plate Compactor	5 Days	11/21/22-11/22/22; 12/8/22-12/9/22; 1/6/23
		Concrete Truck	3 Trips	11/18/22; 12/7/22; 1/6/22
		Concrete Pumper Truck	3 Days	11/18/22; 12/7/22; 1/6/22
70	Manhole Excavation/Shoring	Excavator	5 Days	12/12/22-12/16/22
		Haul Truck	5 Trips	12/12/22-12/16/22
71	Manhole Base Placement	Concrete Truck	2 Trips	12/28/2022
		Concrete Pumper Truck	1 Day	12/28/2022
72	Manhole Shaft Placement/Backfill	Delivery Truck with Boom	1 Day	1/9/2023
		Material Truck	3 Trips	1/11/23-1/13/23
		Vibratory Rammer	2 Days	1/11/23-1/13/23
		Excavator	3 Days	1/11/23-1/13/23

Lift Station No. 2 Construction Equipment Estimate

				Schedule Dates
A	**Emergency Intertie Valve Vault and Piping**			**9/6/2021 - 11/19/2021**
M	**Generator Building Construction**			**4/3/2023 - 7/10/2023**
73	Footing and Equipment Bases	Backhoe	7 Days	4/3/23-4/7/23;4/11/23-4/12/23
		Haul Truck	1 Trip	4/12/2023
		Concrete Truck	4 Trips	4/10/2023;4/19/23
74	Masonry Building and Roof	Forklift	35 Days	5/28/23-6/23/23
		Concrete Truck	2 Trips	6/26/2023
		Concrete Pumper Truck	1 Day	6/26/2023
		Crane	5 Days	7/3/23-7/10/23
N	**Pump Building Construction**			**4/24/2023 - 7/28/2023**
75	Masonry Building and Roof	Forklift	30 Days	4/24/23-6/9/23
		Concrete Truck	2 Trips	6/27/2023
		Concrete Pumper Truck	1 Day	6/27/2023
		Crane	5 Days	7/24/23-7/28/23
O	**Generator Building Mechanical**			**8/14/2023 - 8/15/2023**
76	Set Generator and Diesel Pump	Crane	2 Days	8/14/2023;8/15/23
P	**Pump Building Mechanical**			**7/3/2023**
77	Set Pumps	Crane	1 Day	7/3/2023
Q	**Scrubber Installation**			**5/23/2023 - 3/11/2024**
78	Foul Air Piping Excavation	Backhoe	6 Days	5/2/23-5/9/23
		Industrial Saw	1 Day	5/1/2023
		Haul Truck	3 Trips	5/3/23; 5/5/23; 5/10/23
79	Foul Air Piping Subgrade Preparation	Backhoe	2 Days	5/15/23-5/16/23
		Vibratory Rammer	2 Days	5/15/23-5/16/23
80	Piping Installation/Backfill	Backhoe	10 Days	5/17/23-5/30/23
		Vibratory Rammer	3 Days	5/29/23-5/31/23
		Material Truck	2 Trips	5/29/23-5/31/23
81	Scrubber Installation	Concrete Truck	1 Trip	2/23/2024
		Crane	1 Day	3/11/2024

Lift Station No. 2 Construction Equipment Estimate

				Schedule Dates
A	**Emergency Intertie Valve Vault and Piping**			**9/6/2021 - 11/19/2021**
R	**Miscellaneous Pump Station Site Improvements**			**10/6/2023 - 4/26/2024**
82	Yard Paving	Concrete Truck	3 Trips	10/6/2023
		Concrete Pumper Truck	1 Day	10/6/2023
		Vibratory Plate Compactor	3 Days	9/26/23-9/29/23
83	Yard Piping	Backhoe	10 Days	7/4/23-8/4/23
		Vibratory Rammer	10 Days	7/4/23-8/4/23
84	Drain Boxes/Radio Antenna	Backhoe	10 Days	6/5/23-6/16/23
		Concrete Truck	1 Trip	6/19/2023
		Crane	1 Day	6/23/2023
85	Curb and Gutter/Drive Way	Backhoe	5 Days	2/8/24-2/12/24
		Vibratory Plate Compactor	2 Days	2/14/24-2/15/24
		Concrete Truck	1 Trip	3/1/2024
86	Existing Pump Station Site Paving	Backhoe	2 Days	3/26/24-3/27/24
		Material Truck	3 Trips	4/1/2024
		Roller/Compactor	1 Day	4/1/2024
87	Old Country Club Drive Repaving	Loader	5 Days	3/26/24-3/30/24
		Haul Truck	15 Trips	3/26/24-3/30/24
		Material Truck	15 Trips	4/24/24-4/26/24
		Paver	3 Days	4/24/24-4/26/24
		Roller/Compactor	3 Days	4/24/24-4/26/24
S	**Existing Pump Station Demolition**			**1/22/2024 - 2/16/2024**
88	Remove Buildings/Paving and Structure 6 feet BGS	Compressor	10 days	1/22/24-2/2/24
		Crane	3 days	1/17/24-1/19/24
		Excavator	5 Days	1/22/24-1/26/24
		Loader	5 Days	2/12/24-2/16/24
		Haul Truck	10 trips	1/22/24-2/2/24
		Material Truck	3 Trips	2/12/24-2/16/24
		Concrete Truck	1 Trip	2/7/2024
89	**Miscellaneous Items**			**9/6/2021 - 2/16/2024**
	Street Sweeping	Sweeper Truck	360 Days	9/6/21-2/16/24
	Dust Control	Water Truck	360 Days	9/6/21-2/16/24
	Pneumatic Tools	Compressor	360 Days	9/6/21-2/16/24

1. Assumptions
c. Equipment List

Lift Station No. 2 Construction Equipment Estimate

					Total Round Trips		
				Days	Haul Trips	Concrete	Vendor
Emergency Intertie Valve Vault and Piping							
Dewatering Wells	Drill Rig	2 Days	Days	2			
Vault and Tapping Sleeve Excavation /Shoring	Excavator	10 Days	Days	10	4		
	Haul Truck	4 Trips	Trips				
Line Stop Installation/Removal	Delivery Truck	2 Trips	Trips	1			2
	Boom Truck	8 hours	Trips				
Subgrade Preparation	Excavator	1 Day	Days	2			1
	Material Truck	1 trip	Trips				
	Vibratory Plate Compactor	2 Days	Days				
Vault Delivery and Placement	Delivery Truck with Boom	1Trip/1Day	trips/day	1			1
Vault Backfill and Compaction	Excavator	5 Days	Days	5			
	Vibratory Rammer	5 Days	Days				
Valve and Pipe Installation	Excavator	15 days	Days	15	2		
	Vibratory Rammer	5 Days	Days				
	Haul Truck	2 Trips	Trips				
	Crane	1 Day	Days				
Overhead Power Relocation							
Power Conduit installation	Industrial Saw	1 Day	Days	10	1		
	Backhoe	10 days	Days				
	Vibratory Rammer	5 Days	Days				
	Haul Truck	1 Trip	Trips				
Communication Conduit Installation	Industrial Saw	1 Day	Days	15	1		
	Backhoe	15 days	Days				
	Vibratory Rammer	5 Days	Days				
	Haul Truck	1 Trip	Trips				
Pavement Repair	Material Truck	2 trips	Trips	2			2
	Roller/Compactor	2 Day	Days				
Sewer Grinder Vault							
Dewatering Wells	Drill Rig	1 Day	Days	1			
Excavation/Shoring	Excavator	10 Days	Days	10	12		
	Haul Truck	12 Trips	Trips				
Subgrade Preparation	Excavator	1 Day	Days	2			1
	Material Truck	1 Trip	Trips				
	Vibratory Plate Compactor	2 Days	Days				
Vault Base Forming/Rebar/Concrete	Excavator	5 Days	Days	5		3	
	Concrete Truck	3 Trips	Trips				
	Concrete Pumper Truck	1 Day	Days				
Vault Placement/Backfill	Delivery Truck with Boom	1 Day/1Trip	trips/day	3			1
	Excavator	3 Days	Days				
	Vibratory Rammer	3 Days	Days				
Set Grinder	Crane	1 Day	Days	1			

Lift Station No. 2 Construction Equipment Estimate

					Total Round Trips		
				Days	Haul Trips	Concrete	Vendor
Storm Drain and Creek Outlet Structure							
Outlet Structure Excavation	Excavator	3 Days	Days	3	3		
	Haul Truck	3 Trips	Trips				
Subgrade Preparation	Excavator	1 Day	Days	1			
	Vibratory Plate Compactor	1 Day	Days				
Outlet Structure Forming/Rebar/Concrete	Excavator	3 Days	Days	3		2	
	Concrete Truck	2 Trips	Trips				
	Concrete Pumper Truck	2 Days	Days				
Outlet Structure Backfill	Excavator	1 Day	Days	1			
	Vibratory Rammer	1 Day	Days				
Rip Rap Excavation and Placement	Excavator	3 Days	Days	3	3		5
	Haul Truck	3 Trips	Trips				
	Rock Delivery Truck	5 Trips	Trips				
4'x1' RCB Excavation	Backhoe	2 Days	Days	2	4		
	Haul Truck	4 Trips	Trips				
4'x1' RCB Subgrade Preparation	Backhoe	1 Day	Days	1			
	Vibratory Plate Compactor	1 Day	Days				
4'x1' RCB Concrete	Concrete Truck	2 Trips	Trips	1		2	
42 inch RCP Excavation	Excavator	2 Day	Days	2	1		
	Haul Truck	1 Trip	Trips				
42 inch RCP Subgrade Preparation	Excavator	1 Day	Days	1			
	Vibratory Plate Compactor	1 Day	Days				
42 Inch RCP Installation/Backfill	Excavator	2 Days	Days	2			
	Vibratory Rammer	1 Days	Days				
Catch Basin Excavation	Backhoe	1 Day	Days	1	1		
	Haul Truck	1 Trip	Trips				
Catch Basin Concrete	Concrete Truck	1 Trip	Trips	1		1	
Catch Basin Backfill	Backhoe	1 Day	Days	1			
	Vibratory Rammer	1 Day	Days				
18 Inch RCP Excavation	Industrial Saw	1 Day	Days	5	1		
	Backhoe	5 Days	Days				
	Haul Truck	1 Trip	Trips				
18 Inch RCP Subgrade Preparation	Backhoe	2 Days	Days	2			
	Vibratory Plate Compactor	2 Days	Days				
18 Inch RCP Installation Backfill	Backhoe	13 Days	Days	13			
	Vibratory Rammer	5 Days	Days				
Country Club Drive Relocation							
Road Grading/Subgrade Preparation	Grader	10 Days	Days	15	3		
	Loader	10 Days	Days				
	Haul Truck	3 Trips	Trips				
	Water Truck	15 Days	Days				
	Roller/Compactor	5 Days	Days				

Lift Station No. 2 Construction Equipment Estimate

					Total Round Trips		
				Days	Haul Trips	Concrete	Vendor
Road Base and Compaction	Material Truck	30 Trips	Trips	10			30
	Roller/Compactor	10 Days	Days				
AC Pavement	Material Truck	18 Trips	Trips	20			18
	Paver	20 Days	Days				
	Roller/Compactor	20 Days	Days				
DG Pedestrian Path	Material Truck	2 Trips	Trips	10			2
	Vibratory Plate Compactor	10 Days	Days				
	Backhoe	10 Days	Days				
Temporary Sewer Relocation							
Manhole Excavation/Shoring	Backhoe	1 Day	Days	1	2		
	Haul Truck	2 Trips	Trips				
Manhole Base Placement	Concrete Truck	1 Trip	Trips	1		1	
Manhole Riser Placement/Backfill	Delivery Truck with Boom	1Trip/1Day	trips/day	2			1
	Backhoe	2 Days	Days				
	Vibratory Rammer	2 Days	Days				
8-inch Pipe Excavation/Shoring	Backhoe	2 Days	Days	2	1		
	Haul Truck	1 Trip	Trips				
8-inch Pipe Subgrade Preparation	Backhoe	1 Day	Days	1			
	Vibratory Plate Compactor	1 Day	Days				
8-inch Pipe Installation/Backfill	Backhoe	5 Day	Days	5			
	Vibratory Rammer	3 Day	Days				
New Lift Station Site Demolition							
Building Demolition	Concrete Saw	5 Days	Days	5	3		
	Dozer	5 Days	Days				
	Backhoe	5 Days	Days				
	Water Truck	5 Days	Days				
	Haul Truck	3 Trips	Trips				
Pipe Removals	Backhoe	3 Days	Days	3			
Wetwell/Drywell Construction							
Deep Soil Mixing	Soil Mixing Drill Rig	35 Days	Days	35	130	200	
	Concrete Truck	200 Trips	Trips				
	Loader	35 Days	Days				
	Haul Truck	130 Trips	Trips				
Dewatering Wells	Drill Rig	3 Days	Days	3			
Excavation/Shoring	Excavator	25 Days	Days	25	500		
	Haul Truck	500 Trips	Trips				
	Crane	10 Days	Days				
Subgrade Preparation	Bobcat Loader	5 days	Days	5			12
	Material Truck	12 Trips	Trips				
	Roller/Compactor	5 Days	Days				
Wetwell/Drywell Base Construction	Crane	10 Days	Days	10		35	
	Concrete Truck	35 Trips	Trips				
	Concrete Pumper Truck	1 Day	Days				

Lift Station No. 2 Construction Equipment Estimate

					Total Round Trips		
				Days	**Haul Trips**	**Concrete**	**Vendor**
Wetwell/Drywell Wall Construction	Crane	30 Days	Days	30		62	
	Concrete Truck	62 Trips	Trips				
	Concrete Pumper Truck	6 Days	Days				
Wetwell/Drywell Deck Construction	Crane	30 Days	Days	30		25	
	Concrete Truck	25 Trips	Trips				
	Concrete Pumper Truck	3 Days	Days				
Backfill/Compaction	Loader	20 Days	Days	20			250
	Vibratory Plate Compactor	20 Days	Days				
	Material Truck	250 Trips	Trips				
Stair Installation	Crane	5 Days	Days	5			
Perimeter Wall Construction							
Footing Excavation	Backhoe	5 Days	Days	5			
Footing Construction	Concrete Truck	6 Trips	Trips	1		6	
	Concrete Pumper Truck	1 Day	Days				
Wall Construction	Crane	30 Days	Days	30		10	
	Concrete Truck	10 Trips	Trips				
	Concrete Pumper Truck	3 Days	Days				
2'X3' RCB Construction							
Fill to Subgrade	Material Truck	25 Trips	Trips	5			25
	Loader	5 Days	Days				
	Roller/Compactor	5 Days	Days				
	Water Truck	5 Days	Days				
2'x3' RCB Construction	Concrete Truck	5 Trips	Trips	2		5	
	Concrete Pumper Truck	2 Days	Days				
Slope Grading Behind Perimeter Wall							
Fill Placement	Material Truck	20 Trips	Trips	5			20
	Dozer	5 Days	Days				
	Backhoe	5 Days	Days				
Rip Rap Placement	Material Truck	2 Trips	Trips	2		1	2
	Concrete Truck	1 Trip	Trips				
	Excavator	2 Days	Days				
Concrete Maintenance Walk	Concrete Truck	2 Trips	Trips	5		2	
	Backhoe	5 Day	Days				
Influent Sewer Extension							
Dewatering Wells	Drill Rig	5 Days	Days	5			
Jacking and Receiving Pit Excavation/shoring	Excavator	15 days	Days	15	20		
	Haul Truck	20 trips	Trips				
	Crane	5 Days	Days				
Jack and Bore 42 inch Casing	Jacking Machine	10 Days	Days	10	4	1	
	Boom Truck	10 Days	Days				
	Haul Truck	4 Trips	Trips				
	Concrete Truck	1 Trip	Trips				
	Concrete Pumper Truck	1 Day	Days				

Lift Station No. 2 Construction Equipment Estimate

					Total Round Trips		
				Days	**Haul Trips**	**Concrete**	**Vendor**
Jacking Pit Backfill/Compaction	Excavator	10 Days	Days	10			20
	Vibratory Plate Compactor	10 Days	Days				
	Material Truck	20 Trips	Trips				
Sewer Open Cut Excavation	Excavator	10 Days	Days	10	12		
	Haul Truck	12 trips	Trips				
Pipe Subgrade Preparation	Excavator	4 Days	Days	4			
	Vibratory Plate Compactor	4 Days	Days				
Pipe Installation/Backfill	Excavator	15 Days	Days	15		3	10
	Material Truck	10 Trips	Trips				
	Vibratory Plate Compactor	5 Days	Days				
	Concrete Truck	3 Trips	Trips				
	Concrete Pumper Truck	3 Days	Days				
Manhole Excavation/Shoring	Excavator	5 Days	Days	5	5		
	Haul Truck	5 Trips	Trips				
Manhole Base Placement	Concrete Truck	2 Trips	Trips	1		2	
	Concrete Pumper Truck	1 Day	Days				
Manhole Shaft Placement/Backfill	Delivery Truck with Boom	1 Day	Days	3			3
	Material Truck	3 Trips	Trips				
	Vibratory Rammer	2 Days	Days				
	Excavator	3 Days	Days				
Generator Building Construction							
Footing and Equipment Bases	Backhoe	7 Days	Days	7	1	4	
	Haul Truck	1 Trip	Trips				
	Concrete Truck	4 Trips	Trips				
Masonry Building and Roof	Forklift	35 Days	Days	35		2	
	Concrete Truck	2 Trips	Trips				
	Concrete Pumper Truck	1 Day	Days				
	Crane	5 Days	Days				
Pump Building Construction							
Masonry Building and Roof	Forklift	30 Days	Days	30		2	
	Concrete Truck	2 Trips	Trips				
	Concrete Pumper Truck	1 Day	Days				
	Crane	5 Days	Days				
Generator Building Mechanical							
Set Generator and Diesel Pump	Crane	2 Days	Days	2			
Pump Building Mechanical							
Set Pumps	Crane	1 Day	Days	1			
Scrubber Installation							
Foul Air Piping Excavation	Backhoe	6 Days	Days	6	3		
	Industrial Saw	1 Day	Days				
	Haul Truck	3 Trips	Trips				

Lift Station No. 2 Construction Equipment Estimate

				Total Round Trips			
				Days	**Haul Trips**	**Concrete**	**Vendor**
Foul Air Piping Subgrade Preparation	Backhoe	2 Days	Days	2			
	Vibratory Rammer	2 Days	Days				
Piping Installation/Backfill	Backhoe	10 Days	Days	10			2
	Vibratory Rammer	3 Days	Days				
	Material Truck	2 Trips	Trips				
Scrubber Installation	Concrete Truck	1 Trip	Trips	1		1	
	Crane	1 Day	Days				
Miscellaneous Pump Station Site Improvements							
Yard Paving	Concrete Truck	3 Trips	Trips	3		3	
	Concrete Pumper Truck	1 Day	Days				
	Vibratory Plate Compactor	3 Days	Days				
Yard Piping	Backhoe	10 Days	Days	10			
	Vibratory Rammer	10 Days	Days				
Drain Boxes/Radio Antenna	Backhoe	10 Days	Days	10		1	
	Concrete Truck	1 Trip	Trips				
	Crane	1 Day	Days				
Curb and Gutter/Drive Way	Backhoe	5 Days	Days	5		1	
	Vibratory Plate Compactor	2 Days	Days				
	Concrete Truck	1 Trip	Trips				
Existing Pump Station Site Paving	Backhoe	2 Days	Days	2			3
	Material Truck	3 Trips	Trips				
	Roller/Compactor	1 Day	Days				
Old Country Club Drive Repaving	Loader	5 Days	Days	5	15		15
	Haul Truck	15 Trips	Trips				
	Material Truck	15 Trips	Trips				
	Paver	3 Days	Days				
	Roller/Compactor	3 Days	Days				
Existing Pump Station Demolition							
Remove Buildings/Paving and Structure 6 feet BGS	Compressor	10 days	Days	10	10	1	3
	Crane	3 days	Days				
	Excavator	5 Days	Days				
	Loader	5 Days	Days				
	Haul Truck	10 trips	Trips				
	Material Truck	3 Trips	Trips				
	Concrete Truck	1 Trip	Trips				
Miscellaneous Items							
Street Sweeping	Sweeper Truck	360 Days	Days	360			
Dust Control	Water Truck	360 Days	Days	360			
Pneumatic Tools	Compressor	360 Days	Days	360			

Lift Station No. 2 Construction Equipment Estimate

		Daily Round Trips		
		Haul Trips	**Concrete**	**Vendor**
Emergency Intertie Valve Vault and Piping				
Dewatering Wells	Drill Rig			
Vault and Tapping Sleeve Excavation /Shoring	Excavator	2		
	Haul Truck			
Line Stop Installation/Removal	Delivery Truck			2
	Boom Truck			
Subgrade Preparation	Excavator			1
	Material Truck			
	Vibratory Plate Compactor			
Vault Delivery and Placement	Delivery Truck with Boom			1
Vault Backfill and Compaction	Excavator			
	Vibratory Rammer			
Valve and Pipe Installation	Excavator	2		
	Vibratory Rammer			
	Haul Truck			
	Crane			
Overhead Power Relocation				
Power Conduit installation	Industrial Saw	1		
	Backhoe			
	Vibratory Rammer			
	Haul Truck			
Communication Conduit Installation	Industrial Saw	1		
	Backhoe			
	Vibratory Rammer			
	Haul Truck			
Pavement Repair	Material Truck			2
	Roller/Compactor			
Sewer Grinder Vault				
Dewatering Wells	Drill Rig			
Excavation/Shoring	Excavator	2		
	Haul Truck			
Subgrade Preparation	Excavator			1
	Material Truck			
	Vibratory Plate Compactor			
Vault Base Forming/Rebar/Concrete	Excavator		3	
	Concrete Truck			
	Concrete Pumper Truck			
Vault Placement/Backfill	Delivery Truck with Boom			1
	Excavator			
	Vibratory Rammer			
Set Grinder	Crane			

Lift Station No. 2 Construction Equipment Estimate

		Daily Round Trips		
		Haul Trips	**Concrete**	**Vendor**
Storm Drain and Creek Outlet Structure				
Outlet Structure Excavation	Excavator	1		
	Haul Truck			
Subgrade Preparation	Excavator			
	Vibratory Plate Compactor			
Outlet Structure Forming/Rebar/Concrete	Excavator		1	
	Concrete Truck			
	Concrete Pumper Truck			
Outlet Structure Backfill	Excavator			
	Vibratory Rammer			
Rip Rap Excavation and Placement	Excavator	1		3
	Haul Truck			
	Rock Delivery Truck			
4'x1' RCB Excavation	Backhoe	2		
	Haul Truck			
4'x1' RCB Subgrade Preparation	Backhoe			
	Vibratory Plate Compactor			
4'x1' RCB Concrete	Concrete Truck		2	
42 inch RCP Excavation	Excavator	1		
	Haul Truck			
42 inch RCP Subgrade Preparation	Excavator			
	Vibratory Plate Compactor			
42 Inch RCP Installation/Backfill	Excavator			
	Vibratory Rammer			
Catch Basin Excavation	Backhoe	1		
	Haul Truck			
Catch Basin Concrete	Concrete Truck		1	
Catch Basin Backfill	Backhoe			
	Vibratory Rammer			
18 Inch RCP Excavation	Industrial Saw	1		
	Backhoe			
	Haul Truck			
18 Inch RCP Subgrade Preparation	Backhoe			
	Vibratory Plate Compactor			
18 Inch RCP Installation Backfill	Backhoe			
	Vibratory Rammer			
Country Club Drive Relocation				
Road Grading/Subgrade Preparation	Grader	1		
	Loader			
	Haul Truck			
	Water Truck			
	Roller/Compactor			

Lift Station No. 2 Construction Equipment Estimate

		Daily Round Trips		
		Haul Trips	**Concrete**	**Vendor**
Road Base and Compaction	Material Truck			3
	Roller/Compactor			
AC Pavement	Material Truck			1
	Paver			
	Roller/Compactor			
DG Pedestrian Path	Material Truck			2
	Vibratory Plate Compactor			
	Backhoe			
Temporary Sewer Relocation				
Manhole Excavation/Shoring	Backhoe	2		
	Haul Truck			
Manhole Base Placement	Concrete Truck		1	
Manhole Riser Placement/Backfill	Delivery Truck with Boom			1
	Backhoe			
	Vibratory Rammer			
8-inch Pipe Excavation/Shoring	Backhoe	1		
	Haul Truck			
8-inch Pipe Subgrade Preparation	Backhoe			
	Vibratory Plate Compactor			
8-inch Pipe Installation/Backfill	Backhoe			
	Vibratory Rammer			
New Lift Station Site Demolition				
Building Demolition	Concrete Saw	3		
	Dozer			
	Backhoe			
	Water Truck			
	Haul Truck			
Pipe Removals	Backhoe			
Wetwell/Drywell Construction				
Deep Soil Mixing	Soil Mixing Drill Rig	4	6	
	Concrete Truck			
	Loader			
	Haul Truck			
Dewatering Wells	Drill Rig			
Excavation/Shoring	Excavator	20		
	Haul Truck			
	Crane			
Subgrade Preparation	Bobcat Loader			3
	Material Truck			
	Roller/Compactor			
Wetwell/Drywell Base Construction	Crane		35	
	Concrete Truck			
	Concrete Pumper Truck			

Lift Station No. 2 Construction Equipment Estimate

		Daily Round Trips		
		Haul Trips	**Concrete**	**Vendor**
Wetwell/Drywell Wall Construction	Crane		11	
	Concrete Truck			
	Concrete Pumper Truck			
Wetwell/Drywell Deck Construction	Crane		9	
	Concrete Truck			
	Concrete Pumper Truck			
Backfill/Compaction	Loader			13
	Vibratory Plate Compactor			
	Material Truck			
Stair Installation	Crane			
Perimeter Wall Construction				
Footing Excavation	Backhoe			
Footing Construction	Concrete Truck		6	
	Concrete Pumper Truck			
Wall Construction	Crane		4	
	Concrete Truck			
	Concrete Pumper Truck			
2'X3' RCB Construction				
Fill to Subgrade	Material Truck			5
	Loader			
	Roller/Compactor			
	Water Truck			
2'x3' RCB Construction	Concrete Truck		3	
	Concrete Pumper Truck			
Slope Grading Behind Perimeter Wall				
Fill Placement	Material Truck			4
	Dozer			
	Backhoe			
Rip Rap Placement	Material Truck		1	2
	Concrete Truck			
	Excavator			
Concrete Maintenance Walk	Concrete Truck		2	
	Backhoe			
Influent Sewer Extension				
Dewatering Wells	Drill Rig			
Jacking and Receiving Pit Excavation/shoring	Excavator	5		
	Haul Truck			
	Crane			
Jack and Bore 42 inch Casing	Jacking Machine	4	1	
	Boom Truck			
	Haul Truck			
	Concrete Truck			
	Concrete Pumper Truck			

Lift Station No. 2 Construction Equipment Estimate

		Daily Round Trips		
		Haul Trips	**Concrete**	**Vendor**
Jacking Pit Backfill/Compaction	Excavator			2
	Vibratory Plate Compactor			
	Material Truck			
Sewer Open Cut Excavation	Excavator	2		
	Haul Truck			
Pipe Subgrade Preparation	Excavator			
	Vibratory Plate Compactor			
Pipe Installation/Backfill	Excavator		1	2
	Material Truck			
	Vibratory Plate Compactor			
	Concrete Truck			
	Concrete Pumper Truck			
Manhole Excavation/Shoring	Excavator	1		
	Haul Truck			
Manhole Base Placement	Concrete Truck		2	
	Concrete Pumper Truck			
Manhole Shaft Placement/Backfill	Delivery Truck with Boom			1
	Material Truck			
	Vibratory Rammer			
	Excavator			
Generator Building Construction				
Footing and Equipment Bases	Backhoe	1	4	
	Haul Truck			
	Concrete Truck			
Masonry Building and Roof	Forklift		2	
	Concrete Truck			
	Concrete Pumper Truck			
	Crane			
Pump Building Construction				
Masonry Building and Roof	Forklift		2	
	Concrete Truck			
	Concrete Pumper Truck			
	Crane			
Generator Building Mechanical				
Set Generator and Diesel Pump	Crane			
Pump Building Mechanical				
Set Pumps	Crane			
Scrubber Installation				
Foul Air Piping Excavation	Backhoe	2		
	Industrial Saw			
	Haul Truck			

Lift Station No. 2 Construction Equipment Estimate

		Daily Round Trips		
		Haul Trips	**Concrete**	**Vendor**
Foul Air Piping Subgrade Preparation	Backhoe			
	Vibratory Rammer			
Piping Installation/Backfill	Backhoe			2
	Vibratory Rammer			
	Material Truck			
Scrubber Installation	Concrete Truck		1	
	Crane			
Miscellaneous Pump Station Site Improvements				
Yard Paving	Concrete Truck		3	
	Concrete Pumper Truck			
	Vibratory Plate Compactor			
Yard Piping	Backhoe			
	Vibratory Rammer			
Drain Boxes/Radio Antenna	Backhoe		1	
	Concrete Truck			
	Crane			
Curb and Gutter/Drive Way	Backhoe		1	
	Vibratory Plate Compactor			
	Concrete Truck			
Existing Pump Station Site Paving	Backhoe			3
	Material Truck			
	Roller/Compactor			
Old Country Club Drive Repaving	Loader	3		3
	Haul Truck			
	Material Truck			
	Paver			
	Roller/Compactor			
Existing Pump Station Demolition				
Remove Buildings/Paving and Structure 6 feet BGS	Compressor	2	1	3
	Crane			
	Excavator			
	Loader			
	Haul Truck			
	Material Truck			
	Concrete Truck			
Miscellaneous Items				
Street Sweeping	Sweeper Truck			
Dust Control	Water Truck			
Pneumatic Tools	Compressor			

2. Emissions
a. Regional Construction Emissions

Lift Station
Maximum Daily Regional Construction Emissions

CalEEMod 2016.3.2 Title: Lift Station Date: 12/12/2020

EMFAC 2017 Title: Lift Station Date: 12/12/2020

Unmitigated - Construction

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
		Max Daily (lbs/day)					
A	Emergency Intertie Valve Vault and Piping	1	8	6	0	0	0
B	Overhead Power Relocation	1	11	13	0	2	1
C	Sewer Grinder Vault	1	9	8	0	0	0
D	Storm Drain and Creek Outlet Structure	1	8	8	0	1	0
E	Country Club Drive Relocation	1	12	7	0	1	1
F	Temporary Sewer Relocation	1	8	6	0	1	0
G	New Lift Station Site Demolition	2	19	12	0	2	1
H	Wetwell/Drywell Construction	2	27	13	0	2	1
I	Perimeter Wall Construction	1	12	7	0	1	0
J	2'X3' RCB Construction	1	7	6	0	1	0
K	Slope Grading Behind Perimeter Wall	1	14	7	0	1	1
L	Influent Sewer Extension	2	17	12	0	1	1
M	Generator Building Construction	54	12	7	0	1	1
N	Pump Building Construction	54	12	7	0	1	1
O	Generator Building Mechanical	0	5	2	0	0	0
P	Pump Building Mechanical	0	5	2	0	0	0
Q	Scrubber Installation	1	6	6	0	1	0
R	Miscellaneous Pump Station Site Improvements	1	13	13	0	2	1
S	Existing Pump Station Demolition	1	13	11	0	1	1
T	Miscellaneous Items	1	4	4	0	0	0
	Max Construction Phase	54	27	13	0	2	1
	Maximum Overlap	110	46	31	0	4	2
	Max Daily w/ Overlaps	110	46	31	0	4	2
	Threshold	**75**	100	550	150	150	55
	Exceed Threshold?	**Yes**	No	No	No	No	No
	Mitigated Daily W/Overlaps	57					
	Threshold	75					
	Exceed Threshold?	No					

Lift Station
Maximum Daily Regional Construction Emissions

Unmitigated - Construction (Overlap Scenarios)

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
		Max Daily (lbs/day)					
1	1,T	0.82	7.42	6.63	0.02	0.44	0.35
2	2,8,T	1.47	13.24	14.77	0.03	1.40	0.78
3	3,9,T	1.82	15.71	14.87	0.04	1.44	0.84
4	4,8,9,T	2.11	18.37	21.22	0.04	2.24	1.16
5	5,8,T	1.82	15.85	14.89	0.04	1.45	0.85
6	6,9,11,T	1.73	15.53	16.76	0.04	1.48	0.86
7	6,9,12,T	1.74	15.65	18.37	0.04	1.57	0.90
8	7,9,12,T	2.20	21.49	20.82	0.04	1.86	1.11
9	7,10,12,19,T	2.63	26.01	23.66	0.06	1.56	1.15
10	14,17,T	1.71	15.96	15.67	0.04	0.96	0.71
11	14,19,T	2.32	21.23	19.31	0.05	1.17	0.89
12	18,T	0.83	6.81	8.08	0.02	0.48	0.38
13	25,T	0.81	7.05	8.03	0.02	0.49	0.38
14	26,T	0.83	6.81	8.08	0.02	0.48	0.38
15	15,20,T	1.73	14.98	15.50	0.04	0.88	0.69
16	21,27,T	1.15	10.95	12.27	0.03	0.77	0.54
17	22,T	0.79	7.29	7.23	0.02	1.01	0.47
18	23,T	0.79	6.55	7.06	0.01	0.96	0.45
19	24,T	0.60	5.39	4.93	0.01	0.41	0.29
20	16,75,83,84,T	3.02	30.95	21.05	0.05	3.07	1.55
21	34,T	1.57	15.96	11.70	0.42	1.42	0.79
22	35,T	0.75	6.32	6.43	0.01	0.47	0.37
23	36,T	1.00	8.92	9.38	0.02	0.61	0.49
24	37,T	0.79	6.55	7.06	0.01	0.96	0.45
25	38,44,T	2.63	26.01	18.94	0.04	2.55	1.41
26	39,44,T	2.42	23.62	16.47	0.04	1.93	1.23
27	40,44,T	3.25	31.03	22.59	0.05	2.73	1.59
28	41,45,T	0.96	8.69	9.37	0.02	1.59	0.64
29	42,45,T	2.63	25.27	18.78	0.04	2.50	1.40
30	43,T	0.79	6.55	7.06	0.01	0.96	0.45
31	46,47,T	1.48	17.31	13.27	0.05	1.59	0.77
32	48,T	1.62	21.32	14.05	0.05	1.46	0.83
33	49,63,T	1.12	10.89	10.35	0.03	0.71	0.53
34	50,64,T	3.05	41.36	23.96	0.10	2.68	1.48
35	51,64,T	2.56	29.47	19.05	0.06	1.79	1.16
36	51,65,T	2.57	24.80	20.71	0.06	1.40	1.04

Lift Station
Maximum Daily Regional Construction Emissions

Unmitigated - Construction (Overlap Scenarios)

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
		Max Daily (lbs/day)					
37	51,66,T	2.10	22.74	16.42	0.05	1.43	0.93
38	66,69,T	1.77	15.69	15.93	0.04	0.95	0.71
39	51,67,68,69,T	3.27	34.07	27.66	0.08	2.06	1.37
40	51,69,70,T	2.98	31.15	23.75	0.07	1.83	1.23
41	52,69,T	2.68	27.50	19.73	0.06	1.55	1.08
42	52,67,70,T	2.29	24.78	19.33	0.06	1.47	1.00
43	52,68,T	2.04	21.39	15.68	0.05	1.27	0.87
44	68,69,T	1.75	15.33	15.73	0.04	0.92	0.70
45	52,72,T	2.65	26.83	19.38	0.06	1.48	1.06
46	53,54,55,T	1.51	15.60	12.73	0.03	2.00	0.90
47	56,73,T	1.58	17.02	12.81	0.04	1.59	0.78
48	57,73,T	1.96	20.88	14.41	0.04	1.73	0.94
49	31,57,75,78,T	56.59	40.16	31.11	0.08	3.66	1.97
50	32,57,75,79,T	56.21	36.39	27.23	0.07	3.41	1.78
51	33,57,74,75,80,T	109.57	45.75	31.09	0.09	4.25	2.14
52	58,74,75,84,T	109.19	42.26	29.42	0.08	4.10	2.06
53	59,74,83,T	55.18	25.60	18.73	0.05	2.31	1.21
54	75,83,T	54.51	18.84	14.41	0.04	1.97	0.98
55	60,T	1.83	17.97	11.28	0.02	1.54	0.96
56	61,T	0.83	7.40	8.23	0.02	0.52	0.39
57	62,T	0.79	7.29	7.23	0.02	1.01	0.47
58	76,T	0.98	9.25	6.53	0.02	0.55	0.45
59	83,T	0.79	6.55	7.06	0.01	0.96	0.45
60	88,T	1.77	17.36	15.53	0.03	1.57	0.92
61	28,85,88,T	2.23	22.41	20.89	0.04	2.91	1.32
62	29,81,88,T	2.23	23.21	18.06	0.04	1.90	1.14
63	30,T	0.79	6.55	7.06	0.01	0.96	0.45
64	86,87	1.12	12.80	12.69	0.02	1.85	0.79
	Max:	109.57	45.75	31.11	0.42	4.25	2.14
		51	51	49	21	51	51

Mitigated ROG

51	33,57,74,75,80,T	57.05	Mitigation:	Architectural Coating for each
52	58,74,75,84,T	56.67		

Lift Station
Maximum Daily Regional Construction Emissions

Emissions by Vehicle Type

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	CO2e
		Max Daily (lbs/day)						(lbs/day) / (MT/Yr)
Tractor/Loader/Backhoe		0.1873	1.8958	2.2602	0.00311	0.5837	0.1743	303.333
Skidsteer Loader		0.0755	1.0035	1.39	0.00207	0.0408	0.0376	201.8171
Offhighway Truck		0.6059	5.2634	3.6044	0.0132	0.1931	0.1776	1288.8605
Air Compressor		0.2919	2.0358	2.4234	0.00396	0.1255	0.1255	375.9079
Concrete/Industrial Saw		0.3848	3.0379	3.6741	0.00626	0.1731	0.1731	593.525
Crane		0.4129	4.8493	1.9829	0.00577	0.1969	0.1811	563.2565
Rubber Tired Dozer		1.0464	10.9713	4.0378	0.00853	0.5325	0.4899	834.0418
Bore/Drill Rig		0.2582	3.0228	2.074	0.00943	0.0916	0.0843	919.4369
Excavator		0.2292	2.1534	3.2718	0.00517	0.1044	0.0961	504.2363
Forklift		0.1293	1.1791	1.1679	0.00153	0.4766	0.1194	149.2277
Grader		0.453	5.9246	1.7672	0.39952	0.2301	0.1727	646.8725
Other Construction equipment	Jacking Machine	0.4199	4.3809	4.0551	0.00618	0.2291	0.2108	603.3638
Paver		0.2462	2.595	2.9048	0.0047	0.1254	0.1154	458.7402
Roller		0.1895	1.9242	1.8804	0.00262	0.1176	0.1082	256.1433
Sweeper/Scrubber		0.1143	1.0286	0.9755	0.00127	0.0757	0.0696	124.0834
Plate Compactor		0.0401	0.2513	0.2105	0.00049	0.00977	0.00977	34.5689
Water	Water Truck	0.1515	1.3158	0.9011	0.0033	0.0483	0.0444	322.2151
Haul	Haul	0.0206625	0.495765259	0.209898186	0.001429472	0.039473449	0.013969665	0.076351863
Vendor	Vendor	0.00898961	0.176561068	0.096143431	0.000514978	0.01526616	0.005585989	0.026605779
Worker	Worker	0.00076162	0.002987399	0.041958557	0.000139584	0.01649658	0.004429946	0.006450018
Arch. Coating	1 day AC	52.5238	0	0	0	0	0	0
Arch. Coating	5 days AC	10.50476						

Lift Station
Maximum Daily Regional Construction Emissions

	Onsite, Haul and Vendor Emissions by Phase	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	CO2e
		Max Daily (lbs/day)						(lbs/day)
A	**Emergency Intertie Valve Vault and Piping**	**0.73**	**8.26**	**6.05**	**0.01**	**0.46**	**0.33**	**1288.95**
1	Dewatering Wells	0.26	3.03	2.16	0.01	0.12	0.09	919.45
2	Vault and Tapping Sleeve Excavation /Shoring	0.27	3.15	3.78	0.01	0.22	0.13	504.40
3	Line Stop Installation/Removal	0.63	5.62	3.88	0.01	0.26	0.20	1288.93
4	Subgrade Preparation	0.28	2.59	3.70	0.01	0.18	0.12	538.85
5	Vault Delivery and Placement	0.63	5.77	3.90	0.01	0.27	0.20	1288.95
6	Vault Backfill and Compaction	0.27	2.41	3.61	0.01	0.16	0.12	538.82
7	Valve and Pipe Installation	0.73	8.26	6.05	0.01	0.46	0.33	1102.24
B	**Overhead Power Relocation**	**1.27**	**11.39**	**13.05**	**0.02**	**1.74**	**0.78**	**1863.06**
8	Power Conduit installation	0.64	5.69	6.52	0.01	0.87	0.39	931.53
9	Communication Conduit Installation	0.64	5.69	6.52	0.01	0.87	0.39	931.53
10	Pavement Repair	0.21	2.28	2.16	0.00	0.18	0.13	256.21
C	**Sewer Grinder Vault**	**0.90**	**8.91**	**7.63**	**0.02**	**0.47**	**0.33**	**1827.76**
11	Dewatering Wells	0.26	3.03	2.16	0.01	0.12	0.09	**919.45**
12	Excavation/Shoring	0.27	3.15	3.78	0.01	0.22	0.13	504.40
13	Subgrade Preparation	0.28	2.59	3.70	0.01	0.18	0.12	**538.85**
14	Vault Base Forming/Rebar/Concrete	0.90	8.91	7.63	0.02	0.47	0.33	1793.35
15	Vault Placement/Backfill	0.90	8.17	7.42	0.02	0.40	0.31	1827.76
16	Set Grinder	0.41	4.86	2.07	0.01	0.23	0.19	563.27
D	**Storm Drain and Creek Outlet Structure**	**0.86**	**7.92**	**7.80**	**0.02**	**0.85**	**0.37**	**1793.19**
17	Outlet Structure Excavation	0.25	2.66	3.57	0.01	0.18	0.12	504.33
18	Subgrade Preparation	0.27	2.41	3.61	0.01	0.16	0.12	538.82
19	Outlet Structure Forming/Rebar/Concrete	0.86	7.92	7.21	0.02	0.39	0.30	1793.19
20	Outlet Structure Backfill	0.27	2.41	3.61	0.01	0.16	0.12	538.82
21	Rip Rap Excavation and Placement	0.31	4.14	4.20	0.01	0.30	0.16	504.55
22	4'x1' RCB Excavation	0.23	2.89	2.76	0.01	0.70	0.21	303.50
23	4'x1' RCB Subgrade Preparation	0.23	2.16	2.60	0.00	0.64	0.20	337.92
24	4'x1' RCB Concrete	0.04	0.99	0.46	0.00	0.10	0.03	0.16
25	42 inch RCP Excavation	0.25	2.66	3.57	0.01	0.18	0.12	504.33
26	42 inch RCP Subgrade Preparation	0.27	2.41	3.61	0.01	0.16	0.12	538.82
27	42 Inch RCP Installation/Backfill	0.27	2.41	3.61	0.01	0.16	0.12	538.82
28	Catch Basin Excavation	0.21	2.40	2.55	0.00	0.66	0.20	**303.42**
29	Catch Basin Concrete	0.02	0.50	0.25	0.00	0.06	0.02	0.08
30	Catch Basin Backfill	0.23	2.16	2.60	0.00	0.64	0.20	337.92
31	18 Inch RCP Excavation	0.60	5.44	6.27	0.01	0.85	0.37	896.95
32	18 Inch RCP Subgrade Preparation	0.23	2.16	2.60	0.00	0.64	0.20	337.92
33	18 Inch RCP Installation Backfill	0.23	2.16	2.60	0.00	0.64	0.20	337.92

Lift Station
Maximum Daily Regional Construction Emissions

	Onsite, Haul and Vendor Emissions by Phase	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	CO2e
		Max Daily (lbs/day)						(lbs/day)
E	**Country Club Drive Relocation**	**1.01**	**11.57**	**7.23**	**0.41**	**1.10**	**0.54**	**1528.67**
34	Road Grading/Subgrade Preparation	1.01	11.57	7.23	0.41	1.10	0.54	1528.67
35	Road Base and Compaction	0.19	1.93	1.96	0.00	0.15	0.12	256.16
36	AC Pavement	0.44	4.53	4.91	0.01	0.29	0.24	714.90
37	DG Pedestrian Path	0.23	2.16	2.60	0.00	0.64	0.20	337.92
F	**Temporary Sewer Relocation**	**0.86**	**7.92**	**6.41**	**0.02**	**0.88**	**0.39**	**1626.86**
38	Manhole Excavation/Shoring	0.23	2.89	2.76	0.01	0.70	0.21	303.50
39	Manhole Base Placement	0.02	0.50	0.29	0.00	0.07	0.02	0.09
40	Manhole Riser Placement/Backfill	0.86	7.92	6.41	0.02	0.88	0.39	1626.86
41	8-inch Pipe Excavation/Shoring	0.21	2.40	2.55	0.00	0.66	0.20	303.42
42	8-inch Pipe Subgrade Preparation	0.23	2.16	2.60	0.00	0.64	0.20	337.92
43	8-inch Pipe Installation/Backfill	0.23	2.16	2.60	0.00	0.64	0.20	337.92
G	**New Lift Station Site Demolition**	**1.84**	**18.72**	**11.71**	**0.03**	**1.54**	**0.95**	**2053.38**
44	Building Demolition	1.84	18.72	11.71	0.03	1.54	0.95	2053.38
45	Pipe Removals	0.19	1.90	2.34	0.00	0.62	0.18	303.35
H	**Wetwell/Drywell Construction**	**1.74**	**27.47**	**13.06**	**0.07**	**1.82**	**0.86**	**2143.02**
46	Deep Soil Mixing	0.66	9.89	6.60	0.03	1.14	0.42	1223.56
47	Dewatering Wells	0.26	3.03	2.20	0.01	0.14	0.10	919.46
48	Excavation/Shoring	1.06	16.93	9.58	0.04	1.14	0.57	1069.04
49	Subgrade Preparation	0.29	3.47	3.68	0.01	0.25	0.18	458.06
50	Wetwell/Drywell Base Construction	1.74	27.47	13.06	0.07	1.82	0.86	1854.81
51	Wetwell/Drywell Wall Construction	1.25	15.58	8.15	0.04	0.92	0.54	1853.00
52	Wetwell/Drywell Deck Construction	1.21	14.58	7.60	0.03	0.79	0.50	1852.82
53	Backfill/Compaction	0.35	4.45	3.85	0.01	0.84	0.27	338.27
54	Stair Installation	0.41	4.86	2.07	0.01	0.23	0.19	563.27
I	**Perimeter Wall Construction**	**1.10**	**12.10**	**6.55**	**0.03**	**0.62**	**0.43**	**1852.44**
55	Footing Excavation	0.19	1.90	2.34	0.00	0.62	0.18	303.35
56	Footing Construction	0.73	8.24	4.95	0.02	0.46	0.27	1289.33
57	Wall Construction	1.10	12.10	6.55	0.03	0.60	0.43	1852.44
J	**2'X3' RCB Construction**	**0.67**	**6.76**	**5.69**	**0.02**	**0.89**	**0.37**	**1289.10**
58	Fill to Subgrade	0.58	6.03	5.69	0.01	0.89	0.37	881.85
59	2'x3' RCB Construction	0.67	6.76	4.32	0.02	0.34	0.23	1289.10
K	**Slope Grading Behind Perimeter Wall**	**1.27**	**13.58**	**6.81**	**0.01**	**1.23**	**0.70**	**1137.50**
60	Fill Placement	1.27	13.58	6.81	0.01	1.23	0.70	1137.50
61	Rip Rap Placement	0.27	3.01	3.76	0.01	0.21	0.13	504.38
62	Concrete Maintenance Walk	0.23	2.89	2.76	0.01	0.70	0.21	303.50

Lift Station
Maximum Daily Regional Construction Emissions

	Onsite, Haul and Vendor Emissions by Phase	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	CO2e
		Max Daily (lbs/day)						(lbs/day)
L	**Influent Sewer Extension**	**1.74**	**17.40**	**12.48**	**0.04**	**0.88**	**0.65**	**3181.49**
63	Dewatering Wells	0.26	3.03	2.20	0.01	0.14	0.10	919.46
64	Jacking and Receiving Pit Excavation/shoring	0.75	9.49	6.43	0.02	0.55	0.36	1067.89
65	Jack and Bore 42 inch Casing	1.74	17.40	12.48	0.04	0.88	0.65	3181.49
66	Jacking Pit Backfill/Compaction	0.29	2.77	3.80	0.01	0.19	0.13	538.88
67	Sewer Open Cut Excavation	0.27	3.15	3.78	0.01	0.22	0.13	504.40
68	Pipe Subgrade Preparation	0.27	2.41	3.61	0.01	0.16	0.12	538.82
69	Pipe Installation/Backfill	0.92	8.53	7.66	0.02	0.44	0.33	1827.82
70	Manhole Excavation/Shoring	0.25	2.65	3.48	0.01	0.14	0.11	504.31
71	Manhole Base Placement	0.65	6.26	4.11	0.02	0.31	0.21	1289.03
72	Manhole Shaft Placement/Backfill	0.89	7.85	7.31	0.02	0.37	0.30	1827.71
M	**Generator Building Construction**	**1.19**	**12.30**	**7.34**	**0.02**	**1.01**	**0.52**	**2001.52**
73	Footing and Equipment Bases	0.29	4.38	3.39	0.01	0.81	0.25	303.73
74	Masonry Building and Roof	1.19	12.30	7.34	0.02	1.01	0.52	2001.52
N	**Pump Building Construction**	**1.19**	**12.30**	**7.34**	**0.02**	**1.01**	**0.52**	**2001.52**
75	Masonry Building and Roof	1.19	12.30	7.34	0.02	1.01	0.52	2001.52
O	**Generator Building Mechanical**	**0.41**	**4.86**	**2.07**	**0.01**	**0.23**	**0.19**	**563.27**
76	Set Generator and Diesel Pump	0.41	4.86	2.07	0.01	0.23	0.19	563.27
P	**Pump Building Mechanical**	**0.41**	**4.86**	**2.07**	**0.01**	**0.23**	**0.19**	**563.27**
77	Set Pumps	0.41	4.86	2.07	0.01	0.23	0.19	563.27
Q	**Scrubber Installation**	**0.62**	**5.93**	**6.48**	**0.01**	**0.89**	**0.39**	**897.03**
78	Foul Air Piping Excavation	0.62	5.93	6.48	0.01	0.89	0.39	897.03
79	Foul Air Piping Subgrade Preparation	0.23	2.16	2.60	0.00	0.64	0.20	337.92
80	Piping Installation/Backfill	0.25	2.51	2.79	0.01	0.67	0.21	337.97
81	Scrubber Installation	0.44	5.35	2.28	0.01	0.27	0.20	563.35
R	**Miscellaneous Pump Station Site Improvements**	**1.12**	**12.80**	**12.69**	**0.02**	**1.85**	**0.79**	**1578.13**
82	Yard Paving	0.71	7.01	4.57	0.02	0.37	0.24	1323.68
83	Yard Piping	0.23	2.16	2.60	0.00	0.64	0.20	337.92
84	Drain Boxes/Radio Antenna	0.62	7.25	4.58	0.01	0.87	0.38	866.69
85	Curb and Gutter/Drive Way	0.25	2.65	2.81	0.01	0.68	0.21	338.00
86	Existing Pump Station Site Paving	0.41	4.36	4.55	0.01	0.80	0.31	559.58
87	Old Country Club Drive Repaving	0.72	8.44	8.13	0.02	1.06	0.47	1018.55
S	**Existing Pump Station Demolition**	**1.21**	**12.97**	**11.07**	**0.02**	**1.26**	**0.66**	**1747.07**
88	Remove Buildings/Paving and Structure 6 feet BGS	1.21	12.97	11.07	0.02	1.26	0.66	1747.07

Lift Station
Maximum Daily Regional Construction Emissions

	Onsite, Haul and Vendor Emissions by Phase	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	CO2e
		Max Daily (lbs/day)						(lbs/day)
T	**Miscellaneous Items**	**0.56**	**4.39**	**4.47**	**0.01**	**0.32**	**0.26**	**822.23**
	Street Sweeping	0.11	1.03	0.98	0.00	0.08	0.07	124.08
	Dust Control	0.15	1.32	0.90	0.00	0.05	0.04	322.22
	Pneumatic Tools	0.29	2.04	2.42	0.00	0.13	0.13	375.91
	Worker	0.00	0.01	0.17	0.00	0.07	0.02	0.03

Lift Station
Maximum Daily Regional Construction Emissions

		Days	trips	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	NBio- CO2	Total CO2	CH4	N2O	CO2e
				Max Daily (lbs/day)						(lbs/day - Onsite Equipment); MT/yr (On Road Equipment)				
Emergency Intertie Valve Vault and Piping														
Dewatering Wells	Bore/Drill Rig	2		0.26	3.02	2.07	0.01	0.09	0.08	912.06	912.06	0.30	0.00	919.44
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Vault and Tapping Sleeve Excavation /Shoring	Excavator	10		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Haul		2	0.04	0.99	0.42	0.00	0.08	0.03	0.00	0.00	0.00	0.00	0.15
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Line Stop Installation/Removal	Vendor	1	2	0.02	0.35	0.19	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.05
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Subgrade Preparation	Excavator	2		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Vendor		1	0.01	0.18	0.10	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.03
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Vault Delivery and Placement	Haul	1	1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Vault Backfill and Compaction	Excavator	5		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Valve and Pipe Installation	Excavator	15		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Haul		2	0.04	0.99	0.42	0.00	0.08	0.03	0.00	0.00	0.00	0.00	0.15
	Crane			0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Worker		4	0.00	0.01	0.17	0.00	0.07	0.02	0.00	0.00	0.00	0.00	0.03
Overhead Power Relocation														
Power Conduit installation	Concrete/Industrial Sav	10		0.38	3.04	3.67	0.01	0.17	0.17	592.66	592.66	0.03	0.00	593.53
	Tractor/Loader/Backhoe			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Haul		1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Worker		4	0.00	0.01	0.17	0.00	0.07	0.02	0.00	0.00	0.00	0.00	0.03
Communication Conduit Installation	Concrete/Industrial Sav	15		0.38	3.04	3.67	0.01	0.17	0.17	592.66	592.66	0.03	0.00	593.53
	Tractor/Loader/Backhoe			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Haul		1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Worker		4	0.00	0.01	0.17	0.00	0.07	0.02	0.00	0.00	0.00	0.00	0.03

Lift Station
Maximum Daily Regional Construction Emissions

		Days	trips	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	NBio- CO2	Total CO2	CH4	N2O	CO2e
				Max Daily (lbs/day)						(lbs/day - Onsite Equipment); MT/yr (On Road Equipment)				
Pavement Repair	Vendor	2	2	0.02	0.35	0.19	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.05
	Roller			0.19	1.92	1.88	0.00	0.12	0.11	254.09	254.09	0.08	0.00	256.14
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Sewer Grinder Vault														
Dewatering Wells	Bore/Drill Rig	1		0.26	3.02	2.07	0.01	0.09	0.08	912.06	912.06	0.30	0.00	919.44
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Excavation/Shoring	Excavator	10		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Haul		2	0.04	0.99	0.42	0.00	0.08	0.03	0.00	0.00	0.00	0.00	0.15
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Subgrade Preparation	Excavator	2		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Vendor		1	0.01	0.18	0.10	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.03
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Vault Base Forming/Rebar/Concrete	Excavator	5		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Haul		3	0.06	1.49	0.63	0.00	0.12	0.04	0.00	0.00	0.00	0.00	0.23
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Vault Placement/Backfill	Haul	3	1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Excavator			0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Set Grinder	Crane	1		0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Storm Drain and Creek Outlet Structure														
Outlet Structure Excavation	Excavator	3		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Haul		1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Subgrade Preparation	Excavator	1		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Outlet Structure Forming/Rebar/Concrete	Excavator	3		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Haul		1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02

Lift Station
Maximum Daily Regional Construction Emissions

			Days	trips	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	NBio- CO2	Total CO2	CH4	N2O	CO2e
					Max Daily (lbs/day)						(lbs/day - Onsite Equipment); MT/yr (On Road Equipment)				
Outlet Structure Backfill	Excavator	1			0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Plate Compactor				0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker			3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Rip Rap Excavation and Placement	Excavator	3			0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Haul			1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Haul	0		3	0.06	1.49	0.63	0.00	0.12	0.04	0.00	0.00	0.00	0.00	0.23
	Worker			2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
4'x1' RCB Excavation	Tractor/Loader/Backho	2			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Haul			2	0.04	0.99	0.42	0.00	0.08	0.03	0.00	0.00	0.00	0.00	0.15
	Worker			2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
4'x1' RCB Subgrade Preparation	Tractor/Loader/Backho	1			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor				0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker			3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
4'x1' RCB Concrete	Haul	1		2	0.04	0.99	0.42	0.00	0.08	0.03	0.00	0.00	0.00	0.00	0.15
	Worker			1	0.00	0.00	0.04	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01
42 inch RCP Excavation	Excavator	2			0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Haul			1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Worker			2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
42 inch RCP Subgrade Preparation	Excavator	1			0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Plate Compactor				0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker			3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
42 Inch RCP Installation/Backfill	Excavator	2			0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Plate Compactor				0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker			3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Catch Basin Excavation	Tractor/Loader/Backho	1			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Haul			1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Worker			2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Catch Basin Concrete	Haul	1		1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Worker			1	0.00	0.00	0.04	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01
Catch Basin Backfill	Tractor/Loader/Backho	1			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor				0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker			3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
18 Inch RCP Excavation	Concrete/Industrial Sav	5			0.38	3.04	3.67	0.01	0.17	0.17	592.66	592.66	0.03	0.00	593.53
	Tractor/Loader/Backhoe				0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Haul			1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Worker			3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02

Lift Station
Maximum Daily Regional Construction Emissions

		Days	trips	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	NBio- CO2	Total CO2	CH4	N2O	CO2e
				Max Daily (lbs/day)						(lbs/day - Onsite Equipment); MT/yr (On Road Equipment)				
18 Inch RCP Subgrade Preparation	Tractor/Loader/Backho	2		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
18 Inch RCP Installation Backfill	Tractor/Loader/Backho	13		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Country Club Drive Relocation														
Road Grading/Subgrade Preparation	Grader	15		0.45	5.92	1.77	0.40	0.23	0.17	641.68	641.68	0.21	0.00	646.87
	Tractor/Loader/Backhoe			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Haul		1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Water			0.15	1.32	0.90	0.00	0.05	0.04	319.63	319.63	0.10	0.00	322.22
	Roller			0.19	1.92	1.88	0.00	0.12	0.11	254.09	254.09	0.08	0.00	256.14
	Worker		5	0.00	0.01	0.21	0.00	0.08	0.02	0.00	0.00	0.00	0.00	0.03
Road Base and Compaction	Vendor	10		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Roller			0.19	1.92	1.88	0.00	0.12	0.11	254.09	254.09	0.08	0.00	256.14
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
AC Pavement	Vendor	20		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paver			0.25	2.60	2.90	0.00	0.13	0.12	455.06	455.06	0.15	0.00	458.74
	Roller			0.19	1.92	1.88	0.00	0.12	0.11	254.09	254.09	0.08	0.00	256.14
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
DG Pedestrian Path	Vendor	10		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Tractor/Loader/Backhoe			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Temporary Sewer Relocation														
Manhole Excavation/Shoring	Tractor/Loader/Backho	1		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Haul		2	0.04	0.99	0.42	0.00	0.08	0.03	0.00	0.00	0.00	0.00	0.15
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Manhole Base Placement	Haul	1	1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Manhole Riser Placement/Backfill	Haul	2	1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Tractor/Loader/Backhoe			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
8-inch Pipe Excavation/Shoring	Tractor/Loader/Backho	2		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Haul		1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
8-inch Pipe Subgrade Preparation	Tractor/Loader/Backho	1		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02

Lift Station
Maximum Daily Regional Construction Emissions

		Days	trips	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	NBio- CO2	Total CO2	CH4	N2O	CO2e
				Max Daily (lbs/day)						(lbs/day - Onsite Equipment); MT/yr (On Road Equipment)				
8-inch Pipe Installation/Backfill	Tractor/Loader/Backho	5		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
New Lift Station Site Demolition														
Building Demolition	Concrete/Industrial Sav	5		0.38	3.04	3.67	0.01	0.17	0.17	592.66	592.66	0.03	0.00	593.53
	Rubber Tired Dozer			1.05	10.97	4.04	0.01	0.53	0.49	827.35	827.35	0.27	0.00	834.04
	Tractor/Loader/Backhoe			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Water			0.15	1.32	0.90	0.00	0.05	0.04	319.63	319.63	0.10	0.00	322.22
	Haul		3	0.06	1.49	0.63	0.00	0.12	0.04	0.00	0.00	0.00	0.00	0.23
	Worker		5	0.00	0.01	0.21	0.00	0.08	0.02	0.00	0.00	0.00	0.00	0.03
Pipe Removals	Tractor/Loader/Backho	3		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Wetwell/Drywell Construction														
Deep Soil Mixing	Bore/Drill Rig	35		0.26	3.02	2.07	0.01	0.09	0.08	912.06	912.06	0.30	0.00	919.44
	Haul		4	0.08	1.98	0.84	0.01	0.16	0.06	0.00	0.00	0.00	0.00	0.31
	Tractor/Loader/Backhoe			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Haul		6	0.12	2.97	1.26	0.01	0.24	0.08	0.00	0.00	0.00	0.00	0.46
	Worker		4	0.00	0.01	0.17	0.00	0.07	0.02	0.00	0.00	0.00	0.00	0.03
Dewatering Wells	Bore/Drill Rig	3		0.26	3.02	2.07	0.01	0.09	0.08	912.06	912.06	0.30	0.00	919.44
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Excavation/Shoring	Excavator	25		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Haul		20	0.41	9.92	4.20	0.03	0.79	0.28	0.00	0.00	0.00	0.00	1.53
	Crane			0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Subgrade Preparation	Skidsteer Loader	5		0.08	1.00	1.39	0.00	0.04	0.04	200.20	200.20	0.06	0.00	201.82
	Vendor		3	0.03	0.53	0.29	0.00	0.05	0.02	0.00	0.00	0.00	0.00	0.08
	Roller			0.19	1.92	1.88	0.00	0.12	0.11	254.09	254.09	0.08	0.00	256.14
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Wetwell/Drywell Base Construction	Crane	10		0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Haul		35	0.72	17.35	7.35	0.05	1.38	0.49	0.00	0.00	0.00	0.00	2.67
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Wetwell/Drywell Wall Construction	Crane	30		0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Haul		11	0.23	5.45	2.31	0.02	0.43	0.15	0.00	0.00	0.00	0.00	0.84
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Wetwell/Drywell Deck Construction	Crane	30		0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Haul		9	0.19	4.46	1.89	0.01	0.36	0.13	0.00	0.00	0.00	0.00	0.69
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02

Lift Station
Maximum Daily Regional Construction Emissions

		Days	trips	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	NBio- CO2	Total CO2	CH4	N2O	CO2e
				Max Daily (lbs/day)						(lbs/day - Onsite Equipment); MT/yr (On Road Equipment)				
Backfill/Compaction	Tractor/Loader/Backho	20		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Vendor		13	0.12	2.30	1.25	0.01	0.20	0.07	0.00	0.00	0.00	0.00	0.35
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Stair Installation	Crane	5		0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Perimeter Wall Construction														
Footing Excavation	Tractor/Loader/Backho	5		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Footing Construction	Haul	1	6	0.12	2.97	1.26	0.01	0.24	0.08	0.00	0.00	0.00	0.00	0.46
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Wall Construction	Crane	30		0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Haul		4	0.08	1.98	0.84	0.01	0.16	0.06	0.00	0.00	0.00	0.00	0.31
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
2'X3' RCB Construction														
Fill to Subgrade	Vendor	5	5	0.04	0.88	0.48	0.00	0.08	0.03	0.00	0.00	0.00	0.00	0.13
	Tractor/Loader/Backhoe			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Roller			0.19	1.92	1.88	0.00	0.12	0.11	254.09	254.09	0.08	0.00	256.14
	Water			0.15	1.32	0.90	0.00	0.05	0.04	319.63	319.63	0.10	0.00	322.22
	Worker		4	0.00	0.01	0.17	0.00	0.07	0.02	0.00	0.00	0.00	0.00	0.03
2'x3' RCB Construction	Haul	2	3	0.06	1.49	0.63	0.00	0.12	0.04	0.00	0.00	0.00	0.00	0.23
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Slope Grading Behind Perimeter Wall														
Fill Placement	Vendor	5	4	0.04	0.71	0.38	0.00	0.06	0.02	0.00	0.00	0.00	0.00	0.11
	Rubber Tired Dozer			1.05	10.97	4.04	0.01	0.53	0.49	827.35	827.35	0.27	0.00	834.04
	Tractor/Loader/Backhoe			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Rip Rap Placement	Vendor	2	2	0.02	0.35	0.19	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.05
	Haul		1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Excavator			0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Concrete Maintenance Walk	Haul	5	2	0.04	0.99	0.42	0.00	0.08	0.03	0.00	0.00	0.00	0.00	0.15
	Tractor/Loader/Backhoe			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Influent Sewer Extension														
Dewatering Wells	Bore/Drill Rig	5		0.26	3.02	2.07	0.01	0.09	0.08	912.06	912.06	0.30	0.00	919.44
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02

Lift Station
Maximum Daily Regional Construction Emissions

		Days	trips	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	NBio- CO2	Total CO2	CH4	N2O	CO2e
				Max Daily (lbs/day)						(lbs/day - Onsite Equipment); MT/yr (On Road Equipment)				
Jacking and Receiving Pit Excavation/shoring	Excavator	15		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Haul		5	0.10	2.48	1.05	0.01	0.20	0.07	0.00	0.00	0.00	0.00	0.38
	Crane			0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Jack and Bore 42 inch Casing	Other Construction equ	10		0.42	4.38	4.06	0.01	0.23	0.21	598.52	598.52	0.19	0.00	603.36
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Haul		4	0.08	1.98	0.84	0.01	0.16	0.06	0.00	0.00	0.00	0.00	0.31
	Haul		1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		4	0.00	0.01	0.17	0.00	0.07	0.02	0.00	0.00	0.00	0.00	0.03
Jacking Pit Backfill/Compaction	Excavator	10		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Vendor		2	0.02	0.35	0.19	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.05
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Sewer Open Cut Excavation	Excavator	10		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Haul		2	0.04	0.99	0.42	0.00	0.08	0.03	0.00	0.00	0.00	0.00	0.15
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Pipe Subgrade Preparation	Excavator	4		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02

Lift Station
Maximum Daily Regional Construction Emissions

		Days	trips	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	NBio- CO2	Total CO2	CH4	N2O	CO2e
				Max Daily (lbs/day)						(lbs/day - Onsite Equipment); MT/yr (On Road Equipment)				
Pipe Installation/Backfill	Excavator	15		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Vendor		2	0.02	0.35	0.19	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.05
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Haul		1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		4	0.00	0.01	0.17	0.00	0.07	0.02	0.00	0.00	0.00	0.00	0.03
Manhole Excavation/Shoring	Excavator	5		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Haul		1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Worker		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Manhole Base Placement	Haul	1	2	0.04	0.99	0.42	0.00	0.08	0.03	0.00	0.00	0.00	0.00	0.15
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Manhole Shaft Placement/Backfill	Offhighway Truck	3		0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Vendor		1	0.01	0.18	0.10	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.03
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Excavator			0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Generator Building Construction														
Footing and Equipment Bases	Tractor/Loader/Backho	7		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Haul		1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Haul		4	0.08	1.98	0.84	0.01	0.16	0.06	0.00	0.00	0.00	0.00	0.31
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Masonry Building and Roof	Forklift	35		0.13	1.18	1.17	0.00	0.48	0.12	148.03	148.03	0.05	0.00	149.23
	Haul		2	0.04	0.99	0.42	0.00	0.08	0.03	0.00	0.00	0.00	0.00	0.15
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Crane			0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Worker		4	0.00	0.01	0.17	0.00	0.07	0.02	0.00	0.00	0.00	0.00	0.03
Pump Building Construction														
Masonry Building and Roof	Forklift	30		0.13	1.18	1.17	0.00	0.48	0.12	148.03	148.03	0.05	0.00	149.23
	Haul		2	0.04	0.99	0.42	0.00	0.08	0.03	0.00	0.00	0.00	0.00	0.15
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Crane			0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Worker		4	0.00	0.01	0.17	0.00	0.07	0.02	0.00	0.00	0.00	0.00	0.03
Generator Building Mechanical														
Set Generator and Diesel Pump	Crane	2		0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Pump Building Mechanical														
Set Pumps	Crane	1		0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01

Lift Station
Maximum Daily Regional Construction Emissions

		Days	trips	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	NBio- CO2	Total CO2	CH4	N2O	CO2e
				Max Daily (lbs/day)						(lbs/day - Onsite Equipment); MT/yr (On Road Equipment)				
Scrubber Installation														
Foul Air Piping Excavation	Tractor/Loader/Backho	6		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Concrete/Industrial Saw			0.38	3.04	3.67	0.01	0.17	0.17	592.66	592.66	0.03	0.00	593.53
	Haul		2	0.04	0.99	0.42	0.00	0.08	0.03	0.00	0.00	0.00	0.00	0.15
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Foul Air Piping Subgrade Preparation	Tractor/Loader/Backho	2		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Piping Installation/Backfill	Tractor/Loader/Backho	10		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Vendor		2	0.02	0.35	0.19	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.05
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Scrubber Installation	Haul	1	1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Crane			0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Worker		2	0.00	0.01	0.08	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.01
Miscellaneous Pump Station Site Improvements														
Yard Paving	Haul	3	3	0.06	1.49	0.63	0.00	0.12	0.04	0.00	0.00	0.00	0.00	0.23
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02

Lift Station
Maximum Daily Regional Construction Emissions

		Days	trips	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	NBio- CO2	Total CO2	CH4	N2O	CO2e
				Max Daily (lbs/day)						(lbs/day - Onsite Equipment); MT/yr (On Road Equipment)				
Yard Piping	Tractor/Loader/Backho	10		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Drain Boxes/Radio Antenna	Tractor/Loader/Backho	10		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Haul		1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Crane			0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Curb and Gutter/Drive Way	Tractor/Loader/Backho	5		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Haul		1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Existing Pump Station Site Paving	Tractor/Loader/Backho	2		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Vendor		3	0.03	0.53	0.29	0.00	0.05	0.02	0.00	0.00	0.00	0.00	0.08
	Roller			0.19	1.92	1.88	0.00	0.12	0.11	254.09	254.09	0.08	0.00	256.14
	Worker		3	0.00	0.01	0.13	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.02
Old Country Club Drive Repaving	Tractor/Loader/Backho	5		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Haul		3	0.06	1.49	0.63	0.00	0.12	0.04	0.00	0.00	0.00	0.00	0.23
	Vendor		3	0.03	0.53	0.29	0.00	0.05	0.02	0.00	0.00	0.00	0.00	0.08
	Paver			0.25	2.60	2.90	0.00	0.13	0.12	455.06	455.06	0.15	0.00	458.74
	Roller			0.19	1.92	1.88	0.00	0.12	0.11	254.09	254.09	0.08	0.00	256.14
	Worker		4	0.00	0.01	0.17	0.00	0.07	0.02	0.00	0.00	0.00	0.00	0.03
Existing Pump Station Demolition														
Remove Buildings/Paving and Structure 6 feet BG	Air Compressor	10		0.29	2.04	2.42	0.00	0.13	0.13	375.26	375.26	0.03	0.00	375.91
	Crane			0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Excavator			0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Tractor/Loader/Backhoe			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Haul		2	0.04	0.99	0.42	0.00	0.08	0.03	0.00	0.00	0.00	0.00	0.15
	Vendor		3	0.03	0.53	0.29	0.00	0.05	0.02	0.00	0.00	0.00	0.00	0.08
	Haul		1	0.02	0.50	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.08
	Worker		5	0.00	0.01	0.21	0.00	0.08	0.02	0.00	0.00	0.00	0.00	0.03
Miscellaneous Items														
Street Sweeping	Sweeper/Scrubber	360		0.11	1.03	0.98	0.00	0.08	0.07	123.09	123.09	0.04	0.00	124.08
Dust Control	Water	360		0.15	1.32	0.90	0.00	0.05	0.04	319.63	319.63	0.10	0.00	322.22
Pneumatic Tools	Air Compressor	360		0.29	2.04	2.42	0.00	0.13	0.13	375.26	375.26	0.03	0.00	375.91
	Worker		4	0.00	0.01	0.17	0.00	0.07	0.02	0.00	0.00	0.00	0.00	0.03

Lift Station
Maximum Daily Regional Construction Emissions

Unmitigated - Construction

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	NBio- CO2	Total CO2	CH4	N2O	CO2e
		(lbs/day)						(lbs/day)				
Tractor/Loader/Backhoe	Fugitive					0.4719	0.0715		0			0
	Onsite	0.1873	1.8958	2.2602	3.11E-03	0.1118	0.1028	300.9001	300.9001	0.0973		303.333
Bobcat Loader	Fugitive											
	Onsite	0.0755	1.0035	1.39	2.07E-03	0.0408	0.0376	200.1984	200.1984	6.48E-02		201.8171
Off Highway Truck	Fugitive											
	Onsite	0.6059	5.2634	3.6044	0.0132	0.1931	0.1776	1,278.52	1,278.52	0.4135		1,288.86
Air Compressor	Fugitive											
	Onsite	0.2919	2.0358	2.4234	3.96E-03	0.1255	0.1255	375.2641	375.2641	0.0258		375.9079
Concrete/Industrial Saw	Fugitive											
	Onsite	0.3848	3.0379	3.6741	6.26E-03	0.1731	0.1731	592.6646	592.6646	0.0344		593.525
Crane	Fugitive											
	Onsite	0.4129	4.8493	1.9829	5.77E-03	0.1969	0.1811	558.7388	558.7388	0.1807		563.2565
Rubber Tired Dozer	Fugitive											
	Onsite	1.0464	10.9713	4.0378	8.53E-03	0.5325	0.4899	827.3522	827.3522	0.2676		834.0418
Bore/Drill Rig	Fugitive											
	Onsite	0.2582	3.0228	2.074	9.43E-03	0.0916	0.0843	912.0624	912.0624	0.295		919.4369
Excavator	Fugitive											
	Onsite	0.2292	2.1534	3.2718	5.17E-03	0.1044	0.0961	500.19	500.19	0.1618		504.24
Forklift	Fugitive					0.3929	0.0424					
	Onsite	0.1293	1.1791	1.1679	1.53E-03	0.0837	0.077	148.0308	148.0308	0.0479		149.2277
Grader	Fugitive				0.3929	0.0424						
	Onsite	0.45	5.92	1.77	0.01	0.19	0.17	641.6841	641.6841	0.2075		646.87
Loader	Fugitive											
	Onsite	0.4199	4.3809	4.0551	6.18E-03	2.29E-01	2.11E-01	598.5245	598.5245	1.94E-01		603.3638
Paver	Fugitive											
	Onsite	0.2462	2.595	2.9048	4.70E-03	1.25E-01	1.15E-01	455.0608	455.0608	1.47E-01		458.7402
Roller	Fugitive											
	Onsite	0.1895	1.9242	1.8804	2.62E-03	1.18E-01	1.08E-01	254.0889	254.0889	8.22E-02		256.1433
Sweeper/Scrubber	Fugitive											
	Onsite	0.1143	1.0286	0.9755	1.27E-03	7.57E-02	6.96E-02	123.0882	123.0882	3.98E-02		124.0834
Plate Compactor	Fugitive											
	Onsite	0.0401	0.2513	0.2105	4.90E-04	9.77E-03	9.77E-03	34.4794	34.4794	3.58E-03		34.5689
Water Truck	Fugitive											
	Onsite	0.15	1.32	0.90	0.00	0.05	0.04	319.6308	319.6308	0.1034		322.22
Vehicles	Haul	0.02	0.50	0.21	0.00	0.04	0.01					0.08
	Vendor	0.01	0.18	0.10	0.00	0.02	0.01					0.03
	Worker	0.00	0.00	0.04	0.00	0.02	0.00					0.01
Arch. Coating		52.5238				0	0		0			0

2. Emissions
b. Localized Construction Emissions

Lift Station
Maximum Daily Unmitigated Local Construction Emissions

CalEEMod	2016.3.2	Title:	Lift Station	Date:	12/12/2020
EMFAC	2017	Title:	Lift Station	Date:	12/12/2020

Unmitigated - Construction

			NOx	CO		PM10 Total	PM2.5 Total
			Max Daily (lbs/day)				
A	Emergency Intertie Valve Vault and Piping		7	5		0	0
B	Overhead Power Relocation		10	12		2	1
C	Sewer Grinder Vault		8	7		0	0
D	Storm Drain and Creek Outlet Structure		7	7		1	0
E	Country Club Drive Relocation		11	7		1	0
F	Temporary Sewer Relocation		7	6		1	0
G	New Lift Station Site Demolition		17	11		1	1
H	Wetwell/Drywell Construction		10	6		1	0
I	Perimeter Wall Construction		10	6		1	0
J	2'X3' RCB Construction		5	5		1	0
K	Slope Grading Behind Perimeter Wall		13	6		1	1
L	Influent Sewer Extension		15	11		1	1
M	Generator Building Construction		11	7		1	0
N	Pump Building Construction		11	7		1	0
O	Generator Building Mechanical		5	2		0	0
P	Pump Building Mechanical		5	2		0	0
Q	Scrubber Installation		5	6		1	0
R	Miscellaneous Pump Station Site Improvements		10	11		2	1
S	Existing Pump Station Demolition		11	10		1	1
T	Miscellaneous Items		4	4		0	0
	Max Construction Phase		17	12		2	1
	Maximum Overlap		41	29		3.6	2
	Max Daily w/ Overlaps		41	29		3.6	2
	Threshold		**51**	**647**		**4**	**3**
	Exceed Threshold?		No	No		No	No

SRA **hern California Edison**

Receptor Distance	37	meters from Site (up hill)
	25	meter threshold used
	1	LST Acre comparison

The screening criteria for NOx were developed based on the 1-hour NO2 CAAQS of 0.18 ppm. However, since the publication of the SCAQMD's guidance, the USEPA has promulgated a 1-hour NO2 NAAQS of 0.100 ppm based on a 98th percentile value, which is more stringent than the CAAQS. In order to determine if Project emissions would result in an exceedance of the 1 hour NO2 NAAQS, an approximated LST was estimated to evaluate the federal 1-hour NO2 standard, as the SCAQMD significance threshold has not been updated to reflect this standard. Calculated by scaling the NO2 LST for by the ratio of 1-hour NO2 standards (federal/state)(i.e., 780 lb/day * (0.10/0.18) =433 lb/day).

Lift Station
Maximum Daily Unmitigated Local Construction Emissions

Unmitigated - Construction (Overlap Scenarios)

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
		Max Daily (lbs/day)					
1	1,T	0.82	7.40	6.37	0.02	0.34	0.32
2	2,8,T	1.40	11.72	13.72	0.02	1.12	0.69
3	3,9,T	1.78	14.83	14.05	0.03	1.21	0.77
4	4,8,9,T	2.05	17.15	20.07	0.03	1.90	1.06
5	5,8,T	1.78	14.83	14.05	0.03	1.21	0.77
6	6,9,11,T	1.70	14.99	16.00	0.03	1.22	0.79
7	6,9,12,T	1.67	14.12	17.20	0.03	1.23	0.80
8	7,9,12,T	2.08	18.97	19.18	0.03	1.43	0.98
9	7,10,12,19,T	2.49	23.13	21.79	0.05	1.08	1.00
10	14,17,T	1.62	13.95	14.45	0.03	0.65	0.61
11	14,19,T	2.23	19.21	18.05	0.05	0.84	0.79
12	18,T	0.83	6.78	7.78	0.01	0.36	0.35
13	25,T	0.79	6.53	7.57	0.01	0.35	0.34
14	26,T	0.83	6.78	7.78	0.01	0.36	0.35
15	15,20,T	1.70	14.45	14.87	0.03	0.67	0.63
16	21,27,T	1.06	8.94	11.05	0.02	0.47	0.44
17	22,T	0.75	6.28	6.56	0.01	0.83	0.41
18	23,T	0.79	6.53	6.77	0.01	0.84	0.42
19	24,T	0.56	4.38	4.30	0.01	0.25	0.24
20	16,75,83,84,T	2.95	29.41	19.75	0.05	2.69	1.44
21	34,T	1.54	15.44	11.11	0.42	1.23	0.74
22	35,T	0.75	6.30	6.18	0.01	0.37	0.35
23	36,T	0.99	8.90	9.09	0.02	0.49	0.46
24	37,T	0.79	6.53	6.77	0.01	0.84	0.42
25	38,44,T	2.52	23.50	17.43	0.03	2.17	1.30
26	39,44,T	2.33	21.60	15.17	0.03	1.59	1.12
27	40,44,T	3.16	29.01	21.25	0.05	2.37	1.48
28	41,45,T	0.93	8.17	8.82	0.01	1.42	0.59
29	42,45,T	2.56	23.75	17.64	0.03	2.18	1.31
30	43,T	0.79	6.53	6.77	0.01	0.84	0.42
31	46,47,T	1.26	12.32	10.71	0.03	1.02	0.58
32	48,T	1.20	11.38	9.55	0.02	0.55	0.52
33	49,63,T	1.08	10.33	9.64	0.02	0.50	0.47
34	50,64,T	2.22	21.50	15.14	0.04	0.94	0.88
35	51,64,T	2.22	21.50	15.14	0.04	0.94	0.88

Lift Station
Maximum Daily Unmitigated Local Construction Emissions

Unmitigated - Construction (Overlap Scenarios)

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
		Max Daily (lbs/day)					
36	51,65,T	2.42	21.44	18.84	0.05	0.97	0.90
37	51,66,T	1.85	16.90	13.37	0.03	0.75	0.70
38	66,69,T	1.70	14.45	14.87	0.03	0.67	0.63
39	51,67,68,69,T	2.95	26.72	23.73	0.06	1.17	1.08
40	51,69,70,T	2.68	24.31	20.25	0.05	1.05	0.98
41	52,69,T	2.45	22.16	16.97	0.05	0.95	0.88
42	52,67,70,T	2.03	18.80	16.43	0.04	0.85	0.79
43	52,68,T	1.85	16.90	13.37	0.03	0.75	0.70
44	68,69,T	1.70	14.45	14.87	0.03	0.67	0.63
45	52,72,T	2.45	22.16	16.97	0.05	0.95	0.88
46	53,54,55,T	1.39	13.27	11.01	0.02	1.62	0.78
47	56,73,T	1.35	11.54	10.16	0.02	1.03	0.59
48	57,73,T	1.76	16.39	12.15	0.03	1.22	0.77
49	31,57,75,78,T	3.87	35.65	28.51	0.07	3.02	1.77
50	32,57,75,79,T	3.52	32.87	25.05	0.06	2.86	1.61
51	33,57,74,75,80,T	4.33	41.37	28.34	0.08	3.56	1.92
52	58,74,75,84,T	3.98	38.84	27.10	0.07	3.51	1.88
53	59,74,83,T	2.54	23.08	17.13	0.05	1.90	1.08
54	75,83,T	1.93	17.82	13.53	0.03	1.71	0.90
55	60,T	1.79	17.25	10.60	0.02	1.37	0.90
56	61,T	0.79	6.53	7.57	0.01	0.35	0.34
57	62,T	0.75	6.28	6.56	0.01	0.83	0.41
58	76,T	0.97	9.23	6.28	0.01	0.45	0.42
59	83,T	0.79	6.53	6.77	0.01	0.84	0.42
60	88,T	1.68	15.31	14.24	0.03	1.26	0.82
61	28,85,88,T	2.09	19.36	18.97	0.03	2.44	1.17
62	29,81,88,T	2.09	20.16	16.22	0.03	1.46	1.00
63	30,T	0.79	6.53	6.77	0.01	0.84	0.42
64	86,87	1.00	10.24	11.19	0.02	1.53	0.68
	Max:	4.33	41.37	28.51	0.42	3.56	1.92
		51	51	49	21	51	51

Lift Station
Maximum Daily Unmitigated Local Construction Emissions

Emissions by Vehicle Type

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	CO2e
		Max Daily (lbs/day)						(lbs/day) / (MT/Yr)
Tractor/Loader/Backhoe		0.1873	1.8958	2.2602	0.00311	0.5837	0.1743	303.333
Skidsteer Loader		0.0755	1.0035	1.39	0.00207	0.0408	0.0376	201.8171
Offhighway Truck		0.6059	5.2634	3.6044	0.0132	0.1931	0.1776	1288.8605
Air Compressor		0.2919	2.0358	2.4234	0.00396	0.1255	0.1255	375.9079
Concrete/Industrial Saw		0.3848	3.0379	3.6741	0.00626	0.1731	0.1731	593.525
Crane		0.4129	4.8493	1.9829	0.00577	0.1969	0.1811	563.2565
Rubber Tired Dozer		1.0464	10.9713	4.0378	0.00853	0.5325	0.4899	834.0418
Bore/Drill Rig		0.2582	3.0228	2.074	0.00943	0.0916	0.0843	919.4369
Excavator		0.2292	2.1534	3.2718	0.00517	0.1044	0.0961	504.2363
Forklift		0.1293	1.1791	1.1679	0.00153	0.4766	0.1194	149.2277
Grader		0.453	5.9246	1.7672	0.39952	0.2301	0.1727	646.8725
Other Construction equipment	Jacking Machine	0.4199	4.3809	4.0551	0.00618	0.2291	0.2108	603.3638
Paver		0.2462	2.595	2.9048	0.0047	0.1254	0.1154	458.7402
Roller		0.1895	1.9242	1.8804	0.00262	0.1176	0.1082	256.1433
Sweeper/Scrubber		0.1143	1.0286	0.9755	0.00127	0.0757	0.0696	124.0834
Plate Compactor		0.0401	0.2513	0.2105	0.00049	0.00977	0.00977	34.5689
Water	Water Truck	0.1515	1.3158	0.9011	0.0033	0.0483	0.0444	322.2151
Haul	Haul							
Vendor	Vendor							
Worker	Worker							
Arch. Coating	1 day AC	52.5238	0	0	0	0	0	0
Arch. Coating	5 days AC	10.50476						

Note: Mobile Sources are not part of the localized emissions analysis.

Lift Station
Maximum Daily Unmitigated Local Construction Emissions

	Onsite, Haul and Vendor Emissions by Phase	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	CO2e
		Max Daily (lbs/day)						(lbs/day)
A	**Emergency Intertie Valve Vault and Piping**	**0.68**	**7.25**	**5.47**	**0.01**	**0.31**	**0.29**	**1288.86**
1	Dewatering Wells	0.26	3.02	2.07	0.01	0.09	0.08	919.44
2	Vault and Tapping Sleeve Excavation /Shoring	0.23	2.15	3.27	0.01	0.10	0.10	504.24
3	Line Stop Installation/Removal	0.61	5.26	3.60	0.01	0.19	0.18	1288.86
4	Subgrade Preparation	0.27	2.40	3.48	0.01	0.11	0.11	538.81
5	Vault Delivery and Placement	0.61	5.26	3.60	0.01	0.19	0.18	1288.86
6	Vault Backfill and Compaction	0.27	2.40	3.48	0.01	0.11	0.11	538.81
7	Valve and Pipe Installation	0.68	7.25	5.47	0.01	0.31	0.29	1102.06
B	**Overhead Power Relocation**	**1.22**	**10.37**	**12.29**	**0.02**	**1.53**	**0.71**	**1862.85**
8	Power Conduit installation	0.61	5.19	6.14	0.01	0.77	0.36	931.43
9	Communication Conduit Installation	0.61	5.19	6.14	0.01	0.77	0.36	931.43
10	Pavement Repair	0.19	1.92	1.88	0.00	0.12	0.11	256.14
C	**Sewer Grinder Vault**	**0.88**	**7.67**	**7.09**	**0.02**	**0.31**	**0.28**	**1827.67**
11	Dewatering Wells	0.26	3.02	2.07	0.01	0.09	0.08	**919.44**
12	Excavation/Shoring	0.23	2.15	3.27	0.01	0.10	0.10	504.24
13	Subgrade Preparation	0.27	2.40	3.48	0.01	0.11	0.11	**538.81**
14	Vault Base Forming/Rebar/Concrete	0.84	7.42	6.88	0.02	0.30	0.27	1793.10
15	Vault Placement/Backfill	0.88	7.67	7.09	0.02	0.31	0.28	1827.67
16	Set Grinder	0.41	4.85	1.98	0.01	0.20	0.18	563.26
D	**Storm Drain and Creek Outlet Structure**	**0.84**	**7.42**	**6.88**	**0.02**	**0.76**	**0.35**	**1793.10**
17	Outlet Structure Excavation	0.23	2.15	3.27	0.01	0.10	0.10	504.24
18	Subgrade Preparation	0.27	2.40	3.48	0.01	0.11	0.11	538.81
19	Outlet Structure Forming/Rebar/Concrete	0.84	7.42	6.88	0.02	0.30	0.27	1793.10
20	Outlet Structure Backfill	0.27	2.40	3.48	0.01	0.11	0.11	538.81
21	Rip Rap Excavation and Placement	0.23	2.15	3.27	0.01	0.10	0.10	504.24
22	4'x1' RCB Excavation	0.19	1.90	2.26	0.00	0.58	0.17	303.33
23	4'x1' RCB Subgrade Preparation	0.23	2.15	2.47	0.00	0.59	0.18	337.90
24	4'x1' RCB Concrete	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	42 inch RCP Excavation	0.23	2.15	3.27	0.01	0.10	0.10	504.24
26	42 inch RCP Subgrade Preparation	0.27	2.40	3.48	0.01	0.11	0.11	538.81
27	42 Inch RCP Installation/Backfill	0.27	2.40	3.48	0.01	0.11	0.11	538.81
28	Catch Basin Excavation	0.19	1.90	2.26	0.00	0.58	0.17	**303.33**
29	Catch Basin Concrete	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	Catch Basin Backfill	0.23	2.15	2.47	0.00	0.59	0.18	337.90
31	18 Inch RCP Excavation	0.57	4.93	5.93	0.01	0.76	0.35	896.86
32	18 Inch RCP Subgrade Preparation	0.23	2.15	2.47	0.00	0.59	0.18	337.90
33	18 Inch RCP Installation Backfill	0.23	2.15	2.47	0.00	0.59	0.18	337.90

Lift Station
Maximum Daily Unmitigated Local Construction Emissions

	Onsite, Haul and Vendor Emissions by Phase	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	CO2e
		Max Daily (lbs/day)						(lbs/day)
E	**Country Club Drive Relocation**	**0.98**	**11.06**	**6.81**	**0.41**	**0.98**	**0.50**	**1528.56**
34	Road Grading/Subgrade Preparation	0.98	11.06	6.81	0.41	0.98	0.50	1528.56
35	Road Base and Compaction	0.19	1.92	1.88	0.00	0.12	0.11	256.14
36	AC Pavement	0.44	4.52	4.79	0.01	0.24	0.22	714.88
37	DG Pedestrian Path	0.23	2.15	2.47	0.00	0.59	0.18	337.90
F	**Temporary Sewer Relocation**	**0.83**	**7.41**	**6.08**	**0.02**	**0.79**	**0.36**	**1626.76**
38	Manhole Excavation/Shoring	0.19	1.90	2.26	0.00	0.58	0.17	303.33
39	Manhole Base Placement	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	Manhole Riser Placement/Backfill	0.83	7.41	6.08	0.02	0.79	0.36	1626.76
41	8-inch Pipe Excavation/Shoring	0.19	1.90	2.26	0.00	0.58	0.17	303.33
42	8-inch Pipe Subgrade Preparation	0.23	2.15	2.47	0.00	0.59	0.18	337.90
43	8-inch Pipe Installation/Backfill	0.23	2.15	2.47	0.00	0.59	0.18	337.90
G	**New Lift Station Site Demolition**	**1.77**	**17.22**	**10.87**	**0.02**	**1.34**	**0.88**	**2053.11**
44	Building Demolition	1.77	17.22	10.87	0.02	1.34	0.88	2053.11
45	Pipe Removals	0.19	1.90	2.26	0.00	0.58	0.17	303.33
H	**Wetwell/Drywell Construction**	**1.02**	**10.11**	**6.41**	**0.02**	**0.79**	**0.37**	**2142.21**
46	Deep Soil Mixing	0.45	4.92	4.33	0.01	0.68	0.26	1222.77
47	Dewatering Wells	0.26	3.02	2.07	0.01	0.09	0.08	919.44
48	Excavation/Shoring	0.64	7.00	5.25	0.01	0.30	0.28	1067.49
49	Subgrade Preparation	0.27	2.93	3.27	0.00	0.16	0.15	457.96
50	Wetwell/Drywell Base Construction	1.02	10.11	5.59	0.02	0.39	0.36	1852.12
51	Wetwell/Drywell Wall Construction	1.02	10.11	5.59	0.02	0.39	0.36	1852.12
52	Wetwell/Drywell Deck Construction	1.02	10.11	5.59	0.02	0.39	0.36	1852.12
53	Backfill/Compaction	0.23	2.15	2.47	0.00	0.59	0.18	337.90
54	Stair Installation	0.41	4.85	1.98	0.01	0.20	0.18	563.26
I	**Perimeter Wall Construction**	**1.02**	**10.11**	**5.59**	**0.02**	**0.58**	**0.36**	**1852.12**
55	Footing Excavation	0.19	1.90	2.26	0.00	0.58	0.17	303.33
56	Footing Construction	0.61	5.26	3.60	0.01	0.19	0.18	1288.86
57	Wall Construction	1.02	10.11	5.59	0.02	0.39	0.36	1852.12
J	**2'X3' RCB Construction**	**0.61**	**5.26**	**5.04**	**0.01**	**0.75**	**0.33**	**1288.86**
58	Fill to Subgrade	0.53	5.14	5.04	0.01	0.75	0.33	881.69
59	2'x3' RCB Construction	0.61	5.26	3.60	0.01	0.19	0.18	1288.86
K	**Slope Grading Behind Perimeter Wall**	**1.23**	**12.87**	**6.30**	**0.01**	**1.12**	**0.66**	**1137.37**
60	Fill Placement	1.23	12.87	6.30	0.01	1.12	0.66	1137.37
61	Rip Rap Placement	0.23	2.15	3.27	0.01	0.10	0.10	504.24
62	Concrete Maintenance Walk	0.19	1.90	2.26	0.00	0.58	0.17	303.33

Lift Station
Maximum Daily Unmitigated Local Construction Emissions

	Onsite, Haul and Vendor Emissions by Phase	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	CO2e
		Max Daily (lbs/day)						(lbs/day)
L	**Influent Sewer Extension**	**1.63**	**14.91**	**11.26**	**0.03**	**0.62**	**0.57**	**3181.08**
63	Dewatering Wells	0.26	3.02	2.07	0.01	0.09	0.08	919.44
64	Jacking and Receiving Pit Excavation/shoring	0.64	7.00	5.25	0.01	0.30	0.28	1067.49
65	Jack and Bore 42 inch Casing	1.63	14.91	11.26	0.03	0.62	0.57	3181.08
66	Jacking Pit Backfill/Compaction	0.27	2.40	3.48	0.01	0.11	0.11	538.81
67	Sewer Open Cut Excavation	0.23	2.15	3.27	0.01	0.10	0.10	504.24
68	Pipe Subgrade Preparation	0.27	2.40	3.48	0.01	0.11	0.11	538.81
69	Pipe Installation/Backfill	0.88	7.67	7.09	0.02	0.31	0.28	1827.67
70	Manhole Excavation/Shoring	0.23	2.15	3.27	0.01	0.10	0.10	504.24
71	Manhole Base Placement	0.61	5.26	3.60	0.01	0.19	0.18	1288.86
72	Manhole Shaft Placement/Backfill	0.88	7.67	7.09	0.02	0.31	0.28	1827.67
M	**Generator Building Construction**	**1.15**	**11.29**	**6.76**	**0.02**	**0.87**	**0.48**	**2001.34**
73	Footing and Equipment Bases	0.19	1.90	2.26	0.00	0.58	0.17	303.33
74	Masonry Building and Roof	1.15	11.29	6.76	0.02	0.87	0.48	2001.34
N	**Pump Building Construction**	**1.15**	**11.29**	**6.76**	**0.02**	**0.87**	**0.48**	**2001.34**
75	Masonry Building and Roof	1.15	11.29	6.76	0.02	0.87	0.48	2001.34
O	**Generator Building Mechanical**	**0.41**	**4.85**	**1.98**	**0.01**	**0.20**	**0.18**	**563.26**
76	Set Generator and Diesel Pump	0.41	4.85	1.98	0.01	0.20	0.18	563.26
P	**Pump Building Mechanical**	**0.41**	**4.85**	**1.98**	**0.01**	**0.20**	**0.18**	**563.26**
77	Set Pumps	0.41	4.85	1.98	0.01	0.20	0.18	563.26
Q	**Scrubber Installation**	**0.57**	**4.93**	**5.93**	**0.01**	**0.76**	**0.35**	**896.86**
78	Foul Air Piping Excavation	0.57	4.93	5.93	0.01	0.76	0.35	896.86
79	Foul Air Piping Subgrade Preparation	0.23	2.15	2.47	0.00	0.59	0.18	337.90
80	Piping Installation/Backfill	0.23	2.15	2.47	0.00	0.59	0.18	337.90
81	Scrubber Installation	0.41	4.85	1.98	0.01	0.20	0.18	563.26
R	**Miscellaneous Pump Station Site Improvements**	**1.00**	**10.24**	**11.19**	**0.02**	**1.53**	**0.68**	**1577.69**
82	Yard Paving	0.65	5.51	3.81	0.01	0.20	0.19	1323.43
83	Yard Piping	0.23	2.15	2.47	0.00	0.59	0.18	337.90
84	Drain Boxes/Radio Antenna	0.60	6.75	4.24	0.01	0.78	0.36	866.59
85	Curb and Gutter/Drive Way	0.23	2.15	2.47	0.00	0.59	0.18	337.90
86	Existing Pump Station Site Paving	0.38	3.82	4.14	0.01	0.70	0.28	559.48
87	Old Country Club Drive Repaving	0.62	6.42	7.05	0.01	0.83	0.40	1018.22
S	**Existing Pump Station Demolition**	**1.12**	**10.93**	**9.94**	**0.02**	**1.01**	**0.58**	**1746.73**
88	Remove Buildings/Paving and Structure 6 feet BGS	1.12	10.93	9.94	0.02	1.01	0.58	1746.73

Lift Station
Maximum Daily Unmitigated Local Construction Emissions

	Onsite, Haul and Vendor Emissions by Phase	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	CO2e
		Max Daily (lbs/day)						(lbs/day)
T	**Miscellaneous Items**	**0.56**	**4.38**	**4.30**	**0.01**	**0.25**	**0.24**	**822.21**
	Street Sweeping	0.11	1.03	0.98	0.00	0.08	0.07	124.08
	Dust Control	0.15	1.32	0.90	0.00	0.05	0.04	322.22
	Pneumatic Tools	0.29	2.04	2.42	0.00	0.13	0.13	375.91
	Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Lift Station
Maximum Daily Unmitigated Local Construction Emissions

		Days	trips	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	NBio- CO2	Total CO2	CH4	N2O	CO2e
				Max Daily (lbs/day)						(lbs/day - Onsite Equipment); MT/yr (On Road Equipment)				
Emergency Intertie Valve Vault and Piping														
Dewatering Wells	Bore/Drill Rig	2		0.26	3.02	2.07	0.01	0.09	0.08	912.06	912.06	0.30	0.00	919.44
	Worker		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vault and Tapping Sleeve Excavation /Shoring	Excavator	10		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Haul		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Line Stop Installation/Removal	Vendor	1	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subgrade Preparation	Excavator	2		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Vendor		1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vault Delivery and Placement	Haul	1	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vault Backfill and Compaction	Excavator	5		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valve and Pipe Installation	Excavator	15		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Haul		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Crane			0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Worker		4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Overhead Power Relocation														
Power Conduit installation	Concrete/Industrial Saw	10		0.38	3.04	3.67	0.01	0.17	0.17	592.66	592.66	0.03	0.00	593.53
	Tractor/Loader/Backhoe			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Haul		1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker		4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Communication Conduit Installation	Concrete/Industrial Saw	15		0.38	3.04	3.67	0.01	0.17	0.17	592.66	592.66	0.03	0.00	593.53
	Tractor/Loader/Backhoe			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Haul		1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker		4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Lift Station
Maximum Daily Unmitigated Local Construction Emissions

		Days	trips	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	NBio- CO2	Total CO2	CH4	N2O	CO2e
				Max Daily (lbs/day)						(lbs/day - Onsite Equipment); MT/yr (On Road Equipment)				
Pavement Repair	Vendor	2	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Roller			0.19	1.92	1.88	0.00	0.12	0.11	254.09	254.09	0.08	0.00	256.14
	Worker		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sewer Grinder Vault														
Dewatering Wells	Bore/Drill Rig	1		0.26	3.02	2.07	0.01	0.09	0.08	912.06	912.06	0.30	0.00	919.44
	Worker		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation/Shoring	Excavator	10		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Haul		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subgrade Preparation	Excavator	2		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Vendor		1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vault Base Forming/Rebar/Concrete	Excavator	5		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Haul		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vault Placement/Backfill	Haul	3	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Excavator			0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Set Grinder	Crane	1		0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Worker		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Storm Drain and Creek Outlet Structure														
Outlet Structure Excavation	Excavator	3		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Haul		1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subgrade Preparation	Excavator	1		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Outlet Structure Forming/Rebar/Concrete	Excavator	3		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Haul		1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Lift Station
Maximum Daily Unmitigated Local Construction Emissions

			Days	trips	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	NBio- CO2	Total CO2	CH4	N2O	CO2e
					Max Daily (lbs/day)						(lbs/day - Onsite Equipment); MT/yr (On Road Equipment)				
Outlet Structure Backfill	Excavator	1			0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Plate Compactor				0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker			3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rip Rap Excavation and Placement	Excavator	3			0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Haul			1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Haul	0		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker			2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4'x1' RCB Excavation	Tractor/Loader/Backho	2			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Haul			2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker			2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4'x1' RCB Subgrade Preparation	Tractor/Loader/Backho	1			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor				0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker			3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4'x1' RCB Concrete	Haul	1		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker			1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42 inch RCP Excavation	Excavator	2			0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Haul			1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker			2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42 inch RCP Subgrade Preparation	Excavator	1			0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Plate Compactor				0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker			3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42 Inch RCP Installation/Backfill	Excavator	2			0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Plate Compactor				0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker			3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Catch Basin Excavation	Tractor/Loader/Backho	1			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Haul			1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker			2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Catch Basin Concrete	Haul	1		1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker			1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Catch Basin Backfill	Tractor/Loader/Backho	1			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor				0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker			3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 Inch RCP Excavation	Concrete/Industrial Saw	5			0.38	3.04	3.67	0.01	0.17	0.17	592.66	592.66	0.03	0.00	593.53
	Tractor/Loader/Backhoe				0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Haul			1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker			3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Lift Station
Maximum Daily Unmitigated Local Construction Emissions

		Days	trips	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	NBio- CO2	Total CO2	CH4	N2O	CO2e
				Max Daily (lbs/day)						(lbs/day - Onsite Equipment); MT/yr (On Road Equipment)				
18 Inch RCP Subgrade Preparation	Tractor/Loader/Backho	2		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 Inch RCP Installation Backfill	Tractor/Loader/Backho	13		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Country Club Drive Relocation														
Road Grading/Subgrade Preparation	Grader	15		0.45	5.92	1.77	0.40	0.23	0.17	641.68	641.68	0.21	0.00	646.87
	Tractor/Loader/Backhoe			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Haul		1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Water			0.15	1.32	0.90	0.00	0.05	0.04	319.63	319.63	0.10	0.00	322.22
	Roller			0.19	1.92	1.88	0.00	0.12	0.11	254.09	254.09	0.08	0.00	256.14
	Worker		5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Road Base and Compaction	Vendor	10		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Roller			0.19	1.92	1.88	0.00	0.12	0.11	254.09	254.09	0.08	0.00	256.14
	Worker		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC Pavement	Vendor	20		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paver			0.25	2.60	2.90	0.00	0.13	0.12	455.06	455.06	0.15	0.00	458.74
	Roller			0.19	1.92	1.88	0.00	0.12	0.11	254.09	254.09	0.08	0.00	256.14
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DG Pedestrian Path	Vendor	10		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Tractor/Loader/Backhoe			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Temporary Sewer Relocation														
Manhole Excavation/Shoring	Tractor/Loader/Backho	1		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Haul		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Manhole Base Placement	Haul	1	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Manhole Riser Placement/Backfill	Haul	2	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Tractor/Loader/Backhoe			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8-inch Pipe Excavation/Shoring	Tractor/Loader/Backho	2		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Haul		1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8-inch Pipe Subgrade Preparation	Tractor/Loader/Backho	1		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Lift Station
Maximum Daily Unmitigated Local Construction Emissions

		Days	trips	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	NBio- CO2	Total CO2	CH4	N2O	CO2e
				Max Daily (lbs/day)						(lbs/day - Onsite Equipment); MT/yr (On Road Equipment)				
8-inch Pipe Installation/Backfill	Tractor/Loader/Backho	5		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
New Lift Station Site Demolition														
Building Demolition	Concrete/Industrial Sav	5		0.38	3.04	3.67	0.01	0.17	0.17	592.66	592.66	0.03	0.00	593.53
	Rubber Tired Dozer			1.05	10.97	4.04	0.01	0.53	0.49	827.35	827.35	0.27	0.00	834.04
	Tractor/Loader/Backhoe			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Water			0.15	1.32	0.90	0.00	0.05	0.04	319.63	319.63	0.10	0.00	322.22
	Haul		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker		5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe Removals	Tractor/Loader/Backho	3		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Worker		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wetwell/Drywell Construction														
Deep Soil Mixing	Bore/Drill Rig	35		0.26	3.02	2.07	0.01	0.09	0.08	912.06	912.06	0.30	0.00	919.44
	Haul		4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Tractor/Loader/Backhoe			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Haul		6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker		4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dewatering Wells	Bore/Drill Rig	3		0.26	3.02	2.07	0.01	0.09	0.08	912.06	912.06	0.30	0.00	919.44
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Excavation/Shoring	Excavator	25		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Haul		20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Crane			0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subgrade Preparation	Skidsteer Loader	5		0.08	1.00	1.39	0.00	0.04	0.04	200.20	200.20	0.06	0.00	201.82
	Vendor		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Roller			0.19	1.92	1.88	0.00	0.12	0.11	254.09	254.09	0.08	0.00	256.14
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wetwell/Drywell Base Construction	Crane	10		0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Haul		35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wetwell/Drywell Wall Construction	Crane	30		0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Haul		11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wetwell/Drywell Deck Construction	Crane	30		0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Haul		9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Lift Station
Maximum Daily Unmitigated Local Construction Emissions

			Days	trips	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	NBio- CO2	Total CO2	CH4	N2O	CO2e
					Max Daily (lbs/day)						(lbs/day - Onsite Equipment); MT/yr (On Road Equipment)				
Backfill/Compaction	Tractor/Loader/Backho	20			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor				0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Vendor			13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker			3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stair Installation	Crane	5			0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Worker			2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Perimeter Wall Construction															
Footing Excavation	Tractor/Loader/Backho	5			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Worker			2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Footing Construction	Haul	1		6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offhighway Truck				0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker			2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wall Construction	Crane	30			0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Haul			4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offhighway Truck				0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker			3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2'X3' RCB Construction															
Fill to Subgrade	Vendor	5		5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Tractor/Loader/Backhoe				0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Roller				0.19	1.92	1.88	0.00	0.12	0.11	254.09	254.09	0.08	0.00	256.14
	Water				0.15	1.32	0.90	0.00	0.05	0.04	319.63	319.63	0.10	0.00	322.22
	Worker			4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2'x3' RCB Construction	Haul	2		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offhighway Truck				0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker			2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Slope Grading Behind Perimeter Wall															
Fill Placement	Vendor	5		4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Rubber Tired Dozer				1.05	10.97	4.04	0.01	0.53	0.49	827.35	827.35	0.27	0.00	834.04
	Tractor/Loader/Backhoe				0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Worker			3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rip Rap Placement	Vendor	2		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Haul			1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Excavator				0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Worker			2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concrete Maintenance Walk	Haul	5		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Tractor/Loader/Backhoe				0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Worker			2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Influent Sewer Extension															
Dewatering Wells	Bore/Drill Rig	5			0.26	3.02	2.07	0.01	0.09	0.08	912.06	912.06	0.30	0.00	919.44
	Worker			3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Lift Station
Maximum Daily Unmitigated Local Construction Emissions

		Days	trips	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	NBio- CO2	Total CO2	CH4	N2O	CO2e
				Max Daily (lbs/day)						(lbs/day - Onsite Equipment); MT/yr (On Road Equipment)				
Jacking and Receiving Pit Excavation/shoring	Excavator	15		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Haul		5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Crane			0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jack and Bore 42 inch Casing	Other Construction equ	10		0.42	4.38	4.06	0.01	0.23	0.21	598.52	598.52	0.19	0.00	603.36
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Haul		4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Haul		1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jacking Pit Backfill/Compaction	Excavator	10		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Vendor		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sewer Open Cut Excavation	Excavator	10		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Haul		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipe Subgrade Preparation	Excavator	4		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Lift Station
Maximum Daily Unmitigated Local Construction Emissions

		Days	trips	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	NBio- CO2	Total CO2	CH4	N2O	CO2e
				Max Daily (lbs/day)						(lbs/day - Onsite Equipment); MT/yr (On Road Equipment)				
Pipe Installation/Backfill	Excavator	15		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Vendor		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Haul		1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Manhole Excavation/Shoring	Excavator	5		0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Haul		1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Manhole Base Placement	Haul	1	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Worker		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Manhole Shaft Placement/Backfill	Offhighway Truck	3		0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Vendor		1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Excavator			0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Generator Building Construction														
Footing and Equipment Bases	Tractor/Loader/Backho	7		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Haul		1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Haul		4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Masonry Building and Roof	Forklift	35		0.13	1.18	1.17	0.00	0.48	0.12	148.03	148.03	0.05	0.00	149.23
	Haul		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Crane			0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Worker		4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pump Building Construction														
Masonry Building and Roof	Forklift	30		0.13	1.18	1.17	0.00	0.48	0.12	148.03	148.03	0.05	0.00	149.23
	Haul		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Crane			0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Worker		4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Generator Building Mechanical														
Set Generator and Diesel Pump	Crane	2		0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Worker		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pump Building Mechanical														
Set Pumps	Crane	1		0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Worker		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Lift Station
Maximum Daily Unmitigated Local Construction Emissions

		Days	trips	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	NBio- CO2	Total CO2	CH4	N2O	CO2e
				Max Daily (lbs/day)						(lbs/day - Onsite Equipment); MT/yr (On Road Equipment)				
Scrubber Installation														
Foul Air Piping Excavation	Tractor/Loader/Backho	6		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Concrete/Industrial Saw			0.38	3.04	3.67	0.01	0.17	0.17	592.66	592.66	0.03	0.00	593.53
	Haul		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Foul Air Piping Subgrade Preparation	Tractor/Loader/Backho	2		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Piping Installation/Backfill	Tractor/Loader/Backho	10		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Vendor		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scrubber Installation	Haul	1	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Crane			0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Worker		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miscellaneous Pump Station Site Improvements														
Yard Paving	Haul	3	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Offhighway Truck			0.61	5.26	3.60	0.01	0.19	0.18	1278.52	1278.52	0.41	0.00	1288.86
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Lift Station
Maximum Daily Unmitigated Local Construction Emissions

		Days	trips	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	NBio- CO2	Total CO2	CH4	N2O	CO2e
				Max Daily (lbs/day)						(lbs/day - Onsite Equipment); MT/yr (On Road Equipment)				
Yard Piping	Tractor/Loader/Backho	10		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drain Boxes/Radio Antenna	Tractor/Loader/Backho	10		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Haul		1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Crane			0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Curb and Gutter/Drive Way	Tractor/Loader/Backho	5		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Plate Compactor			0.04	0.25	0.21	0.00	0.01	0.01	34.48	34.48	0.00	0.00	34.57
	Haul		1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Existing Pump Station Site Paving	Tractor/Loader/Backho	2		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Vendor		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Roller			0.19	1.92	1.88	0.00	0.12	0.11	254.09	254.09	0.08	0.00	256.14
	Worker		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Old Country Club Drive Repaving	Tractor/Loader/Backho	5		0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Haul		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paver			0.25	2.60	2.90	0.00	0.13	0.12	455.06	455.06	0.15	0.00	458.74
	Roller			0.19	1.92	1.88	0.00	0.12	0.11	254.09	254.09	0.08	0.00	256.14
	Worker		4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Existing Pump Station Demolition														
Remove Buildings/Paving and Structure 6 feet BG	Air Compressor	10		0.29	2.04	2.42	0.00	0.13	0.13	375.26	375.26	0.03	0.00	375.91
	Crane			0.41	4.85	1.98	0.01	0.20	0.18	558.74	558.74	0.18	0.00	563.26
	Excavator			0.23	2.15	3.27	0.01	0.10	0.10	500.19	500.19	0.16	0.00	504.24
	Tractor/Loader/Backhoe			0.19	1.90	2.26	0.00	0.58	0.17	300.90	300.90	0.10	0.00	303.33
	Haul		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Haul		1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Worker		5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miscellaneous Items														
Street Sweeping	Sweeper/Scrubber	360		0.11	1.03	0.98	0.00	0.08	0.07	123.09	123.09	0.04	0.00	124.08
Dust Control	Water	360		0.15	1.32	0.90	0.00	0.05	0.04	319.63	319.63	0.10	0.00	322.22
Pneumatic Tools	Air Compressor	360		0.29	2.04	2.42	0.00	0.13	0.13	375.26	375.26	0.03	0.00	375.91
	Worker		4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Lift Station
Maximum Daily Unmitigated Local Construction Emissions

Unmitigated - Construction

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total	NBio- CO2	Total CO2	CH4	N2O	CO2e
		(lbs/day)						(lbs/day)				
Tractor/Loader/Backhoe	Fugitive					0.4719	0.0715		0			0
	Onsite	0.1873	1.8958	2.2602	3.11E-03	0.1118	0.1028	300.9001	300.9001	0.0973		303.333
Bobcat Loader	Fugitive											
	Onsite	0.0755	1.0035	1.39	2.07E-03	0.0408	0.0376	200.1984	200.1984	6.48E-02		201.8171
Off Highway Truck	Fugitive											
	Onsite	0.6059	5.2634	3.6044	0.0132	0.1931	0.1776	1,278.52	1,278.52	0.4135		1,288.86
Air Compressor	Fugitive											
	Onsite	0.2919	2.0358	2.4234	3.96E-03	0.1255	0.1255	375.2641	375.2641	0.0258		375.9079
Concrete/Industrial Saw	Fugitive											
	Onsite	0.3848	3.0379	3.6741	6.26E-03	0.1731	0.1731	592.6646	592.6646	0.0344		593.525
Crane	Fugitive											
	Onsite	0.4129	4.8493	1.9829	5.77E-03	0.1969	0.1811	558.7388	558.7388	0.1807		563.2565
Rubber Tired Dozer	Fugitive											
	Onsite	1.0464	10.9713	4.0378	8.53E-03	0.5325	0.4899	827.3522	827.3522	0.2676		834.0418
Bore/Drill Rig	Fugitive											
	Onsite	0.2582	3.0228	2.074	9.43E-03	0.0916	0.0843	912.0624	912.0624	0.295		919.4369
Excavator	Fugitive											
	Onsite	0.2292	2.1534	3.2718	5.17E-03	0.1044	0.0961	500.19	500.19	0.1618		504.24
Forklift	Fugitive					0.3929	0.0424					
	Onsite	0.1293	1.1791	1.1679	1.53E-03	0.0837	0.077	148.0308	148.0308	0.0479		149.2277
Grader	Fugitive				0.3929	0.0424						
	Onsite	0.45	5.92	1.77	0.01	0.19	0.17	641.6841	641.6841	0.2075		646.87
Loader	Fugitive											
	Onsite	0.4199	4.3809	4.0551	6.18E-03	2.29E-01	2.11E-01	598.5245	598.5245	1.94E-01		603.3638
Paver	Fugitive											
	Onsite	0.2462	2.595	2.9048	4.70E-03	1.25E-01	1.15E-01	455.0608	455.0608	1.47E-01		458.7402
Roller	Fugitive											
	Onsite	0.1895	1.9242	1.8804	2.62E-03	1.18E-01	1.08E-01	254.0889	254.0889	8.22E-02		256.1433
Sweeper/Scrubber	Fugitive											
	Onsite	0.1143	1.0286	0.9755	1.27E-03	7.57E-02	6.96E-02	123.0882	123.0882	3.98E-02		124.0834
Plate Compactor	Fugitive											
	Onsite	0.0401	0.2513	0.2105	4.90E-04	9.77E-03	9.77E-03	34.4794	34.4794	3.58E-03		34.5689
Water Truck	Fugitive											
	Onsite	0.15	1.32	0.90	0.00	0.05	0.04	319.6308	319.6308	0.1034		322.22
Vehicles	Haul	0.02	0.50	0.21	0.00	0.04	0.01					0.08
	Vendor	0.01	0.18	0.10	0.00	0.02	0.01					0.03
	Worker	0.00	0.00	0.04	0.00	0.02	0.00					0.01
Arch. Coating		52.5238				0	0		0			0

3. CalEEMod Output

Lift Station - Orange County, Winter

Lift Station

Orange County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	5.67	1000sqft	1.50	5,666.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	421.21	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See Assumptions

Land Use - See Assumptions

Construction Phase - See Assumptions

Off-road Equipment - See Assumptions

Off-road Equipment - See Assumptions

Off-road Equipment - See Assumptions

Off-road Equipment - See Assumptions

Off-road Equipment - See Assumptions

Off-road Equipment - See Assumptions

Off-road Equipment - See Assumptions

Off-road Equipment - See Assumptions

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Off-road Equipment - See Assumptions

Off-road Equipment - See Assumptions

Off-road Equipment - See Assumptions

Off-road Equipment - See Assumptions

Off-road Equipment - See Assumptions

Off-road Equipment - See Assumptions

Grading - See Assumption

Demolition - See Assumptions

Trips and VMT - Modeled outside CalEEMod

Architectural Coating - See Assumptions

Vehicle Trips - Operationa modeled separately

Road Dust - Operational modeled separately

Area Coating -

Energy Use - Operational modeled separately

Water And Wastewater - Operational modeled separately

Solid Waste - Operational modeled separately

Construction Off-road Equipment Mitigation - See Assumptions

Table Name	Column Name	Default Value	New Value
tblAreaCoating	ReapplicationRatePercent	10	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstructionPhase	NumDays	200.00	1.00
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tblConstructionPhase	NumDays	200.00	1.00
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tblConstructionPhase	NumDays	200.00	1.00
tblConstructionPhase	NumDays	200.00	1.00
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tblConstructionPhase	PhaseEndDate	11/22/2021	1/4/2021
tblConstructionPhase	PhaseEndDate	2/5/2021	1/1/2021
tblConstructionPhase	PhaseEndDate	2/15/2021	1/14/2021
tblConstructionPhase	PhaseEndDate	12/6/2021	1/5/2021
tblConstructionPhase	PhaseEndDate	2/9/2021	1/4/2021
tblConstructionPhase	PhaseStartDate	12/7/2021	1/6/2021
tblConstructionPhase	PhaseStartDate	2/16/2021	1/3/2021
tblConstructionPhase	PhaseStartDate	1/11/2021	1/1/2021
tblConstructionPhase	PhaseStartDate	2/10/2021	1/14/2021
tblConstructionPhase	PhaseStartDate	11/23/2021	1/5/2021
tblConstructionPhase	PhaseStartDate	2/6/2021	1/2/2021
tblEnergyUse	LightingElect	2.99	0.00
tblEnergyUse	NT24E	3.83	0.00
tblEnergyUse	NT24NG	6.86	0.00
tblEnergyUse	T24E	1.63	0.00
tblEnergyUse	T24NG	14.04	0.00
tblGrading	AcresOfGrading	0.50	1.00
tblGrading	MaterialExported	0.00	4,176.00
tblLandUse	LandUseSquareFeet	5,670.00	5,666.00
tblLandUse	LotAcreage	0.13	1.50
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders

tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Concrete/Industrial Saws
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Bore/Drill Rigs
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Pavers
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Sweepers/Scrubbers
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00

tblProjectCharacteristics	CO2IntensityFactor	702.44	421.21
tblRoadDust	RoadPercentPave	100	0
tblSolidWaste	SolidWasteGenerationRate	7.03	0.00
tblTripsAndVMT	HaulingTripNumber	6.00	0.00
tblTripsAndVMT	HaulingTripNumber	413.00	0.00
tblTripsAndVMT	VendorTripNumber	1.00	0.00
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tblTripsAndVMT	VendorTripNumber	1.00	0.00
tblTripsAndVMT	VendorTripNumber	1.00	0.00
tblTripsAndVMT	WorkerTripNumber	3.00	0.00
tblTripsAndVMT	WorkerTripNumber	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	3.00	0.00
tblTripsAndVMT	WorkerTripNumber	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	2.00	0.00

tblTripsAndVMT	WorkerTripNumber	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	2.00	0.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblWater	IndoorWaterUseRate	1,311,187.50	0.00

2.0 Emissions Summary

-Emissions Summary Not Used

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Tractor/Loader/Backhoe	Demolition	1/1/2021	1/1/2021	5	1	
2	Bobcat Loader	Building Construction	1/2/2021	1/4/2021	5	1	
3	Offhighway Truck	Building Construction	1/3/2021	1/4/2021	5	1	
4	Compressor	Architectural Coating	1/5/2021	1/5/2021	5	1	
5	Concrete Saw/Industrial Saw	Building Construction	1/6/2021	1/6/2021	5	1	
6	Crane	Building Construction	1/7/2021	1/7/2021	5	1	
7	Dozer	Building Construction	1/8/2021	1/8/2021	5	1	
8	Drill Rig	Building Construction	1/11/2021	1/11/2021	5	1	
9	Excavator	Building Construction	1/12/2021	1/12/2021	5	1	
10	Forklift	Building Construction	1/13/2021	1/13/2021	5	1	
11	Grader	Grading	1/14/2021	1/14/2021	5	1	
12	Jacking Machine	Building Construction	1/15/2021	1/15/2021	5	1	
13	Paver	Building Construction	1/16/2021	1/18/2021	5	1	

14	Roller/Compactor	Building Construction	1/17/2021	1/18/2021	5	1	
15	Sweeper	Building Construction	1/18/2021	1/18/2021	5	1	
16	Plate Compactor	Building Construction	1/19/2021	1/19/2021	5	1	
17	Water Truck	Building Construction	1/20/2021	1/20/2021	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 8,499; Non-Residential Outdoor: 2,833; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Concrete Saw/Industrial Saw	Generator Sets	0	8.00	84	0.74
Crane	Generator Sets	0	8.00	84	0.74
Dozer	Generator Sets	0	8.00	84	0.74
Drill Rig	Generator Sets	0	8.00	84	0.74
Excavator	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Forklift	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Jacking Machine	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Paver	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Roller/Compactor	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Sweeper	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Plate Compactor	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Concrete Saw/Industrial Saw	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Crane	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Dozer	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Drill Rig	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Tractor/Loader/Backhoe	Welders	0	8.00	46	0.45
Excavator	Welders	0	8.00	46	0.45
Forklift	Welders	0	8.00	46	0.45

Jacking Machine	Welders	0	8.00	46	0.45
Paver	Welders	0	8.00	46	0.45
Roller/Compactor	Welders	0	8.00	46	0.45
Sweeper	Welders	0	8.00	46	0.45
Plate Compactor	Welders	0	8.00	46	0.45
Bobcat Loader	Welders	0	8.00	46	0.45
Compressor	Welders	0	8.00	46	0.45
Concrete Saw/Industrial Saw	Welders	0	8.00	46	0.45
Crane	Welders	0	8.00	46	0.45
Dozer	Welders	0	8.00	46	0.45
Drill Rig	Welders	0	8.00	46	0.45
Bobcat Loader	Skid Steer Loaders	1	8.00	65	0.37
Offhighway Truck	Off-Highway Trucks	1	8.00	402	0.38
Compressor	Air Compressors	1	8.00	78	0.48
Concrete Saw/Industrial Saw	Concrete/Industrial Saws	1	8.00	81	0.73
Dozer	Rubber Tired Dozers	1	8.00	247	0.40
Drill Rig	Bore/Drill Rigs	1	8.00	221	0.50
Excavator	Excavators	1	8.00	158	0.38
Jacking Machine	Other Construction Equipment	1	8.00	172	0.42
Paver	Pavers	1	8.00	130	0.42
Roller/Compactor	Rollers	1	8.00	80	0.38
Sweeper	Sweepers/Scrubbers	1	4.00	64	0.46
Plate Compactor	Plate Compactors	1	8.00	8	0.43
Water Truck	Cranes	0	6.00	231	0.29
Water Truck	Forklifts	0	6.00	89	0.20
Water Truck	Generator Sets	0	8.00	84	0.74
Water Truck	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Water Truck	Welders	0	8.00	46	0.45
Water Truck	Off-Highway Trucks	1	2.00	402	0.38
Concrete Saw/Industrial Saw	Air Compressors	0	6.00	78	0.48

Compressor	Cement and Mortar Mixers	0	6.00	9	0.56
Tractor/Loader/Backhoe	Concrete/Industrial Saws	0	8.00	81	0.73
Offhighway Truck	Generator Sets	0	8.00	84	0.74
Offhighway Truck	Cranes	0	6.00	231	0.29
Offhighway Truck	Forklifts	0	6.00	89	0.20
Bobcat Loader	Graders	0	8.00	187	0.41
Compressor	Pavers	0	6.00	130	0.42
Compressor	Rollers	0	7.00	80	0.38
Tractor/Loader/Backhoe	Rubber Tired Dozers	0	8.00	247	0.40
Grader	Rubber Tired Dozers	0	6.00	247	0.40
Offhighway Truck	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Tractor/Loader/Backhoe	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grader	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Compressor	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Bobcat Loader	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grader	Graders	1	8.00	187	0.41
Compressor	Paving Equipment	0	8.00	132	0.36
Bobcat Loader	Rubber Tired Dozers	0	7.00	247	0.40
Offhighway Truck	Welders	0	8.00	46	0.45
Tractor/Loader/Backhoe	Cranes	0	6.00	231	0.29
Excavator	Cranes	0	6.00	231	0.29
Forklift	Cranes	0	6.00	231	0.29
Jacking Machine	Cranes	0	6.00	231	0.29
Paver	Cranes	0	6.00	231	0.29
Roller/Compactor	Cranes	0	6.00	231	0.29
Sweeper	Cranes	0	6.00	231	0.29
Plate Compactor	Cranes	0	6.00	231	0.29
Bobcat Loader	Cranes	0	6.00	231	0.29
Compressor	Cranes	0	6.00	231	0.29
Concrete Saw/Industrial Saw	Cranes	0	6.00	231	0.29

Crane	Cranes	1	8.00	231	0.29
Dozer	Cranes	0	6.00	231	0.29
Drill Rig	Cranes	0	6.00	231	0.29
Tractor/Loader/Backhoe	Forklifts	0	6.00	89	0.20
Excavator	Forklifts	0	6.00	89	0.20
Forklift	Forklifts	1	8.00	89	0.20
Jacking Machine	Forklifts	0	6.00	89	0.20
Paver	Forklifts	0	6.00	89	0.20
Roller/Compactor	Forklifts	0	6.00	89	0.20
Sweeper	Forklifts	0	6.00	89	0.20
Plate Compactor	Forklifts	0	6.00	89	0.20
Bobcat Loader	Forklifts	0	6.00	89	0.20
Compressor	Forklifts	0	6.00	89	0.20
Concrete Saw/Industrial Saw	Forklifts	0	6.00	89	0.20
Crane	Forklifts	0	6.00	89	0.20
Dozer	Forklifts	0	6.00	89	0.20
Drill Rig	Forklifts	0	6.00	89	0.20
Tractor/Loader/Backhoe	Generator Sets	0	8.00	84	0.74
Excavator	Generator Sets	0	8.00	84	0.74
Forklift	Generator Sets	0	8.00	84	0.74
Jacking Machine	Generator Sets	0	8.00	84	0.74
Paver	Generator Sets	0	8.00	84	0.74
Roller/Compactor	Generator Sets	0	8.00	84	0.74
Sweeper	Generator Sets	0	8.00	84	0.74
Plate Compactor	Generator Sets	0	8.00	84	0.74
Bobcat Loader	Generator Sets	0	8.00	84	0.74
Compressor	Generator Sets	0	8.00	84	0.74

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Tractor/Loader/Backhoe	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Bobcat Loader	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grader	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Offhighway Truck	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Compressor	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Concrete Saw/Industrial Saw	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Excavator	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Forklift	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Jacking Machine	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paver	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Roller/Compactor	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Sweeper	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Plate Compactor	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Crane	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Dozer	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Drill Rig	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Water Truck	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Tractor/Loader/Backhoe - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.2738	0.0000	1.2738	0.1929	0.0000	0.1929			0.0000			0.0000
Off-Road	0.1873	1.8958	2.2602	3.1100e-003		0.1118	0.1118		0.1028	0.1028		300.9001	300.9001	0.0973		303.3330
Total	**0.1873**	**1.8958**	**2.2602**	**3.1100e-003**	**1.2738**	**0.1118**	**1.3855**	**0.1929**	**0.1028**	**0.2957**		**300.9001**	**300.9001**	**0.0973**		**303.3330**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4719	0.0000	0.4719	0.0715	0.0000	0.0715			0.0000			0.0000

Off-Road	0.0380	0.1646	2.3421	3.1100e-003		5.0600e-003	5.0600e-003		5.0600e-003	5.0600e-003	0.0000	300.9001	300.9001	0.0973		303.3330
Total	**0.0380**	**0.1646**	**2.3421**	**3.1100e-003**	**0.4719**	**5.0600e-003**	**0.4770**	**0.0715**	**5.0600e-003**	**0.0765**	**0.0000**	**300.9001**	**300.9001**	**0.0973**		**303.3330**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.3 Bobcat Loader - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0755	1.0035	1.3900	2.0700e-003		0.0408	0.0408		0.0376	0.0376		200.1984	200.1984	0.0648		201.8171
Total	**0.0755**	**1.0035**	**1.3900**	**2.0700e-003**		**0.0408**	**0.0408**		**0.0376**	**0.0376**		**200.1984**	**200.1984**	**0.0648**		**201.8171**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0509	1.1622	1.5694	2.0700e-003		3.3900e-003	3.3900e-003		3.3900e-003	3.3900e-003	0.0000	200.1984	200.1984	0.0648		201.8171
Total	**0.0509**	**1.1622**	**1.5694**	**2.0700e-003**		**3.3900e-003**	**3.3900e-003**		**3.3900e-003**	**3.3900e-003**	**0.0000**	**200.1984**	**200.1984**	**0.0648**		**201.8171**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.4 Offhighway Truck - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6059	5.2634	3.6044	0.0132		0.1931	0.1931		0.1776	0.1776		1,278.5230	1,278.5230	0.4135		1,288.8605
Total	**0.6059**	**5.2634**	**3.6044**	**0.0132**		**0.1931**	**0.1931**		**0.1776**	**0.1776**		**1,278.5230**	**1,278.5230**	**0.4135**		**1,288.8605**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1617	0.7005	5.9273	0.0132		0.0216	0.0216		0.0216	0.0216	0.0000	1,278.5230	1,278.5230	0.4135		1,288.8605
Total	**0.1617**	**0.7005**	**5.9273**	**0.0132**		**0.0216**	**0.0216**		**0.0216**	**0.0216**	**0.0000**	**1,278.5230**	**1,278.5230**	**0.4135**		**1,288.8605**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.5 Compressor - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	52.5238					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2919	2.0358	2.4234	3.9600e-003		0.1255	0.1255		0.1255	0.1255		375.2641	375.2641	0.0258		375.9079
Total	**52.8157**	**2.0358**	**2.4234**	**3.9600e-003**		**0.1255**	**0.1255**		**0.1255**	**0.1255**		**375.2641**	**375.2641**	**0.0258**		**375.9079**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	52.5238					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Off-Road	0.0396	0.1717	2.4432	3.9600e-003		5.2800e-003	5.2800e-003		5.2800e-003	5.2800e-003	0.0000	375.2641	375.2641	0.0258		375.9079
Total	**52.5634**	**0.1717**	**2.4432**	**3.9600e-003**		**5.2800e-003**	**5.2800e-003**		**5.2800e-003**	**5.2800e-003**	**0.0000**	**375.2641**	**375.2641**	**0.0258**		**375.9079**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.6 Concrete Saw/Industrial Saw - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3848	3.0379	3.6741	6.2600e-003		0.1731	0.1731		0.1731	0.1731		592.6646	592.6646	0.0344		593.5250
Total	**0.3848**	**3.0379**	**3.6741**	**6.2600e-003**		**0.1731**	**0.1731**		**0.1731**	**0.1731**		**592.6646**	**592.6646**	**0.0344**		**593.5250**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0626	0.2712	3.8586	6.2600e-003		8.3400e-003	8.3400e-003		8.3400e-003	8.3400e-003	0.0000	592.6646	592.6646	0.0344		593.5250
Total	**0.0626**	**0.2712**	**3.8586**	**6.2600e-003**		**8.3400e-003**	**8.3400e-003**		**8.3400e-003**	**8.3400e-003**	**0.0000**	**592.6646**	**592.6646**	**0.0344**		**593.5250**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.7 Crane - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4129	4.8493	1.9829	5.7700e-003		0.1969	0.1969		0.1811	0.1811		558.7388	558.7388	0.1807		563.2565
Total	**0.4129**	**4.8493**	**1.9829**	**5.7700e-003**		**0.1969**	**0.1969**		**0.1811**	**0.1811**		**558.7388**	**558.7388**	**0.1807**		**563.2565**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0709	0.3072	2.5993	5.7700e-003		9.4500e-003	9.4500e-003		9.4500e-003	9.4500e-003	0.0000	558.7388	558.7388	0.1807		563.2565
Total	**0.0709**	**0.3072**	**2.5993**	**5.7700e-003**		**9.4500e-003**	**9.4500e-003**		**9.4500e-003**	**9.4500e-003**	**0.0000**	**558.7388**	**558.7388**	**0.1807**		**563.2565**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.8 Dozer - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0464	10.9713	4.0378	8.5300e-003		0.5325	0.5325		0.4899	0.4899		827.3522	827.3522	0.2676		834.0418
Total	**1.0464**	**10.9713**	**4.0378**	**8.5300e-003**		**0.5325**	**0.5325**		**0.4899**	**0.4899**		**827.3522**	**827.3522**	**0.2676**		**834.0418**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1046	0.4531	3.8336	8.5300e-003		0.0139	0.0139		0.0139	0.0139	0.0000	827.3522	827.3522	0.2676		834.0418

Total	**0.1046**	**0.4531**	**3.8336**	**8.5300e-003**		**0.0139**	**0.0139**		**0.0139**	**0.0139**	**0.0000**	**827.3522**	**827.3522**	**0.2676**		**834.0418**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.9 Drill Rig - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2582	3.0228	2.0740	9.4300e-003		0.0916	0.0916		0.0843	0.0843		912.0624	912.0624	0.2950		919.4369
Total	**0.2582**	**3.0228**	**2.0740**	**9.4300e-003**		**0.0916**	**0.0916**		**0.0843**	**0.0843**		**912.0624**	**912.0624**	**0.2950**		**919.4369**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2582	3.0228	2.0740	9.4300e-003		0.0916	0.0916		0.0843	0.0843	0.0000	912.0624	912.0624	0.2950		919.4369
Total	**0.2582**	**3.0228**	**2.0740**	**9.4300e-003**		**0.0916**	**0.0916**		**0.0843**	**0.0843**	**0.0000**	**912.0624**	**912.0624**	**0.2950**		**919.4369**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.10 Excavator - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2292	2.1534	3.2718	5.1700e-003		0.1044	0.1044		0.0961	0.0961		500.1920	500.1920	0.1618		504.2363
Total	**0.2292**	**2.1534**	**3.2718**	**5.1700e-003**		**0.1044**	**0.1044**		**0.0961**	**0.0961**		**500.1920**	**500.1920**	**0.1618**		**504.2363**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0635	0.2753	3.9180	5.1700e-003		8.4700e-003	8.4700e-003		8.4700e-003	8.4700e-003	0.0000	500.1920	500.1920	0.1618		504.2363
Total	**0.0635**	**0.2753**	**3.9180**	**5.1700e-003**		**8.4700e-003**	**8.4700e-003**		**8.4700e-003**	**8.4700e-003**	**0.0000**	**500.1920**	**500.1920**	**0.1618**		**504.2363**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.11 Forklift - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1293	1.1791	1.1679	1.5300e-003		0.0837	0.0837		0.0770	0.0770		148.0308	148.0308	0.0479		149.2277
Total	**0.1293**	**1.1791**	**1.1679**	**1.5300e-003**		**0.0837**	**0.0837**		**0.0770**	**0.0770**		**148.0308**	**148.0308**	**0.0479**		**149.2277**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0188	0.0816	1.1616	1.5300e-003		2.5100e-003	2.5100e-003		2.5100e-003	2.5100e-003	0.0000	148.0308	148.0308	0.0479		149.2277

Total	**0.0188**	**0.0816**	**1.1616**	**1.5300e-003**		**2.5100e-003**	**2.5100e-003**		**2.5100e-003**	**2.5100e-003**	**0.0000**	**148.0308**	**148.0308**	**0.0479**		**149.2277**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.12 Grader - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0605	0.0000	1.0605	0.1145	0.0000	0.1145			0.0000			0.0000
Off-Road	0.4530	5.9246	1.7672	6.6200e-003		0.1877	0.1877		0.1727	0.1727		641.6841	641.6841	0.2075		646.8725
Total	**0.4530**	**5.9246**	**1.7672**	**6.6200e-003**	**1.0605**	**0.1877**	**1.2482**	**0.1145**	**0.1727**	**0.2872**		**641.6841**	**641.6841**	**0.2075**		**646.8725**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3929	0.0000	0.3929	0.0424	0.0000	0.0424			0.0000			0.0000
Off-Road	0.0811	0.3516	2.9749	6.6200e-003		0.0108	0.0108		0.0108	0.0108	0.0000	641.6841	641.6841	0.2075		646.8725
Total	**0.0811**	**0.3516**	**2.9749**	**6.6200e-003**	**0.3929**	**0.0108**	**0.4037**	**0.0424**	**0.0108**	**0.0533**	**0.0000**	**641.6841**	**641.6841**	**0.2075**		**646.8725**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.13 Jacking Machine - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4199	4.3809	4.0551	6.1800e-003		0.2291	0.2291		0.2108	0.2108		598.5245	598.5245	0.1936		603.3638
Total	**0.4199**	**4.3809**	**4.0551**	**6.1800e-003**		**0.2291**	**0.2291**		**0.2108**	**0.2108**		**598.5245**	**598.5245**	**0.1936**		**603.3638**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4199	4.3809	4.0551	6.1800e-003		0.2291	0.2291		0.2108	0.2108	0.0000	598.5245	598.5245	0.1936		603.3638
Total	**0.4199**	**4.3809**	**4.0551**	**6.1800e-003**		**0.2291**	**0.2291**		**0.2108**	**0.2108**	**0.0000**	**598.5245**	**598.5245**	**0.1936**		**603.3638**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.14 Paver - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2462	2.5950	2.9048	4.7000e-003		0.1254	0.1254		0.1154	0.1154		455.0608	455.0608	0.1472		458.7402
Total	**0.2462**	**2.5950**	**2.9048**	**4.7000e-003**		**0.1254**	**0.1254**		**0.1154**	**0.1154**		**455.0608**	**455.0608**	**0.1472**		**458.7402**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0578	0.2504	3.5630	4.7000e-003		7.7000e-003	7.7000e-003		7.7000e-003	7.7000e-003	0.0000	455.0608	455.0608	0.1472		458.7402

Total	**0.0578**	**0.2504**	**3.5630**	**4.7000e-003**		**7.7000e-003**	**7.7000e-003**		**7.7000e-003**	**7.7000e-003**	**0.0000**	**455.0608**	**455.0608**	**0.1472**		**458.7402**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.15 Roller/Compactor - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1895	1.9242	1.8804	2.6200e-003		0.1176	0.1176		0.1082	0.1082		254.0889	254.0889	0.0822		256.1433
Total	**0.1895**	**1.9242**	**1.8804**	**2.6200e-003**		**0.1176**	**0.1176**		**0.1082**	**0.1082**		**254.0889**	**254.0889**	**0.0822**		**256.1433**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0322	0.1394	1.9838	2.6200e-003		4.2900e-003	4.2900e-003		4.2900e-003	4.2900e-003	0.0000	254.0889	254.0889	0.0822		256.1433
Total	**0.0322**	**0.1394**	**1.9838**	**2.6200e-003**		**4.2900e-003**	**4.2900e-003**		**4.2900e-003**	**4.2900e-003**	**0.0000**	**254.0889**	**254.0889**	**0.0822**		**256.1433**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.16 Sweeper - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1143	1.0286	0.9755	1.2700e-003		0.0757	0.0757		0.0696	0.0696		123.0882	123.0882	0.0398		124.0834
Total	**0.1143**	**1.0286**	**0.9755**	**1.2700e-003**		**0.0757**	**0.0757**		**0.0696**	**0.0696**		**123.0882**	**123.0882**	**0.0398**		**124.0834**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0312	0.7114	0.9606	1.2700e-003		2.0800e-003	2.0800e-003		2.0800e-003	2.0800e-003	0.0000	123.0882	123.0882	0.0398		124.0834
Total	**0.0312**	**0.7114**	**0.9606**	**1.2700e-003**		**2.0800e-003**	**2.0800e-003**		**2.0800e-003**	**2.0800e-003**	**0.0000**	**123.0882**	**123.0882**	**0.0398**		**124.0834**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.17 Plate Compactor - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0401	0.2513	0.2105	4.9000e-004		9.7700e-003	9.7700e-003		9.7700e-003	9.7700e-003		34.4794	34.4794	3.5800e-003		34.5689
Total	**0.0401**	**0.2513**	**0.2105**	**4.9000e-004**		**9.7700e-003**	**9.7700e-003**		**9.7700e-003**	**9.7700e-003**		**34.4794**	**34.4794**	**3.5800e-003**		**34.5689**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0401	0.2513	0.2105	4.9000e-004		9.7700e-003	9.7700e-003		9.7700e-003	9.7700e-003	0.0000	34.4794	34.4794	3.5800e-003		34.5689

Total	**0.0401**	**0.2513**	**0.2105**	**4.9000e-004**		**9.7700e-003**	**9.7700e-003**		**9.7700e-003**	**9.7700e-003**	**0.0000**	**34.4794**	**34.4794**	**3.5800e-003**		**34.5689**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.18 Water Truck - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1515	1.3158	0.9011	3.3000e-003		0.0483	0.0483		0.0444	0.0444		319.6308	319.6308	0.1034		322.2151
Total	**0.1515**	**1.3158**	**0.9011**	**3.3000e-003**		**0.0483**	**0.0483**		**0.0444**	**0.0444**		**319.6308**	**319.6308**	**0.1034**		**322.2151**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0404	0.1751	1.4818	3.3000e-003		5.3900e-003	5.3900e-003		5.3900e-003	5.3900e-003	0.0000	319.6308	319.6308	0.1034		322.2151
Total	**0.0404**	**0.1751**	**1.4818**	**3.3000e-003**		**5.3900e-003**	**5.3900e-003**		**5.3900e-003**	**5.3900e-003**	**0.0000**	**319.6308**	**319.6308**	**0.1034**		**322.2151**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

-Operational Emissions Not Quantified

4. EMFAC2017

Lift Station

Total On-Road Emissions

260 Max construction days per year

Construction Phase	Daily One-Way Trips	Haul Days per Phase (days)	Work Hours per Day (hours/day)	One-Way Trip Distance per Day (miles)	Idling per Day (minutes)
General Construction	2021				
Total Haul Trips	0				
Hauling	2	1	8	20	15
Vendor	2	1	8	7.3	15
Worker	2	1	8	10.8	0

Lift Station

Total On-Road Emissions

Construction Phase	Regional Emissions (pounds/day)										(MT/yr)
	ROG	NOX	CO	SO2	PM10 Dust	PM10 Exh	Total PM10	PM2.5 Dust	PM2.5 Exh	Total PM2.5	Total CO2e
General Construction											
Total Haul Trips											
Hauling	0.02	0.50	0.21	0.00	0.03	0.00	0.04	0.01	0.00	0.01	0.08
Vendor	0.01	0.18	0.10	0.00	0.01	0.00	0.02	0.00	0.00	0.01	0.03
Worker	0.00	0.00	0.04	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.01

Lift Station
Running Emissions

		Running Emissions Factor (grams/mile)					
		ROG	NOX	CO	SO2	PM10	PM2.5
2021Hauling	Hauling	0.1160351	3.925745664	0.83515721	0.01343159	0.05009956	0.04793223
2021Vendor	Vendor	0.10512088	2.943469546	0.67185981	0.01191566	0.05157114	0.04933722
2021Worker	Worker	0.01599365	0.062734327	0.88111494	0.0029312	0.00182245	0.00167778
	GWP	N/A	N/A	N/A	N/A	N/A	N/A

Construction Phase	Daily One-Way Trips	Haul Days per Phase (days)	Work Hours per Day (hours/day)	One-Way Trip Distance per Day (miles)	Regional Emissions (pounds/day)					
					ROG	NOX	CO	SO2	PM10	PM2.5
General Construction	2021									
Total Haul Trips	0									
Hauling	2	1	8	20	0.01	0.35	0.07	0.00	0.00	0.00
Vendor	2	1	8	7.3	0.00	0.09	0.02	0.00	0.00	0.00
Worker	2	1	8	10.8	0.00	0.00	0.04	0.00	0.00	0.00

Lift Station
Running Emissions

		Running Emissions Factor (grams/mile)		
		CO2	CH4	N2O
2021Hauling	Hauling	1517.43728	0.14348884	0.24286839
2021Vendor	Vendor	1301.88974	0.07455007	0.18442333
2021Worker	Worker	296.776138	0.00389727	0.00599431
	GWP	1	25	290

Construction Phase	Daily One-Way Trips	Haul Days per Phase (days)	Work Hours per Day (hours/day)	One-Way Trip Distance per Day (miles)	Regional Emissions (MT/year)			
					CO2	CH4	N2O	CO2e
General Construction	2021							
Total Haul Trips	0							
Hauling	2	1	8	20	0.06	0.00	0.00	0.06
Vendor	2	1	8	7.3	0.02	0.00	0.00	0.02
Worker	2	1	8	10.8	0.01	0.00	0.00	0.01

Lift Station
Idling Emissions

		Idling Emissions Factor (grams/minute)					
		ROG	NOX	CO	SO2	PM10	PM2.5
2021Hauling	Hauling	0.15769826	2.261517577	2.06006444	0.00370447	0.00324353	0.00310322
2021Vendor	Vendor	0.08476179	1.237070106	1.12669254	0.00198739	0.00198459	0.00189874
2021Worker	Worker	0	0	0	0	0	0
	GWP	N/A	N/A	N/A	N/A	N/A	N/A

Construction Phase	Daily One-Way Trips	Haul Days per Phase (days)	Work Hours per Day (hours/day)	Idling minutes per Day (miles)	Regional Emissions (pounds/day) ROG	NOX	CO	SO2	PM10	PM2.5
General Construction	2021									
Total Haul Trips	0									
Hauling	2	1	8	15	0.01	0.15	0.14	0.00	0.00	0.00
Vendor	2	1	8	15	0.01	0.08	0.07	0.00	0.00	0.00
Worker	2	1	8	0	0.00	0.00	0.00	0.00	0.00	0.00

Lift Station
Idling Emissions

		Idling Emissions Factor (grams/minute)		
		CO2	CH4	N2O
2021Hauling	Hauling	404.249924	0.011151	0.06410899
2021Vendor	Vendor	216.320388	0.00680452	0.03395576
2021Worker	Worker	0	0	0
	GWP	1	25	290

Construction Phase	Daily One-Way Trips	Haul Days per Phase (days)	Work Hours per Day (hours/day)	Idling minutes per Day (miles)	Regional Emissions (MT/year) CO2	CH4	N2O	CO2e
General Construction	2021							
Total Haul Trips	0							
Hauling	2	1	8	15	0.01	0.00	0.00	0.01
Vendor	2	1	8	15	0.01	0.00	0.00	0.01
Worker	2	1	8	0	0.00	0.00	0.00	0.00

Lift Station
Road Dust, Break Wear, and Tire wear Emissions

	Emission Factors (grams/mile)					
	PM10			PM2.5		
	RD	BW	TW	RD	BW	TW
2021Hauling Hauling	3.00E-01	0.060168391	0.0350709	7.36E-02	0.02578645	0.00876773
2021Vendor Vendor	3.00E-01	0.095254214	0.02353545	7.36E-02	0.04082323	0.00588386
2021Worker Worker	3.00E-01	0.036750011	0.008	7.36E-02	0.01575	0.002

Construction Phase	Daily One-Way Trips	Haul Days per Phase (days)	Work Hours per Day (hours/day)	One-Way Trip Distance per Day (miles)	Regional Emissions (pounds/day)					
					PM10			PM2.5		
					RD	BW	TW	RD	BW	TW
General Construction	2021									
Total Haul Trips	0									
Hauling	2	1	8	20	0.03	0.01	0.00	0.01	0.00	0.00
Vendor	2	1	8	7.3	0.01	0.00	0.00	0.00	0.00	0.00
Worker	2	1	8	10.8	0.01	0.00	0.00	0.00	0.00	0.00

Lift Station
Road Dust

Paved Road Dust Emission Factors (Assumes No Precipitation)

Formula: $EF_{Dust,P} = (k\ (sL)^{0.91} \times (W)^{1.02})$

Where:

$EF_{Dust,P}$ =	Paved Road Dust Emission Factor (having the same units as k)
k =	particle size multiplier
sL =	road surface silt loading (g/m^2)
W =	average fleet vehicle weight (tons) (CARB uses 2.4 tons as a fleet average vehicle weight factor)

	Emission Factor (grams per VMT)	
	PM10	PM2.5
k	0.9979	0.2449
sL	0.1	0.1
W	2.4	2.4
$EF_{Dust,P}$	3.00E-01	7.36E-02

Unpaved Road Dust Emission Factors (Assumes No Precipitation)

Formula: $EF_{Dust,U} = (k\ (\ s / 12)^{1} \times (Sp / 30)^{0.5} / (M / 0.5)^{0.2}) - C)$

Where:

$EF_{Dust,U}$ =	Unpaved Road Dust Emission Factor (having the same units as k)
k =	particle size multiplier
s =	surface material silt content (%)
Sp =	mean vehicle speed (mph)
M =	surface material moisture content (%)
C =	Emission Factor for 1980s vehicle fleet exhaust, brake wear, and tire wear

	Emission Factor (grams per VMT)	
	PM10	PM2.5
k	816.47	81.65
s	4.3%	4.3%
Sp	15	15
M	0.5%	0.5%
C	0.00047	0.00036
$EF_{Dust,U}$	5.20E+00	5.19E-01

Sources:

SCAQMD, CalEEMod, Version 2011.1.

CARB, *Entrained Dust from Paved Road Travel: Emission Estimation Methodology Background Document* , (1997).

USEPA, *AP-42* , Fifth Edition, Volume I, Chapter 13.2.1 - Paved Roads, (2011).

PCR Services Corporation, 2013.

Appendix B
Biological Technical Report

ESA

SOUTH COAST WATER DISTRICT LIFT STATION NO. 2 REPLACEMENT PROJECT

Biological Technical Report

Prepared for
South Coast Water District

February 2021

SOUTH COAST WATER DISTRICT LIFT STATION NO. 2 REPLACEMENT PROJECT

Biological Technical Report

Prepared for
South Coast Water District

February 2021

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SOUTH COAST WATER DISTRICT LIFT STATION NO. 2 REPLACEMENT PROJECT

Biological Assessment

1. Introduction

1.1 Background and Purpose

This biological technical report (BTR) presents the findings of a general biological resource assessment conducted by Environmental Science Associates (ESA) for the South Coast Water District Lift Station No. 2 Replacement Project (proposed project) in the City of Laguna Beach (City), Orange County, California (**Figure 1**). The purpose of this BTR is to document the existing biological resources and assess the potential biological and regulatory impacts associated with the removal of the existing lift station, construction of a new replacement lift station approximately 100 feet east of the existing lift station along Country Club Drive, the permanent realignment of Country Club Drive, the replacement of existing drainage and drainage outlet into Aliso Creek, installation of a new odor control scrubber at the existing lift station site, and an emergency intertie. The preparation of this BTR is intended to satisfy documentation according to the City of Laguna Beach Biological Report Requirements (City of Laguna Beach 2006) and the California Coastal Commission.

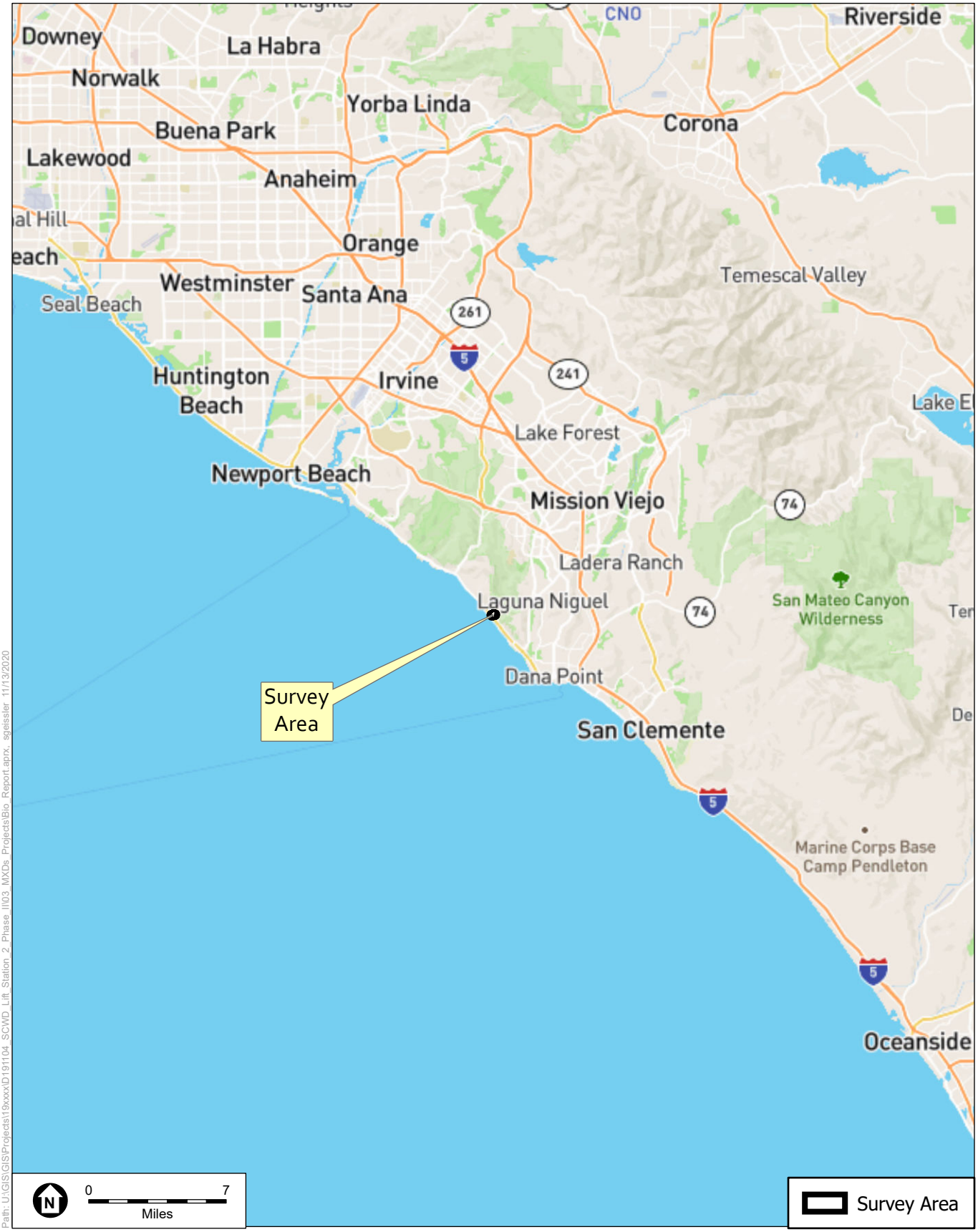
1.2 Survey Area Location

The 6.9-acre survey area is located along Country Club Drive in Laguna Beach, Orange County, California and includes a 100-foot buffer (**Figure 2**). The survey area includes lands within Section 6 of Township 8 South, Range 8 West and Section 31 of Township 7 South, Range 8 West of the Laguna Beach and San Juan Capistrano U.S. Geological Survey (USGS) 7.5-minute quadrangle topographic maps (**Figure** 3). Lands within and immediately surrounding the survey area include South Coast Water District facilities, residential development, mixed-use development, roads for vehicle use, undeveloped open space (vegetated native habitat), and several hiking trails.

1.3 Project Description

Existing Facilities

The South Coast Water District (SCWD) currently operates Lift Station 2 that is a reinforced concrete wet well and dry well sewage lift station. The lift station is located at 31104 Country Club Drive and conveys raw sewage to the South Orange County Wastewater Authority (SOCWA) Coastal Treatment Plant via a 16-inch diameter high-density polyethylene (HDPE) force main that is over a mile in length to the east and runs generally parallel



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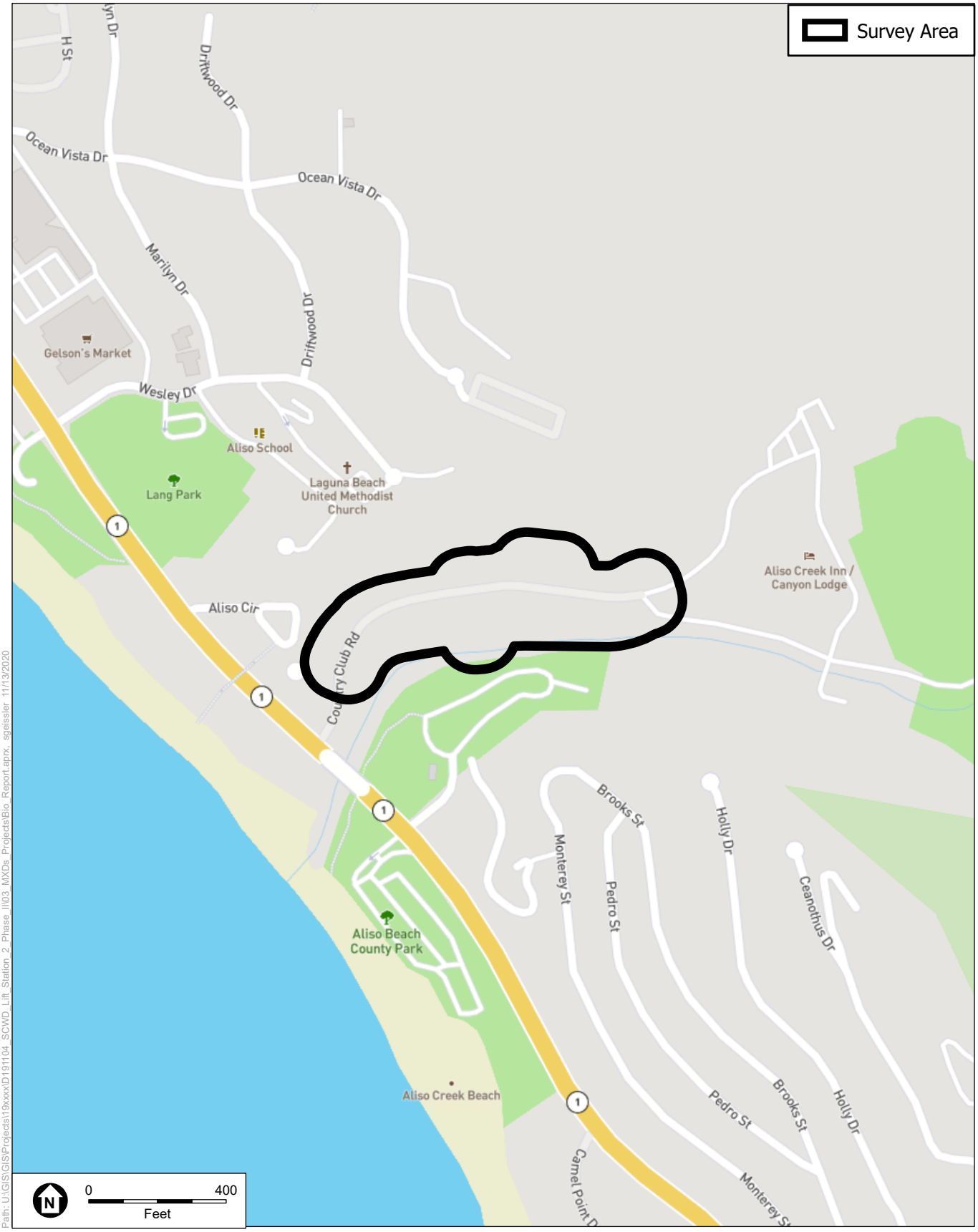
SOURCE: Open Street Map; ESA, 2020.

South Coast Water District Lift Station No. 2 Replacement Project

Figure 1
Regional Location Map

ESA



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SOURCE: Open Street Map; ESA, 2020.

South Coast Water District Lift Station No. 2 Replacement Project

Figure 2
Vicinity Map

ESA

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SOURCE: USGS 7.5' Laguna Beach, San Juan Capistrano, Dana Point Topographic Quadrangles (2018).

South Coast Water District Lift Station No. 2 Replacement Project

Figure 3
USGS Topographic Map

ESA

to Aliso Creek. In addition, the City of Laguna Beach's North Coast Interceptor sewer flows by gravity through a 24-inch asbestos-cement pipe (ACP) that extends along Country Club Drive and then through The Ranch golf course and open country, to the SOCWA Coastal Treatment Plant. Lift Station 2 was originally constructed in 1953 and is in need of major repair and modernization. A SCWD storage area located approximately 100 feet east of the existing lift station includes an approximately 600 square-foot concrete masonry building and an approximately 1,200 square-foot pre-manufactured metal shed. Country Club Drive is an approximately 20-foot wide roadway that extends west to east along the SCWD facilities to The Ranch at Laguna Beach, which is a private resort and hotel and provides an access to the SOCWA Coastal Treatment Plant located east of The Ranch.

Project Characteristics

The proposed project includes the construction of a new lift station, demolition of the existing lift station and facilities, the permanent realignment of Country Club Drive, the replacement of existing drainage a drainage outlet into Aliso Creek, installation of a new odor control scrubber, and an emergency intertie to connect the SCWD pipeline and City of Laguna Beach pipeline for secondary conveyance of sewage flows to the Coastal Treatment Plan in the event of an emergency situation with either agency's pipeline such as a line break or blockage.

Lift Station

The proposed project includes the construction of a new lift station approximately 100 feet east of the existing lift station within an area of approximately 0.09 acre currently used by the SCWD for storage.

The proposed lift station includes two above ground structures separated by approximately 14 feet in width: the generator building is approximately 26 feet wide by 38.7 feet long by 18 feet high and the electrical/control building is approximately 17.4 feet wide by 37.3 feet long by 18 feet high.

The proposed lift station includes subterranean reinforced concrete wet well and dry well structure that measures 85 feet long by 37.3 feet wide by 38 feet deep. The dry well consists of two levels (mid-level and lower level) beneath the ground floor that encompass approximately 31.2 feet in length, 37.3 feet in width and 38 feet in depth. The dry well mid-level floor is 14 feet below the ground floor. The dry well lower level floor is 21 feet below the mid-level floor and 35 feet below the ground floor. The walls and ceiling of dry well lower and mid- level rooms are covered with acoustic panels to control reverberation and the transmission of noise from the building.

The lift station will include: three 250 horse power, 3000 gallons per minute (gpm), immersible main pumps driven by dedicated variable frequency drives; one 7.5 horsepower (hp) 900 gpm, submersible wet well transfer pump; one 7.5 hp, 7000-cubic feet per minute (cfm), exhaust fan and ductwork; 5-ton underhung bridge crane; valves, piping and instrumentation on the lower and mid-levels of the dry well. The electrical/control building on the ground floor is air conditioned by a 5 ton packaged unit. The electrical/control building houses three (3) 250 hp variable frequency drives, electrical distribution panels, pump station SCADA/Control Panel, and the AC system ductwork. The SCADA/Control panel communicates with the Districts central SCADA center via radio telemetry, which includes an on-site, approximately 40 feet high, pole mounted antenna.

On the ground level within the generator building, a 3000-gpm, 475 horsepower diesel pump with a 250-gallon sub-base fuel tank and a 550 Kilowatt diesel generator with a 660-gallon sub-base fuel tank is proposed. The diesel pump is operated in the event of total electric pump failure, pump control panel failure, or if the electric

pumps are mechanically damaged and not keeping up with the influent flow. The generator is started and operates automatically during a commercial power failure. It is shutdown automatically when commercial power is restored. The generator building includes: three (3) ½ hp, 3050-cfm roof mounted fans; 800-amp automatic transfer switch, and 1,000-amp electrical service meter and main disconnect circuit breaker. The walls and ceiling are covered in acoustic panels to control the transmission of noise from the building. The doors and louvers are also acoustic type.

The new pump station site will include a motor operated slide gate and lighting for site security. The security lighting will be hooded and directed toward the ground to prevent light from spilling out of the pump station site.

A two stage bio-scrubber will be installed at the existing Lift Station No. 2 site after the existing structures have been demolished to treat foul air from the new wet well and upstream sewer. The scrubber will be mounted on a concrete pad outdoors. Its approximate dimensions are 19 feet long by 8 feet wide by 9.5 feet high. The scrubber capacity is 3000 cfm, and includes a 5-hp skid mounted fan, control panel and nutrient tank. The nutrient tank contains an aqueous solution of miracle grow fertilizer and is sprayed over the first stage biological filter bed to provide food and moisture for bacteria in the media which is inert. The second stage media in the scrubber is activated carbon and is used to remove any hydrogen sulfide not captured by the first stage media. A 16-inch polyvinyl chloride (pvc) buried duct will be constructed from the new lift station wet well to the scrubber. A 10-inch PVC buried duct will be constructed from the upstream sewer to the scrubber.

Demolition of Existing Lift Station and Facilities

The proposed project includes the demolition of the existing lift station and generator building that encompasses approximately 3,000 square feet. The existing equipment within the lift station will be removed. The two existing storage sheds located on the proposed lift station site will also be removed. One of the storage sheds is pre-manufactured metal and is approximately 22-feet wide by 37-feet long by 15 feet high. The second shed is concrete masonry block and is approximately 12 feet wide by 40 feet long by 9 feet high. A concrete vault, masonry retaining wall and an existing wood retaining wall on the northwest corner of the proposed lift station site will also be removed.

Existing sewer, water and drainage lines located within the project site are proposed to be removed and either replaced, relocated or removed. An existing 12-inch PVC drain extending from the existing lift station to Aliso Creek will be removed and replaced with a new drain line and an outlet structure with rip rap slope protection, within Aliso Creek.

In addition, the vegetation located along the existing alignment of Country Club Drive and in the area's bordering the new lift station site will be removed. There will also be some trees and shrubs removed adjacent to the proposed lift station, along existing Country Club Drive and along the slope of Aliso Creek where the drainage outlet structure is proposed.

Realignment of Country Club Drive

Approximately 1,000 linear feet of Country Club Drive beginning approximately 290 feet northeast of Coast Highway in the vicinity of the existing and proposed SCWD facilities and extending to the east is proposed to be realigned. The realignment of Country Club Drive would place the roadway closer to Aliso Creek and widen it slightly. Country Club Drive would include a pavement width of 25 feet, a landscape zone of 5 feet on the north

side of the roadway, a 4-foot buffer/landscaped zone on the south side of the roadway and a pedestrian path of 4 feet, south of the 4-foot south buffer zone. SCWD is proposing to retain paved access along the front of the existing SCWD facilities by including chain link gates along the existing portion of Country Club Drive that will no longer be used for access to the Ranch.

Replacement of Drainage Pipeline and Outlet into Aliso Creek

The proposed lift station site is located at the base of a steep slope that receives storm water during storm events. The project includes the placement of large stones and a concrete apron with debris posts at the base of the existing drainage course. A 2-foot wide drainage channel is proposed on the north and west sides of the proposed lift station site. The drainage channel will connect to a proposed 18-inch reinforced concrete pipe (RCP) that will extend to the location of the existing 12-inch PVC drain adjacent to the existing lift station, connecting to a new 4-foot-wide by 1-foot-high reinforced concrete box (RCB) and 42-inch RCP, replacing the existing 12-inch PVC drain to Aliso Creek. The outlet structure would include a concrete wing walls, shelf and a cut-off wall that extends into the existing slope for erosion protection of the outlet structure. In addition, rip rap is proposed on all sides of the outlet structure that would extend from above the head wall of the outlet structure at approximately elevation 17.0 feet down the creek slope to approximately elevation 0.0 feet which is two feet below the Aliso Creek stream bed to provide slope protection from potential erosion.

Sewer Facilities between Proposed Lift Station and Proposed Roadway Realignment

The project includes the abandonment of a portion of the existing 16-inch HDPE sewer force main and 21-inch RCP gravity sewer to the existing lift station, and the construction of a 24-inch PVC sewer pipe by open cut and trenchless construction methods to the new lift station site north of the realigned Country Club Drive. The new sewer will connect to the existing 21-inch RCP beach interceptor that extends across Aliso Creek. The 10-inch sewer pipe that extends from Coast Highway is proposed to connect to a proposed 12-inch PVC pipe. The 12-inch pipe would connect to the new 24-inch PVC sewer pipe that is proposed to connect to new proposed sewage grinder to be installed in a new below grade vault adjacent to the new lift station site. A new 30-inch PVC sewage pipe would extend from the sewage grinder vault into the new lift station. A new 16-inch PVC sewer pipe would extend from the proposed sewage grinder, to the east, to an existing 8-inch sewer pipe adjacent to the proposed lift station site.

Emergency Intertie

The North Coast Interceptor (NCI)/Lift Station No. 2 emergency intertie is a joint facility, designed to provide the SCWD and the City of Laguna Beach a secondary means for conveying sewage flows to the SOCWA Coastal Treatment Plant, in the event of an emergency situation with either agency's pipeline (such as a line break or blockage). The hydraulic conditions of each agency's piping system are very different. SCWD pumps flows up to the plant through a 16-inch HDPE force main. The City's NCI is a gravity system that flows to the plant through a 24-inch ACP inverted siphon. Because of these differences, the means by which flows can be transferred between facilities and conveyed to the SOCWA plant are also different.

For the City of Laguna Beach, flows would be diverted to the District's large wet well, and then pumped up to the Coastal Treatment Plant through the District's 16-inch HDPE force main. To divert flows to the SCWD Lift Station wet well, an isolation valve, installed in a vault, will be constructed on the North Coast Interceptor (NCI) 24-inch pipe. The valve would be closed manually when a diversion is required. The NCI must remain operational

during the new valve is installation. To complete the installation, line stops upstream and downstream of the proposed valve location will be installed to block flows in the pipe so that work can be performed. Two hot tap connections would be constructed upstream and downstream of the line stops, and a 70-linear foot (LF) temporary by-pass pipe installed so that sewage flow will continue during the valve installation. After the new line valve is installed, the line stops will be removed and a completion plug installed on the line stop tapping sleeve. The temporary by-pass pipe will then also be removed.

Using the upstream temporary by-pass hot tap, a new 40-LF 16-inch pipe will be constructed to a manhole on the new 30-inch Lift Station No. 2 influent sewer upstream of the Lift Stations sewage grinder vault. A valve will be installed on the new interconnection to allow for isolation and manual control of flows into the Districts wet well. When the new line valve on the 24 inch NCI is closed and the valve on the new 16-inch interconnection pipe is open, sewage will flow from the City system to the SCWD Lift Station No.2 facility for pumping to the Coastal Treatment plant.

For SCWD, flows can be pumped directly from Lift Station No. 2 into the NCI. To transfer the flow, a new 90 LF, 16-inch pipe will be constructed from the pump station discharge header in the dry well structure, to the downstream temporary by-pass hot tap connection installed on the NCI during the diversion/isolation valve installation. Valving will be included in the dry well to allow the District to route flows to either the Districts 16 inch HDPE force main or the NCI. A new 12-inch pipe (25 LF) and valve will be constructed from the interconnection pipe to the Lift Station No. 2 influent sewer to provide a means for draining the NCI, downstream of the new NCI isolation line valve, whenever maintenance or repairs are required on the pipe.

Grading/Excavation

During construction, approximately 1.2 acres will be disturbed and graded. Excavation depths will vary throughout the 1.2 acres. The maximum depth of excavation will be at the lift station site which will be approximately 44 feet below existing grade. Pipeline and utilities construction will include varied depths. Due to high groundwater and poor soil conditions, deep soil mixing and sheet piling on all four sides of the proposed excavation is anticipated to be utilized at the lift station site. The deep soil mixing will address the liquefaction concerns of the existing soils. The sheet piles will create a cofferdam to allow for excavation and prevent groundwater intrusion. Similar shoring activities would occur for pipeline and utility construction. Due to the project site's proximity to Aliso Creek, dewatering is expected to be necessary to lower and control groundwater levels and hydrostatic pressures. Dewatering activities at the proposed lift station site as well as for excavation within any other area of the 1.2-acre site will include treatment prior to disposing the groundwater to Aliso Creek and will require monitoring systems to comply with San Diego Regional Water Quality Control Board Order R9-2015-0013. The estimated earthwork is approximately 11,745 cubic yards of excavation and 7,569 cubic yards of backfill/compaction with a maximum export of 4,176 cubic yards.

1.4 Scope of Assessment

The scope of this assessment is to thoroughly document the existing biological resources of the survey area, and to address any impacts to potentially sensitive resources caused by the proposed project. It incorporates the findings of a literature review and an assessment of the survey area conducted on October 20, 2020 by ESA principal biologist Daryl Koutnik and principal environmental scientist May Lau. Project-related impacts associated with the proposed project design are analyzed and recommendations regarding measures to alleviate

any resulting significant adverse impacts are made. This documentation is consistent with accepted scientific and professional standards pursuant to the California Environmental Quality Act (CEQA) and congruent with technical requirements of the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW), where appropriate. While general biological resources are discussed in a comprehensive manner, the focus of this assessment is on those resources considered to be significant and/or sensitive.

2.0 Methodology

2.1 Literature Review

The assessment began with a review of relevant literature on the biological resources of the survey area and surrounding vicinity. The California Natural Diversity Database (CNDDB; CDFW 2020a), a CDFW species account database, was reviewed for all pertinent information regarding the localities of known observations of sensitive species in the vicinity of the survey area. Federal register listings, protocols, the Laguna Beach General Plan Open Space and Conservation Element (2006), the Laguna Beach Biological Resources Inventory (Marsh et al. 1983), the Diamond/Crestview Specific Plan (City of Laguna Beach 2010), as well as species data provided by the USFWS and CDFW were reviewed in conjunction with anticipated federally and State-listed species (CDFW 2020b, CDFW 2020c) potentially occurring within the vicinity. In addition, regional flora and fauna field guides were utilized in the identification of species and suitable habitats. These sources and other references reviewed provided a baseline from which to inventory the biological resources potentially occurring within the survey area.

2.2 Field Investigation

A biological field assessment of the survey area was conducted on October 20, 2020 by ESA principal biologist Daryl Koutnik and principal environmental scientist May Lau. During the course of this survey, an inventory of all plant and wildlife species observed was compiled and special attention was paid to areas potentially supporting sensitive habitat, and sensitive plant and wildlife species. An aquatic resources delineation was conducted concurrently with the biological field assessment.

2.2.1 Natural Community/Habitat Classification and Mapping

Vegetation communities were mapped with the aid of a 1"=150' scale aerial photograph and a 1"=200' topographic map. Plant community designations follow *A Manual of California Vegetation*, Second Edition (Sawyer et al 2009) but Orange County Habitat Classification System (OCHCS) (Gray and Bramlet 1992) equivalent is also provided. After completing the fieldwork, the natural community polygons were digitized using Geographic Information System (GIS) technology to calculate acreages.

2.2.2 General Plant Inventory

All plant species observed within the survey area were identified and recorded in field notes or collected and later identified using taxonomic keys. Plant taxonomy follows Baldwin et al (2012). Common plant names, when not available from Baldwin, were taken from Roberts (1998), or Clarke (2007). Because common names vary significantly between references, scientific names are included during the first mention of a species; common names consistent within the report are used thereafter. A complete list of observed plant species is provided in **Appendix A**, *Floral and Faunal Compendia*. Sensitive plant species are discussed in the following section.

2.2.3 Special-Status Plant Species

Special-status plants include those listed by the USFWS, CDFW (CDFW 2020c), California Native Plant Society (CNPS) (particularly species with a California Rare Plant Rank (CRPR) of Lists 1A, 1B, 2A, and 2B), and local regulations. While all plant species observed onsite were recorded during the assessment, the current site visit could not be considered a thorough survey for all special-status species because some are seasonal and would not have been evident. Special-status plant species as reported in the CNDDB within the USGS Laguna Beach topographical

quadrangle and five surrounding quadrangles (Newport Beach, Tustin, El Toro, San Juan Capistrano, and Dana Point) with the potential to occur within the survey area is included in **Appendix B,** *Special-Status Plants Potential to Occur*.

2.2.4 General Wildlife Inventory

All wildlife species observed during the assessment either by sight, call, tracks, nests, scat, remains, or other sign were recorded in field notes. Binoculars were utilized in the field for the identification of wildlife, as necessary. Wildlife species observed within the survey area are provided in Appendix A, *Floral and Faunal Compendium*.

Wildlife taxonomy in this report followed Stebbins (2003) for amphibians and reptiles, the American Ornithologists' Union (Chesser et al. 2019) for birds, and Jameson and Peeters (1988) for mammals. Because common names vary significantly between references, scientific names are included during the first mention of a species; common names are used thereafter. Sensitive wildlife species are discussed in the following section.

2.2.5 Special-Status Wildlife Species

Special-status wildlife include those listed by the USFWS, CDFW (CDFW 2020b), and local regulations. As previously mentioned, all wildlife species observed onsite were recorded during the field investigation; however, no focused protocol surveys for sensitive wildlife species were conducted. Special-status wildlife species as reported in the CNDDB within the USGS Laguna Beach topographical quadrangle and five surrounding quadrangles (Newport Beach, Tustin, El Toro, San Juan Capistrano, and Dana Point) with the potential to occur within the survey area is included in **Appendix C,** *Special-Status Wildlife Potential to Occur.*

2.2.6 Regional Connectivity/Wildlife Movement Corridor Assessment

The analysis of wildlife movement corridors associated with the survey area and its immediate vicinity is based on information compiled from the literature and analysis of aerial photographs and topographic maps. Little quantitative data exists on the movements of animals through corridors. A literature review was conducted that included documents on island biogeography (studies of fragmented and isolated habitat "islands"), reports on wildlife home range sizes and migration patterns, and studies on wildlife dispersal. Wildlife movement studies conducted in southern California were also reviewed. The relationship of the survey area to large open space areas in the immediate vicinity was also evaluated in terms of connectivity and habitat linkages. Relative to corridor issues, the discussions in this report are intended to focus on wildlife movement associated with the survey area and the immediate vicinity.

The focus of this assessment is to determine if the alteration of current land use within the survey area will have significant impacts on the regional movement of wildlife. This assessment did not include the use of track plates, camera stations, scent stations, or snares. Where applicable, detailed notes were made during the field investigation of any animal sign found, including the location plotted on an aerial, and if any wildlife movement patterns exist. The conclusions drawn from the assessment are based on the knowledge of desired topography and resource requirements for wildlife potentially utilizing the survey area and vicinity.

3.0 Existing Conditions

3.1 Characteristics of the Site and Surrounding Area

The survey area is located along Country Club Drive, in the City of Laguna Beach, east of Coast Highway and the Pacific Ocean. The 6.9-acre survey area consists of a mix of vegetation communities and land cover types (i.e., developed). Lands within and immediately surrounding the survey area include South Coast Water District facilities, residential development, resort-recreational development, roads for vehicle use, undeveloped open space (vegetated native habitat), and several hiking trails.

The survey area supports areas that have been designated as "Very High Value Habitat" under the Laguna Beach General Plan Open Space and Conservation Element (2006). The City-designated Very High Value Habitat is located within the southern and southwestern portions of the survey area and comprises of the open water of Aliso Creek. Representative photographs of the survey area are included in **Appendix D**, *Site Photographs*.

The topography of the survey area is characterized relatively flat with slight sloping hillsides. Elevations range from approximately 13 to 39 feet amsl, with the highest elevations occurring within the northcentral portion the survey area.

3.2 Vegetation Communities and Land Cover Types

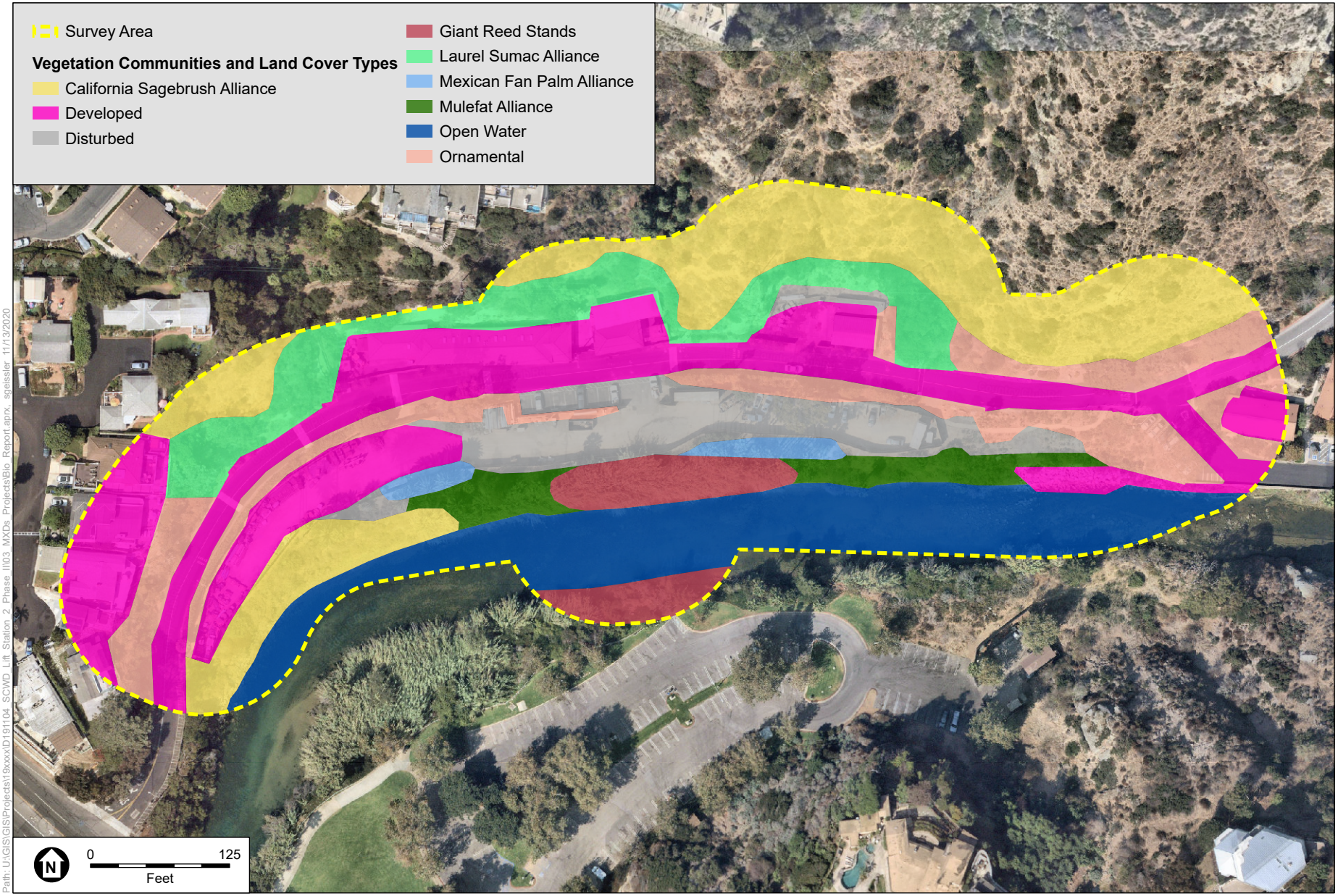
Vegetation communities and land cover types in the survey area are summarized in Table 1, *Vegetation Communities and Land Cover Types* and depicted in **Figure 4**. Vegetation communities and land cover types and descriptions follow *A Manual of California Vegetation* Second Edition (Sawyer et al. 2009), with an OCHCS equivalent provided, where available. After completing the field mapping, the vegetation community and land use polygons were digitized using Geographic Information System (GIS) technology to calculate acreages. All plant species observed on-site are included in Appendix A.

California Sagebrush Alliance *(Artemisia californica Alliance,* ACA*)*

This alliance (OCHCS 2.3.6 Sagebrush Scrub) describes a drought-tolerant native shrub community that is medium in height and dominated by California sagebrush (*Artemisia californica*), with a scattering of coast prickly pear (*Opuntia littoralis*). Additional species found within this alliance include California buckwheat (*Eriogonum fasciculatum*) and Sydney golden wattle (*Acacia longifolia*). This Alliance is endemic to coastal areas of Southern California and provides habitat for native plant and wildlife species. ACA occurs in the northern and southwestern portions of the survey area on south-facing slopes and adjacent to Aliso Creek.

Giant Reed Stands *(Arundo donax Stands,* ADS*)*

Stands of a monoculture of giant reed (*Arundo donax*) are located in the southern portion of the survey area, on the northern bank of Aliso Creek. *Arundo donax* is a non-native and invasive species in California and often occurs in close proximity to a water source. The stand in the survey area contains approximately 10-feet tall giant reed and intergrades with the *Baccharis salicifolia* Alliance.



SOURCE: NearMap/Mapbox, 2020.

South Coast Water District Lift Station No. 2 Replacement Project

Figure 4

Vegetation Communities and Land Cover Types

ESA

Mulefat Alliance (*Baccharis salicifolia* Alliance, BSA)

The *Baccharis salicifolia* alliance (OCHCS 7.3 Mulefat Scrub) mapped within the southern portions of the survey area contains a dominance of mule fat (*Baccharis salicifolia*). This alliance is considered a riparian scrub community associated with waterways, such as the adjacent Aliso Creek to the south. Understory species observed in this vegetation community include non-native species such as tree tobacco (*Nicotiana glauca*), short-podded mustard (*Hirschfeldia incana*), rattail sixweeks grass (*Festuca myuros*), and fennel (*Foeniculum vulgare*).

Laurel Sumac Alliance (*Malosma laurina* Alliance, MLA)

This vegetation community (OCHCS 3.12 Toyon-Sumac Chaparral) is dominated by laurel sumac (*Malosma laurina*) that occurs towards the base of the hill to the immediate north of the project boundary. The laurel sumacs in this area are a minimum of ten feet tall and contain an understory of California sagebrush and prickly pear. A portion of this community previously occurred within the survey area but had been cleared for fuel modification purposes.

Mexican Fan Palm Alliance (*Washingtonia* Alliance, WA)

This vegetation community contains a mix of Mexican fan palm (*Washingtonia robusta*) and Canary Island date palm (*Phoenix canariensis*) and is located in the survey area just south of the project boundary. No other plant species were observed in this community. The understory is generally bare ground with compacted soils.

Open Water (OW)

Open water (OCHCS 12.1 Open Water) is mapped for Aliso Creek in the southern portion of the survey area. Aliso Creek is a perennial stream that contains flowing surface water throughout the year. With the exception of limited areas supporting algae, the open water does not support aquatic vegetation.

Ornamental (ORN)

Ornamental vegetation (OCHCS 15.5 Parks and Ornamental Plantings) typically includes non-native species that have been planted for ornamental purposes and are regularly maintained as part of landscaping efforts for a development. The ornamental vegetation within the survey area supports primarily oleander (*Nerium oleander*), Pride of Madeira (*Echium candicans*), Cape leadwort (*Plumbago auriculata*) and river red gum (*Eucalyptus camaldulensis*) trees that are planted in rows along the paved access roads.

Disturbed (DH)

Disturbed habitat characterizes areas (OCHCS 16.1 Cleared or Graded) that have been previously or currently disturbed from development and regular activities such as maintenance or vehicle access. The surface soils observed in disturbed habitat areas are compacted and contain little to no vegetation. Sparsely scattered non-native and ruderal (weedy) species such as short-podded mustard, and red-stem filaree (*Erodium cicutarium*) occur in areas mapped as disturbed habitat.

Developed (DEV)

Developed land (OCHCS 15.1 Urban) consists of areas that have been subjected to previous disturbances and have been constructed upon or have an unnatural surface such as asphalt or concrete. Developed areas are mapped for the existing maintenance building, lift station and storage buildings, as well as the paved access roads, material staging

areas, and a section of rip-rap adjacent to Aliso Creek. No plant species were observed in any areas mapped as developed land.

TABLE 1
VEGETATION COMMUNITIES AND LAND COVER TYPES

Vegetation Community/Land Cover Type	Survey Area (acre)
California Sagebrush Alliance	1.36
Giant Reed Stands	0.30
Mulefat Alliance	0.24
Laurel Sumac Alliance	0.64
Mexican Fan Palm Alliance	0.10
Open Water	1.05
Ornamental	0.82
Disturbed	0.64
Developed	1.76
Total	6.91

3.3 General Plant Inventory

The vegetation communities discussed above are composed of numerous plant species. Plant species observations and identifications were completed during the assessment to the survey area. All plant species observed within the survey area are indicated in Appendix A, *Floral and Faunal Compendia*. No special-status plant species were detected within the survey area. Special-status plant species with the potential to occur within the survey area are discussed below in Section 3.7.3*, Special-Status Plant Species*.

3.4 General Wildlife Inventory

A general habitat assessment for wildlife was performed while visiting the survey area. No special-status species were detected. The vegetation within the survey area may provide foraging and cover habitat for avian species, including year-round residents, seasonal residents, and migrating songbirds. Several bird species were observed within the survey area and include but are not limited to: mallard (*Anas platyrhynchos*), American coot (*Fulica americana*), house sparrow (*Passer domesticus*), yellow-rumped warbler (*Setophaga coronate*), common yellowthroat (*Geothlypis trichas*), and white-crowned sparrow (*Zonotrichia leucophrys*). One mammal species was observed within the survey area, Audubon cottontail (*Sylvilagus audubonii*). All wildlife species observed within the survey area are indicated in Appendix A, *Floral and Faunal Compendia*. No special-status wildlife species were detected within the survey area. Special-status wildlife species with the potential to occur within the survey area are discussed below in Section 3.7.4, *Special-Status Wildlife Species*.

3.5 Wildlife Movement

Overview

Wildlife corridors link together areas of suitable habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization creates isolated “islands”

of wildlife habitat. In the absence of habitat linkages that allow movement to adjoining open space areas, various studies have concluded that some wildlife species, especially the larger and more mobile mammals, will not likely persist over time in fragmented or isolated habitat areas because such conditions preclude the infusion of new individuals and genetic information into isolated populations (MacArthur and Wilson 1967, Soule 1987, Harris and Gallagher 1989, Bennett 1990).

Corridors effectively act as links between different populations of a species. A group of smaller populations (termed "demes") linked together via a system of corridors is termed a "metapopulation." The long-term health of each deme within the metapopulation is dependent upon its size and the frequency of interchange of individuals (immigration vs. emigration). The smaller the deme, the more important immigration becomes, because prolonged inbreeding with the same individuals can reduce genetic variability. Immigrant individuals that move into the deme from adjoining demes mate with individuals and supply that deme with new genes and gene combinations that increases overall genetic diversity. An increase in a population's genetic variability is generally associated with an increase in a population's health and long-term viability.

Corridors mitigate the effects of habitat fragmentation by: (1) allowing animals to move between remaining habitats, which allows depleted populations to be replenished and promotes genetic diversity; (2) providing escape routes from fire, predators, and human disturbances, thus reducing the risk that catastrophic events (such as fires or disease) will result in population or local species extinction; and (3) serving as travel routes for individual animals as they move within their home ranges in search of food, water, mates, and other needs (Noss 1983, Fahrig and Merriam 1985, Simberloff and Cox 1987, Harris and Gallagher 1989).

Wildlife movement activities usually fall into one of three movement categories: (1) dispersal (e.g., juvenile animals from natal areas, individuals extending range distributions); (2) seasonal migration; and (3) movements related to home range activities (foraging for food or water, defending territories, searching for mates, breeding areas, or cover). A number of terms have been used in various wildlife movement studies, such as "travel route," "wildlife corridor," and "wildlife crossing" to refer to areas in which wildlife move from one area to another. To clarify the meaning of these terms and facilitate the discussion on wildlife movement in this assessment, these terms are defined as follows:

Travel route: A landscape feature (such as a ridge line, drainage, canyon, or riparian strip) within a larger natural habitat area that is used frequently by animals to facilitate movement and provide access to necessary resources (e.g., water, food, cover, den sites). The travel route is generally preferred because it provides the least amount of topographic resistance in moving from one area to another; it contains adequate food, water, and/or cover while moving between habitat areas; and provides a relative direct link between target habitat areas.

Wildlife corridor: A piece of habitat, usually linear in nature, that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are usually bounded by urban land areas or other areas unsuitable for wildlife. The corridor generally contains suitable cover, food, and/or water to support species and facilitate movement while in the corridor. Larger, landscape-level corridors (often referred to as "habitat or landscape linkages") can provide both transitory and resident habitat for a variety of species.

Wildlife crossing: A small, narrow area, relatively short in length and generally constricted in nature, that allows wildlife to pass under or through an obstacle or barrier that otherwise hinders or prevents movement. Crossings typically are man-made and include culverts, underpasses, drainage pipes, and tunnels to provide access across or under roads, highways, pipelines, or other physical obstacles. These are often "choke points" along a movement corridor.

Wildlife Movement Within the Survey Area

As previously described, wildlife movement activities usually fall into one of three movement categories: (1) dispersal (e.g., juvenile animals from natal areas, or individuals extending range distributions); (2) seasonal migration; and (3) movements related to home range activities (foraging for food or water, defending territories, searching for mates, breeding areas, or cover). Although the nature of each of these types of movement are species specific, large open spaces will generally support a diverse wildlife community representing all types of movement. Each type of movement may also be represented at a variety of scales from non-migratory movement of amphibians, reptiles, and some birds on a "local" level, to many square mile home ranges of large mammals moving at a "regional" level.

The western segment of Aliso Creek is situated within the survey area. Aliso Creek is approximate 20 miles long, originating in the Cleveland Nation Forest in the Santa Ana Mountains. It flows southwesterly and empties into the Pacific Ocean in Laguna Beach. Aliso Creek provides habitat, foraging and breeding opportunities and movement for aquatic and semi-aquatic species such as tidewater goby (*Eucyclogobius newberryi*), southwestern pond turtle (*Emys marmorata*) and two-striped garter snake (*Thamnophis hammondii*). Aliso Creek, within the survey area, has been designated by USFWS as Designated Critical Habitat for the federally endangered tidewater goby.

The south and southwestern survey area does support approximately 0.71 acre of "Very High Value Habitat," as designated under the City General Plan Open Space and Conservation Element (2006), which is depicted on **Figure 5**. The City's General Plan-designated "High or Very High Value Habitat" is comprised primarily of mixed chaparral and may be utilized for wildlife movement. "High or Very High Value Habitats" are described in the City General Plan Open Space and Conservation Element as extensive areas dominated by indigenous plant communities, which possess good species diversity. They are often, but not always, linked to extensive open space areas, within or outside of the City, by traversable open space corridors. Their faunal carrying capacity is good to excellent; many areas are utilized as bedding and foraging sites for species such as mule deer, or possess large resident populations of birds or native small mammals. The "Very High Value Habitat" will not be impacted by project activities.

In summary, the survey area does support wildlife movement in the form of a travel route, wildlife corridor, or wildlife crossing for aquatic and semi-aquatic species. The proposed project is not anticipated to substantially interfere with wildlife movement.

3.6 Critical Habitat

Based on the review of the USFWS Environmental Conservation Online System (ECOS) (USFWS 2020), designated critical habitat for tidewater goby is located within the survey area, in Aliso Creek.

Tidewater goby, a federally endangered species, are found within estuaries, marshes, lagoons, and streams along the California coast ranging from Del Norte to San Diego County (Lafferty et al. 1999, USFWS 2005). Water depth and velocity are strong indicators of habitat capacity and suitability to support this species (Chamberlain 2006). Tidewater goby are generally found in waters less than one meter (approximately 3.3 feet) in depth, and within areas of little to no current. Unique among fishes of the Pacific coast, tidewater goby prefers waters with low salinity in coastal estuaries, but can tolerate periods of high salinity. They feed along the bottom, preferring clean, shallow, slow moving waters. Substrate and vegetation composition varies among occupied habitats; however, spawning generally occurs in unvegetated areas with sand or slightly coarser material (Swenson 1999).

SOURCE: City of Laguna Beach; NearMap/Mapbox, 2020.

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Figure 5

High or Very High Value Habitat

ESA

Spawning can occur virtually year round, with peak spawning typically occurring in the spring and a smaller peak in late summer/early fall (Lafferty et al. 1999, Swenson 1999). During the 1970's, a large population (10,000 – 15,000) of tidewater goby was documented; however, the population was severely impacted by upstream golf course and residential development and run-off (USFWS 2000; Orange County Register 2017). The survey area contains suitable breeding and rearing habitat for this species, although tidewater gobies haven't been detected since 1996 (USACE 2017). Breaching of lagoon berms can result in stranding and/or transport out of lagoons and estuaries and exposure to high salinities. Early life stages of tidewater goby lack tolerance of abrupt salinity changes such as those that occur during breaches and/or partially artificial breaches (Hellmair and Kinziger, 2014).

Tidewater goby use lagoons and estuaries for their entire life-cycle. Tidewater goby require shallow habitat with sandy substrate for spawning burrow construction. Adults are relatively tolerant of salinity fluctuations. Very high water temperatures or extended periods of low dissolved oxygen may be unsuitable for rearing and spawning Tidewater goby. Major threats to Tidewater goby include dispersal due to storm flows as well as predation by or competition with native and introduced species, such as African clawed frog (*Xenopus laevis*), staghorn sculpin (*Leptocottus armatus*), largemouth bass (*Micropterus salmoides*), and green sunfish (*Lepomis cyanellus*)

3.7 Aquatic Resources

A formal aquatic resources delineation was conducted on October 20, 2020 by ESA principal biologist Daryl Koutnik and principal environmental scientist May Lau. The survey area is within the Aliso – San Onofre Watershed (USGS Hydrologic Unit Code 18070301). As shown in Figure 3, overall site hydrology drains towards Aliso Creek and out into the Pacific Ocean. Aliso Creek, referred to herein in this section as Perennial Stream 1 (PS1), is identified on the National Hydrography Dataset (NHD) and USGS topo map as a blue-line stream. In addition to PS1, two other aquatic features were delineated in the survey area: Erosional Feature (EF1) and Ephemeral Drainage (ED1), which both drain in a north-south direction towards PS1. Stormwater from ED1 is conveyed to PS1 through a concrete-lined storm drain that extends under Country Club Drive and south into Aliso Creek. Stormwater from EF1 sheet flows into a developed staging area maintained by SCWD, onto Country Club Drive, and eventually into an existing buried storm drain that discharges into PS1.

Aliso Creek (PS1)

Aliso Creek is a perennial stream originating in the Cleveland National Forest in the Santa Ana Mountains. It flows generally southwest and empties into the Pacific Ocean at Laguna Beach. The creek's watershed drains 34.9 square miles (90 km2), Most of the creek's course has been channelized or otherwise impacted by development. Within the survey area, the creek banks are dominated by giant reed stands, mulefat alliance, and California sagebrush alliance.

Ephemeral Drainage (ED1)

ED1 is an unnamed ephemeral drainage originating in an unnamed canyon to the north of the survey area. Stormwater from ED1 is conveyed to PS1 through a concrete-lined storm drain that extends under Country Club Drive and south into Aliso Creek. Within the survey area, ED1 unvegetated, as it is concrete-lined, but the overstory is dominated by the laurel sumac alliance.

Erosional Feature (EF1)

EF1 is an unnamed erosional feature originating in an unnamed canyon to the north of the survey area. Stormwater from EF1 sheet flows into a developed staging area maintained by SCWD, onto Country Club Drive, and

eventually into an existing buried storm drain that discharges into PS1. Within the survey area, EF1 is primarily unvegetated with an overstory dominated by the laurel sumac alliance.

3.7.1 Potential Water of the U.S.

Potential wetlands and non-wetland waters of the U.S. within the survey area are shown in **Figure 6**, summarized in **Table 2** and discussed below.

Jurisdictional Waters

The Clean Water Act (CWA) Section 328.3 defines jurisdictional waters of the U.S. to include (a)(2) waters as tributaries of navigable waters [33 CFR 328.3(a)(2)]. Aliso Creek (PS1) is a perennial stream that is considered an (a)(2) tributary to a navigable water (Pacific Ocean). Within the survey area, this feature receives some tidal influence. The OHWM ranged from approximately 20-65 feet wide based on a clear shelf observed on the north bank of the creek.

Above the OHWM, two soil pits (DP1 and DP2) were dug to verify if adjacent wetlands were present. At DP1, hydrophytic vegetation was present, but hydric soil and wetland hydrology indicators were not observed. At DP2, none of the three wetland indicators were observed. Therefore, wetland waters of the U.S. were not identified at the time of the delineation.

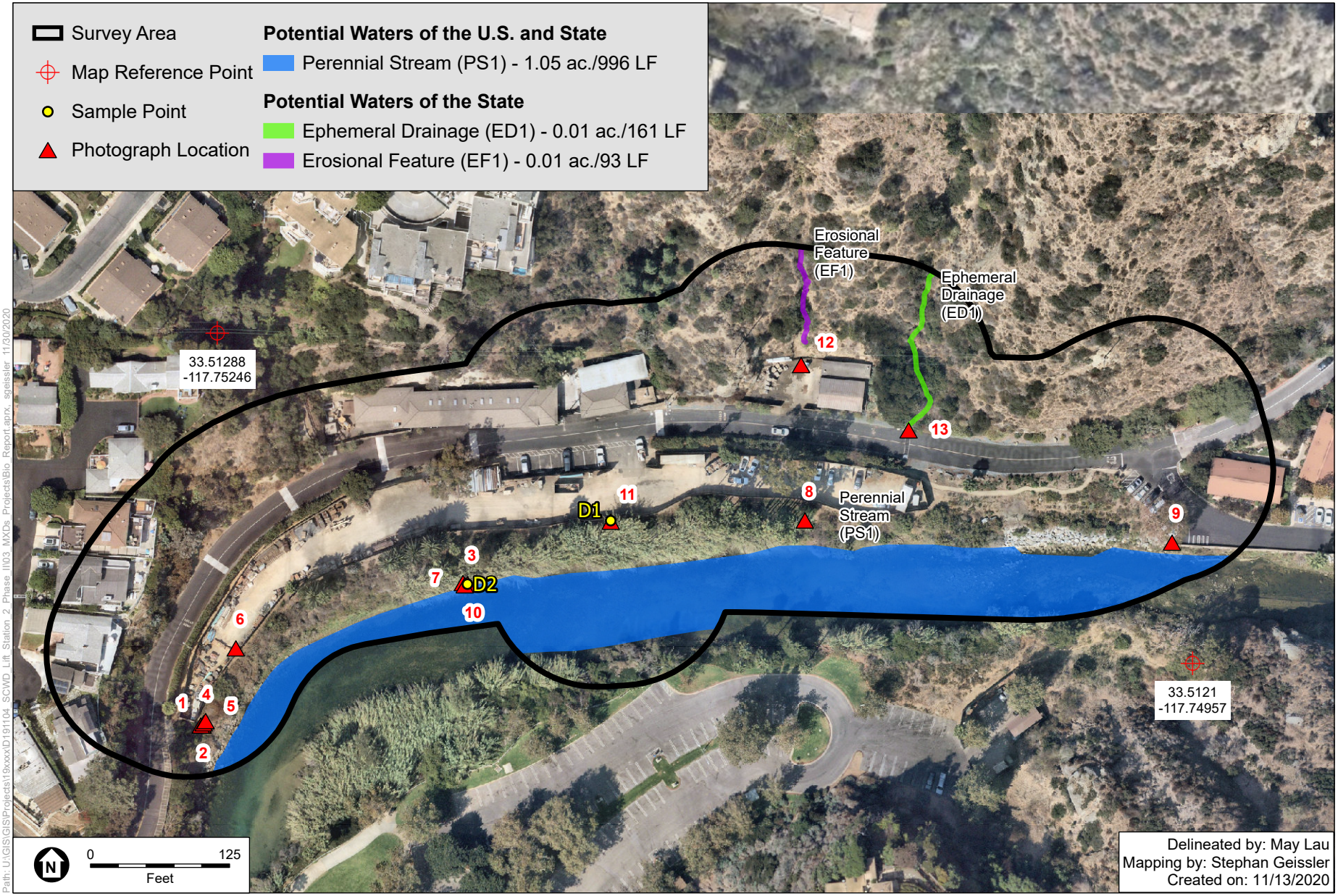
Non-Jurisdictional Waters

The CWA Section 328.3 defines non-jurisdictional waters of the U.S. to include ephemeral features including ephemeral streams, swales, gullies, rills, and pools [33 CFR 328.3(b)(3)]. ED1 is an ephemeral drainage with an OHWM of approximately 3 feet in width, based on the width of the concrete-lined culvert. ED1 was dry at the time of the aquatic resources delineation, and no surface water was observed.

EF1 is an erosional feature without a defined OHWM. Stormwater from EF1 sheet flows into a developed staging area maintained by SCWD, onto Country Club Drive, and eventually into an existing buried storm drain that discharges into PS1. This feature was dry at the time of the aquatic resources delineation and no surface water was observed. EF1 may be excluded as features that diffuse stormwater runoff and directional sheet flow over uplands [33 CFR 328.3(b)(4)].

TABLE 2
AQUATIC RESOURCES WITHIN THE SURVEY AREA

Aquatic Feature	Cowardin Type[1]	Acres	Linear Feet	OHWM (width in feet)	Vegetation/Land Cover Type
Non-Wetland Waters of the U.S. and State					
Perennial Stream (PS1)	E1UBL	1.05	996	21-65	Open Water
Non-Wetland Waters of the U.S. and State		**1.05**	**996**	**21-65**	**--**
Non-Wetland Waters of the State					
Ephemeral Drainage (ED1)	N/A	0.01	161	3	Laurel Sumac Alliance / California Sagebrush Alliance
Erosional Feature (EF1)	N/A	0.01	93	3	Laurel Sumac Alliance / California Sagebrush Alliance



SOURCE: USGS Lidar, 2018; NearMap/Mapbox, 2020.
Coordinate System: US State Plane California Zone VI
Projection: Lambert Conformal Conic
Datum: North American Datum 1983 (2011)

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Figure 6

Aquatic Resources within the Survey Area

ESA

3.7.2 Waters of the State

Waters of the state subject to CWA Section 401 and/or Porter-Cologne Water Quality Control Act are summarized in Table 2 and depicted in Figure 6. As discussed above, PS1 is considered a jurisdictional water of the U.S. per the CWA. Therefore, PS1 is also considered waters of the state pursuant to the CWA Section 401 authority of the San Diego RWQCB. The non-jurisdictional waters of the U.S. within the survey area (ED1 and EF1) would likely be considered non-federal waters of the state subject to regulation under the Porter-Cologne Water Quality Control Act. Based on the aquatic resources delineation, state wetlands (as defined in the procedures) do not occur in the survey area. Based on informal guidance from the San Diego RWQCB, waters of the State extend to the top of the bank (TOB); therefore, the limits of non-wetland waters of the State were delineated to the TOB on the south bank, and the extent of streambed or riparian/wetland vegetation up to the northern survey area boundary.

3.7.3 Potential Fish and Game Code 1600 Resources

Features potentially subject to regulation under Fish and Game Code (FGC) Section 1600 are summarized in **Table 3** and shown in **Figure 7**. Potential FGC 1600 resources included all waters of the U.S. and state described above, with additional habitats, including riparian habitat, extending to the top of the banks.

TABLE 3
FEATURES POTENTIALLY SUBJECT TO SECTION 1600 ET SEQ. OF THE FISH AND GAME CODE

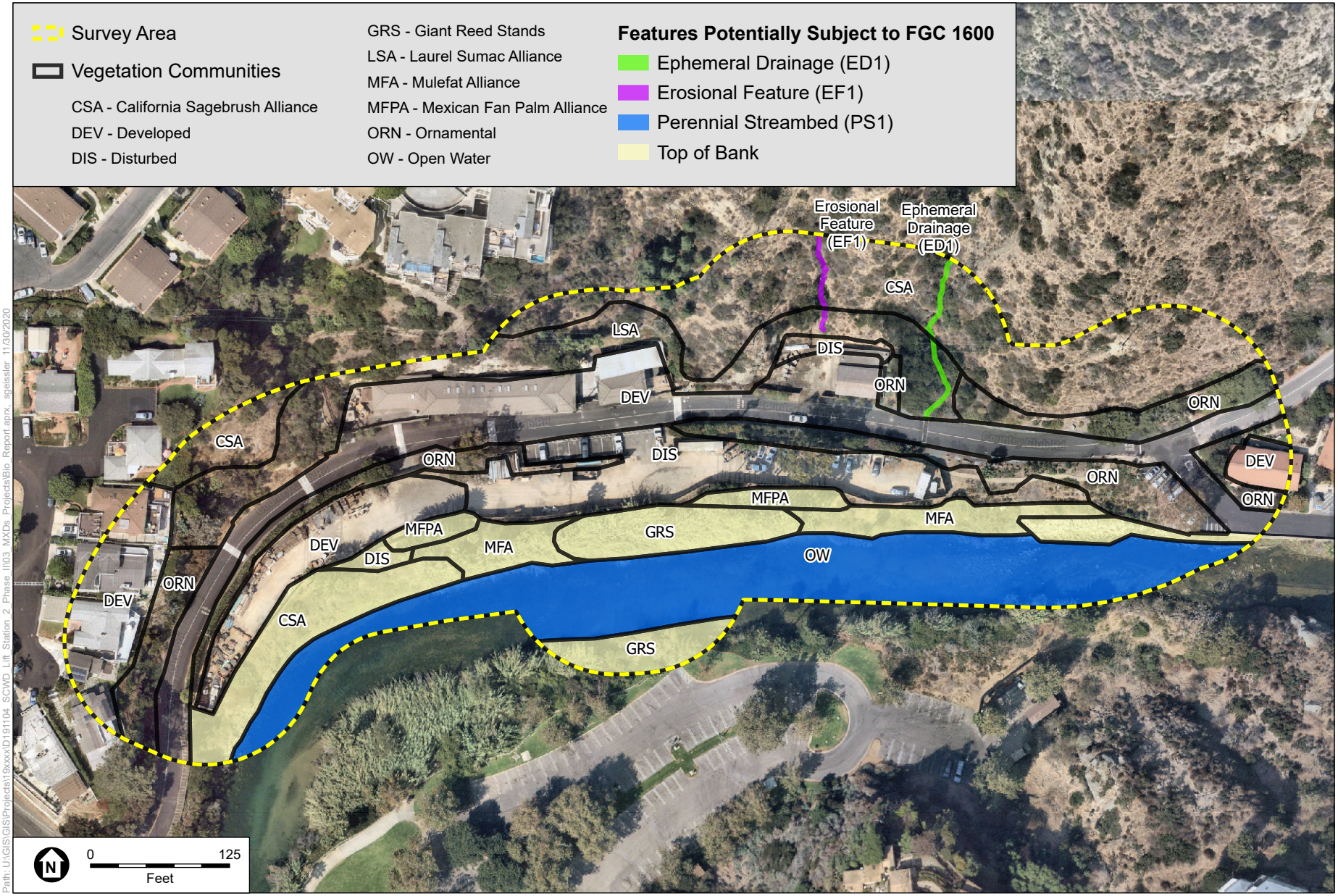
Aquatic Feature	Cowardin Type[1]	Vegetated Streambed/ Pond/Lake (Acre)	Unvegetated Streambed/ Pond/Lake (Acre)	Length (Linear Feet)	Average Width (Ft.)	Vegetation/Land Cover Type	GPS Coordinates (decimal degrees)
Perennial Stream (PS1)	E1UBL	1.00	1.05	996	40	Open Water / California Sagebrush Alliance / Giant Reed Stands /Mulefat Alliance / Mexican Fan Palm Alliance/Disturbed/Developed	33.5122310°N; 117.7509071°W
Ephemeral Drainage (ED1)	N/A	N/A	0.01	161	3	Laurel Sumac Alliance / California Sagebrush Alliance	33.5128532°N; 117.7503870°W
Erosional Feature (EF1)	N/A	N/A	0.01	93	3	Laurel Sumac Alliance / California Sagebrush Alliance	33.5129926°N; 117.7507340°W
Totals:		1.00	1.07	1,250	N/A	--	--

Source: ESA 2020

[1] Cowardin Type – E1UBL = Estuarine, subtidal, unconsolidated bottom.

3.7.4 Coastal Wetlands and Waters

Coastal wetlands as defined under the California Coastal Act are summarized in **Table 4** and shown in **Figure 8**. Coastal wetlands included all habitats dominated by hydrophytic vegetation, and areas dominated by facultative vegetation that are mapped by the NRCS as supporting hydric soils. Coastal waters included all the open water habitat along PS1, ED1 and EF1.



SOURCE: NearMap/Mapbox, 2020.

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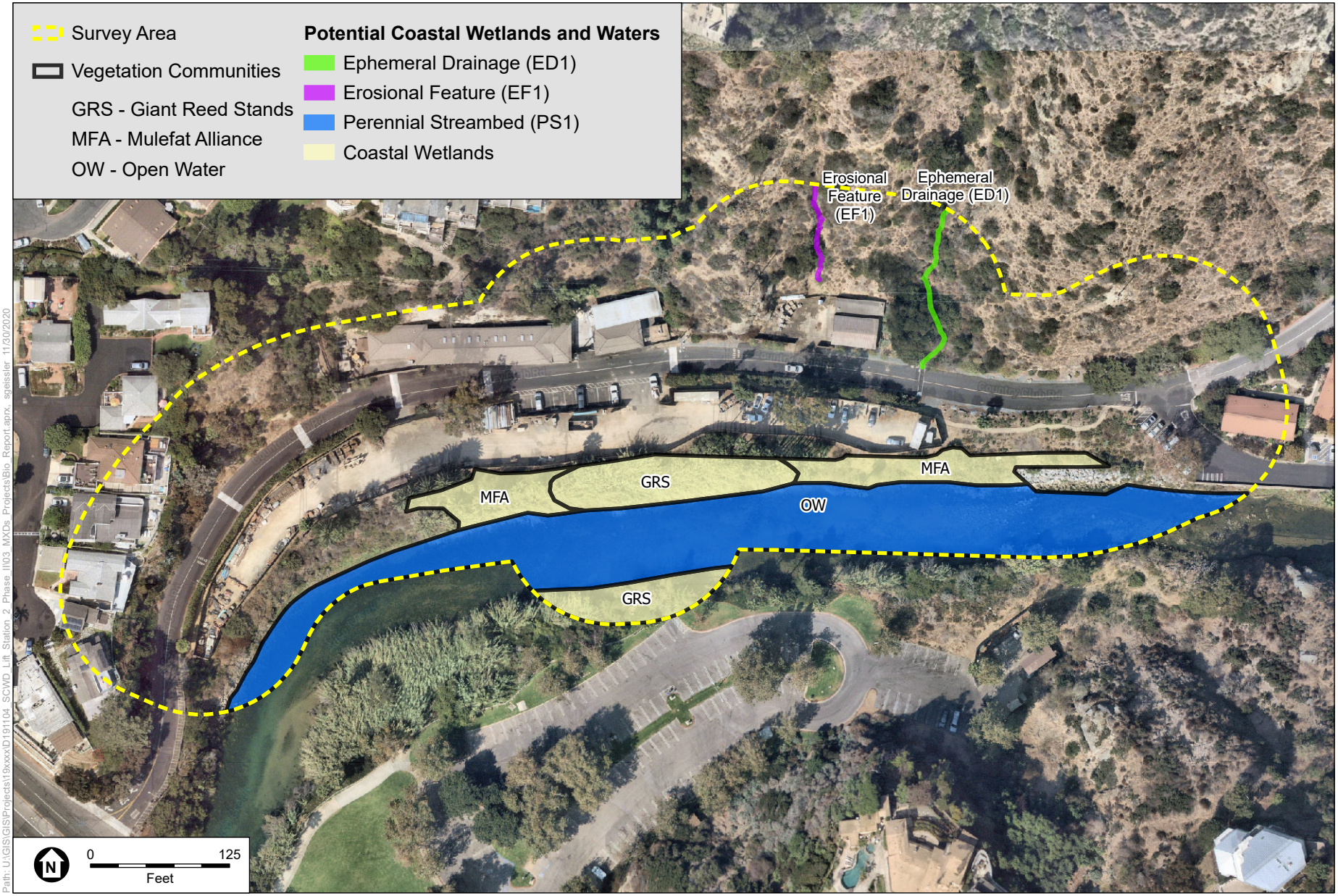
Figure 7

Features Potentially Subject to FGC 1600

ESA



SOURCE: NearMap/Mapbox, 2020.

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Figure 8

Potential Coastal Wetlands and Waters

ESA

TABLE 4
COASTAL WETLANDS AND WATERS

Vegetation Community/Land Cover Type	Survey Area (acre)
Coastal Wetlands	
Giant Reed Stands	0.30
Mulefat Alliance	0.24
Total Coastal Wetlands	0.54
Coastal Waters	
Open Water	1.05
Ephemeral Drainage (ED1)	0.01
Erosional Feature (EF1)	0.01
Total Coastal Waters	1.07
Total	1.61

3.8 Sensitive Biological Resources

Sensitive biological resources are habitats or individual species that have special recognition by Federal, State, or local conservation agencies and organizations as endangered, threatened, or rare. The USFWS, the CDFW, and special groups like the CNPS maintain watch lists of such resources, under the provisions of the Federal and State Endangered Species Acts.

Special-status species that occur or could potentially occur within the survey area are based on one or more of the following: (1) the direct observation of the species on the property during the biological survey, (2) a record reported in the CNDDB, or (3) the survey area is within the known distribution of a species and contains appropriate suitable habitat.

3.8.1 Sensitive Resource Classification

Federal Protection and Classifications

The FESA of 1973 defines an endangered species as "any species which is in danger of extinction throughout all or a significant portion of its range." A threatened species is defined as "any species which is likely to become an Endangered species within the foreseeable future throughout all or a significant portion of its range." Under provisions of Section 9(a)(1)(B) of the FESA, unless properly permitted, it is unlawful to "take" any listed species. "Take" is defined in Section 3(18) of FESA: "...harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Further, the USFWS, through regulation, has interpreted the terms "harm" and "harass" to include certain types of habitat modification as forms of "take." These interpretations, however, are generally considered and applied on a case-by-case basis and often vary from species to species. Of legal note, the FESA does not protect or regulate Federal threatened or endangered listed plant species on private property unless a federal action, such as regulatory permit approval or federal funding, is involved.

All references to Federally-protected species in this report include the most current published status or candidate category to which each species has been assigned by USFWS.

For purposes of this assessment the following acronyms are used for Federal status species:

- FE Federally-listed as Endangered
- FT Federally-listed as Threatened
- FPE Federally proposed for listing as Endangered
- FPT Federally proposed for listing as Threatened
- FPD Federally proposed for delisting
- FC Federal candidate species (former C1 species)

State of California Protection and Classifications

California's Endangered Species Act (CESA) defines an endangered species as:

> "*…a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease*."

The State defines a threatened species as:

> "*a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter. Any animal determined by the commission as rare on or before January 1, 1985 is a threatened species.*"

Candidate species are defined as:

> "*…a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the commission has published a notice of proposed regulation to add the species to either list.*"

Candidate species may be afforded temporary protection as though they were already listed as threatened or endangered at the discretion of the Fish and Game Commission. Unlike the FESA, CESA does not include listing provisions for invertebrate species.

Article 3, Sections 2080 through 2085, of the CESA addresses the taking of threatened or endangered species by stating:

> "*no person shall import into this State, export out of this State, or take, possess, purchase, or sell within this State, any species, or any part or product thereof, that the commission determines to be an endangered species or a threatened species, or attempt any of those acts, except as otherwise provided.*"

Under the CESA, "take" is defined as, "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

Additionally, some sensitive mammals and birds are protected by the State as Fully Protected Mammals or Fully Protected Birds, as described in the California Fish and Game Code, Sections 4700 and 3511, respectively.

California Species of Special Concern are species designated as vulnerable to extinction due to declining population levels, limited ranges, and/or continuing threats. Informally listed species are not protected per se, but warrant consideration in the preparation of biological assessments. For some species, the CNDDB is only concerned with specific portions of the life history, such as roosts, rookeries, or nest sites. The CNDDB records represent both specific and generalized information and mapping of observed species; thus, it is more often than not used as an indicator of the potential presence of special status species on a particular survey area and is without regulatory authority.

For the purposes of this assessment, the following acronyms are used for State status species:

- SE State-listed as Endangered
- ST State-listed as Threatened
- SR State-listed as Rare
- SCE State candidate for listing as Endangered
- SCT State candidate for listing as Threatened
- SFP State Fully Protected
- SSC California Species of Special Concern
- WL California Watch List

California Native Plant Society

The California Native Plant Society (CNPS) is a private plant conservation organization dedicated to the monitoring and protection of sensitive species in California. CNPS has compiled an inventory comprised of the information focusing on geographic distribution and qualitative characterization of Rare, Threatened, or Endangered vascular plant species of California (CNPS 2020). The list serves as the candidate list for listing as Threatened and Endangered by CDFG. CNPS has developed six California Rare Plant Ranks (CRPR) categories of rarity:

- Rank 1A Presumed Extirpated in California and either Rare or Extinct elsewhere.
- Rank 1B Plants Rare, Threatened, or Endangered in California and elsewhere.
- Rank 2A Presumed Extirpated in California but common elsewhere
- Rank 2B Plants Rare, Threatened, or Endangered in California, but more common elsewhere.
- Rank 3 Plants about which we need more information – a review list.
- Rank 4 Plants of limited distribution – a watch list.

The CNPS recently added "threat ranks" which parallel the ranks used by the CNDDB. These ranks are added as a decimal code after the CRPR List (e.g., List 1B.1). The threat codes are as follows:

- .1 – Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat);
- .2 – Moderately threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat);

- .3 – Not very threatened in California (<20% of occurrences threatened/low degree and immediacy of threat or no current threats known).

3.8.2 Sensitive Natural Communities

CDFW and CNPS classify natural communities using *A Manual of California Vegetation* Second Edition (Sawyer et al. 2009). Natural communities with conservation ranks of S1–S3 are considered "Sensitive Natural Communities" and need to be addressed in the environmental review processes of CEQA and its equivalents.

California sagebrush alliance is ranked as S4 under the CDFW natural community rankings and is not considered a sensitive natural community, but the General Plan of the City of Laguna Beach considers intact coastal sage scrub such as California sagebrush alliance to be a sensitive resource. This community also potentially supports the federally-threatened and California Species of Special Concern, coastal California gnatcatcher (*Polioptila californica californica*). Coastal sage scrub habitat dominated by California sagebrush is preferred for gnatcatcher breedinga. No coastal California gnatcatcher was observed during the October site visit; however, no focused surveys were conducted.

The remainder of the vegetation communities rank S4 or S5. Potential impacts to these natural communities are discussed below in Section 4.4.1.

3.8.3 Special-Status Plant Species

Special-status plant species as reported in the CNDDB within the USGS Laguna Beach topographical quadrangle and five surrounding quadrangles (Newport Beach, Tustin, El Toro, San Juan Capistrano, and Dana Point) were analyzed to determine potential to occur within the survey area (Appendix B, *Special-Status Plants Potential to Occur*). No special-status plant species have a high potential to occur within the survey area; however, seven species have a moderate potential to occur. These species include: western dichondra (*Dichondra occidentalis*), Laguna Beach dudleya (*Dudleya stolonifera*), cliff spurge (*Euphorbia misera*), big-leaved crownbeard (*Verbesina dissita*), Catalina mariposa lily (*Calochortus catalinae*), intermediate mariposa lily (*Calochortus weedii* var. *intermedius*), and vernal barley (*Hordeum intercedens*).

3.8.4 Special-Status Wildlife Species

Special-status wildlife species as reported in the CNDDB within the USGS Laguna Beach topographical quadrangle and five surrounding quadrangles (Newport Beach, Tustin, El Toro, San Juan Capistrano, and Dana Point) were analyzed to determine potential to occur within the survey area (Appendix C, *Special-Status Wildlife Potential to Occur*). No special-status wildlife species have a high potential to occur; however, five species have a moderate potential to occur within the survey area. These species include: coast horned lizard (*Phrynosoma blainvillii*), orange-throated whiptail (*Aspidoscelis hyperythra*), coastal California gnatcatcher, southwestern pond turtle, and two-striped garter snake. Potential impacts to these species are discussed below in Section 4.4.3.

4.0 Project-Related Impacts

4.1 Approach to the Analysis

The following discussion examines the potential impacts to plant and wildlife resources that may occur as a result of implementation of the proposed project. The determination of impacts in this analysis is based on both the features of the proposed project and the biological values of the habitat and/or sensitivity of plant and wildlife species to be affected.

The biological values of resources within, adjacent to, and outside the survey area to be affected by the proposed project were determined by consideration of several factors. These included the overall size of habitats to be affected, the survey area's previous land uses and disturbance history, the survey area's surrounding environment and regional context, the biological diversity and abundance within the survey area, the presence of sensitive and special-status plant and wildlife species, the survey area's importance to regional populations of these species, and the degree to which habitats within the survey area are limited or restricted in distribution on a regional basis and, therefore, are considered sensitive in themselves. Whereas this assessment is comprehensive, the focus is on sensitive vegetation communities/habitats, resources that play an important role in the regional biological systems, and special-status species.

4.2 Thresholds of Significance

The environmental impacts relative to biological resources are assessed using impact significance threshold criteria, which mirror the policy statement contained in CEQA, Section 21001(c) of the California Public Resources Code. Accordingly, the State Legislature has established it to be the policy of the State to:

"Prevent the elimination of fish or wildlife species due to man's activities, insure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities..."

Determining whether a project may have a significant effect, or impact, plays a critical role in the CEQA process. According to the State CEQA Guidelines, Section 15064.7, Thresholds of Significance, each public agency is encouraged to develop and adopt (by ordinance, resolution, rule, or regulation) thresholds of significance that the agency uses in the determination of the significance of environmental effects. A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant. In the development of thresholds of significance for impacts to biological resources, the State CEQA Guidelines provides guidance primarily in Section 15065, Mandatory Findings of Significance, and the State CEQA Guidelines, Appendix G, Environmental Checklist Form. Section 15065(a) states that a project may have a significant effect where:

> "*The project has the potential to substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; substantially reduce the number or restrict the range of an endangered, rare, or threatened species; ...*"

Appendix G of the State CEQA Guidelines is more specific in addressing biological resources and encompasses a broader range of resources to be considered, including: candidate, sensitive, or special status species; riparian habitat or other sensitive natural communities; federally protected wetlands; fish and wildlife movement corridors;

local policies or ordinances protecting biological resources; and adopted HCPs. This is done in the form of a checklist of questions to be answered during the Initial Study leading to the preparation of the appropriate environmental documentation for a project. Because these questions are derived from standards in other laws, regulations, and other commonly used thresholds, it is reasonable to use these standards as a basis for defining significance thresholds. Therefore, for the purpose of this analysis, impacts to biological resources are considered potentially significant (before considering offsetting mitigation measures) if one or more of the following conditions would result from implementation of the proposed project.

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

2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?

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

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

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

6. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

For the purposes of this impact analysis, the following definitions apply:

- "Substantial adverse effect" means loss or harm of a magnitude which, based on current scientific data and knowledge would: (1) substantially reduce population numbers of a listed, candidate, sensitive, rare, or otherwise special status species; (2) substantially reduce the distribution of a sensitive natural community/habitat type; or (3) eliminate or substantially impair the functions and values of a biological resource (e.g., streams, wetlands, or woodlands) in a geographical area defined by interrelated biological components and systems. In the case of this analysis, the prescribed geographical area is considered to be the region generally bounded by the Laguna Coast Wilderness Park to the northwest, Aliso and Wood Canyon Wilderness Park to the northeast and the City of Laguna Beach and the Pacific Ocean to the south and southwest.
- "Conflict" means contradiction of a magnitude, which based on foreseeable circumstances would preclude or prevent substantial compliance.
- "Rare" means: (1) that the species exists in such small numbers throughout all, or a significant portion of, its range that it may become endangered if its environment worsens; or (2) the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in the FESA.

4.3 Impacts to Sensitive Natural Communities, Special-Status Species and Critical Habitat

Project impacts determined to be less than significant include impacts to sensitive biological resources that exist in a degraded or disturbed state, and therefore less valuable as habitat, or impacts that do not meet or exceed the significance thresholds defined previously. The project may include removal of vegetation immediately adjacent to existing and proposed structures for fuel modification and fire safety, as determined by the Fire Department. Existing vegetation adjacent to existing SCWD areas are degraded or disturbed, possessing less valuable habitat. Existing and proposed structures are or will be constructed from inflammable material including concrete blocks and metal roofing material. Such structures are not designed as habitable structures and therefore require minimal fuel modification.

4.3.1 Sensitive Natural Communities

The General Plan of the City of Laguna Beach considers intact coastal sage scrub such as California sagebrush alliance within the survey area to be a sensitive resource, primarily as suitable habitat for the special-status coastal California gnatcatcher. However, the CDFW does not consider this natural community to be sensitive. This community is found within the northern and southwestern portions of the survey area; however, both areas show various levels of disturbance, especially the California sagebrush alliance in the northern area adjacent to existing residential areas. Impacts to this community may be considered significant if it were occupied with coastal California gnatcatcher. Impacts would be less than significant with mitigation measure described below in Section 5.2.1.

The project site is located within the Orange County Central-Coastal Natural Community Conservation Plan (NCCP)/Habitat Conservation Plan (HCP), a voluntary planning effort promoting conservation of biological resources while allowing development within the NCCP/HCP area. The NCCP/HCP was approved in 1996 and provides protection to multiple species and habitats while allowing compatible land uses to continue or become established. Participating entities include seven municipalities, County of Orange, the Irvine Company, Metropolitan Water District, University of California at Irvine and the Orange Transportation Corridor Agency. South Coast Water District is not a participating agency.

4.3.2 Special-Status Plant Species

Project implementation could potentially result in the direct removal of numerous common native plant species within the survey area. These common native plant species are present in large numbers throughout the region, therefore, impacts to them are considered to be less than significant. As mentioned previously, seven special-status plant species have a moderate potential to occur (western dichondra, Laguna Beach dudleya, cliff spurge, big-leaved crownbeard, Catalina mariposa lily, intermediate mariposa lily, and vernal barley). Laguna Beach dudleya, cliff spurge, and big-leaved crownbeard are perennial species that would have been identifiable at the time of the October site survey. Impacts would be less than significant with the mitigation measure described below in Section 5.2.2.

4.3.3 Special-Status Wildlife Species

The literature review and habitat assessment determined the survey area has a moderate potential to support five special-status wildlife species: coast horned lizard, orange-throated whiptail, coastal California gnatcatcher, southwestern pond turtle, and two-striped garter snake.

Coast horned lizard, orange-throated whiptail, two-striped garter snake, and southwestern pond turtle have a moderate potential to occur within the survey area based on current habitat conditions. All four species are California Species of Special Concern. Suitable habitat for all four species is present within the survey area, but it is anticipated that these species would be able to move out of the way during construction activities. Any project impacts to these species would be less than significant with mitigation measures implemented because adequate habitat for these species is conserved regionally by the City's General Plan and project impacts are not expected to substantially reduce the viability of these species' populations. Implementation of mitigation measures described below in Section 5.2.3 would reduce impacts to less than significant.

Coastal California gnatcatcher has a moderate potential to occur within the survey area based on current habitat conditions. This species was designated as a federally-threatened in 1993 and is a California Species of Special Concern. The habitat assessment determined that suitable habitat for this species in the form of California sagebrush alliance, is present onsite. No coastal California gnatcatchers were detected during the October 2020 survey. Disturbing or destroying active coastal California gnatcatcher (or any other active avian nests) nests is a violation of the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.) and nests and eggs are protected under FGC Section 3503. Direct impacts to coastal California gnatcatcher could result from accidental destruction of nests through removal of California sagebrush alliance, if commenced. Destruction of nests during the breeding season (March 1 through August 15) would be considered significant. Implementation of the mitigation measures described below in Section 5.2.3 would reduce impacts to less than significant.

4.3.4 Wildlife Movement

The survey area does support "Very High Value Habitat," as designated under the City General Plan Open Space and Conservation Element (2006), in the form of the open water of Aliso Creek; however, wildlife movement through the survey area is likely to be minimal due to current disturbed and developed conditions within and adjacent to the survey area. The proposed project is not anticipated to significantly impact wildlife movement. Therefore, no mitigation is required.

4.3.5 Critical Habitat

USFWS-designated critical habitat is present for tidewater goby within the survey area. A federal Biological Assessment will be prepared, in addition to this BTR, and will discuss in detail the potential impacts and resolutions for tidewater goby. No mitigation is proposed or required.

4.3.6 Aquatic Resources

Project implementation would impact aquatic resources under the jurisdiction of CDFW, RWQCB and USACE. Although the ephemeral drainage will be avoided by the project design, the erosional feature located behind the SCWD storage area would be permanently impacted during construction. The erosional feature is primarily unvegetated but is surrounded by laurel sumac alliance, which will be avoided during construction. The impact area for the erosional feature is estimated to be 0.001 acre and mitigation would be included for that proposed for impacts to Aliso Creek, described below.

The project outlet structure will be constructed in the location of the existing outlet pipe. The new outlet structure will be placed below the OHWM and permanently impact up to 0.002 acre of Aliso Creek. In addition, the replacement pipe for the outlet structure will be placed in coastal wetlands and waters subject to the California Coastal Act, with permanent impact to approximately 0.011 acre of coastal wetlands and 0.003 acre of coastal

waters. Permanent impacts to FGC 1600 resources include 0.003 acre of permanent streambed impacts and 0.030 of permanent riparian habitat impact, and temporary impacts to 0.012 acre of riparian vegetation.

5.0 Mitigation Measures and Conclusion

5.1 Approach

Mitigation measures are recommended for those impacts determined to be significant to sensitive natural resources. Mitigation measures for impacts considered to be "significant" were developed in an effort to reduce such impacts to a level of "insignificance," while at the same time allowing the project proponent an opportunity to realize development goals. As stated in State CEQA Guidelines Section 15370, mitigation includes:

1. Avoiding the impact altogether by not taking a certain action or parts of an action.
2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
3. Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment.
4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
5. Compensating for the impact by replacing or providing substitute resources or environments.

5.2 Mitigation Measures and Recommendations

The following mitigation measures have been included to minimize impacts resulting from the proposed project on jurisdictional issues and nesting birds to the maximum extent practicable.

5.2.1 Sensitive Natural Communities and City General Plan-designated High Value Habitat

The General Plan of the City of Laguna Beach considers intact California sagebrush alliance within the survey area to be a sensitive resource, primarily as suitable habitat for the special-status coastal California gnatcatcher. If the proposed project were to impact this community, mitigation for impacts would be necessary if the community is found to support the coastal California gnatcatcher. Mitigation through off-site compensation for unavoidable impacts through acquisition and protection of high-quality habitat within the NCCP and managed by the Natural Communities Coalition would be recommended for impact to occupied habitat. Avoidance is also possible in the timing of project construction or in project design to avoid impacts to California sagebrush alliance. Based on the current project design, direct impacts to California sagebrush alliance will be avoided.

5.2.2 Special-Status Plant Species

The survey area has a moderate potential for seven special-status plant species to occur: western dichondra, Laguna Beach dudleya, cliff spurge, big-leaved crownbeard, Catalina mariposa lily, intermediate mariposa lily, and vernal barley. Where direct removal of vegetation is anticipated, the limits of grading should be delineated with a temporary construction fence to prevent any potential encroachment into offsite native habitats to ensure no direct impact occurs through habitat modification. Therefore, potential project-related impacts to special-status plant species will be less than significant with Implementation of **BIO-1**.

> **BIO-1.** Prior to commencement of construction, an appropriately-timed (during flowering season) focused plant survey is recommended to confirm whether any special-status plant species occur within the Project

disturbance footprint. If any individuals of these species are observed within the project disturbance footprint, avoidance and minimization measures will be implemented through project re-design. Both Laguna Beach dudleya and big-leaved crownbeard are State and Federally-listed as Threatened, and the project will be redesigned to avoid these species if they are found to occur within the project development footprint. If western dichondra, cliff spurge, Catalina mariposa lily, intermediate mariposa lily, or vernal barley is observed within the project development footprint during the pre-construction focused survey, each species will have seed collected prior to impact for propagation by a native plant nursery such as Tree of Life or Rancho Santa Ana Botanic Garden. If Catalina mariposa lily or intermediate mariposa lily are within the development footprint, then bulbs of impacted individual plants will be removed during summer dormancy and transplanted to an equivalent suitable habitat within the project survey area.

BIO-2: If any of the seven special-status plant species occur within or areaswithin 20 feet of Project disturbance footprint, the limits of grading shall be delineated with a temporary construction fence to prevent encroachment into offsite native habitats to ensure no direct take occurs through habitat modification.

5.2.3 Special-Status Wildlife Species and Nesting Birds

Construction activities could result in impacts to five special-status wildlife species with moderate potential to occur: coastal California gnatcatcher, coast horned lizard, orange-throated whiptail, two-striped garter snake, and southwestern pond turtle. The following measures are recommended to be implemented to avoid potentially significant impacts to special-status wildlife during project construction activities.

BIO-3. Prior to commencement of construction activities, a pre-construction survey is recommended within the Project disturbance footprint for coast horned lizard, orange-throated whiptail, two-striped garter snake, and southwestern pond turtle. If these species are observed or detected during the pre-construction survey, avoidance and minimization measures will be implemented in the form of relocation to suitable habitat areas outside of the project construction area. If either southwestern pond turtle or two-striped garter snake are observed during a pre-construction survey, a biological monitor will be present for any construction activities that occur within or adjacent to open water or riparian vegetation to prevent these species from moving into the construction area. If either coast horned lizard and orange-throated whiptail are observed during a pre-construction survey, a qualified biologist will relocate individuals of these species to comparable habitats prior to construction where habitat disturbance will not occur.

BIO-4: If the nesting season cannot be avoided and construction or vegetation removal occurs between February 1 to September 1 (January 1 to July 31 for raptors), the proposed project shall do the following to avoid and minimize impacts to nesting birds and raptors:

- During the avian breeding season, a qualified biologist shall conduct a pre-construction avian nesting survey no more than 7 days prior to vegetation disturbance or site clearing. If construction begins in the non-breeding season and proceeds continuously into the breeding season, no surveys are required. However, if there is a break of 7 days or more in cleanup or construction activities during the breeding season, a new nesting bird survey shall be conducted before construction begins again.

- The pre-construction survey shall cover all reasonably potential nesting locations on and within 300 feet of the proposed construction areas, and areas that would be occupied by ground-nesting

species such as killdeer. A 500-foot radius shall be surveyed in areas containing suitable habitat for nesting raptors, such as trees, utility poles, rock crevices, and cliffs.

- If an active nest is found during the pre-construction avian nesting survey, a qualified biologist shall implement a 300-foot minimum avoidance buffer for all passerine birds and 500-foot minimum avoidance buffer for all raptor species. The nest site area shall not be disturbed until the nest becomes inactive, the young have fledged, the young are no longer being fed by the parents, the young have left the area, and the young will no longer be impacted by the project. Buffer areas may be increased to prevent take of the species or nest, if any Endangered, Threatened, CDFW Fully Protected, or CDFW Species of Special Concern are identified during protocol or pre-construction surveys. Buffer areas may be decreased for non-special-status avian species by the monitoring biologist if direct observations of active nests suggest tolerance of construction activities.

- If the nest(s) are found in an area where ground disturbance is scheduled to occur, construction shall cease in the nest area either by delaying ground disturbance in the area until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival, or by relocating the project component(s) to avoid the area.

BIO-5: To reduce impacts to coastal California gnatcatcher to a level of less than significant, nesting season avoidance or a pre-construction survey is recommended. The client will avoid clearing California sagebrush alliance during the breeding season (March 1 through September 1). If removal cannot be avoided during this timeframe, a pre-construction survey for the presence of coastal California gnatcatcher shall be conducted within three days prior to the initiation of project clearing, grading, grubbing, or other construction activities. If an active nest is present in the project construction footprint or immediate surrounding area, a minimum 300-foot buffer of the active nest or other measures will be implemented to reduce potential impacts to coastal California gnatcatcher until the nesting cycle is complete or it is determined that the nest is no longer active by a qualified biologist. Such measures may include (but are not limited to): construction avoidance until the nest is no longer active; noise attenuation measures to reduce construction noise levels to below 60 dBA Leq (an hourly measurement of A-weighted decibels) or ambient (if existing ambient levels are above 60 dBA); and monitoring of nesting behavior during construction activities to ensure nesting activities are not impacted during project construction. If construction activities cannot avoid the avian nesting season for coastal California gnatcatcher, a biologist holding a current USFWS 10(a)(1)(A) permit to survey for coastal California gnatcatcher shall conduct a presence/absence survey according to USFWS survey protocol. The presence/absence survey shall be conducted prior to the start of construction activities in all suitable habitat within a 500-foot survey area surrounding the project boundary. Protocol surveys require six survey dates between March and July, during which no construction activities may commence. If the protocol surveys determine the absence of coastal California gnatcatcher, no further presence/absence surveys are needed if both of the following conditions occur: (1) construction activities do not stop for 7 days or more, and (2) construction does not begin within a nesting season for which surveys were not conducted. If this species is observed during the presence/absence survey, additional avoidance measures will be required such as monitoring any active nests during construction or halting construction activities while a nest within 500-feet of construction remains active.

In-water construction activities could result in impacts to tidewater goby, assuming the species is present within Aliso Creek. The following measure is recommended to be implemented to avoid potentially significant impacts to tidewater goby during project construction activities.

> **BIO-6.** Prior to commencement of construction activities, a pre-construction survey is recommended for tidewater goby. If this species is observed or detected during the pre-construction survey, consultation with USFWS will be initiated to determine appropriate avoidance and minimization measures to prevent take of the species. Where in-water construction may occur, a coffer dam will be constructed surrounding the work area with a qualified aquatic biologist holding a current USFWS 10(a)(1)(A) permit for tidewater goby present to monitor the coffer dam placement and removal. Any individual of tidewater goby within the coffer dam construction area will be captured by the permitted biologist for relocation out of harm's way. The qualified and permitted monitoring biologist will be present during all in-water construction activities.

5.2.4 Wildlife Movement

Construction activities would not alter or displace any common or special-status wildlife species or their movement throughout the survey area.

5.2.5 Critical Habitat

During in-water construction activities, critical habitat for tidewater goby could potentially result in impact (though not anticipated). Implementation of BIO-6, described above, would reduce, avoid or minimize impacts to less than significant.

5.2.5 Aquatic Resources

Placement of the new pipeline and outlet structure will impact regulated aquatic resources. Compensatory mitigation for the permanent loss of waters and coastal wetlands can be achieved through the purchase of mitigation credits from the San Luis Rey Mitigation Bank or another location approved by the regulatory agencies. Alternatively, removal of the giant reed stand within the survey area along the north bank of Aliso Creek could be offered as compensatory mitigation. The small impact area of the erosional feature will have mitigation included with the compensatory mitigation proposed for impacts to Aliso Creek aquatic resources. Mitigation for impacts to regulated aquatic resources will be subject to the approval of regulatory agencies during the permitting process. Impacts would be reduced to less than significant.

5.3 Conclusion

The construction of the proposed project could potentially involve the direct removal of vegetation and impacts to Aliso Creek, which in return, could potentially impact numerous special-status plant and wildlife species. With the implementation of recommended mitigation measures **BIO-1** through **BIO-6**, impacts would be reduced to less than significant. The provision of compensatory mitigation through the purchase of off-site mitigation credits would reduce impacts to aquatic resources to less than significant.

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APPENDIX A

Floral and Faunal Compendia

APPENDIX A – SOUTH COAST WATER DISTRICT LIFT STATION NO. 2 REPLACEMENT PROJECT

Floral Compendium

Family	Scientific Name	Common Name	Nativity	Status
GYMNOSPERMS				
PINACEAE – PINE FAMILY				
	Pinus pinea	Italian stone pine	cultivated	
ANGIOSPERMS				
DICOTS				
ADOXACEAE – MUSKROOTFAMILY				
	Sambucus nigra ssp. *caerulea*	blue elderberry	native	
AIZOACEAE – ICE PLANT FAMILY				
	Aptenia cordifolia	dew plant	naturalized	
	Carpobrotus edulis	Hottentot fig	naturalized	
	Tetragona tetragonoides	New Zealand spinach	naturalized	
ANACARDIACEAE – SUMAC OR CASHEW FAMILY				
	Malosma laurina	laurel sumac	native	
	Rhus integrifolia	lemonade berry	native	
	Schinus molle	Peruvian pepper tree	naturalized	
APIACEAE – CARROT FAMILY				
	Apium graveolens	garden celery	naturalized	
	Foeniculum vulgare	fennel	naturalized	
APOCYNACEAE – DOGBANE FAMILY				
	Nerium oleander	oleander	cultivated	
ASTERACEAE – SUNFLOWER FAMILY				
	Ambrosia psilostachya	ragweed	native	
	Artemisia californica	California sagebrush	native	
	Baccharis pilularis subsp. *consanguinea*	coyote brush	native	
	Baccharis salicifolia	mule fat	native	
	Centaurea melitensis	tocalote	naturalized	
	Encelia californica	bush sunflower	native	
	Erigeron bonariensis	flax-leaved horseweed	naturalized	
	Erigeron canadensis	Canada horseweed	native	
	Isocoma menziesii	Menzies' goldenbush	native	
	Jaumea carnosa	fleshy jaumea	native	
	Lactuca serriola	prickly lettuce	naturalized	
	Malacothrix saxatilis	cliff aster	native	
	Pluchea odorata	salt marsh fleabane	native	
	Pseudognaphlium biolettii	two-color rabbit tobacco	native	
	Pulicaria paludosa	Spanish false fleabane	naturalized	
	Stephanomeria virgata	rod wirelettuce	native	
	Xanthium strumarium	rough cockleburr	native	
BIGNONIACEAE – TRUMPET-CREEPER FAMILY				
	Tecoma capensis	Cape honeysuckle	cultivated	
BORAGINACEAE – BORAGE FAMILY				

Echium candicans	Pride of Madeira	cultivated
Heliotropium curassavicum	Seaside heliotrope	native
Phacelia cicutaria	caterpillar phacelia	native
BRASSICACEAE – MUSTARD FAMILY		
Hirschfeldia incana	short-podded mustard	naturalized
CHENOPODIACEAE – GOOSEFOOT FAMILY		
Atriplex prostrata	fat-hen	naturalized
Atriplex semibaccata	Australian saltbush	naturalized
Salsola tragus	Russian thistle	naturalized
CRASSULACEAE – STONECROP FAMILY		
Dudleya pulverulenta	chalk dudleya	native
CUCURBITACEAE – GOURD FAMILY		
Marah macrocarpa	chilicothe	native
EUPHORBIACEAE – SPURGE FAMILY		
Euphorbia maculata	spotted spurge	naturalized
Euphorbia peplus	petty spurge	naturalized
Euphorbia serpens	matted sandmat	naturalized
Ricinus communis	casterbean	naturalized
FABACEAE – LEGUME FAMILY		
Acacia cyclops	coastal wattle	naturalized
Acacia longifolia	Sydney golden wattle	naturalized
Acmispon glaber	deerweed	native
Hoita macrostachya	California hemp	native
Tipuana tipu	tipa	cultivated
GERANIACEAE – GERANIUM FAMILY		
Erodium cicutarium	red-stem filaree	naturalized
LAMIACEAE – MINT FAMILY		
Salvia mellifera	black sage	native
LAURACEAE – LAUREL FAMILY		
Laurus nobilis	sweet bay	cultivated
MALVACEAE – MALLOW FAMILY		
Malacothamnus fasciculatus var. *fasciculatus*	chaparral bush mallow	native
Malva parviflora	cheeseweed mallow	naturalized
MYRSINACEAE – MYRSINE FAMILY		
Lysimachia arvensis	scarlet pimpernel	naturalized
MYRTACACEAE – MYRTLE FAMILY		
Callistemon citrinus	crimson bottlebrush	naturalized
Eucalyptus camaldulensis	red gum	cultivated
PLANTAGINACEAE – PLANTAIN FAMILY		
Kickxia elatine	sharp leaved fluellin	naturalized
PLUMBAGINACEAE – PLUMBAGO FAMILY		
Plumbago auriculata	Cape leadwort	cultivated
POLYGONACEAE – BUCKWHEAT FAMILY		
Eriogonum fasciculatum	California buckwheat	native
ROSACEAE – ROSE FAMILY		
Heteromeles arbutifolia	toyon	native
SOLANACEAE – NIGHTSHADE FAMILY		
Nicotiana glauca	tree tobacco	naturalized
Solanum xanti	chaparral nightshade	native
MONOCOTS		
AGAVACEAE – CENTURY PLANT FAMILY		
Agave americana	century plant	naturalized
Yucca gigantea	Giant yucca	naturalized
ARECACEAE – PALM FAMILY		
Phoenix canariensis	Canary Island date palm	naturalized
Washingtonia robusta	Mexican fan palm	naturalized

ASPARAGACEAE – ASPARAGUS FAMILY		
Asparagus asparagoides	African asparagus fern	naturalized
POACEAE – GRASS FAMILY		
Arundo donax	giant reed	naturalized
Avena barbata	slender wild oats	naturalized
Brachypodium distachyon	false brome	naturalized
Bromus rubens	red brome	naturalized
Cortaderia selloana	pampas grass	naturalized
Distichlis spicata	salt grass	native
Ehrharta erecta	panic veldtgrass	naturalized
Festuca myuros	rattail sixweeks grass	naturalized
Pennisetum setaceum	crimson fountain grass	naturalized
Stipa miliacea var. *miliacea*	smilo grass	naturalized

Key to Species Listing Status Codes

FE	*Federally Endangered*	SE	*State Listed as Endangered*
FT	*Federally Threatened*	ST	*State Listed as Threatened*
FC	*Federal Candidate*	SCE	*State Candidate for Endangered*
FPE	*Federally Proposed as Endangered*	SCT	*State Candidate for Threatened*
FPT	*Federally Proposed as Threatened*	SFP	*State Fully Protected*
FPD	*Federally Proposed for Delisting*		

California Native Plant Society (CNPS)

Rank 1A: Presumed extirpated in California and either Rare or Extinct elsewhere. *Rank 1B: Rare, threatened, or endangered in California and elsewhere.* *Rank 2A: Presumed extirpated in California, but more common elsewhere.* *Rank 2B: Rare, threatened, or endangered in California, but more common in other states.* *Rank 3: Plant species about which more information is needed.* *Rank 4: Species of limited distribution in California.* Source: ESA 2020.	*Threat Code extensions and their meanings:* *1 Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)* *2 Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)* *3 Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)*

APPENDIX A – SOUTH COAST WATER DISTRICT LIFT STATION
Faunal Compendium

Class	Family	Family Common Name	Scientific Name	Common Name	Special-status?
REPTILES					
	Phrynosomatidae	Spiny Lizards	*Sceloporus occidentalis*	Western Fence Lizard	N
BIRDS					
	Anatidae	Ducks, Geese, and Waterfowl	*Anas platyrhynchos*	Mallard	N
	Corvidae	Crows and Jays	*Corvus brachyrhynchos*	American Crow	N
	Fringillidae	Fringilline and Cardueline Finches and Allies	*Haemorhous mexicanus*	House Finch	N
	Mimidae	Mockingbirds and Thrashers	*Mimus polyglottos*	Northern Mockingbird	N
	Parulidae	New World Warblers	*Setophaga coronata*	Yellow-rumped Warbler	N
	Parulidae	New World Warblers	*Geothlypis trichas*	Common Yellowthroat	N
	Passerellidae	New World Sparrows	*Melozone crissalis*	California Towhee	N
	Passerellidae	New World Sparrows	*Zonotrichia leucophrys*	White-crowned Sparrow	N
	Passeridae	Old World Sparrows	*Passer domesticus*	House Sparrow	N
	Rallidae	Rails, Gallinules and Coots	*Fulica americana*	American Coot	N
	Sylviidae	Sylviid Warblers	*Chamaea fasciata*	Wrentit	N
	Trochilidae	Hummingbirds	*Calypte anna*	Anna's Hummingbird	N
	Troglodytidae	Wrens	*Thryomanes bewickii*	Bewick's Wren	N
	Tyrannidae	Tyrant Fycatchers	*Myiarchus cinerascens*	Ash-throated Flycatcher	N
MAMMALS					
	Leporidae	Rabbits and Hares	*Sylvilagus audubonii*	Audubon Cottontail	N

APPENDIX B

Special-Status Plant Species Potential to Occur

APPENDIX B – SPECIAL-STATUS PLANTS POTENTIAL TO OCCUR

Scientific Name	Common Name	Flowering Period	CNPS	State	Federal	Preferred Habitat	Potential For Occurrence[1]
Gymnosperms							
Cupressaceae	Cypress Family						
Hesperocyparis forbesii	tecate cypress	None	1B.1	None	None	Clay, gabbroic or metavolcanic. closed-cone coniferous forest, and chaparral	**None.** Suitable habitat is not present.
Angiosperms (Dicotyledons)							
Apiaceae	Carrot Family						
Eryngium aristulatum var. *parishii*	San Diego button-celery	Apr-Jun	1B.1	FE	CE	Mesic, coastal scrub, valley and foothill grassland, and vernal pools	**None.** Suitable habitat is not present.
Asteraceae	Sunflower Family						
Centromadia parryi ssp. *australis*	southern tarplant	May-Nov	1B.1	None	None	Marshes and swamps (margins), valley and foothill grassland (vernally mesic), vernal pools	**None.** Suitable habitat is not present.
Chaenactis glabriuscula var. *orcuttiana*	Orcutt's pincushion	Jan-Aug	1B.1	None	None	Coastal bluff scrub (sandy), coastal dunes	**None.** Suitable habitat is not present.
Deinandra paniculata	paniculate tarplant	(Mar) Apr-Nov (Dec)	4.2	None	None	Vernally mesic and somewhat sandy soils in coastal scrub, valley and foothill grassland, vernal pools	**None.** Suitable habitat is not present.
Helianthus nuttallii ssp. *parishii*	Los Angeles sunflower	Aug-Oct	1A	None	None	Marshes and swamps (coastal salt and freshwater)	**None.** Suitable habitat is not present.
Isocoma menziesii var. *decumbens*	decumbent goldenbush	Apr-Nov	1B.2	None	None	Chaparral, coastal scrub (sandy, often in disturbed areas)	**Low.** Suitable habitat is present; however, species has not been detected within survey area.
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	Feb-Jun	1B.1	None	None	Marshes and swamps (coastal salt), playas, vernal pools	**None.** Suitable habitat is not present.
Malacothrix saxatilis var. *saxatilis*	cliff malacothrix	Mar-Sep	4.2	None	None	In cracks, crevices and flats of coastal bluff within Coastal bluff scrub, coastal scrub	**None.** Suitable habitat is present; however, species has not been detected within survey area.
Pentachaeta aurea ssp. *allenii*	Allen's pentachaeta	Mar-Jun	1B.1	None	None	Coastal scrub (openings), valley and foothill grassland	**None.** Suitable habitat is present; however, species has not been detected within survey area.
Pseudognaphalium leucocephalum	white rabbit- tobacco	(Jul) Aug-Nov	2B.2	None	None	Sandy, gravelly, chaparral, cismontane woodland, coastal scrub, and riparian woodland	**None.** Suitable habitat is present; however, species has not been detected within survey area.
Senecio aphanactis	chaparral ragwort	Jan-Apr (May)	2B.2	None	None	Sometimes alkaline, chaparral, cismontane woodland, and coastal scrub	**None.** Suitable habitat is not present.

[1] **OBSERVED** = species observed during focused surveys; **NONE** = species not expected to occur due to the lack of suitable habitat, or the site's location outside of the species' range

Symphyotrichum defoliatum	San Bernardino aster	Jul-Nov (Dec)	1B.2	None	None	Near ditches, streams, springs, cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps, and valley and foothill grassland (vernally mesic)	**None.** Suitable habitat is not present.
Verbesina dissita	big-leaved crownbeard	(Mar) Apr-Jul	1B.1	CT	FT	Chaparral (maritime), coastal scrub	**Moderate**. Suitable habitat is present within survey area and species was detected just south of survey area in 2011 (Calflora 2020).
Boraginaceae	Borage Family						
Harpagonella palmeri	Palmer's grapplinghook	Mar-May	4.2	None	None	Clay; open grassy areas within shrubland, chaparral, coastal scrub, and valley and foothill grassland	**None.** Suitable habitat is not present.
Nama stenocarpa	mud nama	Jan-Jul	2B.2	None	None	Marshes and swamps (lake margins, riverbanks)	**None.** Suitable habitat is not present.
Phacelia ramosissima var. *austrolitoralis*	south coast branching phacelia	Mar-Aug	3.2	None	None	Sandy, sometimes rocky soils in chaparral, coastal dunes, coastal scrub, marshes and swamps (coastal salt)	**None**. Suitable habitat is present; however, species has not been detected within survey area.
Brassicaceae	Mustard Family						
Lepidium virginicum var. *robinsonii*	Robinson's pepper grass	Jan-Jul	4.3	None	None	Chaparral and coastal scrub	**None.** Suitable habitat is present; however, species has not been detected within survey area.
Nasturtium gambelii	Gambel's water cress	Apr-Oct	1B.1	FE	CT	Marshes and swamps (freshwater or brackish)	**None.** Suitable habitat is not present.
Campanulaceae	Bellflower Family						
Nemacaulis denudata	coast woolly heads	Apr-Sep	1B.2	None	None	Coastal dunes	**None.** Suitable habitat is not present.
Chenopodiaceae	Goosefoot Family						
Aphanisma blitoides	aphanisma	Feb-Jun	1B.2	None	None	Sandy or gravelly soils in coastal bluff scrub, coastal dunes, coastal scrub	**None.** Suitable habitat is not present.
Atriplex coulteri	Coulter's saltbush	Mar-Oct	1B.2	None	None	Alkaline or clay soils in coastal bluff scrub, coastal dunes, coastal scrub, valley and foothill grassland	**Low.** Suitable habitat is within survey area. Species has been observed upstream of Aliso Creek; however, was in 1934 (Calflora 2020).
Atriplex pacifica	South Coast saltscale	Mar-Oct	1B.2	None	None	Coastal bluff scrub, coastal dunes, coastal scrub, playas	**Low**. Suitable habitat is within survey area; however, species has not been detected. Species has been detected several miles north; however, was in 1916. 1916, and 1927 (Calflora 2020).
Atriplex parishii	Parish's brittlescale	Jun-Oct	1B.1	None	None	Alkaline soils in chenopod scrub, playas, vernal pools	**None.** Suitable habitat is not present.
Atriplex serenana var. *davidsonii*	Davidson's saltscale	Apr-Oct	1B.2	None	None	Alkaline soils in coastal bluff scrub, coastal scrub	**None.** Suitable habitat is not present.

Suaeda esteroa	estuary seablite	(May) Jul-Oct (Jan)	1B.2	None	None	Marshes and swamps (coastal salt)	**None.** Suitable habitat is not present.
Suaeda taxifolia	woolly seablite	Jan-Dec	4.2	None	None	Coastal bluff scrub, coastal dunes, and marshes and swamps (margins of coastal salt)	**None.** Suitable habitat is not present.
Convolvulaceae	Morning-Glory Family						
Convolvulus simulans	small-flowered morning-glory	Mar-Jul	4.2	None	None	Clay, serpentinite seeps, chaparral (openings), coastal scrub, and valley and foothill grassland	**None.** Suitable habitat is not present.
Dichondra occidentalis	western dichondra	(Jan) Mar-Jul	4.2	None	None	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland	**Moderate.** Suitable habitat is present and one observation was made a short distance east of survey area in 2006 (Calflora 2020).
Crassulaceae	Stonecrop Family						
Dudleya blochmaniae ssp. *blochmaniae*	Blochman's dudleya	Apr-Jun	1B.1	None	None	Rocky, often clay or serpentinite. coastal bluff scrub, chaparral, coastal scrub, and valley and foothill grassland	**None.** Suitable habitat is not present.
Dudleya multicaulis	many-stemmed dudleya	Apr-Jul	1B.2	None	None	Clay soils in chaparral, coastal scrub, valley and foothill grassland	**Low.** Suitable habitat is present and one observation was made immediately east of survey area in 2006 (Calflora 2020).
Dudleya stolonifera	Laguna Beach dudleya	May-Jul	1B.1	CT	FT	In thin soil on north-facing sandstone cliffs within chaparral, cismontane woodland, coastal scrub, valley and foothill grassland rocky	**Moderate.** Suitable habitat is present and two observations were made immediately east of survey area in 1912 and 1967 (Calflora 2020).
Ericaceae	Heath Family						
Comarostaphylis diversifolia ssp. *diversifolia*	summer holly	Apr-Jun	1B.2	None	None	Chaparral, cismontane woodland	**None.** Suitable habitat is present; however, species has not been detected within survey area.
Euphorbiaceae	Spurge Family						
Euphorbia misera	cliff spurge	Dec-Aug (Oct)	2B.2	None	None	Rocky areas in coastal bluff scrub, coastal scrub, Mojavean desert scrub	**Moderate**. Suitable habitat is present and species has been detected south and southeast of survey area (Calflora 2020).
Tetracoccus dioicus	Parry's tetracoccus	Apr-May	1B.2	None	None	Chaparral and coastal scrub	**None**. Suitable habitat is present however, species has not been detected within survey area,
Fagaceae	Oak Family						
Quercus dumosa	Nuttall's scrub oak	Feb-Apr (May-Aug)	1B.1	None	None	Sandy clay-loam soils in closed-cone coniferous forest, chaparral, coastal scrub	**None.** Suitable habitat is not present.
Lamiaceae	Mint Family						
Monardella hypoleuca	white leaf monardella	Apr-Sep	1B.3	None	None	Usually understory, chaparral, cismontane woodland, and lower montane coniferous forest (sometimes)	**None.** Suitable habitat is not present.

Malvaceae	Mallow Family						
Sidalcea neomexicana	salt spring checkerbloom	Mar-Jun	2B.2	None	None	Alkaline, mesic, chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, and playas	**None.** Suitable habitat is not present.
Montiaceae	Miner's Lettuce Family						
Cistanthe maritima	seaside cistanthe	(Feb) Mar-Jun (Aug)	4.2	None	None	Sandy soils in coastal bluff scrub, coastal scrub, valley and foothill grassland	**None.** Suitable habitat is not present.
Nyctaginaceae	Four O'Clock Family						
Abronia maritima	red sand-verbena	Feb-Nov	4.2	None	None	Coastal dunes	**None.** Suitable habitat is not present.
Abronia villosa var. *aurita*	chaparral sand-verbena	(Jan) Mar-Sept	1B.1	None	None	Chaparral, coastal scrub and desert dunes	**None.** Suitable habitat is not present.
Onagraceae	Evening-Primrose Family						
Camissoniopsis lewisii	Lewis' evening primrose	Mar-May (Jun)	3	None	S4	sandy or clay soils, coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, and valley and foothill grassland	**None.** Suitable habitat is not present.
Orobancaceae	Broomrape Family						
Chloropyron maritimum	salt marsh bird's-beak	May-Oct (Nov)	1B.2	FE	CE	Coastal dunes, marshes and swamps (coastal salt)	**None.** Suitable habitat is not present.
Polemoniaceae	Phlox Family						
Navarretia prostrata	prostrate vernal pool navarretia	Apr-Jul	1B.1	None	None	Mesic soils in coastal scrub, meadows and seeps, valley and foothill grassland (alkaline), vernal pools	**None.** Suitable habitat is present; however, species has not been detected within survey area.
Polygonaceae	Buckwheat Family						
Dodecahema leptoceras	slender-horned spineflower	Apr-Jun	1B.1	FE	CE	Sandy soils, chaparral, cismontane woodland, and coastal scrub (alluvial fan)	**None.** Suitable habitat is not present.
Rosaceae	Rose Family						
Horkelia cuneata var. *puberula*	mesa horkelia	Feb-Jul (Sep)	1B.1	None	None	Sandy or gravelly soils in chaparral (maritime), cismontane woodland, coastal scrub	**None.** Suitable habitat is not present.
Solanceae	Nightshade Family						
Lycium californicum	California box-thorn	(Dec) Mar - Aug	4.2	None	None	Coastal bluff scrub, coastal scrub	**None.** Suitable habitat is not present.
Angiosperms (Monocotyledons)							
Alismataceae	Water-Plantain Family						
Sagittaria sanfordii	Sanford's arrowhead	May-Oct (Nov)	1B.2	None	None	Marshes and swamps (assorted shallow freshwater)	**None.** Suitable habitat is not present.
Juncaceae	Rush Family						

Juncus acutus ssp. *leopoldii*	southwestern spiny rush	(Mar) May-Jun	4.2	None	None	Coastal dunes (mesic), meadows and seeps (alkaline seeps) and marshes and swamps (coastal salt)	**None.** Suitable habitat is not present.
Liliaceae	Lily Family						
Calochortus catalinae	Catalina mariposa lily	(Feb) Mar-Jun	4.2	None	None	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland	**Moderate**. Suitable habitat is present within survey area and species was detected just east of survey area in 2006 (Calflora 2020).
Calochortus weedii var. *intermedius*	intermediate mariposa lily	May-Jul	1B.2	None	None	Rocky, calcareous soils in chaparral, coastal scrub, valley and foothill grassland	**Moderate**. Suitable habitat is present within survey area and species was detected immediately south of the survey area in 1967 (Calflora 2020).
Poaceae	Grass Family						
Hordeum intercedens	vernal barley	Mar-Jun	3.2	None	None	Coastal dunes, coastal scrub, valley and foothill grassland (saline flats and depressions), vernal pools	**Moderate**. Suitable habitat is present within survey area. Species has been observed three times upstream of Aliso Creek in 1998 (Calflora 2020).
Orcuttia californica	California orcutt grass	Apr-Aug	1B.1	FE	CE	Vernal pools	**None.** Suitable habitat is not present.
Ruscaceae	Butcher's-Broom Family						
Nolina cismontana	chaparral nolina	(Mar) May-Jul	1B.2	None	None	Sandstone or gabbro, chaparral and coastal scrub	**None.** Suitable habitat is not present.
Themidaceae	Brodiaea Family						
Brodiaea filifolia	thread-leaved brodiaea	Mar-Jun	1B.1	FT	CE	Often clay, chaparral (openings), cismontane woodland, coastal scrub, playas, valley and foothill grassland, and vernal pools	**Low.** Some of the survey area has suitable habitat; however, species has not been detected within survey area. The nearest detcedtion was in 1996, several miles upstream of Aliso Creek (Calflora 2020).

Key to Species Listing Status Codes

FE	*Federally Endangered*	SE	*State Listed as Endangered*
FT	*Federally Threatened*	ST	*State Listed as Threatened*
FC	*Federal Candidate*	SCE	*State Candidate for Endangered*
FPE	*Federally Proposed as Endangered*	SCT	*State Candidate for Threatened*
FPT	*Federally Proposed as Threatened*	SFP	*State Fully Protected*
FPD	*Federally Proposed for Delisting*		

California Native Plant Society (CNPS)

Rank 1A: Presumed extirpated in California and either Rare or Extinct elsewhere.
Rank 1B: Rare, threatened, or endangered in California and elsewhere.
Rank 2A: Presumed extirpated in California, but common elsewhere.
Rank 2B: Rare, threatened, or endangered in California, but more common elsewhere.
Rank 3: Plant about which more information is needed.
Rank 4: Species of limited distribution in California.

Source: ESA 2020.

Threat Code extensions and their meanings:

.1 Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
.3 Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

APPENDIX C

Special-Status Wildlife Species Potential to Occur

APPENDIX C – SPECIAL-STATUS WILDLIFE POTENTIAL TO OCCUR

Scientific Name	Common Name	State	Federal	Preferred Habitat	Distribution	Potential For Occurrence[1]
Invertebrates						
Bombus crotchii	crotch bumble bee	None	SCE	Open grassland and scrub habitats that support potential nectar sources such as plants within the Fabaceae, Apocynaceae, Asteraceae, Lamiaceae, and Boraginaceae families.	Coastal California east towards the Sierra-Cascade Crest.	**None.** Suitable habitat is not present.
Branchinecta sandiegonensis	San Diego fairy shrimp	FE	None	Vernal pools	Southern California in the United States, and northern Baja California.	**None.** Suitable habitat is not present.
Cicindela gabbii	western tidal-flat tiger beetle	None	None	Tidal mud flats, salt marshes, sea beaches	Coastal Southern California from Ventura to San Diego County and into Mexico	**None.** Suitable habitat is not present.
Cicindela hirticollis gravida	sandy beach tiger beetle	None	None	Long, wide beaches that have little human activity.	Southern California beaches and dunes	**None.** Suitable habitat is not present.
Cicindela latesignata latesignata	western beach tiger beetle	None	None	Beaches	Coast of California south of Los Angeles; also in Baja California.	**None.** Suitable habitat is not present.
Coelus globosus	globose dune beetle	None	None	Foredunes and sand hummocks	Coast from Bodega Bay Head to Ensenada, Baja California, and all of the Channel Islands except San Clemente Island	**None.** Suitable habitat is not present.
Danaus plexippus pop. 1	Mmnarch butterfly	None	None	roosting butterflies have been seen on basswoods, elms, sumacs, locusts, oaks, osage-oranges, mulberries, pecans, willows, cottonwoods, and mesquites.	Southern Canada through northern South America	**None.** Suitable habitat is not present.
Panoquina errans	wandering skipper	None	None	Presence of salt grass, near nectar sources and near open areas near springs or other water bodies	United States and Mexico	**None.** Suitable habitat is not present.
Streptocephalus woottoni	Riverside fairy shrimp	FE	None	Vernal pools	Southern California in the United States, and northern Baja California in northwest Mexico.	**None.** Suitable habitat is not present.
Tryonia imitator	California brackish water snail	None	None	Brackish environments	United States	**None.** Suitable habitat is not present.
Fishes						

[1] **OBSERVED** = species observed during focused surveys; **NONE** = species not expected to occur due to the lack of suitable habitat, or the site's location outside of the species' range; **ABSENT** = potentially suitable habitat is present but the species was not observed during the focused surveys; **LOW** = species has low potential to occur due to limited suitable habitat; **MODERATE** = species has moderate potential to occur due to suitable habitat, or site's location is inside of species' range.

Euclogobius newberryi	tidewater goby	FE	SSC	Brackish water habitats along the coast; found in shallow lagoons and lower stream reaches with fairly still but not stagnant water and high oxygen levels.	Coastal ranges from Agua Hedionda Lagoon, San Diego Co. to the mouth of the Smith River.	**Low.** Suitable habitat is present within Aliso Creek, although individuals have not been observed since 1996 (USACE 2017). Aliso Creek is designated as critical habitat by USFWS.
Gila orcuttii	arroyo chub	None	SSC	Primarily the warm streams of the Los Angeles Plain, which are typically muddy torrents during the winter, and clear quiet brooks in the summer. They are found both in slow-moving and fast-moving sections, but generally deeper than 40 cm.	Native to Los Angeles, Santa Margarita, San Gabriel, San Luis Rey, and Santa Ana Rivers, as well as to Rainbow, Temecula, Malibu and San Juan Creeks.	**Low.** Though Aliso Creek could support this species upstream, the brackish conditions and proximity to the ocean would limit presence.
Oncorhynchus mykiss irideus pop. 10	steelhead – southern California DPS	FE	None	South coast flowing waters with variable temperatures. Found in streams and rivers with at least 7 inches minimum depth.	Originating below natural and manmade impassable barriers from the Santa Maria River to the U.S.-Mexico Border.	**Low.** Steelhead have historically been present in Aliso Creek; however, species has not been detected since 1972 (USACE 2017).
Rhinichthys osculus ssp. 3	Santa Ana speckled dace	None	SSC	Clear, well oxygenated water, with movement due to a current or waves.	Restricted to the headwaters of the Los Angeles, Santa Ana, and San Gabriel rivers.	**Low.** Though Aliso Creek could support this species upstream, the brackish conditions and proximity to the ocean would limit presence.
Amphibians						
Anaxyrus californicus	arroyo toad	FE	SSC	Sandy or cobbly washes with swift currents and associated upland and riparian habitats, in Southern California from Santa Barbara County south into northwestern Baja California.	Santa Barbara County south into northwestern Baja California.	**None.** Suitable habitat is present; however, the arroyo toad population in Aliso Creek was removed by floods in 1983 (DWR 2009).
Spea hammondii	western spadefoot	None	SSC	Prefers burrow sites within relatively open areas in lowland grasslands, chaparral, and pine-oak woodlands, areas of sandy or gravelly soil in alluvial fans, washes, and floodplains. Requires temporary pools for reproduction.	Great Valley, bordering foothills, and coastal ranges from south of Monterey Bay to nw. Baja, CA.	**None.** Suitable habitat is not present.
Reptiles						
Anniella stebbinsi	southern California legless lizard	None	SSC	Occurs in moist warm loose soil with plant cover. Moisture is essential. Occurs in sparsely vegetated areas of beach/coastal dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. Leaf litter under trees and bushes in sunny areas and dunes stabilized with bush lupine and mock heather often indicate suitable habitat. Often can be found under surface objects such as rocks, boards, driftwood, and logs. Can also be found by gently raking leaf litter under bushes and trees.	Found throughout Southern California south of the Transverse Ranges into northern Baja California.	**None.** Suitable habitat is not present.

Arizona elegans occidentalis	California glossy snake	None	SSC	Inhabits arid scrub, rocky washes, grasslands, chaparral.	Eastern part of the San Francisco Bay Area south to northwestern Baja California. It is absent along the central coast. There are also old reports of this snake from the Santa Monica Mountains.	**None.** Suitable habitat is not present.
Aspidoscelis hyperythra	orange-throated whiptail	None	SSC	Gently sloping hillsides, ridges, and valleys supporting open coastal sage scrub, open chaparral, or sparse grasslands.	Extreme S Los Angeles Co., SW San Bernardino Co., Orange, Riverside, and San Diego Counties, west of the crest of the Peninsular Ranges, and Baja CA.	**Moderate.** Suitable habitat occurs within survey area.
Aspidoscelis tigris stenjnegeri	coastal whiptail	None	SSC	Woodland, chaparral, riparian areas, or desert	Southwestern United States and northern Mexico	**Low.** Suitable habitat occurs within survey area; however, species has not been detected.
Crotalus ruber	red-diamond rattlesnake	None	SSC	Chaparral, woodland, and arid desert habitats in rocky areas with dense vegetation.	San Bernardino county to tip of Baja CA.	**None.** Suitable habitat is not present.
Emys marmorata pallida	southwestern pond turtle	None	SSC	Ponds, lakes, marshes, rivers, streams, and irrigation ditches that typically have a rocky or muddy bottom and grown to watercress, cattails, water lilies, or other aquatic vegetation; found in woodland, grassland, and open forest.	Northern CA south to NW Baja California.	**Moderate.** Suitable habitat is present within survey area and species was observed in 2001 (CNDDN 2020).
Phrynosoma blainvillii	coast horned lizard	None	SSC	Valley-foothill hardwood, conifer, and riparian habitats, pine-cypress, juniper and annual grassland habitats below 6,000 feet, open country, especially sandy areas, washes, flood plains, and windblown deposits.	Coastal ranges from south Ventura, Los Angeles, San Bernardino counties, Orange, western Riverside and western San Diego counties.	**Moderate.** Suitable habitat occurs within the survey area.
Salvadora hexalepis	coast patch-nosed snake	None	SSC	Inhabits semi-arid brushy areas and chaparral in canyons, rocky hillsides, and plains.	Southern California	**None.** Suitable habitat is not present.
Thamnophis hammondii	two-striped garter snake	None	SSC	Highly aquatic species, and prefers habitat adjacent to permanent or semi-permanent bodies of water	Central California to Baja California, Mexico	**Moderate.** Suitable habitat and access to Aliso Creek is available within survey area.
Birds						
Accipiter cooperii	Cooper's hawk	None	WL	Open woodlands especially riparian woodland. Nests and forages near open water or in riparian vegetation.	Entire state.	**None.** Suitable habitat is not present.
Agelaius tricolor	tricolored blackbird	None	ST, SSC	Known to occur in freshwater marsh, marsh, swap, and wetland. Highly colonial species, most numerous in Central Valley and vicinity.	Sacramento Valley to the Sacramento-San Joaquin River delta and	**None.** Suitable habitat is not present.

				Requires open water, protected nesting substrate, and foraging area with insect prey within a few kilometers of the colony	the northern San Joaquin Valley.	
Aimophila ruficeps canescens	southern California rufous-crowned sparrow	None	WL	Known to frequent relatively steep, often rocky hillsides with grass and forb species. Resident in southern California coastal sage scrub and mixed chaparral habitats.	Cismontane S CA.	**Low.** Suitable habitat occurs within survey area; however, species has not been detected.
Ammodramus savannarum	grasshopper sparrow	None	SSC	Open fields and prairies	Southern Canada, United States, Mexico, and Central America	**None.** Suitable habitat is not present.
Athene cunicularia	burrowing owl	None	SSC	Grasslands, rangelands, agricultural areas, deserts, or any other open dry area with low vegetation	Southern Alberta eastward to southern Manitoba, southward into Mexico. Also resident in Florida and into the Caribbean and throughout South America.	**None.** Suitable habitat is not present.
Buteo regalis	ferruginous hawk	None	WL	Arid and semiarid grassland regions of North America	Can be found in North America, as far north as Canada, south through western and central United States to northern Texas.	**None.** Suitable habitat is not present.
Campylorhynchus brunneicapillus sandiegensis	coastal cactus wren	None	SSC	Known to occur in coastal scrub habitats. Nest almost exclusively in prickly pear (*Opuntia littoralis* and *O. oricola*) and coastal cholla (*O. prolifera*).	Ventura Co. south to San Diego Co.	**None.** Suitable habitat is not present.
Charadrius nivosus nivosus	western snowy plover	FT	SSC	Beaches and coastal dunes	Southern and western United States and Caribbean	**None.** Suitable habitat is not present.
Coccyzus americanus	western yellow-billed cuckoo	FT	SE	Deciduous woods	Canada to Mexico and the Caribbean	**None.** Suitable habitat is not present.
Coturnicops noveboracensis	yellow rail	None	SSC	Known to occur within freshwater marshlands, meadows, and seeps.	Central Valley.	**None.** Suitable habitat is not present.
Elanus leucurus	white-tailed kite	None	FP	Central Valley and southern coastal areas, open land around Goleta including the Ellwood Mesa Open Space, marshes in Humboldt County, and also around the San Francisco Bay.	Central Valley and southern coastal areas	**Low.** Suitable habitat occurs within survey area; however, species has not been detected.
Eremophila alpestris actia	California horned lark	None	WL	Open ground, farmland, on prairies, in deserts, on golf courses and airports.	Inland and coastal California	**None.** Suitable habitat is not present.
Icteria virens	yellow-breasted chat	None	SSC	Known to occur with riparian forest, scrub, and woodland habitats. Summer resident; inhabits riparian thickets of willow and other brushy tangles near watercourses. Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forages and nests within 10 feet of ground.	Southern British Columbia down to south-central Baja CA.	**Low.** Suitable habitat occurs within survey area; however, species has not been detected.

Laterallus jamaicensis coturniculus	California black rail	None	ST/FP	Tidal marshes and freshwater marshes.	Western United States and Mexico	**None.** Suitable habitat is not present.
Pandion haliaetus	osprey	None	None	Near a body of water with food supply and very tall trees to nest.	United States	**None.** Suitable habitat is not present.
Passerculus sandwichensis beldingi	Belding's savannah sparrow	None	SE	Inhabits coastal salt marshes and nests in *Salicornia* on and about margins of tidal flats.	Santa Barbara south through San Diego County.	**None.** Suitable habitat is not present.
Polioptila californica californica	coastal California gnatcatcher	FT	SSC	Coastal sage scrub vegetation below 2,500 feet elevation in Riverside County and generally below 1,000 feet elevation along the costal slope; generally avoids steep slopes and dense vegetation.	Southern Ventura county, southward through Los Angeles, Orange, Riverside, San Bernardino counties, and south through the coastal foothills of San Diego county.	**Moderate.** Suitable habitat occurs within the survey area, but no individuals were detected during the 2020 field survey.
Rallus obsoletus levipes	light-footed Ridgeway's rail	FE	SE/FP	southern California coastal salt marshes, and lagoons	Ventura County in the north to the Mexican border in the south	**None.** Suitable habitat is not present.
Riparia riparia	bank swallow	None	ST	Open lowland areas near bodies of water	All continents except Australia and Antarctica	**Low.** Suitable habitat occurs within survey area; however, species has not been detected.
Setophaga petechial	yellow warbler	None	SSC	Found in riparian forest, scrub, and woodland. Riparian plant associations in close proximity to water. Also nests in montane shrubbery in open conifer forests in Cascades and Sierra Nevada. Frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants including cottonwoods, sycamores, ash, and alders.	Central and northern North America to Central America and northern South America.	**None.** Suitable habitat is not present.
Sternula antillarum browni	California least tern	FE	SE/SSC	Nest on beaches, mudflats, and sand dunes, usually near shallow estuaries and lagoons with access to the near open ocean. They roost on the ground in unprotected areas of the coastal environment.	Pacific coast of California, from San Francisco to Baja California.	**None.** Suitable habitat is not present.
Vireo bellii pusillus	least Bell's vireo	FE	SE	Perennial and intermittent streams with low, dense riparian scrub and riparian woodland habitats below 2,000 feet elevation; nests primarily in willows and forages in the riparian and occasionally in adjoining upland habitats. Associated with willow, cottonwood, and mule fat.	Southern California	**None.** Suitable habitat is not present.
Mammals						
Chaetodipus fallax fallax	Northwestern San Diego pocket mouse	None	SSC	Aird coastal and desert border areas	San Diego, Riverside and San Bernardino County.	**None.** Suitable habitat is not present.

Choeronycteris mexicana	Mexican long-tongued bat	None	SSC	Semi-arid thorn scrub and mixed oak-conifer forests.	Southern parts of California, New Mexico and Arizona	**None.** Suitable habitat is not present.
Eumops perotis californicus	western mastiff bat	None	SSC	Primarily arid lowlands, especially deserts. Open, semiarid to arid habitats including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban.	Uncommon resident of lower elevations in se San Joaquin Valley and Coastal Ranges from Monterey Co. southward through S CA from the coast eastward to the Colorado desert.	**None.** Suitable habitat is not present.
Lasiurus cinereus	hoary bat	None	None	Normally roosts alone on trees, hidden in the foliage, but on occasion has been seen in caves with other bats. It prefers woodland, mainly coniferous forests, but hunts over open areas or lakes.	Species spends winter in Central America and the southwestern United States and the spring and summer in more northern latitudes in the United States and Canada	**None.** Suitable habitat is not present.
Myotis yumanensis	yuma myotis	None	None	Variety of western lowland habitats, from arid thorn scrub to coniferous forest, but always close to standing water such as lakes and ponds. When not close to a body of water, can be found in the thousands roosting in caves, attics, buildings, mines, underneath bridges, and other similar structures.	Western North America	**None.** Suitable habitat is not present.
Neotoma lepida intermedia	San Diego desert woodrat	None	SSC	Joshua tree, pinyon-juniper, mixed and chamise-redshank chaparral, sagebrush, and most desert habitats	Southern California	**None.** Suitable habitat is not present.
Nyctinomops macrotis	big free-tailed bat	CE	SSC	Pinyon-juniper regions of the arid parts of CA.	San Mateo Co. to southern CA.	**None.** Suitable habitat is not present.
Onychomys torridus	southern grasshopper mouse	None	SSC	Hot, arid valleys, and scrub deserts.	Central to southern California	**None.** Suitable habitat is not present.
Perognathus californicus femoralis	Dulzura California pocket mouse	None	SSC	Found in coastal scrub, chaparral, and grassland.	southern California	**Low.** Suitable habitat occurs within survey area; however, species has not been detected.
Perognathus longimembris pacificus	Pacific pocket mouse	FE	SSC	Fine, sandy soils.	S CA; widely distributed in arid regions from S Oregon to W Utah and Arizona.	**None.** Suitable habitat is not present.
Sorex ornatus salicornicus	southern California saltmarsh shrew	None	SSC	Coastal salt marshes	Los Angeles, Orange and Ventura Counties	**None.** Suitable habitat is not present.
Taxidea taxus	American badger	None	SSC	Prefer to live in dry, open grasslands, fields, and pastures	Western and central United States, northern Mexico, and south-central Canada to certain areas of southwestern British Columbia.	**None.** Suitable habitat is not present.

Key to Species Listing Status Codes

FE	*Federally Endangered*	SE	*State Listed as Endangered*
FT	*Federally Threatened*	ST	*State Listed as Threatened*
FC	*Federal Candidate*	SCE	*State Candidate for Endangered*
FPE	*Federally Proposed as Endangered*	SCT	*State Candidate for Threatened*
FPT	*Federally Proposed as Threatened*	SFP	*State Fully Protected*
FPD	*Federally Proposed for Delisting*	SSC	*State Species of Special Concern*

APPENDIX D

Site Photographs

Photo 1. Facing west. Photo depicts north bank of Aliso Creek (October 20, 2020).

Photo 2. Facing southwest. Photo depicts north bank of Aliso Creek, towards the Pacific Ocean and Pacific Coast Highway (October 20, 2020).

Photo 3. Facing northeast. Photo depicts Giant reed stands, mulefat, and coastal sage scrub along the bank of Aliso Creek (October 20, 2020).

Photo 4. Facing south. Photo depicts vegetation along north bank of Aliso Creek, facing towards the south bank (October 20, 2020).

Appendix C

Native American Heritage Commission and AB 52 Correspondence

ESA

ESA

2121 Alton Parkway
Suite 100
Irvine, CA 92606
949.753.7001 phone
949.753.7002 fax

www.esassoc.com

October 18, 2016

Gayle Totton
Native American Heritage Commission
1550 Harbor Boulevard, Suite 100
West Sacramento, CA 95691
FAX- 916-373-5471

Subject: SLF Search Request South Coast Water District Lift Station No. 2 Project, Orange County, California (D160053.00)

Dear Ms. Totton:

Environmental Science Associates (ESA) is preparing an Initial Study/ Mitigated Negative Declaration (IS/MND) for the South Coast Water District (SCWD) Lift Station No. 2 Project (Project). The Project is located in the City of Laguna Beach, within Orange County. The Project includes the construction of a new lift station along Country Club Drive in the City. Part of Country Club Drive would be used for construction staging and equipment access. For this reason, a temporary asphalt road is proposed on the south side of the existing road so that access is maintained for The Ranch at Laguna Beach. The temporary road is proposed in an area that is currently a flat dirt area.

The enclosed map shows the Project area located in:

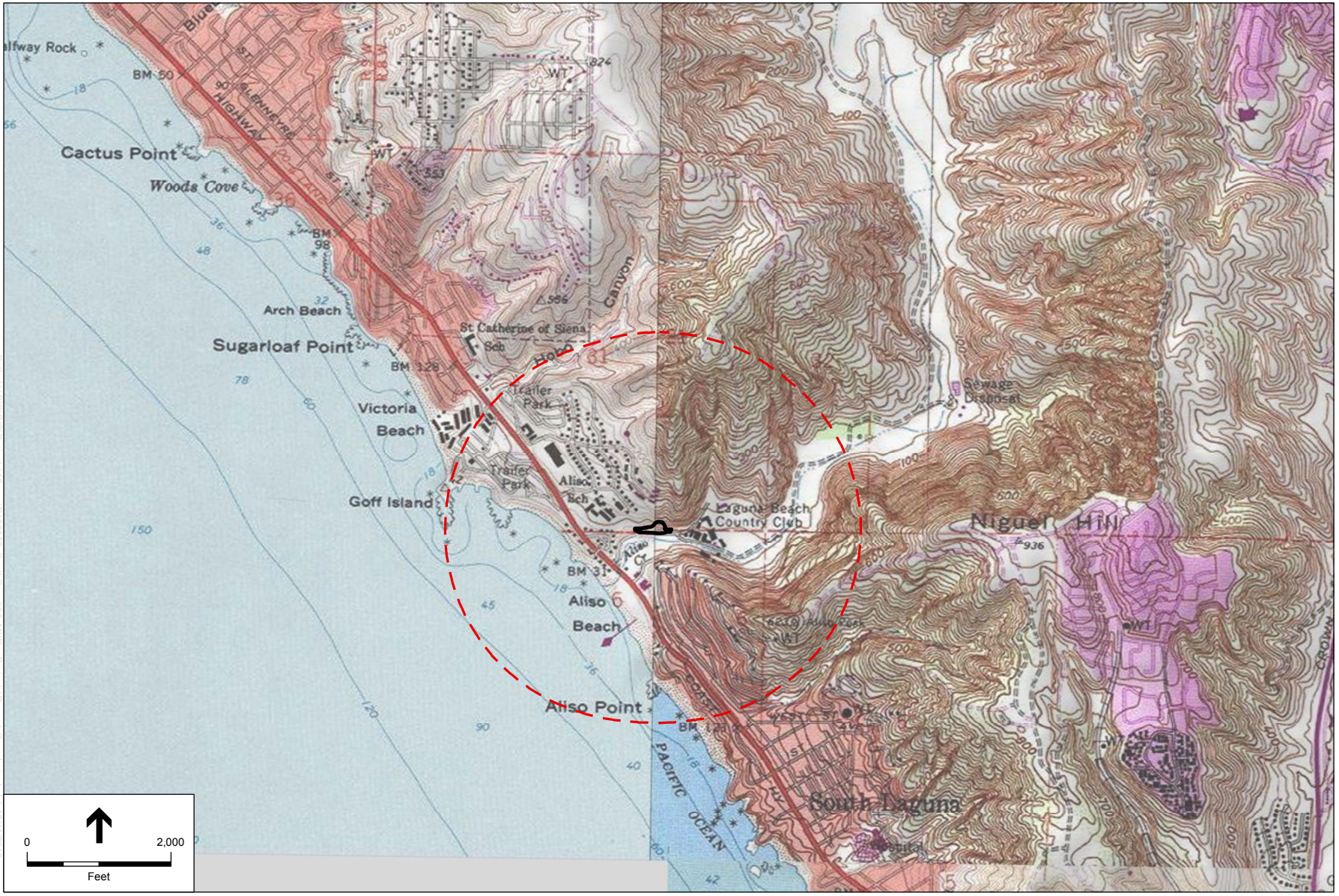
- Section 31 area of the Laguna Beach USGS 7.5' Quadrangle, Township 8 South, Range 8 West.

In an effort to provide an adequate appraisal of all potential impacts to cultural resources that may result from the proposed Project, ESA is requesting that a records search be conducted for sacred lands or traditional cultural properties that may exist within the Project area.

Thank you for your time and cooperation regarding this matter. To expedite the delivery of search results, please email them to aabdelwahed@esassoc.com or fax 949.753.7002. Please contact me at 949.753.7001 or email if you have any questions.

Sincerely,

Arabesque Said-Abdelwahed, MPP
Senior Associate



SOURCE: USGS 7.5' Topo Quad Laguna Beach 1977; San Juan Capistrano 1977

South Coast. D160053

Figure 1
Records Search

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710
(916) 373-5471 FAX

October 25, 2016

Arabesque Said-Abdelwahed, Senior Associate
ES Associates

Sent by E-mail: aabdelwahed@esassoc.com

RE: Proposed South Coast Water District Lift Station No. 2 Initial Study Project, City of Laguna Beach; Laguna Beach USGS Quadrangle, Orange County, California

Dear Ms. Said-Abdelwahed:

Attached is a contact list of tribes with traditional lands or cultural places located within the boundaries of the above referenced counties. A search of the SFL was completed for the USGS quadrangle information provided with negative results.

Our records indicate that the lead agency for this project has not requested a Native American Consultation List for the purposes of formal consultation. Lists for cultural resource assessments are different than consultation lists. Please note that the intent of the referenced codes below is to avoid or mitigate impacts to tribal cultural resources, as defined, for California Environmental Quality Act (CEQA) projects under AB-52.

As of July 1, 2015, Public Resources Code Sections 21080.3.1 and 21080.3.2 **require public agencies** to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose mitigating impacts to tribal cultural resources:

> **Within 14 days** of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section. (Public Resources Code Section 21080.3.1(d))

The law does not preclude agencies from initiating consultation with the tribes that are culturally and traditionally affiliated with their jurisdictions. The NAHC believes that in fact that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

In accordance with Public Resources Code Section 21080.3.1(d), formal notification must include a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation. The NAHC believes that agencies should also include with their notification letters information regarding any cultural resources assessment that has been completed on the APE, such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

   - A listing of any and all known cultural resources have already been recorded on or adjacent to the APE;
   - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
   - If the probability is low, moderate, or high that cultural resources are located in the APE.

   - Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the potential APE; and

- If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

   - Any report that may contain site forms, site significance, and suggested mitigation measurers.
   - All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure in accordance with Government Code Section 6254.10.

3. The results of any Sacred Lands File (SFL) check conducted through Native American Heritage Commission.

4. Any ethnographic studies conducted for any area including all or part of the potential APE; and

5. Any geotechnical reports regarding all or part of the potential APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS is not exhaustive, and a negative response to these searches does not preclude the existence of a cultural place. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the case that they do, having the information beforehand well help to facilitate the consultation process.

The results of these searches and surveys should be included in the "Tribal Cultural Resources" subsection of the Cultural Resources section of the environmental document submitted for review.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance we are able to assure that our consultation list contains current information.

If you have any questions, please contact me at my email address: gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton

Gayle Totton, M.A., PhD.
Associate Governmental Program Analyst

Native American Heritage Commission
Native American Contact List
Orange County
10/25/2016

Agua Caliente Band of Cahuilla Indians
Patricia Garcia-Plotkin, Director
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264 — Luiseno
Phone: (760) 699 - 6907
Fax: (760) 699-6924
ACBCI-THPO@aguacaliente.net

Agua Caliente Band of Cahuilla Indians
Jeff Grubbe, Chairperson
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264 — Luiseno
Phone: (760) 699 - 6800
Fax: (760) 699-6919

Campo Band of Mission Indians
Ralph Goff, Chairperson
36190 Church Road, Suite 1 — Kumeyaay
Campo, CA, 91906
Phone: (619)478-9046
Fax: (619)478-5818
rgoff@campo-nsn.gov

Ewiiaapaayp Tribal Office
Robert Pinto, Chairperson
4054 Willows Road — Kumeyaay
Alpine, CA, 91901
Phone: (619)445-6315
Fax: (619)445-9126

Ewiiaapaayp Tribal Office
Michael Garcia, Vice Chairperson
4054 Willows Road — Kumeyaay
Alpine, CA, 91901
Phone: (619) 445 - 6315
Fax: (619) 445-9126
michaelg@leaningrock.net

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chariperson
P.O. Box 393 — Gabrielino
Covina, CA, 91723
Phone: (626) 926 - 4131
gabrielenoindians@yahoo.com

Gabrieleno/Tongva San Gabriel Band of Mission Indians
Anthony Morales, Chairperson
P.O. Box 693 — Gabrielino
San Gabriel, CA, 91778
Phone: (626) 483 - 3564
Fax: (626)286-1262
GTTribalcouncil@aol.com

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., #231 — Gabrielino
Los Angeles, CA, 90012
Phone: (951)807-0479
sgoad@gabrielino-tongva.com

Gabrielino Tongva Indians of California Tribal Council
Robert F. Dorame, Chairperson
P.O. Box 490 — Gabrielino
Bellflower, CA, 90707
Phone: (562)761-6417
Fax: (562)761-6417
gtongva@verizon.net

Gabrielino-Tongva Tribe
Linda Candelaria, Co-Chairperson
1999 Avenue of the Stars, Suite 1100 — Gabrielino
Los Angeles, CA, 90067
Phone: (626) 676 - 1184

Jamul Indian Village
Erica Pinto, Chairperson
P.O. Box 612 — Kumeyaay
Jamul, CA, 91935
Phone: (619)669-4785
Fax: (619)669-4817

Juaneno Band of Mission Indians
Sonia Johnston, Chairperson
P.O. Box 25628 — Juaneno
Santa Ana, CA, 92799
sonia.johnston@sbcglobal.net

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed South Coast Water District Lift Station No. 2 Project, Orange County.

Native American Heritage Commission
Native American Contact List
Orange County
10/25/2016

Juaneno Band of Mission Indians Acjachemen Nation - Belardes
Matias Belardes, Chairperson
32161 Avenida Los Amigos — Juaneno
San Juan Capisttrano, CA, 92675
Phone: (949)293-8522

Juaneno Band of Mission Indians Acjachemen Nation - Belardes
Joyce Perry, Tribal Manager
4955 Paseo Segovia — Juaneno
Irvine, CA, 92603
Phone: (949) 293 - 8522
kaamalam@gmail.com

Juaneno Band of Mission Indians Acjachemen Nation - Romero
Teresa Romero, Chairperson
31411-A La Matanza Street — Juaneno
San Juan Capistrano, CA, 92675
Phone: (949)488-3484
Fax: (949)488-3294
tromero@juaneno.com

La Jolla Band of Luiseno Indians
Thomas Rodriguez, Chairperson
22000 Highway 76 — Luiseno
Pauma Valley, CA, 92061
Phone: (760)742-3771

La Posta Band of Mission Indians
Javaughn Miller, Tribal Administrator
8 Crestwood Road — Kumeyaay
Boulevard, CA, 91905
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Fax: (619) 478-2125
jmiller@LPtribe.net

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Gwendolyn Parada, Chairperson
8 Crestwood Road — Kumeyaay
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Fax: (619)478-2125
LP13boots@aol.com

Manzanita Band of Kumeyaay Nation
Angela Elliott Santos, Chairperson
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Phone: (619) 766 - 4930
Fax: (619) 766-4957

Manzanita Band of Kumeyaay Nation
Nick Elliott, Cultural Resources Coordinator
P. O. Box 1302 — Kumeyaay
Boulevard, CA, 91905
Phone: (619) 766 - 4930
Fax: (619) 766-4957
nickmepa@yahoo.com

Mesa Grande Band of Mission Indians
Virgil Oyos, Chairperson
P.O Box 270 — Kumeyaay
Santa Ysabel, CA, 92070
Phone: (760)782-3818
Fax: (760)782-9092
mesagrandeband@msn.com

Pala Band of Mission Indians
Shasta Gaughen, Tribal Historic Preservation Officer
PMB 50, 35008 Pala Temecula Rd. — Cupeno, Luiseno
Pala, CA, 92059
Phone: (760) 891 - 3515
Fax: (760) 742-3189
sgaughen@palatribe.com

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Native American Heritage Commission
Native American Contact List
Orange County
10/25/2016

Pauma Band of Luiseno Indians - Pauma & Yuima Reservation
Temet Aguilar, Chairperson
P.O. Box 369, Ext. 303 — Luiseno
Pauma Valley, CA, 92061
Phone: (760)742-1289
Fax: (760)742-3422

Pechanga Band of Mission Indians
Anna Hoover, Cultural Analyst
P. O. Box 2183 — Luiseno
Temecula, CA, 92593
Phone: (951) 770 - 8104
Fax: (951) 694-0446
ahoover@pechanga-nsn.gov

Pechanga Band of Mission Indians
Mark Macarro, Chairperson
P.O. Box 1477 — Luiseno
Temecula, CA, 92593
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striplett@pechanga-nsn.gov

Pechanga Band of Mission Indians
Paul Macarro, Cultural Resources Manager
P.O. Box 1477 — Luiseno
Temecula, CA, 92593
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Fax: (951) 506-9491
pmacarro@pechanga-nsn.gov

Rincon Band of Mission Indians
Jim McPherson, Tribal Historic Preservation Officer
1 West Tribal Road — Luiseno
Valley Center, CA, 92082
Phone: (760)749-1051
Fax: (760)749-5144
vwhipple@rincontribe.org

Rincon Band of Mission Indians
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Valley Center, CA, 92082
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Fax: (760)749-5144
bomazzetti@aol.com

San Fernando Band of Mission Indians
John Valenzuela, Chairperson
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Newhall, CA, 91322 — Serrano
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tsen2u@hotmail.com

San Luis Rey Band of Mission Indians
San Luis Rey, Tribal Council
1889 Sunset Drive — Luiseno
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Phone: (760)724-8505
Fax: (760)724-2172
cjmojado@slrmissionindians.org

San Luis Rey Band of Mission Indians
1889 Sunset Drive — Luiseno
Vista, CA, 92081
Phone: (760) 724 - 8505
Fax: (760) 724-2172
cjmojado@slrmissionindians.org

San Pasqual Band of Mission Indians
Allen E. Lawson, Chairperson
P.O. Box 365 — Kumeyaay
Valley Center, CA, 92082
Phone: (760)749-3200
Fax: (760)749-3876
allenl@sanpasqualtribe.org

San Pasqual Band of Mission Indians
John Flores, Environmental Coordinator
P. O. Box 365 — Kumeyaay
Valley Center, CA, 92082
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johnf@sanpasqualtribe.org

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Native American Heritage Commission
Native American Contact List
Orange County
10/25/2016

Soboba Band of Luiseno Indians
Carrie Garcia, Cultural Resources Manager
P. O. Box 487 — Cahuilla
San Jacinto, CA, 92583 — Luiseno
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Fax: (951)654-4198
carrieg@soboba-nsn.gov

Soboba Band of Luiseno Indians
Rosemary Morillo, Chairperson
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San Jacinto, CA, 92583 — Luiseno
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Fax: (951) 654-4198
rmorillo@soboba-nsn.gov

Soboba Band of Luiseno Indians
Joseph Ontiveros, Cultural Resource Department
P.O. BOX 487 — Cahuilla
San Jacinto, CA, 92581 — Luiseno
Phone: (951)663-5279
Fax: (951)654-4198
jontiveros@soboba-nsn.gov

Sycuan Band of the Kumeyaay Nation
Cody J. Martinez, Chairperson
1 Kwaaypaay Court — Kumeyaay
El Cajon, CA, 92019
Phone: (619)445-2613
Fax: (619)445-1927
ssilva@sycuan-nsn.gov

Sycuan Band of the Kumeyaay Nation
Lisa Haws, Cultural Resources Manager
1 Kwaaypaay Court — Kumeyaay
El Cajon, CA, 92019
Phone: (619) 312 - 1935

Viejas Band of Kumeyaay Indians
Julie Hagen,
1 Viejas Grade Road — Kumeyaay
Alpine, CA, 91901
Phone: (619) 445 - 3810
Fax: (619) 445-5337
jhagen@viejas-nsn.gov

Viejas Band of Kumeyaay Indians
Robert J. Welch, Chairperson
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Fax: (619)445-5337
jhagen@viejas-nsn.gov

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed South Coast Water District Lift Station No. 2 Project, Orange County.

SOUTH COAST WATER DISTRICT

Board of Directors

Wayne Rayfield
President

Rick Erkeneff
Vice President

Dick Dietmeier
Director

Dennis Erdman
Director

William Green
Director

November 2, 2016

Andrew Salas, Chairman
Gabrieleno Band of Mission Indians – Kizh Nation
P O Box 393
Covina, CA 91723

Assembly Bill 52 Notification for Consultation
For
South Coast Water District Lift Station 2 Project

Purpose

This letter is intended as an offer of government-to-government consultation under Assembly Bill (AB) 52 Public Resources Code (PRC) Section 21080.3.1 regarding the undertaking of this project.

Proposed Project and Location

The South Coast Water District (SCWD) currently operates Lift Station 2 which is a reinforced concrete wet well and dry well sewage lift station. The lift station is located at 31104 Country Club Drive and conveys raw sewage to the South Orange County Wastewater Authority (SOCWA) Coastal Treatment Plant via a 20-inch diameter ductile iron force main that is over a mile in length to the east and runs generally parallel to Aliso Creek. Lift Station 2 was originally constructed in 1953 and is in need of major repair and modernization. The proposed project is to construct a new lift station approximately 100 feet east of the existing lift station within an area currently used by the SCWD for storage. The proposed project includes the removal of the two existing storage sheds located on the site. One of the storage sheds is metal and is approximately 22-feet wide by 37-feet long by 15 feet high. The second shed is concrete block and is approximately 12 feet wide by 40 feet long by 9 feet high.

The project includes the construction of two above ground structures: one is a generator building that is approximately 26 feet wide by 38.7 feet long by 18 feet high and the second is an electrical building that is approximately 14.7 feet wide by 35.4 feet long by 18 feet high.

The lift station includes two subterranean levels: mid-level and lower level. The first subterranean level is the mid-level. The first level is approximately 10 feet below the ground floor and is 31.3 feet wide by 28.3 feet long. The second subterranean level is the lower level and is 21 feet below the first level and 35 feet below the ground floor. The second level is 36.3 feet wide by 81 feet long.

The lift station will include three 170 horse power pumps and a 10 horsepower submersible transfer pump on the lower level and piping on the mid-level. On the ground level within the generator building, a 300 horsepower diesel pump and a 750 Kilowatt diesel generator is proposed. The diesel pump is operated in the event of total electric pump failure, pump control panel failure, or if the electric pumps are mechanically damaged and not keeping up with the influent flow.

During construction, the total excavation depth is approximately 44 feet below existing grade. Due to high groundwater conditions, sheet piling will be used on all four sides of the proposed excavation. The sheet piles will create a cofferdam to allow for excavation. The estimated earthwork is approximately 6,600 cubic yards of excavation and 2,900 cubic yards of backfill/compaction.
The project also includes the construction of underground pipelines between the proposed lift station and pipelines west of the existing lift station. This area will also be used for construction staging. A 24-inch sewer line is proposed to extend immediately east-west just south of the existing Country Club Drive and three laterals (8-inch, 10-inch, and 24-inch) will extend to the 24-inch line. In addition, a temporary asphalt road will be constructed south of Country Club Drive to retain access to The Ranch at Laguna Beach while a portion of Country Club Drive is closed during construction activities. Please see the attached Project Map for proposed improvements.

Coordination Requirements
PRC Section 21080.3.1 requires a Lead Agency to consult with the California Native American tribe that requests consultation for potential impacts to tribal cultural resources. In accordance with the PRC, if a tribe wishes to engage in consultation, the tribe must respond to the Lead Agency within 30 days of receipt of this notification. Your tribe has requested to be informed on activities conducted by the South Coast Water District (SCWD) that could affect tribal cultural resources. At this time, we are formally requesting if you have any knowledge of tribal sacred lands or other tribal cultural resources on or near the project area and if you are requesting to consult with SCWD on the Lift Station 2 Project.

The consultation review period will extend for 30 days from November 2, 2016 to December 2, 2016.

If you have any question regarding this Notification for Consultation under AB52, please contact David Yang at 949.499.4555 or at dyang@scwd.org.

Sincerely,

South Coast Water District
Rick A. Shintaku
Chief Engineer

GABRIELENO BAND OF MISSION INDIANS - KIZH NATION
Historically known as The San Gabriel Band of Mission Indians
recognized by the State of California as the aboriginal tribe of the Los Angeles basin

Rick A. Shintaku
Chief Engineer

RE: AB52 consultation response for 31104 Country Club Dr. South Orange County

Dear Rick,

Nov 28, 2016

Please find this letter in response to your request for consultation dated Nov 2,2016. I have reviewed the project site and do have concerns for cultural resources. Your project lies in an area where the Ancestral territories of the Kizh (Kitc) Gabrieleño's villages adjoined and overlapped with each other, at least during the Late Prehistoric and Protohistoric Periods. The homeland of the Kizh Gabrieleño was probably the most influential Native American group in aboriginal southern California (Bean and Smith 1978a:538), was centered in the Los Angeles Basin, and reached as far east as the San Bernardino-Riverside area. The homeland of our neighbors the Serranos was primarily the San Bernardino Mountains, including the slopes and lowlands on the north and south flanks. Whatever the linguistic affiliation, Native Americans in and around the project area exhibited similar organization and resource procurement strategies. Villages were based on clan or lineage groups. Their home/ base sites are marked by midden deposits often with bedrock mortars. During their seasonal rounds to exploit plant resources, small groups would migrate within their traditional territory in search of specific plants and animals. Their gathering strategies of ten left behind signs of special use sites, usually grinding slicks on bedrock boulders, at the locations of the resources.

Due to the project location and the high sensitivity of the area location, we would like to request one of our certified Native American Monitor to be on site during any and all ground disturbances (including but not limited to pavement removal, post holing, auguring, boring, grading, excavation and trenching) to protect any cultural resources which may be effected during construction or development. In all cases, when the Native American Heritage Commission states there are "no records of sacred sites in the project area" the NAHC will always refer lead agencies to the respective Native American Tribe because the NAHC is only aware of general information and are not the experts on each California Tribe. Our Elder Committee & Tribal Historians are the experts for our Tribe and are able to provide a more complete history (both written and oral) regarding the location of historic villages, trade routes, cemeteries and sacred/religious sites in the project area. While the property may be located in an area that has been previously developed, numerous examples can be shared to show that there still is a possibility that unknown, yet significant, cultural resources will be encountered during ground disturbance activities. Please note, if they haven't been listed with the NAHC, it doesn't mean that they aren't there. Not everyone reports what they know.

The recent implementation of AB52 dictates that lead agencies consult with Native American Tribes who can prove and document traditional and cultural affiliation with the area of said project in order to protect cultural resources. However, our tribe is connected Ancestrally to this project location area, what does Ancestrally or Ancestral mean? The people who were in your family in past times, Of, belonging to, inherited from, or denoting an ancestor or ancestors http://www.thefreedictionary.com/ancestral. Our priorities are to avoid and protect without delay or conflicts – to consult with you to avoid unnecessary destruction of cultural and biological resources, but also to protect what resources still exist at the project site for the benefit and education of future generations. At your convenience we can Consultation either by Phone or Face to face. Thank you

CC: NAHC

With respect,

Andrew Salas, Chairman
cell (626)926-4131

Andrew Salas, Chairman
Nadine Salas, Vice-Chairman
Christina Swindall Martinez, secretary
Albert Perez, treasurer I
Martha Gonzalez Lemos, treasurer II
Richard Gradias, Chairman of the council of Elders

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Appendix D
Historical Resources Assessment

ESA

SOUTH COAST WATER DISTRICT LIFT STATION #2
LAGUNA BEACH, CALIFORNIA

Historic Resources Assessment

Prepared for
John Loague
AKM Consulting Engineers
533 Wald
Irvine, CA 92618

November 2020

SOUTH COAST WATER DISTRICT LIFT STATION #2 LAGUNA BEACH, CALIFORNIA

Historic Resources Assessment

Prepared for
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533 Wald
Irvine, CA 92618

November 2020

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SOUTH COAST WATER DISTRICT LIFT STATION #2

Historic Resources Assessment

1.0 Introduction

1.1 Executive Summary

Environmental Science Associates (ESA) was retained by John Loague of AKM Consulting Engineers (Client) to prepare this Historic Resources Assessment Report (Report). The purpose of this Report is to identify and evaluate potential historical resources located at 31104 Coast Highway (subject property) in original Rancho Niguel located in Laguna Beach (City), California, on assessor parcel number (APN) 056-240-061. The subject property, which consists of a one-story pump lift station designed in 1953 by engineer James M. Montgomery and completed in 1954, is over 50 years in age and is evaluated in this Report for its potential eligibility as a historical resource for listing in the National Register of Historic Places (National Register), the California Register of Historical Resources (California Register), and for local designation (Laguna Beach Historic Register). The report is being prepared as due diligence for the proposed project which would demolish the existing lift station. The Report includes a discussion of the survey methods used, regulatory framework, a summary of previously recorded resources, a brief overview of the history of the property and surrounding area, architectural description of the subject property, applicable contexts and periods of significance, SurveyLA eligibility requirements, and an eligibility evaluation of the subject property.

ESA's qualified architectural historian, Hanna Winzenried, M.Sc., conducted an intensive-level pedestrian site survey of the exterior and interior of the subject property on September 9, 2020. As part of the survey, the subject property was documented with digital photography and recorded on the California Department of Parks and Recreation forms 523A Primary Record and 523B Building, Structure, Object. ESA also researched on the subject property's construction and occupancy to document the building chronology and alterations to the subject property. South Coast Water District Lift Station #2 was evaluated within the historic context of the South Laguna Sanitary District and its role in the development of Laguna Beach and Aliso Creek. The historic and architectural significance of the subject property was evaluated and its existing integrity was analyzed, including the history of its construction and alterations. The period of significance associated with the subject property's architecture and engineering was identified as 1953-54, the date of the building's design and construction. The period of significance associated with the subject property's history is 1954 to 1976, representing the time period during which the property was under the original ownership of the South Laguna Sanitary District. ESA evaluated the subject property under the criteria for listing in the National Register, California Register, and as a Laguna Beach Historic Landmark.

ESA did not find the subject property eligible under any of the applicable criteria at either the national, state, or local levels. As a result of this finding, ESA recommends that the subject property should be assigned the California Historical Resource Status Codes of "6Z" meaning that it appears to be ineligible for listing and does not meet any eligibility criteria for designation as an individual historical resource or as a contributor to a potential District. Historically, South Coast Water Lift Station #2 was an important part of the wastewater infrastructure of South Laguna during the mid-1950s when it supported the development of the area during the post-World War II period, and it has continued to function as a wastewater pumping station to the present time. It was connected with a two-mile tunnel that employed innovative technology for its time, relying solely on gravity flow to transport wastewater. However, as discussed herein, South Coast Lift Station #2 (substantially altered in 1992) and the associated workshop, storage and garage building (rebuilt after a fire 1992-93), and associated landscape features including planters and walls (renovated/altered 1992-93), and reclaimed water main (replaced 1991), do not retain sufficient integrity to convey their appearance from the subject property's historical period of significance (1954-1976). Research did not reveal any persons important to state, or national history were associated with the subject property. The subject property was originally built in a utilitarian, simplified style. In 1992-1993 it was substantially altered, renovated, and upgraded. As a result, it does not embody the distinctive characteristics of a type, period, or method of construction from its period of significance (1953-54). It lacks integrity due to substantial alterations that have removed and replaced the majoring of its original character-defining features including the original windows, doors, and signage. Furthermore, it was not designed by a master architect or master engineer. While the subject property retains integrity of location and association, later changes after the period of significance substantially detract from its integrity of design, workmanship, materials, and feeling, and materially impair its eligibility for listing in the National Register or California Register or Laguna Beach Historic Register.

1.2 Project Location

The subject property is located at 31104 Coast Highway in City of Laguna Beach, as shown on **Figure 1**, *Regional and Project Vicinity Map.* As previously mentioned above, the subject property is improved with a minimal traditional style lift station; the location of the structure on the subject property is shown in **Figure 2**, *Aerial Photograph of Subject property.* The subject property is oriented facing south toward Aliso Creek.

1.3 Research and Field Methodology

This Report was prepared by a team of ESA's architectural historians—including Margarita Jerabek, Ph.D., Director of Historical Resources; and Hanna Winzenried, M.Sc., Associate—both of whom meet and exceed the *Secretary of the Interior's Professional Qualification Standards* in history and architectural history. Professional qualifications are provided in **Appendix A**. Preparation of this Report involved a review of the National Register and its annual updates, the California Register, the Statewide Historical Resources Inventory (HRI) database maintained by the State Office of Historic Preservation (OHP), City of Laguna Beach inventory of historic properties in order to identify any previously recorded properties within or near the subject property. An intensive-level pedestrian survey was also undertaken to document the existing conditions of the subject property and its vicinity. Additional tasks performed for the study are as follows:

- Conducted field inspections of the subject property and used the survey methodology of the State OHP.
- Photographed the subject property and associated landscape features, and examined other properties in the vicinity that exhibited potential architectural and/or historical associations.
- Conducted site-specific research on the property utilizing building permits, Sanborn Fire Insurance Maps (Sanborn Maps), City directories, historical photographs, the historical newspapers, and other published sources.
- Conducted research at the City's Building and Construction and Planning departments.
- Reviewed and analyzed ordinances, statutes, regulations, bulletins, and technical materials relating to federal, state, and local historic preservation, designation assessment processes, and related programs.
- Evaluated potential historical resources based upon criteria used by the National Register, California Register, and City of Laguna Beach Historic Preservation Ordinance.

SOURCE: Open Street Map, 2020.

South Coast Water District Lift Station No. 2 Replacement Project

Figure 1
Regional and Project Vicinity Map

ESA

Path: U:\GIS\GIS\Projects\19xxxx\D191104_SCWD_Lift_Station_2_Phase_II\03_MXDs_Projects\HRA_Cultural.aprx, sgeissler 11/12/2020

SOURCE: Open Street Map, 2020.

South Coast Water District Lift Station No. 2 Replacement Project

Figure 2
Aerial Photograph of Project Site

ESA

2.0 Regulatory Framework

Historical resources fall within the jurisdiction of the federal, state, and local designation programs. Federal laws provide the framework for the identification, and in certain instances, protection of historical resources. Additionally, state and local jurisdictions play active roles in the identification, documentation, and protection of such resources within their communities. The National Historic Preservation Act (NHPA) of 1966, as amended and the California Public Resources Code (PRC), Section 5024.1, are the primary federal and state laws and regulations governing the evaluation and significance of historical resources of national, state, regional, and local importance. Descriptions of these relevant laws and regulations are presented below.

2.1 Federal Eligibility Criteria and Integrity Aspects

National Register of Historic Places

The National Register was established by the NHPA as "an authoritative guide to be used by federal, state, and local governments, private groups and citizens to identify the Nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment."[1] The National Register recognizes properties that are significant at the national, state, and/or local levels.

To be eligible for listing in the National Register, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Four criteria for evaluation have been established to determine the significance of a resource:

A. Associated with events that have made a significant contribution to the broad patterns of our history;

B. Associated with the lives of persons significant in our past;

C. Embodies the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction;

D. Yields, or may be likely to yield, information important in prehistory or history.[2]

Districts, sites, buildings, structures, and objects that are 50 years in age must meet one or more of the above criteria ***and*** retain integrity (that is, convey their significance) to be eligible for listing.

Under the National Register, a property can be significant not only for the way it was originally constructed, but also for the way it was adapted at a later period, or for the way it illustrates changing tastes, attitudes, and uses over a period of time.[3]

1 36 CFR Section 60.2.

2 "Guidelines for Completing National Register Forms," in National Register Bulletin 16, U.S. Department of Interior, National Park Service, September 30, 1986. This bulletin contains technical information on comprehensive planning, survey of cultural resources and registration in the NRHP.

3 National Register Bulletin 15, p. 19.

Within the concept of integrity, the National Register recognizes seven aspects or qualities that, in various combinations, define integrity: Location, Design, Setting, Materials, Workmanship, Feeling, and Association:

Location is the place where the historic property was constructed or the place where the historic event occurred. The relationship between the property and its location is often important to understanding why the property was created or why something happened. The actual location of a historic property, complemented by its setting, is particularly important in recapturing the sense of historic events and persons. Except in rare cases, the relationship between a property and its historic associations is destroyed if the property is moved.

Design is the combination of elements that create the form, plan, space, structure, and style of a property. It results from conscious decisions made during the original conception and planning of a property (or its significant alteration) and applies to activities as diverse as community planning, engineering, architecture, and landscape architecture. Design includes such elements as organization of space, proportion, scale, technology, ornamentation, and materials. A property's design reflects historic functions and technologies as well as aesthetics. It includes such considerations as the structural system; massing; arrangement of spaces; pattern of fenestration; textures and colors of surface materials; type, amount and style of ornamental detailing; and arrangement and type of plantings in a designed landscape.

Setting is the physical environment of a historic property. Whereas location refers to the specific place where a property was built or an event occurred, setting refers to the *character* of the place in which the property played its historic role. It involves *how*, not just where, the property is situated and its relationship to surrounding features and open space.

Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory. It is the evidence of artisans' labor and skill in constructing or altering a building, structure, object, or site. Workmanship can apply to the property as a whole or to its individual components.

Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.

The choice and combination of materials reveal the preferences of those who created the property and indicate the availability of particular types of materials and technologies. A property must retain key exterior materials dating from the period of its historic significance.

Feeling is a property's expression of the aesthetic or historic sense of a particular period of time. It results from the presence of physical features that, taken together, convey the property's historic character.

Association is the direct link between an important historic event or person and a historic property. A property retains association if it is the place where the event or activity occurred and is sufficiently intact to convey that relationship to an observer.[4]

To retain historic integrity, a property will always possess most of the aspects and depending upon its significance, retention of specific aspects of integrity may be paramount for a property to convey its significance.[5] Determining which of these aspects are most important to a particular property requires knowing why, where and when a property is significant.[6] For properties that are considered significant under National Register Criteria A and B, *National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation (National Register Bulletin 15)* explains, "a property that is significant for its historic association is eligible if it retains the essential physical features that made up its character or appearance during the period of its association with the important event, historical pattern, or person(s)."[7] In assessing the integrity of properties that are considered significant under National Register Criterion C, *National Register Bulletin 15* states, "a property important for illustrating a particular architectural style or construction technique must retain most of the physical features that constitute that style or technique."[8]

2.2 State Register and Eligibility Criteria

California Register of Historical Resources

The OHP, as an office of the California Department of Parks and Recreation, implements the policies of the NHPA on a statewide level.

The OHP also carries out the duties as set forth in the PRC and maintains the HRI and the California Register. The State Historic Preservation Officer (SHPO) is an appointed official who implements historic preservation programs within the state's jurisdictions.

Also implemented at the state level, California Environmental Quality Act requires projects to identify any substantial adverse impacts that may affect the significance of identified historical resources.

4 National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation, 44-45, http://www.nps.gov/nr/publications/bulletins/pdfs/nrb15.pdf, accessed July 7, 2013.

5 The National Register defines a property as an "area of land containing a single historic resource or a group of resources, and constituting a single entry in the National Register of Historic Places." A "Historic Property" is defined as "any prehistoric or historic district, site, building, structure, or object at the time it attained historic significance." Glossary of National Register Terms, http://www.nps.gov/nr/publications/bulletins/nrb16a/nrb16a_appendix_IV.htm, accessed June 1, 2013.

6 National Register Bulletin 15, p. 44.

7 "A property retains association if it is the place where the event or activity occurred and is sufficiently intact to convey that relationship to an observer. Like feeling, association requires the presence of physical features that convey a property's historic character. Because feeling and association depend on individual perceptions, their retention alone is never sufficient to support eligibility of a property for the National Register." Ibid, p. 46.

8 "A property that has lost some historic materials or details can be eligible if it retains the majority of the features that illustrate its style in terms of the massing, spatial relationships, proportion, pattern of windows and doors, texture of materials, and ornamentation. The property is not eligible, however, if it retains some basic features conveying massing but has lost the majority of the features that once characterized its style." Ibid.

The California Register was created by Assembly Bill 2881 which was signed into law on September 27, 1992. The California Register is "an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change."[9] The criteria for eligibility for the California Register are based upon National Register criteria.[10]

The California Register consists of resources that are listed automatically and those that must be nominated through an application and public hearing process. The California Register automatically includes the following:

- California properties listed on the National Register and those formally Determined Eligible for the National Register. [11]
- California Registered Historical Landmarks from No. 770 onward.
- Those California Points of Historical Interest (PHI) that have been evaluated by the OHP and have been recommended to the State Historical Commission for inclusion on the California Register.[12]

Other resources which may be nominated to the California Register include:

- Individual historical resources.
- Historical resources contributing to historic districts.
- Historical resources identified as significant in historical resources surveys with significance ratings of Category 1 through 5.
- Historical resources designated or listed as local LAHCMs, or designated under any local ordinance, such a Historic Preservation Overlay Zone (HPOZ).[13]

To be eligible for the California Register, a historical resource must be significant at the local, state, or national level, under one or more of the following four criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
2. Is associated with the lives of persons important in our past.
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
4. Has yielded, or may be likely to yield, information important in prehistory or history.

Additionally, a historical resource eligible for listing in the California Register must meet one or more of the criteria of significance described above and retain enough of its historic character or

9 PRC Section 5024.1(a).
10 PRC Section 5024.1(b).
11 PRC Section 5024.1(d).
12 PRC Section 5024.1(d).
13 PRC Section 5024.1(e)

appearance to be recognizable as a historical resource and to convey the reasons for its significance. Historical resources that have been rehabilitated or restored may be evaluated for listing. Integrity is evaluated with regard to the retention of seven aspects of integrity similar to the National Register (location, design, setting, materials, workmanship, feeling, and association). Also like the National Register, it must also be judged with reference to the particular criteria under which a resource is proposed for eligibility. Alterations over time to a resource or historic changes in its use may themselves have historical, cultural, or architectural significance. It is possible that historical resources may not retain sufficient integrity to meet the criteria for listing in the National Register, but they may still be eligible for listing in the California Register. A resource that has lost its historic character or appearance may still have sufficient integrity for the California Register if it maintains the potential to yield significant scientific or historical information or specific data.[14]

2.3 Local Cultural Heritage Ordinance and Eligibility Criteria

City of Laguna Beach

The City of Laguna Beach has adopted a Historic Preservation Ordinance (Laguna Beach Municipal Code 25.45), which established the purpose of the ordinance and also created the Laguna Beach Heritage Committee (LBHC) and Laguna Beach Historic Register. The City's preservation ordinance is the primary body of local law relating to historic preservation. Chapter 25.45 establishes the authority for preservation, the composition and responsibilities of the LBHC, the criteria for determining what is eligible for designation as a City-recognized Historic Site or Historic District, and procedures for the alteration or demolition of historic properties.

The City Clerk maintains a current record of historic structures on the City's Historic Register. Structures identified on the historic resources inventory (which was officially recognized per Resolution 82.111) and those structures identified as heritage structures in the South Laguna Specific Plan are referred to as the historic inventory and are eligible to apply for placement on the City's Historic Register. Structures on the historic resources inventory that are placed on the historic register are classified into three categories of historical significance, "E" Exceptional, "K" Key and "C" Contributive.

The Heritage Committee, as established by City Council, serves an advisory role on matters pertaining to historic preservation as specified within Chapter 25.45. Structures identified on the historic inventory can be placed on the historic register upon submittal of a completed application to the city clerk and recordation of a written agreement between the city and the property owner. If a structure is not on the historic inventory, but the owner desires inclusion of the structure on the historic register, application can be made to the Heritage Committee. Removal from the register can be initiated by the property owner or by the city and is subject to City Council approval with recommendation from the Heritage Committee.

[14] Codified in California Code of Regulations, Title 14, Chapter 11.5, Section 4852(c) which can be accessed on the internet at http://ohp.parks.ca.gov

City of Laguna Beach Criteria for Historic Landmarks and Districts

Any structure considered for placement on the Laguna Beach Historic Register must be at least fifty years old and the following criteria shall be used in consideration:

a. Structures that most retain their original appearance and architectural integrity using the rating system of "E," "K" and "C" as described in the historic resources element of the general plan;

b. Structures that most represent character, interest or value as part of the heritage of the city;

c. The location as a site of significant historic event;

d. The identification with a person or persons or groups who significantly contributed to the culture and development of the city;

e. The exemplification of a particular architectural style or way of life important to the city;

f. The embodiment of elements of outstanding attention to architectural design, detail, materials, or craftsmanship.[15]

Properties recorded in the Laguna Beach Historic Resources Inventory (Heritage Orange County, Inc., 1981), included the best representative examples of historically significant architecture within the city.[16] The Laguna Beach Historic Resources inventory was officially recognized per Resolution 82.111 of the City Council of Laguna Beach, which was adopted in 1982. Buildings recorded in the Laguna Beach Historic Resources inventory are eligible for placement on the City's Historic Register.[17] The criteria for a building to be included in the Laguna Beach Historic Resources Inventory included the following:

- Buildings constructed prior to 1940;
- Buildings located within the historical survey area;
- Buildings that retained their original appearance and architectural integrity; and
- Buildings that most represent the former character of Laguna Beach.

The 706 buildings identified in the Laguna Beach Inventory were classified as Exceptional (E), Key (K), or Contributive (C). The codes accompanying the descriptions in the Historic Resources Element ("E," "K," and "C") represent classifications/categories defined in the City's Historic Preservation discussion. The classification system reads as follows:

15 City of Laguna Beach Municipal Code, 25.45.
16 City of Laguna Beach, Resolution 82.111, adopted by the Laguna Beach City Council, December 21, 1982.
17 City of Laguna Beach Municipal Code 25.45

Exceptional (E): Buildings with this classification are outstanding historic architectural examples. Most have been recommended eligible for the National Register and those which were not may be considered for National Register status in the future. Buildings in this category are usually in excellent architectural condition and are typically unique or excellent historical and/or historical architectural examples.

Key (K): Buildings with this classification are very good historical architectural examples which strongly retain their original integrity. These buildings have significant architectural, historical and/o aesthetic value and are fine period examples.

Contributive (C): Buildings with this classification are those which contribute to the overall character and history of the neighborhood, though they are not unique in and of themselves. The great preponderance of these buildings contributes greatly to the historic and visual fabric of Laguna Beach and is important in a more general historical architectural context. The many beach bungalows built in Laguna during the 1920s are examples of buildings in this category. While contributive buildings are not architecturally outstanding, without them the streetscape of many Laguna neighborhoods would be very different.[18]

[18] City of Laguna Beach, Historic Resources Element, Laguna Beach General Plan.

3.0 Identification of Potential Historical Resources within the Subject Property and Surrounding Area

3.1 Previous Evaluations of the Subject Property

The subject property has not been previously evaluated

3.2 Nearby Resources

There are four historic resources located within 0.25 miles of the subject properties as found both in the Built Environment Resource Directory (BERD), as maintained by the State Office of Historic Preservation (OHP). These four resources are listed below in **Table 1.** Of the four historic resources within 0.25 miles of the subject property, none have views of the subject property.

TABLE 1
NEARBY HISTORIC RESOURCES

Address/Name	Source	Date	*Resource Description	*CHR Status Code	Approx. Distance from Subject Property	View
Aliso Pedestrian Overcrossing, Bridge #55-27	BERD	1929	Pedestrian Bridge	7R	1,022 ft E	No view
Bridge #55-0003 Aliso Creek Bridge	BERD	1926	Car overpass	2S2	678 ft SW	No view
31031 SR 1	BERD	1928	Beach house	67	968 ft. W	No view
31001 SR 1 S	BERD	2948	Beach house	6Y	1,084 ft. W	No view

4.0 Environmental Setting

4.1 City Development

Settlement and Development of Laguna Beach

By the mid-1880s, Laguna had become a popular camping spot occupied by a temporary tent village during the summer months.[19] Historic topographic maps show that permanent development was still sparse in the Laguna Beach area in 1885. By 1894, a small permanent settlement of about twenty-five structures had been established along what is now the Pacific Coast Highway, though the area that is now South Laguna remained largely unsettled.[20] During this era, the future City of Laguna Beach consisted of little more than a series of cottages along the coast. Public services were scarce with no gas or electricity and only scant infrastructure and services. Daily needs often took residents to Santa Ana, 20 miles away. Mail was provided to the small community three times a week by a stagecoach from Santa Ana. Vegetables, melons, and other fresh produce were provided by Joseph Thurston, from Aliso Canyon. Once a week a butcher would arrive with fresh meat, but there was no ice for refrigeration. Twice a month an itinerant barber would arrive.

The area's abundant natural beauty and dramatic topography made it a popular summer getaway for artists from Los Angeles and San Diego. Artist Norman St. Clair "discovered" Laguna Beach in 1900 and set about popularizing the area as subject matter in his work, which he exhibited widely throughout the state. During the 1910s and 1920s, numerous artists settled in the vicinity, some as permanent residents and others only temporarily as they established seasonal studios or led classes. The local population during these years was only around 300 residents, which included a disproportionate number of artists, including many of the most well-known California artists of the period, including William McBurney, William Lees Judson, William Cahill, George Gardner Symons, Frank Cuprien, Anna Hills, Alice Fullerton, William Wendt, and Edgar Payne. The burgeoning art colony became particularly distinguished as a center of the *plain air* style of landscape painting.[21]

A local newspaper was established about 1914 by Elmer Robbins, who originally came to Laguna Beach under doctor's orders to recover from pneumonia. There was no electricity, and cooking and lighting were done with kerosene. Water was obtained from an old well in Laguna Canyon. Social life at the time included dancing and visiting with local residents and vacationers at the general store. The first dance hall was built by Tom Sales, high on posts on account of the high breakers, locally called the "dancehall on stilts." The Derkum Brothers built a pier that was beaten back each winter by heavy seas and then rebuilt in the spring with eucalyptus logs to replace the washed-out pilings. It was several years before a highway was built to the village on

19 Ferguson and McKenna, p. 8, from Belinda Blacketer, A Look through Time in Laguna Beach (http://laguna.freeyellow.com/lagunahistory.htm, 2000).

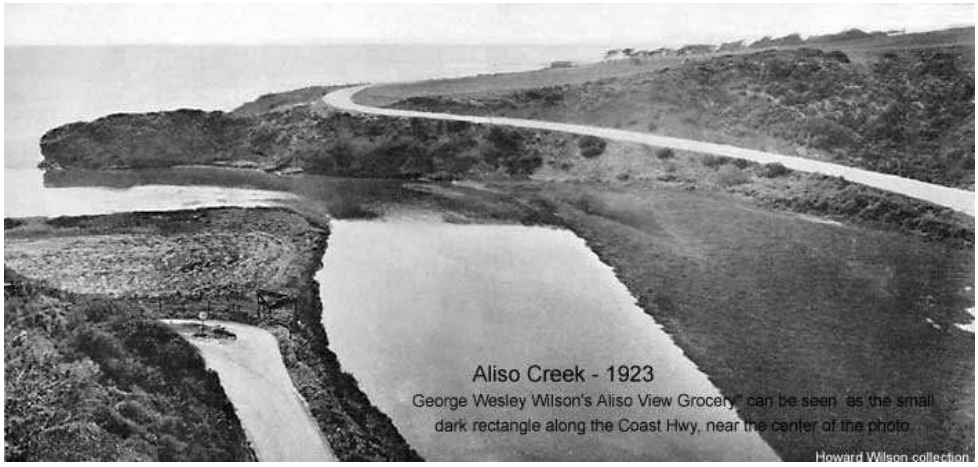
20 1885 and 1894 topographic maps of the Laguna Beach area reproduced in Ferguson and McKenna, p. 9 and 10.

21 Moure, Nancy Dustin Wall. "75 Works, 75 Years, Collecting the Art of California: The Years 1918-1955" Exhibition Catalog, Laguna Art Museum, November 2007.

the coast. In 1917, the Automobile Club of Southern California recognized Laguna Beach on their roadmaps, although there was still only a rough road down the canyon at the time.[22]

Along with visual artists, actors had numerous opportunities to practice their craft in Laguna Beach. In 1921, the first pageant presented by the Laguna Pageant Association was held against a background of eucalyptus trees in what was then called "Sleepy Hollow." The purpose of the pageant was to raise funds to build a fireproof art gallery that would entice other artists to come to Laguna Beach to exhibit their pictures. The stage setting for the pageant was at the upper end of this canyon, and the entrance was from Catalina Street up a dusty path now known as Arroyo Chico. Rough benches were used as seats. The cast, lighting, director, and others involved included some professional actors and others associated with the motion picture industry as well as local talent. The event was a success and would become a leading California drama each year.[23]

Further south at Aliso Beach, Laguna Beach resident George Wesley Wilson constructed the Aliso View Grocery Store in 1922 **(Figure 3).** The little store was built on the land now occupied by the Montage Resort. This now densely populated area was virtually untouched at the time Wilson built his store. One of the few residents of South Laguna at this time was Bill Shrewsbury, a pioneer farmer who lived in the area with his family. In 1923, Wilson and Shrewsbury took a plow and tractor to Aliso Beach to increase the camping area there **(Figure 4).** Just as at Laguna Beach, a small camping community grew up at Aliso Beach, with the camping concern run by Wilson **(Figure 5)**.[24]



South Coast Water District Lift Station # 2 / D2019001104.00

SOURCE: South Laguna California: An Early Pioneer Family's Photos

Figure 3
View north of Aliso Creek

22 Merle and Mabel Ramsey, Pioneer Days of Laguna Beach (Laguna Beach: The Authors, 1967), 31-33.

23 Ibid., 149-152.

24 Turnbull, Steven, "South Laguna California: An early pioneer family's photos," updated February 2014, http://www.light-headed.com/asite/laguna/laguna_history/south_laguna_1.php, accessed September 2014.

South Coast Water District Lift Station # 2 / D2019001104.00

SOURCE: South Laguna California: An Early Pioneer Family's Photos

Figure 4
Wilson and Shrewsbury increase size of Aliso Beach in 1923

South Coast Water District Lift Station # 2 / D2019001104.00

SOURCE: South Orange County Archives

Figure 5
Aliso Auto Camp 1930s

Following a similar pattern as other coastal communities in the Southern California Region, the establishment of a readily available source of water was a key turning point in the development of Laguna Beach. In 1924, after a period of severe drought during the years 1919-1921, the wetlands in the downtown area were filled and Broadway was developed. Two years later, a group of citizens purchased 120 acres of wetland from Huntington Beach, which led to the

formation of the Laguna Beach Water District and allowed for an increased settlement of Laguna Canyon.[25]

The building boom that affected southern California during the 1920s also hit Laguna Beach and transformed the rustic isolated village. Sanborn maps indicate that by 1925, Second and Third Streets had been developed with single-family dwellings, but there still were some vacant lots. The City of Laguna Beach was incorporated in June 1927. The population nearly doubled from 1,900 to 4,500 in the next two decades. By 1948 most of the lots were occupied and residential development had increased in density. During the twentieth century, Laguna Beach became famous as a seaside artist's haven and a resort popular with celebrities and dignitaries.

Meanwhile, development in the vicinity of Aliso Beach continued to be relatively slow. The paving of the Pacific Coast Highway in 1926 allowed for increased access to the area and a small amount of growth **(Figure 6)**. Historic photographs show that by 1936 **(Figure 7)** it was increasingly developed with residential properties, especially on Aliso Peak.[26] However, photographs and postcards from a year or two later **(Figures 8 and 9)** show that the area north on the Coast Highway remained largely undeveloped.[27]

A description of Laguna Beach from Marshall Breeden's book, *The Romantic Southland of California* (1928), provides a contemporary characterization of the seaside town during the late 1920s:

> Laguna Beach has long slept satisfied unto itself, but now its cocoon is broken by the onrush of automobile traffic. For many years it has dozed peacefully on the shores of the ocean, where surf and winds have sung it a song of quiet restfulness. . . . There are colorful houses dotting Temple Hills, high above the quaint little town, while hundreds of bright, if scantily clad, bathers throng the beaches, changing from street dress to bathing suit in the automobiles parked near the sands. Laguna has been the Mecca for artists who have been lured by the rugged bits of coast where strong cliffs stand with feet in beating surf . . . . Artists have publicized Laguna with their sketches and paintings, and city folks who longed for a peaceful stretch of beach find it a haven of rest for tired nerves.[28]

Laguna Beach continues its historical legacy today as an inspirational haven for artists and idyllic retreat for visitors.

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25 Ferguson and McKenna, p. 8.

26 Turnbull, Steven, "South Laguna California: An early pioneer family's photos," updated February 2014, http://www.light-headed.com/asite/laguna/laguna_history/south_laguna_2.php, accessed September 2014.

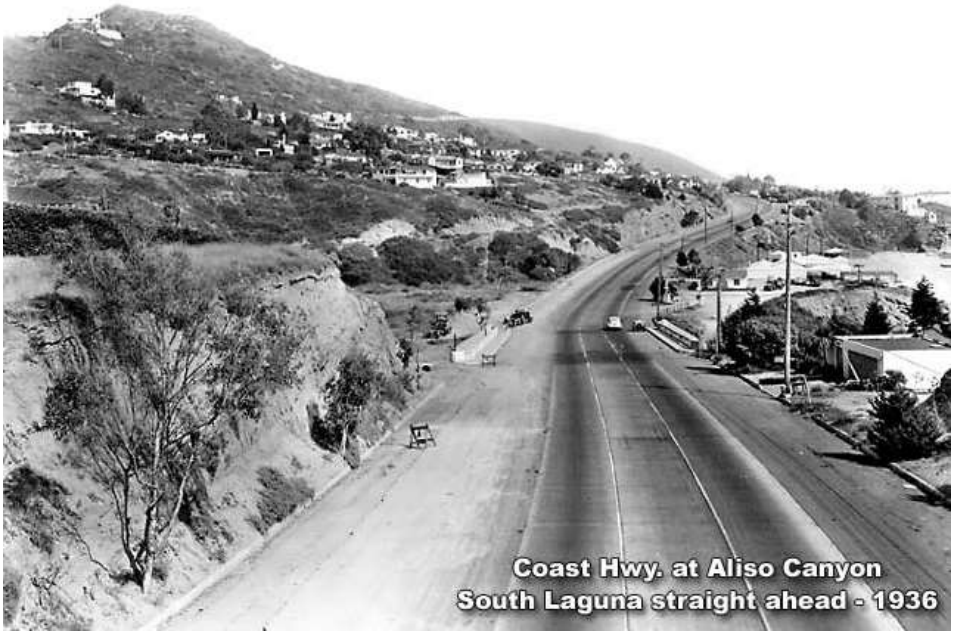
27 "Beginning of construction of Hangover House," Photograph, Richard Halliburton Collection, Rhodes College Archives and Special Collections, http://hdl.handle.net/10267/11011, accessed August 2014.

28 Marshall Breeden, The Romantic Southland of California (Los Angeles: Kenmore Publishing Co., 1928), p. 107-108.

South Coast Water District Lift Station # 2 / D2019001104.00

SOURCE: South Laguna California: An Early Pioneer Family's Photos

Figure 6
Paving the Pacific Coast Highway in 1926



South Coast Water District Lift Station # 2 / D2019001104.00

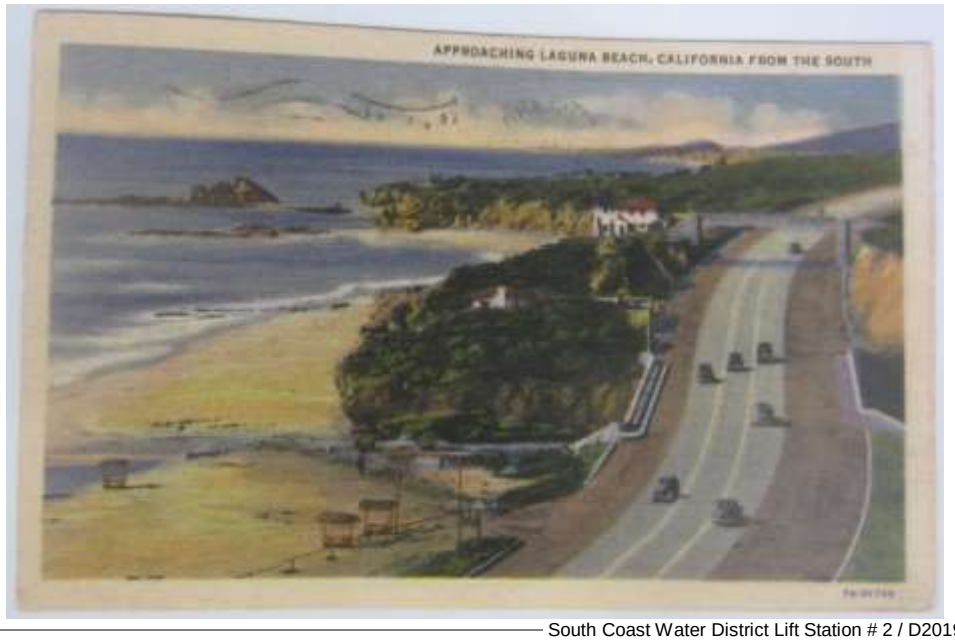
SOURCE: South Laguna California: An Early Pioneer Family's Photos

Figure 7
Coast Highway, view from pedestrian bridge c.1936

South Coast Water District Lift Station # 2 / D2019001104.00

SOURCE: Rhodes College Archive Digital Repository

Figure 8
View of subject property looking northwest from Aliso Peak
C. 1937



South Coast Water District Lift Station # 2 / D2019001104.00

SOURCE: Laguna Beach: An Illustrated Narrative History

Figure 9
31031 Coast Highway on a vintage postcard, c. 1930

Development of South Coast Highway

The South Coast Highway is the main thoroughfare in Laguna Beach. The road began as an unpaved road connecting Main Beach to Aliso Canyon. Buildings built along the South Coast Highway in Laguna Beach date back as far as the 1880s. At first, development along the highway was mainly residential in nature, typically board and batten beach cottages. Many of those original cottages are now used as commercial buildings, as the highway began to develop as a commercial strip in the mid-1920s. In 1926 the road was paved **(Figure 6)** and today the highway runs from Broadway Street downtown south to the edge of the city. As the area became more developed, vernacular beach cottages and Period Revival styles came to dominate the architecture along the highway in the early 20th century. Presently, building types vary greatly along the highway and include private homes, apartments, hotels, and a variety of commercial properties.[29]

Tract History

Rancho Niguel

The South Coast Water District Lift Station #2 is located on the north side of Aliso Creek. Before European settlement, Aliso Creek was located in Acjachemen Native American territory and was a good place to camp, hunt, gather, and fish.[30] The first Europeans, the Spanish Portola Expedition, came across the creek in the summer of 1769.[31] They were soon followed by Franciscan missionaries who established Mission San Juan Capistrano in 1775 five miles east of Aliso Creek, which was part of the landholdings of the Mission. The Spanish also established Rancheria Niguel which encompassed the creek.[32] Mexico became independent in 1822, after which the former mission lands were divided into private land grants. Don Juan Avila received Rancho Niguel and became known as "El Rico" due to his prosperity.[33]

Following the United States' annexation of California in 1859, Don Juan Avila sold the Rancho Niguel in 1865 to John Forster. He had to sell after a severe drought caused his cattle to die. In 1895, Lewis Moulton and Jean Pierre Daguerre, a Basque immigrant, bought the Rancho. The Moulton family owned the Rancho and farmed it until the 1960s **(Figure 10)**.[34]

From reviewing historic aerial photographs, it can be observed that by 1938, a residential neighborhood was being developed south of Aliso Creek **(Figure 11)**. In 1946, some residences were also being developed west of the subject property **(Figure 12)**. Between 1952 and 1963, more residential neighborhoods were developed north of the subject property and the country

[29] City of Laguna Beach Historic Resources Inventory, DPR Form, South Coast Highway, 1980.

[30] Constance Cameron, "Determining Tribal Boundaries Through Potsherds- An Archeological Perspective," *PCAS Quarterly*, August 10, 2009.

[31] Herbert E. Bolton, *Fray Juan Crespi: Missionary Explorer on the Pacific Coast, 1769-1774* (HathiTrust Digital Library), 137-139.

[32] "Construction and Operation of Incoming Mail Facility in Aliso Viejo: Environmental Impact Statement, Volume 1," U.S. Postal Service, December 2008, 3-44.

[33] "Juan Avila Adobe," *Laguna Hills, California,* accessed October 4, 2020, https://www.ci.laguna-hills.ca.us/250/Juan-Avila-Adobe.

[34] "Draft Environmental Impact Statement, Regional Water Treatment System, Aliso Water Management Agency". U.S. Environmental Protection Agency. February 20, 1975.

club was developed east of the subject property **(Figures 12 and 13)**. Today the surrounding neighborhoods look much the same except more densely developed **(Figure 14)**.

South Coast Water District Lift Station # 2 / D2019001104.00

SOURCE: Laguna Beach: An Illustrated Narrative History

Figure 10
Official Map of Orange County, 1924, Rancho Niguel shown outlined in red, with the subject property located on Plot 6 outlined in green

South Coast Water District Lift Station # 2 / D2019001104.00

SOURCE: EDR

Figure 11
Aerial photograph from 1938, subject property (vacant) outlined in red

South Coast Water District Lift Station # 2 / D2019001104.00

SOURCE: EDR

Figure 12
Aerial photograph from 1946, subject property (vacant with evidence of road and grading work) outlined in red

South Coast Water District Lift Station # 2 / D2019001104.00

SOURCE: EDR

Figure 13
Aerial photograph from 1963, subject property (early improvements) outlined in red

South Coast Water District Lift Station # 2 / D2019001104.00

SOURCE: EDR

Figure 14
Aerial photograph from 2016, subject property (improved) outlined in red

4.2 Historic Context

Historic context provides the background necessary to evaluate the historic and architectural significance of the subject property, including the history of its construction and alterations. The period of significance associated with the subject property is 1953, the date of the building's construction. ESA evaluated the subject property under the historical and architectural theme that follows: South Laguna Sanitary District and South Coast Water District.

4.2.1 South Laguna Sanitary District and South Coast Water District

South Laguna Sanitary District was the original owner of Lift Station 2. The South Laguna Sanitary District and sewer system was established by the South Laguna Civic Association (SLCA). The SLCA was formed as a nonprofit corporation in 1946 before South Laguna was still an unincorporated part of Orange County. South Laguna was annexed into the City of Laguna Beach in 1987.[35] In 1975, two candidates running for the board of the South Laguna Sanitary District were seeking to merge it with the South Coast County Water District.[36] A proposal to dissolve the South Laguna Sanitary District and have its facilities taken over by the South Coast County Water District was on the ballot for residents of South Laguna, Orange county reorganization No. 31.[37] The bill was ratified on July 1, 1976.[38]

The website for the South Coast Water District states the following:

> South Coast Water District was established in 1932. The District currently serves most of Dana Point, South Laguna Beach, and parts of San Clemente and San Juan Capistrano. District facilities include 15 reservoirs, 147 miles of water lines, 136 miles of sewer lines, 7 water pumping stations, 14 sewer pumping stations and approximately 12,360 water meters. An elected five-member Board of Directors governs the District. The Board appoints the General Manager, who is responsible for effecting Board policy and directing employees in the operation of the water and sewer systems.[39]

[35] "South Laguna – A Tradition of Community Leadership," *SouthLaguna.org*, accessed September 1, 2020, http://www.southlaguna.org/SLCA/History.html.

[36] "2 Candidates Seek Merger of Districts," *The Los Angeles Times* (Los Angeles, CA), October 30, 1975, 16.

[37] Thomas Fortune, "Consolidation of Two Districts on Ballot," *The Los Angeles Times* (Los Angeles, CA), June 6, 1976, 521.

[38] South Coast Water District, "Basic Financial Statement for the Year Ended June 30, 2016."

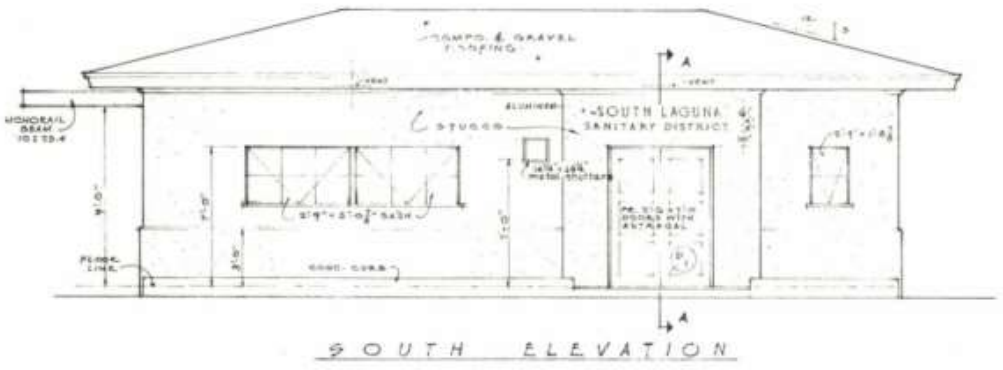
[39] "About Us," *South Coast Water District*, accessed September 2, 2020, https://scwd.org/about/default.htm.

4.3 History of the Subject Property

4.3.1 Construction History

Building permits on file with the City of Laguna Beach Building Safety Division were used to create a construction history for the subject property. The permit history for the building is summarized below in **Table 2**. Building Permits are included in **Appendix B**.

On June 8, 1953, building plans were drawn up by James M. Montgomery, Consulting Engineer, for a one-story sewage pumping station with stucco siding, wood louvers, metal shutters, a side-facing overhanging hipped roof with composite and gravel roofing and boxed eaves **(Figure 23)**. In a letter to City Planning on August 25, 1953, the South Laguna Sanitary District described its $1,250.000 project saying that the pumping station site would cover approximately 1/6 of an acre and was to be located on the north bank of Aliso Creek. The station would lift all sewage originating in the system and deliver it through a force main to the sewage treatment plant to be constructed about a mile up the canyon. They explained that while the pumping station would be visible from the highway by anyone traveling north, it would be a stucco structure of pleasing appearance. At the time of the Lift Station's construction, a two-mile tunnel beneath the bluff in South Laguna Beach was constructed to carry wastewater to the treatment facility. When constructed in 1954, the tunnel was innovative because it relied solely on gravity flow to transport wastewater, which eliminates costly and unsightly infrastructure including lift stations and several thousand feet of sewer lines.[40]



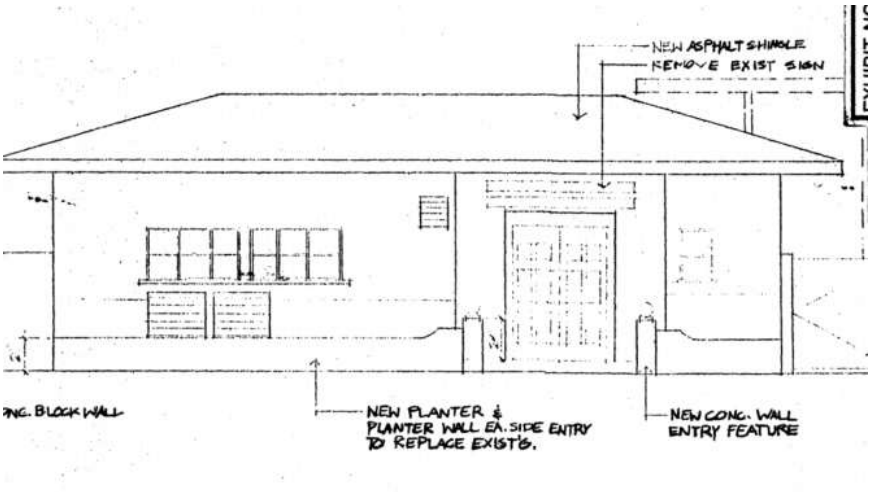
South Coast Water District Lift Station # 2 / D2019001104.00

SOURCE: Sheet D-1, Site Plan, Building Elevations and Details, by James M. Montgomery, Consulting Engineer, 1953, South Laguna Sanitary District, Orange County, on file, City of Laguna Beach Community Development Property File

Figure 23
South Elevation, Sewage Pumping Station by James M. Montgomery, Consulting Engineer, 1953, South Laguna Sanitary District, Orange County)

[40] "Tunnel Project Background," *SCWD.org*, accessed September 1, 2020, https://www.scwd.org/depts/engineering/projects/wastewater_projects/tunnelmain1/project_background.htm.

In 1961, a conditional permit was issued for the construction of a garage, workshop, and storage building for use in connection with the existing sewer pumping station. The additional building was to measure 26 feet by 56 feet and was to house and provide light maintenance facilities for four vehicles owned and operated by the Sanitary District. A few years later, on February 1, 1967, a permit was issued to construct an extension to the existing garage and office building, for additional storage, to measure 56 feet by 26 feet, and be the same type of architecture as the existing buildings. In 1974, the sewer lines were to be replaced due to more than 900 cracks and breaks in the original line installed in 1953.[41] Two and a half miles of sewer main 21-inch pipe that ran through a tunnel on the face of the ocean cliffs between Monarch Bay and Aliso Creek had to be replaced by a 27-inch pipe.[42] In 1991, the existing 8-inch reclaimed water main was replaced with a 16-inch reclaimed water pipeline. In 1992, there was a fire at the lift station. Bays 1-4 of the water district maintenance and equipment storage garage were destroyed by the fire had to be entirely rebuilt utilizing the existing foundations. The garages were upgraded to include fire sprinklers and skylights and the building height was increased to accommodate the upgrade. The project also included new exterior treatments (siding, roofing, paint, etc.) for the garages and associated pumping station. A new entryway and planters were constructed at the front of the existing pumping station **(Figure 24)**, an existing spray booth was demolished, and a new six-foot retaining block wall was built on the property.[43]



South Coast Water District Lift Station # 2 / D2019001104.00

SOURCE: Exhibit No. 2, Permit Application 50920448, 12/21/92, Administrative Permit on file City of Laguna Beach Community Development Property File

Figure 24
Sketch, Exhibit No. 2 from 1992 Administrative Permit, showing new planter & planter wall at entry to existing pumping station building, replacement of concrete wall entry feature, new asphalt shingle roof, and new concrete block wall

[41] "Avco Buys South Laguna Sewer Bonds," *The Los Angeles Times* (Los Angeles, CA), July 23, 2974, 7.

[42] "South Main Sewer Main Will Be Replaced," *The Los Angeles Times* (Los Angeles, CA), March 31, 1974.

[43] Administrative Permit, Application No. 5-92-448, December 21, 1992, on file City of Laguna Beach Community Development Property File.

TABLE 2
APN 056-240-61
LOS ANGELES DEPARTMENT OF BUILDING AND SAFETY BUILDING PERMITS[44]

Issued	Permit/Assessor Record	Owner	Contractor (C) or Architect (A)	Valuation ($)	Description
6/8/1953	Architectural Plans	South Laguna Sanitary District	James M. Montgomery Consulting Engineer		Architectural plans for a one-story sewage pumping station. The building has stucco siding, wood louvers, metal shutters, a side-facing overhanging hipped roof with compo and gravel roofing, and boxed eaves. The building is surrounded by a drainage ditch.
8/25/1953	Letter to City Planning	South Laguna Sanitary District	-	$1,250,000	The pumping station site will cover approximately 1/6 of an acre and is located on the north bank of Aliso Creek. The station will lift all sewage originating in the system and deliver it through a force main to the sewage treatment plant to be constructed about one mile farther up the canyon. Additional equipment in the pumping station includes a pressure water system employing air-gap separation to eliminate any possibility of cross-connections and a program-type chlorinator which will serve the dual purpose of treating the raw sewage as it enters the wet-well and the effluent from the treatment plant as it flows past the pumping station to the ocean outfall. As a means of reducing sulfide generation in the force main, provision has been made for injecting compressed air up to as much as 5 cubic feet per minute as free air. While the pumping station will be visible from the Highway by anyone traveling north, it will be a stucco structure of pleasing appearance.
9/11/1953	Letter to the Board of Supervisors from the Planning Commission	South Laguna Sanitary District	-	-	Planning recommended that the Body grant the conditional permit application No. C-306.
9/15/1953	Conditional Permit Application No C-306 approved by Board	South Laguna Sanitary District	-	-	Approval of the construction of a sewage pumping station for the South Laguna Sanitary District in the R-1 single-family residence district. The Sanitary District will have an easement from the ocean outfall sewer to the sewage treatment plant which will pass by the pumping station. The proposed location is the best site for the pumping station in order that it may receive sewage by gravity from the District and yet be so located with respect to the outfall sewer so that it may provide

[44] Documentation exists for all permits and certificates of occupancy listed in this table.

Issued	Permit/Assessor Record	Owner	Contractor (C) or Architect (A)	Valuation ($)	Description
					chlorination and other facilities for the treated sewage on its way to the ocean outfall.
10/26/1960	Grant Deed	South Laguna Sanitary District	-	-	All portions of Lot One of Section 6, Township 8 South, Range 8 West, S.B.B.&M., lying northeasterly of the northeasterly line of the Coast Boulevard, as shown on a Map of Tract No. 895, recorded in Book 28, pages 15 and 16 of Miscellaneous Maps, records of Orange County, CA, and lying northwesterly and northerly of the northwesterly and northerly line of that certain strip of land 60 feet in width as described in a deed to the South Laguna Sanitary District of Orange County, CA, recorded January 25, 1954, in Book 2656, page 250 of Official Records. Exempting therefrom that portion of said land included within said Tract No. 895. Also excepting therefrom that portion of said land as described in a deed to the South Laguna Sanitary District of Orange County, CA, recorded January 25, 1954, in Book 2656, page 247 of Official records.
1/9/1961	Application for Conditional Permit, CP 944	South Laguna Sanitary District	Boyle Engineering	-	The construction of a building for garage, workshop and storage use in connection with an existing sewer pumping station in the RI single-family residence district. Said building will be approximately 26 ft. by 56 ft. and located a minimum of 36 ft. from the centerline of a private road and approximately 35 ft. westerly of the existing pumping station. Said garage will house and provide light maintenance facilities for four vehicles owned and operated by the Sanitary District. There will be no full-time employees on the premises. Off-street parking for 6 cars will be provided.
1/16/1961	Air Pollution Control District letter to Orange County Planning	South Laguna Sanitary District	-	-	The Air Pollution Control District has no objections to the above application providing that any burning of trash, debris, etc. is done in an incinerator approved by the Orange County Air Pollution Control District.
2/27/1967	Conditional Permit 1280	South Laguna Sanitary District	Boyle Engineering		Permit to construct an addition to the existing garage, workshop, and storage building measuring 56'x26' to be used for storage and maintenance of vehicles owned and operated by the sanitary district.
1/19/1991	Permit No. 5-90-102	South Coast Water District			Abandon the use of an existing 8-inch reclaimed water main within Aliso Creek and install a new 16-inch reclaimed water pipeline. Approximately 1500 linear feet.

Issued	Permit/Assessor Record	Owner	Contractor (C) or Architect (A)	Valuation ($)	Description
11/18/1992	Letter of approval by Community Development Building Division	South Coast Water District	-	-	Fire damage repair project
12/21/1992 Effective 1/19/1993	Permit No. 5-92-448	South Coast Water District			Rebuild a portion of the Water District maintenance and equipment storage garage which were damaged by fire. The proposed structures will utilize the existing building foundations and will be increased by one foot in height (to 16 ft) to accommodate new fire sprinklers and skylights. The proposal also includes associated landscaping and exterior treatments, and demolition of the outdoor spray booth.
1992	92-337	-	Morris Skenderian	$150,000	Reconstruction of fire-damaged areas of vehicle maintenance and storage building (bays 1-4) and minor exterior revisions. Repaint and reroof pump house, plus new entry and planters
11/18/1992	File No. 1774	S. Coast Water District	George Gouvis Company		New retaining block wall 6 feet tall, two feet wide
6/7/1993	Permit No. 93-463	S. Coast Water District	Burge Corp	5,000	Demolition/fire damage limited to demo work only.
6/16/1993	Permit No. 93-484	S. Coast Water District	Burge Corp (C), M. Skenderian (D)	130,000	Reconstruction of fire-damaged area

4.3.2 James M. Montgomery Consulting Engineer

James M. Montgomery was born on November 5, 1895, in Columbus, Ohio. He attended Ohio State University, graduating in 1920 with a degree in Chemical Engineering. In 1936, while working for Hoover and Montgomery, he was retained by the Metropolitan Water District of Southern California to build a 100 million gallons per day water softening filtration plant at La Verne, California. It opened in 1941 and expanded to 400 million gallons per day, and was at the time the world's largest ion-exchange softening plant. In 1945, Montgomery formed James M. Montgomery, Consulting Engineers, Inc., and worked primarily in the design of waterworks and sewage projects throughout the world.[45]

[45] "Montgomery, James McKee; ASCE Fellow (1896-1969)," *American Society of Civil Engineers*, 1970, https://archive.is/20130414151230/http://cedb.asce.org/cgi/WWWdisplay.cgi?7099921.

4.4 Architectural Description

The pump lift station is a utilitarian single-story rectangular building oriented south towards Country Club Drive. Comparison of existing conditions with the original building plans discussed in section 4.3 Construction History below indicates the building has been substantially altered over the years. The structure has stucco siding (restuccoed) and a side-facing overhanging hipped roof with boxed eaves. The original roofing was replaced with asphalt shingles in 1992 (alteration). All of its original windows have been replaced with vinyl sliding windows (alteration). On the front elevation, there are two vinyl sliding windows to the east (alteration) of the projecting front entrance vestibule. Wood louvers located beneath these windows were removed sometime after 1992 (alteration). The original sign for the building was replaced with a new sign in 1992. The original paneled wood front door was also replaced sometime after 1992. According to architectural plans, new block wall planters were originally planned in front of the pump station, although it appears these were never constructed **(Figure 15)**.

On the rear elevation, two wood louvers on the east side were covered (alteration), and a wood louver on the west side was converted into vinyl windows (alteration) **(Figure 16)**. The east (side) elevation has no openings and appears to not have been altered **(Figure 17)**. The west (side) elevation has a French door that appears to have been replaced (alteration), and a vinyl window to the south (alteration) which was originally a wood louver. According to original plans, there were built-up plywood panels over the side entrance door that is no longer extant (alteration) **(Figure 18)**.

The interior of the pump station includes a ground story with a main room that houses electrical panels that appear to have been upgraded and an underground room that houses the pumps that appear to be well maintained older equipment that may be partially original **(Figures 19, 20 and 21)**.

To the west of the pump station is a garage/workshop and storage building originally constructed in 1960. However, after a fire in 1992, the building was substantially rebuilt (altered) utilizing the original building foundations and its size was increased by one foot **(Figure 22)**.

South Coast Water District Lift Station # 2 / D2019001104.00

SOURCE::ESA, 2020

Figure 15
Primary (south) elevation, view facing north, alterations marked in red

South Coast Water District Lift Station # 2 / D2019001104.00

SOURCE::ESA, 2020

Figure 16
Rear (north) elevation, view facing southwest, alterations marked in red

South Coast Water District Lift Station # 2 / D2019001104.00

SOURCE::ESA, 2020

Figure 17
East (side) elevation, view facing southwest

South Coast Water District Lift Station # 2 / D2019001104.00

SOURCE::ESA, 2020

Figure 18
West (side) elevation, view facing southeast, alterations marked in red

South Coast Water District Lift Station # 2 / D2019001104.00

SOURCE::ESA, 2020

Figure 19
Ground floor of the pump station, view facing northwest

South Coast Water District Lift Station # 2 / D2019001104.00

SOURCE::ESA, 2020

Figure 20
Electrical panels on the ground floor of the pump station, view facing northeast

South Coast Water District Lift Station # 2 / D2019001104.00

SOURCE::ESA, 2020

Figure 21
Basement area of the pump station showing pumps, view facing northeast

South Coast Water District Lift Station # 2 / D2019001104.00

SOURCE::ESA, 2020

Figure 22
South (primary) elevation of the garage/workshop/storage building (rebuilt after 1992 fire), view facing northwest

5.0 Evaluation

5.1 Significance Evaluation

South Coast Water District Lift Station #2 was evaluated within the historic context of the South Laguna Sanitary District and its role in the development of Laguna Beach and Aliso Creek. The historic context developed above provides the background necessary to evaluate the historic and architectural significance of the subject property and analyze its existing integrity, including the history of its construction and alterations. The period of significance associated with the subject property's architecture and engineering is 1953-54, the date of the building's design and construction. The period of significance associated with the subject property's history is 1954 to 1976, representing the time period during which the property was under the ownership of the South Laguna Sanitary District. ESA evaluated the subject property under the criteria for listing in the National Register, California Register, and as a Laguna Beach Historic Landmark.

Broad Patterns of History

With regard to broad patterns of history, the following are the relevant criteria:

- **National Register Criterion A:** Is associated with events that have made a significant contribution to the broad patterns of our history.
- **California Register Criterion 1:** Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.

The subject property is located on the north side of Aliso Creek which was a part of Rancho Niguel and South Laguna. By 1938, a residential neighborhood was being developed south of Aliso Creek, and by 1946, a residential neighborhood west of the subject property was developed. Residential neighborhoods were developed north of the subject property between 1952 and 1963.

The subject property was developed with the lift station in 1953-54 to take care of South Laguna's waste. The pump station was developed in tandem with a two-mile tunnel beneath the bluff in South Laguna Beach that carried wastewater to the treatment facility. The tunnel was innovative in 1954 because it relied solely on gravity flow to transport wastewater, eliminating costly and unsightly infrastructure. However, the pump station itself was standard for the time period.

South Laguna Sanitary District was the original owner of Lift Station 2. The South Laguna Sanitary District and sewer system was established by the South Laguna Civic Association (SLCA). The SLCA was formed as a nonprofit corporation in 1946 before South Laguna was still an unincorporated part of Orange County. The South Laguna Sanitary District was taken over by the South Coast County Water District on July 1, 1976.[46]

Historically, Lift Station 2 was an important part of the wastewater infrastructure of South Laguna during the mid-1950s when it supported development of the area during the post-World

[46] South Coast Water District, "Basic Financial Statement for the Year Ended June 30, 2016."

War II period, and it has continued to function as a wastewater pumping station to the present time. It was connected with a two-mile tunnel that employed innovative technology for its time, relying solely on gravity flow to transport wastewater. However, as discussed above, Lift Station 2 (substantially altered in 1992) and the associated workshop, storage and garage building (rebuilt after a fire 1992-93), and associated landscape features including planters and walls (renovated/altered 1992-93), and reclaimed water main (replaced 1991), do not retain sufficient integrity to convey their appearance from the subject property's historical period of significance (1954-1976). While the subject property retains integrity of location and association, these later changes after the period of significance substantially detract from its integrity of design, workmanship, materials, and feeling, and materially impair its eligibility for listing in the National Register or California Register.

Therefore, the South Coast Water Lift Station #2 does not meet eligibility requirements under National Register Criterion A or California Register Criterion 1, either individually or as a potential contributor to a potential District.

Significant Persons

With regard to associations with important persons, the following are the relevant criteria:

- **National Register Criterion B:** Is associated with the lives of persons significant in our past.
- **California Register Criterion 2:** Is associated with the lives of persons important in our past.

Research did not reveal any persons important to state, or national history were associated with the subject property.

Therefore, the South Coast Water Lift Station #2 does not meet the eligibility requirements under National Register Criterion B or California Register Criterion 2, either individually or as a potential contributor to a potential District.

Architecture

With regard to architecture, design, or construction, the following are the relevant criteria:

- **National Register Criterion C:** Embodies the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.
- **California Register Criterion 3:** Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.

The sewage pumping station at the subject property was originally constructed in a utilitarian minimal traditional style. Architectural plans for the building were drawn on June 8, 1953, by James M. Montgomery Consulting Engineer for owners South Laguna Sanitary District. The plans show that the building was a single story with below-ground mechanizations. The sewage pumping station had a low side-facing gabled roof, stucco walls, wood French doors, metal sash windows, and wood louvers. In 1961 a 56'x26' garage, workshop, and storage building was

constructed adjacent to the sewage pumping station in a similar architectural style; and in 1967 a large addition of approximately the same size was constructed to provide additional storage. In 1991, the original 8-inch reclaimed water main was abandoned and a new 16-inch water main was constructed within Aliso Creek. In 1992 a fire damaged the vehicle maintenance and storage building (bays 1-4), resulting in reconstruction of the fire-damaged areas and renovation of the entire facility including the sewage pumping station. Alterations and upgrades included reroofing, exterior restucco, and repainting, new vinyl windows, new front doors, closure of vents, closure of rear windows, new signage, demolition of a paint spray booth, and construction of new walls, entrance gates, and planters. Physical observation indicates that the electrical system was upgraded at the time. A fire suppression system was added, resulting in the roof heights being raised to accommodate the new equipment.

The subject property was originally built in a utilitarian, simplified style. In 1992-1993 it was substantially altered, renovated, and upgraded. As a result, it does not embody the distinctive characteristics of a type, period, or method of construction from its period of significance (1953-54). It lacks integrity due to substantial alterations that have removed and replaced the majoring of its original character-defining features including the original windows, doors, and signage. Furthermore, it was not designed by a master architect or master engineer. As discussed above, Lift Station 2 (substantially altered in 1992) and the associated workshop, storage and garage building (rebuilt after a fire 1992-93), and associated landscape features including planters and walls (renovated/altered 1992-93), and reclaimed water main (replaced 1991), do not retain sufficient integrity to convey their appearance from the subject property's architectural period of significance (1953-54). While the subject property retains integrity of location and association, these later changes after the period of significance substantially detract from its integrity of design, workmanship, materials, and feeling, and materially impair its eligibility for listing in the National Register or California Register.

Therefore, South Coast Water Lift Station #2 does not meet the integrity or eligibility requirements for significance under National Register Criterion C or California Register 3, either individually or as a potential contributor to a potential District.

Data

- **National Register Criterion D:** It yields, or may be likely to yield, information important in prehistory or history.
- **California Register Criterion 4:** Has yielded, or may be likely to yield, information important in prehistory or history.

While most often applied to archaeological districts and sites, Criterion D/4 can also apply to buildings, structures, and objects that contain important information. For these types of properties to be eligible under Criterion D/4, they themselves must be or must have been, the principal source of the important information. None of the buildings on the subject property appear to yield significant information that would expand our current knowledge or theories of design, methods of construction, operation, or other information that is not already known about the period in which they were constructed, their method of construction, or their design. The building reflects

common building practices and materials of the early twentieth century, which have already been well documented.

Therefore, South Coast Water District Lift Station #2 does not meet the eligibility requirements under National Register Criterion D and California Register Criterion 4 either individually or as a potential contributor to a potential District.

5.3 Laguna Beach Significance

A.

Structures that most retain their original appearance and architectural integrity using the rating system of "E," "K" and "C" as described in the historic resources element of the general plan

As discussed above, South Coast Water District Lift Station #2 (substantially altered in 1992) and the associated workshop, storage and garage building (rebuilt after a fire 1992-93), and associated landscape features including planters and walls (renovated/altered 1992-93), and reclaimed water main (replaced 1991), do not retain sufficient integrity to convey their appearance from the subject property's architectural period of significance (1953-54). While the subject property retains integrity of location and association, these later changes after the period of significance substantially detract from its integrity of design, workmanship, materials, and feeling, and materially impair its eligibility for listing in the Laguna Beach Historic Register.

B.

Structures that most represent character, interest or value as part of the heritage of the city

Due to lack of integrity, the South Coast Water District Lift Station #2 does not represent character, interest, or value as part of the heritage of the city.

C.

The location as a site of significant historic event

No known significant historic events took place within or near the South Coast Water District Lift Station #2.

D.

The identification with a person or persons or groups who significantly contributed to the culture and development of the city

The water lift station is associated with the South Laguna Sanitary District, established by the South Laguna Civic Association (SLCA) which oversaw the development of South Laguna Beach before it was annexed by Laguna Beach in 1987. In 1975, the South Coast County Water District took over the South Laguna Sanitary District and its facilities including South Coast Water District Lift Station #2. Therefore, the South Coast Water District Lift Station #2 was indirectly associated with the SLCA through its administration by the South Laguna Sanitary District. Since it is not strongly identified with a person or persons or groups who significantly contributed to the

culture and development of the city, the South Coast Water Lift Station #2 is not eligible under this criterion.

E.

The exemplification of a particular architectural style or way of life important to the city

The South Coast Water Lift Station #2 was constructed in a utilitarian minimal traditional style. It was substantially altered (rebuilt and upgraded) in 1992-1993 and does not currently retain sufficient integrity to convey its original architectural appearance during its period of significance (1953-54). Therefore, it does not currently exemplify a particular architectural style or way of life important to the city.

F.

The embodiment of elements of outstanding attention to architectural design, detail, materials, or craftsmanship

The South Coast Water Lift Station #2 does not embody elements of outstanding attention to architectural design, detail, material, or craftsmanship.

5.3 Conclusion

ESA did not find the subject property eligible under any of the applicable criteria at either the national, state, or local levels. As a result of this finding, ESA recommends that the subject property should be assigned the California Historical Resource Status Codes of "6Z" meaning that it appears to be ineligible for listing and does not meet any eligibility criteria for designation as an individual historical resource or as a contributor to a potential District.

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Appendix A
Professional Qualifications

ESA

Dr. Jerabek, PhD

Historic Resources Director

EDUCATION

PhD, Art History, University of California, Los Angeles

MA, Architectural History, School of Architecture, University of Virginia

Certificate of Historic Preservation, School of Architecture, University of Virginia

B.A., Art History, Oberlin College

30 YEARS EXPERIENCE

AWARDS

2016 Preservation Design Award, Home Savings and Loan Association Montebello Branch Interpretive Exhibit, California Preservation Foundation

2014 Preservation Award, The Dunbar Hotel, L.A. Conservancy

2014 Westside Prize, The Dunbar Hotel, Westside Urban Forum,

2014 Design Award: Tongva Park & Ken Genser Square, Westside Urban Forum

2012 California Preservation Foundation Award, Queen Mary Conservation Management Plan, California Preservation Foundation

Dr. Jerabek has 30 years of professional practice in the United States with an extensive background in historic preservation, architectural history, art history and decorative arts, and historical archaeology. She specializes in Visual Art and Culture, 19th-20th Century American Architecture, Modern and Contemporary Architecture, Architectural Theory and Criticism, Urbanism, and Cultural Landscape, and is a regional expert on Southern California architecture. Her qualifications and experience meet and exceed the Secretary of the Interior's Professional Qualification Standards in History, Architectural History, and Archaeology.

Dr. Jerabek has managed and conducted a wide range of technical studies in support of environmental compliance projects, developed preservation and conservation plans, and implemented preservation treatment projects for public and private clients throughout California and the United States. She provides expert assistance with environmental review, from due diligence through planning/design review and permitting and when necessary, implements mitigation and preservation treatment measures. Dr. Jerabek regularly performs assessments to ensure conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties, and assists clients with adaptive reuse/rehabilitation projects by providing preservation design and treatment consultation, agency coordination, legally defensible documentation, construction monitoring and conservation treatment.

As primary investigator and author of hundreds of technical reports, plan review documents, preservation and conservation plans; Historic American Buildings Survey (HABS), Historic American Engineering Record (HAER), Historic American Landscapes Survey (HALS) reports; construction monitoring reports; and salvage reports and relocation plans, she is a highly experienced practitioner and expert in addressing historical resources issues while supporting and balancing project goals. Dr. Jerabek is an expert in the evaluation, management and treatment of historic properties for compliance with Sections 106 and 110 of the National Historic Preservation Act (NHPA), National Environmental Policy Act (NEPA), Section 4(f) of the Department of Transportation Act, California Environmental Quality Act (CEQA), and local ordinances and planning requirements.

Releveant Experience

Cultural Resources Assessment for the Proposed Pasadena Water and Power Recycled Water Project, City of Pasadena, County of Los Angeles, CA. *Project Manager for Historical Resources/Principal Architectural Historian/Cultural Landscape Specialist.* Cultural Resources Investigations for EIS/EIR for proposed construction of recycled water project. Prepared Section 106 Effects Evaluation for undertaking that would result in potential adverse effects to two historic districts, Pasadena Arroyo Parks and Recreation District, and Arroyo Seco Flood Control Channel District. Conducted Secretary of the Interior's Standards plan reviews and provided project design recommendations to reduce potential effects. Project Cost: $20,970 / End Date: 2012

HABS Recordation, Summerville Beach House, 619 Sleepy Hallow Lane, Laguna Beach, California. *Principal Investigator/Principal Architectural Historian.* The HABS recordation was completed as required mitigation for the demolition of the Summerville Beach House for the construction of a hotel, per the recommendations provided in the Historic Resources Assessment Report and CEQA Impacts Analysis prepared by ESA.

City of Santa Monica On-Call Historic Preservation Services, Santa Monica, CA. *Project Manager/Principal Architectural Historian.* Dr. Jerabek is the primary point of contact and contract administrator for ESA's on-call contract for historic preservation services with the City of Santa Monica. Under her supervision ESA's historic division has prepared hundreds of studies including preliminary assessments, landmark assessments, structure of merit assessments, Secretary of the Interior's Standards plan reviews and preservation recommendations, landscape assessments, character-defining features reports and CEQA impacts analyses.

City of Hermosa Beach On-Call Historic Preservation Services. *Project Director.* ESA has performed a number of surveys, Certificate of Appropriateness, and CEQA compliance reviews for historic structures while serving as a historic preservation consultant for the City of Hermosa Beach. Projects include historic resources surveys on three of the oldest commercial buildings in the downtown area of Hermosa Beach for the City of Hermosa Beach: Bank of America building at 90 Pier Avenue, the Hermosa Hotel at 26 Pier Avenue, Art Deco-style Community Center, and the Neoclassical Revival-style Bijou Theatre located at 1221-1227 Hermosa Avenue. ESA prepared a comprehensive assessment of each building, and reviewed all plans for compliance under the local preservation ordinance and CEQA, which stipulate the use of the Secretary of the Interior's Standards for Rehabilitation as mitigation. Upon implementation of rehabilitation work on the Bijou, ESA also monitored all construction work until final completion. ESA was later commissioned to undertake a Certificate of Appropriateness and CEQA compliance review of interior tenant improvements to the Bijou Theater for conformance with the Secretary of the Interior's Standards. ESA has carried out site reviews of the work to examine the scope and nature of selective demolition and new construction, provided guidance on technical preservation matters, and undertook a substantial completion review of the works. ESA is currently providing project review for tenant improvements, and conducting construction monitoring and oversight for restoration of ornamental plasterwork in the Bijou Building. ESA is currently providing paint analysis and restoration treatment recommendations for the Art Deco-style Hermosa Beach Community Center.

EDUCATION

MSc Historic Conservation, Oxford Brookes University

BA, European Studies, Brigham Young University

9 YEARS OF EXPERIENCE

PROFESSIONAL AFFILIATIONS

The Society for the Protection of Ancient Buildings

Historic England

National Trust for Places of Historic Interest or Natural Beauty

California Preservation Foundation

Hanna Winzenried

Architectural Historian

Hanna is an architectural historian and historic preservation specialist with nine years of academic and professional experience, including undergraduate and graduate work in history, art history and conservation, and four years of professional experience. After earning her Bachelor of Arts degree in European Studies at Brigham Young University, Hanna completed graduate work at Oxford Brookes University, the top planning program in the United Kingdom, where she earned her Masters of Science in Historic Building Conservation (2015) with a concentration in conservation planning and preservation practices. Prior to joining ESA, Hanna spent 1.5 years as an intern and Student Professional Worker with the City of Los Angeles, Department of Planning, in the Office of Historic Resources (OHR), Historic Preservation Overlay Zones (HPOZ) Unit.

During her tenure at ESA, Hanna has continued to develop her knowledge and skills as an architectural historian and historic preservation specialist as a team member in the historic resources group at ESA, under the direction of Dr. Margarita Jerabek. Beginning as an Intern at ESA, Hanna has received several promotions in acknowledgement of her continued growth and mastery of her discipline as an architectural historian and historic preservation specialist. She currently serves as a Deputy Project Manager on many projects for ESA. Through her hands-on experience, Hanna has developed expertise in the survey, research, and assessment of historic properties for compliance with the National Historic Preservation Act (NHPA) and the California Environmental Quality Act (CEQA). She is expert in the research and preparation of property and neighborhood histories, and the development of historic contexts for the evaluation of historic properties under federal, State, and local significance criteria. Additionally, she has substantial experience in analyzing projects for potential impacts to historical resources and developing and implementing mitigation measures to reduce impacts. With a background in architectural conservation, Hanna is also a highly qualified historic preservation specialist with substantial experience providing historic preservation consultation services for rehabilitation and adaptive reuse projects, and has prepared a variety reports in support of this projects including rehabilitation plans, Standards conformance reviews, and construction monitoring.

Relevant Experience

Earl Carroll Theatre Mills Act Application, Los Angeles, CA. *Architectural Historian.* Hanna was the lead organizer of the Earl Carroll Theatre Mills Act Application. Constructed in 1938, the property is significant for its association with owner-operator Earl Carroll, Hollywood nightlife, and architect Gordon B. Kaufmann. The theatre is a listed LA Historic-Cultural Monument and has been identified as eligible for the National Register. In recent years, the theatre has been rented by television network studios as sound stages, and as a result some public areas have been modified over time. Hanna compiled all of the necessary

information for the first part of the Mills Act Application, and helped to gather all of the necessary information and deliverables for the second part of the application.

930 S. Mansfield Historic Resource Assessment and CEQA Impacts Analysis, Los Angeles, CA. *Architectural Historian and Deputy Project Manager.* Hanna coordinated efforts to prepare an HRA which will include an update to the SurveyLA-identified Sycamore Avenue-Citrus Avenue Historic District and an impacts analysis for a proposed project at 930 S. Mansfield Avenue. As several contributing structures in the Mediterranean Revival and Spanish Revival multi- and single-family district have recently been demolished or heavily altered, the City has requested a current analysis of the remaining district in order to determine its continued eligibility. One complexity of this project involved the prior demolition of a contributing historic resource at the site, which warranted a scrupulous design review of a proposed contemporary 6-story multi-family project at the project site that will sit amidst the extant low-profile revival style buildings that comprise the historic district. Hanna helped to create recommendations for a more compliant new project design within the district.

City of Los Angeles, Point Fermin Light Station Historic District Nomination to the National Register of Historic Places and Historic Cultural Monument Nomination, San Pedro, CA. *Architectural Historian.* The 1874 Point Fermin Lighthouse was listed on the National Register of Historic Places in 1972. As a condition of conveyance of the Point Fermin Light Station property (which includes the lighthouse) by the U.S. General Services Administration to the City of Los Angeles for use as a museum and park, the National Register nomination for the Point Fermin Lighthouse was updated to include all buildings, objects, structures, and sites that comprise the larger Point Fermin Light Station. Hanna co-authored the updated nomination by compiling previous documentation and supplementing it with new research. At this writing, the nomination is being reviewed by the California Office of Historic Preservation. After the National Register Nomination was updated and compiled, Hanna then transferred all of the information into the format required by the City of Los Angeles for the Historic Cultural Monument nomination.

Nelles School Site Redevelopment, Whittier, CA. *Contributor.* ESA oversaw the documentation and architectural salvage of the Fred C. Nelles School. Brookfield Residential plans on redeveloping the whole site into a residential neighborhood while maintaining four historically significant structures. Hanna helped draft a documentation and architectural features salvage plan according to the character defining features list and oversaw the deconstruction of the other school buildings to ensure the architectural features were salvaged correctly. Hanna monitored the restoration of the Chapels Building, one of the historic buildings, to ensure that it was restored in conformance with the Standards. Hanna also reviewed the restoration plans for the other three historic buildings at the site.

Appendix B
Building Permits

ESA

056-240-61

CITY OF LAGUNA BEACH

Department of Community Development

PROJECT STATUS LOG

PROJECT reconstruct fire damaged buildings ADDRESS 31104 Coast Hwy.

Date Received	Received by	Purpose	Status	Forwarded to	Date Forwarded	Initial
5/19/93	DM/AS	Plan Check				
5/21/93		Out for Corrections				
6/7/93	DM/AS	recheck	COPR	Atch	6/9/93	D.O.
6/16/93	JY	SIGNATURE	OK	FILE	6/16/93	JY

CALIFORNIA COASTAL COMMISSION
SOUTH COAST AREA
245 W. BROADWAY, STE. 380
P.O. BOX 1450
LONG BEACH, CA 90802-4416
(310) 590-5071

RECEIVED
JAN 21 1993
BUILDING DIVISION

Date: 1-19-93

Permit No. 5-92-448

NOTICE OF ADMINISTRATIVE PERMIT EFFECTIVENESS

Please be advised that the Administrative Permit with the above permit number which was sent to you on December 23, 1992 and was reported to the Commission on January 13, 1993 is now fully effective. Development of your project is subject to compliance with all terms and conditions specified in the Administrative Permit.

Should you have any questions please contact our office.

PETER M. DOUGLAS
Executive Director

By: _____

Title: Staff Analyst

B2: 4/88
7438E
NS/lm

CALIFORNIA COASTAL COMMISSION
SOUTH COAST AREA
245 W. BROADWAY, STE. 380
P.O. BOX 1450
LONG BEACH, CA 90802-4416
(310) 590-5071

Permit Application No. 5-92-448
Date 12-21-92

ADMINISTRATIVE PERMIT

APPLICANT: South Coast Water District

PROJECT DESCRIPTION: Rebuild a portion of the Water District maintenance and equipment storage garages which were damaged by fire. The proposed structures will utilize the existing building foundations and will be increased by one foot in height (to 16 ft.) to accommodate new fire sprinklers and skylights. The proposal also includes associated landscaping and exterior treatments, and demolition of the outdoor spray booth.

PROJECT LOCATION: 31104 Coast Coast Hwy., Laguna Beach, Orange Co.

EXECUTIVE DIRECTOR'S DETERMINATION: The findings for this determination, and for any special conditions, appear on subsequent pages.

NOTE: P.R.C. Section 30624 provides that this permit shall not become effective until it is reported to the Commission at its next meeting. If one-third or more of the appointed membership of the Commission so request, the application will be removed from the administrative calendar and set for public hearing at a subsequent Commission meeting. Our office will notify you if such removal occurs.

This permit will be reported to the Commission at the following time and place:
Wednesday, January 13, 1993 at 9:00 a.m.
Holiday Inn-Bay View Plaza
530 Pico Blvd., Santa Monica (310) 399-9344

IMPORTANT - Before you may proceed with development, the following must occur:

Pursuant to 14 Cal. Admin. Code Sections 13150(b) and 13158, you must sign the enclosed duplicate copy acknowledging the permit's receipt and accepting its contents, including all conditions, and return it to our office. Following the Commission's meeting, and once we have received the signed acknowledgement and evidence of compliance with all special conditions, we will send you a Notice of Administrative Permit Effectiveness.

BEFORE YOU CAN OBTAIN ANY LOCAL PERMITS AND PROCEED WITH DEVELOPMENT, YOU MUST HAVE RECEIVED BOTH YOUR ADMINISTRATIVE PERMIT AND THE NOTICE OF PERMIT EFFECTIVENESS FROM THIS OFFICE.

PETER DOUGLAS
Executive Director

By: _____

Title: Coastal Analyst

STANDARD CONDITIONS:

1. Notice of Receipt and Acknowledgment. The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. Expiration. If development has not commenced, the permit will expire two years from the date this permit is reported to the Commission. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. Compliance. All development must occur in strict compliance with the proposal as set forth in the application for permit, subject to any special conditions set forth below. Any deviation from the approved plans must be reviewed and approved by the staff and may require Commission approval.

4. Interpretation. Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.

5. Inspections. The Commission staff shall be allowed to inspect the site and the project during its development, subject to 24-hour advance notice.

6. Assignment. The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

7. Terms and Conditions Run with the Land. These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

EXECUTIVE DIRECTOR'S DETERMINATION (continued):

The Executive Director hereby determines that the proposed development is a category of development which, pursuant to PRC Section 30624, qualifies for approval by the Executive Director through the issuance of an administrative permit. Subject to Standard Conditions as attached, said development is in conformity with the provisions of Chapter 3 of the Coastal Act of 1976, will not prejudice the ability of the local government to prepare a Local Coastal Program that is in conformity with the provisions of Chapter 3, and will not have any significant impacts on the environment within the meaning of the California Environmental Quality Act. If located between the nearest public road and the sea, this development is in conformity with the public access and public recreation policies of Chapter 3.

FINDINGS FOR EXECUTIVE DIRECTOR'S DETERMINATION:

A. Project Description and History

The applicant, South Coast Water District, is seeking a permit to rebuild the portion of the storage and equipment garages that were destroyed by fire at their Laguna Beach-Aliso Creek site. The proposed work will include upgrading the garages to include fire sprinklers and skylights. These improvements will increase the height of the garages by one foot over what was previously existing, making the replacement garages a maximum of 16 ft. in height. The proposed project also includes new exterior treatments (siding, roofing, paint, etc.), a new entrance, new landscaping and planter boxes, and demolition of the existing spray booth.

The project site is located in Aliso Canyon, approximately 400 ft. inland of Pacific Coast Hwy. The subject site is currently developed with the Water District's garages (what's left of them anyway) and their associated improvements including a paved parking area and vehicle service area. Immediately behind the garages, the canyon walls rise steeply to the north, and across the paved access road and parking area, Aliso Creek flows west, toward the ocean.

B. Hazards

Section 30253 of the Coastal Act states:

> New development shall:
>
> (1) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.
>
> (2) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.

The Aliso Creek corridor in which the proposed project is located is subject to periodic flooding. The last major flood event in this area occurred in March of 1992, and this flood caused substantial destruction at the golf course and resort just upstream of the project. Only minor damage was sustained at the project site as the flood waters creeped up to the existing buildings. As a precautionary measure, sandbags were placed in front of the structure doorways to prevent, as much as possible, the flood waters from entering the building.

According to the "Flood boundary and floodway map", delineated by the Federal Emergency Management Agency (FEMA), the project site is adjacent to the Aliso Creek floodplain. The map identifies the floodplain in this area being somewhere between elevation 18' and elevation 19'. The lowest point of elevation of the proposed project is the existing garage slab at elevation 18.88'. New

construction and substantial improvements in areas of special flood hazards need to conform to Flood Damage Prevention chapter of the Laguna Beach Zoning Ordinance (Ch. 25.38). The proposed project was reviewed by the Community Development Department and Building Division of the City of Laguna Beach and received an "Approval in Concept", partially in part to its non-conforming status, on November 18, 1992, in that the proposal complies with the current adopted Laguna Beach General Plan and Zoning Ordinance.

Because of the following factors; the proposal is a replacement of a portion of an existing structure destroyed by fire - not flood, the proposal has been approved by the City that it complies with the current Zoning Ordinance, the proposal is a non-residential structure that lies adjacent to the floodplain and only a portion of the existing garage slab which is below elevation 19' (0.12 ft.) could be subject to flood waters according to the FEMA maps, and finally, the proposal received only minor damage from the March 1992 flood of last winter, it was concluded that the replacement of the garages will not be subject to high hazards from flood waters. Therefore, the Executive Director determines that the proposed project is consistent with section 30253 of the Coastal Act for minimizing risks in areas of high flood hazard.

C. Local Coastal Program

Section 30604(a) of the Coastal Act provides that the Commission shall issue a Coastal Development Permit only if the project will not prejudice the ability of the local government having jurisdiction to prepare a Local Coastal Program which conforms with the Chapter 3 policies of the Coastal Act.

The Laguna Beach Local Coastal Plan was certified, with suggested modifications, at the Commission's July 1992 hearing, minus several areas which were deferred. The City does not yet have Coastal Development Permit authority. The proposed development is consistent with the subject Land Use classification for the subject parcel, will not create adverse impacts to coastal resources or access, and is consistent with the Chapter 3 policies of the Coastal Act. Therefore, the Executive Director determines that approval of the proposed development, as conditioned, will not prejudice the City's ability to carry out their Land Use Plan or implementing ordinances consistent with the policies of Chapter 3 of the Coastal Act as required by Section 30604(a).

D. California Environmental Quality Act

Section 13096(a) of the Commission's administrative regulations requires Commission approval of a Coastal Development Permit application to be supported by a finding showing the application to be consistent with any applicable requirements of the California Environmental Quality Act (CEQA). The proposed project will not cause any significant adverse impacts on the environment. As discussed earlier in the report, the proposed project is a replacement of an existing structure destroyed by fire, and would not be subject to high hazards from floods. Therefore, the Executive Director determines that the project is consistent with the requirements of the Coastal Act to conform to CEQA.

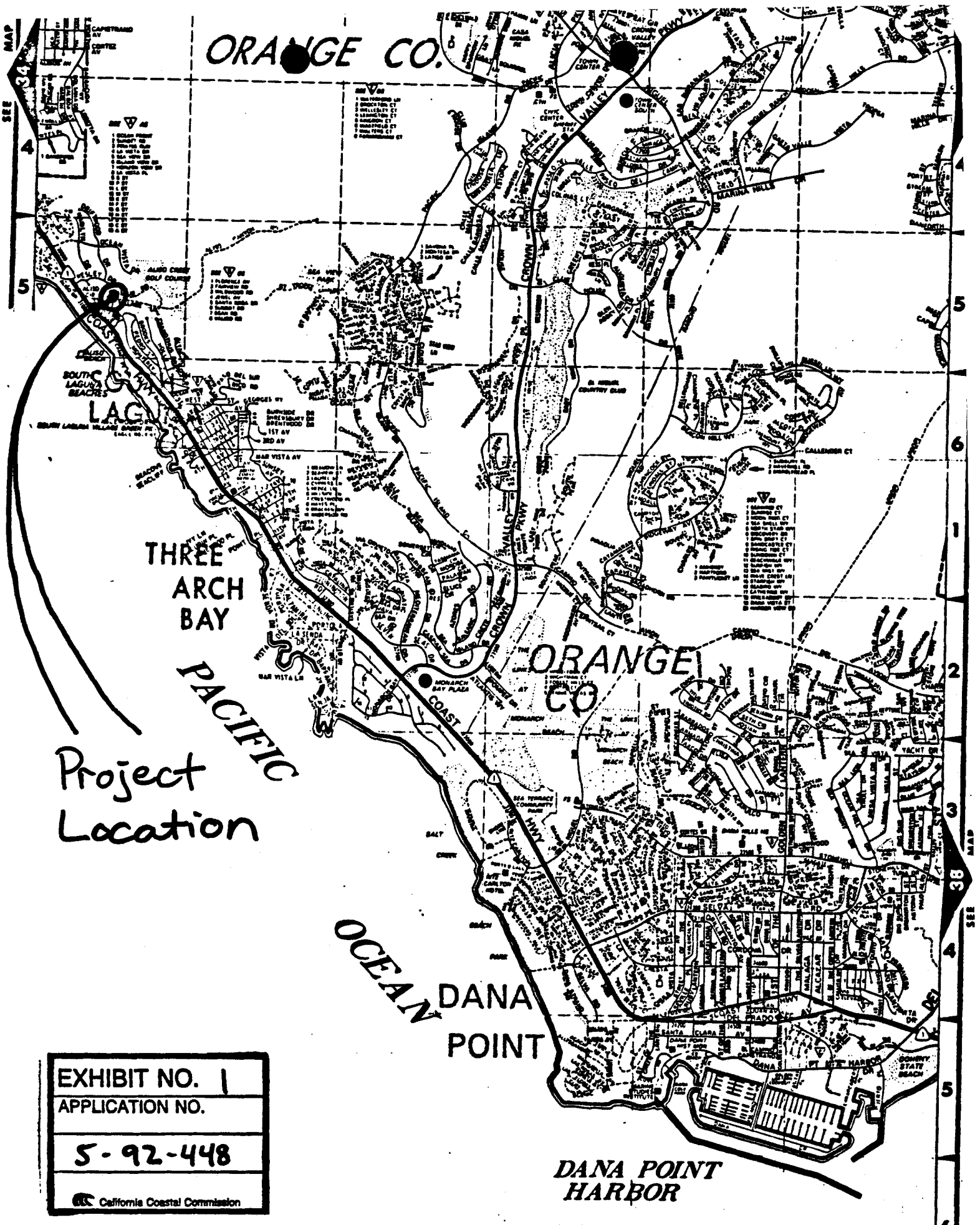


EXHIBIT NO. 1

APPLICATION NO.

5-92-448

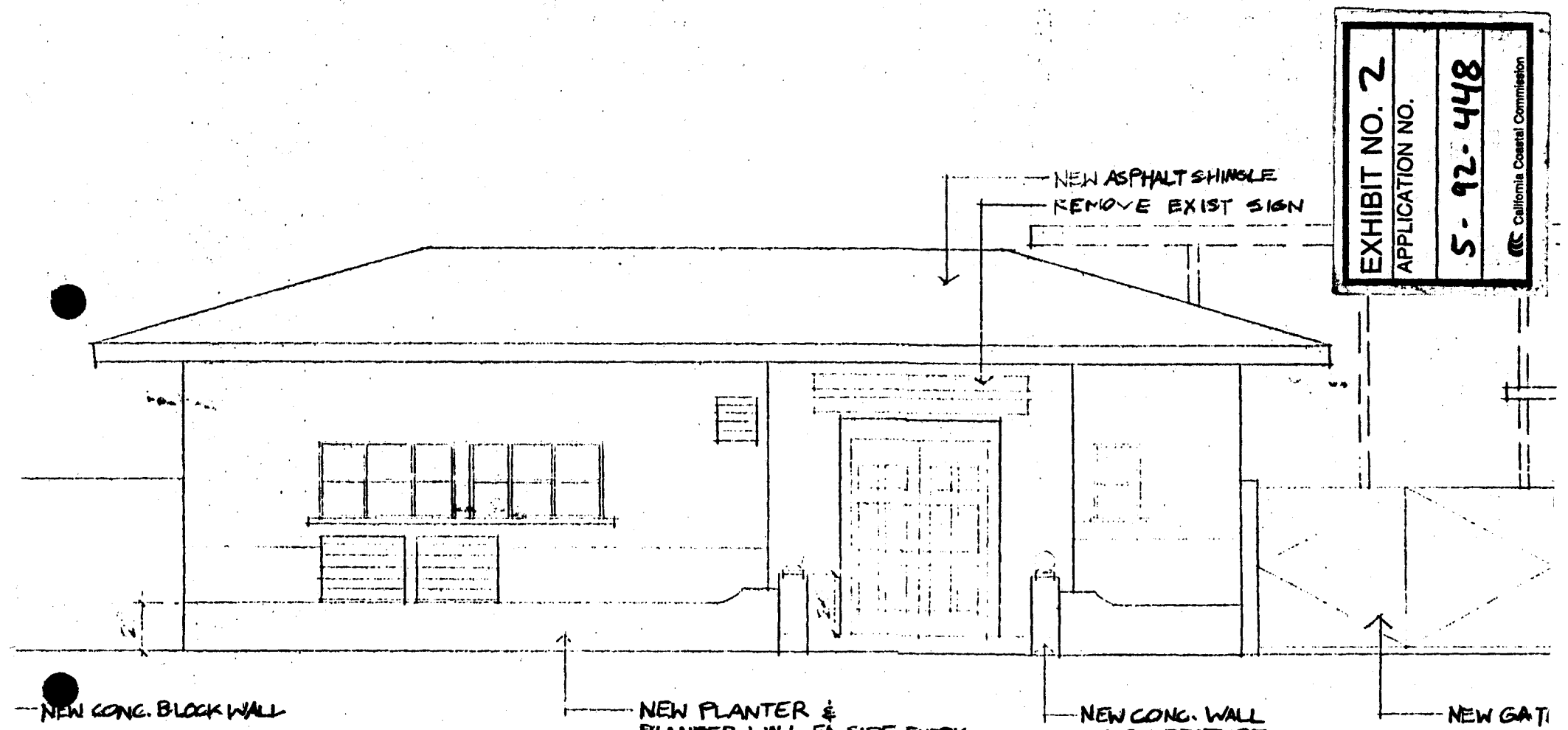
California Coastal Commission

VICINITY MAP

ENTRY FEATURE - TYP

& PLANTER WALL TO REPLACE EXIST'G

EXHIBIT NO. 2
APPLICATION NO.
5-92-448
California Coastal Commission



3

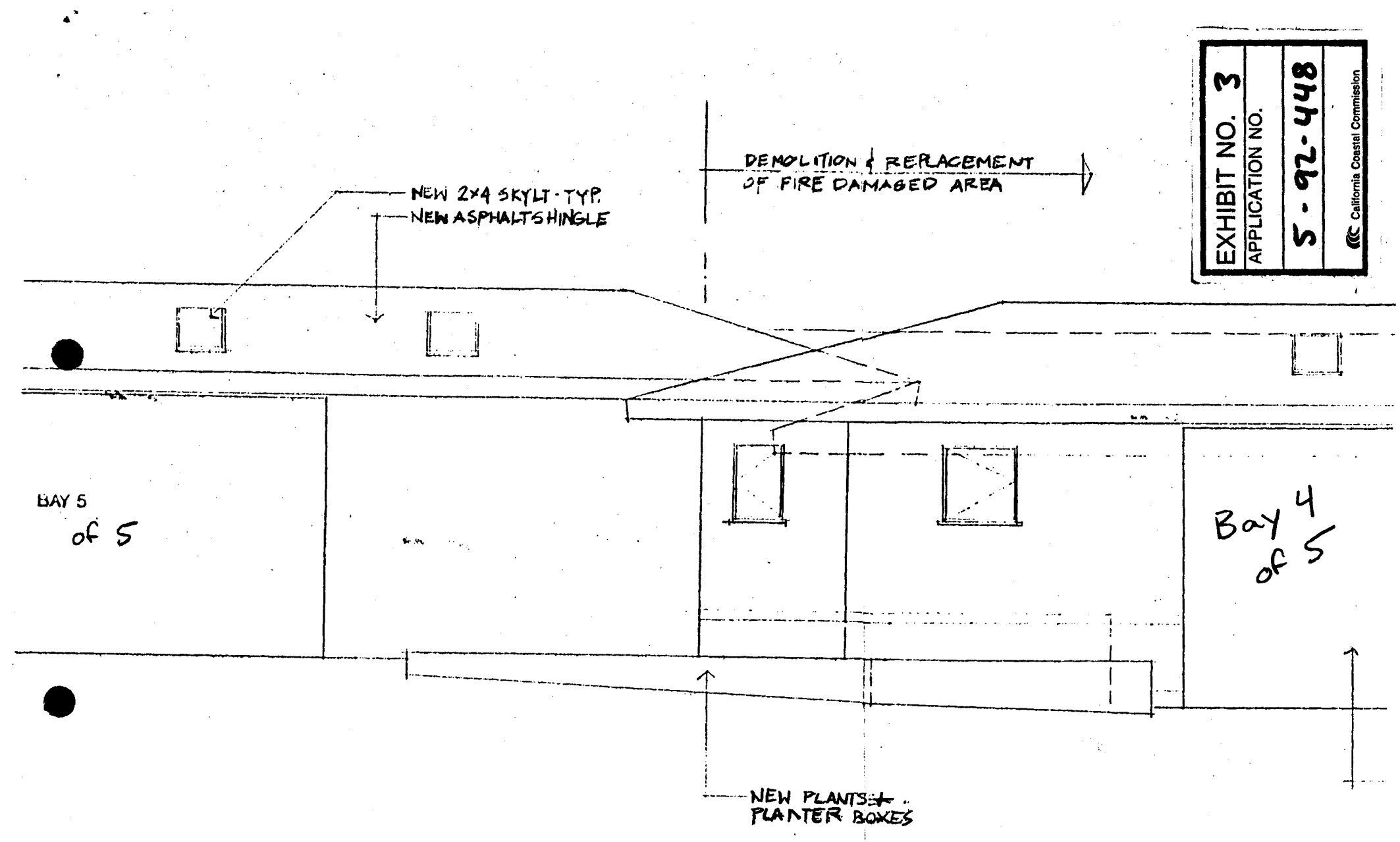


EXHIBIT NO. 3
APPLICATION NO.
5-92-448
California Coastal Commission
DEMOLITION & REPLACEMENT OF FIRE DAMAGED AREA
NEW 2x4 SKYLT - TYP.
NEW ASPHALT SHINGLE
BAY 5 of 5
Bay 4 of 5
NEW PLANTS + PLANTER BOXES

COMMUNITY DEVELOPMENT DEPARTMENT
BUILDING DIVISION

November 18, 1992

California Coastal Commission
South Coast District Office
P.O. Box 1450
Long Beach, CA 90801

RE: City Approval for South Coast Water District project at 31104 Coast Highway

Dear Sir/Madam:

The building project at 31104 Coast Highway, for the South Coast Water district, has been determined by this Department to be exempt from the Design Review process. It is a fire damage repair project that is approved in concept by the City of Laguna Beach.

Sincerely,

Kyle Butterwick, Director
Department of Community Development

CITY OF LAGUNA BEACH

Department of Community Development

PROJECT STATUS LOG

PROJECT rebuild for damaged ADDRESS 31104 Coast Hwy

Date Received	Received by	Purpose	Status	Forwarded to	Date Forwarded	Initial
11/18/92	To	Coastal				

California Coastal Commission
South Coast District Office
P.O. Box 1450
Long Beach, CA 90801
(213) 590-5071
(714) 846-0648

APPENDIX E

APPROVAL IN CONCEPT

APPROVAL IN CONCEPT BY THE CITY/~~COUNTY~~ OF LAGUNA BEACH

as required for permit application to the California Coastal Commission, South Coast Region pursuant to California Administrative Code, Section 13052.

COMPLETE Description of Proposed Development: RECONSTRUCTION OF FIRE DAMAGED AREAS (BAYS 1-4) INCLUDING MINOR EXTERIOR REVISIONS (NEW PLANTERS, ROOFS, ENTRANCE PAINTS.)

Property Address: 3104 COAST HWY
S. LAGUNA BEACH CA

Legal Description: _____

Zone: _____

Applicant(s): MORRIS SKENDERIAN

Applicant's Mailing Address: 2094 S. COAST HWY
LAGUNA BCH 92651

Applicant's Telephone Number: 497-3374

I have reviewed the plans for the foregoing development including:

1. The general site plan, including any roads and public access to the shoreline,
2. The grading plan, if any,
3. The general uses and intensity of use proposed for each part of the area covered in the application,

and find,

~~—~~ They comply with the current adopted LAGUNA BEACH City or ~~County~~ General Plan, Zoning Ordinance, Subdivision Ordinance, ~~and~~ any applicable specific or precise plans, or

That a variance or exception has been approved and is final.

A copy of any variance, exception, conditional use permit, or other issued permit is attached together with all conditions of approval and all approved plans including approved tentative tract maps. On the basis of this finding, these plans are approved in concept and said approval has been written upon said plans, signed, and dated.

Should this City or County adopt an ordinance deleting, amending, or adding to the Zoning Ordinance or other regulations in any manner that would affect the use of the property or the design of a project location thereon, this approval in concept shall become null and void as of the effective date of this said ordinance.

In accordance with the California Environmental Quality Act of 1970, and State and local guidelines adopted thereunder, this development:

_____ Has been determined to be ministerial or categorically exempt.

_____ Has received a final Exemption Declaration for final Negative Declaration (copy attached).

_____ Has received a final Environmental Impact Report (copy attached).

This concept approval in no way excuses the applicant from complying with all applicable policies, ordinances, codes, and regulations of this City or County.

THE APPROVAL IN CONCEPT STAMP MUST BE AFFIXED ON ALL SUBMITTED PLANS. THIS REQUIREMENT WILL BE IN ADDITION TO THE APPROVAL IN CONCEPT FORM THAT IS NOW REQUIRED.

I hereby certify that all information contained in this approval in concept is correct and that all discretionary approvals legally required of this City or County prior to issuance of a building permit have been given and are final. The development is not subject to rejection in principal by this City or County unless a substantial change in it is proposed.

Kyle Butterwick, Director of Community Development

Planning Director

By: _____

John M. Connors, Zoning Administrator

Printed Name and Title of Individual Signing

Date: Nov. 18, 1992

Attachments:

1.
2.
3.
4.

STATE OF CALIFORNIA—THE RESOURCES AGENCY

GEORGE DEUKMEJIAN, Governor

CALIFORNIA COASTAL COMMISSION
SOUTH COAST AREA
245 WEST BROADWAY, SUITE 380
LONG BEACH, CA 90802
(213) 590-5071

RECEIVED
JAN 28 1991
PLANNING DEPARTMENT
CITY OF LAGUNA BEACH, CA.

Date: 01-24-91

Permit No. 5-90-1024

COASTAL DEVELOPMENT PERMIT

On January 10, 1991, the California Coastal Commission granted to

South Coast Water District

this permit subject to the attached Standard and Special conditions, for development consisting of : Abandon the use of an existing 8-inch reclaimed water main within Aliso Creek and install a new 16-inch reclaimed water pipeline from connection at Aliso Creek Inn golf course to an existing 16-inch reclaimed water pipeline, approximately 1500 linear feet. The project includes 70 cubic yards of cut.

more specifically described in the application file in the Commission offices.

The development is within the coastal zone in Los Angeles County at Aliso Creek Inn private Rd from the Aliso Creek Inn golf course.

Issued on behalf of the California Coastal Commission by January 10, 1991.

PETER DOUGLAS
Executive Director

By: Meg Vaughn

Title: Staff Analyst

ACKNOWLEDGMENT

The undersigned permittee acknowledges receipt of this permit and agrees to abide by all terms and conditions thereof.

The undersigned permittee acknowledges that Government Code Section 818.4 which states in pertinent part, that: "A public entity is not liable for injury caused by the issuance. . . of any permit. . ." applies to the issuance of this permit.

IMPORTANT: THIS PERMIT IS NOT VALID UNLESS AND UNTIL A COPY OF THE PERMIT WITH THE SIGNED ACKNOWLEDGEMENT HAS BEEN RETURNED TO THE COMMISSION OFFICE. 14 Cal. Admin. Code Section 13158(a).

Date

Signature of Permittee

8091D/lm

COASTAL DEVELOPMENT PERMIT

STANDARD CONDITIONS:

1. Notice of Receipt and Acknowledgment. The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. Expiration. If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. Compliance. All development must occur in strict compliance with the proposal as set forth in the application for permit, subject to any special conditions set forth below. Any deviation from the approved plans must be reviewed and approved by the staff and may require Commission approval.

4. Interpretation. Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.

5. Inspections. The Commission staff shall be allowed to inspect the site and the project during its development, subject to 24-hour advance notice.

6. Assignment. The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

7. Terms and Conditions Run with the Land. These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

SPECIAL CONDITIONS:

None

COUNTY OF ORANGE

PLANNING COMMISSION

TELEPHONE: 834-2050
AREA CODE 714

400 WEST EIGHTH STREET
SANTA ANA, CALIFORNIA
ZIP CODE 92701

FEBRUARY 16, 1967.

Orange County Department of
Building and Safety
400 West Eighth Street
Santa Ana, California

Attention F. G. McLELLAN, JR., DIRECTOR

Gentlemen:

Re C-1280

The Orange County Planning Commission at its regular meeting of FEBRUARY 1, 1967 authorized the issuance of CONDITIONAL PERMIT APPLICATION NO. C-1280 OF SOUTH LAGUNA SANITARY DISTRICT AS STATED IN THE ENCLOSED COPY OF THEIR MINUTES.

The appeal period as provided for in the Orange County Zoning Code has expired. The determination of the Planning Commission is now final.

Very truly yours,

ORANGE COUNTY PLANNING COMMISSION

Forest Dickason

Forest Dickason, Planning Director
and Secretary to the
Orange County Planning Commission

RECEIVED
LAND USE DIVISION
FEB 16 1967
ORANGE COUNTY
Bldg. & Safety Dept.

Enclosures

Application (3)
Commission Action (3)

F 2073-13

MINUTES
ORANGE COUNTY PLANNING COMMISSION MEETING - FEBRUARY 1, 1967

PUBLIC HEARING:
P.C. TAPE NO. 105, RECORDING INDEX: 1176.

5SD C-1280, OF SOUTH LAGUNA SANITARY DISTRICT, IN SOUTH LAGUNA.

Location: On the northerly side of a private road easement approximately 550 feet northeasterly of the Coast Highway at Aliso Creek Bridge.

Request: To permit the construction of an addition to an existing garage, workshop and storage building in connection with an existing sewer pumping station in the R1 "Single Family Residence" District, according to application on file.

Planner III Remland presented the staff report and located the subject property. Previous Conditional Permits referred to were C-306 and C-944 which permitted the establishment and enlargement of this use in 1953 and 1961.

A letter was presented from the city of Laguna Beach Planning Commission which stated no objections.

1180: The Chairman opened the public hearing.

1182: John Smith, General Manager Sanitary District, was present and spoke in favor of the request.

1183: The Chairman asked if anyone else wished to be heard. There being no response the Chairman thereupon closed the public hearing.

There were no questions by the Commission.

COMMISSION ACTION: 1184: Granted, on motion of Krueger.

2-16-67

I HEREBY CERTIFY THAT THIS IS A TRUE COPY OF AN EXCERPT FROM THE MINUTES OF THE ORANGE COUNTY PLANNING COMMISSION.

Forest S. Dickason

Forest S. Dickason, Secretary KA

Planning
DEPARTMENT

CITY OF LAGUNA BEACH
CALIFORNIA

January 24, 1967

Orange County Planning Commission
400 West 8th Street
Santa Ana, California

Gentlemen:

ORANGE COUNTY CP 1280

The Planning Commission of the City of Laguna Beach reviewed the matter of CP 1280 at its regular meeting of January 24, 1967.

The City Planning Commission has no opposition to the request, as indicated in the application.

Very truly yours,

CITY PLANNING COMMISSION

C. Z. Springe
Secretary

jr
Attachment

RECEIVED
JAN 25
ORANGE COUNTY
PLANNING COMMISSION

56-240-32

FEB 27 1967

Laguna Beach

NO. CP 1280
SUPERVISORIAL DISTRICT 5
FILING DATE Jan. 11, 1967
HEARING DATE Feb. 1, 1967
TECHNICIAN VAB:pss
S.D.M. NO 6-8-8
REFERRED TO Krueger
Bldg. Dept.
Road Dept.
Laguna Beach P.C.
S. Laguna Civic Association

APPLICATION FOR CONDITIONAL PERMIT

UNDER ORDINANCE NO. 351, AS AMENDED,
COUNTY of ORANGE, CALIFORNIA

South Laguna Sanitary District
applicant — mailing address — phone no.

Boyle Engineering (William A. Allison) 412 South Lyon St., Santa Ana 547-4471
agent — mailing address

B.P. 32510 - Issued 2-21-67 by N Abrown

TO PERMIT the construction of an addition to an existing garage, workshop and storage building in connection with an existing sewer pumping station in the R1 Single Family Residence District.

Said addition will be approximately 56 ft. by 26 ft. and located a minimum of 6 ft. from the north edge of a private road.

Said addition will be used for the storage and maintenance of vehicles owned and operated by the sanitary district.

Setback Variance for Addition: From 20 ft. from the front property line to a minimum of 6 ft. therefrom.

CP-944 to permit the construction of a building for garage, workshop and storage use in connection with an existing sewer pumping station was granted with conditions on January 25, 1961.

C-306 to permit the establishment of a sewer pumping station was granted on September 15, 1953.

B.P. #32510

All in accordance with the attached plot plan which is hereby made a part hereof. In any case of conflict between the language of this application and the plot plan, the plot plan shall prevail.

LEGAL DESCRIPTION of SUBJECT PROPERTY: See attached plot plan. 240-61

APN 056-[redacted]

No address

31104 7

Location of property: On the northerly side of a private road easement approximately 550 ft. northeasterly of the Coast Highway at Aliso Creek Bridge, in South Laguna.

Present use of property: Pumping station and garage and storage building.

Adjoining property owned or leased by applicant: None.

GRANTED

Planning Commission Action

ORANGE COUNTY
PLANNING COMMISSION
2/1/67

signature of applicant or his agent

signature of property owner or his agent

12-8-70
LAM

F 2073-12

FEE: $25.00 $20.00 FEE

CP 1280

DIRECTORS
CLAY N. MITCHELL
PRESIDENT
JOHN V. SMITH
SECRETARY
LUDY P. CURCIO
HAROLD E. EDWARDS
Charles W. Petty

SOUTH LAGUNA SANITARY DISTRICT
31652 SECOND AVENUE
SOUTH LAGUNA, CALIFORNIA 92677

JOHN R. SMITH
GENERAL MANAGER
◇
JACK J. RIMEL
ATTORNEY
◇
TELEPHONE 499-2495
(AREA CODE NO. 714)

January 9, 1967

Orange County Planning Commission
400 West Eighth Street
Santa Ana, California

Gentlemen:

This is to request variance to construct an extension to the District's existing garage and office building, for additional storage use in connection with an existing sewer pumping station in the R1 Single Family Residence District, located approximately 550 feet easterly of the Coast Highway on the northerly side of a private road running easterly therefrom at the Aliso Creek Bridge in South Laguna.

The extension will be approximately 26 ft. by 56 ft. and the same type of architecture will be used as the existing buildings; it will not affect the view of any property.

Very truly yours,

John R. Smith

John R. Smith, General Manager
SOUTH LAGUNA SANITARY DISTRICT

JRS:ry
cc: Boyle Engineering

COUNTY of ORANGE
PLANNING COMMISSION

118 West Fifth Street, Santa Ana, California Kimberly 7-3311 Extension 217

FEBRUARY 9, 1961

RECEIVED
LAND USE DIVISION
FEB 9 1961

ORANGE COUNTY
Bldg. & Safety Dept.

Orange County Department of
Building and Safety
204½ North Broadway
Santa Ana, California

Attention: Mr. C. W. Donohue, Superintendent

RE: C-944.

Gentlemen:

The Orange County Planning Commission at its regular meeting of JANUARY 25, 1961 authorized the issuance of CONDITIONAL PERMIT APPLICATION No. C-944, OF SOUTH LAGUNA SANITARY DISTRICT, SUBJECT TO THE CONDITIONS STATED IN THE ENCLOSED COPY OF THEIR MINUTES.
The appeal period as provided for in the Land Use Districting Ordinance 351 has expired. The determination of the Planning Commission is now final.

Very truly yours,

ORANGE COUNTY PLANNING COMMISSION

Harry E. Bergh

Harry E. Bergh, Planning Director
and Secretary to the Commission

Enclosures:

Application (3)
Commission Action (3)

ocpc-1 5/59-500

MINUTES
ORANGE COUNTY PLANNING COMMISSION MEETING - JANUARY 25, 1961

PUBLIC HEARING:
P.C. TAPE NO. 10, RECORDING INDEX: 0596.

5SD C-944, OF SOUTH LAGUNA SANITARY DISTRICT, IN SOUTH LAGUNA.

Location: Approximately 550 feet easterly of the Coast Highway on the northerly side of a private road running easterly therefrom at the Aliso Creek Bridge.

Request: To permit the construction of a building for garage, workshop and storage use in connection with an existing sewer pumping station in the R1 Single Family Residence District, according to application on file.

COMMISSION ACTION: 0602: Granted upon condition that the off-street parking area shall be paved,

(finding in accordance with provisions of Section 19, Ordinance No. 351, as amended) on motion of Barnes.

A report was read from the Air Pollution Control District stating that the burning of any trash, debris, etc. shall be done in an incinerator approved by said District.

I HEREBY CERTIFY THAT THIS IS A TRUE COPY OF AN EXCERPT FROM THE MINUTES OF THE ORANGE COUNTY PLANNING COMMISSION.

Harry E. Bergh

Harry E. Bergh, Secretary

INTRA-OFFICE MEMO

January 24, 1961

Department of Building and Safety
County of Orange

To: Albert B. Nelson, Administrator, Land Use Division

From: Richard P. Ruiz, Supervising Land Use Technician

Subject: Application for CP-944
South Laguna Sanitary District

For the erection of a garage and workshop to be used in connection with an existing, sewer, pumping station - A1 (General Agricultural) district

FINDINGS

1. Plot plan not fully dimensioned.

2. The legal discription does not include any description of an easement, although the plot plan shows "60' easement - South Laguna Sanitary District-OR 2656-250"

Ruiz
Richard P. Ruiz

P. C. Action 1-25-61
Approved

COUNTY OF ORANGE
AIR POLLUTION CONTROL DISTRICT
9640 SOUTH HARBOR BLVD.
ANAHEIM, CALIFORNIA

WILLIAM FITCHEN
AIR POLLUTION CONTROL OFFICER

TELEPHONE
PROSPECT 4-0250

January 16, 1961

County of Orange
Planning Commission
Courthouse Annex
Santa Ana, California

Gentlemen:

Re: CP 944 - South Laguna Sanitary District

This office has no objection to the above referenced application for the construction of a building for garage, workshop and storage use in connection with an existing sewer pumping station in the R1 Single Family Residence District providing any burning of trash, debris, etc., is done in an incinerator approved by the Orange County Air Pollution Control District.

Kindly let us know what disposition is made of this application.

Very truly yours,

Chas. W. Dougan

CHAS. W. DOUGAN
Air Pollution Engineer

CWD:fw

REFERRED TO:

RECEIVED
JAN 17 1961
ORANGE COUNTY
PLANNING COMMISSION

C –

Jan 12 1961 — Do Laguna Sanitary Dist — 944.

The Sanitary District pumping station was authorized by C-306 on Sept 15-53. The site herein described lies between Tract 895 and the Station site.

The private road (not described in legal desc) runs from Coast Blvd to Laguna Beach Country Club.

Plot plan is not dimensioned

MMG

1/16/60 INSP. THE PREMISES.
ALTHO LOS ALISOS RD. IS SHOWN AS A 60' R.O.W.
ONLY ABOUT 25'-30' IS DEVELOPED.
THE LAND IS VACANT AND RISES SHARPLY
FROM THE ROAD ELEVATION

JStotts

SO. LAGUNA SANITARY DIST. C-944

2-23-61	CONST. NOT BEGUN.	LAM
3-17-61	" " "	LAM
4-12-61	" " "	LAM by RD
5-4-61	GRADING BEGINNING	LAM
5-26-61	" CONTINUES	LAM
7-13-61	BLDG. FRAMED LOCATION CONFORMS TO TEXT OF C. PARKING AREA NOT PAVED	LAM
7-25-61	Parking Area not Paved as yet.	LAM/abp
8-14-61	PARKING AREA PAVED PER CONDITION.	
"	CLOSED	LAM.

FEB 1 4 1961

Laguna Beach

NO. CP 944
SUPERVISORIAL DISTRICT: 5th
FILING DATE: 1-10-61
HEARING DATE: 1-25-61
TECHNICIAN: DWM:sg
S.D.M. NO. 6-8-8
REFERRED TO: Barnes
Building Dept.
Road Dept.
Air Pollution

APPLICATION FOR CONDITIONAL PERMIT

UNDER ORDINANCE NO. 351, AS AMENDED,
COUNTY of ORANGE, CALIFORNIA

South Laguna Sanitary District
applicant — mailing address — phone no.

Boyle Engineering (Emerson B. Milnor) Suite 331 Spurgeon Building, Santa Ana
agent — mailing address — phone no.
B-1652-4-27-61-Lt
KI 7-4471

TO PERMIT The construction of a building for garage, workshop and storage use in connection with an existing sewer pumping station in the RI Single Family Residence District.

Said building will be approximately 26 ft. by 56 ft. and located a minimum of 36 ft. from the center line of a private road and approximately 35 ft. westerly of the existing pumping station as indicated.

Said garage will house and provide light maintenance facilities for 4 vehicles owned and operated by the Sanitary District.

There will be no full time employees on the permises.

Off-street parking for 6 cars will be provided, however, in the area indicated on the plot plan.

Setback Variance for Garage: From 50 ft. from the center line of the street to a minimum of 36 ft. therefrom.

LEGAL DESCRIPTION of SUBJECT PROPERTY:

See attached sheet.

[redacted]

Location of property: Approximately 550 ft. easterly of the Coast Highway on the northerly side of a private road running easterly therefrom at the Aliso Creek Bridge, in South Laguna.
Present use of property: Vacant.

Adjoining property owned or leased by applicant: Pumping station site to the east.

APN 056-240-61
So. Coast Water ~~Sanitary~~ District

GRANTED WITH CONDITIONS
BY ACTION OF THE ORANGE COUNTY PLANNING COMMISSION
1/25/61
Planning Commission Action

South Laguna Sanitary District
by Emerson B. Milnor Dist. Engr.
signature of applicant or his agent

South Laguna Sanitary District
by Emerson B. Milnor Dist. Engr.
signature of property owner or his agent

D 12 58

NO FEE: ~~$25.00~~

NO. CP 944

Boyle ENGINEERING

ARCHITECTS • ENGINEERS

Consulting Engineers

SUITE 331, SPURGEON BUILDING • SANTA ANA, CALIFORNIA • KIMBERLY 7-4471

January 9, 1961

Orange County Planning Commission
118 West Fifth Street
Santa Ana, California

Gentlemen:

In connection with the application for a Conditional Permit to build a garage, shower room, store room and work shop in Aliso Canyon on our 60-foot easement to the treatment plant, we are informing you of the following:

(1) Due to the rough terrain in which the proposed garage is to be built, no other structures can be built adjacent to it.

(2) It will be built adjacent to the existing sewer pumping station.

(3) It is proposed to use the same type of architecture as the pumping station.

(4) No offensive or obnoxious use will be made of the building.

(5) It will not affect the view of any property.

In view of the preceding items, it is felt that the integrity and character of the District, the utility and value of adjacent property, and the general welfare of the neighborhood will be maintained if the Conditional Permit is granted.

Very truly yours,

BOYLE ENGINEERING

Emerson B. Milnor

EBM:JJ
7+

C-944

Sheet 1 of 1

Date 1-3-1961

Scale: 1"=60'

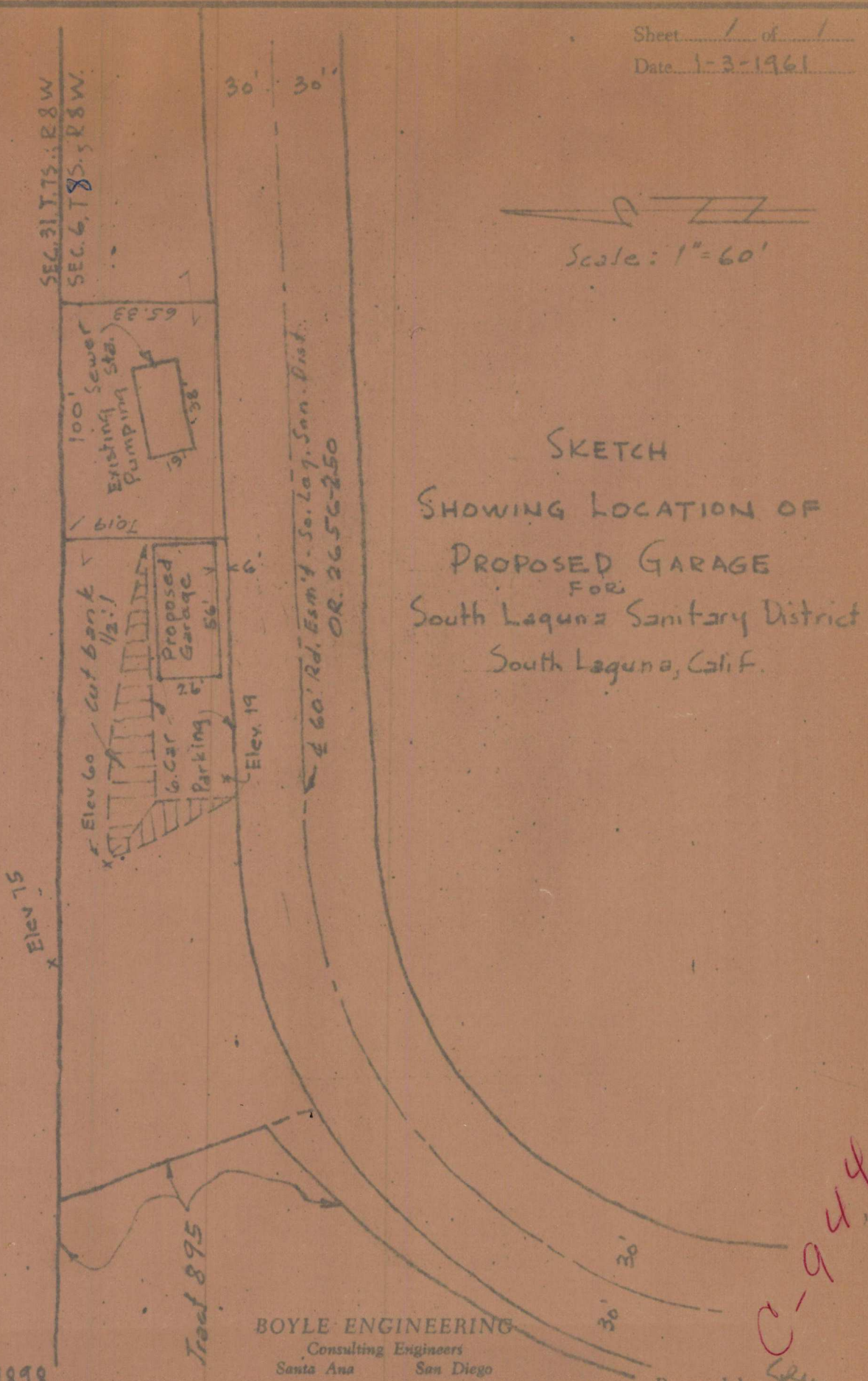
SKETCH

SHOWING LOCATION OF PROPOSED GARAGE

FOR

South Laguna Sanitary District

South Laguna, Calif.



BOYLE ENGINEERING

Consulting Engineers

Santa Ana San Diego

Job No. 1898

Prepared by

C-944

BOOK 5480 PAGE 312

RECORDING REQUESTED BY

WHEN RECORDED MAIL TO
South Laguna Sanitary District
Post Office Box 36
South Laguna, California

188477

BOOK 5480 PAGE 312
RECORDED AT REQUEST OF ORANGE COUNTY TITLE CO. IN OFFICIAL RECORDS OF ORANGE COUNTY, CALIF.
9 AM OCT 26 1960
RUBY McFARLAND, County Recorder

FREE

SPACE ABOVE THIS LINE FOR RECORDER'S USE

404 O OCT 26 1960

3

PLACE INTERNAL REVENUE STAMPS IN THIS SPACE

GRANT DEED

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged,

ROY E. SHIPLEY and BERYL SHIPLEY, husband and wife, and ELMER A. NELSON and ELIZABETH NELSON, husband and wife, and WILLARA, INC., a California corporation, do hereby

GRANT to SOUTH LAGUNA SANITARY DISTRICT,

the real property in the County of Orange,
State of California, described as:

All that portion of Lot One of Section 6, Township 8 South, Range 8 West, S.B.B.& M., lying Northeasterly of the Northeasterly line of the Coast Boulevard, as shown on a Map of Tract No. 895, recorded in Book 28, pages 15 and 16 of Miscellaneous Maps, records of Orange County, California, and lying Northwesterly and Northerly of the Northwesterly and Northerly line of that certain strip of land 60.00 feet in width, as described in a deed to the South Laguna Sanitary District of Orange County, State of California, recorded January 25, 1954 in Book 2656, page 250 of Official Records.

EXCEPTING therefrom that portion of said land included within said Tract No. 895.

ALSO EXCEPTING therefrom that portion of said land as described in a deed to the South Laguna Sanitary District of Orange County, State of California, recorded January 25, 1954 in Book 2656, page 247 of Official Records.

Subject to covenants, conditions, reservations, restrictions and rights of way of record.

Also subject to taxes for fiscal year 1960-1961, not yet payable.

Dated: February 29, 1960

Roy E. Shipley
Roy E. Shipley

Beryl Shipley
Beryl Shipley

Elmer A Nelson
Elmer A. Nelson

Elizabeth Nelson
Elizabeth Nelson

STATE OF CALIFORNIA } ss
COUNTY OF ORANGE }

On 9/13/60

before me, the undersigned, a Notary Public in and for said County and State, personally appeared

Roy E. Shipley, Beryl Shipley, Elmer A. Nelson and Elizabeth Nelson,

known to me to be the person S whose name S are subscribed to the within instrument and acknowledged that they executed the same.

WITNESS my hand and official seal

(Seal) Neva G. Eberhard
Notary Public in and for said County and State.

NEVA G. EBERHARD

Order No. 404021-hrb

Escrow or Loan No.

FORM 1005—59

C-944

County of Orange

PLANNING COMMISSION

COURT HOUSE ANNEX
SANTA ANA, CALIFORNIA

September 11, 1953

To the Honorable Board of Supervisors
Orange County, California

RE: Conditional Permit Application No. C-306.

Applicant: South Laguna Sanitary District.

Situated in the Fifth Supervisorial District.

Gentlemen:

It is recommended that Your Honorable Body grant the above stated Conditional Permit Application No. C-306, as set forth in the attached application which is transmitted herewith pursuant to the provisions of Section 19, Land Use Ordinance No. 351, as amended.

This application was considered by the Planning Commission on September 11, 1953, and it was found:

1. That there are special circumstances or conditions applicable to the property referred to in the application;
2. That the granting of the application is necessary for the preservation and enjoyment of substantial property rights;
3. That the granting of such application will not materially affect the health or safety of persons residing or working in the neighborhood and will not be materially detrimental to the public welfare or injurious to property or improvements in the neighborhood; and,

that material detriment or injury to the neighborhood will not result from the granting of this application.

Respectfully submitted,

Raymond R. Reed

Raymond R. Reed, Secretary
Orange County Planning Commission

RRR:bh

pc-1

5th Dist.
cc: Bigham; Weimer
South Laguna Civic Assn.
Laguna Beach P. C.

Meeting September 11, 1953

Laguna Beach

C R1
11-23-59 R1

NO FEE - ~~$10.00~~

CONDITIONAL PERMIT APPLICATION NO. C-306

APPLICATION FOR CONDITIONAL PERMIT UNDER ORDINANCE NO. 351, AS AMENDED, OFFICAL LAND USE PLAN OF ORANGE COUNTY, CALIFORNIA.

Santa Ana, California, August 31, 1953

To The Orange County Planning Commission

(Applicant)	(Authorized Agent)
Name South Laguna Sanitary District	Name Harold E. Edwards
Mailing Address 31652 South Second Ave.	Mailing Address Box 517
South Laguna, California	South Laguna, California
Phone No. L.B. 4-6495	Phone No. None

Pursuant to the provisions of Section 19, Ordinance No. 351, as amended, application is hereby made for a Conditional Permit to permit the establishment of a sewage pumping station for the South Laguna Sanitary District in the R-1- Single Family Residence District. The sewage pumping station will be located, constructed and operated as set forth in the attached letter which is made a part of this application and

APPROVED by Board 9/12/53
R. R. REED, SECRETARY
FW

in accordance with accompanying plans which are made a part of this application, on the following described parcel of land: (Insert legal description of property).

APN 056-240-61
No Address

See attached sheet

AP 56-240-~~46~~ 32

Location of premises on the northerly side of Aliso Creek about 600 feet inland from the Coast Highway, South Laguna.

Adjoining property owned or leased by applicant The Sanitary District will have an easement from the ocean outfall sewer to the sewage treatment plant which will pass by the pumping station.

Present use of property Vacant

Property classified as R - 1 - Single Family Residence District

by District Map A, Sheet 5, South Laguna Section

(Continuation of Application on other side of Sheet)

2000—8-8-52

10-19-70

(Continued from other side of Sheet)

STATEMENT OF APPLICANT GIVING EVIDENCE SHOWING:

1. (That there are special circumstances or conditions applicable to the property).

The proposed location is the best site for the pumping station in order that it may receive sewage by gravity from the District and yet be so located with respect to the outfall sewer so that it may provide chlorination and other facilities for the treated sewage on its way to the ocean outfall.

2. (That the granting of the application is necessary for the preservation and enjoyment of substantial property rights).

It would be impossible to continue the contemplated sewage disposal program for the South Laguna area if the requested conditional permit is not granted.

3. (That the granting of the application will not materially affect the health or safety of persons residing or working in the neighborhood and will not be materially detrimental to the public welfare or injurious to property or improvements in the neighborhood).

The health and safety of persons in the area will not be materially affected by the granting of this application.

Harold E Edwards

Signature of applicant or authorized agent

DIRECTORS
HAROLD E. EDWARDS, PRESIDENT
J. LEWIS FURMAN, SECRETARY
ROBB L. SCOTT
DR. ERIC S. EVANS
JOSEPH T. ROBERTS

South Laguna Sanitary District

BOX 36
SOUTH LAGUNA, CALIFORNIA

H. HOWARD McKEE
ASSESSOR
MARJORIE M. NELSON
CLERK
TELEPHONE LAGUNA BEACH 4-6495

August 25, 1953

RECEIVED
AUG 31 1953
ORANGE COUNTY
PLANNING COMMISSION

Planning Commission
County of Orange
Court House Annex
Santa Ana, California

Gentlemen:

The South Laguna Sanitary District is planning the construction of a sewage pumping station on a parcel of land located in Aliso Canyon approximately 600 feet east of Pacific Coast Highway. Present zoning of this parcel is R-1 (Residential) . The station is part of the South Laguna Sanitary District's Sewage Collection and Disposal System for which $1,250,000 worth of general obligation bonds were authorized by the voters on September 15, 1952. The contract on the pumping station is to be awarded on September 17, 1953 and completion is scheduled within 330 days after execution of the contract.

Accompanying this letter are:

(1) 4 copies of application for a Conditional Permit
(2) 4 copies of legal description of property
(3) 4 copies of plot plan of property
(4) 4 copies of Site Plan, Building Elevations and Details (Sheet D-1)
(5) 4 copies of general location map (Key Map-C-4)

The pumping station site will cover approximately 1/6 of an acre and is located on the north bank of Aliso Creek. The station will lift all sewage originating in the system and deliver it through a force main to the sewage treatment plant to be constructed about one mile farther up the canyon.

Sewage will enter a wet well and will pass through a bar screen which may be raised by an electric hoist for periodic cleaning. Two 800 gpm vertical centrifugal non-clog sewage pumps, each driven by a 40 hp electric motor will be installed initially. Pump operation will be fully automatic using electrode type liquid level controls.

Additional equipment in the pumping station includes a pressure water system employing air-gap separation to eliminate any possibility of cross-connections and a program-type chlorinator which will serve the dual purpose of treating the raw sewage as it enters the wet-well and the effluent from the treatment plant as it flows past the pumping

DIRECTORS
HAROLD E. EDWARDS, PRESIDENT
J. LEWIS FURMAN, SECRETARY
ROBB L. SCOTT
DR. ERIC S. EVANS
JOSEPH T. ROBERTS

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BOX 36
SOUTH LAGUNA, CALIFORNIA

H. HOWARD McKEE
ASSESSOR
MARJORIE M. NELSON
CLERK
TELEPHONE LAGUNA BEACH 4-6495

station to the ocean outfall.

As a means of reducing sulfide generation in the force main, provision has been made for injecting compressed air up to as much as 5 cubic feet per minute (as free air).

While the pumping station will be visible from the Highway by anyone traveling north, it will be a stucco structure of pleasing appearance as shown on enclosed sheet D-1.

Very truly yours,

Harold E Edwards

President, Board of Directors
SOUTH LAGUNA SANITARY DISTRICT

Enclosure

FEE TITLE

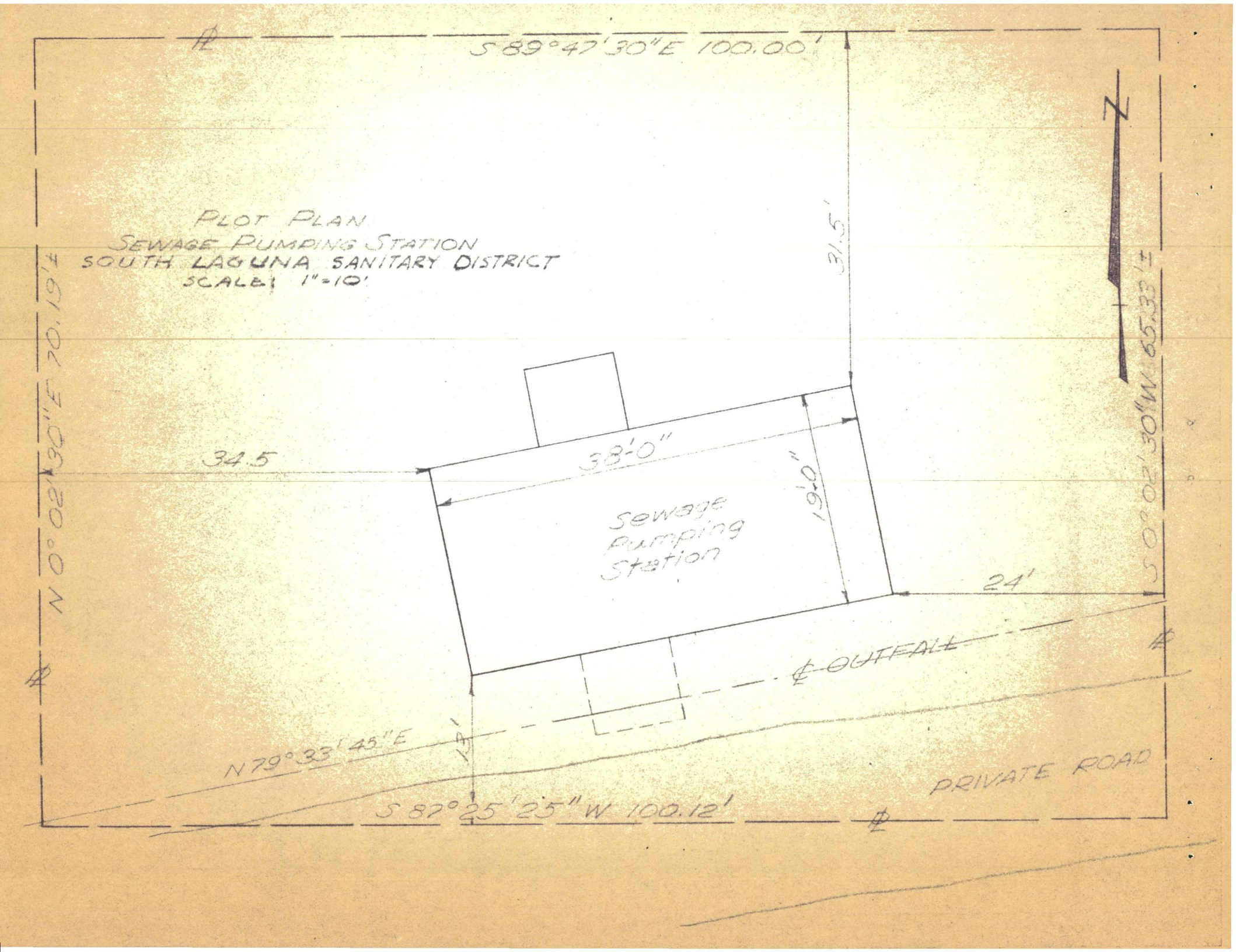
PUMPING STATION SITE

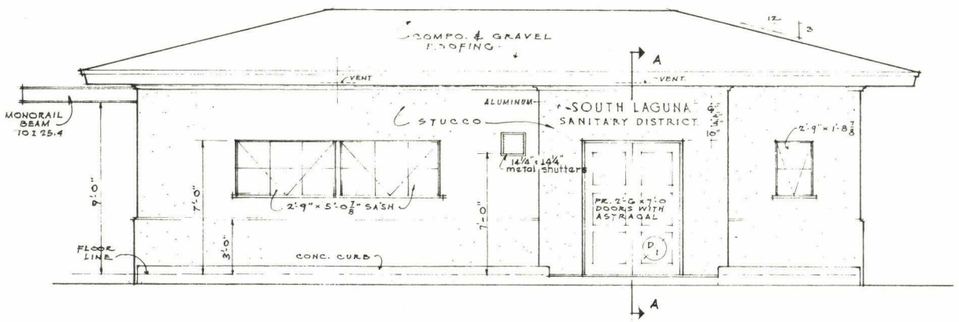
(Roy E. Shipley, Elmer A. Nelson, Alice A. Lewis)

A parcel of land being a portion of Lot 1 of Section 6, Fractional Township 8 South, Range 8 West, S.B.M., according to the Government Survey, in the County of Orange, State of California, and particularly bounded and described as follows:

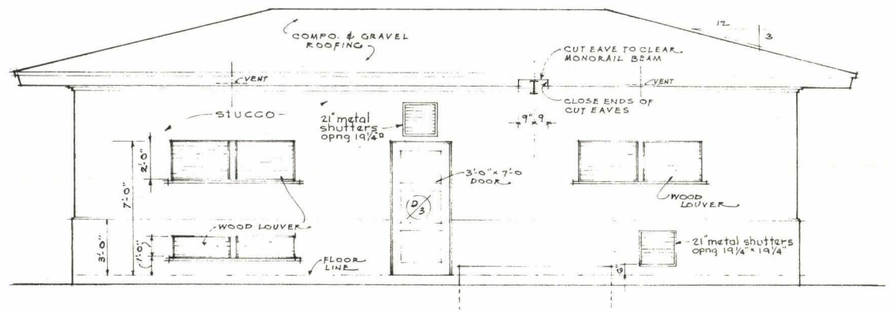
Beginning at the Northeast corner of said Section 6; thence North 89° 47' 30" West along the Northerly line of said Section 6, a distance of 1805 feet to the true point of beginning; thence South 0° 02' 30" West, a distance of 65.33 feet, more or less, to an intersection with the Northerly sideline of a 60-foot easement, said easement being described in Book 2190, page 565 of Official Records of Orange County, California; thence South 87° 25' 25" West along the Northerly side line of said easement, a distance of 100.12 feet, more or less, to a point in the said Northerly side line; thence North 0° 02' 30" East, a distance of 70.19 feet, more or less, to a point in the Northerly line of said Section 6; thence South 89° 47' 30" East an exact distance of 100 feet to the true point of beginning.

Containing 0.156 acres of land.


S 89°47'30"E 100.00'
PLOT PLAN
SEWAGE PUMPING STATION
SOUTH LAGUNA SANITARY DISTRICT
SCALE: 1"=10'
N
31.5'
N 0°02'30"E 70.19'±
S 0°02'30"W 65.33'±
34.5
38'-0"
19'-0"
Sewage
Pumping
Station
24'
℄ OUTFALL
N 79°33'45"E
PRIVATE ROAD
S 82°25'25"W 100.12'



SOUTH ELEVATION



NORTH ELEVATION

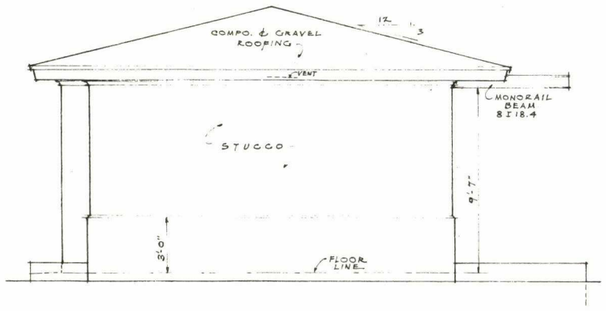
HARDWARE LIST

D/1
3 PR. HINGES - 4" x 4" DULL BRONZE, STANLEY No. 241½
1 HASP - 7½", STANLEY No. 135G
1 LATCH SET - DULL BRONZE, SCHLAGE No. A105.
1 FOOT BOLT - STANLEY No. 1057

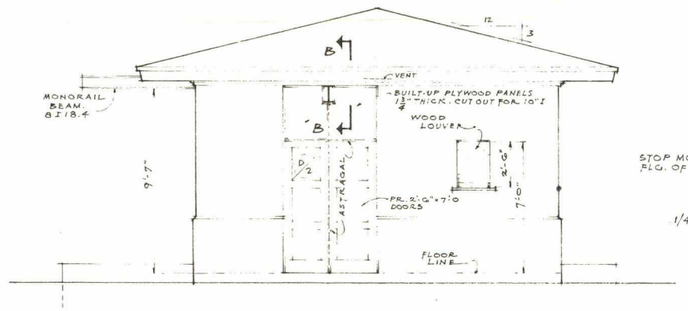
D/2
3 PR. HINGES - 4" x 4" DULL BRONZE, STANLEY No. 241½
1 LOCK SET - SCHLAGE No. A52PD, DULL BRONZE.
1 PANIC BOLT - RUSSWIN No. 60 FOR RIGHT HAND DOOR.
1 FOOT BOLT - STANLEY No. 1057
BUILT-UP PANELS:
2 PR. HINGES - 4" x 4" DULL BRONZE, STANLEY No. 241½
1 CHAIN BOLT - STANLEY No. 1055

D/3
1½ PR. HINGES - 4" x 4" DULL BRONZE, STANLEY NO. 241½
1 LOCK SET - SCHLAGE No. A52PD, DULL BRONZE.

WINDOWS TO BE COMMERCIAL PROJECTED STEEL SASH

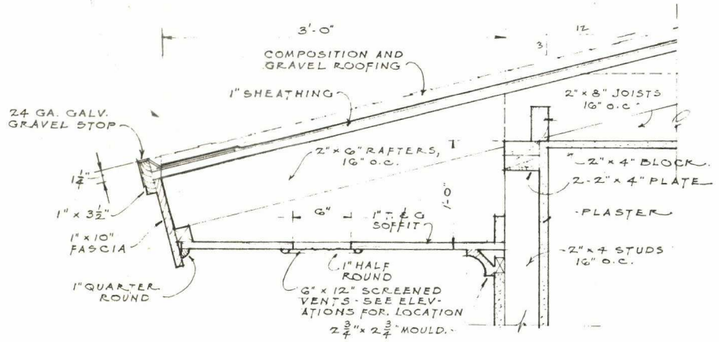


EAST ELEVATION



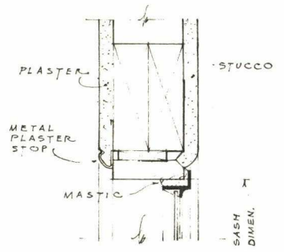
WEST ELEVATION

SCALE: ¼" = 1'-0"

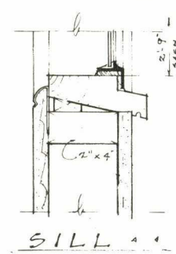


EAVE DETAIL

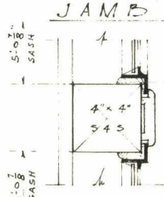
SCALE: 1½" = 1'-0"



HEAD & JAMB



SILL

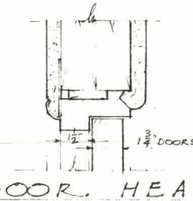


MULLION

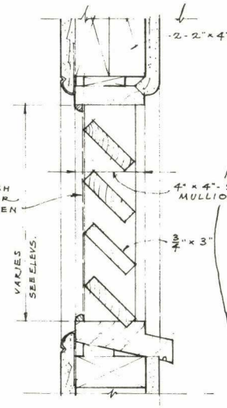
NOTE:
GLAZING TO BE OBSCURE WIRE GLASS.

WINDOW DETAILS

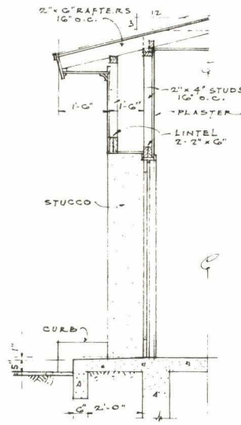
SCALE: 3" = 1'-0"



DOOR HEAD & JAMB

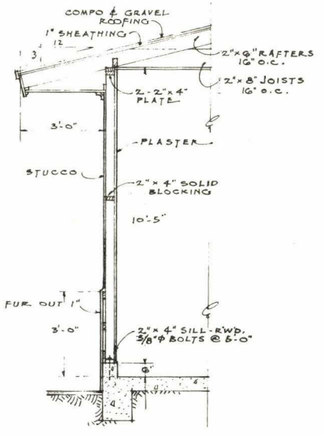


WOOD LOUVER DETAIL



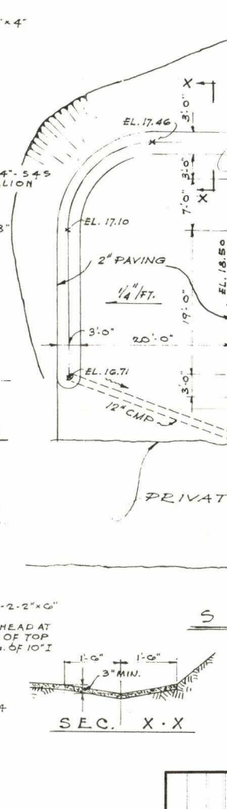
SECTION A-A

SCALE: ⅜" = 1'-0"

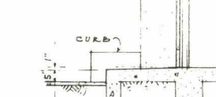


TYPICAL WALL SECTION

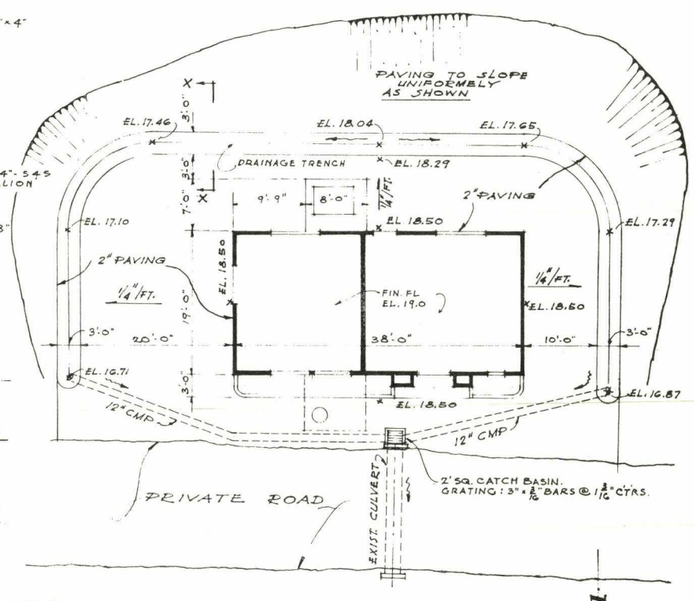
NOTE: FOR FOOTING DETAILS SEE SH.



SEC. B-B



SEC. X-X



SITE PLAN

SCALE: 1" = 10'

APPROVED:
SOUTH LAGUNA SANITARY DISTRICT

Harold E. Edwards Pres. DATE June 11, 1957

DESCRIPTION	DATE	REV.

SOUTH LAGUNA SANITARY DISTRICT
ORANGE COUNTY, CALIFORNIA

SEWAGE PUMPING STATION

SITE PLAN, BUILDING ELEVATIONS AND DETAILS

James M. Montgomery R.C.E. 5580 DATE 6-8 1957

DESIGNED BY E. C. C.
DRAWN BY E. C. C.
CHECKED BY A. M. W.

SCALE: AS NOTED

JAMES M. MONTGOMERY
CONSULTING ENGINEER
15 N. OAKLAND AVE. PASADENA 1, CALIF.

SHEET D-1 OF 7 SHEETS

N

PACIFIC COAST HIGHWAY

ALISO CIRCLE DRIVE

TRACT NO. 885

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

C-29

PUMPING STATION

A-1 A-2 A-3 A-4 A-5 A-6

B-1

F-1

10" V.C.P.

21" V.C.P.

12" R.C.P.

15" V.C.P.

15" R.C.P.

18" R.C.P.

18" O.D. Steel pipe

ALISO Creek

U.S.C. & G.S. B.M. No J 167

BEACH INTERCEPTING SEWER

MONTEREY ST.

OCEAN OUTFALL

OCEAN

PACIFIC

LOT 1, SEC. 6

LOT 2, SEC. 31

LOT 3, SEC. 32

LOT 4, SEC. 32

LOT 3, SEC. 5

NE¼, NE¼, SEC. 6

A.B.C. CONSTRUCTION CO.

GIRL SCOUTS COUNCIL OF LAGUNA BEACH

SEWAGE TREATMENT PLANT

RANCHO NIGUEL

LAGUNA BEACH GOLF CLUB

CLUB HOUSE

GREEN No. 1 GREEN No. 2 GREEN No. 3 GREEN No. 4 GREEN No. 5 GREEN No. 6 GREEN No. 7 GREEN No. 8 GREEN No. 9

TEE

OUTFALL SEWER & FORCE MAIN

LEGEND

SEWERS (open cut trench)

TUNNELS

FORCE MAIN

APPROVED:
SOUTH LAGUNA SANITARY DISTRICT

Harold E. Edwards Pres. DATE June 1, 1953

SOUTH LAGUNA SANITARY DISTRICT
ORANGE COUNTY, CALIFORNIA

SEWAGE COLLECTION AND DISPOSAL SYSTEM

KEY MAP
(ALISO CREEK FORCE MAIN & OUTFALL SEWER)

DESCRIPTION | DATE | REV.

James M. Montgomery R.C.E. 5520 DATE 6-8 1953

DESIGNED BY H.R.S.
DRAWN BY P.R.
CHECKED BY J.R.F.

SCALE: 1" = 200'

JAMES M. MONTGOMERY
CONSULTING ENGINEER
15 N. OAKLAND AVE. PASADENA 1, CALIF.

SHEET 6-4
OF 4 SHEETS

APPLICATION FOR BUILDING PERMIT
DEPARTMENT OF COMMUNITY DEVELOPMENT
CITY OF LAGUNA BEACH, CA. 92651

505 FOREST AVENUE
(714) 497-0715

APPLICANT TO FILL IN INFORMATION & DECLARATIONS WITHIN RED LINES
BALLPOINT PEN ONLY.
PRINT ALL INFORMATION

8/19/93 Chuck GR

DESCRIPTION OF WORK: Elec. + Mech

ASSESSOR PARCEL NO. — —

Not Valid Unless Machine Certified

PROJECT
ADDRESS: 31104 Coast Hwy
LEGAL DESCRIPTION: LOT / BLOCK / SUBDIVISION / UNIT NO.
EXISTING USE / PROPOSED USE

VALUATION | PLAN CHECK NO. | SPEC. INSP. REQ'D. FOR ☐ CONCRETE ☐ MASONRY ☐ STRUCT. STEEL ☐ SOILS ☐ OTHER
OCC. GROUP | CONST. TYPE | OCC. LOAD | DATE

CONDITION OF SOIL AT PROJECT: ☐ UNDISTURBED ☐ COMPACTED FILL ☐ LOOSE FILL

TYPE CONST. | PERMIT NO.

USE ZONE | REQ'D SET BACKS | FRONT | RIGHT SIDE | LEFT SIDE | REAR

LAND AREA _____ SQ. FT. NO. STORIES _____
EXIST BLDG. _____ SQ. FT. CARPORT /GARAGE _____ SQ. FT. NO. UNITS ___

NEW CONSTRUCTION
GARAGE _____ SQ FT
HABITABLE _____ SQ FT DECK _____ SQ FT
MAXIMUM HEIGHT IN FEET
PARKING SPACES: REQ'D | PROVIDED

PLOT PLAN

OWNER
NAME: South Coast Water DIST TEL. NO. 499-4555
ADDRESS: 31592 WEST ST LA&BCH ZIP CODE 92677

CONTRACTOR
NAME: OWNER/BLDR
ADDRESS / TEL. NO.
CITY / ZIP CODE
STATE LIC. NO. / LIC. CLASS / CITY LIC. NO.

DESIGNER
NAME / LIC. NO.
ADDRESS / TEL. NO.
CITY / ZIP CODE

LICENSED CONTRACTORS DECLARATION: I hereby affirm that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.
Contractor's Signature

CONSTRUCTION LENDING AGENCY: I hereby affirm that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ. C)
LENDERS NAME _____
LENDERS ADDRESS _____

OWNER-BUILDER DECLARATION: I hereby affirm that I am exempt from the Contractor's License Law for the following reason:
☐ I, as owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale.
☐ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project.
☐ I am exempt under Sec. _____, B&PC for this reason _____
DATE: _____ OWNER: _____

WORKER'S COMPENSATION DECLARATION: I hereby affirm that I have a certificate of consent to self-insure, or a certificate of Workers' Compensation Insurance, or a certified copy thereof filed with the Building (Sec. 3800, Lab. C.).
Policy No. 5807-015 Insurance Company ACWA-JPIA
Applicant's Signature Linda D Jones Expiration Date 3-1-94

CERTIFICATE OF EXEMPTION FROM WORKER'S COMPENSATION INSURANCE: I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Worker's Compensation Laws of California.
Owner's or Contractor's Signature

CONTRACTOR/ OWNER & BUILDER
NAME: South Coast Water DISTRICT
ADDRESS: 31592 WEST ST CITY: LAGUNA BCH ZIP CODE: 92677

I certify that I have read this application and state that the above information is correct, and that I am the owner or the duly authorized agent of the owner. I agree to comply with all city and state laws relating to building construction. I hereby authorize representatives of the City of Laguna Beach to enter upon the above-mentioned property for inspection purposes. If, after making the Certificate of Exemption from the Worker's Compensation provisions of the Labor Code I should become subject to such provisions, I will forthwith comply. In the event I do not comply with the Workmen's Compensation law, this permit shall be deemed revoked.

SCWD SIGNATURE Linda D Jones Asst Admin DATE 8/19/93

☐ CONTRACTOR ☒ OWNER ☐ AGENT FOR CONTRACTOR ☐ AGENT FOR OWNER

YES ☐ NO ☐ WILL THE APPLICANT OR FUTURE BUILDING OCCUPANT HANDLE A HAZARDOUS MATERIAL OR A MIXTURE CONTAINING A HAZARDOUS MATERIAL EQUAL TO OR GREATER THAN THE AMOUNTS SPECIFIED ON THE HAZARDOUS MATERIALS INFORMATION GUIDE?

YES ☐ NO ☐ WILL THE INTENDED USE OF THE BUILDING BY THE APPLICANT OR FUTURE BUILDING OCCUPANT REQUIRE A PERMIT FOR CONSTRUCTION OR MODIFICATION FROM THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD)? SEE PERMITTING CHECKLIST FOR GUIDELINES.

YES ☐ NO ☐ WILL THE PROPOSED BUILDING OR MODIFIED FACILITY BE WITHIN 1000 FEET OF THE OUTER BOUNDARY OF A SCHOOL?

I HAVE READ THE HAZARDOUS MATERIAL INFORMATION GUIDE AND THE SCAQMD PERMITTING CHECKLIST. I UNDERSTAND MY REQUIREMENTS UNDER THE STATE OF CALIFORNIA HEALTH & SAFETY CODE, SECTIONS 25505, 25533, AND 25534 CONCERNING HAZARDOUS MATERIALS REPORTING.

PRINT NAME: _____ OWNER OR AUTHORIZED AGENT X _____

AN OSHA PERMIT IS REQUIRED FOR EXCAVATIONS OVER -5'0" DEEP AND DEMOLITION OR CONSTRUCTION OF STRUCTURES OVER 3 STORIES IN HEIGHT. (714) 939-0145

HAZARDOUS FIRE AREA	YES		NO	
GEOTECHNICAL REPORT REQUIRED	YES		NO	
UNDERGROUNDED - UTILITIES REQUIRED	YES		NO	
HEALTH DEPARTMENT REQUIRED	YES		NO	
PUBLIC WORKS PERMIT REQUIRED	YES		NO	

Expiration. Every permit issued by the Building Offical under the provisions of this Code shall expire by limitation and become null and void if the building or work authorized by such permit is not commenced within 180 days from the date of such permit, or if the building or work authorized by such permit is suspended or abandoned at any time after the work is commenced for a period of 180 days.

QTY.	PLUMBING PERMIT	AMT.
	EACH FIXTURE	
	EACH BUILDING SEWER	
	EACH WATER HEAT AND/OR VENT	
	EACH GAS SYSTEM 1 TO 4 OUTLETS	
	EACH GAS SYSTEM 5 OR MORE	
	EACH INSTAL., ALTER, REPAIR WATER PIPE	
	LAWN SPRINKLER SYSTEM-VACUUM BREAKER	
	ISSUANCE	
	TOTAL PLUMBING	

QTY.	MECHANICAL PERMIT	AMT.
	INSTALL FURN. DUCTS UP TO 100,000 BTU	
	OVER 100,000 BTU	
	BOILER/COMPRESSOR UP TO 3 HP	
	BOILER/COMPRESSOR 3-15 HP	
4	VENT FAN SINGLE DUCT	24.00
	EXTEND DUCTWORK	
	MECH EXHAUST - HOOD/DUCTS	
	RELOCATION OF EA FURNACE/HEATER	
	ISSUANCE	19.00
	TOTAL MECHANICAL	43.00

QTY.	ELECTRICAL PERMIT	AMT.
27	FIXTURES	8.75
32	OUTLETS	16.20
	SUBPANEL	
3	SERVICE METER	39.00
	TEMPORARY POWER	
	HABITABLE AREA SQ. FT.	
	GARAGE AREA SQ. FT.	
	ISSUANCE	19.00
	TOTAL ELECTRICAL	82.95

DR/VA APPROVED DATE
ZONING
PUBLIC WORKS
FIRE
PLANS APPROVED BY
APPROVED FOR ISSUANCE DATE

INSPECTOR

FEE SUMMARY

PLAN CHECK		
BUILDING PERMIT		
SMIP INCLUDED IN PERMIT FEE		
TOTAL ELECTRICAL 93-1403		82.95
PLUMBING		
MECHANICAL 93-3155		43.00
GRADING FEE		
BUILDING CONSTRUCTION FEE		
SEWER CONSTRUCTION FEE		
PARK FEES		
DRAINAGE FEE		
ART IN PUBLIC PLACES		
BOND AMOUNT		
WHEN PROPERLY SIGNED AND MACHINE VALIDATED THIS APPLICATION BECOMES A BUILDING PERMIT		
TOTAL FEES PAYABLE TO: CITY OF LAGUNA BEACH		125.95

PRIOR TO FINAL INSPECTION A CASHIER'S CHECK, CERTIFIED CHECK OR MONEY ORDER MUST BE DEPOSITED WITH THE CITY IN THE AMOUNT OF _____

INSPECTION RECORD CARD

COMMUNITY DEVELOPMENT, BUILDING DIVISION
City of Laguna Beach 497-3311

Job Address

Owner

Contractor

DATE

BUILDING PERMIT NO.

ELECTRIC PERMIT NO.

PLUMBING PERMIT NO.

MECHANICAL PERMIT NO.

OTHER PERMIT NO.

The following inspections must be called for by the pertinent contractor (24 hrs. in advance). No electrical wiring, plumbing heating, foundations, caissons, grout or structural members shall be covered until inspections are made by city inspection.

BUILDING	DATE	ELECTRICAL	DATE	MECHANICAL	DATE
SETBACKS					
		TEMPORARY POWER		REFRIGERATION	
FOUNDATIONS-FORMS					
		UNDERGROUND		AIR COND.	
FOOTINGS					
				HOOD	
		PARTIAL ROUGH			
REINFORCING STEEL				DUCTS/VENTS	
CAISSONS-PILES					
				HEATING	
MASONRY		ROUGH WIRING CL 8-23-93			
UNDER FLOORS/SILLS/JOISTS					
FLOOR SHEATHING		FIXTURES			
ROOF SHEATHING		FINAL ELECTRICAL OK 9-23-93		FINAL ~~ELECTRICAL~~	
		PLUMBING	DATE	PLUMBING	DATE
FRAMING					
		UNDERGROUND			
				SEWER	
		ROUGH PLUMBING		OK COVER	
				FINAL SEWER	
INSULATION		TOP OUT			
EXTERIOR LATH					
INTERIOR LATH					
		GAS			
SCRATCH COAT					
		TEST			
FINAL BLDG.				FINAL PLUMBING	

INSPECTOR'S NOTES

NOTE: Do not occupy Building until Final Approval by all Departments!

TO: MS TALLIE

FROM: S.C.W.D. 8/12/93

HERE IS THE INFORMATION REQUESTED TO OBTAIN AN ELECTRICAL PERMIT FOR THE SOUTH COAST WATER DIST. MAINTENANCE GARAGES, LOCATED AT 31104 ~~Coast~~ So. LAGUNA. IF THERE ARE ANY QUESTIONS, FEEL FREE TO CALL ME AT 714-499-2500.

THANK YOU,
JOHN BARNATT

OUTLETS - 32
FIXTURES - 23
FANS - 4
GARAGE OPENERS - 4
PANELS - 1 ADDED, 2 EXISTING

1.75
12.00

APPLICATION FOR BUILDING PERMIT
DEPARTMENT OF COMMUNITY DEVELOPMENT
CITY OF LAGUNA BEACH, CA. 92651

505 FOREST AVENUE, (714) 497-0715

APPLICANT TO FILL IN INFORMATION AND DECLARATIONS WITHIN RED LINES. USE BALLPOINT PEN ONLY.

PRINT ALL INFORMATION

DESCRIPTION OF WORK: Building permit 93-484

5002A001 07/20/93COMD4 23.40
0002

ASSESSOR PARCEL NO. — —

Not Valid Unless Machine Certified

PROJECT
ADDRESS: 31596 ~~WEST ST.~~ 31704 Coast Hwy
LEGAL DESCRIPTION: LOT | BLOCK | SUBDIVISION | UNIT NO.
EXISTING USE | PROPOSED USE

OWNER
NAME: So Coast Water District TEL. NO.
ADDRESS | ZIP CODE

CONTRACTOR
NAME: Parker Pacific
ADDRESS: 8592 Palermo Dr. TEL. NO. 714 962-7807
CITY: H.B. ZIP CODE: 92646
STATE LIC. NO.: 649187 LIC. CLASS: B-36 CITY LIC. NO.: 230498

DESIGNER
NAME | LIC. NO.
ADDRESS | TEL. NO.
CITY | ZIP CODE

VALUATION | PLAN CHECK NO. | SPEC. INSP. REQ'D. FOR ☐ CONCRETE ☐ MASONRY ☐ STRUCT. STEEL ☐ SOILS ☐ OTHER
OCC. GROUP | CONST. TYPE | OCC. LOAD | DATE

CONDITION OF SOIL AT PROJECT: ☐ UNDISTURBED ☐ COMPACTED FILL ☐ LOOSE FILL
TYPE CONST. | PERMIT NO.

USE ZONE | REQ'D SET BACKS | FRONT | RIGHT SIDE | LEFT SIDE | REAR

LAND AREA _____ SQ. FT. CARPORT /GARAGE _____ SQ. FT. NO. STORIES _____
EXIST BLDG. _____ SQ. FT. NO. UNITS _____
NEW CONSTRUCTION GARAGE _____ SQ FT
HABITABLE _____ SQ FT DECK _____ SQ FT
MAXIMUM HEIGHT IN FEET | PARKING SPACES REQ'D | PROVIDED

PLOT PLAN

LICENSED CONTRACTORS DECLARATION: I hereby affirm that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.
Contractor's Signature

CONSTRUCTION LENDING AGENCY: I hereby affirm that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ. C)
LENDERS NAME _____
LENDERS ADDRESS _____

OWNER-BUILDER DECLARATION: I hereby affirm that I am exempt from the Contractor's License Law for the following reason:
☐ I, as owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale.
☐ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project.
☐ I am exempt under Sec. _____, B&PC for this reason _____
DATE: _____ OWNER: _____

WORKER'S COMPENSATION DECLARATION: I hereby affirm that I have a certificate of consent to self-insure, or a certificate of Workers' Compensation Insurance, or a certified copy thereof filed with the Building (Sec. 3800, Lab. C.)
Policy No. 1315043 Insurance Company STATE FUND.
Applicant's Signature Expiration Date 4/1/94

CERTIFICATE OF EXEMPTION FROM WORKER'S COMPENSATION INSURANCE: I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Worker's Compensation Laws of California.
Owner's or Contractor's Signature

CONTRACTOR/ OWNER & BUILDER
NAME: Parker Pacific
ADDRESS: 8592 Palermo Dr. CITY: H.B. ZIP CODE: 92646

I certify that I have read this application and state that the above information is correct, and that I am the owner or the duly authorized agent of the owner. I agree to comply with all city and state laws relating to building construction. I hereby authorize representatives of the City of Laguna Beach to enter upon the above-mentioned property for inspection purposes. If, after making the Certificate of Exemption from the Worker's Compensation provisions of the Labor Code I should become subject to such provisions, I will forthwith comply. In the event I do not comply with the Workmen's Compensation law, this permit shall be deemed revoked.

SIGNATURE Joel Parker DATE 6-25-93
☒ CONTRACTOR ☐ OWNER ☐ AGENT FOR CONTRACTOR ☐ AGENT FOR OWNER

YES ☐ NO ☐ WILL THE APPLICANT OR FUTURE BUILDING OCCUPANT HANDLE A HAZARDOUS MATERIAL OR A MIXTURE CONTAINING A HAZARDOUS MATERIAL EQUAL TO OR GREATER THAN THE AMOUNTS SPECIFIED ON THE HAZARDOUS MATERIALS INFORMATION GUIDE?

YES ☐ NO ☐ WILL THE INTENDED USE OF THE BUILDING BY THE APPLICANT OR FUTURE BUILDING OCCUPANT REQUIRE A PERMIT FOR CONSTRUCTION OR MODIFICATION FROM THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD)? SEE PERMITTING CHECKLIST FOR GUIDELINES.

PRINT NAME: _____

YES ☐ NO ☐ WILL THE PROPOSED BUILDING OR MODIFIED FACILITY BE WITHIN 1000 FEET OF THE OUTER BOUNDARY OF A SCHOOL?

I HAVE READ THE HAZARDOUS MATERIAL INFORMATION GUIDE AND THE SCAQMD PERMITTING CHECKLIST. I UNDERSTAND MY REQUIREMENTS UNDER THE STATE OF CALIFORNIA HEALTH & SAFETY CODE, SECTIONS 25505, 25533, AND 25534 CONCERNING HAZARDOUS MATERIALS REPORTING.

OWNER OR AUTHORIZED AGENT X _____

AN OSHA PERMIT IS REQUIRED FOR EXCAVATIONS OVER -5'0" DEEP AND DEMOLITION OR CONSTRUCTION OF STRUCTURES OVER 3 STORIES IN HEIGHT. (714) 939-0145

HAZARDOUS FIRE AREA	YES		NO	
GEOTECHNICAL REPORT REQUIRED	YES		NO	
UNDERGROUNDED - UTILITIES REQUIRED	YES		NO	
HEALTH DEPARTMENT REQUIRED	YES		NO	
PUBLIC WORKS PERMIT REQUIRED	YES		NO	

Expiration. Every permit issued by the Building Offical under the provisions of this Code shall expire by limitation and become null and void if the building or work authorized by such permit is not commenced within 180 days from the date of such permit, or if the building or work authorized by such permit is suspended or abandoned at any time after the work is commenced for a period of 180 days.

QTY.	PLUMBING PERMIT	AMT.
2	EACH FIXTURE	4.40
	EACH BUILDING SEWER	
	EACH WATER HEAT AND/OR VENT	
	EACH GAS SYSTEM 1 TO 4 OUTLETS	
	EACH GAS SYSTEM 5 OR MORE	
	EACH INSTAL., ALTER, REPAIR WATER PIPE	
	LAWN SPRINKLER SYSTEM-VACUUM BREAKER	
	ISSUANCE	19.00
	TOTAL PLUMBING	$ 23.40

QTY.	MECHANICAL PERMIT	AMT.
	INSTALL FURN. DUCTS UP TO 100,000 BTU	
	OVER 100,000 BTU	
	BOILER/COMPRESSOR UP TO 3 HP	
	BOILER/COMPRESSOR 3-15 HP	
	VENT FAN SINGLE DUCT	
	EXTEND DUCTWORK	
	MECH EXHAUST - HOOD/DUCTS	
	RELOCATION OF EA FURNACE/HEATER	
	ISSUANCE	
	TOTAL MECHANICAL	

QTY.	ELECTRICAL PERMIT	AMT.
	FIXTURES	
	OUTLETS	
	SUBPANEL	
	SERVICE METER	
	TEMPORARY POWER	
	HABITABLE AREA SQ FT	
	GARAGE AREA SQ FT	
	ISSUANCE	
	TOTAL ELECTRICAL	

DR/VA APPROVED DATE
ZONING
PUBLIC WORKS
FIRE
PLANS APPROVED BY
APPROVED FOR ISSUANCE DATE

FEE SUMMARY

PLAN CHECK	
BUILDING PERMIT	
SMIP INCLUDED IN PERMIT FEE	
TOTAL ELECTRICAL	
PLUMBING 93-2188	23.40
MECHANICAL	
GRADING FEE	
BUILDING CONSTRUCTION FEE	
SEWER CONSTRUCTION FEE	
PARK FEES	
DRAINAGE FEE	
ART IN PUBLIC PLACES	
BOND AMOUNT	
WHEN PROPERLY SIGNED AND MACHINE VALIDATED THIS APPLICATION BECOMES A BUILDING PERMIT	
TOTAL FEES PAYABLE TO: CITY OF LAGUNA BEACH	$ 23.40

PRIOR TO FINAL INSPECTION A CASHIER'S CHECK, CERTIFIED CHECK OR MONEY ORDER MUST BE DEPOSITED WITH THE CITY IN THE AMOUNT OF _____

INSPECTOR

INSPECTION RECORD CARD

Job Address

COMMUNITY DEVELOPMENT, BUILDING DIVISION
City of Laguna Beach 497-3311

BUILDING PERMIT NO.

ELECTRIC PERMIT NO.

PLUMBING PERMIT NO.

MECHANICAL PERMIT NO.

OTHER PERMIT NO.

Owner

Contractor

DATE

The following inspections must be called for by the pertinent contractor (24 hrs. in advance). No electrical wiring, plumbing, heating, foundations, caissons, grout or structural members shall be covered until inspections are made by city inspection.

BUILDING	DATE	ELECTRICAL	DATE	MECHANICAL	DATE
SETBACKS					
		TEMPORARY POWER		REFRIGERATION	
FOUNDATIONS-FORMS					
		UNDERGROUND		AIR COND.	
FOOTINGS					
				HOOD	
		PARTIAL ROUGH			
REINFORCING STEEL				DUCTS/VENTS	
CAISSONS-PILES					
				HEATING	
MASONRY		ROUGH WIRING			
UNDER FLOORS/SILLS/JOISTS					
FLOOR SHEATHING		FIXTURES			
ROOF SHEATHING		FINAL ELECTRICAL		FINAL ELECTRICAL	
		PLUMBING	DATE	PLUMBING	DATE
FRAMING					
		UNDERGROUND			
				SEWER	
		ROUGH PLUMBING		OK COVER	
				FINAL SEWER	
INSULATION		TOP OUT			
EXTERIOR LATH					
INTERIOR LATH					
		GAS			
SCRATCH COAT					
		TEST			
FINAL BLDG.				FINAL PLUMBING	OK 9-23-93

INSPECTOR'S NOTES

NOTE: Do not occupy Building until Final Approval by all Departments!

DANIEL COMMERFORD INSPECTION SERVICE
18031 DEBI LANE
YORBA LINDA, CA 92686
(714) 996-7593
FAX 714-996-2946

DEPT. OF BLDG. & SAFETY
CITY OF LAGUNA Beach

SPECIAL INSPECTION REPORT

JUL 1993

LONG DIVISION

Building Permit No. 93-484 Job No. _____ Date 6-18-93

Job Identification / Address So. Coast Water Dist. Remodel 31104 Coast Hwy.

General Contractor / Address Burge Corp 33041 Calle Aviador "H", San Juan Cap.

Sub-Contractor / Address N/A

Structural Engineer / Address George Gouvis 3848 Campus Dr. #220, Newport Bch

TYPE OF WORK: REINFORCED CONCRETE ___ MASONRY ___ HI-TENSILE BOLTING ___

PRESTRESSED CONCRETE ___ WELDING ___ GYPSUM CONCRETE ___

WELDER	RECEIPT NUMBER	WELDER	RECEIPT NUMBER

DATE OF INSPECTION	DESCRIPTION OF WORK INSPECTED:
6-18	Observed installation of Anchor w/Epoxy. - 4ea HD2, 4ea HD7 + 2 HD6a. Det 2/SD2, Also Dowells @ front (East) side of Bldg @ existing footing. Det 3/SP2. All work is complete to plan, specs + codes.

HOURS

Date	Reg.	O.T.	TIME IN	TIME OUT	Mileage	Code	Initials
6-18	4		6:00	9:00			

All inspections based on a minimum of 4 hours & over 4 hours - 8 hour minimum. In addition, any inspection extending past noon hour will be an 8 hour minimum.

ATTORNEY'S FEES - If any action at law or in equity is brought to enforce or interpret the terms of this Contract, the prevailing party shall be entitled to reasonable attorney's fees, costs and necessary disbursements in addition to any other relief to which such party may be entitled.

CERTIFICATE OF COMPLIANCE

Registered LA Co Deputy Building Inspector's certificate Signed by Inspector _____
I.D. NO. 065 has been filed and it states that the above work was inspected by him and complies with the provisions of the Building Code applicable thereto.

Respectfully Submitted

Approved by: _____ Project Superintendent By _____ Daniel Commerford Inspection

GeoFirm
801 Glenneyre St. • Suite F • Laguna Beach • CA 92651
(714) 494-2122 • FAX (714) 497-0270

FIELD MEMORANDUM

TO: South Coast Water District
C/O Burge Corp.

Date 6/16/93

Project No.

Project Name SoCoast WD / Maintenance Bldg

Grading Permit No.

Tract No.

Comments:

Observed foundation excavations for westerly wall of office and part footing for (within) Bay 4. The foundation excavations have been constructed into cemented hard bedrock materials. The excavations are considered suitable from a geotechnical viewpoint and are approved for placement of steel + concrete.

Loose soils beneath proposed steps at lunchroom entry (so. side of Bldg) should be removed to expose firm soils prior to placement of concrete.

BY: Michael B. Clutch EG 1664

NOTE: If you do not understand or disagree with any information presented on this form, please contact our office immediately.

Sheet 1 of 1 sheets. Received by:

APPLICATION FOR BUILDING PERMIT
DEPARTMENT OF COMMUNITY DEVELOPMENT
CITY OF LAGUNA BEACH, CA. 92651

505 FOREST AVENUE

(714) 497-3311

APPLICANT TO FILL IN INFORMATION AND DECLARATIONS WITHIN RED LINES. USE BALLPOINT PEN ONLY.

PRINT ALL INFORMATION

DESCRIPTION OF WORK: RECONSTRUCTION OF FIRE DAMAGED AREA

3728A001 06/17/93COMD4 990.00
0001

ASSESSOR PARCEL NO. 056-240-61

Not Valid Unless Machine Certified

PROJECT

ADDRESS: 31104 COAST HWY SO. LAGUNA

LEGAL DESCRIPTION: LOT | BLOCK | SUBDIVISION | UNIT NO.

EXISTING USE | PROPOSED USE

VALUATION: 130,000

PLAN CHECK NO.: 93-135

SPEC. INSP. REQ'D. FOR: ☐ CONCRETE ☐ MASONRY ☐ STRUCT. STEEL ☐ SOILS ☐ OTHER

OCC. GROUP | OCC. LOAD | DATE

CONDITION OF SOIL AT PROJECT: ☐ UNDISTURBED ☐ COMPACTED FILL ☐ LOOSE FILL

TYPE CONST. | PERMIT NO.: 93-484

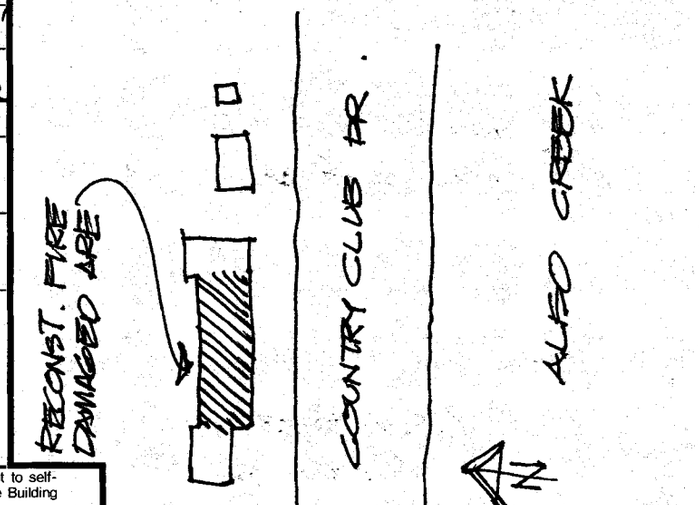
USE ZONE | REQ'D SET BACKS | FRONT | RIGHT SIDE | LEFT SIDE | REAR

LAND AREA _____ SQ. FT. | NO. STORIES _____

EXIST BLDG. _____ SQ. FT. | CARPORT /GARAGE _____ SQ. FT. | NO. UNITS _____

NEW CONSTRUCTION | GARAGE _____ SQ FT | HABITABLE _____ SQ FT | DECK _____ SQ FT | MAXIMUM HEIGHT IN FEET | PARKING SPACES REQ'D | PARKING SPACES PROVIDED

PLOT PLAN



OWNER

NAME: S. COAST WATER DISTRICT | TEL. NO. 499-4555

ADDRESS: P.O. BOX 30205 LAG. NIG. | ZIP CODE 92607-0205

CONTRACTOR

NAME: BURGE CORP

ADDRESS: 30047 CALLE AVIADOR | TEL. NO. 493-8960

CITY: SAN JUAN CAPO. | ZIP CODE 92675

STATE LIC. NO. 335884 | LIC. CLASS B | CITY LIC. NO. 105864

DESIGNER

NAME: M. SKENDERIAN | LIC. NO. C5703

ADDRESS: 2094 S. COAST HWY #3 | TEL. NO. 497-3374

CITY: LAGUNA BCH | ZIP CODE 92651

LICENSED CONTRACTORS DECLARATION: I hereby affirm that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

Contractor's Signature

CONSTRUCTION LENDING AGENCY: I hereby affirm that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ. C)

LENDERS NAME _____

LENDERS ADDRESS _____

OWNER-BUILDER DECLARATION: I hereby affirm that I am exempt from the Contractor's License Law for the following reason:

☐ I, as owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale.

☐ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project.

☐ I am exempt under Sec. _____, B&PC for this reason _____

DATE: _____ OWNER: _____

WORKER'S COMPENSATION DECLARATION: I hereby affirm that I have a certificate of consent to self-insure, or a certificate of Workers' Compensation Insurance, or a certified copy thereof filed with the Building (Sec. 3800, Lab. C.).

Policy No. WC4076044 Insurance Company General Expiration Date 7-1-93

Applicant's Signature

CERTIFICATE OF EXEMPTION FROM WORKER'S COMPENSATION INSURANCE: I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Worker's Compensation Laws of California.

Owner's or Contractor's Signature

APPLICANT

NAME: MORRIS SKENDERIAN & ASSOC.

ADDRESS | CITY | ZIP CODE

I certify that I have read this application and state that the above information is correct, and that I am the owner or the duly authorized agent of the owner. I agree to comply with all city and state laws relating to building construction. I hereby authorize representatives of the City of Laguna Beach to enter upon the above-mentioned property for inspection purposes. If, after making the Certificate of Exemption from the Worker's Compensation provisions of the Labor Code I should become subject to such provisions, I will forthwith comply. In the event I do not comply with the Workmen's Compensation law, this permit shall be deemed revoked.

SIGNATURE X _____ DATE 5-19-93

☐ CONTRACTOR ☐ OWNER ☐ AGENT FOR CONTRACTOR ☑ AGENT FOR OWNER

*GEO MEMO REQ'D IF NEW FTGS REQ'D

AN OSHA PERMIT IS REQUIRED FOR EXCAVATIONS OVER -5'0" DEEP AND DEMOLITION OR CONSTRUCTION OF STRUCTURES OVER 3 STORIES IN HEIGHT.

HAZARDOUS FIRE AREA	YES	X	NO	
GEOTECHNICAL REPORT REQUIRED *	YES	X	NO	
UNDERGROUNDED - UTILITIES REQUIRED	YES		NO	X
HEALTH DEPARTMENT REQUIRED	YES		NO	X
PUBLIC WORKS PERMIT REQUIRED	YES		NO	X

Expiration. Every permit issued by the Building Offical under the provisions of this Code shall expire by limitation and become null and void if the building or work authorized by such permit is not commenced within 180 days from the date of such permit, or if the building or work authorized by such permit is suspended or abandoned at any time after the work is commenced for a period of 180 days.

QTY.	PLUMBING PERMIT	AMT.
	EACH FIXTURE	
	EACH BUILDING SEWER	
	EACH WATER HEAT AND/OR VENT	
	EACH GAS SYSTEM 1 TO 4 OUTLETS	
	EACH GAS SYSTEM 5 OR MORE	
	EACH INSTAL., ALTER, REPAIR WATER PIPE	
	LAWN SPRINKLER SYSTEM-VACUUM BREAKER	
	ISSUANCE	
	TOTAL PLUMBING	

QTY.	MECHANICAL PERMIT	AMT.
	INSTALL FURN. DUCTS UP TO 100,000 BTU	
	OVER 100,000 BTU	
	BOILER/COMPRESSOR UP TO 3 HP	
	BOILER/COMPRESSOR 3-15 HP	
	VENT FAN SINGLE DUCT	
	EXTEND DUCTWORK	
	MECH EXHAUST - HOOD/DUCTS	
	RELOCATION OF EA FURNACE/HEATER	
	ISSUANCE	
	TOTAL MECHANICAL	

QTY.	ELECTRICAL PERMIT	AMT.
	FIXTURES	
	OUTLETS	
	SUBPANEL	
	SERVICE METER	
	TEMPORARY POWER	
	HABITABLE AREA SQ. FT.	
	GARAGE AREA SQ. FT.	
	ISSUANCE	
	TOTAL ELECTRICAL	

DR/VA APPROVED _____ DATE 5/19/93

ZONING _____ 5/19/93

PUBLIC WORKS _____

FIRE _____

PLANS APPROVED BY GUSTAFSON/GIHOSN 6/16/93

APPROVED FOR ISSUANCE _____ DATE

John Gustafson 6/16/93

INSPECTOR

FEE SUMMARY

PLAN CHECK	635.00
BUILDING PERMIT	977.00
TOTAL ELECTRICAL	
PLUMBING	
MECHANICAL	
SMIP INCLUDED IN PERMIT FEE	13.00
BUILDING CONSTRUCTION FEE	
SEWER CONSTRUCTION FEE	
PARK FEES	
GRADING FEE	
DRAINAGE FEE	
ART IN PUBLIC PLACES	
BOND AMOUNT	
PUBLIC WORKS	
TOTAL FEES PAYABLE TO: CITY OF LAGUNA BEACH	990.00

PRIOR TO FINAL INSPECTION A CASHIER'S CHECK, CERTIFIED CHECK OR MONEY ORDER MUST BE DEPOSITED WITH THE CITY IN THE AMOUNT OF _____

INSPECTION RECORD CARD

Job Address

COMMUNITY DEVEPLOPMENT, BUILDING DIVISION
City of Laguna Beach 497-3311

BUILDING PERMIT NO.

ELECTRIC PERMIT NO.

PLUMBING PERMIT NO.

MECHANICAL PERMIT NO.

OTHER PERMIT NO.

Owner

Contractor

DATE

The following inspections must be called for by the pertinent contractor (24 hrs. in advance). No electrical wiring, plumbing, heating, foundations, caissons, grout or structural members shall be covered until inspections are made by city inspection.

BUILDING	DATE	ELECTRICAL	DATE	MECHANICAL	DATE
SETBACKS					
		TEMPORARY POWER		REFRIGERATION	
FOUNDATIONS-FORMS					
		UNDERGROUND		AIR COND.	
FOOTINGS					
				HOOD	
		PARTIAL ROUGH			
REINFORCING STEEL				DUCTS/VENTS	
CAISSONS-PILES					
				HEATING	
MASONRY		ROUGH WIRING			
UNDER FLOORS/SILLS/JOISTS					
FLOOR SHEATHING		FIXTURES			
ROOF SHEATHING	OK 7-27-93				
		FINAL ELECTRICAL		FINAL MECHANICAL	
		PLUMBING	DATE	PLUMBING	DATE
FRAMING	OK 7-27-93				
		UNDERGROUND			
				SEWER	
		ROUGH PLUMBING		OK COVER	
				FINAL SEWER	
INSULATION		TOP OUT			
EXTERIOR LATH	OK 7-30-93				
INTERIOR LATH	OK 7-30-93				
		GAS			
SCRATCH COAT	OK 8-6-93				
		TEST			
FINAL BLDG	OK 9-23-93			FINAL PLUMBING	

INSPECTOR'S NOTES

Final Approved 9-23-93

NOTE: Do not occupy Building until Final Approval by all Departments!

APPLICATION FOR BUILDING PERMIT
DEPARTMENT OF COMMUNITY DEVELOPMENT
CITY OF LAGUNA BEACH, CA. 92651

505 FOREST AVENUE, [redacted]

(714) 497-0715

APPLICANT TO FILL IN INFORMATION AND DECLARATIONS WITHIN RED LINES. USE BALLPOINT PEN ONLY.

PRINT ALL INFORMATION

DESCRIPTION OF WORK: DEMOLITION / FIRE DAMAGE

So. Coast Water District

ASSESSOR PARCEL NO. — —

3326A001 06/07/93COMD4 102.50
0002
Not Valid Unless Machine Certified

PROJECT

ADDRESS: 31104 Coast Hwy.

LEGAL DESCRIPTION: LOT / BLOCK / SUBDIVISION / UNIT NO.

EXISTING USE / PROPOSED USE

VALUATION: 5000.

PLAN CHECK NO.

OCC. GROUP / CONST. TYPE / OCC. LOAD. / DATE: 6/7/93

SPEC. INSP. REQ'D. FOR: ☐ CONCRETE ☐ MASONRY ☐ STRUCT STEEL ☐ SOILS ☐ OTHER

CONDITION OF SOIL AT PROJECT: ☐ UNDISTURBED ☐ COMPACTED FILL ☐ LOOSE FILL

TYPE CONST.: V

PERMIT NO.: 93-463

OWNER

NAME / TEL. NO.

ADDRESS / ZIP CODE

CONTRACTOR

NAME: Barge Corp

ADDRESS: 33047 #B Calle Aviador TEL. NO.: 714 493 8560

CITY: San Juan ZIP CODE: 92675

STATE LIC. NO.: 335584 LIC. CLASS: B 1 CITY LIC. NO.: 105864

DESIGNER

NAME: Skendarian LIC. NO.

ADDRESS / TEL. NO.

CITY / ZIP CODE

USE ZONE	REQ'D SET BACKS	FRONT	RIGHT SIDE	LEFT SIDE	REAR

LAND AREA _____ SQ. FT. NO. STORIES _____

EXIST BLDG. _____ SQ. FT. CARPORT /GARAGE _____ SQ. FT. NO. UNITS ___

NEW CONSTRUCTION: GARAGE _____ SQ FT; HABITABLE _____ SQ FT; DECK _____ SQ FT

MAXIMUM HEIGHT IN FEET

PARKING SPACES: REQ'D / PROVIDED

PLOT PLAN

Limited to Demo work only.

LICENSED CONTRACTORS DECLARATION: I hereby affirm that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

Contractor's Signature

CONSTRUCTION LENDING AGENCY: I hereby affirm that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ. C)

LENDERS NAME_____

LENDERS ADDRESS _____

OWNER-BUILDER DECLARATION: I hereby affirm that I am exempt from the Contractor's License Law for the following reason:

☐ I, as owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale.

☐ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project.

☐ I am exempt under Sec. _____, B&PC for this reason _____

DATE: _____ OWNER: _____

YES ☐ NO ☐ WILL THE APPLICANT OR FUTURE BUILDING OCCUPANT HANDLE A HAZARDOUS MATERIAL OR A MIXTURE CONTAINING A HAZARDOUS MATERIAL EQUAL TO OR GREATER THAN THE AMOUNTS SPECIFIED ON THE HAZARDOUS MATERIALS INFORMATION GUIDE?

YES ☐ NO ☐ WILL THE INTENDED USE OF THE BUILDING BY THE APPLICANT OR FUTURE BUILDING OCCUPANT REQUIRE A PERMIT FOR CONSTRUCTION OR MODIFICATION FROM THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD)? SEE PERMITTING CHECKLIST FOR GUIDELINES.

PRINT NAME: _____

YES ☐ NO ☐ WILL THE PROPOSED BUILDING OR MODIFIED FACILITY BE WITHIN 1000 FEET OF THE OUTER BOUNDARY OF A SCHOOL?

I HAVE READ THE HAZARDOUS MATERIAL INFORMATION GUIDE AND THE SCAQMD PERMITTING CHECKLIST. I UNDERSTAND MY REQUIREMENTS UNDER THE STATE OF CALIFORNIA HEALTH & SAFETY CODE, SECTIONS 25505, 25533, AND 26534 CONCERNING HAZARDOUS MATERIALS REPORTING.

OWNER OR AUTHORIZED AGENT X _____

WORKER'S COMPENSATION DECLARATION: I hereby affirm that I have a certificate of consent to self-insure, or a certificate of Workers' Compensation Insurance, or a certified copy thereof filed with the Building (Sec. 3800, Lab. C)

Policy No. WC016847 Insurance Company: General

Expiration Date: 7-1-93

Applicant's Signature

CERTIFICATE OF EXEMPTION FROM WORKER'S COMPENSATION INSURANCE: I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Worker's Compensation Laws of California.

Owner's or Contractor's Signature

CONTRACTOR/ OWNER & BUILDER

NAME: Barge Corp

ADDRESS: 33047 #B Calle Aviador CITY: SJ ZIP CODE: 92675

I certify that I have read this application and state that the above information is correct, and that I am the owner or the duly authorized agent of the owner. I agree to comply with all city and state laws relating to building construction. I hereby authorize representatives of the City of Laguna Beach to enter upon the above-mentioned property for inspection purposes. If, after making the Certificate of Exemption from the Worker's Compensation provisions of the Labor Code I should become subject to such provisions, I will forthwith comply. In the event I do not comply with the Workmen's Compensation law, this permit shall be deemed revoked.

SIGNATURE _____ DATE 6-4-93

☒ CONTRACTOR ☐ OWNER ☐ AGENT FOR CONTRACTOR ☐ AGENT FOR OWNER

AN OSHA PERMIT IS REQUIRED FOR EXCAVATIONS OVER -5'0" DEEP AND DEMOLITION OR CONSTRUCTION OF STRUCTURES OVER 3 STORIES IN HEIGHT. (714) 939-0145

HAZARDOUS FIRE AREA	YES	X	NO	
GEOTECHNICAL REPORT REQUIRED	YES		NO	
UNDERGROUNDED - UTILITIES REQUIRED	YES		NO	
HEALTH DEPARTMENT REQUIRED	YES		NO	
PUBLIC WORKS PERMIT REQUIRED	YES		NO	

Expiration. Every permit issued by the Building Offical under the provisions of this Code shall expire by limitation and become null and void if the building or work authorized by such permit is not commenced within 180 days from the date of such permit, or if the building or work authorized by such permit is suspended or abandoned at any time after the work is commenced for a period of 180 days.

QTY.	PLUMBING PERMIT	AMT.
	EACH FIXTURE	
	EACH BUILDING SEWER	
	EACH WATER HEAT AND/OR VENT	
	EACH GAS SYSTEM 1 TO 4 OUTLETS	
	EACH GAS SYSTEM 5 OR MORE	
	EACH INSTAL., ALTER, REPAIR WATER PIPE	
	LAWN SPRINKLER SYSTEM-VACUUM BREAKER	
	ISSUANCE	
	TOTAL PLUMBING	

QTY.	MECHANICAL PERMIT	AMT.
	INSTALL FURN. DUCTS UP TO 100,000 BTU	
	OVER 100,000 BTU	
	BOILER/COMPRESSOR UP TO 3 HP	
	BOILER/COMPRESSOR 3-15 HP	
	VENT FAN SINGLE DUCT	
	EXTEND DUCTWORK	
	MECH EXHAUST - HOOD/DUCTS	
	RELOCATION OF EA FURNACE/HEATER	
	ISSUANCE	
	TOTAL MECHANICAL	

QTY.	ELECTRICAL PERMIT	AMT.
	FIXTURES	
	OUTLETS	
	SUBPANEL	
	SERVICE METER	
	TEMPORARY POWER	
	HABITABLE AREA SQ. FT.	
	GARAGE AREA SQ. FT.	
	ISSUANCE	
	TOTAL ELECTRICAL	

DR/VA APPROVED	DATE
ZONING	
PUBLIC WORKS	
FIRE	
PLANS APPROVED BY	D. Whorm 6/7/93
APPROVED FOR ISSUANCE	DATE

6/9/93 on 6/7/93

INSPECTOR

FEE SUMMARY

PLAN CHECK	
BUILDING PERMIT	102.00
SMIP INCLUDED IN PERMIT FEE	50
TOTAL ELECTRICAL	
PLUMBING	
MECHANICAL	
GRADING FEE	
BUILDING CONSTRUCTION FEE	
SEWER CONSTRUCTION FEE	
PARK FEES	
DRAINAGE FEE	
ART IN PUBLIC PLACES	
BOND AMOUNT	
WHEN PROPERLY SIGNED AND MACHINE VALIDATED THIS APPLICATION BECOMES A BUILDING PERMIT	
TOTAL FEES PAYABLE TO CITY OF LAGUNA BEACH	102.50

PRIOR TO FINAL INSPECTION A CASHIER'S CHECK, CERTIFIED CHECK OR MONEY ORDER MUST BE DEPOSITED WITH THE CITY IN THE AMOUNT OF _____

INSPECTION RECORD CARD

Job Address

COMMUNITY DEVELOPMENT, BUILDING DIVISION
City of Laguna Beach 497-3311

BUILDING PERMIT NO. _____

ELECTRIC PERMIT NO. _____

PLUMBING PERMIT NO. _____

MECHANICAL PERMIT NO. _____

OTHER PERMIT NO.

Owner _____

Contractor _____

DATE

The following inspections must be called for by the pertinent contractor (24 hrs. in advance). No electrical wiring, plumbing, heating, foundations, caissons, grout or structural members shall be covered until inspections are made by city inspection.

BUILDING	DATE	ELECTRICAL	DATE	MECHANICAL	DATE
SETBACKS					
		TEMPORARY POWER		REFRIGERATION	
FOUNDATIONS-FORMS	CK 6-21-93				
		UNDERGROUND		AIR COND.	
FOOTINGS					
				HOOD	
		PARTIAL ROUGH			
REINFORCING STEEL				DUCTS/VENTS	
CAISSONS-PILES					
				HEATING	
MASONRY		ROUGH WIRING			
UNDER FLOORS/SILLS/JOISTS					
FLOOR SHEATHING		FIXTURES			
ROOF SHEATHING		FINAL ELECTRICAL		FINAL ELECTRICAL	
		PLUMBING	**DATE**	**PLUMBING**	**DATE**
FRAMING					
		UNDERGROUND			
				SEWER	
		ROUGH PLUMBING		OK COVER	
				FINAL SEWER	
INSULATION		TOP OUT			
EXTERIOR LATH					
INTERIOR LATH					
		GAS			
SCRATCH COAT					
		TEST			
FINAL BLDG.	CK 9-23-93			FINAL PLUMBING	

INSPECTOR'S NOTES

(1) H.D.S ok To cover @ entry office wall & bathroom wall. CK 7-7-93

NOTE: Do not occupy Building until Final Approval by all Departments!

BUILDING DEPARTMENT CORRECTIONS

ARCHITECT: Morris Skenderian & Associates
DATE: 6/3/93
DEVELOPER: South Coast Water District

CITY: Laguna Beach
FILE NO.: 1774
PLAN CHECK NO.: 93-135

ITEM	REPLY
9.	Please reference alternate detail 15/SD1 over Bay 5 which utilizes plywood shear material in lieu of a special designed drag truss to transfer shear loads.
14.	Please reference alternate detail 17/SD2 between bays 2 and 3 for a full height shear wall in place of a special designed truss to transfer shear loads.

RECEIVED
JUN 9 1993
BUILDING DIVISION

THE GEORGE GOUVIS COMPANY, INC.

REVISIONS

SHEET NUMBER

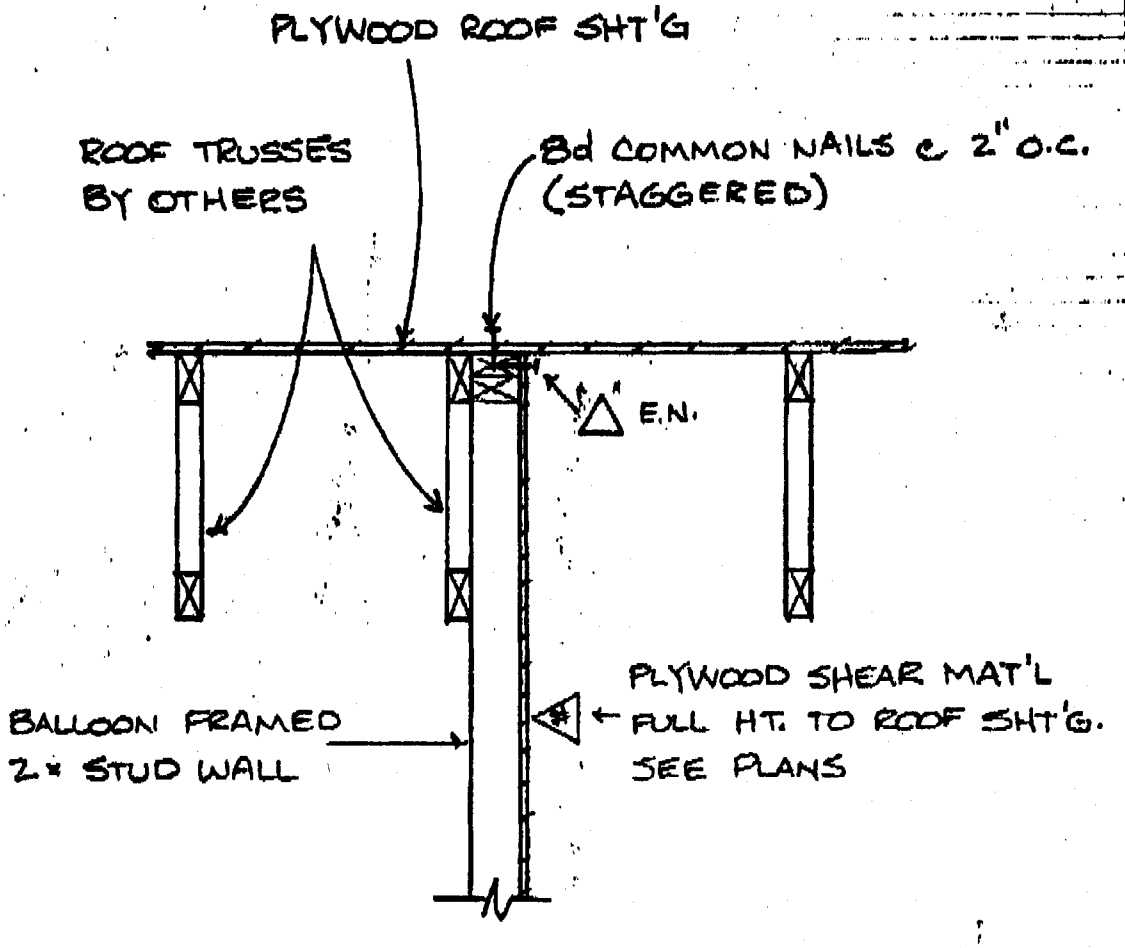
FILE NUMBER 1774

DATE 6-8-93

DETAILS

Structural Engineering & Consulting

SOUTH COAST WATER DISTRICT



1 BLDG. DEPT. CORR. ITEM 14, PLAN CHECK NO. 93-135

17/502 ALTERNATE

THE GEORGE GOUVIS COMPANY, INC.

REVISIONS

SHEET NUMBER

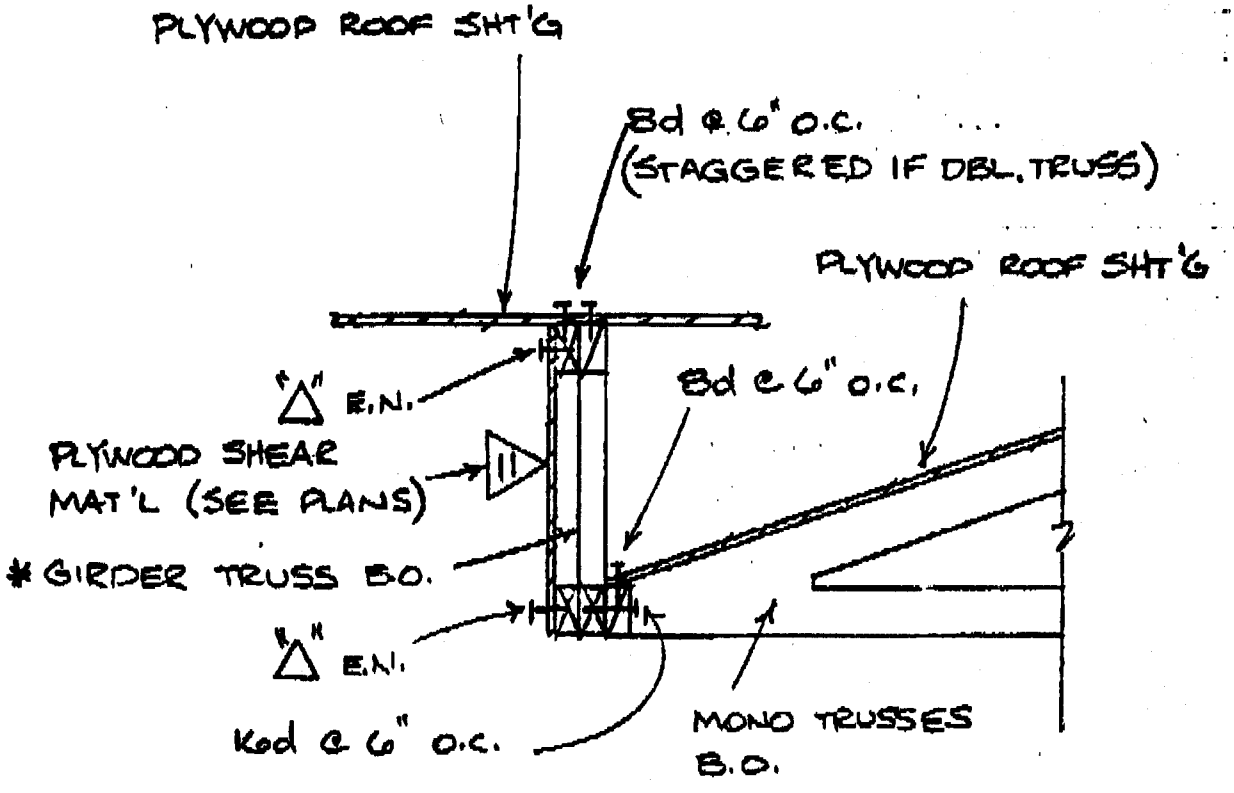
FILE NUMBER 1774

DATE 6-8-93

DETAILS

Structural Engineering & Consulting

SOUTH COAST WATER DISTRICT



* IF DBL. TRUSS: NAIL TOP AND BOTTOM CHORDS TOGETHER W/ MIN. 10d" @ 6" O.C. (TRUSS MFR. MAY REQUIRE TIGHTER SPACING).

Δ1 BLDG. DEPT. CORR. ITEM 9, PLAN CHECK NO. 93-135.

15/SD1 ALTERNATE

BUILDING DEPARTMENT CORRECTIONS

ARCHITECT: Morris Skenderian & Associates
DATE: 6/3/93
DEVELOPER: South Coast Water District

CITY: Laguna Beach
FILE NO.: 1774
PLAN CHECK NO.: 93-135

ITEM **REPLY**

9. Roof Truss shop drawings by others have not yet been supplied to this office for review.

12. Please see note #7 added to sheet S-1 of the plans.

13. Please see note added to detail 20/SD-2. Also see sheet GN-1 for ICBO approved epoxy systems (third column on that sheet).

14. Special designed roof truss to transfer load above shear wall between bays 2 & 3. See response to item #9.

15. Plywood shear material to be installed prior to wall furr-out. See note added to sheet S-2 at that location.

16. Error in wall lengths in calculation packet is actually on the conservative side. Wall length summation is actually 6.0 + 6.5 + 5.0 + 5.0 = 22.5'. No change to plans or calculations have been made.

DEPARTMENT OF COMMUNITY DEVELOPMENT
CITY OF LAGUNA BEACH

RECEIVED OF _____ **FEE RECEIPT**

ADDRESS _____ 93-8285

2715A001 05/19/93COMD4 635.05

CITY _____ **0001**

SUBJECT ADDRESS 31104 Coast Hwy.

$_____ Park In-Lieu Fee Area_____	$_____ Design/Concept Review
$_____ Drainage In-Lieu Fee	$_____ Variance
$_____ Bldg. Construction Fee	$_____ CD/Site Development
$_____ Sewer Connection Fee	$_____ General Plan Amendment
$_____ Temporary Use Permit	$_____ Environmental Report
$_____ Conditional Use Permit	$_____ Real Property Report
$_____ Encroachment Permit	$_____ Lot Line Adjustment
$_____ Sandblasting Permit	$_____ Extension of _____
$_____ Use & Occupancy	$_____ Reinspection Fee
$_____ Zoning Plan Check	$_____ Parcel Map
$635.05 Structural Plan Check	$_____ Other _____

HEARING DATE _____ TIME _____, in City Council Chambers.

TOTAL $ 635.05 BY _____

COMMUNITY DEVELOPMENT DEPARTMENT
BUILDING DIVISION

November 18, 1992

California Coastal Commission
South Coast District Office
P.O. Box 1450
Long Beach, CA 90801

RE: City Approval for South Coast Water District project at 31104 Coast Highway

Dear Sir/Madam:

The building project at 31104 Coast Highway, for the South Coast Water district, has been determined by this Department to be exempt from the Design Review process. It is a fire damage repair project that is approved in concept by the City of Laguna Beach.

Sincerely,

Kyle Butterwick, Director
Department of Community Development

505 FOREST AVE. • LAGUNA BEACH, CA 92651 • TEL (714) 497-3311 • FAX (714) 497-5672

GeoFirm
801 Glenneyre St. • Suite F • Laguna Beach • CA 92651
(714) 494-2122 • FAX (714) 497-0270

MAY 19 1993
DING DIVISION
FILE
copy to Mike Dunbar

November 18, 1992

South Coast Water District
c/o Morris Skendarian & Associates
2094 South Coast Highway
Laguna Beach, CA 92651

Project No. 70247-00
Report No. 2-1128

Subject: Geotechnical Recommendations
for Block Wall Design & Construction
31104 Coast Highway
Laguna Beach, California

Reference: South Coast Water District Remodel Plans dated November 1992, by Morris Skendarian & Associates, Inc.

Dear Sirs:

This letter presents geotechnical recommendations for design and construction of block walls at the South Coast Water District Maintenance Facility at 31104 Coast Highway, Laguna Beach, California.

The proposed block wall locations depicted on the referenced plans are underlain primarily by alluvium, with possible localized areas underlain by fill or slopewash, and two very short segments underlain by bedrock (San Onofre Breccia).

The allowable bearing capacity, based upon footing embedment being primarily in alluvium, is 1000 pounds per square foot for footings embedded a minimum of 18 inches into competent materials. Passive resistance from possible wind loading may be developed based upon a 100 pound per cubic foot Equivalent Fluid Pressure and a friction coefficient of 0.25. As the block walls will transition across differing soil materials, and from bedrock to soil, differential wall settlement may occur. Longitudinal reinforcing steel should therefore be doubled for 10 feet in both directions from such transition areas in order to minimize the potential impact and perception.

THE
GEORGE
GOUVIS
COMPANY,
INC.

Structural Engineering & Consulting

MAY 19 1993

DING DIVISION

Client:	Morris Skenderian & Associates
File No.:	92-1774
Date:	November 17, 1992
Project:	South Coast Water District Remodel

Description: Structural calculations and structural drafting for the remodel of an existing fire damaged garage structure located adjacent to Aliso Creek in Laguna Beach, California.

Revisions: Δ

3848 Campus Drive, Suite 220 • Newport Beach, California 92660 • (714) 756-1525 • Fax (714) 756-0208

THE GEORGE GOUVIS COMPANY, INC.

REVISIONS
Δ
Δ

SHEET NUMBER 2
FILE NUMBER 1774
DATE 11/17/92

SPECIFICATIONS — **Structural Engineering & Consulting**

ROOF

PITCH	3:12
Live Load	**20.0**
Pitch Adj.	1.0
Roofing Mat'l	6.0
Sheathing	2.0
Roof Rafters	3.0*
Ceiling Joist	0.0
Drywall	2.0
Insulation	1.0
Total D.L.=	**15.0**
Total Load=	**31.0**

LL/1.25=D.L.

*Wood trusses by others

FLOOR

Live Load

D.L. of Fin. Fl.
Sheathing
Floor Joist
Drywall

Total D.L.=
Total Load=

REGISTERED PROFESSIONAL ENGINEER GEORGE A. GOUVIS II No. C29211 CIVIL STATE OF CALIFORNIA

George A. Gouvis II, RCE 29211

DATE: MAY 18 1993
EXP. DATE 3-31-95

CRITERIA: 1991 U.B.C.

TIMBER: West Coast Douglas Fir (WCDF)
2x Studs:
DF No. 2
Fb=1450 psi / 1650 psi;
Fv=95 psi; E=1.7 x 10^6 psi

2x; 4x Rafter, Ceiling & Floor Joists
Beams & Headers
DF No. 1
Fb=1500 psi / 1750 psi;
Fv=95 psi; E=1.8 x 10^6 psi
DF No. 2
Fb=1250 psi / 1450 psi;
Fv=95 psi; E=1.7 x 10^6 psi

6x or greater
Beams & Headers
DF No. 1
E=1.6 x 10^6 psi
Fb=1350 psi; Fv=85 psi
Select Structural
E=1.6 x 10^6 psi
Fb=1600 psi; Fv=85 psi

Glue Laminated
E=1.6 x 10^6 psi
Fb=2400 psi; Fv=155 psi
(indust. appearance grade - 1 1/2" ply)
SOILS REPORT BY: Assumed
ALLOWABLE BEARING: SB= 1,000 psf

CONCRETE: (Strength @ 28 days)

Foundations	f'c=2000 psi
Precast	f'c=3000 psi
Columns	f'c=3000 psi
Struct. Slabs	f'c=3000 psi

REINFORCING STEEL
Intermediate grade A-40; grade-60

STRUCTURAL STEEL

Beams	Fy=36 ksi, ASTM A-36
Columns	Fy=36 ksi, ASTM A-36
Pipe	Fy=35 ksi, Grade B types E or S, ASTM A-501

MASONRY
Hollow Concrete Units (CMU)
Type S Mortar
Grade N f'm=1350 psi
Grade N f'm=1500 psi (solid grouted)

○ ROOF RAFTERS

DL=15, LL=20
Roof Members: (Yes)/No
Fb=1450psi, E=1.7 x 10^6psi: (Yes)/No
=_____ =_____
△LL= L/360, △DL+LL=L/240: (Yes)/No

****
ROOF RAFTERS
F.N. 1774
****
BASED ON UNIFORM LOADS
TOTAL UNIF. LOAD W= 35 psf
DL= 15 psf; LL= 20 psf
Fb= 1450 psi; E= 1700000 psi
RF MEMBERS: 25% STRESS INCR.

Span Limiting Case
1-BENDING
2-DL+LL DEFL.@L/ 240
3-LL DEFL.@L/ 360

CASE	MEMBER	MAXIMUM SPAN
Spacing @ 12 inches o.c.		
2	2 x 4	8 ft.- 3 in.
2	2 x 6	13 ft.- 1 in.
2	2 x 8	17 ft.- 3 in.
2	2 x 10	22 ft.- 0 in.
2	2 x 12	26 ft.- 9 in.
2	2 x 14	31 ft.- 6 in.
Spacing @ 16 inches o.c.		
2	2 x 4	7 ft.- 6 in.
2	2 x 6	11 ft.-10 in.
2	2 x 8	15 ft.- 8 in.
2	2 x 10	20 ft.- 0 in.
2	2 x 12	24 ft.- 3 in.
2	2 x 14	28 ft.- 7 in.
Spacing @ 24 inches o.c.		
2	2 x 4	6 ft.- 7 in.
2	2 x 6	10 ft.- 4 in.
2	2 x 8	13 ft.- 8 in.
2	2 x 10	17 ft.- 5 in.
2	2 x 12	21 ft.- 3 in.
2	2 x 14	25 ft.- 0 in.

○

DL=_____, LL=_____
Roof Members: Yes/No
Fb=1450psi, E=1.7 x 10^6psi: Yes/No
=_____ =_____
△LL= L/360, △DL+LL=L/240: Yes/No
=_____ =_____

Beam #1
Ridge Beam Beam at Bay 4

6 X 18 D.F. #1
Areq'd= 76.16
Sreq'd= 262.02
Ireq'd= 2387.62
8 X 16 D.F. #1
Areq'd= 77.36
Sreq'd= 262.02
Ireq'd= 2387.62 <=5%
5.125" X 18.0" GLB
Areq'd= 41.60
Sreq'd= 154.18
Ireq'd= 2387.62

Type= 1 L= 24.0 L/360= 0.80
UNIFORM LOADS
Roof2 [27.8]x[13.00]=[361.40]
Beam DL =[48.00]

Total W1 409.40

R1 = 4912.8 Brg.A. req'd= 7.9
R2 = 4912.8 Brg.A. req'd= 7.9

TA.= 312 SF → use LL=16.0 PSF
TL= 27.8 PSF @ Roof

Beam #2
Beam at compressor door

4 X 10 D.F. #2
Areq'd= 21.26
Sreq'd= 27.53
Ireq'd= 59.21
6 X 6 D.F. #1
Areq'd= 26.75
Sreq'd= 25.49
Ireq'd= 62.91
8 X 8 D.F. #1
Areq'd= 25.15
Sreq'd= 25.49
Ireq'd= 62.91

Type= 1 L= 6.5 L/360= 0.22
UNIFORM LOADS
Roof [31.0]x[15.00]=[465.00]
Wall [10.0]x[6.50]=[65.00]
Beam DL =[13.00]

Total W1 543.00

R1 = 1764.8 Brg.A. req'd= 2.8
R2 = 1764.8 Brg.A. req'd= 2.8

Beam #3
Header at Bay 4 entry

~~4 X 16~~ D.F. #1
Areq'd= 42.39
Sreq'd= 125.65
Ireq'd= 965.97

6 X 14 D.F. #1
Areq'd= 48.15
Sreq'd= 139.62
Ireq'd= 1086.72

8 X 14 D.F. #1
Areq'd= 48.15
Sreq'd= 139.62
Ireq'd= 1086.72

Type= 1 L= 20.5 L/360= 0.68
UNIFORM LOADS

Roof	[31.0]x[8.00]	=[248.00]
Wall	[10.0]x[1.00]	=[10.00]
Beam DL		=[41.00]
	Total W1	299.00

R1 = 3064.8 Brg.A. req'd= 4.9
R2 = 3064.8 Brg.A. req'd= 4.9

Beam #4
Header at Bay 1-3

6 X 18 D.F. #1
Areq'd= 77.65
Sreq'd= 233.71
Ireq'd= 1819.07

8 X 16 D.F. #1
Areq'd= 79.12
Sreq'd= 233.71
Ireq'd= 1819.07

10 X 14 D.F. #1
Areq'd= 80.60
Sreq'd= 233.71
Ireq'd= 1819.07

Type= 1 L= 20.5 L/360= 0.68
UNIFORM LOADS

Roof	[31.0]x[14.50]	=[449.50]
Wall	[10.0]x[1.00]	=[10.00]
Beam DL		=[41.00]
	Total W1	500.50

R1 = 5130.1 Brg.A. req'd= 8.2
R2 = 5130.1 Brg.A. req'd= 8.2

ALT GLB

$A_{REQ} = 77.65\left(\frac{85}{155}\right) = 43.\text{in}^2$

$S_{REQ} = 233.71\left(\frac{1750}{2450}\right) = 129.\text{in}^3$

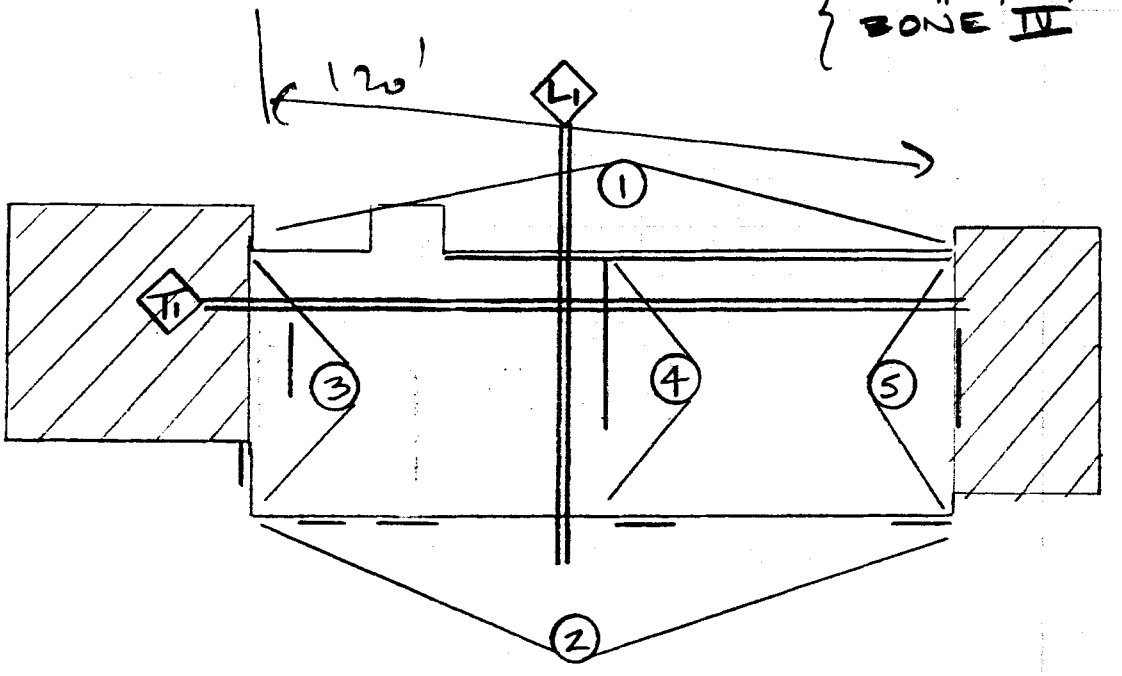
$I_{REQ} = 1819\ \text{in}^4$

$5\frac{1}{8} \times 16\frac{1}{2}$" GLB
$6\frac{3}{4} \times 15$" GLB
$C = \frac{1}{4}$"

WALL DIAGRAMS

ROOF FRMG

{ 1991 UBC
70 MPH ; EXP C
ZONE IV }



▨ = EXIST'G

SEISMIC FORCE DISTRIBUTION

$$F_x = \frac{\{\Sigma w_i\}\, w_x h_x}{\Sigma w_i h_i}$$

LEVEL	w_i (plf)	h_i (ft)	$w_i h_i$ (lbs)	F_x (plf)	LEVEL	w_i (plf)	h_i (ft)	$w_i h_i$ (lbs)	F_x (plf)
TRANSVERSE					LONGITUDINAL				

THE GEORGE GOUVIS COMPANY, INC.

REVISIONS △ △

SHEET NUMBER 7

FILE NUMBER 1774

DATE 11-17-92

SPECIFICATIONS

Structural Engineering & Consulting

ANCHOR BOLT SPACING [1]

630#/Bolt x 1.33= 835#/Bolt	1/2" Ø x 10" A.B.	
	SPACING	CAPACITY
Ⓐ	64"o.c.	156#/ft
Ⓑ	56"o.c.	179#/ft
Ⓒ	48"o.c.	209#/ft
Ⓓ	40"o.c.	250#/ft
Ⓔ	32"o.c.	313#/ft
Ⓕ	24"o.c.	418#/ft
Ⓖ	16"o.c.	628#/ft
Ⓗ	8"o.c.	1253#/ft
Ⓙ	(2-1/2"Ø)AB[2]	1670#
Ⓚ	(3-1/2"Ø)AB[2]	2505#

1. 1991 UBC Table 25F & sect. 2510(b).
2. Equally spaced.
3. All exterior wall to be secured with 1/2" Ø x 10" A.B.'s at 72"o.c. with 7" of embedment, unless otherwise noted on plans.
4. All interior walls to be secured with Hitli # DN 72 shot pins, or equivalent, at 18" o.c., unless otherwise noted on plans.
5. 5/8" Ø Hilti Kwik-Bolts (6" embed.) may replace 1/2" Ø A.B. at 1:1 ratio (1 7/8" concrete edge distance at exterior).

SEE # 1 / SD2 — SIMPSON A-35

	SPACING	SHEAR LOADS
1	64"o.c.	84#/ft
2	48"o.c.	113#/ft
3	32"o.c.	169#/ft
4	24"o.c.	225#/ft
5	16"o.c.	338#/ft
6	8"o.c.	675#/ft
7	6"o.c.	900#/ft

MULTI-STUD BEARING (ABRV. MSB)

Typical standard as alternate to solid post if noted.

BEAM	# of 2 x STUDS
4x	2
6x	4
8x	5
2x Joist	1 Per Joist

NOTES:

- U.O.N. use double floor joists below all parallel walls.
- At floor levels use solid blocking below trimmers and posts from bearing headers and beams.
- All posts or MSB shall match beam width.

TYPICAL ROOF/FLOOR SHEATHING NOTES

ROOF LEVEL:

Use 1/2 " Structural II, C-D or C-C Plywood, EXTERIOR GLUE GRADE Min. Panel Index Number (24/0), with 8d nails @ 6" o.c. - supported edges and boundaries; @ 12" o.c. in the field. (Unblocked U.O.N.)

FLOOR LEVEL:

Use / " Structural II, C-D or C-C T & G Plywood, EXTERIOR GLUE GRADE min Panel Index Number (/), with 10d nails @ 6" o.c. - supported edges and boundaries; @ 10" o.c. in the field. (Unblocked U.O.N.)

NOTE: USE COMMON WIRE NAILS

FRAMING NOTES 1991UNIFORM BUILDING CODE

Shear Panel Material UBC 1991	Sole Plate Nailing 16d Common	16d Box	Shear Capacity
1 — 5/8" Blk'd. two-ply drywall w/ 6d cooler nails @ 9" o.c. @ base ply & 8d cooler nails @ 7"o.c. @ face ply (table 47-I)	4" o.c.	3" o.c.	250 #/ft
2 — 1/2" drywall with 5d cooler nails @ 7" o.c. edge & field (table 47-I UBC, H:W 1-1/2:1)	16" o.c.	12" o.c.	100 #/ft
3 — 5/8" drywall with 6d cooler nails @ 7" o.c. edge & field.	16" o.c.	12" o.c.	115 #/ft
4 — 1/2" drywall with 5d cooler nails @ 4" o.c. edge & field.	12" o.c.	8" o.c.	125 #/ft
5 — 5/8" drywall with 6d cooler nails @ 4" o.c. edge & field.	12" o.c.	8" o.c.	145 #/ft
6 — 1/2" blocked drywall with 5d cooler nails @ 4" o.c. edge& field (table 47-1 UBC, H:W 2:1)	8" o.c.	6" o.c.	150 #/ft
7 — 5/8" blocked drywall with 6d cooler nails @ 4" o.c. edge & field.	8" o.c.	6" o.c.	175 #/ft
8 — 7/8" stucco over paper backed lath w/ 16 gauge staples at 6" o.c. at top & bottom plates, edge of shear wall and on field. (ICBO Report No. 1318, April 1991)	8" o.c.	6" o.c.	180 #/ft
9 — 7/8" stucco over paper backed lath w/ 16 gauge staples at 3" o.c. at top & bottom plates, edge of shear wall and 6" o.c. on field (ICBO Reports same as above)	4" o.c.	3" o.c.	325 #/ft
10 — 3/8" structural II, C-C or C-D plywood with 8d nails @ 6" o.c. at edges and 12" o.c. field (table 25K UBC, H:W 3-1/2:1)	6" o.c.	4" o.c.	264 #/ft
11 — 3/8" structural II, C-C or C-D plywood with 8d nails @ 4" o.c. at edges and 12" o.c. field.	4" o.c.	3" o.c.	384 #/ft
12 — 3/8" structural II, C-C or C-D plywood with 8d nails @ 3" o.c. at edges and 12" o.c. field.	3" o.c.	2 1/2" o.c.	492 #/ft
13 — 3/8" structural I plywood with 8d nails @ 3" o.c. at edges and 12" o.c. field.	3" o.c.	2" o.c.	552 #/ft
14 — 1/2" structural I plywood with 10d nails @ 3"o.c. staggered at edges and 12" o.c. field. Use 3x framing members at adjoining plywood edges only.	20d @ 2" o.c.	——	665 #/ft
15 — 1/2" structural I plywood with 10d nails @ 2"o.c. staggered at edges and 12" o.c. field. Use 3x framing members at adjoining plywood edges only.	5/8" ϕ x 7" lag bolts @ 16" o.c. 3x blk'g	——	870 #/ft

1 Where Double 2x Sole Plates are used provide progressive nailing.
2 Reconstituted wood panels (waferboard, flake board, OSB) may be substituted for plywd. shear panels provided that an APA-NER108 stamp appears on each sheet, and equivalent thickness, nailing and structural ratings are used.
3 Plywood shear panels shall have an exterior glue grade.
4 All plywood shear panel edges shall be blocked.
5 Shear wall sheathing nails or other approved sheathing connectors shall be driven flush but shall not fracture the surface.
6 Boundary nails shall be placed not less than 3/8 inch in from the panel edge.
7 Where sole plate nailing is specified at 3" o.c. or closer, nailing must be staggered and 3x blk'g or wider should be provided below.

WIND FORCES

Wind speed = 70
Wind exposure = C

Ht Abv Base (h)			Wind Pressure
0' -	15'	=	17.4 plf
15' -	20'	=	18.5 plf
20' -	25'	=	19.5 plf
25' -	30'	=	20.1 plf
30' -	40'	=	21.5 plf

SEISMIC FORCES

Seismic zone = 4
Dead Loads (Wdl)

Roof	15.0
Floor	12.0
Deck	12.0
Misc	5.0
Wall	10.0

Seismic Force (Ws)
V = (Z * I * C / Rw) * Wdl
V = (0.40 * 1.00 * 2.75 / 6.00) * Wdl
V = (0.18) * Wdl

Seismic Force Distrubution

$$Fx = \frac{(\text{Summation of Ws}) * (Ws * h)}{\text{Summation of } (Ws * h)}$$

STRIP FORCE @ T1
WIND:
17.4* 3= 52
18.5* 1= 19
17.4*12/2= 104
Ww= 175 plf
SEISMIC:
Wall 5*10.0*12/2= 300
(Roof) 15.0*120=1793
Ws=0.18*2093
Ws= 384 plf
DISTRIBUTED SEISMIC:
383.6*(383.6*12.0)/4603.5
Wds=383.6 plf

STRIP FORCE @ L1
WIND:
17.4* 3= 52
18.5* 1= 19
17.4*12/2= 104
Ww= 175 plf
SEISMIC:
Wall 2*10.0*12/2= 120
(Roof) 15.0*26= 390
Ws=0.18* 510
Ws= 94 plf
DISTRIBUTED SEISMIC:
93.5*(93.5*12.0)/1122.0
Wds=93.5 plf

WALL #1
WIND:
T1 175*27*(27/2)/27=2359.5
Rw=2359 #

SEISMIC:
T1 384*27*(27/2)/27=5178.9
Rs=5179 #

Σ(L)=22.0+22.0+47.0=91.0 ft

Sw=5179/91= 57 plf (57 x 2 = 114 plf SEISMIC)

Sd=5179/119= 44 plf

1/2" ϕ AB @ 72"o/c OK

USE (3) WALL w/ ϕ AB & [2] @ SD & @ SW(above)

WALL #2
WIND:
T1 175*27*(27/2)/27=2359.5
Rw=2359 #

SEISMIC:
T1 384*27*(27/2)/27=5178.9
Rs=5179 #

Σ(L)=3.5+6.5+5.0+5.0=20.0 ft

Sw=5179/20=259 plf

Sd=5179/119= 44 plf

H/W @ 6.5+5+5 = 16.5'

USE (11) WALL w/ (E) AB & [2] @ SD & @ SW(above)
(J) @ 3½" WALL
(K) @ OTHERS

$$\text{UPLIFT} = \left[259(5')(12) - (10(12))\frac{5^2}{2}\left(\tfrac{2}{3}\right)\right]\tfrac{1}{5} = 2908\# \rightarrow \text{HD2}$$

$$\text{UPLIFT} = \left[259(5)(12) - (10(12)+15(26/2))\frac{5^2}{2}\left(\tfrac{2}{3}\right)\right]\tfrac{1}{5} = 2583\#$$

$$\text{ACTUAL} = 2583\# - 5130\#\left(\tfrac{15}{31}\right) = 100\# \rightarrow \text{NO HD REQ'D}$$

(R4 ↓, DL ↖)

USE HD2

$$\text{SPLICE} = \left[259(3.5+6.5) - 19'(44\text{ PLF})\right]\tfrac{1}{1.33}\left(\tfrac{1}{108}\right) = 12 \rightarrow (15)\ \text{16d NAILS}$$

WALL #3

WIND:
L1 175*62*(62/2)/62=5418.0
Rw=5418 #

SEISMIC:
L1 94*62*(62/2)/62=2898.5
Rs=2899 #

Σ(L)=5.0+7.5=12.5 ft

Sw=5418/13=433 plf

Sd=5418/26=208 plf

$UPLIFT = \left[(433)(5)(12) - \left((12)(10) + 15(8/2)\right)\frac{5^2}{2}(2/3)\right]\frac{1}{5} =$
$= 4096^{\#} \rightarrow$ HDG Epoxy

Special inspection

USE 12 WALL w/ G AB & 4 @ SD & @ SW(above)

WALL #4

WIND:
L1 175*62*(62/2)/62=5418.0
L1 175*57*(57/2)/57=4981.1
Rw=10399 #

SEISMIC:
L1 94*62*(62/2)/62=2898.5
L1 94*57*(57/2)/57=2664.8
Rs=5563 #

Σ(L)=17.0=17.0 ft

Sw=10399/17=612 plf → Detail Shear Connection to roof diaphram

Sd=10399/26=400 plf

USE 14 WALL w/ G AB & 6 @ SD & @ SW(above)

$UPLIFT = \left[10399^{\#}(12) - (10)(12)\frac{17^2}{2}(2/3)\right]\frac{1}{17} = 6667^{\#} \rightarrow$ HDG Epoxy

WALL #5

WIND:
L1 175*57*(57/2)/57=4981.1
L1 175*19*(19/2)/19=1660.4
Rw=6641 #

SEISMIC:
L1 94*57*(57/2)/57=2664.8
L1 94*19*(19/2)/19=888.3
Rs=3553 #

Σ(L)=11.5=11.5 ft

Sw=6641/12=578 plf

Sd=6641/26=255 plf

USE (14) WALL w/ (G) AB & [E] @ SD & @ SW(above)

$$\text{UPLIFT} = \left[6641(12) - \left((10)(12) + 15(8/2)\right)\frac{11.5^2}{2}(2/3)\right]\frac{1}{11.5} = 6240^{\#}$$

HD-7

Top Plate Splice at Rear

$$\frac{(175\ \text{plf})(6')^2}{8(26')(1.33)(100)} = (2)\ 16d\ \text{NAILS}$$

The George Gouvis Company
3848 Campus Dr, Ste 220
Newport Beach, Ca 92660
(714) 756-1525

Title :S. Coast Water Distric
Scope :Freestanding Walls (6'0" Max)
Number:1774
Misc :
Dsngr :mcm Date:19-Nov-92

RETAINING WALL DESIGN Page

DESCRIPTION >> Typical Freestanding CMU walls.
>>

SOIL DATA

ALLOWABLE BEARING	= 1,000	psf	
ACTIVE LATERAL	= 45.0	pcf	
.....MAX PRESS.	=	"	
.....SLOPE PRESS.	=	"	
BACKFILL SLOPE	=	:1	
(horiz:vert,0=Level)			
PASSIVE PRESS.	= 100	"	
SOIL DENSITY	= 110	pcf	
SOIL HT OVER TOE	= 6	in	

VERTICAL LOADS

AXIAL DL ON STEM	=	plf
AXIAL LL ON STEM	=	plf
...ECC(Toward Toe='+')	=	in
SURCHARGE OVER TOE	=	psf
SURCHARGE OVER HEEL	=	"
USE HEEL SURCHARGE TO RESIST OVERTURNING ?	Y	y/n
USE 1/3 VERT. COMPNT ?	Y	y/n

LATERAL LOADS

LATERAL LOAD ACTING ON STEM ABOVE SOIL	= 17.4	psf	
ADD'L LATERAL LOAD	=	plf	
TOP OF FTG TO START	=	ft	
TOP OF FTG TO END	=	ft	

ADJACENT FOOTING:

VERTICAL LOAD	=	lbs
FOOTING WIDTH	=	ft
FTG. CL TO WALL	=	ft
VERT. POSITION OF FTG. ...Above/Below:[+/-]	=	ft
SPREAD FOOTING ?	Y	y/n

WALL & FOOTING DATA

RETAINED HEIGHT	= 0.5	ft	TOE WIDTH	= 0.67	ft
WALL HT. ABOVE SOIL	= 6	ft	HEEL WIDTH	= 1.33	ft
KEY DEPTH	=	in	Total Width	= 2.00	ft
KEY WIDTH	=	in			
KEY DIST TO TOE	=	ft	THICKNESS	= 12	in

SUMMARY

Pressure @ Toe	= 1,183	psf	Factors of Safety:		
Pressure @ Heel	=	"	Overturning	= 1.70	
Allowable Press.	= 1,000	"	Sliding	= 2.91	
Ecc. of resultant	= 6.84	in			

Soil Pressure Exceeds Allowable

Max. Shear @ Toe	=	psi	Allow. Ftg Shear	= 76.03	psi
Max Shear @ Heel	=	psi			

SLIDING CHECK

FTG/SOIL FRICTION	= 0.25		Lateral Pressure	= 104	#
SOIL TO NEGLECT	=	in	- Passive Pressure	= 113	
Factor of Safety	= 2.91		- Friction	= 191	
			Add'l Force Required	=	#

FOOTING DESIGN

Soil Press. Mult.	--Toe--	--Heel--	f'c	= 2,000	psi
By ACI Eq. 9-1 psf=	1,656		Fy	= 40,000	psi
Mu - Upward ft-#=	307		Min. As Percent	= 0.0014	
Mu - Downward " =	64	79	OMIT SP UNDER HEEL?	Y	y/n
Mu - Design " =	243	(79)			

Rebar Choices

One-Way Shear:		-- Toe --	-- Heel --
Actual psi=		# 4 @ 16.81 in o.c.	15.04
Allowable " =	76.0 76.0	# 5 @ 26.05 "	23.31

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RETAINING WALL DESIGN Page

Cover over Rebar	in=	3.50	2.50	# 6 @	36.97	"	33.08
'd'	"=	8.50	9.50	# 7 @	48.00	"	45.11
Ru = Mu/bd^2	psi=	3.7	1.0	# 8 @	48.00	"	48.00
				# 9 @	48.00	"	48.00
				#10 @	48.00	"	48.00
				#11 @	48.00	"	48.00

STEM DESIGN

<Stem Sections ->

		Top				Bottom	
WALL TYPE.....							
1:Mas,2:Conc,3:Not Used	:	1	1	1	1	1	
DESIGN HEIGHT ABOVE FTG.	=						ft
REBAR: 0:Cntr,1:Edge	?						
'd' FOR DESIGN	=	3.75					
.DESIGN DATA.....							
THICKNESS (nominal)	=	8					in
REBAR SIZE	#	4					
REBAR SPACING	=	16					in
Lateral Load @ Section	=	104					#
Moment....Actual	=	365					ft-#
Moment....Allow.	=	521					ft-#
Shear.....Actual	=	1.5					psi
Shear.....Allow.	=	19.4					psi
....Interaction Result	=	0.722					
Wall Weight	=	60.0					psf
n : Modular Ratio	=	25.78					
Rebar Embed Length	=	20.00					in
.MASONRY STEM DATA.....							
f'm	=	1,500	1,500	1,500	1,500	1,500	psi
Fs	=	20,000	24,000	24,000	24,000	24,000	psi
ALL CELLS GROUTED	?	N	N	N	N	N	y/n
USE SPECIAL INSP.	?	N	N	N	N	N	y/n
Load Duration Factor	=	1.00	1.00	1.00	1.00	1.00	in
.CONCRETE STEM DATA.....							
f'c	=	2,000	3,000	3,000	3,000	3,000	psi
Fy	=	40,000	60,000	60,000	60,000	60,000	psi

SUMMARY OF FORCES & MOMENTS

		<-Overturning	Moments->		<- Resisting	Moments ->	
Origin of Force:		#	ft	ft-#	#	ft	ft-#
Active Soil Press.	=	50.6	0.50	25.312	--	--	--
Soil over Heel	=	--	--	--	36.5	1.67	60.866
Soil over Toe	=	-50.6	0.50	-25.31	36.9	0.34	12.344
Sloped Soil @ Heel	=	--	--	--			
Adjacent Ftg. Load	=						
Surcharge Over Heel	=	--	--	--			
Surcharge over Toe	=						
Axial Load on Wall	=	--	--				
Load @ Proj. Wall	=	104.4	4.50	469.8	--	--	--

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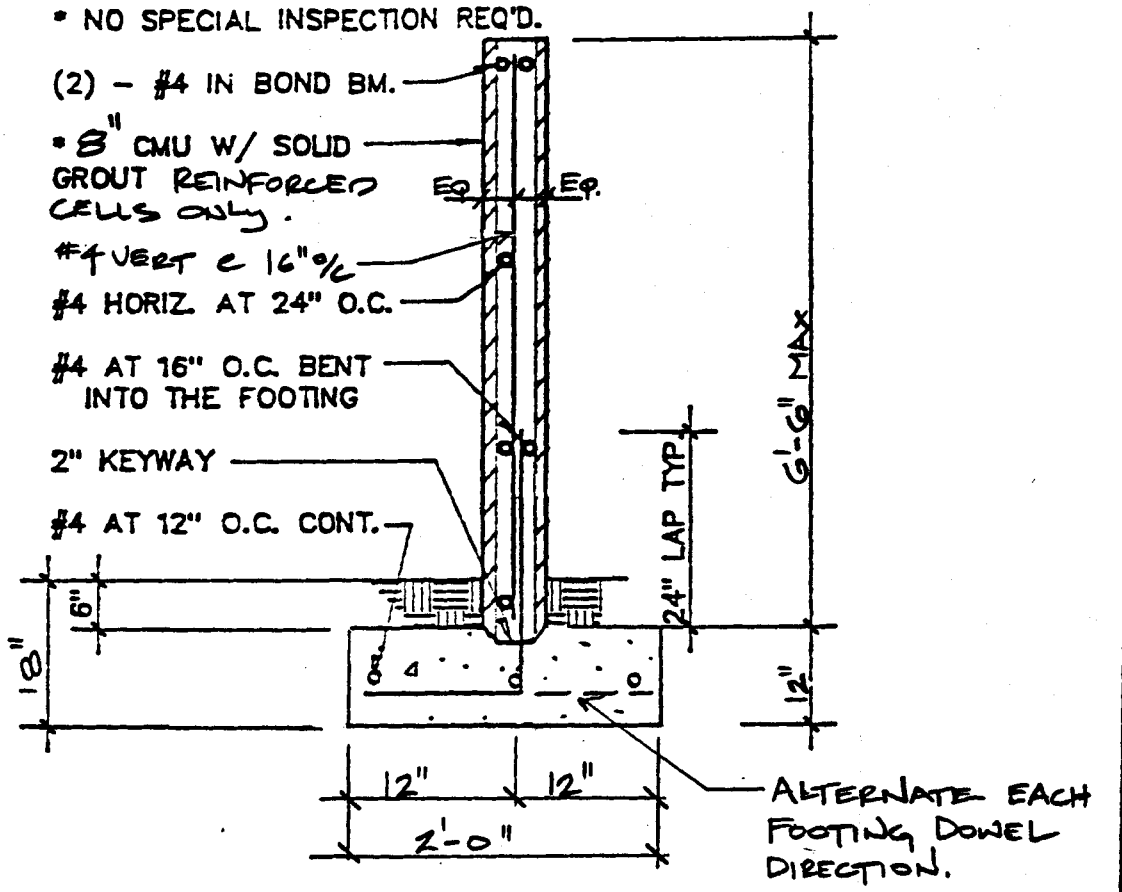
RETAINING WALL DESIGN Page

Averaged Stem Wts. =	--	--	--	390.0	1.00	391.3
Added Lateral Load =				--	--	--
Ftg & Key Weight =	--	--	--	300.0	1.00	299.99
1/3 Active Pressure =	--	--	--	16.9	2.00	33.716
Totals =	104.4		469.8	763.3		798.22

'N' Multiplier = 750
Center 'd' Modifier= 1
Edge 'd' Modifier = 1

Wall Wt. Multiplier = 1
Should Retain Ht be modified for slope ? Y y/n



FREE STANDING WALL

FNM-DETRT010

APPLICATION FOR BUILDING PERMIT
DEPARTMENT OF COMMUNITY DEVELOPMENT
CITY OF LAGUNA BEACH, CA. 92651

505 FOREST AVE.

VEHICLE MAINTENANCE & STORAGE (714) 497-0345 BLDG

ALLPOINT PEN

PRINT ALL INFORMATION

DESCRIPTION OF WORK: RECONST. OF FIRE DAMAGED AREAS (BAYS 1-4) & MINOR EXTERIOR REVISIONS REPAINT & REROOF PUMP HOUSE - PLUS NEW ENTRY & PLANTERS

ASSESSOR PARCEL NO. — —

Not Valid Unless Machine Certified

PROJECT

ADDRESS: 31104 COAST HWY S. LAGUNA BCH

LEGAL DESCRIPTION: LOT | BLOCK | SUBDIVISION | UNIT NO.

EXISTING USE | PROPOSED USE

VALUATION: 150,000 | PLAN CHECK NO.: 92-337 | DATE

OCC. GROUP | CONST. TYPE | OCC. LOAD

SPEC. INSP. REQ'D. FOR: ☐ CONCRETE ☐ MASONRY ☐ STRUCT. STEEL ☐ SOILS ☐ OTHER

CONDITION OF SOIL AT PROJECT: ☐ UNDISTURBED ☐ COMPACTED FILL ☐ LOOSE FILL

TYPE CONST. | PERMIT NO.

OWNER

NAME | TEL. NO.

ADDRESS | ZIP CODE

CONTRACTOR

NAME

ADDRESS | TEL. NO.

CITY | ZIP CODE

STATE LIC. NO. | LIC. CLASS | CITY LIC. NO.

DESIGNER

NAME: MORRIS SKENDERIAN | LIC. NO.

ADDRESS: 2094 S. COAST HWY | TEL. NO.: 497-3374

CITY: LAGUNA BCH | ZIP CODE: 92651

USE ZONE | REQ'D SET BACKS | FRONT | RIGHT SIDE | LEFT SIDE | REAR

LAND AREA _____ SQ. FT. | NO. STORIES _____

EXIST BLDG. _____ SQ. FT. | CARPORT /GARAGE _____ SQ. FT. | NO. UNITS ___

NEW CONSTRUCTION | GARAGE _____ SQ FT | MAXIMUM HEIGHT IN FEET | PARKING SPACES REQ'D | PARKING SPACES PROVIDED

HABITABLE _____ SQ FT | DECK _____ SQ FT

PLOT PLAN

LICENSED CONTRACTORS DECLARATION: I hereby affirm that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

Contractor's Signature

CONSTRUCTION LENDING AGENCY: I hereby affirm that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ. C)

LENDERS NAME _____

LENDERS ADDRESS _____

OWNER-BUILDER DECLARATION: I hereby affirm that I am exempt from the Contractor's License Law for the following reason:

☐ I, as owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale.

☐ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project.

☐ I am exempt under Sec. _____, B&PC for this reason _____

DATE: _____ OWNER: _____

YES ☐ NO ☐ WILL THE APPLICANT OR FUTURE BUILDING OCCUPANT HANDLE A HAZARDOUS MATERIAL OR A MIXTURE CONTAINING A HAZARDOUS MATERIAL EQUAL TO OR GREATER THAN THE AMOUNTS SPECIFIED ON THE HAZARDOUS MATERIALS INFORMATION GUIDE?

YES ☐ NO ☐ WILL THE INTENDED USE OF THE BUILDING BY THE APPLICANT OR FUTURE BUILDING OCCUPANT REQUIRE A PERMIT FOR CONSTRUCTION OR MODIFICATION FROM THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD)? SEE PERMITTING CHECKLIST FOR GUIDELINES.

PRINT NAME: _____

YES ☐ NO ☐ WILL THE PROPOSED BUILDING OR MODIFIED FACILITY BE WITHIN 1000 FEET OF THE OUTER BOUNDARY OF A SCHOOL?

I HAVE READ THE HAZARDOUS MATERIAL INFORMATION GUIDE AND THE SCAQMD PERMITTING CHECKLIST. I UNDERSTAND MY REQUIREMENTS UNDER THE STATE OF CALIFORNIA HEALTH & SAFETY CODE, SECTIONS 25505, 25533, AND 25534 CONCERNING HAZARDOUS MATERIALS REPORTING.

OWNER OR AUTHORIZED AGENT X _____

WORKER'S COMPENSATION DECLARATION: I hereby affirm that I have a certificate of consent to self-insure, or a certificate of Workers' Compensation Insurance, or a certified copy thereof filed with the Building (Sec. 3800, Lab. C.).

Insurance Company _____ Policy No. _____

Applicant's Signature | Expiration Date

CERTIFICATE OF EXEMPTION FROM WORKER'S COMPENSATION INSURANCE: I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Worker's Compensation Laws of California.

Owner's or Contractor's Signature

AN OSHA PERMIT IS REQUIRED FOR EXCAVATIONS OVER -5'0" DEEP AND DEMOLITION OR CONSTRUCTION OF STRUCTURES OVER 3 STORIES IN HEIGHT. (714) 939-0145

HAZARDOUS FIRE AREA	YES		NO	
GEOTECHNICAL REPORT REQUIRED	YES		NO	
UNDERGROUNDED - UTILITIES REQUIRED	YES		NO	
HEALTH DEPARTMENT REQUIRED	YES		NO	
PUBLIC WORKS PERMIT REQUIRED	YES		NO	

Expiration. Every permit issued by the Building Official under the provisions of this Code shall expire by limitation and become null and void if the building or work authorized by such permit is not commenced within 180 days from the date of such permit, or if the building or work authorized by such permit is suspended or abandoned at any time after the work is commenced for a period of 180 days.

CONTRACTOR/ OWNER & BUILDER

NAME

ADDRESS | CITY | ZIP CODE

I certify that I have read this application and state that the above information is correct, and that I am the owner or the duly authorized agent of the owner. I agree to comply with all city and state laws relating to building construction. I hereby authorize representatives of the City of Laguna Beach to enter upon the above-mentioned property for inspection purposes. If, after making the Certificate of Exemption from the Worker's Compensation provisions of the Labor Code I should become subject to such provisions, I will forthwith comply. In the event I do not comply with the Workmen's Compensation law, this permit shall be deemed revoked.

SIGNATURE _____ DATE _____

☐ CONTRACTOR ☐ OWNER ☐ AGENT FOR CONTRACTOR ☐ AGENT FOR OWNER

QTY.	PLUMBING PERMIT	AMT.
	EACH FIXTURE	
	EACH BUILDING SEWER	
	EACH WATER HEAT AND/OR VENT	
	EACH GAS SYSTEM 1 TO 4 OUTLETS	
	EACH GAS SYSTEM 5 OR MORE	
	EACH INSTAL., ALTER, REPAIR WATER PIPE	
	LAWN SPRINKLER SYSTEM-VACUUM BREAKER	
	ISSUANCE	
	TOTAL PLUMBING	

QTY.	MECHANICAL PERMIT	AMT.
	INSTALL FURN. DUCTS UP TO 100,000 BTU	
	OVER 100,000 BTU	
	BOILER/COMPRESSOR UP TO 3 HP	
	BOILER/COMPRESSOR 3-15 HP	
	VENT FAN SINGLE DUCT	
	EXTEND DUCTWORK	
	MECH EXHAUST - HOOD/DUCTS	
	RELOCATION OF EA FURNACE/HEATER	
	ISSUANCE	
	TOTAL MECHANICAL	

QTY.	ELECTRICAL PERMIT	AMT.
	FIXTURES	
	OUTLETS	
	SUBPANEL	
	SERVICE METER	
	TEMPORARY POWER	
	HABITABLE AREA SQ. FT	
	GARAGE AREA SQ. FT	
	ISSUANCE	
	TOTAL ELECTRICAL	

DR/VA APPROVED DATE

ZONING

PUBLIC WORKS

FIRE

PLANS APPROVED BY

APPROVED FOR ISSUANCE DATE

FEE SUMMARY

PLAN CHECK	
BUILDING PERMIT	
SMIP INCLUDED IN PERMIT FEE	
TOTAL ELECTRICAL	
PLUMBING	
MECHANICAL	
GRADING FEE	
BUILDING CONSTRUCTION FEE	
SEWER CONSTRUCTION FEE	
PARK FEES	
DRAINAGE FEE	
ART IN PUBLIC PLACES	
BOND AMOUNT	
WHEN PROPERLY SIGNED AND MACHINE VALIDATED THIS APPLICATION BECOMES A BUILDING PERMIT	
TOTAL FEES PAYABLE TO: CITY OF LAGUNA BEACH	

PRIOR TO FINAL INSPECTION A CASHIER'S CHECK, CERTIFIED CHECK OR MONEY ORDER MUST BE DEPOSITED WITH THE CITY IN THE AMOUNT OF _____

INSPECTOR

...VISION

...497-3311

BUILDING PERMIT NO. _____

ELECTRIC PERMIT NO. _____

PLUMBING PERMIT NO. _____

MECHANICAL PERMIT NO. _____

OTHER PERMIT NO.

APPLICANT TO FILL IN INFORMATION AND DECLARATIONS WITHIN RED LINES. USE ... ONLY.

The following inspections must be called for by the pertinent contractor (24 hrs. in advance). No electrical wiring, plumbing, heating, foundations, caissons, grout or structural members shall be covered until inspections are made by city inspection.

BUILDING	DATE	ELECTRICAL	DATE	MECHANICAL	DATE
SETBACKS					
		TEMPORARY POWER		REFRIGERATION	
FOUNDATIONS-FORMS					
		UNDERGROUND		AIR COND.	
FOOTINGS					
				HOOD	
		PARTIAL ROUGH			
REINFORCING STEEL				DUCTS/VENTS	
CAISSONS-PILES					
				HEATING	
MASONRY		ROUGH WIRING			
UNDER FLOORS/SILLS/JOISTS					
FLOOR SHEATHING		FIXTURES			
ROOF SHEATHING		FINAL ELECTRICAL		FINAL ELECTRICAL	
		PLUMBING	DATE	PLUMBING	DATE
FRAMING					
		UNDERGROUND			
				SEWER	
		ROUGH PLUMBING		OK COVER	
				FINAL SEWER	
INSULATION		TOP OUT			
EXTERIOR LATH					
INTERIOR LATH					
		GAS			
SCRATCH COAT					
		TEST			
FINAL BLDG.				FINAL PLUMBING	

INSPECTOR'S NOTES

NOTE: Do not occupy Building until Final Approval by all Departments!

APPLICATION FOR ELECTRICAL PERMIT

COUNTY OF ORANGE
ENVIRONMENTAL MANAGEMENT AGENCY
REGULATION

1

REGIONAL OFFICE
26052 GETTY DRIVE
LAGUNA NIGUEL, CA 92677
714—831-2610

CENTRAL OFFICE
400 CIVIC CENTER DRIVE WEST
P.O. BOX 4048
SANTA ANA, CA 92702
714—834-2626

BUILDING ADDRESS 31102 COAST HWY.
COUNTY AREA So. LAGUNA
NEAREST CROSS ST JEFFREY / BOAT RENTAL
OWNER ALLIED MARK HWAG. AGENCY / CALTRANS
PROPOSED USE
PRESENT USE

TRACT
LOT NO.
CONTRACTOR VIDO ARTUKOVICH & SON ELEC.
ADDRESS 11155 RUSH ST
CITY So. EL MONTE
TEL NO 213-283-0911

		PER UNIT	FEE
Single or Multi-Family Dwlg. (New or Relocated)	(Area in sq. ft.)	1.6 sq. ft	
Garages, Residential (New or Relocated)	(Area in sq. ft.)	.6 sq. ft	
Relocated Dwelling Pre-Lowering Inspection	(In addition to fees shown above)	5.00	
Above Fees Cover All Electrial Installations Within New or Relocated Dwellings Except Radiant Heating. Does not include Service.			
Radiant Ceiling Heat	(No. of Rooms) Per Room	$ 1.25	
Fixtures	1 — 20	.25 ea	
	Additional	.12 ea	
Outlets	1 — 20	.25 ea	
	Additional	.12 ea	
Electrical Appliances or Factory-wired, self-contained units	(No.)	2.00 ea	
Time Clock	(No.)	1.25 ea	
Metal Vapor Fixtures (No.)	Pole Mount	1.25 ea	
	Add'l Fixtures	.25 ea	
Special Equipment Inspection (No. Hours)	½ Hour	6.00	
	1 Hour	12.00	
Underground Raceway		2.00	
Residential Service Meter — Underground (No.)	1 or 2 4.50+	3.00 ea	
	3 or more 4.50+	5.00 ea	
Commercial Service Meters Underground	(No.)	5.00 ea	
Work-with Service	Residential	10.00	
	Commercial	15.00	
Construction or Permanent Pole, Pedestal or Piggy Back (No.)	Metered pole	5.00	5 —
	Add'l. poles on same service	3.00 ea	
Other: List generators, motors, transformers, etc. & give rating in HP, KW or KVA		(See schedule)	
Building Permit Number NC	Permit Insurance 3.00		3 00
Verified By OK	TOTAL PERMIT FEE		8 00
	PLAN CHECK FEE		

CERTIFICATE FOR REGULATION PERMIT

Contractor's
I certify that the following Contr. Lic. No. 735294-A and Classification A-2 is in full force and effect.
Workman's Compensation Insurance Certificate on file verified by
Expiration date

Other Applicants

I hereby certify I am exempt from Sec. 7031.5 of the Business and Professional Code, Div. 3, Chap. 9, Contractor's License Law under the following section:

- ☒ Owner (Sect 7044), or
- ☐ Minor Work under $100 (sect 7048), or
- ☐ Employee working for wages only (sect 7053, or
- ☐ OTHER

Certification of Exemption from Sect 3800 of the California Labor Code, Article 3, Construction Permit:

- ☒ The permit is for One Hundred Dollars ($100) or less.
- ☐ I certify that in the performance of the work for which the permit is issued I shall not employ any person in any manner so as to become subject to the Workmen's Compensation laws of California.

If, after making such certification the applicant for this permit should become subject to the Workmen's Compensation provisions of the Labor Code, the applicant shall forthwith comply with the provisions of Sect 3700 or this permit shall be deemed revoked.

I hereby acknowledge and state that the information I have provided is correct both on the permit and this certificate and agree to comply with all County ordinances and State laws regulating building construction.

Date 9-25-78
(Applicants Signature) Permit No.

APPLICATION APPROVED BY (SIGNATURE) (DATE) 9/26/78

METERS AND SERVICES	LIGHT	POWER	AC & RFG	VOLT	PHASE

INSPECTION RECORD

APPROVALS	DATE	INSP. SIGNATURE
UNDERGROUND		
ROUGH WIRING		
FIXTURES		
SERVICE		
WORK-WITH RELEASE		
FINAL APPROVAL	REL 9-26-78	DISHER
UTILITY NOTIFIED		

VALIDATION

CASHIER	DATE	PERMIT NO.	PERMIT FEE	CODE	PLAN CHECK	TOTAL
L.O.	SEP 25'78	548711	8.00	2	NC 4-27-78	8.00 *
				SEP 27 1978		Cash

31104 ~~Pac~~. Coast Hwy. 12/21/77 So.Laguna

Aliso Water Mgmt. Agency

BUILDING	PLASTER	PLUMBING	HEATING	ELECTRIC
				NC539,252 C.pole

CRS F 0250-176

APPLICATION FOR ELECTRICAL PERMIT

1

COUNTY OF ORANGE
ENVIRONMENTAL MANAGEMENT AGENCY — REGULATION DIVISION
BUILDING AND SAFETY BRANCH
P.O. BOX 419
SANTA ANA, CALIFORNIA 92702

REGIONAL OFFICE
26052 GETTY DRIVE
LAGUNA NIGUEL, CA 92677
714-831-2610

MAIN OFFICE
400 CIVIC CENTER DRIVE WEST
SANTA ANA, CALIFORNIA
714-834-2626

BUILDING ADDRESS 31102 Coast Hwy
COUNTY AREA So Lag NEAREST CROSS ST. Seaview
OWNER Alice Walker Myers Agency Pacific Coast
PROPOSED USE PRESENT USE

TRACT LOT NO.
CONTRACTOR V100 Arte Rowell + Son
ADDRESS 11155 Rush St
CITY S.E. El Monte TEL. NO. 213-283-0911

		PER UNIT	FEE
Single or Multi-Family Dwlg. (New or Relocated)	(Area in sq.ft.)	1¼¢ sq.ft.	
Garages, Residential (New or Relocated)	(Area in sq.ft.)	½¢ sq.ft.	
Relocated Dwelling Pre-Lowering Inspection	(In addition to fees shown above)	$ 5.00	
Above Fees Cover All Electrical Installations Within New or Relocated Dwellings Except Radiant Heating. Does not include Service.			
Radiant Ceiling Heat	(No. of Rooms)	Per Room $ 1.25	
Fixtures	(No.)	1 – 20 .25 ea Additional .12 ea	
Outlets	(No.)	1 – 20 .25 ea Additional .12 ea	
Electrical Appliances or Factory-wired, self-contained units	(No.)	2.00 ea	
Time Clock	(No.)	1.25 ea	
Relocated Commercial Bldg. Pre-lowering Inspection	(In addition to fee schedule for electrical work)	5.00	
Swimming pool — Underground raceway		2.00	
Signs & HP Gas Tube Lighting		(See schedule)	
Commercial Service Meters Overhead or Underground	(No.)	5.00 ea	
Residential Service Meter — Overhead	(No.)	3.00 ea	
Residential Service Meter — Underground	(No.) 1 or 2 4.50+ 3 or more 4.50+	3.00 ea 5.00 ea	
Work-with Service	Residential Commercial	10.00 15.00	
Construction or Permanent Pole, Pedestal or Piggy Back	(No.) Metered pole Add'l. poles on same service	5.00 3.00 ea	$100
Other: List generators, motors, transformers, etc. & give rating in HP, KW or KVA		(See schedule)	
Building Permit Number NC	Permit Issuance	3.00	3.00
Verified By:	TOTAL PERMIT FEE		8.00
	PLAN CHECK FEE		

State Compensation
Ins. Policy No. _____ Exp. Date _____

"I Certify that the following State Contr. Lic. No. 352944-A and Classification A is in full force and effect".

☐ "I Hereby Certify I am exempt from Sec. 7031.5 of the Business & Professional Code, Div. 3, Chap. 9, Contractors' License Law under the following section:
Owner-Sec. 7044 ( ); Minor Work Under $100-Sec. 7048 ( );
or employee working for Wages Only - Sec. 7053 ( );
Other. _____"

☑ "I Certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Workmen's Compensation Laws of California".

"I Hereby acknowledge and state that the information I have provided is correct and agree to comply with all County Ordinances and State Laws regulating building construction".

Signature Russ Patrick Date _____

METERS AND SERVICES	LIGHT	POWER	AC & RFG	VOLT	PHASE

THIS ELECTRIC POWER POLE IS FOR A TEMPORARY POWER SERVICE ONLY — WILL BE REMOVED UPON COMPLETION OF CONSTRUCTION OR DISCONTINUANCE OF SERVICE PRIOR TO ISSUANCE OF CERTIFICATE OF OCCUPANCY.

INSPECTION RECORD

Elec TEMP POLES -

APPROVALS	DATE	INSP. SIGNATURE
CONDUIT		
UNDERGROUND		
WIRING		
FIXTURES		
POWER		
FINAL	REL 1-27-78	DISHER
UTILITY NOTIFIED		

VALIDATION

$ 4.0 INFO 21177 039.250 8.00 2 8.00 *

cal 1/30/78 DK
re released 2/3/78

CASHIER DATE PERMIT NO. PERMIT FEE CODE PLAN CHECK TOTAL

APPLICATION FOR ELECTRICAL PERMIT

1

COUNTY OF ORANGE
ENVIRONMENTAL MANAGEMENT AGENCY — REGULATION DIVISION
BUILDING AND SAFETY BRANCH
P.O. BOX 628
SANTA ANA, CALIFORNIA 92702

REGIONAL OFFICE
26052 GETTY DRIVE
LAGUNA NIGUEL, CA 92677
714-831-2810

MAIN OFFICE
400 CIVIC CENTER DRIVE WEST
SANTA ANA, CALIFORNIA
714-834-2600

BUILDING ADDRESS 31104 Coast Hwy
COUNTY AREA So Laguna NEAREST CROSS ST. Nyes & Coast
OWNER Alice Robertson Mgmt Agency Co Inc
PROPOSED USE PRESENT USE

TRACT LOT NO.
CONTRACTOR Hood Electric Co Inc
ADDRESS 11155 Rush St
CITY S. El Monte TEL NO. 213-283-0911

State Compensation Ins. Policy No. 135294-B Exp. Date
"I Certify that the following State Contr. Lic. No. and Classification A-1 is in full force and effect".
☐ "I Hereby Certify I am exempt from Sec. 7031.5 of the Business & Professional Code, Div. 3, Chap. 9, Contractors' License Law under the following section:
Owner-Sec. 7044 ( ) Minor Work Under $100-Sec. 7048 ( )
or employee working for Wages Only - Sec. 7053 ( )
Other ."
☒ "I Certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Workmen's Compensation Laws of California".
"I Hereby acknowledge and state that the information I have provided is correct and agree to comply with all County Ordinances and State Laws regulating building construction".
Signature Date

	PER UNIT	FEE
Single or Multi-Family Dwlg (New or Relocated) (Area in sq.ft.)	1¼¢ sq.ft.	
Garages, Residential (New or Relocated) (Area in sq.ft.)	¼¢ sq.ft.	
Relocated Dwelling Pre-Lowering Inspection (In addition to fees shown above)	$ 5.00	
Above Fees Cover All Electrical Installations Within New or Relocated Dwellings Except Radiant Heating. Does not include Service		
Radiant Ceiling Heat (No. of Rooms) Per Room	$ 1.25	
Fixtures (No.) 1 – 20	.25 ea	
Additional	.12 ea	
Outlets (No.) 1 – 20	.25 ea	
Additional	.12 ea	
Electrical Appliances or Factory-wired, self-contained units (No.)	2.00 ea	
Time Clock (No.)	2.25 ea	
Relocated Commercial Bldg. Pre-lowering Inspection (In addition to fee schedule for electrical work)	5.00	
Swimming pool – Underground raceway	2.00	
Signs & HP Gas Tube Lighting	(See schedule)	
Commercial Service Meters Overhead or Underground (No.)	5.00 ea	
Residential Service Meter – Overhead (No.)	3.00 ea	
Residential Service Meter – Underground (No.) 1 or 2 4.50+	3.00 ea	
3 or more 4.50+	5.00 ea	
Work-with Service Residential	10.00	
Commercial	15.00	
Construction or Permanent Pole, Pedestal or Piggy Back (No.) Metered pole	5.00	
Add'L poles on same service	3.00 ea	5.00
Other List generators, motors, transformers, etc, & give rating in HP, KW or KVA	(See schedule)	
Permit Issuance	3.00	3.00
TOTAL PERMIT FEE		8.00
PLAN CHECK FEE		

Building Permit Number NC
Verified By

METERS AND SERVICES	LIGHT	POWER	AC & RFG	VOLT	PHASE

INSPECTION RECORD

Roof

APPROVALS	DATE	INSP. SIGNATURE
CONDUIT		
UNDERGROUND		
WIRING		
FIXTURES		
POWER		
FINAL	RTL 1-29-78	DISHER
UTILITY NOTIFIED		

VALIDATION

HH 2177 539252 8.00 2 8.00 ●

CASHIER DATE PERMIT NO. PERMIT FEE CODE PLAN CHECK TOTAL

EXEMPTION CERTIFICATION FOR WORKMEN'S COMPENSATION INSURANCE

CALIFORNIA LABOR CODE, ARTICLE 3, SECTION 3800

☐ The permit is for One Hundred Dollars ($100) or less, or

☒ I certify that in the performance of the work for which this permit is issued I shall not employ any person in any manner so as to become subject to the workmen's compensation laws of California.

IF, AFTER MAKING SUCH CERTIFICATE, THE APPLICATION FOR THE PERMIT SHOULD BECOME SUBJECT TO THE WORKMEN'S COMPENSATION PROVISIONS OF THE LABOR CODE, HE SHALL FORTHWITH COMPLY WITH THE PROVISIONS OF SECTION 3700 OR HIS PERMIT SHALL BE DEEMED REVOKED.

SIGNATURE: John Petricich DATE: _____

PERMIT NO. 539252

REGIONAL OFFICE
26032 GETTY DRIVE
LAGUNA NIGUEL, CALIF. 92677
714-831-2810

APPLICATION FOR ELECTRICAL PERMIT

COUNTY OF ORANGE DEPARTMENT OF BUILDING AND SAFETY

F. G. McLELLAN, JR., DIRECTOR

MAIN OFFICE
400 CIVIC CENTER DRIVE WEST
SANTA ANA, CALIFORNIA 92701
714-834-2550

1

BUILDING ADDRESS 31107 Pacific Coast Highway	TRACT LOT NO.
COUNTY AREA S. Laguna NEAREST CROSS ST.	CONTRACTOR D.W. Payne DBA E.L. Payne
OWNER S. Laguna Sanitary District	ADDRESS 3005 S. Halladay St.
PROPOSED USE Sewer pumping station PRESENT	CITY Santa Ana TEL. NO. 545-5542

		PER UNIT	FEE
Single or Multi Family Dwlg. (New or Relocated)	(Area in sq. ft.)	1¼¢ sq. ft.	
Garages, Residential (New or Relocated)	(Area in sq. ft.)	¼¢ sq. ft.	
Relocated Dwelling Pre Lowering Inspection	(In addition to fees shown above)	$ 5.00	
Above Fees Cover All Electrical Installations Within New or Relocated Dwellings Except Radiant Heating. Does not include Service.			
Radiant Ceiling Heat	(No. of Rooms)	Per Room $ 1.25	
Fixtures	(No.)	1 – 20 .25 ea Additional .12 ea	
Outlets	(No.)	1 – 20 .25 ea Additional .12 ea	
Electrical Appliances or Factory-wired, self-contained units	(No.)	2.00 ea	
Time Clock	(No.)	1.25 ea	
Relocated Commercial Bldg. Pre-lowering Inspection	(In addition to fee schedule for electrical work)	5.00	
Swimming pool – Underground raceway		2.00	
Signs & HP Gas Tube Lighting		(See schedule)	
Commercial Service Meters Overhead or Underground	(No.)	5.00 ea	
Residential Service Meter – Overhead	(No.)	3.00 ea	
Residential Service Meter – Underground	(No.) 1 or 2 @ 0-50+ 3 or more @ 50+	3.00 ea 5.00 ea	
Work with Service	Residential Commercial	10.00 15.00	
Construction or Permanent Pole, Pedestal or Piggy Back	(No.) Metered pole Add'l. poles on same service	5.00 3.00 ea	
Other: List generators, motors, transformers, etc. & give rating in HP, KW or KVA		(See schedule)	5 00
one 15KW strip heater			

Building Permit Number NC	Permit Issuance 3.00	3 00
Verified By:	TOTAL PERMIT FEE	8 00
	PLAN CHECK FEE	

State Compensation Ins. Policy No. 2-310790 Exp. Date 7-1-75

"I Certify that the following State Contr. Lic. No. 280319 and Classification C20 is in full force and effect".

☐ "I Hereby Certify I am exempt from Sec. 7051.5 of the Business & Professional Code, Div. 3, Chap. 9, Contractors' License Law under the following section:
Owner-Sec. 7044 ( ); Minor Work Under $100-Sec. 7048 ( ); or employees working for Wages Only - Sec. 7053 ( )
Other _____"

☒ "I Certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Workmen's Compensation Laws of California".

"I Hereby acknowledge and state that the information I have provided is correct and agree to comply with all County Ordinances and State Laws regulating building construction".

Signature _____ Date 2-8-77

METERS AND SERVICES	LIGHT	POWER	AC & RPG	VOLT	PHASE

INSPECTION RECORD

APPROVALS	DATE	INSP. SIGNATURE
CONDUIT		
UNDERGROUND		
WIRING		
FIXTURES		
POWER		
FINAL		
UTILITY NOTIFIED		

VALIDATION

CASHIER	DATE	PERMIT NO.	PERMIT FEE	CODE	PLAN CHECK	TOTAL
4	AUG 1'74	255,077	8.00 +	3 2	FEB 16 1977	8.00 *

Received 05/21/2015

EXEMPTION CERTIFICATION FOR WORKMEN'S COMPENSATION INSURANCE

CALIFORNIA LABOR CODE, ARTICLE 3, SECTION 3800

☐ The permit is for One Hundred Dollars ($100) or less, or

☒ I certify that in the performance of the work for which this permit is issued I shall not employ any person in any manner so as to become subject to the workmen's compensation laws of California.

IF, AFTER MAKING SUCH CERTIFICATE, THE APPLICATION FOR THE PERMIT SHOULD BECOME SUBJECT TO THE WORKMEN'S COMPENSATION PROVISIONS OF THE LABOR CODE, HE SHALL FORTHWITH COMPLY WITH THE PROVISIONS OF SECTION 3700 OR HIS PERMIT SHALL BE DEEMED REVOKED.

SIGNATURE: John Patrick DATE: _____

PERMIT NO. 539250

Appendix C
DPR Forms

ESA

State of California □ The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #____
HRI #
Trinomial
NRHP Status Code 6Z
Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 **of** 10 ***Resource Name or #:** (Assigned by recorder) South Coast Water District Lift Station #2
P1. Other Identifier: _____
***P2. Location:** □ **Not for Publication** ☒ **Unrestricted**
***a. County** Orange **and** (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad** _Date **T** __; **R** __; W □ **of** __ □ **of Sec** __; __**B.M.**
c. Address 31104 Coast Highway City Laguna Beach Zip 92651
d. UTM: (Give more than one for large and/or linear resources) Zone __, _____ mE/ _____ mN
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, decimal degrees, etc., as appropriate)
APN: 056-240-061

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
The pump lift station is a utilitarian single-story rectangular building oriented south towards Country Club Drive. The structure has stucco siding (restuccoed) and a side-facing overhanging hipped roof with boxed eaves. The original roofing was replaced with asphalt shingles in 1992 (alteration). All of its original windows have been replaced with vinyl sliding windows (alteration). On the front elevation, there are two vinyl sliding windows to the east (alteration) of the projecting front entrance vestibule. Wood louvers located beneath these windows were removed sometime after 1992 (alteration). The original sign for the building was replaced with a new sign in 1992. The original paneled wood front door was also replaced sometime after 1992. According to architectural plans, new block wall planters were originally planned in front of the pump station, although it appears these were never constructed
[See Continuation Sheets]

***P3b. Resource Attributes:** (List attributes and codes) HP9 (Public utility building)
***P4. Resources Present:**
☒ Building □ Structure □ Object □ Site □ District □ Element of District

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects.)

□ Other (Isolates, etc.)
P5b. Description of Photo: (view, date, accession #) View of the primary (south) façade (view facing north)
***P6. Date Constructed/Age and Source:** ☒ Historic □ Prehistoric □ Both
1953/Orange County Assessor
***P7. Owner and Address:**
South Coast Water District
31592 West Street
Laguna Beach, CA 92651
***P8. Recorded by:** (Name, affiliation, and address) Hanna Winzenried
ESA
626 Wilshire Blvd., Suite 1100
Los Angeles, CA 90017
***P9. Date Recorded:** November 2020
***P10. Survey Type:** (Describe)
Intensive Pedestrian
***P11. Report Citation**: (Cite survey report and other sources, or enter "none.")
ESA, South Coast Water District Lift Station #2, Laguna Beach, California Historic Resources Assessment, November, 2020.

***Attachments:** □NONE □Location Map ☒Continuation Sheet ☒Building, Structure, and Object Record
□Archaeological Record □District Record □Linear Feature Record □Milling Station Record □Rock Art Record
□Artifact Record □Photograph Record □Other (List): _____

State of California ☐ The Resources Agency Primary # _____
DEPARTMENT OF PARKS AND RECREATION HRI# _____

BUILDING, STRUCTURE, AND OBJECT RECORD

***Resource Name or #** (Assigned by recorder) South Coast Water District Lift Station #2 ***NRHP Status Code** 6Z
Page 2 **of** 10

B1. Historic Name: _____
B2. Common Name: _____
B3. Original Use: Lift Station B4. Present Use: Lift Station
***B5. Architectural Style:** Minimal Traditional
***B6. Construction History:** (Construction date, alterations, and date of alterations)
Building permits on file with the City of Laguna Beach Building Safety Division were used to create a construction history for the subject property.
[See Continuation Sheet].
***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** _____ **Original Location:** _____
***B8. Related Features:**

B9a. Architect: James M. Montgomery Consulting Engineer **b. Builder**: _____
***B10. Significance: Theme** South Laguna Sanitary District and South Coast Water District
Area South Laguna Beach
Period of Significance 1953-1954 **Property Type** Public utility building **Applicable Criteria** _____
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)
South Coast Water District Lift Station #2 was evaluated within the historic context of the South Laguna Sanitary District and its role in the development of Laguna Beach and Aliso Creek. The historic context developed above provides the background necessary to evaluate the historic and architectural significance of the subject property and analyze its existing integrity, including the history of its construction and alterations. The period of significance associated with the subject property's architecture and engineering is 1953-54, the date of the building's design and construction. The period of significance associated with the subject property's history is 1954 to 1976, representing the time period during which the property was under the ownership of the South Laguna Sanitary District. ESA evaluated the subject property under the criteria for listing in the National Register, California Register, and as a Laguna Beach Historic Landmark.
[See Continuation Sheets]
B11. Additional Resource Attributes: (List attributes and codes) _____
***B12. References:**
[See Continuation Sheets]

B13. Remarks:

***B14. Evaluator:** Hanna Winzenried
***Date of Evaluation:** November, 2020

(This space reserved for official comments.)

(Sketch Map with north arrow required.)

***P3a. Description (continued)**:

On the rear elevation, two wood louvers on the east side were covered (alteration), and a wood louver on the west side was converted into vinyl windows (alteration). The east (side) elevation has no openings and appears to not have been altered. The west (side) elevation has a French door that appears to have been replaced (alteration), and a vinyl window to the south (alteration) which was originally a wood louver. According to original plans, there were built-up plywood panels over the side entrance door that is no longer extant (alteration).

The interior of the pump station includes a ground story with a main room that houses electrical panels that appear to have been upgraded and an underground room that houses the pumps that appear to be well maintained older equipment that may be partially original.

To the west of the pump station is a garage/workshop and storage building originally constructed in 1960. However, after a fire in 1992, the building was substantially rebuilt (altered) utilizing the original building foundations and its size was increased by one foot**.**

***B6. Construction History (continued):**

On June 8, 1953, building plans were drawn up by James M. Montgomery, Consulting Engineer, for a one-story sewage pumping station with stucco siding, wood louvers, metal shutters, a side-facing overhanging hipped roof with composite and gravel roofing and boxed eaves. In a letter to City Planning on August 25, 1953, the South Laguna Sanitary District described its $1,250.000 project saying that the pumping station site would cover approximately 1/6 of an acre and was to be located on the north bank of Alise Creek. The station would lift all sewage originating in the system and deliver it through a force main to the sewage treatment plant to be constructed about a mile up the canyon. They explained that while the pumping station would be visible from the highway by anyone traveling north, it would be a stucco structure of pleasing appearance. At the time of the Lift Station's construction, a two-mile tunnel beneath the bluff in South Laguna Beach was constructed to carry wastewater to the treatment facility. When constructed in 1954, the tunnel was innovative because it relied solely on gravity flow to transport wastewater, which eliminates costly and unsightly infrastructure including lift stations and several thousand feet of sewer lines.

In 1961, a conditional permit was issued for the construction of a garage, workshop and storage building for use in connection with the existing sewer pumping station. The additional building was to measure 26 feet by 56 feet and was to house and provide light maintenance facilities for four vehicles owned and operated by the Sanitary District. A few years later, on February 1, 1967, a permit was issued to construct an extension to the existing garage and office building, for additional storage, to measure 56 feet by 26 feet, and be the same type of architecture as the existing buildings. In 1974, the sewer lines were to be replaced due to more than 900 cracks and breaks in the original line installed in 1953. Two

and a half miles of sewer main 21-inch pipe that ran through a tunnel on the face of the ocean cliffs between Monarch Bay and Aliso Creek had to be replaced by a 27-inch pipe. In 1991, the existing 8-inch reclaimed water main was replaced with a 16-inch reclaimed water pipeline. In 1992, there was a fire at the lift station. Bays 1-4 of the water district maintenance and equipment storage garage were destroyed by the fire had to be entirely rebuilt utilizing the existing foundations. The garages were upgraded to include fire sprinklers and skylights and the building height was increased to accommodate the upgrade. The project also included new exterior treatments (siding, roofing, paint, etc.) for the garages and associated pumping station. A new entryway and planters were constructed at the front of the existing pumping station, an existing spray booth was demolished, and a new six-foot retaining block wall was built on the property.

*B10. Significance (continued):

National Register and California Register

a. Broad Patterns of History

With regard to broad patterns of history, the following are the relevant criteria:

National Register Criterion A: Is associated with events that have made a significant contribution to the broad patterns of our history.

California Register Criterion 1: Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.

The subject property is located on the north side of Aliso Creek which was a part of Rancho Niguel and South Laguna. By 1938, a residential neighborhood was being developed south of Aliso Creek, and by 1946, a residential neighborhood west of the subject property was developed. Residential neighborhoods were developed north of the subject property between 1952 and 1963.

The subject property was developed with the lift station in 1953-54 to take care of South Laguna's waste. The pump station was developed in tandem with a two-mile tunnel beneath the bluff in South Laguna Beach that carried wastewater to the treatment facility. The tunnel was innovative in 1954 because it relied solely on gravity flow to transport wastewater, eliminating costly and unsightly infrastructure. However, the pump station itself was standard for the time period.

South Laguna Sanitary District was the original owner of Lift Station 2. The South Laguna Sanitary District and sewer system was established by the South Laguna Civic Association (SLCA). The SLCA was formed as a nonprofit corporation in 1946 before South Laguna was still an unincorporated part of Orange County. The South Laguna Sanitary District was taken over by the South Coast County Water District on July 1, 1976.

Historically, Lift Station 2 was an important part of the wastewater infrastructure of South Laguna during the mid-1950s when it supported development of the area during the post-World War II period, and it has continued to function as a wastewater pumping station to the present time. It was connected with a two-mile tunnel that employed innovative technology for its time, relying solely on gravity flow to

transport wastewater. However, as discussed above, Lift Station 2 (substantially altered in 1992) and the associated workshop, storage and garage building (rebuilt after a fire 1992-93), and associated landscape features including planters and walls (renovated/altered 1992-93), and reclaimed water main (replaced 1991), do not retain sufficient integrity to convey their appearance from the subject property's historical period of significance (1954-1976). While the subject property retains integrity of location and association, these later changes after the period of significance substantially detract from its integrity of design, workmanship, materials, and feeling, and materially impair its eligibility for listing in the National Register or California Register.

Therefore, the South Coast Water Lift Station #2 does not meet eligibility requirements under National Register Criterion A or California Register Criterion 1, either individually or as a potential contributor to a potential District.

b. Significant Persons

With regard to associations with important persons, the following are the relevant criteria:

National Register Criterion B: Is associated with the lives of persons significant in our past.

California Register Criterion 2: Is associated with the lives of persons important in our past.

Research did not reveal any persons important to state, or national history were associated with the subject property.

Therefore, the South Coast Water Lift Station #2 does not meet the eligibility requirements under National Register Criterion B or California Register Criterion 2, either individually or as a potential contributor to a potential District.

c. Architecture

With regard to architecture, design, or construction, the following are the relevant criteria:

National Register Criterion C: Embodies the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

California Register Criterion 3: Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.

The sewage pumping station at the subject property was originally constructed in a utilitarian minimal traditional style. Architectural plans for the building were drawn on June 8, 1953, by James M. Montgomery Consulting Engineer for owners South Laguna Sanitary District. The plans show that the building was a single story with below-ground mechanizations. The sewage pumping station had a low side-facing gabled roof, stucco walls, wood French doors, metal sash windows, and wood louvers. In 1961 a 56'x26' garage, workshop, and storage building was constructed adjacent to the sewage pumping station in a similar architectural style; and in 1967 a large addition of approximately the same

size was constructed to provide additional storage. In 1991, the original 8-inch reclaimed water main was abandoned and a new 16-inch water main was constructed within Aliso Creek. In 1992 a fire damaged the vehicle maintenance and storage building (bays 1-4), resulting in reconstruction of the fire-damaged areas and renovation of the entire facility including the sewage pumping station. Alterations and upgrades included reroofing, exterior restucco, and repainting, new vinyl windows, new front doors, closure of vents, closure of rear windows, new signage, demolition of a paint spray booth, and construction of new walls, entrance gates, and planters. Physical observation indicates that the electrical system was upgraded at the time. A fire suppression system was added, resulting in the roof heights being raised to accommodate the new equipment.

The subject property was originally built in a utilitarian, simplified style. In 1992-1993 it was substantially altered, renovated, and upgraded. As a result, it does not embody the distinctive characteristics of a type, period, or method of construction from its period of significance (1953-54). It lacks integrity due to substantial alterations that have removed and replaced the majoring of its original character-defining features including the original windows, doors and signage. Furthermore, it was not designed by a master architect or master engineer. As discussed above, Lift Station 2 (substantially altered in 1992) and the associated workshop, storage and garage building (rebuilt after a fire 1992-93), and associated landscape features including planters and walls (renovated/altered 1992-93), and reclaimed water main (replaced 1991), do not retain sufficient integrity to convey their appearance from the subject property's architectural period of significance (1953-54). While the subject property retains integrity of location and association, these later changes after the period of significance substantially detract from its integrity of design, workmanship, materials, and feeling, and materially impair its eligibility for listing in the National Register or California Register.

Therefore, South Coast Water Lift Station #2 does not meet the integrity or eligibility requirements for significance under National Register Criterion C or California Register 3, either individually or as a potential contributor to a potential District.

d. Data

National Register Criterion D. It yields, or may be likely to yield, information important in prehistory or history.

California Register Criterion 4. Has yielded, or may be likely to yield, information important in prehistory or history.

While most often applied to archaeological districts and sites, Criterion D/4 can also apply to buildings, structures, and objects that contain important information. For these types of properties to be eligible under Criterion D/4, they themselves must be, or must have been, the principal source of the important information. None of the buildings on the subject property appear to yield significant information that would expand our current knowledge or theories of design, methods of construction, operation, or other information that is not already known about the period in which they were constructed, their method of construction, or their design. The building reflects common building practices and materials of the early twentieth century, which have already been well documented.

Therefore, South Coast Water District Lift Station #2 does not meet the eligibility requirements under National Register Criterion D and California Register Criterion 4 either individually or as a potential contributor to a potential District.

Laguna Beach Significance

A.

Structures that most retain their original appearance and architectural integrity using the rating system of "E," "K" and "C" as described in the historic resources element of the general plan

As discussed above, South Coast Water District Lift Station #2 (substantially altered in 1992) and the associated workshop, storage and garage building (rebuilt after a fire 1992-93), and associated landscape features including planters and walls (renovated/altered 1992-93), and reclaimed water main (replaced 1991), do not retain sufficient integrity to convey their appearance from the subject property's architectural period of significance (1953-54). While the subject property retains integrity of location and association, these later changes after the period of significance substantially detract from its integrity of design, workmanship, materials, and feeling, and materially impair its eligibility for listing in the Laguna Beach Historic Register.

B.

Structures that most represent character, interest or value as part of the heritage of the city

Due to lack of integrity, the South Coast Water District Lift Station #2 does not represent character, interest, or value as part of the heritage of the city.

C.

The location as a site of significant historic event

No known significant historic events took place within or near the South Coast Water District Lift Station #2.

D.

The identification with a person or persons or groups who significantly contributed to the culture and development of the city

The water lift station is associated with the South Laguna Sanitary District, established by the South Laguna Civic Association (SLCA) which oversaw the development of South Laguna Beach before it was annexed by Laguna Beach in 1987. In 1975, the South Coast County Water District took over the South Laguna Sanitary District and its facilities including South Coast Water District Lift Station #2. Therefore, the South Coast Water District Lift Station #2 was indirectly associated with the SLCA through its administration by the South Laguna Sanitary District. Since it is not strongly identified with a person or persons or groups who significantly contributed to the culture and development of the city, the South Coast Water Lift Station #2 is not eligible under this criterion.

E.

The exemplification of a particular architectural style or way of life important to the city

The South Coast Water Lift Station #2 was constructed in a utilitarian minimal traditional style. It was substantially altered (rebuilt and upgraded) in 1992-1993 and does not currently retain sufficient integrity to convey its original architectural appearance during its period of significance (1953-54). Therefore, it does not currently exemplify a particular architectural style or way of life important to the city.

F.

The embodiment of elements of outstanding attention to architectural design, detail, materials, or craftsmanship

The South Coast Water Lift Station #2 does not embody elements of outstanding attention to architectural design, detail, material, or craftsmanship.

*B12. References (continued):

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Appendix E

Energy Assumptions and Modeling

ESA

APPENDIX E
Energy Assumptions and Calculations

1. Assumptions
    a. Construction Assumptions
    b. Schedule
    c. Equipment List
2. Energy Consumption
3. EMFAC2017

1. Assumptions
a. Construction Assumptions

Lift Station
Assumptions

CalEEMod Inputs (Non-Default information only)

Project Location			
County	Orange County		
Air District	SCAQMD		
Climate Zone	8		
Construction Year start	2021		
Operational Year Project	2024		
Utility Provider	Southern California Edison		
Source Receptor Area (SCAQMD)	20	Central Orange County Costal	

	2021	2022	2024
CO intensity	483.27	462.58	421.21
% renewable	35.75%	38.50%	44.00%

1 Southern California Edison, 2018. ESG/Sustainability Template. Report date: September 27, 2018. Available: https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf. Accessed April 5, 2019.

2 SCE 2017 Power Content Label https://www.sce.com/sites/default/files/inline-files/2017PCL_0.pdf

3 SB-100 California Renewables Portfolio Standard Program: Emissions of Greenhouse Gases, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180

Project Description

The proposed project includes the removal of an existing water well and the construction of a new water well approximately 40 feet southwest of the existing well within the existing fenced well facility. The following is a description of the facilities proposed to be removed and the construction of the proposed facilities.

Land Use	Building SQFT	Building KFS	Units/ Spaces	Acres	CalEEMod Category
Lift Station	5,666			1.50	Light Industrial

Site Buildings:

1,006	Generator Building	
520	Electrical Building	
4,139	Lift Station	
1,294	Existing	To Be demolished

Lift Station
Assumptions

Construction Schedule

Phase Name	Start Date	End Date		
Emergency Intertie Valve Vault and Piping	9/6/2021	11/19/2021	**32**	**Months**
Overhead Power Relocation	10/4/2021	11/19/2021		
Sewer Grinder Vault	11/1/2021	7/4/2023		
Storm Drain and Creek Outlet Structure	11/22/2021	2/6/2024		
Country Club Drive Relocation	1/24/2022	4/8/2022		
Temporary Sewer Relocation	4/11/2022	4/27/2022		
New Lift Station Site Demolition	4/11/2022	4/20/2022		
Wetwell/Drywell Construction	5/23/2022	3/17/2023		
Perimeter Wall Construction	3/13/2023	5/30/2023		
2'X3' RCB Construction	6/5/2023	7/10/2023		
Slope Grading Behind Perimeter Wall	8/7/2023	9/15/2023		
Influent Sewer Extension	8/15/2022	1/13/2023		
Generator Building Construction	4/3/2023	7/10/2023		
Pump Building Construction	4/24/2023	7/28/2023		
Generator Building Mechanical	8/14/2023	8/15/2023		
Pump Building Mechanical	7/3/2023	7/3/2023		
Scrubber Installation	5/23/2023	3/11/2024		
Miscellaneous Pump Station Site Improvements	10/6/2023	4/26/2024		
Existing Pump Station Demolition	1/22/2024	2/16/2024		
Miscellaneous Items	9/6/2021	2/16/2024		

Note:

The above schedule contains the start and end date for each construction phase. However, subphases and equipment use may be intermittentb between these dates. It is not intended that construction of these phases will occur on every day, or even every work day, within the start and end date listed. See the detailed phasing below for numer of days per sub phase and the accompanying construction schedule for detaild days of activities per phase and subphase.

Lift Station
Assumptions

Phase Name	Days	Haul Trips	Concrete	Vendor
Emergency Intertie Valve Vault and Piping				
Dewatering Wells	2	0	0	0
Vault and Tapping Sleeve Excavation /Shoring	10	2	0	0
Line Stop Installation/Removal	1	0	0	2
Subgrade Preparation	2	0	0	1
Vault Delivery and Placement	1	0	0	1
Vault Backfill and Compaction	5	0	0	0
Valve and Pipe Installation	15	2	0	0
Overhead Power Relocation				
Power Conduit installation	10	1	0	0
Communication Conduit Installation	15	1	0	0
Pavement Repair	2	0	0	2
Sewer Grinder Vault				
Dewatering Wells	1	0	0	0
Excavation/Shoring	10	2	0	0
Subgrade Preparation	2	0	0	1
Vault Base Forming/Rebar/Concrete	5	0	3	0
Vault Placement/Backfill	3	0	0	1
Set Grinder	1	0	0	0
Storm Drain and Creek Outlet Structure				
Outlet Structure Excavation	3	1	0	0
Subgrade Preparation	1	0	0	0
Outlet Structure Forming/Rebar/Concrete	3	0	1	0
Outlet Structure Backfill	1	0	0	0
Rip Rap Excavation and Placement	3	1	0	3
4'x1' RCB Excavation	2	2	0	0
4'x1' RCB Subgrade Preparation	1	0	0	0
4'x1' RCB Concrete	1	0	2	0
42 inch RCP Excavation	2	1	0	0
42 inch RCP Subgrade Preparation	1	0	0	0
42 Inch RCP Installation/Backfill	2	0	0	0
Catch Basin Excavation	1	1	0	0
Catch Basin Concrete	1	0	1	0
Catch Basin Backfill	1	0	0	0
18 Inch RCP Excavation	5	1	0	0
18 Inch RCP Subgrade Preparation	2	0	0	0
18 Inch RCP Installation Backfill	13	0	0	0
Country Club Drive Relocation				
Road Grading/Subgrade Preparation	15	1	0	0
Road Base and Compaction	10	0	0	3
AC Pavement	20	0	0	1
DG Pedestrian Path	10	0	0	2

Lift Station
Assumptions

Phase Name	Days	Haul Trips	Concrete	Vendor
Temporary Sewer Relocation				
Manhole Excavation/Shoring	1	2	0	0
Manhole Base Placement	1	0	1	0
Manhole Riser Placement/Backfill	2	0	0	1
8-inch Pipe Excavation/Shoring	2	1	0	0
8-inch Pipe Subgrade Preparation	1	0	0	0
8-inch Pipe Installation/Backfill	5	0	0	0
New Lift Station Site Demolition				
Building Demolition	5	3	0	0
Pipe Removals	3	0	0	0
Wetwell/Drywell Construction				
Deep Soil Mixing	35	4	6	0
Dewatering Wells	3	0	0	0
Excavation/Shoring	25	20	0	0
Subgrade Preparation	5	0	0	3
Wetwell/Drywell Base Construction	10	0	35	0
Wetwell/Drywell Wall Construction	30	0	11	0
Wetwell/Drywell Deck Construction	30	0	9	0
Backfill/Compaction	20	0	0	13
Stair Installation	5	0	0	0
Perimeter Wall Construction				
Footing Excavation	5	0	0	0
Footing Construction	1	0	6	0
Wall Construction	30	0	4	0
2'X3' RCB Construction				
Fill to Subgrade	5	0	0	5
2'x3' RCB Construction	2	0	3	0
Slope Grading Behind Perimeter Wall				
Fill Placement	5	0	0	4
Rip Rap Placement	2	0	1	2
Concrete Maintenance Walk	5	0	2	0
Influent Sewer Extension				
Dewatering Wells	5	0	0	0
Jacking and Receiving Pit Excavation/shoring	15	5	0	0
Jack and Bore 42 inch Casing	10	4	1	0
Jacking Pit Backfill/Compaction	10	0	0	2
Sewer Open Cut Excavation	10	2	0	0
Pipe Subgrade Preparation	4	0	0	0
Pipe Installation/Backfill	15	0	1	2
Manhole Excavation/Shoring	5	1	0	0
Manhole Base Placement	1	0	2	0
Manhole Shaft Placement/Backfill	3	0	0	1

Lift Station
Assumptions

Phase Name	Days	Haul Trips	Concrete	Vendor
Generator Building Construction				
Footing and Equipment Bases	7	1	4	0
Masonry Building and Roof	35	0	2	0
Pump Building Construction				
Masonry Building and Roof	30	0	2	0
Generator Building Mechanical				
Set Generator and Diesel Pump	2	0	0	0
Pump Building Mechanical				
Set Pumps	1	0	0	0
Scrubber Installation				
Foul Air Piping Excavation	6	2	0	0
Foul Air Piping Subgrade Preparation	2	0	0	0
Piping Installation/Backfill	10	0	0	2
Scrubber Installation	1	0	1	0
Miscellaneous Pump Station Site Improvements				
Yard Paving	3	0	3	0
Yard Piping	10	0	0	0
Drain Boxes/Radio Antenna	10	0	1	0
Curb and Gutter/Drive Way	5	0	1	0
Existing Pump Station Site Paving	2	0	0	3
Old Country Club Drive Repaving	5	3	0	3
Existing Pump Station Demolition				
Remove Buildings/Paving and Structure 6 feet BGS	10	2	1	3
Miscellaneous Items				
Street Sweeping	360	0	0	0
Dust Control	360	0	0	0
Pneumatic Tools	360	0	0	0

Note: Onroad Emissions modeled Outside of CalEEMod using EMFAC2017. Due to the variety of vehicle trips per phase, each category (Haul Truck (Haul and Concrete Trucks), Vendor Truck, and Worker Vehicles) were only modeled for 1 vehicle. Modeling accounts for 2 one-way trips or 1 round trip.

Lift Station
Assumptions

Soil Import/Export

11,745	cubic yards excavation
7,869	cubic yards of backfill/compaction
4,176	cubic yards export

Equipment Used Onsite

The following equipment is used for various phases throughout the project. Due to the number of phases and the overlap of equipment, each piece of equimpent is only modeled once in CalEEMod. To determine accurate fugitive dust emissions from grading for 1.2 acres would be graded with a maximum of 1 acre per day. Default horse power and load factor are used where CalEEmod defautlts exist for the equpiment.

Type	#	Hrs/day	CalEEMod Designation
Backhoe	1	8	Tractor/Loader/Backhoe
Bobcat Loader	1	8	Skidsteer Loader
Boom Truck	1	8	Offhighway Truck
Compressor	1	8	Air Compressor
Concrete Pumper Truck	1	8	Offhighway Truck
Concrete Saw	1	8	Concrete/Industrial Saw
Concrete Truck		Modeled Outside CalEEMod	
Crane	1	8	Crane
Delivery Truck		Modeled Outside CalEEMod	
Delivery Truck with Boom		Modeled Outside CalEEMod	
Dozer	1	8	Rubber Tired Dozer
Drill Rig	1	8	Bore/Drill Rig
Excavator	1	8	Excavator
Forklift	1	8	Forklift
Grader	1	8	Grader
Haul Truck		Modeled Outside CalEEMod	
Industrial Saw	1	8	Concrete/Industrial Saw
Jacking Machine	1	8	Other Construction equipment
Loader	1	8	Tractor/Loader/Backhoe
Material Truck		Modeled Outside CalEEMod	
Paver	1	8	Paver
Rock Delivery Truck		Modeled Outside CalEEMod	
Roller/Compactor	1	8	Roller
Soil Mixing Drill Rig	1	8	Bore/Drill Rig
Sweeper Truck	1	8	Sweeper/Scrubber
Vibratory Plate Compactor	1	8	Plate Compactor
Vibratory Rammer	1	8	Plate Compactor
Water Truck	1	8	Water
Pneumatic Tools	1	8	Air Compressor

Utility Provider: **SCE** **Intensity Factors With RPS Included**

	Year	RPS Mandate	Electricity Emission Factor (MT CO_2e/MWh)	Electricity Emission Factor (lbs CO_2e/MWh)	Proportion Compared to 2024	lbs/ metric ton 2204.623
	Base	Base	0.3412	752.16549		
	2017[1]	32.00%	0.232	511.47254		
	Base	0%	0.3412	752.1655		
	2017	32%	0.2320	511.4725		
1%	2018	32%	0.2309	508.9653		
0.333%	2019	33%	0.2297	506.4581		
11%	2020	33.00%	0.2286	503.9509		
2.750%	2021	35.75%	0.2192	483.2663		
2.750%	2022	38.50%	0.2098	462.5818		
2.750%	2023	41.25%	0.2004	441.8972		
	2024	44.00%	0.1911	421.2127	1.00	
2.667%	2025	46.67%	0.1820	401.1549	0.95	
2.667%	2026	49.33%	0.1729	381.0972	0.90	
	2027	52.00%	0.1638	361.0394	0.86	
2.67%	2028	54.67%	0.1547	340.9817	0.81	
2.67%	2029	57.33%	0.1456	320.9239	0.76	
	2030	60.00%	0.1365	300.8662	0.71	
2.67%	2031	62.7%	0.1274	280.8085	0.67	
2.67%	2032	65.3%	0.1183	260.7507	0.62	
2.67%	2033	68.0%	0.1092	240.6930	0.57	
2.67%	2034	70.7%	0.1001	220.6352	0.52	
2.67%	2035	73.3%	0.0910	200.5775	0.48	
2.67%	2036	76.0%	0.0819	180.5197	0.43	
2.67%	2037	78.7%	0.0728	160.4620	0.38	
2.67%	2038	81.3%	0.0637	140.4042	0.33	
2.67%	2039	84.0%	0.0546	120.3465	0.29	
2.67%	2040	86.7%	0.0455	100.2887	0.24	
2.67%	2041	89.3%	0.0364	80.2310	0.19	
2.67%	2042	92.0%	0.0273	60.1732	0.14	
2.67%	2043	94.7%	0.0182	40.1155	0.10	
2.67%	2044	97.3%	0.0091	20.0577	0.05	
2.67%	2045	100%	0	0	0.00	
0.00%	2046	100%	0	0	0.00	
0.00%	2047	100%	0	0	0.00	
0.00%	2048	100%	0	0	0.00	
0.00%	2049	100%	0	0	0.00	
0.00%	2050	100%	0	0	0.00	
0.00%	2051	100%	0	0	0.00	
0.00%	2052	100%	0	0	0.00	
0.00%	2053	100%	0	0	0.00	
	2054	100%	0	0	0.00	

[1] Southern California Edison, 2018. ESG/Sustainability Template. Report date: September 27, 2018. Available: https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf. Accessed April 5, 2019.

[2] SCE 2017 Power Content Label https://www.sce.com/sites/default/files/inline-files/2017PCL_0.pdf

[3] SB-100 California Renewables Portfolio Standard Program: Emissions of Greenhouse Gases, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180

1. Assumptions
b. Schedule

Lift Station No. 2 Construction Equipment Estimate

Schedule by Main Phase	Compiled Schedule	Start	End
Emergency Intertie Valve Vault and Piping	9/6/2021 - 11/19/2021	9/6/2021	11/19/2021
Overhead Power Relocation	10/4/2021 - 11/19/2021	10/4/2021	11/19/2021
Sewer Grinder Vault	11/1/2021 - 7/4/2023	11/1/2021	7/4/2023
Storm Drain and Creek Outlet Structure	11/22/2021 - 2/26/2024	11/22/2021	2/6/2024
Country Club Drive Relocation	1/24/2022 - 4/8/2022	1/24/2022	4/8/2022
Temporary Sewer Relocation	4/11/2022 - 4/27/2022	4/11/2022	4/27/2022
New Lift Station Site Demolition	4/11/2022 - 4/20/2022	4/11/2022	4/20/2022
Wetwell/Drywell Construction	5/23/2022 - 3/17/2023	5/23/2022	3/17/2023
Perimeter Wall Construction	3/13/2023 - 5/30/2023	3/13/2023	5/30/2023
2'X3' RCB Construction	6/5/2023 - 7/10/2023	6/5/2023	7/10/2023
Slope Grading Behind Perimeter Wall	8/7/2023 - 9/15/2023	8/7/2023	9/15/2023
Influent Sewer Extension	8/15/2022 - 1/13/2023	8/15/2022	1/13/2023
Generator Building Construction	4/3/2023 - 7/10/2023	4/3/2023	7/10/2023
Pump Building Construction	4/24/2023 - 7/28/2023	4/24/2023	7/28/2023
Generator Building Mechanical	8/14/2023 - 8/15/2023	8/14/2023	8/15/2023
Pump Building Mechanical	7/3/2023	7/3/2023	7/3/2023
Scrubber Installation	5/23/2023 - 3/11/2024	5/23/2023	3/11/2024
Miscellaneous Pump Station Site Improvements	10/6/2023 - 4/26/2024	10/6/2023	4/26/2024
Existing Pump Station Demolition	1/22/2024 - 2/16/2024	1/22/2024	2/16/2024
Miscellaneous Items	9/6/2021 - 2/16/2024	9/6/2021	2/16/2024

Lift Station No. 2 Construction Equipment Estimate

				Schedule Dates
A	**Emergency Intertie Valve Vault and Piping**			**9/6/2021 - 11/19/2021**
1	Dewatering Wells	Drill Rig	2 Days	9/6/21-9/7/21
2	Vault and Tapping Sleeve Excavation /Shoring	Excavator	10 Days	9/8/21-9/14/21;9/30/21-10/8/21
		Haul Truck	4 Trips	9/8/21-10/8/21
3	Line Stop Installation/Removal	Delivery Truck	2 Trips	9/16/21;10/29/21
		Boom Truck	8 hours	9/16/21;10/29/21
4	Subgrade Preparation	Excavator	1 Day	10/13/2021
		Material Truck	1 trip	10/13/2021
		Vibratory Plate Compactor	2 Days	10/14/21-10/15/21
5	Vault Delivery and Placement	Delivery Truck with Boom	1Trip/1Day	10/18/2021
6	Vault Backfill and Compaction	Excavator	5 Days	11/1/21-11/5/21
		Vibratory Rammer	5 Days	11/1/21-11/6/21
7	Valve and Pipe Installation	Excavator	15 days	10/25/21-10/28/21;11/8/21-11/19/21
		Vibratory Rammer	5 Days	11/14/21-11/19/21
		Haul Truck	2 Trips	11/11/21;11/16/21
		Crane	1 Day	10/25/2021
B	**Overhead Power Relocation**			**10/4/2021 - 11/19/2021**
8	Power Conduit installation	Industrial Saw	1 Day	10/4/2021
		Backhoe	10 days	10/5/21-10/18/21
		Vibratory Rammer	5 Days	10/12/21-10/18/21
		Haul Truck	1 Trip	10/11/2021
9	Communication Conduit Installation	Industrial Saw	1 Day	10/25/2021
		Backhoe	15 days	10/26/21-11/15/21
		Vibratory Rammer	5 Days	10/13/21-10/16/21;11/16/21-11/17/21
		Haul Truck	1 Trip	11/8/2021
10	Pavement Repair	Material Truck	2 trips	11/18/21-11/19/21
		Roller/Compactor	2 Day	11/18/21-11/19/21
C	**Sewer Grinder Vault**			**11/1/2021 - 7/4/2023**
11	Dewatering Wells	Drill Rig	1 Day	11/1/2021
12	Excavation/Shoring	Excavator	10 Days	11/4/21-11/17/21
		Haul Truck	12 Trips	11/8/21-11/19/21
13	Subgrade Preparation	Excavator	1 Day	11/18/2021
		Material Truck	1 Trip	11/18/2019
		Vibratory Plate Compactor	2 Days	11/18/21-11/19/21
14	Vault Base Forming/Rebar/Concrete	Excavator	5 Days	11/22/2021-11/26/21
		Concrete Truck	3 Trips	11/29/2021
		Concrete Pumper Truck	1 Day	11/29/2021
15	Vault Placement/Backfill	Delivery Truck with Boom	1 Day/1Trip	12/20/2021
		Excavator	3 Days	1/5/22-1/7/22
		Vibratory Rammer	3 Days	1/5/22-1/7/22
16	Set Grinder	Crane	1 Day	7/24/2023
D	**Storm Drain and Creek Outlet Structure**			**11/22/2021 - 2/26/2024**
17	Outlet Structure Excavation	Excavator	3 Days	11/22/21-11/24/21
		Haul Truck	3 Trips	11/22/21-11/24/21
18	Subgrade Preparation	Excavator	1 Day	
		Vibratory Plate Compactor	1 Day	11/30/2021
19	Outlet Structure Forming/Rebar/Concrete	Excavator	3 Days	12/1/21-12/3/21
		Concrete Truck	2 Trips	11/29/21,12/6/21
		Concrete Pumper Truck	2 Days	11/29/21;12/6/21
20	Outlet Structure Backfill	Excavator	1 Day	12/20/2021
		Vibratory Rammer	1 Day	12/20/2021

Lift Station No. 2 Construction Equipment Estimate

				Schedule Dates
A	**Emergency Intertie Valve Vault and Piping**			**9/6/2021 - 11/19/2021**
21	Rip Rap Excavation and Placement	Excavator	3 Days	12/21/21-12/24/21
		Haul Truck	3 Trips	12/21/2021-12/23/21
		Rock Delivery Truck	5 Trips	12/24/2021
22	4'x1' RCB Excavation	Backhoe	2 Days	12/27/21-12/28/21
		Haul Truck	4 Trips	12/27/21-12/28/21
23	4'x1' RCB Subgrade Preparation	Backhoe	1 Day	12/29/2021
		Vibratory Plate Compactor	1 Day	12/29/2021
24	4'x1' RCB Concrete	Concrete Truck	2 Trips	1/10/2022
25	42 inch RCP Excavation	Excavator	2 Day	12/7/21-12/8/21
		Haul Truck	1 Trip	12/8/2021
26	42 inch RCP Subgrade Preparation	Excavator	1 Day	12/9/2021
		Vibratory Plate Compactor	1 Day	12/9/2021
27	42 Inch RCP Installation/Backfill	Excavator	2 Days	12/10/21;12/23/21
		Vibratory Rammer	1 Days	12/23/2021
28	Catch Basin Excavation	Backhoe	1 Day	2/12/2024
		Haul Truck	1 Trip	2/12/2024
29	Catch Basin Concrete	Concrete Truck	1 Trip	2/19/2024
30	Catch Basin Backfill	Backhoe	1 Day	2/26/2024
		Vibratory Rammer	1 Day	2/26/2024
31	18 Inch RCP Excavation	Industrial Saw	1 Day	5/1/2023
		Backhoe	5 Days	5/2/23-5/8/23
		Haul Truck	1 Trip	5/8/2023
32	18 Inch RCP Subgrade Preparation	Backhoe	2 Days	5/15/23-5/16/23
		Vibratory Plate Compactor	2 Days	5/15/23-5/16/23
33	18 Inch RCP Installation Backfill	Backhoe	13 Days	5/17/23-5/26/23;5/29/23-6/2/23
		Vibratory Rammer	5 Days	5/29/23-6/2/23
E	**Country Club Drive Relocation**			**1/24/2022 - 4/8/2022**
34	Road Grading/Subgrade Preparation	Grader	10 Days	1/24/2022-2/4/22
		Loader	10 Days	1/24/2022-2/4/22
		Haul Truck	3 Trips	1/24/2022-2/4/22
		Water Truck	15 Days	1/24/2022-2/11/22
		Roller/Compactor	5 Days	2/7/22-2/11/22
35	Road Base and Compaction	Material Truck	30 Trips	2/14/22-2/25/22
		Roller/Compactor	10 Days	2/14/22-2/25/22
36	AC Pavement	Material Truck	18 Trips	2/28/22-3/25/22
		Paver	20 Days	2/28/22-3/25/22
		Roller/Compactor	20 Days	2/28/22-3/25/22
37	DG Pedestrian Path	Material Truck	2 Trips	3/28/2022;4/4/22
		Vibratory Plate Compactor	10 Days	3/28/22-4/8/22
		Backhoe	10 Days	3/28/22-4/8/22
F	**Temporary Sewer Relocation**			**4/11/2022 - 4/27/2022**
38	Manhole Excavation/Shoring	Backhoe	1 Day	4/11/2022
		Haul Truck	2 Trips	4/11/2022
39	Manhole Base Placement	Concrete Truck	1 Trip	4/12/2022
40	Manhole Riser Placement/Backfill	Delivery Truck with Boom	1Trip/1Day	4/14/2022
		Backhoe	2 Days	4/14/22-4/15/22
		Vibratory Rammer	2 Days	4/14/22-4/15/22
41	8-inch Pipe Excavation/Shoring	Backhoe	2 Days	4/18/22-4/19/22
		Haul Truck	1 Trip	4/19/2022
42	8-inch Pipe Subgrade Preparation	Backhoe	1 Day	4/20/2022
		Vibratory Plate Compactor	1 Day	4/20/2022

Lift Station No. 2 Construction Equipment Estimate

				Schedule Dates
A	**Emergency Intertie Valve Vault and Piping**			**9/6/2021 - 11/19/2021**
43	8-inch Pipe Installation/Backfill	Backhoe	5 Day	4/21/22-4/27/22
		Vibratory Rammer	3 Day	4/25/22-4/27/22
G	**New Lift Station Site Demolition**			**4/11/2022 - 4/20/2022**
44	Building Demolition	Concrete Saw	5 Days	4/11/22-4/15/22
		Dozer	5 Days	4/11/22-4/15/22
		Backhoe	5 Days	4/11/22-4/15/22
		Water Truck	5 Days	4/11/22-4/15/22
		Haul Truck	3 Trips	4/12/22;4/14/22;4/15/22
45	Pipe Removals	Backhoe	3 Days	4/18/22-4/20/22
H	**Wetwell/Drywell Construction**			**5/23/2022 - 3/17/2023**
46	Deep Soil Mixing	Soil Mixing Drill Rig	35 Days	5/23/22-7/8/22
		Concrete Truck	200 Trips	5/23/22-7/8/22
		Loader	35 Days	5/23/22-7/8/22
		Haul Truck	130 Trips	5/23/22-7/8/22
47	Dewatering Wells	Drill Rig	3 Days	6/16/22-6/18/22
48	Excavation/Shoring	Excavator	25 Days	7/11/22-8/12/22
		Haul Truck	500 Trips	7/11/22-8/12/22
		Crane	10 Days	7/25/22-8/12/22
49	Subgrade Preparation	Bobcat Loader	5 days	8/15/22-8/19/22
		Material Truck	12 Trips	8/15/22-8/19/22
		Roller/Compactor	5 Days	8/15/22-8/19/22
50	Wetwell/Drywell Base Construction	Crane	10 Days	8/22/22-9/2/22
		Concrete Truck	35 Trips	9/2/2022
		Concrete Pumper Truck	1 Day	9/2/2022
51	Wetwell/Drywell Wall Construction	Crane	30 Days	9/6/22-9/19/22; **9/28/22**;9/29/22-10/13/22; **10/20/22-10/21/22** ;11/7/22-11/11/22**; 11/14/22;** 12/5/22
		Concrete Truck	62 Trips	9/26/22-9/27/22; 10/24/22-10/25/22; 11/14/22-11/15/22
		Concrete Pumper Truck	6 Days	9/26/22-9/27/22; 10/24/22-10/25/22; 11/14/22-11/15/22
52	Wetwell/Drywell Deck Construction	Crane	30 Days	11/21/22-12/2/22; 12/19/22-1/3/23; 1/16/23-1/27/23
		Concrete Truck	25 Trips	12/12/22; 1/9/23; 2/6/23
		Concrete Pumper Truck	3 Days	12/12/22; 1/9/23; 2/6/23
53	Backfill/Compaction	Loader	20 Days	3/6/23-3/31/23
		Vibratory Plate Compactor	20 Days	3/6/23-3/31/23
		Material Truck	250 Trips	3/6/23-3/31/23
54	Stair Installation	Crane	5 Days	3/13/23-3/17/23
I	**Perimeter Wall Construction**			**3/13/2023 - 5/30/2023**
55	Footing Excavation	Backhoe	5 Days	3/13/23-3/17/23
56	Footing Construction	Concrete Truck	6 Trips	4/3/2023
		Concrete Pumper Truck	1 Day	4/3/2023
57	Wall Construction	Crane	30 Days	4/4/23-4/13/23; 4/18/23-4/27/23; 5/2/23-5/11/23; 5/16/23-5/17/23; 5/22/23-5/23/23; 5/29/23-5/30/23
		Concrete Truck	10 Trips	4/17/23; 5/1/23; 5/16/23
		Concrete Pumper Truck	3 Days	4/17/23; 5/1/23; 5/16/23

Lift Station No. 2 Construction Equipment Estimate

				Schedule Dates
A	**Emergency Intertie Valve Vault and Piping**			**9/6/2021 - 11/19/2021**
J	**2'X3' RCB Construction**			**6/5/2023 - 7/10/2023**
58	Fill to Subgrade	Material Truck	25 Trips	6/5/23-6/9/23
		Loader	5 Days	6/5/23-6/9/23
		Roller/Compactor	5 Days	6/5/23-6/9/23
		Water Truck	5 Days	6/5/23-6/9/23
59	2'x3' RCB Construction	Concrete Truck	5 Trips	6/26/23; 7/10/23
		Concrete Pumper Truck	2 Days	6/26/23; 7/10/23
K	**Slope Grading Behind Perimeter Wall**			**8/7/2023 - 9/15/2023**
60	Fill Placement	Material Truck	20 Trips	8/7/23-8/11/23
		Dozer	5 Days	9/4/23-9/8/23
		Backhoe	5 Days	8/7/23-8/11/23
61	Rip Rap Placement	Material Truck	2 Trips	9/1/2023
		Concrete Truck	1 Trip	9/1/2023
		Excavator	2 Days	8/28/23; 9/1/23
62	Concrete Maintenance Walk	Concrete Truck	2 Trips	9/22/2023
		Backhoe	5 Day	9/11/23-/9/15/23
L	**Influent Sewer Extension**			**8/15/2022 - 1/13/2023**
63	Dewatering Wells	Drill Rig	5 Days	8/15/22-8/19/22
64	Jacking and Receiving Pit Excavation/shoring	Excavator	15 days	8/29/22-9/16/22
		Haul Truck	20 trips	8/29/22-9/16/22
		Crane	5 Days	9/12/22-9/16/22
65	Jack and Bore 42 inch Casing	Jacking Machine	10 Days	9/19/22-9/23/22; 9/26/22-9/30/22
		Boom Truck	10 Days	9/19/22-9/23/22; 9/26/22-9/30/22
		Haul Truck	4 Trips	9/19/22-9/23/22
		Concrete Truck	1 Trip	9/30/2022
		Concrete Pumper Truck	1 Day	9/30/2022
66	Jacking Pit Backfill/Compaction	Excavator	10 Days	10/24/22-11/4/22
		Vibratory Plate Compactor	10 Days	10/24/22-11/4/22
		Material Truck	20 Trips	10/24/22-11/4/22
67	Sewer Open Cut Excavation	Excavator	10 Days	10/3/22-10/4/22; 11/7/22-11/9/22; 11/28/22-11/30/22;12/29/22-12/30/22
		Haul Truck	12 trips	10/3/22-10/4/22; 11/7/22-11/9/22; 11/28/22-11/30/22;12/29/22-12/30/22
68	Pipe Subgrade Preparation	Excavator	4 Days	10/5/22 ;11/10/22; 12/1/22; 1/3/23
		Vibratory Plate Compactor	4 Days	10/6/22; 11/11/22; 12/2/22; 1/4/23
69	Pipe Installation/Backfill	Excavator	15 Days	11/14/22-11/18/22; 11/21/22-11/22/22; 12/5/22-12/7/22; 12/8/22-12/9/22; 1/4/23-1/6/23
		Material Truck	10 Trips	11/21/22; 12/8/22;1/6/23
		Vibratory Plate Compactor	5 Days	11/21/22-11/22/22; 12/8/22-12/9/22; 1/6/23
		Concrete Truck	3 Trips	11/18/22; 12/7/22; 1/6/22
		Concrete Pumper Truck	3 Days	11/18/22; 12/7/22; 1/6/22
70	Manhole Excavation/Shoring	Excavator	5 Days	12/12/22-12/16/22
		Haul Truck	5 Trips	12/12/22-12/16/22
71	Manhole Base Placement	Concrete Truck	2 Trips	12/28/2022
		Concrete Pumper Truck	1 Day	12/28/2022
72	Manhole Shaft Placement/Backfill	Delivery Truck with Boom	1 Day	1/9/2023
		Material Truck	3 Trips	1/11/23-1/13/23
		Vibratory Rammer	2 Days	1/11/23-1/13/23
		Excavator	3 Days	1/11/23-1/13/23

Lift Station No. 2 Construction Equipment Estimate

				Schedule Dates
A	**Emergency Intertie Valve Vault and Piping**			**9/6/2021 - 11/19/2021**
M	**Generator Building Construction**			**4/3/2023 - 7/10/2023**
73	Footing and Equipment Bases	Backhoe	7 Days	4/3/23-4/7/23;4/11/23-4/12/23
		Haul Truck	1 Trip	4/12/2023
		Concrete Truck	4 Trips	4/10/2023;4/19/23
74	Masonry Building and Roof	Forklift	35 Days	5/28/23-6/23/23
		Concrete Truck	2 Trips	6/26/2023
		Concrete Pumper Truck	1 Day	6/26/2023
		Crane	5 Days	7/3/23-7/10/23
N	**Pump Building Construction**			**4/24/2023 - 7/28/2023**
75	Masonry Building and Roof	Forklift	30 Days	4/24/23-6/9/23
		Concrete Truck	2 Trips	6/27/2023
		Concrete Pumper Truck	1 Day	6/27/2023
		Crane	5 Days	7/24/23-7/28/23
O	**Generator Building Mechanical**			**8/14/2023 - 8/15/2023**
76	Set Generator and Diesel Pump	Crane	2 Days	8/14/2023;8/15/23
P	**Pump Building Mechanical**			**7/3/2023**
77	Set Pumps	Crane	1 Day	7/3/2023
Q	**Scrubber Installation**			**5/23/2023 - 3/11/2024**
78	Foul Air Piping Excavation	Backhoe	6 Days	5/2/23-5/9/23
		Industrial Saw	1 Day	5/1/2023
		Haul Truck	3 Trips	5/3/23; 5/5/23; 5/10/23
79	Foul Air Piping Subgrade Preparation	Backhoe	2 Days	5/15/23-5/16/23
		Vibratory Rammer	2 Days	5/15/23-5/16/23
80	Piping Installation/Backfill	Backhoe	10 Days	5/17/23-5/30/23
		Vibratory Rammer	3 Days	5/29/23-5/31/23
		Material Truck	2 Trips	5/29/23-5/31/23
81	Scrubber Installation	Concrete Truck	1 Trip	2/23/2024
		Crane	1 Day	3/11/2024

Lift Station No. 2 Construction Equipment Estimate

				Schedule Dates
A	**Emergency Intertie Valve Vault and Piping**			**9/6/2021 - 11/19/2021**
R	**Miscellaneous Pump Station Site Improvements**			**10/6/2023 - 4/26/2024**
82	Yard Paving	Concrete Truck	3 Trips	10/6/2023
		Concrete Pumper Truck	1 Day	10/6/2023
		Vibratory Plate Compactor	3 Days	9/26/23-9/29/23
83	Yard Piping	Backhoe	10 Days	7/4/23-8/4/23
		Vibratory Rammer	10 Days	7/4/23-8/4/23
84	Drain Boxes/Radio Antenna	Backhoe	10 Days	6/5/23-6/16/23
		Concrete Truck	1 Trip	6/19/2023
		Crane	1 Day	6/23/2023
85	Curb and Gutter/Drive Way	Backhoe	5 Days	2/8/24-2/12/24
		Vibratory Plate Compactor	2 Days	2/14/24-2/15/24
		Concrete Truck	1 Trip	3/1/2024
86	Existing Pump Station Site Paving	Backhoe	2 Days	3/26/24-3/27/24
		Material Truck	3 Trips	4/1/2024
		Roller/Compactor	1 Day	4/1/2024
87	Old Country Club Drive Repaving	Loader	5 Days	3/26/24-3/30/24
		Haul Truck	15 Trips	3/26/24-3/30/24
		Material Truck	15 Trips	4/24/24-4/26/24
		Paver	3 Days	4/24/24-4/26/24
		Roller/Compactor	3 Days	4/24/24-4/26/24
S	**Existing Pump Station Demolition**			**1/22/2024 - 2/16/2024**
88	Remove Buildings/Paving and Structure 6 feet BGS	Compressor	10 days	1/22/24-2/2/24
		Crane	3 days	1/17/24-1/19/24
		Excavator	5 Days	1/22/24-1/26/24
		Loader	5 Days	2/12/24-2/16/24
		Haul Truck	10 trips	1/22/24-2/2/24
		Material Truck	3 Trips	2/12/24-2/16/24
		Concrete Truck	1 Trip	2/7/2024
89	**Miscellaneous Items**			**9/6/2021 - 2/16/2024**
	Street Sweeping	Sweeper Truck	360 Days	9/6/21-2/16/24
	Dust Control	Water Truck	360 Days	9/6/21-2/16/24
	Pneumatic Tools	Compressor	360 Days	9/6/21-2/16/24

1. Assumptions
c. Equipment List

Lift Station No. 2 Construction Equipment Estimate

					Total Round Trips		
				Days	Haul Trips	Concrete	Vendor
Emergency Intertie Valve Vault and Piping							
Dewatering Wells	Drill Rig	2 Days	Days	2			
Vault and Tapping Sleeve Excavation /Shoring	Excavator	10 Days	Days	10	4		
	Haul Truck	4 Trips	Trips				
Line Stop Installation/Removal	Delivery Truck	2 Trips	Trips	1			2
	Boom Truck	8 hours	Trips				
Subgrade Preparation	Excavator	1 Day	Days	2			1
	Material Truck	1 trip	Trips				
	Vibratory Plate Compactor	2 Days	Days				
Vault Delivery and Placement	Delivery Truck with Boom	1Trip/1Day	trips/day	1			1
Vault Backfill and Compaction	Excavator	5 Days	Days	5			
	Vibratory Rammer	5 Days	Days				
Valve and Pipe Installation	Excavator	15 days	Days	15	2		
	Vibratory Rammer	5 Days	Days				
	Haul Truck	2 Trips	Trips				
	Crane	1 Day	Days				
Overhead Power Relocation							
Power Conduit installation	Industrial Saw	1 Day	Days	10	1		
	Backhoe	10 days	Days				
	Vibratory Rammer	5 Days	Days				
	Haul Truck	1 Trip	Trips				
Communication Conduit Installation	Industrial Saw	1 Day	Days	15	1		
	Backhoe	15 days	Days				
	Vibratory Rammer	5 Days	Days				
	Haul Truck	1 Trip	Trips				
Pavement Repair	Material Truck	2 trips	Trips	2			2
	Roller/Compactor	2 Day	Days				
Sewer Grinder Vault							
Dewatering Wells	Drill Rig	1 Day	Days	1			
Excavation/Shoring	Excavator	10 Days	Days	10	12		
	Haul Truck	12 Trips	Trips				
Subgrade Preparation	Excavator	1 Day	Days	2			1
	Material Truck	1 Trip	Trips				
	Vibratory Plate Compactor	2 Days	Days				
Vault Base Forming/Rebar/Concrete	Excavator	5 Days	Days	5		3	
	Concrete Truck	3 Trips	Trips				
	Concrete Pumper Truck	1 Day	Days				
Vault Placement/Backfill	Delivery Truck with Boom	1 Day/1Trip	trips/day	3			1
	Excavator	3 Days	Days				
	Vibratory Rammer	3 Days	Days				
Set Grinder	Crane	1 Day	Days	1			

Lift Station No. 2 Construction Equipment Estimate

					Total Round Trips		
				Days	Haul Trips	Concrete	Vendor
Storm Drain and Creek Outlet Structure							
Outlet Structure Excavation	Excavator	3 Days	Days	3	3		
	Haul Truck	3 Trips	Trips				
Subgrade Preparation	Excavator	1 Day	Days	1			
	Vibratory Plate Compactor	1 Day	Days				
Outlet Structure Forming/Rebar/Concrete	Excavator	3 Days	Days	3		2	
	Concrete Truck	2 Trips	Trips				
	Concrete Pumper Truck	2 Days	Days				
Outlet Structure Backfill	Excavator	1 Day	Days	1			
	Vibratory Rammer	1 Day	Days				
Rip Rap Excavation and Placement	Excavator	3 Days	Days	3	3		5
	Haul Truck	3 Trips	Trips				
	Rock Delivery Truck	5 Trips	Trips				
4'x1' RCB Excavation	Backhoe	2 Days	Days	2	4		
	Haul Truck	4 Trips	Trips				
4'x1' RCB Subgrade Preparation	Backhoe	1 Day	Days	1			
	Vibratory Plate Compactor	1 Day	Days				
4'x1' RCB Concrete	Concrete Truck	2 Trips	Trips	1		2	
42 inch RCP Excavation	Excavator	2 Day	Days	2	1		
	Haul Truck	1 Trip	Trips				
42 inch RCP Subgrade Preparation	Excavator	1 Day	Days	1			
	Vibratory Plate Compactor	1 Day	Days				
42 Inch RCP Installation/Backfill	Excavator	2 Days	Days	2			
	Vibratory Rammer	1 Days	Days				
Catch Basin Excavation	Backhoe	1 Day	Days	1	1		
	Haul Truck	1 Trip	Trips				
Catch Basin Concrete	Concrete Truck	1 Trip	Trips	1		1	
Catch Basin Backfill	Backhoe	1 Day	Days	1			
	Vibratory Rammer	1 Day	Days				
18 Inch RCP Excavation	Industrial Saw	1 Day	Days	5	1		
	Backhoe	5 Days	Days				
	Haul Truck	1 Trip	Trips				
18 Inch RCP Subgrade Preparation	Backhoe	2 Days	Days	2			
	Vibratory Plate Compactor	2 Days	Days				
18 Inch RCP Installation Backfill	Backhoe	13 Days	Days	13			
	Vibratory Rammer	5 Days	Days				
Country Club Drive Relocation							
Road Grading/Subgrade Preparation	Grader	10 Days	Days	15	3		
	Loader	10 Days	Days				
	Haul Truck	3 Trips	Trips				
	Water Truck	15 Days	Days				
	Roller/Compactor	5 Days	Days				

Lift Station No. 2 Construction Equipment Estimate

					Total Round Trips		
				Days	Haul Trips	Concrete	Vendor
Road Base and Compaction	Material Truck	30 Trips	Trips	10			30
	Roller/Compactor	10 Days	Days				
AC Pavement	Material Truck	18 Trips	Trips	20			18
	Paver	20 Days	Days				
	Roller/Compactor	20 Days	Days				
DG Pedestrian Path	Material Truck	2 Trips	Trips	10			2
	Vibratory Plate Compactor	10 Days	Days				
	Backhoe	10 Days	Days				
Temporary Sewer Relocation							
Manhole Excavation/Shoring	Backhoe	1 Day	Days	1	2		
	Haul Truck	2 Trips	Trips				
Manhole Base Placement	Concrete Truck	1 Trip	Trips	1		1	
Manhole Riser Placement/Backfill	Delivery Truck with Boom	1Trip/1Day	trips/day	2			1
	Backhoe	2 Days	Days				
	Vibratory Rammer	2 Days	Days				
8-inch Pipe Excavation/Shoring	Backhoe	2 Days	Days	2	1		
	Haul Truck	1 Trip	Trips				
8-inch Pipe Subgrade Preparation	Backhoe	1 Day	Days	1			
	Vibratory Plate Compactor	1 Day	Days				
8-inch Pipe Installation/Backfill	Backhoe	5 Day	Days	5			
	Vibratory Rammer	3 Day	Days				
New Lift Station Site Demolition							
Building Demolition	Concrete Saw	5 Days	Days	5	3		
	Dozer	5 Days	Days				
	Backhoe	5 Days	Days				
	Water Truck	5 Days	Days				
	Haul Truck	3 Trips	Trips				
Pipe Removals	Backhoe	3 Days	Days	3			
Wetwell/Drywell Construction							
Deep Soil Mixing	Soil Mixing Drill Rig	35 Days	Days	35	130	200	
	Concrete Truck	200 Trips	Trips				
	Loader	35 Days	Days				
	Haul Truck	130 Trips	Trips				
Dewatering Wells	Drill Rig	3 Days	Days	3			
Excavation/Shoring	Excavator	25 Days	Days	25	500		
	Haul Truck	500 Trips	Trips				
	Crane	10 Days	Days				
Subgrade Preparation	Bobcat Loader	5 days	Days	5			12
	Material Truck	12 Trips	Trips				
	Roller/Compactor	5 Days	Days				
Wetwell/Drywell Base Construction	Crane	10 Days	Days	10		35	
	Concrete Truck	35 Trips	Trips				
	Concrete Pumper Truck	1 Day	Days				

Lift Station No. 2 Construction Equipment Estimate

					Total Round Trips		
				Days	**Haul Trips**	**Concrete**	**Vendor**
Wetwell/Drywell Wall Construction	Crane	30 Days	Days	30		62	
	Concrete Truck	62 Trips	Trips				
	Concrete Pumper Truck	6 Days	Days				
Wetwell/Drywell Deck Construction	Crane	30 Days	Days	30		25	
	Concrete Truck	25 Trips	Trips				
	Concrete Pumper Truck	3 Days	Days				
Backfill/Compaction	Loader	20 Days	Days	20			250
	Vibratory Plate Compactor	20 Days	Days				
	Material Truck	250 Trips	Trips				
Stair Installation	Crane	5 Days	Days	5			
Perimeter Wall Construction							
Footing Excavation	Backhoe	5 Days	Days	5			
Footing Construction	Concrete Truck	6 Trips	Trips	1		6	
	Concrete Pumper Truck	1 Day	Days				
Wall Construction	Crane	30 Days	Days	30		10	
	Concrete Truck	10 Trips	Trips				
	Concrete Pumper Truck	3 Days	Days				
2'X3' RCB Construction							
Fill to Subgrade	Material Truck	25 Trips	Trips	5			25
	Loader	5 Days	Days				
	Roller/Compactor	5 Days	Days				
	Water Truck	5 Days	Days				
2'x3' RCB Construction	Concrete Truck	5 Trips	Trips	2		5	
	Concrete Pumper Truck	2 Days	Days				
Slope Grading Behind Perimeter Wall							
Fill Placement	Material Truck	20 Trips	Trips	5			20
	Dozer	5 Days	Days				
	Backhoe	5 Days	Days				
Rip Rap Placement	Material Truck	2 Trips	Trips	2		1	2
	Concrete Truck	1 Trip	Trips				
	Excavator	2 Days	Days				
Concrete Maintenance Walk	Concrete Truck	2 Trips	Trips	5		2	
	Backhoe	5 Day	Days				
Influent Sewer Extension							
Dewatering Wells	Drill Rig	5 Days	Days	5			
Jacking and Receiving Pit Excavation/shoring	Excavator	15 days	Days	15	20		
	Haul Truck	20 trips	Trips				
	Crane	5 Days	Days				
Jack and Bore 42 inch Casing	Jacking Machine	10 Days	Days	10	4	1	
	Boom Truck	10 Days	Days				
	Haul Truck	4 Trips	Trips				
	Concrete Truck	1 Trip	Trips				
	Concrete Pumper Truck	1 Day	Days				

Lift Station No. 2 Construction Equipment Estimate

					Total Round Trips		
				Days	**Haul Trips**	**Concrete**	**Vendor**
Jacking Pit Backfill/Compaction	Excavator	10 Days	Days	10			20
	Vibratory Plate Compactor	10 Days	Days				
	Material Truck	20 Trips	Trips				
Sewer Open Cut Excavation	Excavator	10 Days	Days	10	12		
	Haul Truck	12 trips	Trips				
Pipe Subgrade Preparation	Excavator	4 Days	Days	4			
	Vibratory Plate Compactor	4 Days	Days				
Pipe Installation/Backfill	Excavator	15 Days	Days	15		3	10
	Material Truck	10 Trips	Trips				
	Vibratory Plate Compactor	5 Days	Days				
	Concrete Truck	3 Trips	Trips				
	Concrete Pumper Truck	3 Days	Days				
Manhole Excavation/Shoring	Excavator	5 Days	Days	5	5		
	Haul Truck	5 Trips	Trips				
Manhole Base Placement	Concrete Truck	2 Trips	Trips	1		2	
	Concrete Pumper Truck	1 Day	Days				
Manhole Shaft Placement/Backfill	Delivery Truck with Boom	1 Day	Days	3			3
	Material Truck	3 Trips	Trips				
	Vibratory Rammer	2 Days	Days				
	Excavator	3 Days	Days				
Generator Building Construction							
Footing and Equipment Bases	Backhoe	7 Days	Days	7	1	4	
	Haul Truck	1 Trip	Trips				
	Concrete Truck	4 Trips	Trips				
Masonry Building and Roof	Forklift	35 Days	Days	35		2	
	Concrete Truck	2 Trips	Trips				
	Concrete Pumper Truck	1 Day	Days				
	Crane	5 Days	Days				
Pump Building Construction							
Masonry Building and Roof	Forklift	30 Days	Days	30		2	
	Concrete Truck	2 Trips	Trips				
	Concrete Pumper Truck	1 Day	Days				
	Crane	5 Days	Days				
Generator Building Mechanical							
Set Generator and Diesel Pump	Crane	2 Days	Days	2			
Pump Building Mechanical							
Set Pumps	Crane	1 Day	Days	1			
Scrubber Installation							
Foul Air Piping Excavation	Backhoe	6 Days	Days	6	3		
	Industrial Saw	1 Day	Days				
	Haul Truck	3 Trips	Trips				

Lift Station No. 2 Construction Equipment Estimate

				Total Round Trips			
				Days	**Haul Trips**	**Concrete**	**Vendor**
Foul Air Piping Subgrade Preparation	Backhoe	2 Days	Days	2			
	Vibratory Rammer	2 Days	Days				
Piping Installation/Backfill	Backhoe	10 Days	Days	10			2
	Vibratory Rammer	3 Days	Days				
	Material Truck	2 Trips	Trips				
Scrubber Installation	Concrete Truck	1 Trip	Trips	1		1	
	Crane	1 Day	Days				
Miscellaneous Pump Station Site Improvements							
Yard Paving	Concrete Truck	3 Trips	Trips	3		3	
	Concrete Pumper Truck	1 Day	Days				
	Vibratory Plate Compactor	3 Days	Days				
Yard Piping	Backhoe	10 Days	Days	10			
	Vibratory Rammer	10 Days	Days				
Drain Boxes/Radio Antenna	Backhoe	10 Days	Days	10		1	
	Concrete Truck	1 Trip	Trips				
	Crane	1 Day	Days				
Curb and Gutter/Drive Way	Backhoe	5 Days	Days	5		1	
	Vibratory Plate Compactor	2 Days	Days				
	Concrete Truck	1 Trip	Trips				
Existing Pump Station Site Paving	Backhoe	2 Days	Days	2			3
	Material Truck	3 Trips	Trips				
	Roller/Compactor	1 Day	Days				
Old Country Club Drive Repaving	Loader	5 Days	Days	5	15		15
	Haul Truck	15 Trips	Trips				
	Material Truck	15 Trips	Trips				
	Paver	3 Days	Days				
	Roller/Compactor	3 Days	Days				
Existing Pump Station Demolition							
Remove Buildings/Paving and Structure 6 feet BGS	Compressor	10 days	Days	10	10	1	3
	Crane	3 days	Days				
	Excavator	5 Days	Days				
	Loader	5 Days	Days				
	Haul Truck	10 trips	Trips				
	Material Truck	3 Trips	Trips				
	Concrete Truck	1 Trip	Trips				
Miscellaneous Items							
Street Sweeping	Sweeper Truck	360 Days	Days	360			
Dust Control	Water Truck	360 Days	Days	360			
Pneumatic Tools	Compressor	360 Days	Days	360			

Lift Station No. 2 Construction Equipment Estimate

		Daily Round Trips		
		Haul Trips	**Concrete**	**Vendor**
Emergency Intertie Valve Vault and Piping				
Dewatering Wells	Drill Rig			
Vault and Tapping Sleeve Excavation /Shoring	Excavator	2		
	Haul Truck			
Line Stop Installation/Removal	Delivery Truck			2
	Boom Truck			
Subgrade Preparation	Excavator			1
	Material Truck			
	Vibratory Plate Compactor			
Vault Delivery and Placement	Delivery Truck with Boom			1
Vault Backfill and Compaction	Excavator			
	Vibratory Rammer			
Valve and Pipe Installation	Excavator	2		
	Vibratory Rammer			
	Haul Truck			
	Crane			
Overhead Power Relocation				
Power Conduit installation	Industrial Saw	1		
	Backhoe			
	Vibratory Rammer			
	Haul Truck			
Communication Conduit Installation	Industrial Saw	1		
	Backhoe			
	Vibratory Rammer			
	Haul Truck			
Pavement Repair	Material Truck			2
	Roller/Compactor			
Sewer Grinder Vault				
Dewatering Wells	Drill Rig			
Excavation/Shoring	Excavator	2		
	Haul Truck			
Subgrade Preparation	Excavator			1
	Material Truck			
	Vibratory Plate Compactor			
Vault Base Forming/Rebar/Concrete	Excavator		3	
	Concrete Truck			
	Concrete Pumper Truck			
Vault Placement/Backfill	Delivery Truck with Boom			1
	Excavator			
	Vibratory Rammer			
Set Grinder	Crane			

Lift Station No. 2 Construction Equipment Estimate

		Daily Round Trips		
		Haul Trips	**Concrete**	**Vendor**
Storm Drain and Creek Outlet Structure				
Outlet Structure Excavation	Excavator	1		
	Haul Truck			
Subgrade Preparation	Excavator			
	Vibratory Plate Compactor			
Outlet Structure Forming/Rebar/Concrete	Excavator		1	
	Concrete Truck			
	Concrete Pumper Truck			
Outlet Structure Backfill	Excavator			
	Vibratory Rammer			
Rip Rap Excavation and Placement	Excavator	1		3
	Haul Truck			
	Rock Delivery Truck			
4'x1' RCB Excavation	Backhoe	2		
	Haul Truck			
4'x1' RCB Subgrade Preparation	Backhoe			
	Vibratory Plate Compactor			
4'x1' RCB Concrete	Concrete Truck		2	
42 inch RCP Excavation	Excavator	1		
	Haul Truck			
42 inch RCP Subgrade Preparation	Excavator			
	Vibratory Plate Compactor			
42 Inch RCP Installation/Backfill	Excavator			
	Vibratory Rammer			
Catch Basin Excavation	Backhoe	1		
	Haul Truck			
Catch Basin Concrete	Concrete Truck		1	
Catch Basin Backfill	Backhoe			
	Vibratory Rammer			
18 Inch RCP Excavation	Industrial Saw	1		
	Backhoe			
	Haul Truck			
18 Inch RCP Subgrade Preparation	Backhoe			
	Vibratory Plate Compactor			
18 Inch RCP Installation Backfill	Backhoe			
	Vibratory Rammer			
Country Club Drive Relocation				
Road Grading/Subgrade Preparation	Grader	1		
	Loader			
	Haul Truck			
	Water Truck			
	Roller/Compactor			

Lift Station No. 2 Construction Equipment Estimate

		Daily Round Trips		
		Haul Trips	**Concrete**	**Vendor**
Road Base and Compaction	Material Truck			3
	Roller/Compactor			
AC Pavement	Material Truck			1
	Paver			
	Roller/Compactor			
DG Pedestrian Path	Material Truck			2
	Vibratory Plate Compactor			
	Backhoe			
Temporary Sewer Relocation				
Manhole Excavation/Shoring	Backhoe	2		
	Haul Truck			
Manhole Base Placement	Concrete Truck		1	
Manhole Riser Placement/Backfill	Delivery Truck with Boom			1
	Backhoe			
	Vibratory Rammer			
8-inch Pipe Excavation/Shoring	Backhoe	1		
	Haul Truck			
8-inch Pipe Subgrade Preparation	Backhoe			
	Vibratory Plate Compactor			
8-inch Pipe Installation/Backfill	Backhoe			
	Vibratory Rammer			
New Lift Station Site Demolition				
Building Demolition	Concrete Saw	3		
	Dozer			
	Backhoe			
	Water Truck			
	Haul Truck			
Pipe Removals	Backhoe			
Wetwell/Drywell Construction				
Deep Soil Mixing	Soil Mixing Drill Rig	4	6	
	Concrete Truck			
	Loader			
	Haul Truck			
Dewatering Wells	Drill Rig			
Excavation/Shoring	Excavator	20		
	Haul Truck			
	Crane			
Subgrade Preparation	Bobcat Loader			3
	Material Truck			
	Roller/Compactor			
Wetwell/Drywell Base Construction	Crane		35	
	Concrete Truck			
	Concrete Pumper Truck			

Lift Station No. 2 Construction Equipment Estimate

		Daily Round Trips		
		Haul Trips	**Concrete**	**Vendor**
Wetwell/Drywell Wall Construction	Crane		11	
	Concrete Truck			
	Concrete Pumper Truck			
Wetwell/Drywell Deck Construction	Crane		9	
	Concrete Truck			
	Concrete Pumper Truck			
Backfill/Compaction	Loader			13
	Vibratory Plate Compactor			
	Material Truck			
Stair Installation	Crane			
Perimeter Wall Construction				
Footing Excavation	Backhoe			
Footing Construction	Concrete Truck		6	
	Concrete Pumper Truck			
Wall Construction	Crane		4	
	Concrete Truck			
	Concrete Pumper Truck			
2'X3' RCB Construction				
Fill to Subgrade	Material Truck			5
	Loader			
	Roller/Compactor			
	Water Truck			
2'x3' RCB Construction	Concrete Truck		3	
	Concrete Pumper Truck			
Slope Grading Behind Perimeter Wall				
Fill Placement	Material Truck			4
	Dozer			
	Backhoe			
Rip Rap Placement	Material Truck		1	2
	Concrete Truck			
	Excavator			
Concrete Maintenance Walk	Concrete Truck		2	
	Backhoe			
Influent Sewer Extension				
Dewatering Wells	Drill Rig			
Jacking and Receiving Pit Excavation/shoring	Excavator	5		
	Haul Truck			
	Crane			
Jack and Bore 42 inch Casing	Jacking Machine	4	1	
	Boom Truck			
	Haul Truck			
	Concrete Truck			
	Concrete Pumper Truck			

Lift Station No. 2 Construction Equipment Estimate

		Daily Round Trips		
		Haul Trips	**Concrete**	**Vendor**
Jacking Pit Backfill/Compaction	Excavator			2
	Vibratory Plate Compactor			
	Material Truck			
Sewer Open Cut Excavation	Excavator	2		
	Haul Truck			
Pipe Subgrade Preparation	Excavator			
	Vibratory Plate Compactor			
Pipe Installation/Backfill	Excavator		1	2
	Material Truck			
	Vibratory Plate Compactor			
	Concrete Truck			
	Concrete Pumper Truck			
Manhole Excavation/Shoring	Excavator	1		
	Haul Truck			
Manhole Base Placement	Concrete Truck		2	
	Concrete Pumper Truck			
Manhole Shaft Placement/Backfill	Delivery Truck with Boom			1
	Material Truck			
	Vibratory Rammer			
	Excavator			
Generator Building Construction				
Footing and Equipment Bases	Backhoe	1	4	
	Haul Truck			
	Concrete Truck			
Masonry Building and Roof	Forklift		2	
	Concrete Truck			
	Concrete Pumper Truck			
	Crane			
Pump Building Construction				
Masonry Building and Roof	Forklift		2	
	Concrete Truck			
	Concrete Pumper Truck			
	Crane			
Generator Building Mechanical				
Set Generator and Diesel Pump	Crane			
Pump Building Mechanical				
Set Pumps	Crane			
Scrubber Installation				
Foul Air Piping Excavation	Backhoe	2		
	Industrial Saw			
	Haul Truck			

Lift Station No. 2 Construction Equipment Estimate

		Daily Round Trips		
		Haul Trips	**Concrete**	**Vendor**
Foul Air Piping Subgrade Preparation	Backhoe			
	Vibratory Rammer			
Piping Installation/Backfill	Backhoe			2
	Vibratory Rammer			
	Material Truck			
Scrubber Installation	Concrete Truck		1	
	Crane			
Miscellaneous Pump Station Site Improvements				
Yard Paving	Concrete Truck		3	
	Concrete Pumper Truck			
	Vibratory Plate Compactor			
Yard Piping	Backhoe			
	Vibratory Rammer			
Drain Boxes/Radio Antenna	Backhoe		1	
	Concrete Truck			
	Crane			
Curb and Gutter/Drive Way	Backhoe		1	
	Vibratory Plate Compactor			
	Concrete Truck			
Existing Pump Station Site Paving	Backhoe			3
	Material Truck			
	Roller/Compactor			
Old Country Club Drive Repaving	Loader	3		3
	Haul Truck			
	Material Truck			
	Paver			
	Roller/Compactor			
Existing Pump Station Demolition				
Remove Buildings/Paving and Structure 6 feet BGS	Compressor	2	1	3
	Crane			
	Excavator			
	Loader			
	Haul Truck			
	Material Truck			
	Concrete Truck			
Miscellaneous Items				
Street Sweeping	Sweeper Truck			
Dust Control	Water Truck			
Pneumatic Tools	Compressor			

2. Energy Consumption

Lift Station
Energy Summary

Construction Fuel Consumption Summary

	gallons			
Phase	**Diesel**	**Gas**	**# Years**	
Tank Site	***147,467***	***9,148***	2.67	August 2021 to March 2024
Annual Average	55,300	3,430		

County Usage[1]	51,000,000	1,198,000,000
Project % County	0.1084%	0.0003%

Construction	Total Gallons	
Onsite Equipment	30,960	diesel
Haul Trucks	107,035	diesel
Vendor Trucks	9,472	diesel
Worker Trips	9,148	gasoline
Onroad Total	116,507	diesel

Lift Station
Energy Summary

Assumptions/Constants

8.78	Kg of CO_2 per gallon of Gasoline		
10.21	Kg of CO_2 per gallon of Diesel		
1040	MMBtu/MMCF	1040	MMBtu
1	MWh=	0.001	GWh
100,000	BTU/therm		
53.12	kg CO2/ thousand cubic feet[8]		
1036	btu/cubic foot		

Construction	diesel	Used for trucks (haul and vendor) and off-road equipment
	gasoline	worker vehicles

LCFS & Pavley assumed for on-road vehicles after year 2011

Sources:

1 California Energy Commission, 2019. California Retail Fuel Outlet Annual Reporting (CEC-A15) Results. https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-retail-fuel-outlet-annual-reporting Accessed, December 2020.

2 ESA, 2020 CalEEMod Output -

3 http://www.ecdms.energy.ca.gov/elecbycounty.aspx

4 Edison International and Southern California Edison, 2018. 2018 Annual Report. Available: https://www.edison.com/content/dam/eix/documents/investors/corporate-governance/eix-sce-2018-annual-report.pdf. Accessed October, 2019.

Lift Station

Unmitigated Fuel Conversion - Construction

		Total CO_2 MT/yr	Fuel Type	Factor $KGCO_2$/gal	Gallons
Emergency Intertie Valve Vault and Piping					
Dewatering Wells	Bore/Drill Rig	0.83	diesel	10.21	82
	Worker	0.05	gasoline	8.78	6
Vault and Tapping Sleeve Excavation /Shoring	Excavator	2.29	diesel	10.21	224
	Haul	0.61	diesel	10.21	60
	Worker	0.26	gasoline	8.78	29
Line Stop Installation/Removal	Vendor	0.11	diesel	10.21	10
	Offhighway Truck	0.58	diesel	10.21	57
	Worker	0.03	gasoline	8.78	3
Subgrade Preparation	Excavator	0.23	diesel	10.21	22
	Vendor	0.03	diesel	10.21	3
	Plate Compactor	0.03	diesel	10.21	3
	Worker	0.12	gasoline	8.78	13
Vault Delivery and Placement	Haul	0.08	diesel	10.21	7
	Offhighway Truck	0.58	diesel	10.21	57
	Worker	0.03	gasoline	8.78	3
Vault Backfill and Compaction	Excavator	1.14	diesel	10.21	112
	Plate Compactor	0.08	diesel	10.21	8
	Worker	0.29	gasoline	8.78	33
Valve and Pipe Installation	Excavator	3.43	diesel	10.21	336
	Plate Compactor	0.08	diesel	10.21	8
	Haul	0.31	diesel	10.21	30
	Crane	0.26	diesel	10.21	25
	Worker	1.55	gasoline	8.78	176
Overhead Power Relocation					
Power Conduit installation	Concrete/Industrial Saw	0.27	diesel	10.21	26
	Tractor/Loader/Backhoe	1.38	diesel	10.21	135
	Plate Compactor	0.08	diesel	10.21	8
	Haul	0.08	diesel	10.21	7
	Worker	1.03	gasoline	8.78	118
Communication Conduit Installation	Concrete/Industrial Saw	0.27	diesel	10.21	26
	Tractor/Loader/Backhoe	2.06	diesel	10.21	202
	Plate Compactor	0.08	diesel	10.21	8
	Haul	0.08	diesel	10.21	7
	Worker	1.55	gasoline	8.78	176
Pavement Repair	Vendor	0.11	diesel	10.21	10
	Roller	0.23	diesel	10.21	23
	Worker	0.05	gasoline	8.78	6
Sewer Grinder Vault					
Dewatering Wells	Bore/Drill Rig	0.42	diesel	10.21	41
	Worker	0.03	gasoline	8.78	3
Excavation/Shoring	Excavator	2.29	diesel	10.21	224
	Haul	1.83	diesel	10.21	179
	Worker	0.26	gasoline	8.78	29

Lift Station

Unmitigated Fuel Conversion - Construction

Subgrade Preparation	Excavator	0.23	diesel	10.21	22
	Vendor	0.03	diesel	10.21	3
	Plate Compactor	0.03	diesel	10.21	3
	Worker	0.12	gasoline	8.78	13
Vault Base Forming/Rebar/Concrete	Excavator	1.14	diesel	10.21	112
	Haul	0.69	diesel	10.21	67
	Offhighway Truck	0.58	diesel	10.21	57
	Worker	0.29	gasoline	8.78	33
Vault Placement/Backfill	Haul	0.08	diesel	10.21	7
	Excavator	0.69	diesel	10.21	67
	Plate Compactor	0.05	diesel	10.21	5
	Offhighway Truck	0.58	diesel	10.21	57
	Worker	0.17	gasoline	8.78	20
Set Grinder	Crane	0.26	diesel	10.21	25
	Worker	0.03	gasoline	8.78	3
Storm Drain and Creek Outlet Structure					
Outlet Structure Excavation	Excavator	0.69	diesel	10.21	67
	Haul	0.23	diesel	10.21	22
	Worker	0.08	gasoline	8.78	9
Subgrade Preparation	Excavator	0.23	diesel	10.21	22
	Plate Compactor	0.02	diesel	10.21	2
	Worker	0.06	gasoline	8.78	7
Outlet Structure Forming/Rebar/Concrete	Excavator	0.69	diesel	10.21	67
	Haul	0.15	diesel	10.21	15
	Offhighway Truck	1.17	diesel	10.21	115
	Worker	0.17	gasoline	8.78	20
Outlet Structure Backfill	Excavator	0.23	diesel	10.21	22
	Plate Compactor	0.02	diesel	10.21	2
	Worker	0.06	gasoline	8.78	7
Rip Rap Excavation and Placement	Excavator	0.69	diesel	10.21	67
	Haul	0.23	diesel	10.21	22
	Haul	1.15	diesel	10.21	112
	Worker	0.08	gasoline	8.78	9
4'x1' RCB Excavation	Tractor/Loader/Backhoe	0.28	diesel	10.21	27
	Haul	0.31	diesel	10.21	30
	Worker	0.05	gasoline	8.78	6
4'x1' RCB Subgrade Preparation	Tractor/Loader/Backhoe	0.14	diesel	10.21	13
	Plate Compactor	0.02	diesel	10.21	2
	Worker	0.06	gasoline	8.78	7
4'x1' RCB Concrete	Haul	0.31	diesel	10.21	30
	Worker	0.01	gasoline	8.78	1
42 inch RCP Excavation	Excavator	0.46	diesel	10.21	45
	Haul	0.08	diesel	10.21	7
	Worker	0.05	gasoline	8.78	6
42 inch RCP Subgrade Preparation	Excavator	0.23	diesel	10.21	22
	Plate Compactor	0.02	diesel	10.21	2
	Worker	0.06	gasoline	8.78	7

Lift Station

Unmitigated Fuel Conversion - Construction

42 Inch RCP Installation/Backfill	Excavator	0.46	diesel	10.21	45
	Plate Compactor	0.02	diesel	10.21	2
	Worker	0.12	gasoline	8.78	13
Catch Basin Excavation	Tractor/Loader/Backhoe	0.14	diesel	10.21	13
	Haul	0.08	diesel	10.21	7
	Worker	0.03	gasoline	8.78	3
Catch Basin Concrete	Haul	0.08	diesel	10.21	7
	Worker	0.01	gasoline	8.78	1
Catch Basin Backfill	Tractor/Loader/Backhoe	0.14	diesel	10.21	13
	Plate Compactor	0.02	diesel	10.21	2
	Worker	0.06	gasoline	8.78	7
18 Inch RCP Excavation	Concrete/Industrial Saw	0.27	diesel	10.21	26
	Tractor/Loader/Backhoe	0.69	diesel	10.21	67
	Haul	0.08	diesel	10.21	7
	Worker	0.29	gasoline	8.78	33
18 Inch RCP Subgrade Preparation	Tractor/Loader/Backhoe	0.28	diesel	10.21	27
	Plate Compactor	0.03	diesel	10.21	3
	Worker	0.12	gasoline	8.78	13
18 Inch RCP Installation Backfill	Tractor/Loader/Backhoe	1.79	diesel	10.21	175
	Plate Compactor	0.08	diesel	10.21	8
	Worker	0.75	gasoline	8.78	86
Country Club Drive Relocation					
Road Grading/Subgrade Preparation	Grader	2.93	diesel	10.21	287
	Tractor/Loader/Backhoe	1.38	diesel	10.21	135
	Haul	0.23	diesel	10.21	22
	Water	2.19	diesel	10.21	215
	Roller	0.58	diesel	10.21	57
	Worker	2.42	gasoline	8.78	275
Road Base and Compaction	Vendor	0.00	diesel	10.21	0
	Roller	1.16	diesel	10.21	114
	Worker	0.26	gasoline	8.78	29
AC Pavement	Vendor	0.00	diesel	10.21	0
	Paver	4.16	diesel	10.21	408
	Roller	2.32	diesel	10.21	228
	Worker	1.16	gasoline	8.78	132
DG Pedestrian Path	Vendor	0.00	diesel	10.21	0
	Plate Compactor	0.16	diesel	10.21	15
	Tractor/Loader/Backhoe	1.38	diesel	10.21	135
	Worker	0.58	gasoline	8.78	66
Temporary Sewer Relocation					
Manhole Excavation/Shoring	Tractor/Loader/Backhoe	0.14	diesel	10.21	13
	Haul	0.31	diesel	10.21	30
	Worker	0.03	gasoline	8.78	3
Manhole Base Placement	Haul	0.08	diesel	10.21	7
	Worker	0.03	gasoline	8.78	3

Lift Station

Unmitigated Fuel Conversion - Construction

Manhole Riser Placement/Backfill	Haul	0.08	diesel	10.21	7
	Tractor/Loader/Backhoe	0.28	diesel	10.21	27
	Plate Compactor	0.03	diesel	10.21	3
	Offhighway Truck	0.58	diesel	10.21	57
	Worker	0.12	gasoline	8.78	13
8-inch Pipe Excavation/Shoring	Tractor/Loader/Backhoe	0.28	diesel	10.21	27
	Haul	0.08	diesel	10.21	7
	Worker	0.05	gasoline	8.78	6
8-inch Pipe Subgrade Preparation	Tractor/Loader/Backhoe	0.14	diesel	10.21	13
	Plate Compactor	0.02	diesel	10.21	2
	Worker	0.06	gasoline	8.78	7
8-inch Pipe Installation/Backfill	Tractor/Loader/Backhoe	0.69	diesel	10.21	67
	Plate Compactor	0.05	diesel	10.21	5
	Worker	0.29	gasoline	8.78	33
New Lift Station Site Demolition					
Building Demolition	Concrete/Industrial Saw	1.35	diesel	10.21	132
	Rubber Tired Dozer	1.89	diesel	10.21	185
	Tractor/Loader/Backhoe	0.69	diesel	10.21	67
	Water	0.73	diesel	10.21	72
	Haul	0.69	diesel	10.21	67
	Worker	0.81	gasoline	8.78	92
Pipe Removals	Tractor/Loader/Backhoe	0.41	diesel	10.21	40
	Worker	0.08	gasoline	8.78	9
Wetwell/Drywell Construction					
Deep Soil Mixing	Bore/Drill Rig	14.60	diesel	10.21	1,430
	Haul	39.70	diesel	10.21	3,889
	Tractor/Loader/Backhoe	4.82	diesel	10.21	472
	Haul	91.62	diesel	10.21	8,974
	Worker	3.61	gasoline	8.78	411
Dewatering Wells	Bore/Drill Rig	1.25	diesel	10.21	123
	Worker	0.17	gasoline	8.78	20

Lift Station

Unmitigated Fuel Conversion - Construction

	Excavation/Shoring	Excavator	5.72	diesel	10.21	560
		Haul	763.52	diesel	10.21	74,781
		Crane	2.55	diesel	10.21	250
		Worker	1.45	gasoline	8.78	165
	Subgrade Preparation	Skidsteer Loader	0.46	diesel	10.21	45
		Vendor	0.96	diesel	10.21	94
		Roller	0.58	diesel	10.21	57
		Worker	0.29	gasoline	8.78	33
	Wetwell/Drywell Base Construction	Crane	2.55	diesel	10.21	250
		Haul	93.53	diesel	10.21	9,161
		Offhighway Truck	0.58	diesel	10.21	57
		Worker	0.58	gasoline	8.78	66
	Wetwell/Drywell Wall Construction	Crane	7.66	diesel	10.21	751
		Haul	52.07	diesel	10.21	5,100
		Offhighway Truck	3.51	diesel	10.21	344
		Worker	1.74	gasoline	8.78	198
	Wetwell/Drywell Deck Construction	Crane	7.66	diesel	10.21	751
		Haul	17.18	diesel	10.21	1,683
		Offhighway Truck	1.75	diesel	10.21	172
		Worker	1.74	gasoline	8.78	198
	Backfill/Compaction	Tractor/Loader/Backhoe	2.75	diesel	10.21	270
		Plate Compactor	0.31	diesel	10.21	31
		Vendor	86.47	diesel	10.21	8,469
		Worker	1.16	gasoline	8.78	132
	Stair Installation	Crane	1.28	diesel	10.21	125
		Worker	0.13	gasoline	8.78	15
Perimeter Wall Construction						
	Footing Excavation	Tractor/Loader/Backhoe	0.69	diesel	10.21	67
		Worker	0.13	gasoline	8.78	15
	Footing Construction	Haul	2.75	diesel	10.21	269
		Offhighway Truck	0.58	diesel	10.21	57
		Worker	0.13	gasoline	8.78	15
	Wall Construction	Crane	7.66	diesel	10.21	751
		Haul	3.05	diesel	10.21	299
		Offhighway Truck	1.75	diesel	10.21	172
		Worker	1.74	gasoline	8.78	198
2'X3' RCB Construction						
	Fill to Subgrade	Vendor	3.33	diesel	10.21	326
		Tractor/Loader/Backhoe	0.69	diesel	10.21	67
		Roller	0.58	diesel	10.21	57
		Water	0.73	diesel	10.21	72
		Worker	0.52	gasoline	8.78	59
	2'x3' RCB Construction	Haul	1.15	diesel	10.21	112
		Offhighway Truck	1.17	diesel	10.21	115
		Worker	0.05	gasoline	8.78	6

Lift Station

Unmitigated Fuel Conversion - Construction

Slope Grading Behind Perimeter Wall					
Fill Placement	Vendor	2.13	diesel	10.21	208
	Rubber Tired Dozer	1.89	diesel	10.21	185
	Tractor/Loader/Backhoe	0.69	diesel	10.21	67
	Worker	0.29	gasoline	8.78	33
Rip Rap Placement	Vendor	0.11	diesel	10.21	10
	Haul	0.08	diesel	10.21	7
	Excavator	0.46	diesel	10.21	45
	Worker	0.05	gasoline	8.78	6
Concrete Maintenance Walk	Haul	0.31	diesel	10.21	30
	Tractor/Loader/Backhoe	0.69	diesel	10.21	67
	Worker	0.13	gasoline	8.78	15
Influent Sewer Extension					
Dewatering Wells	Bore/Drill Rig	2.09	diesel	10.21	204
	Worker	0.29	gasoline	8.78	33
Jacking and Receiving Pit Excavation/shoring	Excavator	3.43	diesel	10.21	336
	Haul	7.64	diesel	10.21	748
	Crane	1.28	diesel	10.21	125
	Worker	0.87	gasoline	8.78	99
Jack and Bore 42 inch Casing	Other Construction equipment	2.74	diesel	10.21	268
	Offhighway Truck	5.85	diesel	10.21	573
	Haul	1.22	diesel	10.21	120
	Haul	0.08	diesel	10.21	7
	Offhighway Truck	0.58	diesel	10.21	57
	Worker	1.03	gasoline	8.78	118
Jacking Pit Backfill/Compaction	Excavator	2.29	diesel	10.21	224
	Plate Compactor	0.16	diesel	10.21	15
	Vendor	1.06	diesel	10.21	104
	Worker	0.77	gasoline	8.78	88
Sewer Open Cut Excavation	Excavator	2.29	diesel	10.21	224
	Haul	1.83	diesel	10.21	179
	Worker	0.26	gasoline	8.78	29
Pipe Subgrade Preparation	Excavator	0.91	diesel	10.21	90
	Plate Compactor	0.06	diesel	10.21	6
	Worker	0.23	gasoline	8.78	26
Pipe Installation/Backfill	Excavator	3.43	diesel	10.21	336
	Vendor	0.53	diesel	10.21	52
	Plate Compactor	0.08	diesel	10.21	8
	Haul	0.23	diesel	10.21	22
	Offhighway Truck	1.75	diesel	10.21	172
	Worker	1.55	gasoline	8.78	176
Manhole Excavation/Shoring	Excavator	1.14	diesel	10.21	112
	Haul	0.38	diesel	10.21	37
	Worker	0.00	gasoline	8.78	0
Manhole Base Placement	Haul	0.31	diesel	10.21	30
	Offhighway Truck	0.58	diesel	10.21	57
	Worker	0.03	gasoline	8.78	3

Lift Station

Unmitigated Fuel Conversion - Construction

Manhole Shaft Placement/Backfill	Offhighway Truck	0.58	diesel	10.21	57
	Vendor	0.08	diesel	10.21	8
	Plate Compactor	0.03	diesel	10.21	3
	Excavator	0.69	diesel	10.21	67
	Worker	0.17	gasoline	8.78	20
Generator Building Construction					
Footing and Equipment Bases	Tractor/Loader/Backhoe	0.96	diesel	10.21	94
	Haul	0.08	diesel	10.21	7
	Haul	1.22	diesel	10.21	120
	Worker	0.18	gasoline	8.78	21
Masonry Building and Roof	Forklift	2.37	diesel	10.21	232
	Haul	0.31	diesel	10.21	30
	Offhighway Truck	0.58	diesel	10.21	57
	Crane	1.28	diesel	10.21	125
	Worker	3.61	gasoline	8.78	411
Pump Building Construction					
Masonry Building and Roof	Forklift	2.03	diesel	10.21	199
	Haul	0.31	diesel	10.21	30
	Offhighway Truck	0.58	diesel	10.21	57
	Crane	1.28	diesel	10.21	125
	Worker	3.10	gasoline	8.78	353
Generator Building Mechanical					
Set Generator and Diesel Pump	Crane	0.51	diesel	10.21	50
	Worker	0.05	gasoline	8.78	6
Pump Building Mechanical					
Set Pumps	Crane	0.26	diesel	10.21	25
	Worker	0.03	gasoline	8.78	3
Scrubber Installation					
Foul Air Piping Excavation	Tractor/Loader/Backhoe	0.83	diesel	10.21	81
	Concrete/Industrial Saw	0.27	diesel	10.21	26
	Haul	0.46	diesel	10.21	45
	Worker	0.35	gasoline	8.78	40
Foul Air Piping Subgrade Preparation	Tractor/Loader/Backhoe	0.28	diesel	10.21	27
	Plate Compactor	0.03	diesel	10.21	3
	Worker	0.12	gasoline	8.78	13
Piping Installation/Backfill	Tractor/Loader/Backhoe	1.38	diesel	10.21	135
	Plate Compactor	0.05	diesel	10.21	5
	Vendor	0.11	diesel	10.21	10
	Worker	0.58	gasoline	8.78	66
Scrubber Installation	Haul	0.08	diesel	10.21	7
	Crane	0.26	diesel	10.21	25
	Worker	0.03	gasoline	8.78	3
Miscellaneous Pump Station Site Improvements					
Yard Paving	Haul	0.69	diesel	10.21	67
	Offhighway Truck	0.58	diesel	10.21	57
	Plate Compactor	0.05	diesel	10.21	5
	Worker	0.17	gasoline	8.78	20

Lift Station

Unmitigated Fuel Conversion - Construction

Yard Piping	Tractor/Loader/Backhoe	1.38	diesel	10.21	135
	Plate Compactor	0.16	diesel	10.21	15
	Worker	0.58	gasoline	8.78	66
Drain Boxes/Radio Antenna	Tractor/Loader/Backhoe	1.38	diesel	10.21	135
	Haul	0.08	diesel	10.21	7
	Crane	0.26	diesel	10.21	25
	Worker	0.58	gasoline	8.78	66
Curb and Gutter/Drive Way	Tractor/Loader/Backhoe	0.69	diesel	10.21	67
	Plate Compactor	0.03	diesel	10.21	3
	Haul	0.08	diesel	10.21	7
	Worker	0.29	gasoline	8.78	33
Existing Pump Station Site Paving	Tractor/Loader/Backhoe	0.28	diesel	10.21	27
	Vendor	0.24	diesel	10.21	23
	Roller	0.12	diesel	10.21	11
	Worker	0.12	gasoline	8.78	13
Old Country Club Drive Repaving	Tractor/Loader/Backhoe	0.69	diesel	10.21	67
	Haul	3.44	diesel	10.21	337
	Vendor	1.20	diesel	10.21	117
	Paver	0.62	diesel	10.21	61
	Roller	0.35	diesel	10.21	34
	Worker	0.52	gasoline	8.78	59
Existing Pump Station Demolition					
Remove Buildings/Paving and Structure 6 feet BGS	Air Compressor	1.71	diesel	10.21	167
	Crane	0.77	diesel	10.21	75
	Excavator	1.14	diesel	10.21	112
	Tractor/Loader/Backhoe	0.69	diesel	10.21	67
	Haul	1.53	diesel	10.21	150
	Vendor	0.24	diesel	10.21	23
	Haul	0.08	diesel	10.21	7
	Worker	1.61			
Miscellaneous Items					
Street Sweeping	Sweeper/Scrubber	20.26	diesel	10.21	1,985
Dust Control	Water	52.62	diesel	10.21	5,153
Pneumatic Tools	Air Compressor	61.38	diesel	10.21	6,012
	Worker	37.15	gasoline	8.78	4,231

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Lift Station

Total On-Road Fuel Consumption

		gal/mile	gal/min
2021Hauling	Hauling	0.15280027	7.23483E-06
2021Vendor	Vendor	0.12391002	5.6042E-06
2021Worker	Worker	0.03583038	1.93313E-06

Construction Phase	Daily One-Way Trips	Haul Days per Phase (days)	Work Hours per Day (hours/day)	One-Way Trip Distance per Day (miles)	Idling per Day (minutes)
General Construction	2021				
Total Haul Trips	0				
Hauling	2	1	8	20	15
Vendor	2	1	8	7.3	15
Worker	2	1	8	10.8	0

Lift Station

T **Total On-Road Fuel Consumption**

Construction Phase	Regional Emissions (gallons)						
	gal/mile	gal/min	gal/day	Total Gallons/yr			
General Construction							
Total Haul Trips							
Hauling	0.15	7.23E-06	6	6			
Vendor	0.12	5.60E-06	2	2			
Worker	0.04	1.93E-06	1	1			

Appendix F

Geotechnical Evaluation and Paleontological Resources Information

ESA

Geotechnical Evaluation

Lift Station No. 2 Replacement Project
South Coast Water District
Laguna Beach, California

AKM Consulting Engineers

553 Wald Street | Irvine, California 92618

June 5, 2020 | Project No. 209638002

Geotechnical | Environmental | Construction Inspection & Testing | Forensic Engineering & Expert Witness

Geophysics | Engineering Geology | Laboratory Testing | Industrial Hygiene | Occupational Safety | Air Quality | GIS

Ninyo & Moore

Geotechnical & Environmental Sciences Consultants

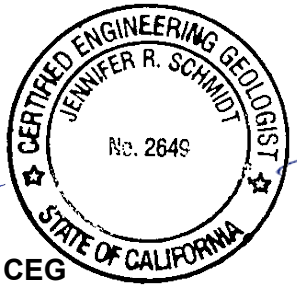
Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

Geotechnical Evaluation

Lift Station No. 2 Replacement Project
South Coast Water District
Laguna Beach, California

Mr. John Loague
AKM Consulting Engineers
553 Wald Street | Irvine, California 92618

June 5, 2020 | Project No. 209638002



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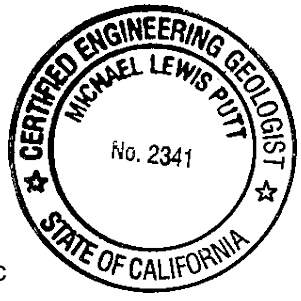

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Principal Geologist

GM/JRS/MLP/DBC/CJB/sc

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1 INTRODUCTION

In accordance with your request and authorization, we have performed a geotechnical evaluation for the proposed South Coast Water District (SCWD), Lift Station No. 2 Replacement Project located at the SCWD Main Shop at 31104 Coast Highway in Laguna Beach, California (Figure 1). The purpose of our study was to evaluate the soil, bedrock, groundwater and geologic conditions at the project site and to provide geotechnical recommendations regarding the design and construction of the new lift station and associated site improvements. This report presents our findings, conclusions, and recommendations for the project.

We previously performed a preliminary geotechnical evaluation for the proposed lift station (Ninyo & Moore, 2016). The findings, conclusions, and recommendations provided in our preliminary report are superseded by this report.

2 SCOPE OF SERVICES

Our scope of services for the project included the following:

- Project planning, coordination, and scheduling for subsurface exploration, groundwater monitoring, and groundwater pump test.
- Review of readily available background materials, including published geologic maps, fault and seismic hazards maps, groundwater data, topographic maps, and stereoscopic aerial photographs.
- Preparation of a site-specific health and safety plan for our field activities.
- Attendance at a kick-off meeting for the project.
- Attendance at a site meeting with SCWD personnel to discuss the work plan and site access requirements.
- A site reconnaissance to observe surface conditions and mark the boring and cone penetration test (CPT) locations for utility clearance by Underground Service Alert and SCWD personnel.
- Acquisition of a permit with the Orange County Health Care Agency for drilling into groundwater.
- Subsurface exploration consisting of the drilling, logging, sampling, and installation of two wells. A 6-inch-diameter pilot test well was installed to a depth of approximately 50.3 feet below the ground surface and a 2-inch-diameter monitoring well was installed to a depth of approximately 26.5 feet below the ground surface. The boreholes were logged by a representative of our firm and bulk and relatively undisturbed soil and bedrock samples were collected at selected intervals for laboratory testing
- Subsurface exploration consisting of three CPTs to depths ranging from approximately 20 to 70 feet below the ground surface.
- Analytical laboratory testing of representative soil samples of excess drill cuttings for volatile organic compounds (VOCs), Total Petroleum Hydrocarbons (TPH), and Title 22 Metals for disposal characterization purposes.

- Geotechnical laboratory testing on representative soil and bedrock samples, including evaluation of in-situ moisture content and dry density, gradation analysis, percentage of particles finer than the No. 200 sieve, Atterberg limits, direct shear strength, and soil corrosivity.

- Mobilization of a well development rig to develop both wells. The wells were developed to prepare them for the pump test and for collection of ground water samples.

- Collection of a groundwater sample approximately 48-hours after well development and performance of analytical laboratory testing of the groundwater sample for groundwater quality analysis. The groundwater sample was analyzed in accordance with the California Regional Water Control Board's (CRWCB) National Pollutant Discharge Elimination System (NPDES) requirements and was used to characterize the groundwater for disposal during pump testing and future dewatering during construction.

- Performance of a 24-hour tidal fluctuation survey using the 2-inch diameter monitoring well to evaluate the effect that the ocean tide may have on the groundwater at the site.

- Performance of a 24-hour constant-rate aquifer pump test in the 6-inch-diameter pilot test well to estimate the shallow aquifer conditions in the project area. The pump test water was discharged into the sewer system with the use of an in-line bag filter mounted to the discharge pipe.

- Data compilation and geotechnical analysis of the information obtained from our background review, subsurface exploration, tidal fluctuation survey, groundwater pump test, and laboratory testing.

- Preparation of this geotechnical report presenting our findings, conclusions, and recommendations for the design and construction of the proposed improvements.

3 SITE DESCRIPTION

The new lift station will be constructed at the SCWD Main Shop property on the north side of Country Club Drive, approximately 850 feet east of Coast Highway, in Laguna Beach, California (Figures 1 and 2). The SCWD Main Shop is located near the mouth of Aliso Canyon, on the north side of Aliso Creek, and at the base of relatively steep canyon slopes. The project site is bounded by Country Club Drive and Aliso Creek to the south and by the ascending slopes of the canyon walls to the north. The Ranch at Laguna Beach resort and golf course is located to east, and the existing pump station, natural slopes, and Coast Highway are located to the west. The south side of the storage yard is enclosed by a wood fence and gate. Two sets of overhead power lines traverse the southern boundary of the site and north of the site on the slope in an east to west direction. The topography of the site is relatively flat with an approximate elevation of 20 feet above mean sea level (MSL) (AKM Consulting Engineers [AKM], 2016).

The ascending slope on the north side of the proposed new lift station site is approximately 200 feet high with a slope inclination ranging from approximately 1½:1 to 2:1 (horizontal to vertical). The slope is moderately to densely vegetated with native grasses, shrubs, and trees. Concentrated surface water runoff from upslope properties has cut a relatively large erosional

gully in the canyon wall at the site measuring approximately 6- to15-feet wide by approximately 10- to 15-feet deep. An approximately 2-feet-high retaining wall constructed of wood lagging is located at the toe of the erosional gully. The toe of the erosional gully was full of eroded material from the slope at the time of our geotechnical evaluation.

4 PROPOSED CONSTRUCTION

The existing lift station is more than 60 years old, has inadequate storage capacity, poor maintenance access, and is at the end of its useful life and will be replaced with a new lift station. The existing lift station building will be removed, including the removal of the below-grade structure to a depth of approximately 6 feet. The below-grade portion of the existing structure will be backfilled with sand-cement slurry and the site will be paved with asphalt concrete.

The new lift station will include a 35,700 gallon operational wet well, a 204,600 gallon emergency storage wet well, and three 170 horsepower centrifugal pumps in a dry well. The wet well/dry well will have finish floor elevations ranging from approximately 9 to 11½ feet below MSL with a sump that is 17 feet below sea level. The new lift station will include an at-grade generator building with a 300 horsepower diesel pump and an at-grade electrical building that will be constructed over the wet well/dry well. Excavations of approximately 30 to 31½ feet below the existing ground surface will be needed to reach finish floor elevations for the majority of the wet well/dry well, and up to approximately 37 feet below the existing ground surface to reach the finish floor elevation of the sump in the emergency storage area wet well.

The project will also include construction of an approximately 10-foot-high retaining wall on the north side of the lift station with an adjacent 2-foot-wide drainage channel. The drainage channel will continue on the east side of the lift station and will connect to an existing 30-inch-diameter corrugated metal pipe (CMP) via a new 24-inch-diameter reinforced concrete pipe (RCP). The existing 30-inch-diameter CMP outlets to Aliso Creek. New sewer pipelines will also be constructed and connected to the new lift station. New asphalt concrete pavement will be constructed around the at-grade buildings. During construction, a temporary asphalt concrete road will be constructed to re-direct traffic on Country Club Drive to the south in order to provide additional work area.

5 SUBSURFACE EVALUATION AND LABORATORY TESTING

5.1 Boring and Monitoring Well Construction

Our boring and monitoring well construction was conducted on February 10 and 11, 2020, and consisted of the drilling, logging, and sampling of two small-diameter borings to depths of

approximately 50.3 feet (PW-1) and 26.5 feet (MW-1). The borings were drilled using truck-mounted drilling equipment with 8-inch-diameter (MW-1) and 12-inch-diameter (PW-1) hollow-stem augers. Ninyo & Moore logged the borings and obtained bulk and relatively undisturbed soil and bedrock samples at selected depths for laboratory testing. The logs of the exploratory borings are presented in Appendix A, including a boring log (B-1) from our preliminary geotechnical evaluation (Ninyo & Moore, 2016). The approximate locations of the boring performed during our previous evaluation and the two wells installed during this evaluation are presented on Figure 2.

The borings were converted to a pumping well (PW-1) and a monitoring well (MW-1). The pumping well was constructed with 6-inch-diameter schedule 40 polyvinyl chloride (PVC) blank casing and 0.020-inch factory-machine slotted screen PVC casing. The monitoring well was constructed with 2-inch-diameter schedule 40 PVC blank casing and 0.020-inch factory-machine slotted screen PVC casing. Clean silica sand was placed in the annulus around the perforated sections of both well casings and cement-bentonite grout was placed from the top of the sand to two feet below grade to form a sanitary seal. The surface completion of the wells included installation of a traffic-rated surface well vault covers. The well specifications are presented on the boring logs in Appendix A. Both wells were developed on February 14, 2020, using a submersible pump to remove the fine materials from the well casings and filter packs.

5.2 Cone Penetration Tests

The CPT soundings were performed on February 6, 2020, and consisted of using a 30-ton CPT rig to push three CPTs to depths ranging from approximately 20 to 70 feet. Continuous soil profiles, including cone tip resistance and sleeve friction, were recorded during the soundings. In addition, the shear wave velocity measurement of the on-site soil was also performed using a seismic cone in the 70-foot-deep CPT (CPT-3). The CPTs were backfilled with cement-bentonite grout. The CPT soundings are presented in Appendix B. The approximate locations of the CPTs are presented on Figure 2.

5.3 Geotechnical Laboratory Testing

Geotechnical laboratory testing was performed to evaluate in-situ moisture content and dry density, gradation analysis, percentage of particles finer than the No. 200 sieve, Atterberg limits, direct shear strength, and soil corrosivity. Moisture and density test results are presented on the boring logs in Appendix A. The remaining test results, including test results from our preliminary geotechnical evaluation, are presented in Appendix C.

5.4 Analytical Laboratory Testing of Soils and Groundwater

During the drilling and well installation, the soil cuttings were drummed and representative samples from the soil drums were collected in jars for the purpose of waste characterization. The collected soil samples were stored in a chilled cooler and delivered to SunStar Laboratories for analytical testing under chain-of-custody protocol. The soil samples were tested for TPHs per United Stated Environmental Protection Agency (EPA) Test Method 8015B, Title 22 metals per EPA Test Methods 6010B/7470/7471, and VOCs per EPA Test Method 8260B. The results of these tests are presented in Appendix D.

On February 19, 2020, groundwater from PW-1 was sampled by Ninyo & Moore personnel and submitted for laboratory chemical analyses. The collected groundwater samples were stored in a chilled cooler and delivered to Enthalpy Analytical for analytical testing under chain-of-custody protocol. The groundwater samples were analyzed in accordance with the CRWCB's NPDES requirements to be used for future permitting to dewater the excavation during construction. The groundwater quality analysis test results are presented in Appendix E.

6 GEOLOGY AND SUBSURFACE CONDITIONS

6.1 Regional Geologic Setting

The project site is located in the Peninsular Ranges Geomorphic Province of Southern California (Norris and Webb, 1990). The province is characterized by northwest to southeast trending mountain ranges and valleys and similarly trending strike-slip faults associated with the boundary between the North American and Pacific tectonic plates. In general, the mountain ranges are underlain by Jurassic-age metavolcanic and metasedimentary rocks and Cretaceous-age igneous rocks of the southern California batholith. Based on our review of the referenced geologic maps, the site is underlain by younger alluvial deposits and middle Miocene-age San Onofre Breccia (Morton, 2006). The alluvial deposits generally consist of unconsolidated sand, silt, and clay. The San Onofre Breccia generally consists of massive to well-bedded, well-indurated breccia with interbedded conglomerate, sandstone, siltstone, and mudstone (Figure 3).

6.2 Site Geology

Earth materials encountered during our subsurface exploration below the pavement consisted of alluvium and bedrock materials of the San Onofre Breccia. A general description of the subsurface materials that we encountered is provided below. Detailed descriptions of the subsurface materials are presented on the boring and CPT logs in Appendices A and B, respectively. A geologic map of the site is presented on Figure 4 and cross sections depicting our interpretation

of the subsurface conditions is presented on Figures 5 through 7. Although not encountered in our borings, fill materials associated with existing pipelines and other improvements in the area is anticipated.

6.2.1 Pavement Sections

The pavement sections consisted of approximately 3 to 3½ inches of asphalt concrete underlain by approximately 4½ to 6 inches of base material generally consisting of loose to medium dense, silty sand with gravel.

6.2.2 Alluvium (Qal) and Slopewash (Qsw)

Alluvium was encountered underlying the base in boring MW-1 to the full depth explored of 26½ feet, to a depth of approximately 23 feet in PW-1, and to approximately 40 feet in our previous boring B-1 (Ninyo & Moore, 2016). CPT-1 and CPT-2 encountered practical refusal at depths of approximately 20 and 22 feet, respectively, which is interpreted as the thickness of the alluvium at these locations. CPT-3 reached the target depth of 70 feet, indicating that the alluvium is more than 70 feet thick at this location. In the borings, the alluvium generally consisted of olive to olive brown, moist to wet, medium dense, clayey sand with gravel and occasional cobbles, with a few layers of sand and sand with silt and gravel as well as few thin layers of silty clay.

Slopewash was observed on the northerly ascending slope and drainage gully above the site. The slopewash generally consisted of unconsolidated to moderately consolidated silty sand with gravel and scattered cobbles. The slopewash is anticipated to be interfingered with the alluvium at the base of the slope against the bedrock. The slopewash and alluvium is undifferentiated in our boring logs.

6.2.3 Bedrock – San Onofre Breccia (Tsob)

Bedrock materials of the San Onofre Breccia was encountered underlying the alluvium in borings B-1 and PW-1 to the depths explored of approximately 50 feet. The San Onofre Breccia generally consisted of blueish green to blueish gray, moist to wet, moderately soft to moderately hard, fine- to coarse-grained sandstone and sandstone with angular gravel (breccia). The bedrock was observed to be intensely weathered near the contact with the overlying alluvium and became less weathered, and harder, with depth. At a depth of approximately 45 feet in boring PW-1, the moisture content of the bedrock decreased.

6.3 Geologic Structure

Outcrops of the San Onofre Breccia were observed on the natural slope to the west and north of the lift station site. The bedrock outcrops were observed to be well-cemented, massive to thickly bedded and dipping approximately 30 degrees to the southwest (Figure 4).

6.4 Groundwater

Groundwater was encountered at a depth of approximately 10 feet below the ground surface on April 19, 2016 during drilling for our preliminary geotechnical evaluation for the project. Groundwater was observed during our recent subsurface evaluation at a depth of approximately 16 feet below the ground surface during drilling. Stabilized groundwater was measured at a depth of approximately 12 feet after drilling. Regional maps indicate that the historic high groundwater level in the vicinity of the site is approximately 5 feet (California Department of Conservation, Division of Mines and Geology CDMG], 2001a). Fluctuations in groundwater levels will occur due to variations in ground surface topography, subsurface stratification, precipitation, irrigation, groundwater pumping, tidal cycles, and other factors, which may not have been evident at the time of our field evaluation.

6.4.1 Tidal Fluctuations

The project is located approximately 150 feet north of Aliso Creek (Figures 2 and 4) and approximately 1,100 feet northeast of the Pacific Ocean (Figure 1). Therefore, Ninyo & Moore performed a limited tidal survey to evaluate the degree to which the ocean tide may affect the shallow groundwater below the project location.

On the morning of March 18, 2020, the depth to groundwater was measured in MW-1 at approximately 12 feet below the ground surface. A down-hole pressure transducer was deployed in MW-1 and set to take water level readings at 10-minute intervals for approximately 24 hours. During this period, the ocean experienced two high-low tidal cycles. The water level measurements from MW-1 varied by approximately 0.4 foot over the course of the survey, but showed no correlation to the approximate 6-hour high-low changes in tide. This is probably due to the nearby influence of Aliso Creek, which was observed to have a steady flow at the time of the tidal survey. Additionally, intermittent light to medium rain occurred at the project location and its up-basin areas during the night of the tidal survey. Based on the above observations, it is anticipated that the stage level of Aliso Creek has an effect on the site groundwater conditions, and possibly acts as a buffer to tidal influences from the ocean.

6.4.2 Hydrogeologic Aquifer Testing

On March 19 and 20, 2020, Ninyo & Moore performed a constant rate aquifer pumping test in PW-1 to estimate aquifer characteristics to provide information for the contractor's dewatering system design. The test was performed for over 24 hours at a closing flow rate of approximately 5 gallons per minute (gpm). The water level displacement during testing and subsequent rate of recovery following cessation of pumping were recorded and later analyzed to estimate the hydraulic conditions of the aquifer in the vicinity of the new lift station. The constant rate pumping test data was analyzed using the Theis with Jacob-Cooper Correction method. The recovery test data was analyzed using the Hvorslev method (1951) and Bouwer and Rice method (1976 and 1989).

The constant rate test analyses for the pumping well estimated a transmissivity value of 35.28 square feet per day (ft^2/d), and a storage coefficient of 81.99 (unitless). The transmissivity value converts to a hydraulic conductivity value of approximately 0.93 feet per day (ft/d). The storage coefficient of 81.99 is significantly higher than would be expected for the aquifer materials at the project site. This is anticipated to be due to the relative short duration of the aquifer test. The storage coefficient decreases over time and pumping. Had the aquifer test been performed for a longer duration, the volume of water entering the pumping well from storage would have stabilized at a lower value. This indicates that during construction of the replacement lift station, the dewatering system will need more than 24 hours to fully stabilize. The recovery test data analysis estimated hydraulic conductivity values ranging from 0.35 to 0.65 ft/d. Data for the full hydrogeologic analyses are presented in Appendix F.

6.4.2.1 Finite Difference Modeling

The higher, more conservative hydraulic conductivity estimate of 0.9 ft/d was incorporated into the finite difference groundwater model to simulate the expected water level changes caused by various pumping scenarios under the modeled conditions.

The groundwater model-processing platform, Groundwater Vistas, was utilized to create groundwater simulations utilizing the Modflow method (2007). The groundwater model was set out on a grid with uniform 48 feet row and column spacings over an area of 2640 feet wide and 2640 feet long centered on the project site. The model assumes that homogeneous and isotropic aquifer conditions exist horizontally across the grid similar to those ascertained from the PW-1 and MW-1 boring logs. The model was designed to estimate the number and configuration of wells expected to dewater to target depth described above. The model was run until steady-state groundwater conditions were achieved. Multiple simulations were

performed with varying numbers and configurations of wells to estimate the desired water-table changes.

For this model, the higher, more conservative, hydraulic conductivity value of 0.9 ft/d was entered. Simulated pumping wells were programmed to operate at various configurations and flow rates for the duration of each model simulation. Based on the model described above and a target drawdown of 21 feet below static, the following two scenarios would be expected to achieve the dewatering target drawdown for this project:

1. A single pumping well with a constant flow rate of 5 gpm would create 23 feet of drawdown in an adjacent 50-foot by 50-foot excavation.
2. Two pumping wells with a cumulative flow rate of 6 gpm straddling a 50-foot by 50-foot excavation would create 23 feet of drawdown.

According to the groundwater simulations, a single pumping well would be expected to achieve dewatering targets. However, the relatively tight hydraulic conditions of the shallow aquifer at the project site will need several days of pumping time to achieve this capture area. Ninyo & Moore understands the limited space available to construct the replacement lift station and the associated overhead hazard present due to the power service lines. Ideally, two pumping wells, if operationally possible, would need less time to achieve the target dewatering depths and provide operational security should one of the wells were to malfunction. The Hydrogeologic Data Sheet in Appendix F presents the results of hydrogeologic analyses and the numerical and visual output from the model simulations.

7 FAULTING AND SEISMICITY

The project sites are located in a seismically active area, as is the majority of southern California. The numerous faults in southern California include active, potentially active, and inactive faults. As defined by the California Geological Survey (CGS), active faults are faults that have ruptured within Holocene time, or within approximately the last 11,000 years. Potentially active faults are those that show evidence of movement during Quaternary time (approximately the last 1.6 million years) but for which evidence of Holocene movement has not been established. Inactive faults have not ruptured in the last approximately 1.6 million years. The approximate locations of major active faults in the region and their geographic relationship to the project sites are shown on Figure 8.

The site is not located within a State of California Earthquake Fault Zone (formerly known as Alquist-Priolo Special Studies Zone). Based on our review of seismic hazard maps, geologic literature, and geologic maps, no active faults are known to cross the subject site. The nearest

known mapped active fault to the project site is the Newport Inglewood fault located approximately 2.3 miles northeast of the site (California Department of Transportation [Caltrans], 2020). The principal seismic hazards at the subject site are surface ground rupture, ground motion, liquefaction, dynamic settlement, lateral spread, and tsunamis. A brief description of these hazards and the potential for their occurrences on site are discussed below.

7.1 Ground Rupture

Based on our review of the referenced literature and our site reconnaissance, no active faults are known to cross the project site. Therefore, the probability of damage from surface ground rupture is considered to be low. However, lurching or cracking of the ground surface as a result of nearby seismic events is possible.

7.2 Site Specific Ground Motion

Considering the proximity of the site to active faults capable of producing a maximum moment magnitude of 6.0 or more, the project area has a high potential for experiencing strong ground motion. The 2019 California Building Code (CBC) specifies that the risk-targeted maximum considered earthquake (MCE_R) ground motion response accelerations be used to evaluate seismic loads for design of buildings and other structures. Based on the shear wave velocity measurement performed at CPT-3, the site shear wave velocity (Vs30) is approximately 750 feet per second (ft/s). Accordingly, the site is classified as Site Class D. Per the 2019 CBC, a site-specific ground motion hazard analysis shall be performed for structures on Site Class D with a mapped MCE_R 5 percent damped, spectral response acceleration parameter at a period of 1 second (S_1) greater than or equal to 0.2g in accordance with Sections 21.2 and 21.3 of the American Society of Civil Engineers (ASCE) Publication 7-16 (2016) for the Minimum Design Loads and Associated Criteria for Building and Other Structures. We calculated that the S_1 for the site is equal to 0.61g using the 2019 Applied Technology Council [ATC] seismic design tool (web-based)]; therefore, a site-specific ground motion hazard analysis was performed for the project area.

The site-specific ground motion hazard analysis consisted of the review of available seismologic information for nearby faults and performance of probabilistic seismic hazard analysis (PSHA) and deterministic seismic hazard analysis (DSHA) to develop acceleration response spectrum (ARS) curves corresponding to the MCE_R for 5 percent damping. The 2014 new generation attenuation (NGA) West-2 relationships were used to evaluate the site-specific ground motions. The NGA relationships that we used for developing the probabilistic and deterministic response spectra are by Chiou and Youngs (2014), Campbell and Bozorgnia (2014), Boore, Stewart,

Seyhan, and Atkinson (2014), and Abrahamson, Silva, and Kamai (2014). The Open Seismic Hazard Analysis software developed by United States Geological Survey (USGS, 2019a) was used for performing the PSHA. The Calculation of Weighted Average 2014 NGA Models spreadsheet by the Pacific Earthquake Engineering Research Center (PEER) was used for performing the DSHA (Seyhan, 2014).

PSHA was performed for earthquake hazards having a 2 percent chance of being exceeded in 50 years multiplied by the risk coefficients per ASCE 7-16. The maximum rotated components of ground motions were considered in PSHA with 5 percent damping. For the DSHA, we analyzed accelerations from characteristic earthquakes on active faults within the region using the Caltrans ARS (Caltrans, 2020) seismic design tool (web-based) and the hazard curves and deaggregation plots at the site using the USGS Unified Hazard Tool application (USGS, 2019b). A magnitude 7.2 event on the Newport-Inglewood fault with a rupture distance of 3.8 kilometers from the site was evaluated to be the controlling earthquake. Hence, the DSHA was performed for the site using this event and corrections were made to the spectral accelerations for the 84th percentile of the maximum rotated component of ground motion with 5 percent damping.

The site-specific MCE_R response spectrum was taken as the lesser of the spectral response acceleration at any period from the PSHA and DSHA, and the site-specific general response spectrum was determined by taking two-thirds of the MCE_R response spectrum with some conditions in accordance with Section 21.3 of ASCE 7-16. Figure 9 presents the site-specific MCE_R response spectrum and the site-specific design response spectrum. The general mapped design response spectrum calculated in accordance with Section 11.4 of ASCE 7-16 is also presented on Figure 9 for comparison. The site-specific spectral response acceleration parameters, consistent with the 2019 CBC, are provided in Section 10.2 for the evaluation of seismic loads on buildings and other structures. The site-specific maximum considered earthquake geometric mean (MCE_G) peak ground acceleration, PGA_M, was calculated as 0.702g.

7.3 Liquefaction Potential

Liquefaction is the phenomenon in which loosely deposited granular soils with silt and clay contents of less than approximately 35 percent and non-plastic silts located below the water table undergo rapid loss of shear strength when subjected to strong earthquake-induced ground shaking. Ground shaking of sufficient duration results in the loss of grain-to-grain contact due to a rapid rise in pore water pressure, and causes the soil to behave as a fluid for a short period of time. Liquefaction is known generally to occur in saturated or near-saturated cohesionless soils at depths shallower than 50 feet below the ground surface. Factors known to influence liquefaction

potential include composition and thickness of soil layers, grain size, relative density, groundwater level, degree of saturation, and both intensity and duration of ground shaking.

As shown on Figure 10, the project site is located in an area mapped as potentially liquefiable on State of California Seismic Hazards Zone map (CDMG, 1998 and 2001b). Accordingly, liquefaction potential of subsurface soils was evaluated using the CPT data. The liquefaction analysis was based on the National Center for Earthquake Engineering Research (NCEER) procedure (Youd, et al., 2001) using the computer program LiquefyPro (CivilTech Corporation, 2008). A groundwater depth of 5 feet, a PGA_m of 0.7g, and a design earthquake magnitude of 7.2 were used in our analyses. Our liquefaction analysis indicated that the relatively loose to medium dense, sand and clayey sand between depths of approximately 5 to 45 feet below the ground surface are susceptible to liquefaction during the design seismic event. Results of our liquefaction analysis are presented in Appendix E.

7.4 Liquefaction-Induced Settlement

As a result of seismically-induced liquefaction, the lift station may be subject to liquefaction-induced settlement. In order to estimate the amount of post-earthquake settlement, the method proposed by Tokimatsu and Seed (1987) was used in which the seismically induced cyclic stress ratios and corrected N-values are related to the volumetric strain of the soil. The amount of soil settlement during a strong seismic event depends on the thickness of the liquefiable layers and the density and/or consistency of the soils.

Under the current conditions, a post-earthquake dynamic settlement at the ground surface of up to approximately 4¼ inches is calculated for the site. However, based on the planned depths of the lift station and the amount of alluvium that is estimated below the lift station, the lift station would be subject to approximately 1 inch of dynamic settlement.

As indicated in Cross Sections A-A', B-B', and C-C' (Figures 5 and 7), the majority of the lift station will be underlain by bedrock (which is not subject to dynamic settlement) while the southern portion of the lift station will be underlain by alluvium. Based on this condition and the relatively narrow lift station footprint in the north-south direction, a differential dynamic settlement of 1 inch over 40 feet should be considered for design purposes.

7.5 Lateral Spread

Lateral spread of the ground surface during an earthquake usually takes place along weak shear zones that have formed within a liquefiable soil layer. Lateral spread has generally been observed to take place in the direction of a free-face (i.e., retaining wall, slope, channel, etc.) but has also

been observed to a lesser extent on ground surfaces with gentle slopes. An empirical model developed by Youd, et al. (2002) is typically used to predict the amount of horizontal ground displacement within a site. For sites located in proximity to a free-face, the amount of lateral ground displacement is correlated with the distance of the site from the free-face as well as the depth of liquefiable strata which contribute to the lateral spreading. The depth of liquefiable strata below the ground surface is approximately twice of the height of the free face (Chu et al., 2006). Based on our review of topographic maps (AKM, 2020), we estimated the height of Aliso Creek face to the south of the site is approximately 16 feet. Accordingly, the depth of the liquefiable soil layer contributing to lateral spreading on-site is approximately 32 feet below the existing ground surface. Other factors such as earthquake magnitude, distance from the causative fault, thickness of the liquefiable layers, and the fines content (FC) and particle sizes of the liquefiable layers also influence the amount of lateral ground displacement.

Due to the proximity of the site to the free-face of the Aliso Creek channel, ground displacement as a result of lateral spread may occur at the site during a significant seismic event. Our analysis indicates that approximately 3 to 5 feet of lateral displacement was estimated to occur in the upper 32 feet of the soil layer during the design seismic event. However, because the bottom of the proposed lift station will be at a depth ranging from 32 to 39 feet below the existing ground surface and portions of the lift station will be founded in San Onofre Breccia, it is our opinion that liquefaction induced lateral spreading is not a design consideration for the proposed lift station.

7.6 Liquefaction-Induced Loss of Bearing Capacity

For the potential loss of bearing capacity during the design earthquake, we evaluated the residual shear strength of the liquefiable layers at a depth of 32 to 45 feet below the existing ground surface using the method presented in Earthquake Engineering Research Institute Monograph - Soil Liquefaction During Earthquakes (Idriss and Boulanger, 2008). Based on our review of the boring log (B-1) and CPT sounding (CPT-3), the subsurface soils underlying the proposed lift station are relatively uniform and consist of interbedded gray, and olive gray, wet, medium dense, silt, silty sand, clayey sand and sand. Based on a corrected SPT blow count $(N1)_{60}$ ranging from 12 to 15 and an FC ranging from 12 to 17 for the liquefiable layer at a depth of 32 to 45 feet as well as on the corrected tip resistance (q_{C1N}) 0f approximately 45, our analysis indicated that the residual shear strength of this liquefiable soil layer underlying the lift station is approximately 240 psf. Accordingly, the ultimate bearing capacity of the liquefiable soil layer may be reduced down to approximately 4,000 psf during the design earthquake.

7.7 Earthquake-Induced Landslides and Slope Stability

The State of California Seismic Hazards Zones Map indicates that the adjacent ascending slope is located within a mapped area subject to seismically induced landslide hazards (Figure 10). Landslides may be induced by strong vibratory motion produced by earthquakes. Research and historical data indicate that seismically induced landslides tend to occur in weak soil and rock on sloping terrain. The process for zoning earthquake-induced landslides incorporates expected future earthquake shaking, existing landslide features, slope gradient and strength of earth materials on the slope.

Our field mapping from our preliminary geotechnical evaluation (Ninyo & Moore, 2016) and our subsurface exploration indicate that the formational materials at the site consist of San Onofre Breccia. The bedrock outcrops observed on the steep ascending slope are massive to thickly bedded and is the bedding orientation is generally neutral with respect to the south facing slope. The bedrock exposed on the slope is strongly cemented and is considered relatively stable.

The slopewash deposits on the north slope were observed in the erosional gully and were estimated to be up to approximately 15 feet thick. The slopewash material consists of unconsolidated to moderately consolidated silty sand with gravel and scattered cobbles. The residential developments at the top of the slope have diverted runoff water from terrace drains on to the slope surface above the site. This diversion of runoff water from the above properties is the cause of the erosion observed on the slope at the project site.

Due to the steepness of the ascending slope, including the near-vertical sidewalls of the erosional gully, the slopewash may become unstable with the addition of water from rainfall and/or runoff from the above properties resulting in slumping and/or mudflows. Based on this condition, the proposed retaining wall that will be constructed adjacent to the slope should be designed as a debris wall.

7.8 Tsunamis

Tsunamis are open-sea waves generated by sudden movements of the ocean floor during submarine earthquakes or landslides that can impact low-lying coastal areas. Water surge caused by tsunamis is measured by distance of run-up on the shore. The site is located on the boundary of a mapped tsunami hazard zone and could be impacted by a tsunami (Figure 11) (CGS, 2009).

8 SLOPE STABILITY

The relatively thick slope wash deposits on the steep ascending slope north of the site are considered a potential slope stability hazard. The erosion due to upgradient run-off onto the slope

exacerbates the condition with near-vertical gully sidewalls. Based on our review of the preliminary plans, the project will include construction of a retaining wall with a 2-foot-wide drainage channel at the bottom of the slope. These improvements may help to protect the new lift station from being impacted by mud and/or debris flows, but additional measures will be appropriate including: 1) backfilling the erosion gulley with compacted soil, 2) designing the retaining wall with additional freeboard to withstand lateral earth pressures associated with potential mudflows. We recommend that 5 feet of freeboard be added from the elevation of the adjacent drainage channel to the top of the wall to accommodate potential eroded debris. Removal of eroded debris from behind the wall and within the drainage channel should be incorporated into the routine maintenance program for the facility prior to each rainy season; including removing debris prior to and after forecasted heavy rain events.

9 CONCLUSIONS

Based on the results of our geotechnical evaluation, it is our opinion that the construction of the proposed lift station and associated sewer alignment are feasible from a geotechnical standpoint provided the following recommendations are incorporated into the design and construction of the project. In general, the following conclusions were made based on our evaluation:

- The site is underlain by alluvial materials overlying bedrock. The alluvial soils generally consisted of medium dense clayey sand with gravel and poorly graded sand. The bedrock generally consisted of moderately soft to moderately hard sandstone and breccia.
- Excavations in the alluvial soils should be feasible with earthmoving equipment in good working condition.
- Excavations in the bedrock materials will vary in difficulty depending on the cementation, fracturing, and degree of weathering of the sedimentary rock. Difficult excavating to non-rippable conditions should be anticipated in some of the formational materials and utilization of a rock breaker should be planned for.
- Granular alluvial soils encountered at the site are anticipated to have little cohesion and may be subject to caving. These soils should be considered Type C soils in accordance with Occupational Safety and Health Administration (OSHA) soil classifications.
- The on-site soils should be suitable for re-use as general fill and trench backfill once moisture conditioned to near optimum moisture content. Soil excavated from below groundwater levels will be wet and will involve drying to be suitable for compaction. Excavations in the unweathered and/or well-cemented bedrock are anticipated to generate oversize rock fragments that will not be suitable for re-use as fill.
- Groundwater was measured in our monitoring well at a depth of approximately 12 feet below the ground surface. Groundwater was encountered at a depth of approximately 10 feet below the ground surface during our preliminary geotechnical evaluation in 2016. Historic high groundwater for the site is reported at approximately 5 feet below the ground surface. Shallow groundwater conditions and dewatering during construction should be anticipated. Shored excavations and construction dewatering are anticipated at the lift station site, as well as for the trenching of the new sewer line. Materials excavated from below the groundwater will be in a wet condition and will not be suitable for structure backfill. Such materials should be disposed of off-site.

- Several existing pipelines are present within the project area including sewer, water, and gas lines along Country Club Drive. Trench excavations, shoring, and dewatering operations can potentially impact these pipelines and adjacent improvements due to ground settlement from the construction activities. Appropriate mitigation measures should be evaluated by the designer and should include implementation of an appropriate shoring system to reduce the potential for ground movement.

- We anticipate that excavation for the pump station site will include cuts of up to approximately 39 feet below the existing grade. Impacts associated with the excavation will vary, including the quantity of material for excavation, storage and disposal, depth of shoring, rate of dewatering, and potential settlement under adjacent improvements

- The hydraulic conductivity test values estimated from the analysis of constant rate pumping test data is approximately 0.9 ft/d.

- The hydraulic conductivity test values estimated from the analysis of recovery test data ranged from 0.35 ft/d to 0.65 ft/d.

- The site is located in a State of California Seismic Hazard Zone for liquefaction. Based on our subsurface evaluation, the soils below groundwater are susceptible to liquefaction during the design seismic event. Our analysis indicates that liquefaction-induced dynamic settlement of approximately 4¼ inches may occur at the site. Lateral spread on the order of 3 to 5 feet has been estimated at the site. Our analysis also indicates liquefaction-induced dynamic settlement of approximately one inch may occur below the proposed lift station. Due to the depth of proposed lift station, lateral spreading is not a design consideration for the proposed lift station but may cause distress to the proposed utilities connect to the lift station.

- The site is not located within a State of California Earthquake Fault Zone (Alquist-Priolo Special Studies Zone). Based on our review of published geologic maps and aerial photographs, no known active or potentially active faults underlie the sites. The potential for surface fault rupture at the sites is considered low.

- The site is located adjacent to a mapped tsunami hazard zone and could be impacted by a tsunami.

- Analytical testing performed for disposal of soil cuttings did not reveal hazardous levels of TPH and VOCs.

- Analytical testing performed on groundwater samples were reviewed by SCWD during our subsurface evaluation and groundwater generated during the pump test was approved for disposal into the sewer system. Additional sampling and updated test results may be needed for construction dewatering.

- The laboratory corrosion testing indicates that the near-surface site soils at the site should be considered non-corrosive based on the Caltrans (Caltrans, 2018) corrosion guidelines.

10 RECOMMENDATIONS

The recommendations presented in the following sections provide general geotechnical criteria regarding the design and construction of the proposed improvements. The recommendations are based on the results of our subsurface evaluation, laboratory testing, review of referenced geologic materials, experience in the general vicinity of the project area, and geotechnical analyses. The proposed work should be performed in conformance with the recommendations presented in this report, project specifications, and appropriate agency standards.

10.1 Earthwork

Based on our understanding of the project, earthwork at the site is anticipated to include deep excavations for the wet well/dry well structure, excavations for retaining wall foundation and retaining wall backfill, and trenching and backfilling for new underground utilities. Relatively shallow cut and fill grading of a few feet or less is anticipated around the perimeter of the lift station. Earthwork performed at the site should be performed in accordance with the recommendations provided in the following sections of this report. We also recommend that the site grading be performed in accordance with the requirements of the applicable governing agency.

10.1.1 Construction Plan Review and Pre-Construction Conference

We recommend that the grading and foundation plans, ground improvement plans, and project specifications, be submitted to Ninyo & Moore for review to evaluate for conformance to the recommendations provided in this report. We further recommend that a pre-construction conference be held. The owner and/or their representative, the governing agencies' representatives, the civil engineer, the geotechnical engineer, and the contractor should attend to discuss the work plan and project schedule.

10.1.2 Demolition, Clearing, and Grubbing

Prior to grading or construction of planned improvements, the area should be cleared of existing structures, concrete, asphalt concrete, rubble and debris, abandoned utilities, surface obstructions, and other deleterious materials. Existing utilities within the project limits should be re-routed or protected from damage by construction activities. Materials generated from the clearing operations should be removed from the project site and disposed at a legal dumpsite.

10.1.3 Excavation Characteristics

We anticipate that excavation within the alluvial materials on site may generally be accomplished with earthmoving equipment in good operating condition. Bedrock was encountered at a depth of approximately 23 feet in our pump test well (PW-1). The depth to bedrock will vary and shallower bedrock should be anticipated for excavations, particularly in the northern portions of the site where there are nearby, resistant bedrock outcrops. Excavations in unweathered and/or cemented bedrock may involve difficult drilling and excavating conditions. Excavating difficulty will also depend on the degree of fracturing/jointing in the rock. Excavations in the bedrock are anticipated to generate oversize rock fragments that are not suitable for fill material.

Although borings were advanced to depths of up to 50 feet without encountering drilling refusal, the bedrock was moderately hard and samplers generally met refusal during driving with a 140-pound hammer. Coring may be involved to extend the shoring system such as soldier piles into bedrock. special excavating equipment, such as rippers, pneumatic chippers, or jackhammers could be involved during excavation of the dry well/wet well. During excavating, the contractor should anticipate encountering, handling and segregating oversize materials, including cobble to boulder size rock fragments. Contractors should make their own independent evaluation of the excavatability of the on-site materials prior to submitting their bids.

10.1.4 Temporary Excavations

Temporary excavations above groundwater up to approximately 4 feet in depth should be generally stable. Excavations which expose friable, cohesionless sands, may be subject to caving. Excavations deeper than 4 feet and above the groundwater level should be stable at slope inclinations of approximately 1½:1 (horizontal to vertical). Continuous shoring will be involved for excavations that extend below groundwater. For planning purposes, we recommend that the on-site soil be considered as Type C soil in accordance with the OSHA soil classification.

Temporary slope surfaces should be kept moist to retard raveling and sloughing. Water should not be allowed to flow over the top of excavations in an uncontrolled manner. Stockpiled material and/or equipment should be kept back from the top of excavations a distance equivalent to the depth of the excavation or more. Temporary excavations should be observed by the geotechnical consultant so that appropriate additional recommendations necessitated by actual field conditions may be provided. Temporary excavations are time sensitive, and failures are possible.

Multiple existing utilities are present across the site. It is imperative that the contractor take care to locate and protect existing utilities or other buried structures during construction. Shoring and excavation systems should be designed to support excavations and protect utilities in advance of excavating.

10.1.5 Shoring

Due to the space limitation and the existence of shallow groundwater, shoring will be needed for the construction of the proposed lift station. As depict on Figures 5 through 7, the northern, eastern, and western sides of the proposed lift station will involve excavation into San Onofre Breccia sandstone with approximately 2:1 (horizontal to vertical) ascending slope behind it.

The majority of the southern side of the lift station will engage with vertical excavation into the alluvium with no slope behind it. A shoring system will be constructed through the on-site soil/bedrock and below groundwater. Accordingly, the design of the shoring system should consider the excavation characteristics of the onsite soil/bedrock, temporary excavation stability, construction dewatering, and the impact of construction on existing structures.

Based on our past experience with similar conditions, shoring methods can reduce the amount of construction dewatering by installing a shoring system that cuts off the groundwater flow into the excavations. Shoring systems such as driven sheet piles (cofferdam) are commonly used below groundwater in relatively loose soils. Due to the relatively hard San Onofre Breccia bedrock materials, driven sheet piles are not considered feasible at the lift station site. In the area of the future trench excavation for the sewer underlain by alluvial soils, driven sheet piles may be appropriate. The following is a brief description of alternative shoring methods.

10.1.5.1 Shoring Methods

- **Slurry Wall** – The slurry wall, sometimes referred to as a diaphragm wall, generally includes excavation of a trench with a clamshell-shaped excavator utilizing a set of guide walls on the edges of the trench. As the trench is excavated, a bentonite slurry is placed in the trench until the design depth is reached. Once the trench is excavated to the design depth, a reinforcing cage is lowered into the slurry-filled trench. The trench is then backfilled with concrete using tremie pipes. The concrete displaces the bentonite slurry, which is pumped and recycled. Additional trenches are then excavated with a similar procedure until the designed area is enclosed. At that time, the excavation for the new structure can be performed. In order to stabilize the wall, temporary supports, such as tiebacks (anchors) or struts, are also installed.

- **Secant Pile Wall** – The secant pile wall, sometimes referred to as interlocking concrete piles, generally consists of drilling alternate boreholes either by using drilling mud or casing along the line of the wall leaving a space for the planned intermediate piles. Typically, a guide wall is used to drill the alternate boreholes. Concrete and reinforcement is then placed in the drilled holes using a tremie method, and the casing, if used, is removed. Prior to the concrete obtaining the planned compressive strength, the secondary (alternate) piles are installed with a slight offset to the primary piles so that the two sequences of piles interconnect, resulting in a continuous wall.

- **Cutter Soil Mixing Wall** – Cutter soil mixing wall is similar to a slurry wall with the exception that the procedure involves a drill rig with two drilling cutting wheels separated by a pipe. The mixing tool is drilled into the ground at a relatively continuous rate. The soil matrix is simultaneously broken up by the cutting wheels, and mixed with bentonite cement fluid that is pumped through the pipe. Excess material is removed with a backhoe onto a screen where primary separation is performed. The fluid fraction is then pumped to a plant unit for further treatment. A continuous wall is formed by a series of overlapping primary and secondary panels similar to the secant pile wall.

- **Silent Sheet Piling (Press-in Method with Integral Augering)** – Silent sheet piling utilizes hydraulic pile jacking technology (Press-in Method) to reduce the noise output and vibration. The silent pile is equipped with an integral pile auger to form a super crush system (Giken Technology). The system involves a selected shaped interconnected metal sheet pile with an auger casing along the edge of the pile. The hard soil is then

loosened by augering, and the pressing-in action is carried out while simultaneously extracting the auger. The pile penetrates hard soil as it collapses around the augered areas.

- **Soldier Piles with Sheet Lagging –** Soldier piles in the form of steel H- beams are installed to an appropriate depth at a specified spacing in a drilled hole. The drilled holes are backfilled with a lean concrete mix using a tremie method. As the excavation proceeds, steel shields and/or water proofing sealant material are installed behind the piles.

Table 1 presents a summary of shoring alternative evaluations based on our research and experience. Experienced contractors should make an independent evaluation of the appropriate shoring method and potential site impacts. Shoring construction should be performed by a specialty contractor who has a record of accomplishment in installing these systems.

Table 1 – Alternative Shoring

Shoring Methods	Environmental Impacts	Advantages and Disadvantages
Slurry Wall	• Moderate Noise • Minor Vibration • Moderate Siltation • Moderate Export	• Moderate Difficult Penetration • Good Water/Vapor Tightness • Moderate Availability • Permanent Wall Potential • Significant Construction Staging
Secant Pile Wall	• Moderate Noise • Minor Vibration • Moderate Siltation • Moderate Export	• Moderate Difficult Penetration • Moderate Water/Vapor Tightness • Readily Available • Permanent Wall Potential • Limited Construction Staging
Cutter Soil Mixing Wall	• Moderate Noise • Minor Vibration • Moderate Siltation • Moderate Export •	• Significant Difficult Penetration • Moderate Water/Vapor Tightness • Limited Availability • Permanent Wall Potential • Significant Construction Staging
Silent Sheet Pile (Press-in Method)	• Low Noise • Minor Vibration • Minor Siltation • Minimal Export	• Moderate Difficult Penetration • Good Water/Vapor Tightness • Limited Availability • No Permanent Wall Potential • Limited Construction Staging
Soldier Piles with Sheeting	• Moderate Noise • Minor Vibration • Minor Siltation • Moderate Export	• Moderate Difficult Penetration • Poor Water/Vapor Tightness • Readily Available • No Permanent Wall Potential • Limited Construction Staging

The shoring systems should be designed using the lateral earth pressures shown on Figures 12 and 13 for the southern side and the other sides of the excavation for the lift station, respectively. The recommended design pressures are based on the assumptions that the shoring system is constructed without raising the ground surface elevation behind the shoring, that there are no surcharge loads, such as soil stockpiles and construction materials, and that no loads act above a 1:1 (horizontal to vertical) plane extending up and back from

the base of the shoring system. For shoring subjected to the above-mentioned surcharge loads, the contractor should include the effect of these loads on the lateral pressures against the shoring wall.

We anticipate that settlement of the ground surface will occur behind the shoring wall during excavation. The amount of settlement depends heavily on the type of shoring system, the contractor's workmanship, and soil conditions. Based on our experience, we anticipate that the shoring system may cause settlement and possible impact to structures within distances of up to approximately 50 feet from the shoring operation. We recommend that structures/improvements in the vicinity of the planned shoring installation be reviewed with regard to foundation support and tolerance to settlement. To reduce the potential for distress to adjacent structures, we recommend that the shoring system be designed to limit the ground settlement behind the shoring system to ½ inch or less. Possible causes of settlement that should be addressed include settlement during installation of the shoring, excavation for structure construction, construction vibrations, dewatering, and removal of the support system. The vibrations from the installation of shoring may result in some dynamic settlement and may affect the adjacent facilities. We recommend that shoring installation be evaluated carefully by the contractor prior to construction and that ground vibration and settlement monitoring be performed during construction. To reduce the potential for settlement associated with shoring removal, the benefit of leaving the shoring buried in-place may be considered.

The contractor should retain a qualified and experienced engineer to design the shoring system. The shoring parameters presented in this report are minimum requirements, and the contractor should evaluate the adequacy of these parameters and make the appropriate modifications for their design. We recommend that the contractor take appropriate measures to protect workers including potential exposure to methane and hydrogen sulfide gases. OSHA requirements pertaining to worker safety should be observed.

10.1.6 Groundwater and Construction Dewatering

Groundwater was measured in our monitoring well at approximately 12 feet below the ground surface at the site. The reported historically shallow groundwater condition in the vicinity of the site is approximately 5 feet below the ground surface. Accordingly, a depth to groundwater of 5 feet should be considered for potential hydrostatic uplift conditions when designing the below-grade structures, as well as other improvements.

Dewatering will be involved during construction for excavations that extend below groundwater, so that work can be done in a relatively dry condition. The dewatering system should be designed such that lowering of the water table outside the excavations is minimal to avoid settlement of existing improvements. The dewatering system design should be performed by a hydrogeologist or specialty dewatering contractor in coordination with the specialty contractor who will design the shoring plan.

The estimated aquifer properties provided in Section 6.4.2 may be used to assist in the design of the dewatering system. Excavations in which more permeable structure and utility trench backfill materials are encountered may involve higher groundwater flow rates from gravel bedding/backfill zones.

Depending on the permeability of soil between the bottom of the excavation and the bottom of the shoring system, as well as the effectiveness of the shoring system to cutoff the lateral migration of water from entering the wet well/dry well excavation, drawing down of the water level within the excavation defined by the “cofferdam” may affect the water level outside of the excavation. Lowering the water table may result in an increase in effective stresses and may induce settlements of the soils underlying adjacent improvements. Accordingly, we recommend that the dewatering be performed from inside the perimeter of the shoring walls and the groundwater level be lowered no more than 3 feet below the excavation. Detailed design of groundwater pumping systems should be prepared by the contractor with consideration of the type of shoring systems and excavations to be performed.

Disposal of groundwater should be performed in accordance with the guidelines of the RWQCB and SCWD’s Acceptance Limits for discharge into a sewer. Design of the groundwater control system is the responsibility of the contractor. Based on our analytical test results, we anticipate the analytes in groundwater during the dewatering will meet the LDLs provided by the SCWD. Prior to dewatering, additional water quality testing should be performed for acceptance to discharge into the sewer system. During dewatering, groundwater should be monitored and tested for potential contaminants from off-site sources. Details regarding the monitoring and testing frequency should be based on the contractors’ means and methods as well as the Soil and Groundwater Management Plan.

10.1.7 Subgrade Preparation

The areas of planned improvements include existing fills and some loose, natural soils, which may be compressible under new loads. In order to provide suitable support for at-grade planned improvements (e.g., structure, sidewalks, pavements, hardscapes, etc.), we

recommend that existing unsuitable fill material and underlying loose natural soils that remain after the clearing operations be removed and recompacted. The recompaction work should consist of 1) removing existing fill material down to the formational deposits or 2 feet below the bottom of foundation, whichever occurs first, 2) scarifying, moisture conditioning, and compacting the exposed natural subgrade soils, and 3) replacing the fill and compacting it to a relative compaction of 90 percent or more near the laboratory optimum moisture content as evaluated by the latest edition of American Society for Testing and Materials (ASTM) D 1557. The lateral limits of removal should extend approximately 5 feet or more beyond the perimeter limits of each improvement at the base of the excavation. The actual depth and limits of removal should be evaluated by the geotechnical consultant during construction.

The excavations for the wet well/dry well that will extend below groundwater (before or after dewatering) is anticipated to expose transitions between relatively hard San Onofre Breccia bedrock and relatively loose/soft alluvium. In order to mitigate this transition, and to stabilize the wet and loose/soft alluvium, the subgrade should be overexcavated to a depth of approximately 2 feet, and the excavated soil/bedrock replaced with crushed aggregate base or gravel wrapped by filter fabric, such as Mirafi 140N, or equivalent. If aggregate base is used, it should consist of either Caltrans Class II aggregate base or crushed miscellaneous base. Caltrans Class II aggregate base should conform to the State of California Standard Specifications, Section 26 1.02A. Crushed miscellaneous base should conform to the Standard Specifications for Public Works Construction, Section 200 2.4. Aggregate base should be compacted to a relative compaction of 95 percent as evaluated by ASTM test method D 1557. Field tests to evaluate compaction should be performed during construction. Recommendations for stabilizing excavation bottoms should be based on evaluation in the field by the geotechnical consultant at the time of construction.

10.1.8 Fill, Structure Backfill, and Trench Backfill

We recommend that structure backfill consist of clean, granular material that meets Greenbook Section 300-3.5 criteria for structure backfill. The on-site sandy alluvial materials and bedrock encountered during our subsurface exploration should generally be suitable for reuse as trench backfill provided they are free of debris, organics, and rocks larger than approximately 4 inches in diameter. Non-granular silt and clay materials may be used as general fill, but should not be used as structure backfill.

Wet soils should be processed to a moisture content that is slightly above the laboratory optimum moisture and suitable for compaction. Wet soils with a high clay and silt content will

involve additional time for processing to be suitable for compaction. Concrete and asphalt concrete from the demolition can be used as fill if the material meets the latest Greenbook Section 300-3.5 criteria for structure backfill or Section 200-2.4 criteria for crushed miscellaneous base. Materials for use as fill should be evaluated by Ninyo & Moore prior to compaction.

Imported fill material (if any), should be granular, non-expansive soil, and free of trash, debris, roots, vegetation, or other deleterious materials. “Non-expansive” soils can be defined as having an expansion index less than 20 as evaluated in accordance with ASTM test method D 4829. Fill should generally be free of rocks or hard lumps of material in excess of 4 inches in diameter. Rocks or hard lumps larger than approximately 4 inches in diameter should be broken into smaller pieces or should be removed from the site. Materials for use as imported structural fill should be evaluated by Ninyo & Moore prior to importing.

10.1.9 Fill Placement and Compaction

Fill and trench backfill should be compacted in uniform horizontal lifts to a relative compaction of 90 percent or more as evaluated by the latest edition of ASTM D 1557. Aggregate base beneath pavement areas should be compacted to a relative compaction of 95 percent. Fill soils should be moisture-conditioned to above the optimum moisture content as evaluated by the latest edition of ASTM D 1557. The optimum lift thickness of fill will depend on the type of compaction equipment used but generally should not exceed 8 inches in loose thickness. Special care should be taken to avoid pipe damage when compacting trench backfill above pipes. Placement and compaction of the fill soils should be in general accordance with the appropriate governing agencies and good construction practices.

10.1.10 Pipe Bedding

We recommend that pipelines be supported on 6 inches or more of granular bedding material such as sand with a sand equivalent value of 30 or more. Bedding material should be placed and compacted around the pipe, and 12 inches or more above the top of the pipe in accordance with the current “Greenbook” Standard Specifications for Public Works. We do not recommend the use of crushed rock for bedding material. It has been our experience that the voids within a crushed rock material are sufficiently large enough to allow fines to migrate into the voids, thereby creating the potential for sinkholes and depressions to develop at the ground surface.

Special care should be taken not to allow voids beneath and around the pipe. Bedding material and compaction requirements should be in accordance with the recommendations

of this report, the project specifications, and applicable requirements of the appropriate agencies. Compaction of the bedding material and backfill should proceed along both sides of the pipe concurrently and be compacted to 90 percent or more relative compaction as evaluated by ASTM D 1557.

10.1.11 Modulus of Soil Reaction

The modulus of soil reaction is used to characterize the stiffness of soil backfill placed at the sides of buried pipelines for evaluating deflection caused by the weight of the backfill above the pipe. For pipelines constructed in granular fill and native materials, we recommend that a modulus of soil reaction of 1,000 pounds per square inch be used for design, provided that granular bedding material is placed adjacent to the pipe, as recommended in this report.

10.1.12 Lateral Earth Pressures for Thrust Blocks

Thrust restraint for pipes under pressure may be achieved by transferring the thrust force to the soil outside the pipe through a thrust block. Thrust blocks may be designed using the lateral passive earth pressures presented on Figure 14.

10.2 Site-Specific Seismic Design Considerations

Design of the proposed improvements should be performed in accordance with the requirements of governing jurisdictions and applicable building codes. Table 2 presents the seismic design parameters at a central location of the site in accordance with the CBC (2019) guidelines.

Table 2 – 2019 California Building Code Seismic Design Criteria

Site Coefficients and Spectral Response Acceleration Parameters	Values
Site Class	D
Mapped Spectral Response Acceleration at 0.2-second Period, S_s	1.331 g
Mapped Spectral Response Acceleration at 1.0-second Period, S_1	0.472 g
Site-Specific Spectral Response Acceleration at 0.2-second Period, S_{MS}	1.552 g
Site-Specific Spectral Response Acceleration at 1.0-second Period, S_{M1}	1.193 g
Site-Specific Design Spectral Response Acceleration at 0.2-second Period, S_{DS}	1.034 g
Site-Specific Design Spectral Response Acceleration at 1.0-second Period, S_{D1}	0.795 g

10.3 Foundations

We anticipate that the lift station wet well/dry well will be supported by mat foundations. The building to house the lift station and the retaining wall/debris wall adjacent to the ascending slopes will be supported by spread footings. Based on our review of the preliminary construction drawings, the proposed generator building will have compacted fill between the bottom of the generator building and the top of the emergency storage area of the wet well. This building may be supported by spread footings or a mat foundation. Recommendations for spread footings and mat foundations are presented in the following sections. Foundations should be designed in

accordance with structural considerations and our geotechnical recommendations. In addition, requirements of the governing jurisdictions, practices of the Structural Engineers Association of California, and applicable building codes should be considered in the design of the structure.

10.3.1 Retaining/Debris Walls

Based on our evaluation, it is our opinion that construction of a retaining/debris wall will be an appropriate form of debris flow hazard protection for the project. We recommend that the height of the debris walls be 5 feet or more above the top the 2-foot-wide drainage channel that will be constructed adjacent to the wall. However, it should be noted that this level of protection does not preclude a relatively large debris flow, tree fall, or other slope failure event from impacting the lift station below. Additionally, maintenance should be performed to regularly remove the accumulated debris from behind the wall to preserve the performance and efficiency of the wall.

Lateral earth pressures recommended for design of debris walls are provided on Figure 15. Debris walls may be supported on footings designed in accordance with the recommendations presented below.

10.3.2 Spread Footings

The generator building and the retaining / debris walls may be supported on shallow spread footings bearing on compacted fill prepared in accordance with the earthwork recommendations of this report. Footings should be founded at a depth of 2 feet or more below the adjacent grade on competent compacted fill. Footings should have a width of 2 feet or more. Footings founded as recommended may be designed for a net allowable soil bearing pressure of 2,500 pounds per square foot (psf). The allowable bearing pressure may be increased by up to one-third when considering loads of short duration, such as wind or seismic forces. Footings should be reinforced in accordance with the recommendations of the project structural engineer. We recommend that, as a minimum, the footings be reinforced with four No. 4 reinforcing steel bars, two placed near the top of the footing and two placed near the bottom. Reinforcing bars should be covered by 3 or more inches of concrete.

Spread footings placed in compacted native soils may be designed using a coefficient of friction of 0.35 (total frictional resistance equals the coefficient of friction times the dead load) at the concrete/soil interface. A design passive resistance value of 350 psf per foot of depth for level soil (with a maximum value of 3,500 psf) may be used. The allowable lateral resistance can be taken as the sum of the friction resistance and passive resistance, provided the passive resistance does not exceed one-half the total allowable resistance. Passive

resistance values may be increased by one-third when considering loads of short duration, such as wind or seismic loads.

10.3.3 Mat Foundations

Mat foundations for the lift station wet well/dry well bearing on compacted aggregate base or gravel wrapped in filter fabric as outlined in the preceding sections of this report may be designed using a net allowable bearing capacity of 3,500 pounds per square foot (psf). The total and differential settlements corresponding to these allowable bearing loads are estimated to be less than approximately 1 inch and ½ inch over a horizontal span of 40 feet, respectively. The allowable bearing capacity may be increased by one third when considering loads of short duration, such as wind or seismic forces. Mat foundations typically experience some deflection due to loads placed on the mat and the reaction of the soils underlying the mat. A design modulus of subgrade reaction of 45 kips per cubic foot (kcf) may be used for the subgrade soils in evaluating such deflections.

For frictional resistance to lateral loads on mat foundations, we recommend a coefficient of friction of 0.35 for compacted granular subgrade soil. For a mat with an embedment depth shallower than 2 feet, an allowable passive earth pressure of 350 psf per foot should be ignored while evaluating lateral resistance; only frictional resistance should be considered. For mats with embedment depths more than 2 feet, passive earth pressure may be combined with frictional resistance to evaluate the total lateral resistance. In such cases, the lateral resistance can be taken as the sum of the frictional resistance and passive resistance provided the passive resistance does not exceed one-half of the total resistance. The passive resistance values may be increased by one-third when considering loads of short duration such as wind or seismic forces.

10.4 Lateral Earth Pressures

Below-grade walls for the proposed lift station may be considered to be restrained from lateral displacement under static loading conditions. Restrained walls subjected to lateral earth pressures should be designed using the parameters presented on Figures 16 and 17 for the southern side and the other sides of the lift station, respectively. Hydrostatic pressure should also be considered for the portions of the walls located below the water table. The dynamic lateral earth pressures for the below-grade walls were evaluated based on the underlying soil characteristics that may induce lateral movement of the underground structure. However, considering the at-rest earth pressure condition, application of the additional dynamic component will not be needed (Atik and Sitar, 2010).

10.5 Waterproofing and Pipe Connections

The exterior of below-grade walls should be carefully waterproofed. We recommend that horizontal and vertical construction joints of underground structures have water stops to reduce the likelihood of water infiltration. For pipes penetrating into the structures, “water-tight” penetration design should be utilized. To reduce the potential for pipe to wall differential settlement due to liquefaction which could cause pipe shearing; we recommend that a pipe joint be located close to the exterior of the walls. The type of joint should be such that relative movement can be accommodated without distress. The pipe connections should be sufficiently flexible to withstand differential settlement on the order of 3 inches.

10.6 Uplift Pressure Considerations

We recommend that concrete mat foundations be designed to resist hydrostatic uplift in accordance with parameters presented on Figure 18. A groundwater depth of 5 feet should be considered for potential hydrostatic uplift conditions when designing the below-grade structures, as well as other improvements. In order to resist uplift pressures, two alternatives may be considered: 1) constructing a thicker concrete mat, or 2) enlarging the surface area of the mat by further extending it laterally on each side beyond the outer limits of the walls. The resistance to uplift may then be taken as the sum of the weight of the structure in question and the weight of the wedge of soil within the zone of influence of the flanges (Figure 18). Liquefaction results in an increase in pore water pressure and may have an impact on uplift pressure. For concrete mat foundations bearing on liquefiable soil layers, increases in uplift pressure should be considered based on liquefiable soils behaving like dense fluids. Case histories, physical modeling, and numerical modeling have indicated that uplift pressures should be increased by a factor of approximately 1.4 for the mat foundations bearing on soils that are susceptible to liquefaction (Luxford, 2014, and Chian, et al., 2014).

10.7 Building Slabs-On-Grade

Buildings supported on shallow footings should have floor slabs designed by the project structural engineer based on the anticipated loading conditions. Building floor slabs should be underlain by compacted soil prepared in accordance with the recommendations presented in this report. We recommend that slabs be 5 inches thick or more and reinforced with No. 4 steel reinforcing bars placed 24 inches on-center (each way) or more placed near the mid-height of the slab. The placement of the reinforcement in the slab is vital for satisfactory performance. The floor slab and foundations should be tied together by extending the slab reinforcement into the footings. The slab should be underlain by a 4-inch-thick capillary break (consisting of either sand or crushed rock) overlain by a polyethylene vapor retarder (with a thickness of 10 mils or more). The steel

reinforcements for the floor slab shall be placed on the vapor retarder using chairs, as appropriate. The vapor retarder is recommended in areas where moisture-sensitive floor coverings are anticipated. Soils underlying the slabs should be moisture-conditioned and compacted in accordance with the recommendations presented in this report prior to concrete placement. Joints should be constructed at intervals designed by the structural engineer to help reduce random cracking of the slab.

10.8 Exterior Flatwork

Exterior slabs-on-grade associated with equipment pads or other improvements should be supported on low-expansion potential compacted soil and should have a thickness of 5 inches or more. The slab should be reinforced with a minimum of No. 3 steel reinforcing bars placed 18 inches on-center (each way) in the middle one-third of the slab height. The design of the slabs should also be based on structural engineering considerations. The appropriate placement of the reinforcement in the slab is vital for adequate performance. The slab should be underlain by a 2-inch-thick layer of clean sand. Soils underlying the slabs should be moisture-conditioned to slightly above the laboratory optimum and compacted in accordance with the recommendations presented in the Earthwork section of this report. The subgrade soil should be maintained in a moist condition until the slab is placed. Joints should be constructed at intervals designed by the structural engineer to help reduce random cracking of the slab.

10.9 Corrosivity

The corrosion potential of the site soils was evaluated based on laboratory testing of a representative sample obtained from our exploratory boring. Laboratory testing was performed to evaluate pH, electrical resistivity, chloride, and sulfate content. The soil pH and minimum resistivity tests were performed in accordance with California Test Method (CT) 643. The test for chloride content of the soils was performed using CT 422. Sulfate testing was performed in general accordance with CT 417. The laboratory results are presented in Appendix C.

The results of our corrosivity testing indicated a pH of approximately 8.2, an electrical resistivity of approximately 2,460 ohm-cm, a chloride content of approximately 50 ppm, and a sulfate content of approximately 0.007 percent (i.e., 70 ppm). Based on the laboratory test results and Caltrans (2018) corrosion criteria, the project site can be classified as non-corrosive, which is defined as having earth materials with less than 500 ppm chlorides, less than 0.15 percent sulfates (i.e., 1,500 ppm), an electrical resistivity of 1,100 ohm-cm or more, and a pH of 5.5 or more. However, if corrosion susceptible improvements are planned on site, we recommend that a corrosion engineer be consulted for further evaluation and recommendations.

10.10 Concrete Placement

Concrete in contact with soil or water that contains high concentrations of soluble sulfates can be subject to chemical deterioration. Based on the CBC criteria, the potential for sulfate attack is negligible for water-soluble sulfate contents in soil ranging from 0.00 to 0.10 percent by weight and moderate for water-soluble sulfate contents ranging from 0.10 to 0.20 percent by weight. The potential for sulfate attack is severe for water-soluble sulfate contents ranging from 0.20 to 2.00 percent by weight and very severe for water-soluble sulfate contents over 2.00 percent by weight. Laboratory testing indicated the sulfate content of the sample tested was approximately 0.007 percent, representing a negligible potential for sulfate attack (CBC, 2019). However, due to the potential variability of the soils on site, consideration should be given to using Type II/V cement for the project.

In order to reduce the potential for shrinkage cracks in the concrete during curing, we recommend that the concrete for the proposed improvements be placed with a slump of 4 inches based on ASTM C 143. The slump should be checked periodically at the site prior to concrete placement. We further recommend that concrete cover over reinforcing steel for foundations be provided in accordance with CBC (2019). The structural engineer should be consulted for additional concrete specifications.

10.11 Drainage

Adequate surface drainage is imperative for satisfactory site performance. Positive drainage should be provided and maintained to direct surface water away from improvements and off the site. Positive drainage is defined as a slope of 2 percent or more for a distance of 5 feet or more. Surface water should not be allowed to pond adjacent to the new lift station improvements.

As previously stated, clearing of eroded debris that accumulates behind the retaining/debris wall and within the drainage channel should be performed prior to each rainy season. This should also be performed prior to and after significant rainfall events to maintain the functionality of the drainage system.

10.12 Instrumentation and Documentation

Consideration should be given to implementing documentation and instrumentation programs to evaluate design assumptions and existing conditions and to monitor movements, levels, and deformations during construction. The monitoring programs may include the use of seismographs, groundwater monitoring wells, inclinometers, convergence points, and an array of surface control points. The resulting data should be reviewed and evaluated by Ninyo & Moore. These programs should be in-place or conducted prior to the start of construction.

10.12.1 Documentation of Existing Conditions

We recommend that a pre-construction survey of the existing conditions of the nearby structures be performed before construction on-site. The pre-construction survey should consist of photographic documentation of the exterior portions of the buildings, including distress features such as cracks and/or separations that may be present and floor level surveys of existing residences above the pump station site should be performed. The purpose of the pre-construction survey is to develop documentation of existing conditions prior to construction that may serve as a basis for evaluating potential damage claims.

10.12.2 Construction Vibrations

Human experience has shown that vibrations at very low levels can be perceived and judged as being much higher than they actually are. Hendron and Oriard (1972) stated that transient vibrations from construction activities, such as pile driving, are noticeable at peak particle velocities as low as 0.02 to 0.06 inch per second. At peak particle velocities as low as 0.2 to 0.4 inch per second, the vibrations are disturbing and may result in complaints and damage claims. However, these vibration levels are below the peak particle velocity threshold considered to cause cosmetic damage to commercial/residential construction.

We recommend that vibration caused by construction activities be monitored in terms of peak particle velocity during construction. To monitor the peak particle velocity, seismographs could be positioned at the construction site and monitored at selected intervals during construction. Consideration should be given to locating one seismograph close to the construction activity, another at the nearest building, and a third at a building farther away.

10.12.3 Groundwater Monitoring

As previously noted, settlement of the ground surface and adjacent structures may result from drawing down of the water table. We recommend, therefore, that the contractor monitor water levels outside of the excavation so that the groundwater is not lowered by more than approximately 3 feet below the bottom of the excavation. In order to monitor the water level, we recommend that two groundwater monitoring wells be installed in the vicinity of the proposed excavation for the pump station. The monitoring wells should be installed at locations that will be accessible during construction. The groundwater levels should be monitored daily or several times a day during dewatering, as appropriate.

10.12.4 Lateral Movement of Shoring Support System

We recommend that inclinometers or survey points be established behind excavations located in areas where structures are located above a 1:1 (horizontal to vertical) plane

projected from the bottom of the proposed excavations. The inclinometers or survey points should be monitored and evaluated daily during excavation activities to provide an advanced warning system of potential problems.

11 CONSTRUCTION OBSERVATION

The conclusions and recommendations presented in this report are based on our understanding of the proposed project and on our evaluation of the data collected based on subsurface conditions observed in widely spaced exploratory borings and CPTs. It is imperative that the geotechnical consultant checks the subsurface conditions during construction. We recommend that Ninyo & Moore review the project plans and specifications prior to construction. It should be noted that, upon review of these documents, some recommendations presented in this report may be revised or modified.

During construction, we recommend that the duties of the geotechnical consultant include, but not be limited to:

- Observing clearing, grubbing, and removals.
- Observe ground improvement construction and perform quality control sampling and testing of DSM materials.
- Observing excavation, placement, and compaction of fill, including trench backfill.
- Evaluating on-site soil for suitability as use as engineered fill/structural backfill prior to placement.
- Evaluating imported materials prior to their use as fill.
- Performing field tests to evaluate fill compaction.
- Observing structure foundation excavations for bearing materials and cleaning prior to placement of reinforcing steel or concrete.
- Performing material testing services including concrete compressive strength and steel tensile strength tests and inspections.

The recommendations provided in this report are based on the assumption that Ninyo & Moore will provide geotechnical observation and testing services during construction. In the event that the services of Ninyo & Moore are not used during construction, we request that the selected consultant provide the owner with a letter (with a copy to Ninyo & Moore) indicating that they fully understand Ninyo & Moore's recommendations and that they are in full agreement with the design parameters and recommendations contained in this report.

12 LIMITATIONS

The geotechnical evaluation presented in this report has been conducted in general accordance with current practice and the standard of care exercised by geotechnical consultants performing similar tasks in the project area. No warranty, expressed or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation detailed enough to reveal every surface and/or subsurface condition. Variations may exist and conditions not observed or described in this report may be encountered during construction. Uncertainties relative to subsurface conditions can be reduced through subsurface exploration.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

Our conclusions, recommendations, and opinions are based on an analysis of the observed site conditions. If geotechnical or environmental conditions different from those described in this report are encountered, our office should be notified, and additional recommendations, if warranted, will be provided upon request. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

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FIGURES

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NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: USGS, 2018a and 2018b.

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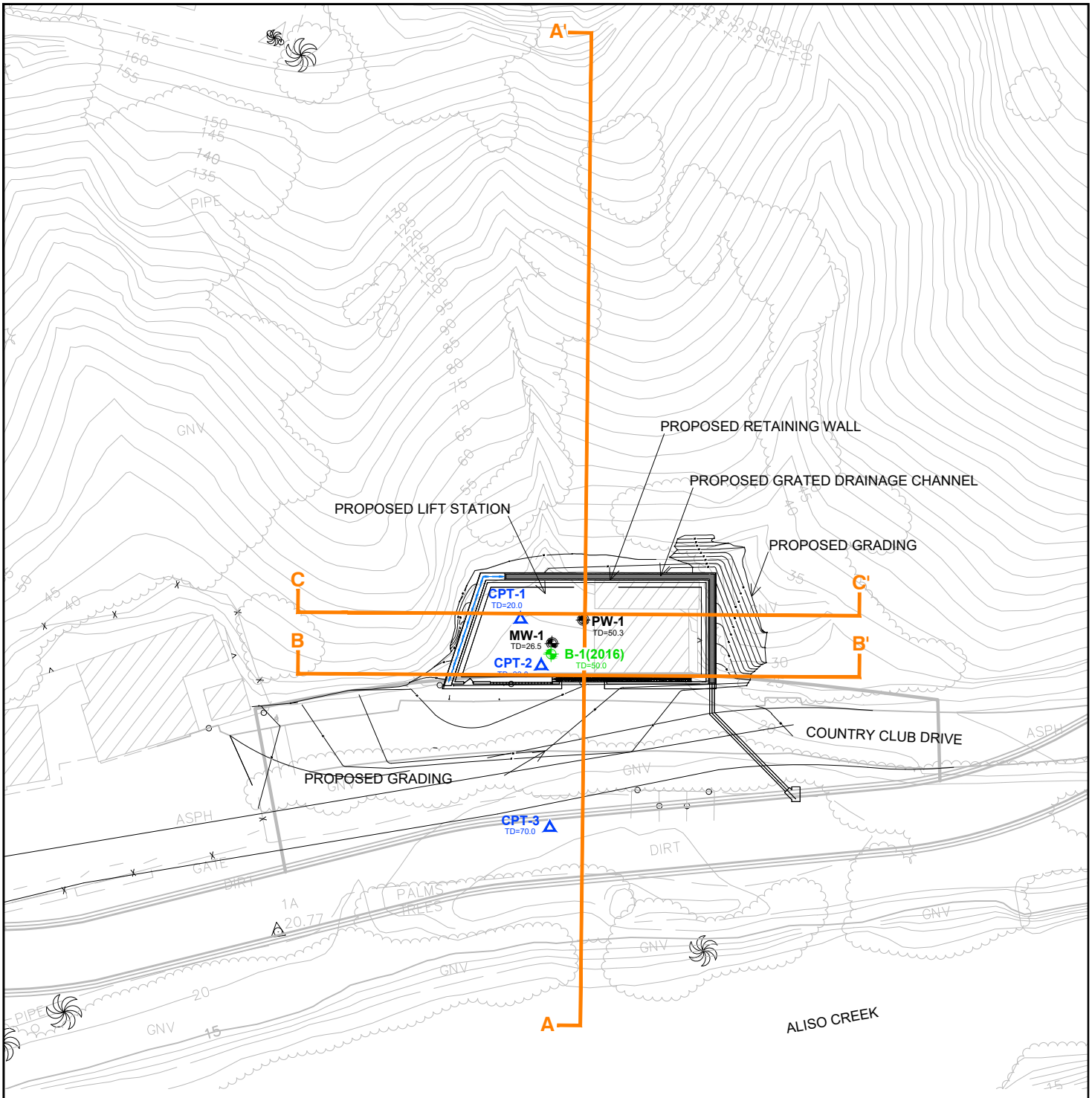
FIGURE 1

SITE LOCATION

LIFT STATION NO. 2 REPLACEMENT PROJECT
SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA
209638002 I 6/20

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants



LEGEND

CPT-3 TD=70.0 — CONE PENETRATION TEST; TD=TOTAL DEPTH IN FEET

MW-1 TD=26.5 — MONITORING WELL; TD=TOTAL DEPTH IN FEET

PW-1 TD=50.3 — PUMPING WELL; TD=TOTAL DEPTH IN FEET

B-1 TD=50.0 — BORING (2016); TD=TOTAL DEPTH IN FEET

A — A' — CROSS SECTION

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NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: AKM, 2019.

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FIGURE 2

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

BORING, CPT, AND WELL LOCATIONS

LIFT STATION NO. 2 REPLACEMENT PROJECT
SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA

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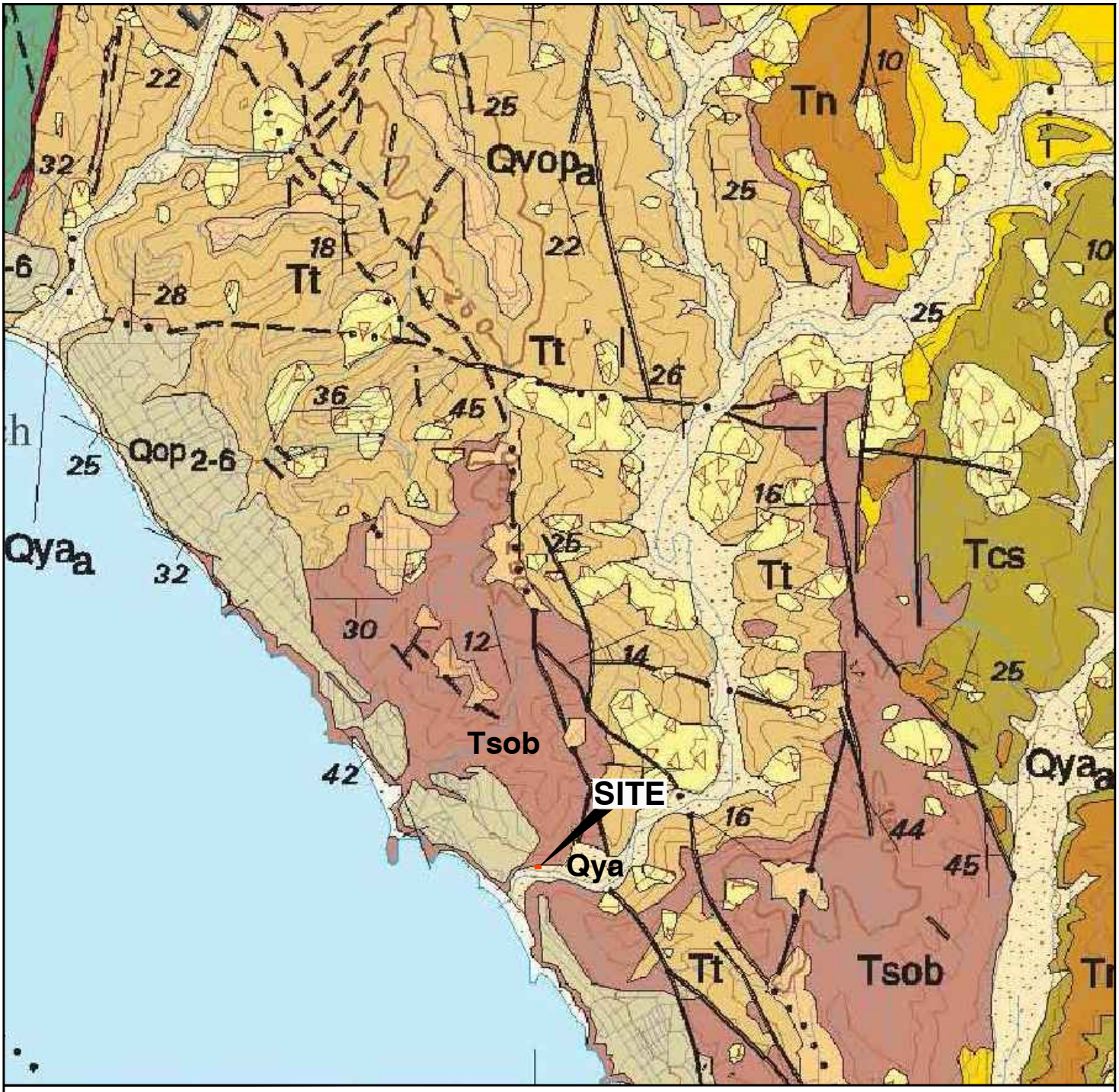

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NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

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FIGURE 3

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

REGIONAL GEOLOGY

LIFT STATION NO. 2 REPLACEMENT PROJECT
SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA

209638002 I 6/20

LEGEND

CPT-3 TD=70.0 — CONE PENETRATION TEST; TD=TOTAL DEPTH IN FEET

MW-1 TD=26.5 — MONITORING WELL; TD=TOTAL DEPTH IN FEET

PW-1 TD=50.3 — PUMPING WELL; TD=TOTAL DEPTH IN FEET

B-1 TD=50.0 — BORING (2016); TD=TOTAL DEPTH IN FEET

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NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: GOOGLE EARTH, 2016.

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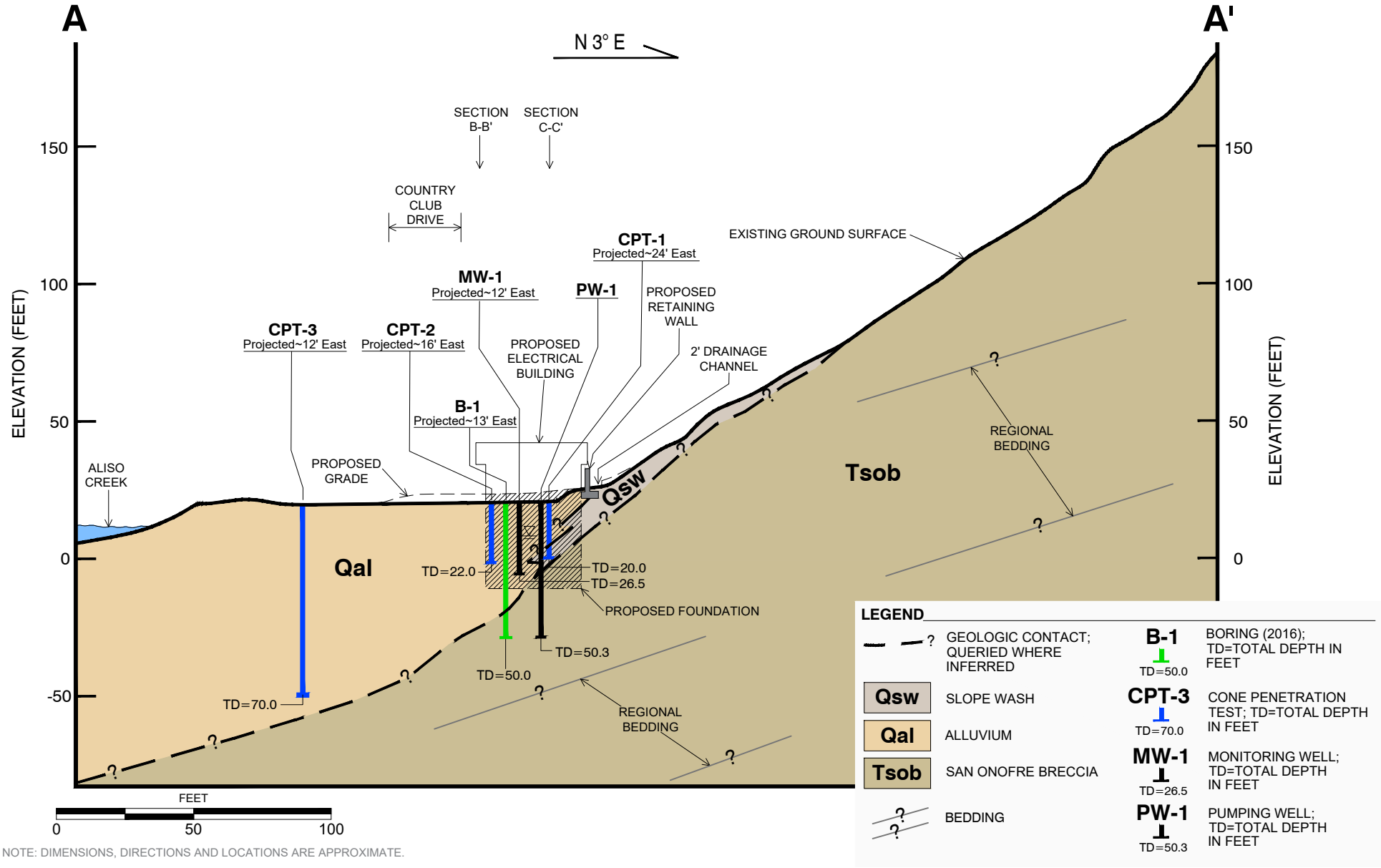
FIGURE 4

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

SITE GEOLOGY

LIFT STATION NO. 2 REPLACEMENT PROJECT
SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA

209638002 I 6/20



NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

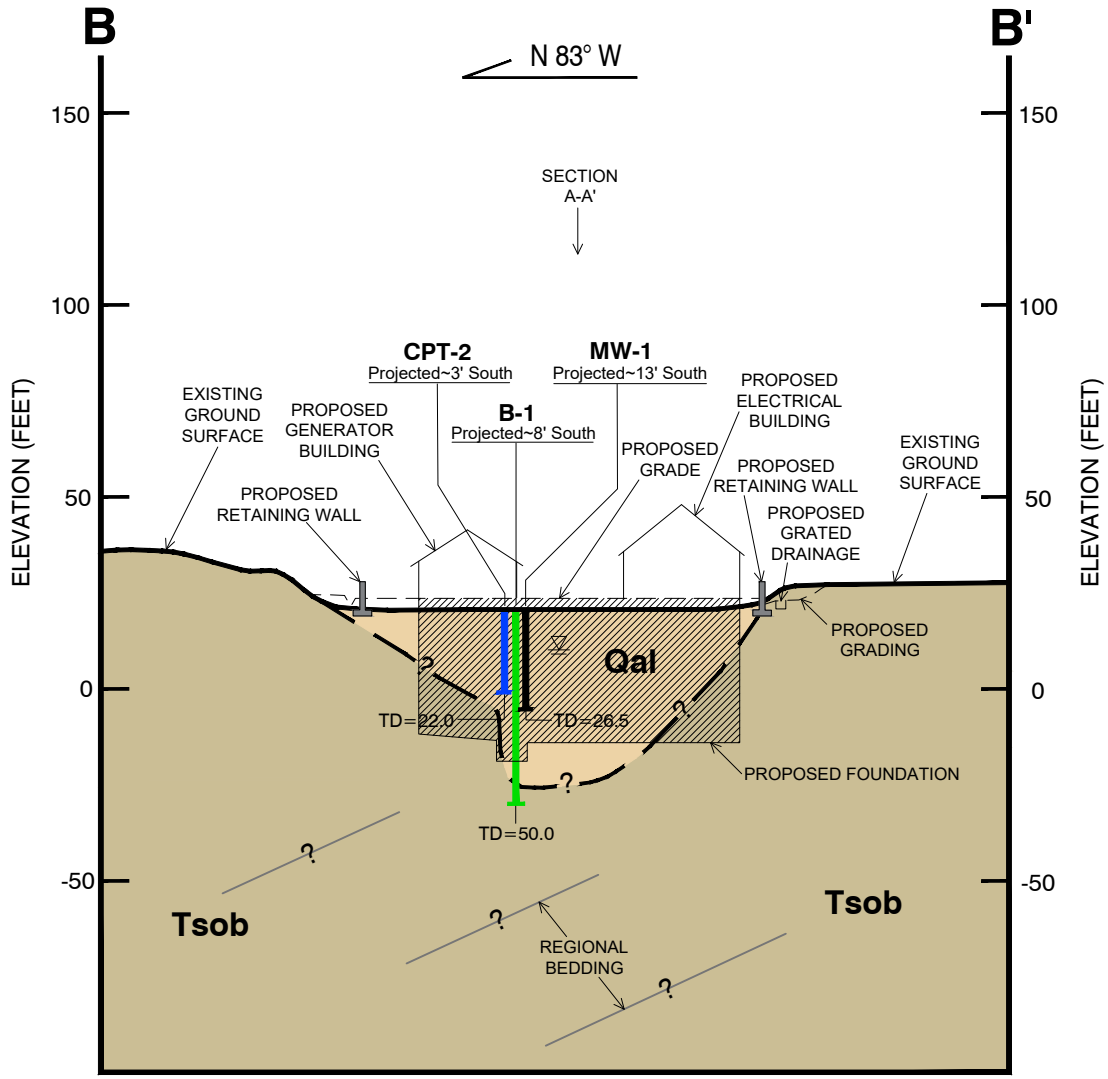
209638002_CSA.dwg 06/04/2020 JDP

FIGURE 5

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

CROSS SECTION A-A'

LIFT STATION NO. 2 REPLACEMENT PROJECT
SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA
209638002 I 6/20



LEGEND

- GEOLOGIC CONTACT; QUERIED WHERE INFERRED
- **Qal** — ALLUVIUM
- **Tsob** — SAN ONOFRE BRECCIA
- BEDDING
- **B-1** (TD=50.0) — BORING (2016); TD=TOTAL DEPTH IN FEET
- **CPT-2** (TD=70.0) — CONE PENETRATION TEST; TD=TOTAL DEPTH IN FEET
- **MW-1** (TD=26.5) — MONITORING WELL; TD=TOTAL DEPTH IN FEET

FEET
0 50 100

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

209638002_CSB.dwg 06/05/2020 JDP

FIGURE 6

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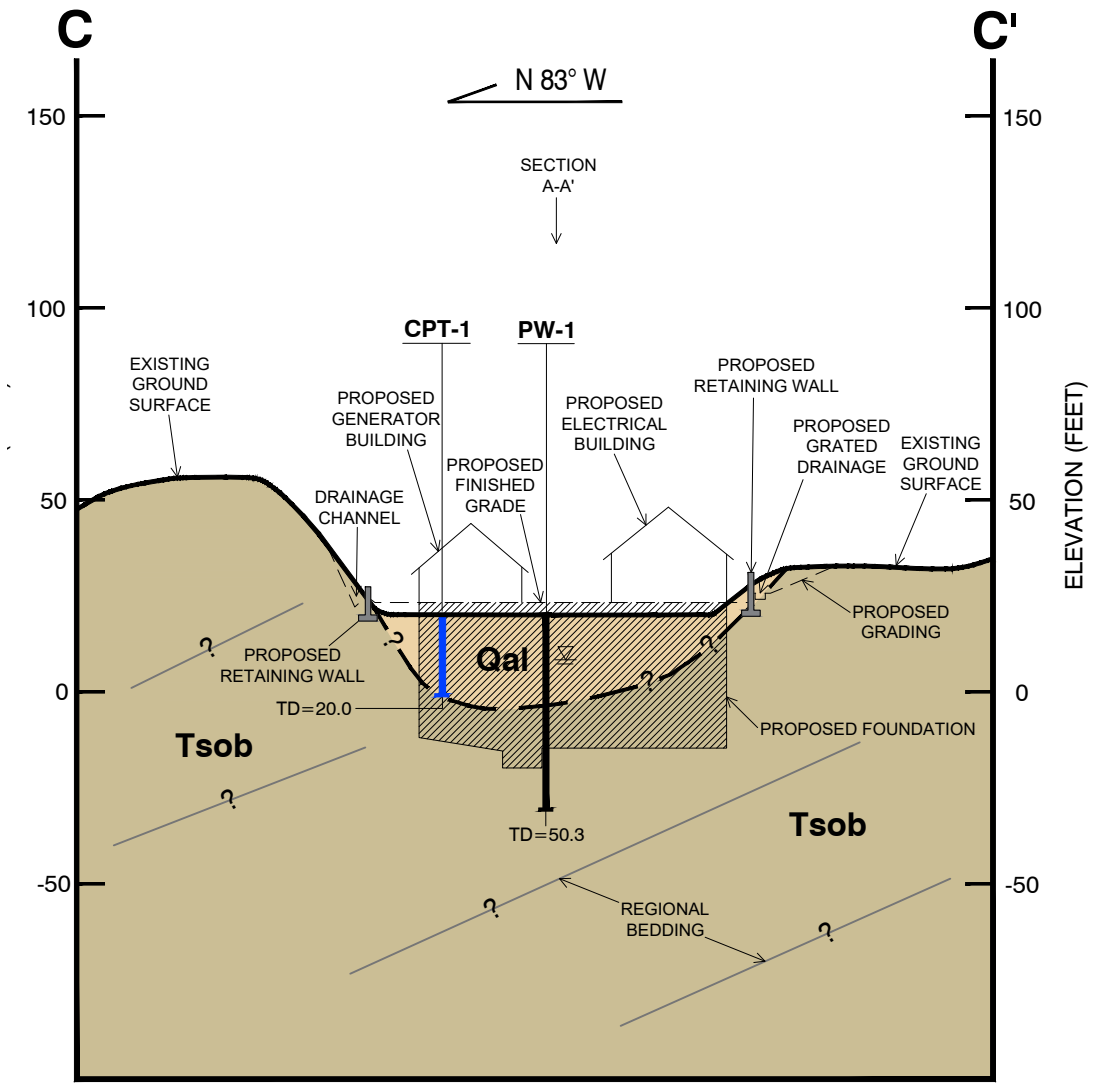
CROSS SECTION B-B'

LIFT STATION NO. 2 REPLACEMENT PROJECT
SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA
209638002 I 6/20



LEGEND

- GEOLOGIC CONTACT; QUERIED WHERE INFERRED
- Qal — ALLUVIUM
- Tsob — SAN ONOFRE BRECCIA
- BEDDING
- CPT-1 (TD=20.0) — CONE PENETRATION TEST; TD=TOTAL DEPTH IN FEET
- PW-1 (TD=50.3) — PUMPING WELL; TD=TOTAL DEPTH IN FEET

FEET
0 50 100

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

209638002_CSC.dwg 06/05/2020 JDP

FIGURE 7

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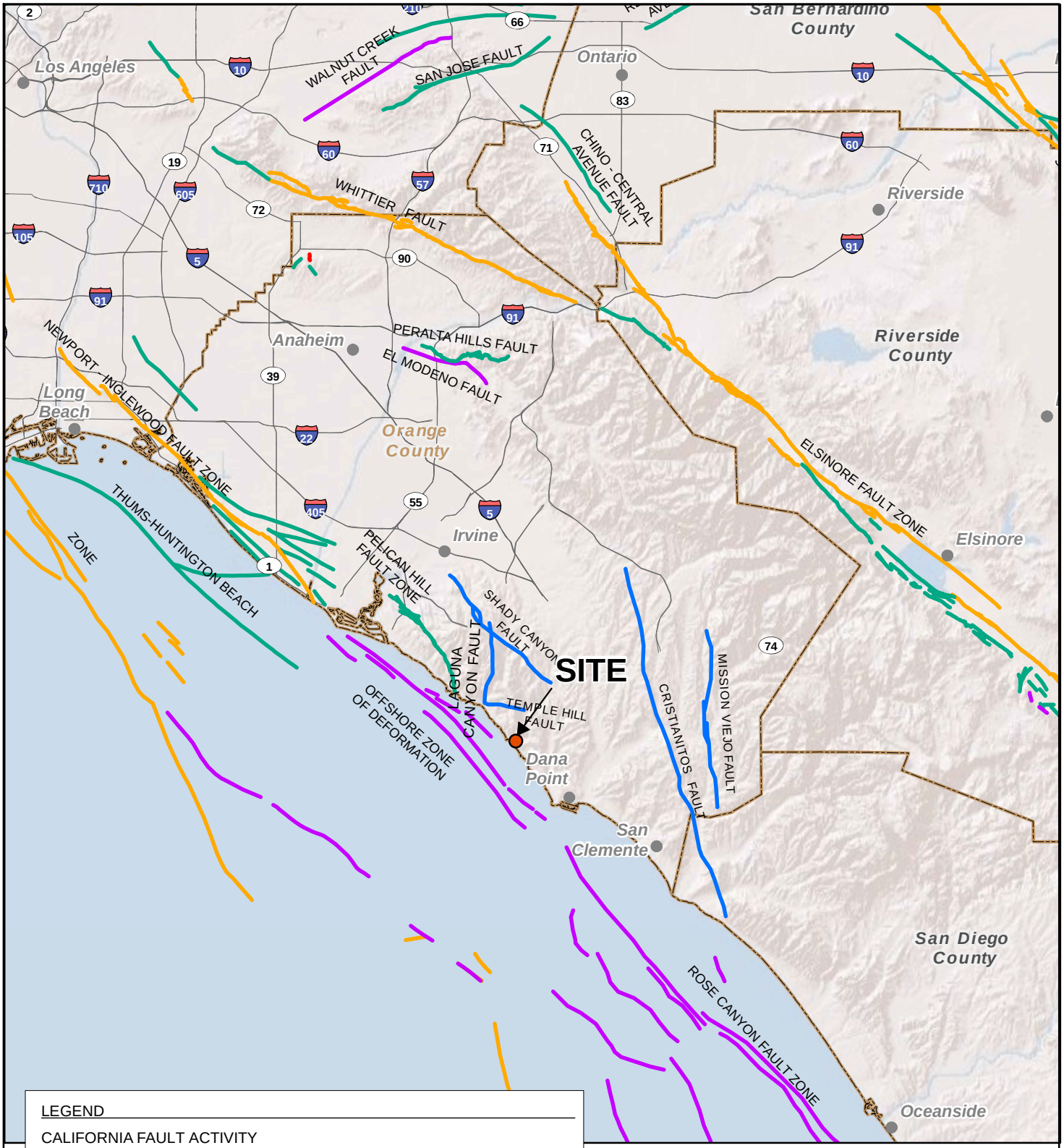
CROSS SECTION C-C'

LIFT STATION NO. 2 REPLACEMENT PROJECT
SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA
209638002 I 6/20



SOURCES: CALIFORNIA DIVISION OF MINES AND GEOLOGY, 1976, ENVIRONMENTAL GEOLOGY OF ORANGE COUNTY, CALIFORNIA, OPEN FILE REPORT 79-8.; JENNINGS, C.W., AND BRYANT, 2010, FAULT ACTIVITY MAP OF CALIFORNIA; ESRI SHADED RELIEF, 2017

NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE.

209638002_FL.mxd 06/04/2020 JDP

FIGURE 8

FAULT LOCATIONS

LIFT STATION NO. 2 REPLACEMENT PROJECT
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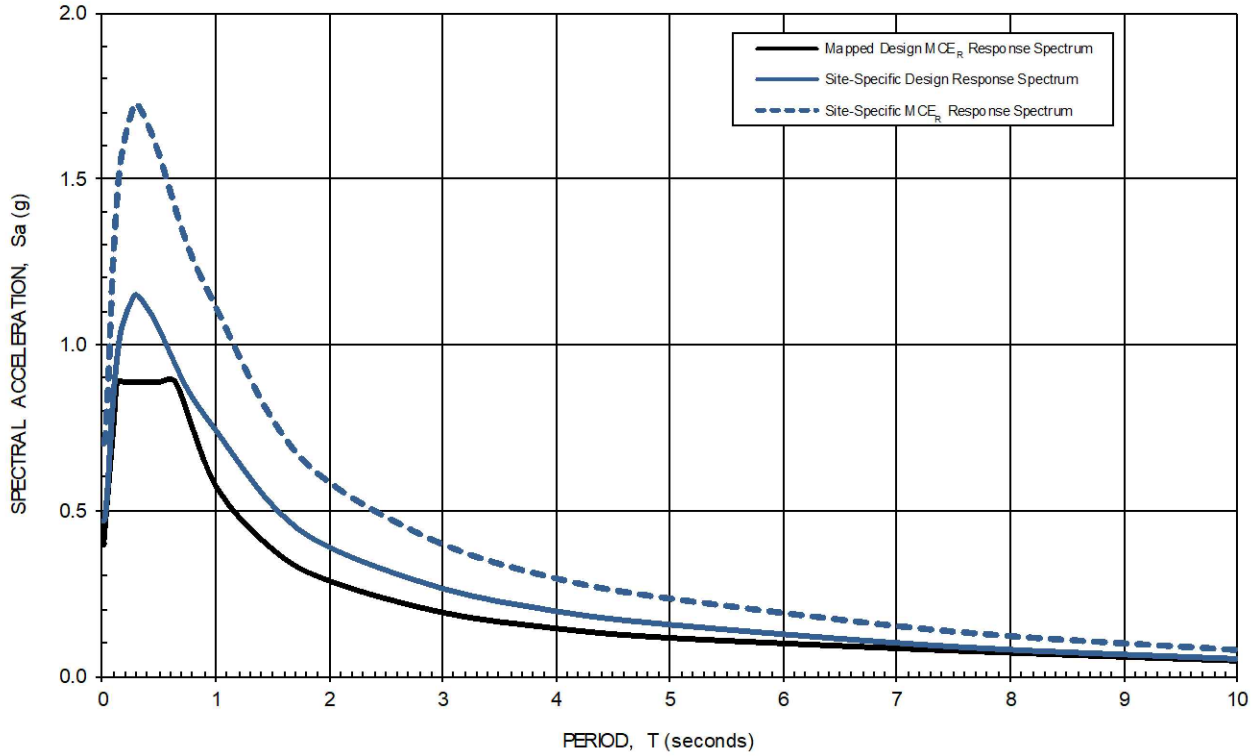
PERIOD (seconds)	SITE-SPECIFIC MCE_R RESPONSE SPECTRUM Sa (g)	SITE-SPECIFIC DESIGN RESPONSE SPECTRUM Sa (g)
0.010	0.701	0.467
0.020	0.708	0.472
0.030	0.744	0.496
0.050	0.874	0.582
0.075	1.092	0.728
0.100	1.284	0.856
0.150	1.520	1.013
0.200	1.622	1.082
0.250	1.686	1.124
0.300	1.724	1.149
0.400	1.661	1.108

PERIOD (seconds)	SITE-SPECIFIC MCE_R RESPONSE SPECTRUM Sa (g)	SITE-SPECIFIC DESIGN RESPONSE SPECTRUM Sa (g)
0.500	1.570	1.047
0.750	1.299	0.866
1.000	1.113	0.742
1.500	0.774	0.516
2.000	0.584	0.390
3.000	0.398	0.265
4.000	0.295	0.197
5.000	0.235	0.156
7.500	0.135	0.090
10.000	0.080	0.053

S_{DS} = 1.034 g	S_{D1} = 0.795 g	S_{MS} = 1.552 g	S_{M1} = 1.193 g	PGA_M = 0.702 g



NOTES:

1 The probabilistic ground motion spectral response accelerations are based on the risk-targeted Maximum Considered Earthquake (MCE_R) having a 2% probability exceedance in 50 years in the maximum direction using the Chiou & Youngs (2014), Campbell & Bozorgnia (2014), Boore et al. (2014), and Abrahamson et al. (2014) attenuation relationships and the risk coefficients.

2 The deterministic ground motion spectral response accelerations are for the 84th percentile of the geometric mean values in the maximum direction using the Chiou & Youngs (2014), Campbell & Bozorgnia (2014), Boore et al. (2014), and Abrahamson et al. (2014) attenuation relationships for deep soil sites considering a Mw 7.2 event on the Newport Inglewood fault zone located 3.76 kilometers from the site. It conforms with the lower bound limit per ASCE 7-16 Section 21.2.2.

3 The Site-Specific MCE_R Response Spectrum is the lesser of spectral ordinates of deterministic and probabilistic accelerations at each period per ASCE 7-16 Section 21.2.3. The Site-Specific Design Response Spectrum conforms with lower bound limit per ASCE 7-16 Section 21.3.

4 The Mapped Design MCE_R Response Spectrum is computed from mapped spectral ordinates modified for Site Class D (stiff soil profile) per ASCE 7-16 Section 11.4. It is presented for the sake of comparison.

29638002_ARS.dwg 06/04/2020 JDP

FIGURE 9

ACCELERATION RESPONSE SPECTRA

LIFT STATION NO. 2 REPLACEMENT PROJECT
SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA

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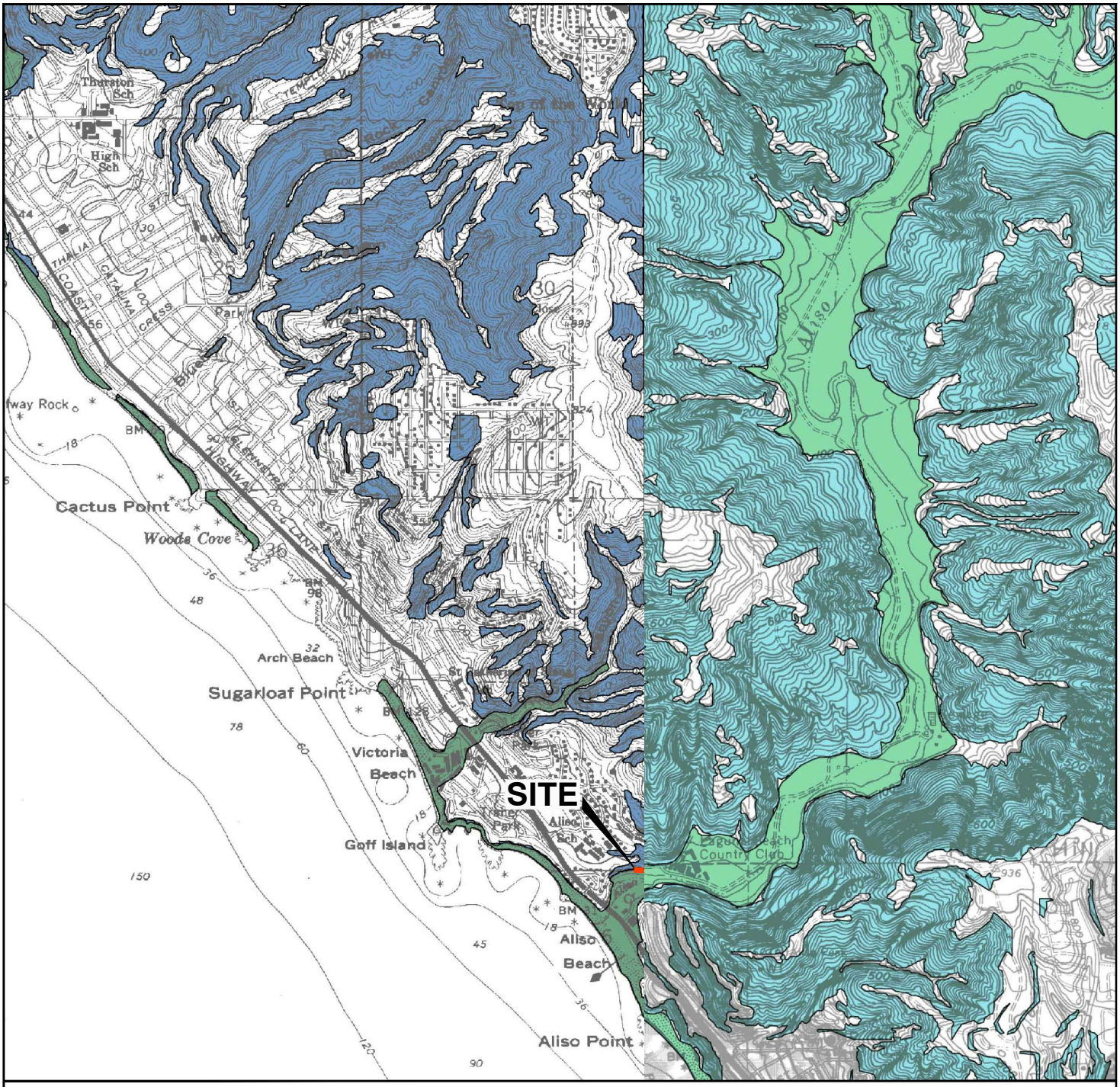

LEGEND

EARTHQUAKE-INDUCED LANDSLIDES

Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

LIQUEFACTION

Areas where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: CDM6, 1998 AND 2001b.

N

FEET

0 2,000 4,000

29638002_SHZ.dwg 06/04/2020 GK, JDP

FIGURE 10

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SEISMIC HAZARD ZONES

LIFT STATION NO. 2 REPLACEMENT PROJECT
SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA

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REFERENCE: CGS, 2009

LEGEND

TSUNAMI INUNDATION LINE

TSUNAMI INUNDATION AREA

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

N

FEET

0 2,000 4,000

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FIGURE 11

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TSUNAMI INUNDATION ZONE

LIFT STATION NO. 2 REPLACEMENT PROJECT
SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA

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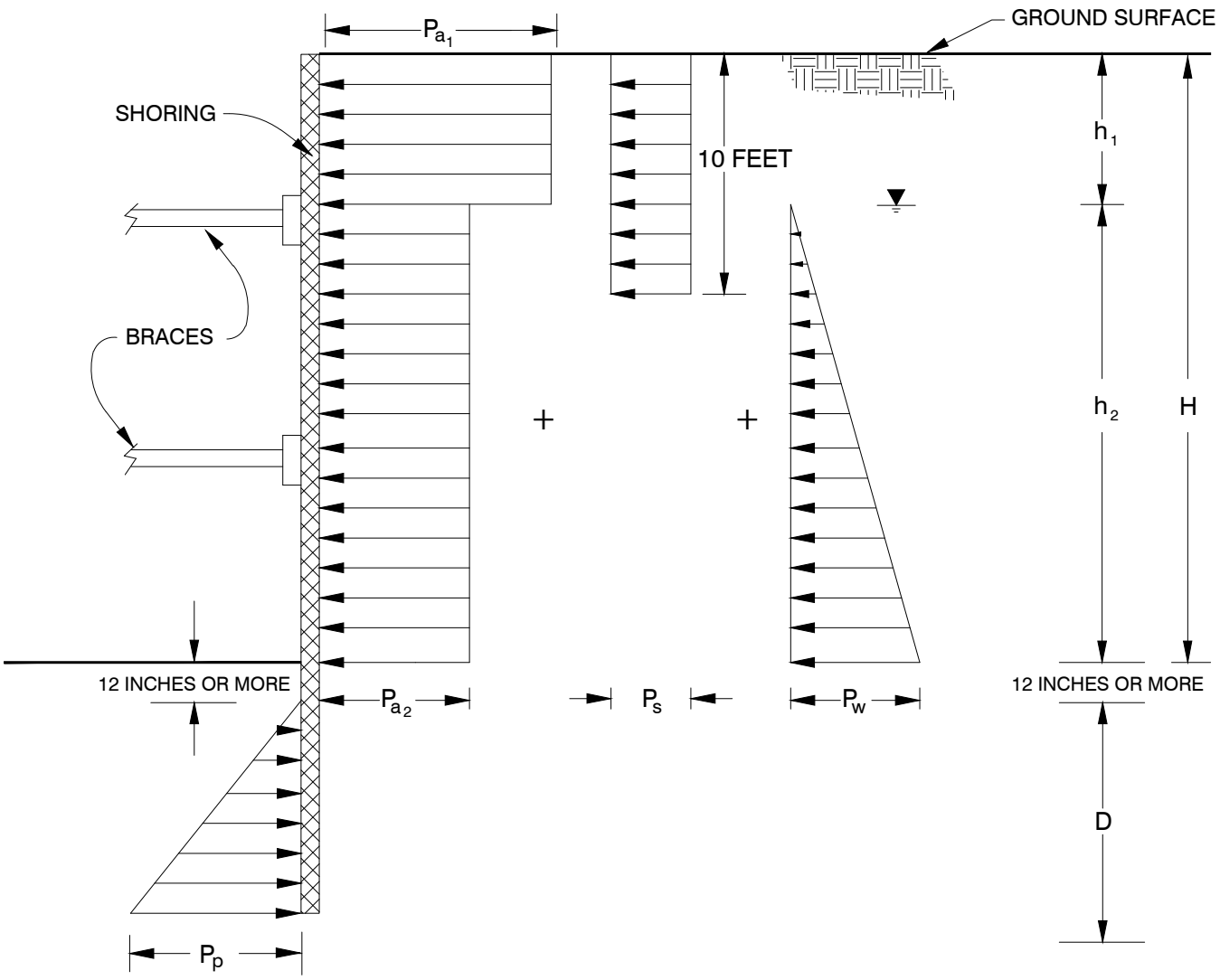

NOTES:

1. APPARENT LATERAL EARTH PRESSURES, P_{a1} AND P_{a2}
   $P_{a_1} = 25h_1$ psf
   $P_{a_2} = 12h_2$ psf
2. CONSTRUCTION TRAFFIC INDUCED SURCHARGE PRESSURE, P_s
   $P_s = 120$ psf
3. WATER PRESSURE, P_w
   $P_w = 62.4h_2$ psf
4. PASSIVE PRESSURE, P_p
   $P_p = 200D$ psf
5. SURCHARGES FROM EXCAVATED SOIL OR CONSTRUCTION MATERIALS ARE NOT INCLUDED
6. H, h_1, h_2 AND D ARE IN FEET
7. ▼ GROUNDWATER TABLE

NOT TO SCALE

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

209638002_EP1.dwg 06/04/2020 GK, JDP

FIGURE 12

LATERAL EARTH PRESSURES FOR BRACED EXCAVATION AT THE SOUTHERN SIDE EXCAVATION

LIFT STATION NO. 2 REPLACEMENT PROJECT
SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA

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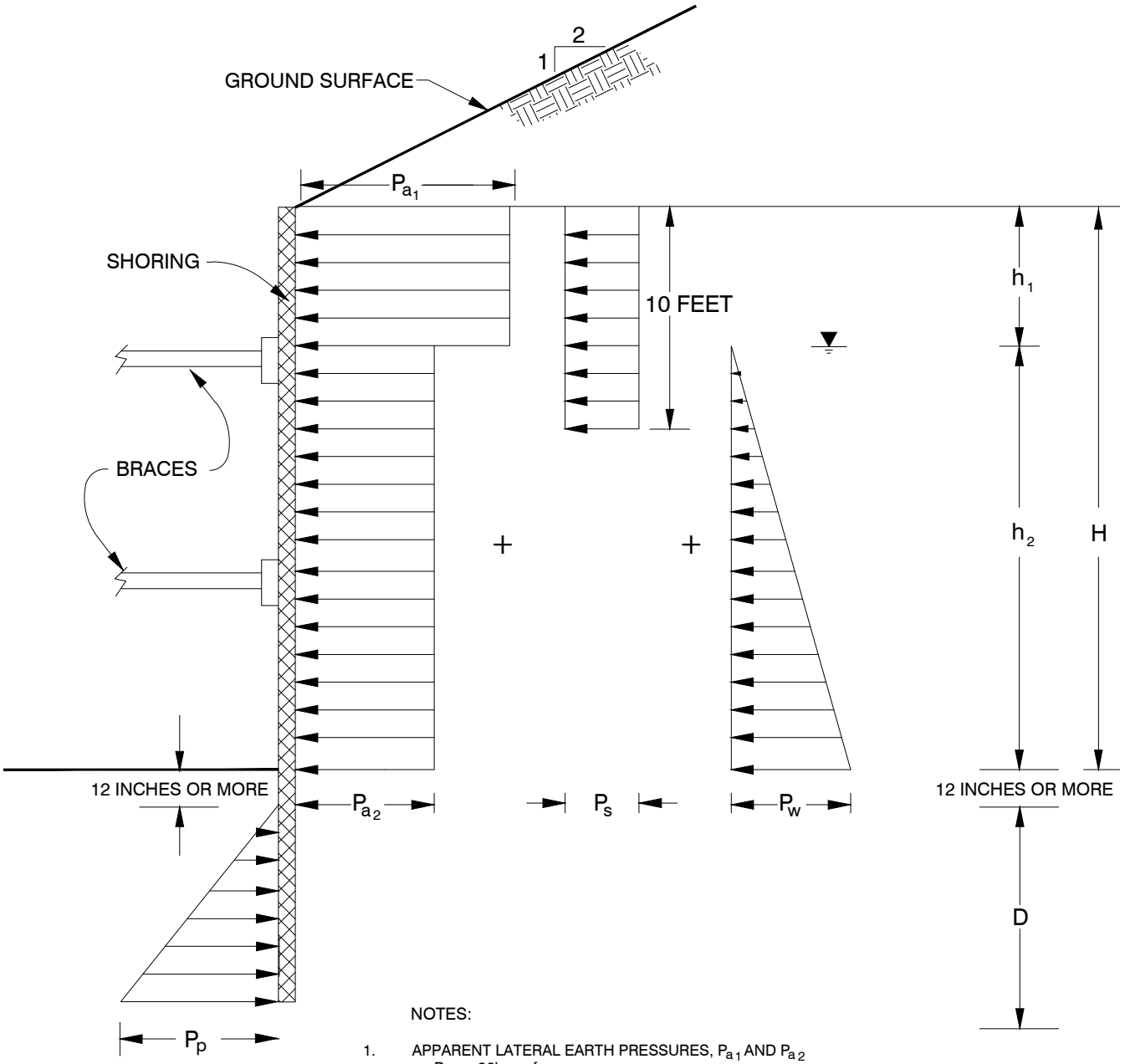

NOTES:

1. APPARENT LATERAL EARTH PRESSURES, P_{a1} AND P_{a2}
   $P_{a_1} = 26h_1$ psf
   $P_{a_2} = 13h_2$ psf
2. CONSTRUCTION TRAFFIC INDUCED SURCHARGE PRESSURE, P_s
   $P_s = 120$ psf
3. WATER PRESSURE, P_w
   $P_w = 62.4h_2$ psf
4. PASSIVE PRESSURE, P_p
   $P_p = 300D$ psf
5. SURCHARGES FROM EXCAVATED SOIL OR CONSTRUCTION MATERIALS ARE NOT INCLUDED
6. H, h_1, h_2 AND D ARE IN FEET
7. ▼ GROUNDWATER TABLE

NOT TO SCALE

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

209638002_EP3.dwg 06/04/2020 JDP

FIGURE 13

LATERAL EARTH PRESSURES FOR BRACED EXCAVATION AT THE EASTERN, NORTHERN, AND WESTERN SIDE EXCAVATION

LIFT STATION NO. 2 REPLACEMENT PROJECT
SOUTH COAST WATER DISTRICT
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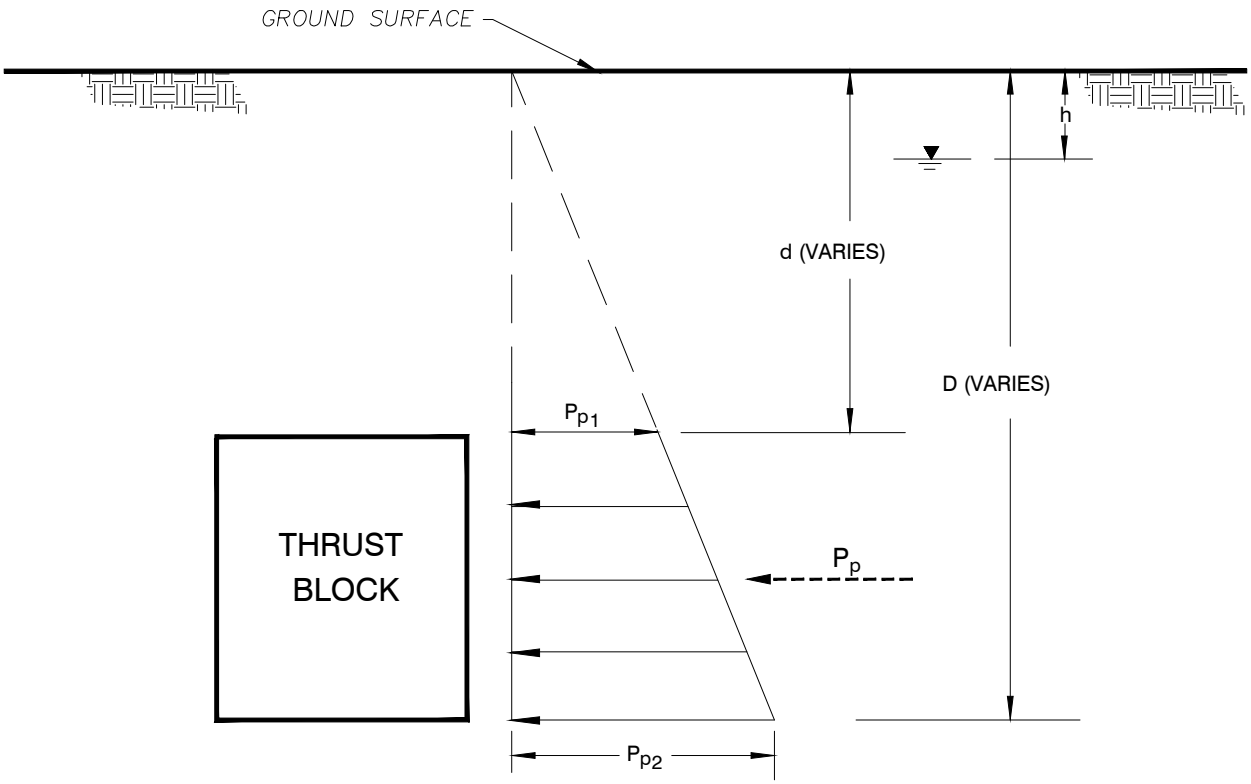

NOTES:

1. GROUNDWATER BELOW BLOCK
   $P_p = 175(D^2-d^2)$ lb/ft
2. GROUNDWATER ABOVE BLOCK
   $P_p = 1.5 (D - d)[124.8h + 57 (D+d)]$ lb/ft
3. ASSUMES BACKFILL IS GRANULAR MATERIAL
4. ASSUMES THRUST BLOCK IS ADJACENT TO COMPETENT MATERIAL
5. D, d AND h ARE IN FEET
6. GROUNDWATER TABLE

NOT TO SCALE

209638002_TB.dwg 06/04/2020 GK, JDP

FIGURE 14

THRUST BLOCK LATERAL EARTH PRESSURE DIAGRAM

LIFT STATION NO. 2 REPLACEMENT PROJECT
SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA

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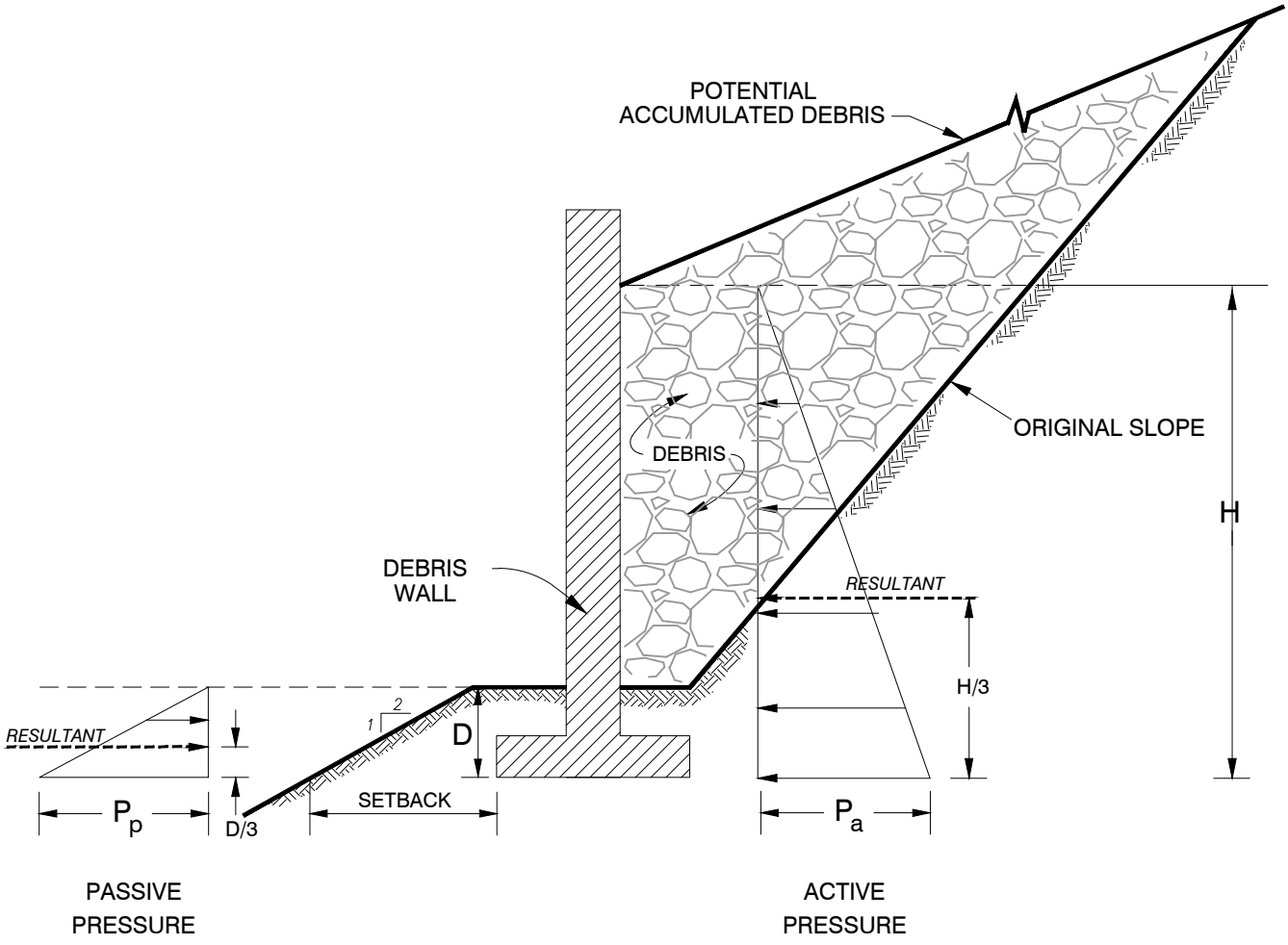

RECOMMENDED GEOTECHNICAL DESIGN PARAMETERS

Lateral Earth Pressure	Equivalent Fluid Pressure ($lb/ft^2/ft$)[1]	
P_a	Level Backfill with Granular Soils[2]	2H:1V Sloping Backfill with Granular Soils[2]
	62H	80H
P_p	Level Ground	2H:1V Descending Ground
	350D	150D

NOT TO SCALE

209638002_D-YRW.dwg 06/04/2020 GK, JDP

FIGURE 15

LATERAL EARTH PRESSURES FOR DEBRIS WALLS

LIFT STATION NO. 2 REPLACEMENT PROJECT
SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA
209638002 I 6/20

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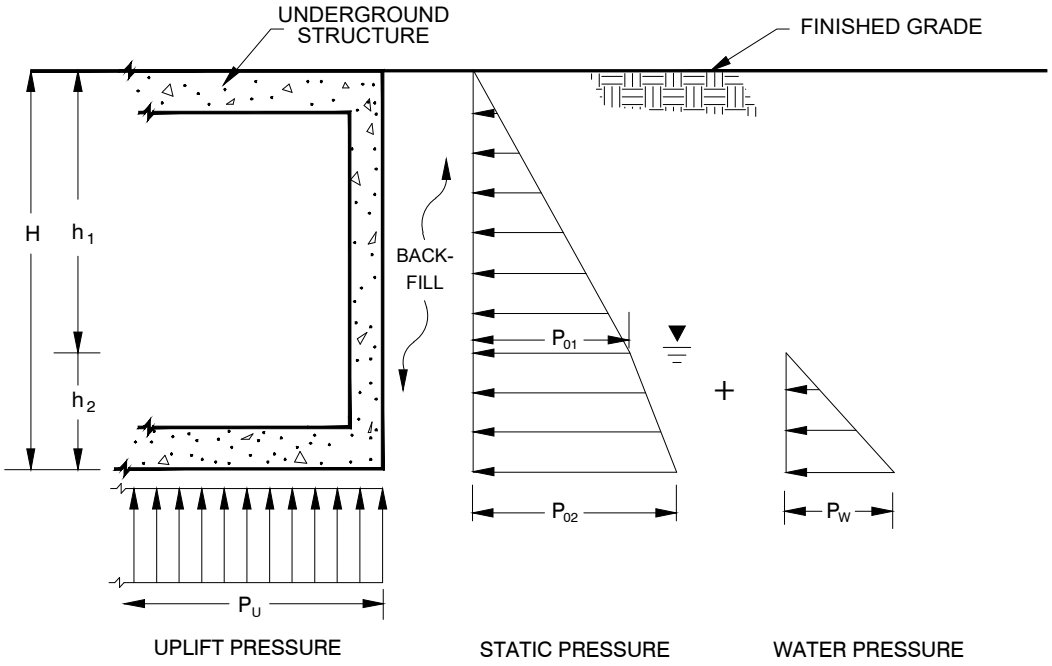

NOTES:

1. APPARENT LATERAL EARTH PRESSURES, P_{01} AND P_{02}
   $P_{01} = 57h_1$ psf
   $P_{02} = 57h_1 + 27\ h_2$ psf
2. WATER PRESSURE, P_w
   $P_w = 62.4h_2$ psf
3. UPLIFT PRESSURE, P_u
   $P_u = 62.4h_2$ psf
4. SURCHARGE PRESSURES CAUSED BY VEHICLES OR NEARBY STRUCTURES ARE NOT INCLUDED
5. H, h_1 AND h_2 ARE IN FEET
6. ▼ GROUNDWATER TABLE

NOT TO SCALE

209638002_EP2.dwg 06/04/2020 GK, JDP

FIGURE 16

LATERAL EARTH PRESSURES FOR SOUTHERN SIDE LIFT STATION WALL

LIFT STATION NO. 2 REPLACEMENT PROJECT
SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA

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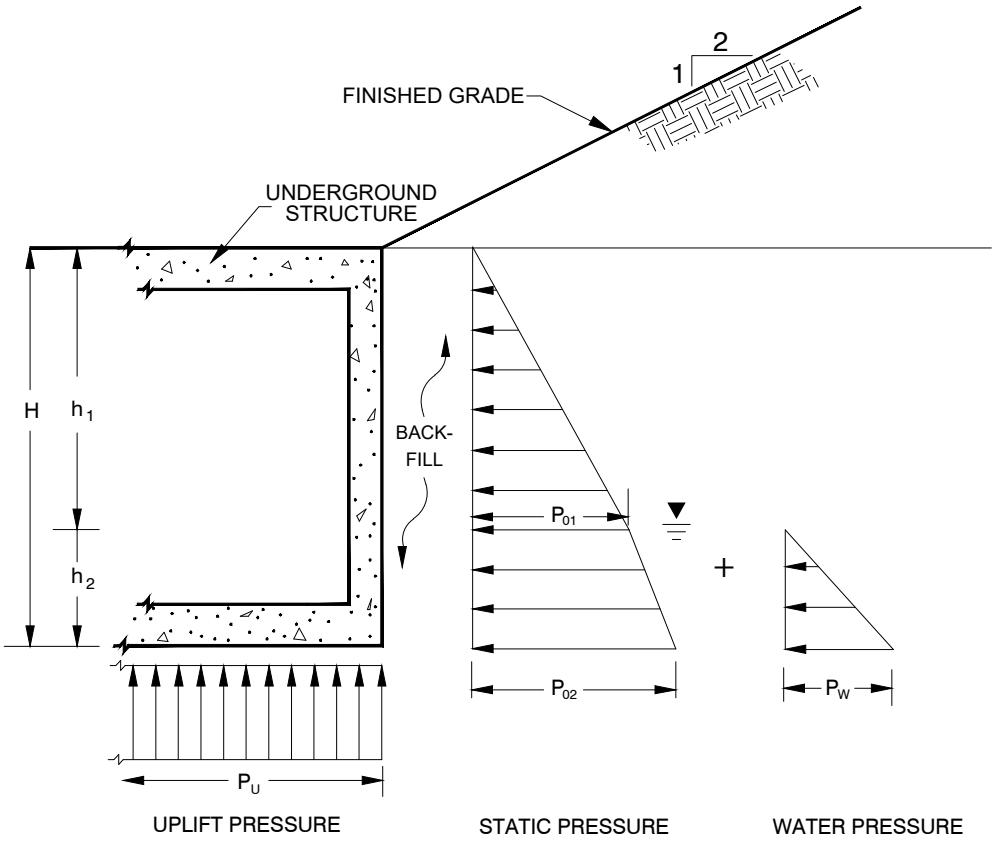

NOTES:

1. APPARENT LATERAL EARTH PRESSURES, P_{01} AND P_{02}
   $P_{01} = 73h_1$ psf
   $P_{02} = 73h_1 + 37h_2$ psf
2. WATER PRESSURE, P_w
   $P_w = 62.4h_2$ psf
3. UPLIFT PRESSURE, P_u
   $P_u = 62.4h_2$ psf
4. SURCHARGE PRESSURES CAUSED BY VEHICLES OR NEARBY STRUCTURES ARE NOT INCLUDED
5. H, h_1 AND h_2 ARE IN FEET
6. ▼ GROUNDWATER TABLE

NOT TO SCALE

209638002_EP4.dwg 06/04/2020 JDP

FIGURE 17

LATERAL EARTH PRESSURES FOR EASTERN, NORTHERN, AND WESTERN SIDES LIFT STATION WALL

LIFT STATION NO. 2 REPLACEMENT PROJECT
SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA

209638002 I 6/20

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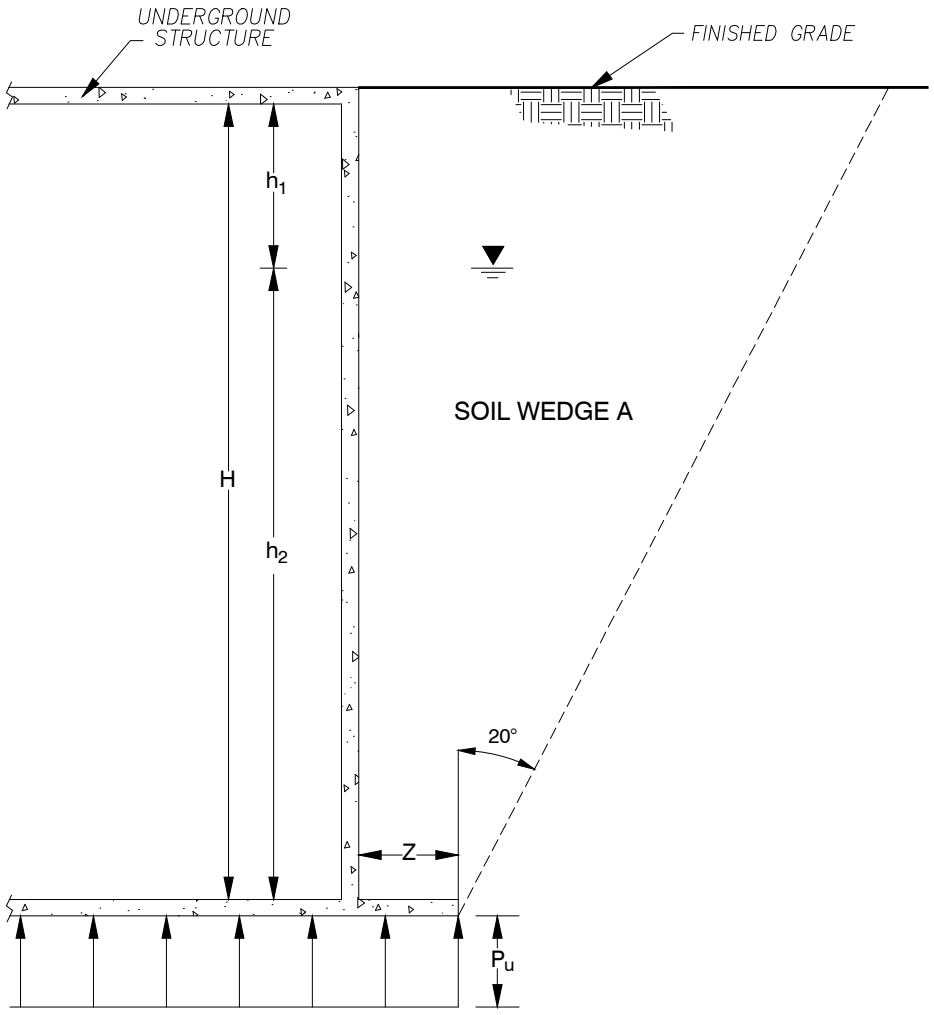

RESISTANCE TO UPLIFT = WEIGHT OF STRUCTURE + WEIGHT OF SOIL WEDGE A

NOTES:

1. UNIT WEIGHT OF SOILS, γ OR γ_b
   γ = 120 pcf ABOVE GROUNDWATER TABLE
   γ_b = 58 pcf BELOW GROUNDWATER TABLE
2. UPLIFT PRESSURE, P_u
   $P_u = 62.4\ h_2$ psf
3. H, Z, h_1 AND h_2 ARE IN FEET
4. ▼ GROUNDWATER TABLE

NOT TO SCALE

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

209638002_D-URD.dwg 06/04/2020 GK, JDP

FIGURE 18

UPLIFT RESISTANCE DIAGRAM FOR UNDERGROUND STRUCTURES
LIFT STATION NO. 2 REPLACEMENT PROJECT
SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA
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APPENDIX A

Boring Logs

APPENDIX A

BORING LOGS

Field Procedure for the Collection of Disturbed Samples
Disturbed soil samples were obtained in the field using the following methods.

Bulk Samples
Bulk samples of representative earth materials were obtained from the exploratory borings. The samples were bagged and transported to the laboratory for testing.

The Standard Penetration Test (SPT) Sampler
Disturbed drive samples of earth materials were obtained by means of a Standard Penetration Test sampler. The sampler is composed of a split barrel with an external diameter of 2 inches and an unlined internal diameter of $1^{3}/_{8}$ inches. The sampler was driven into the ground 12 to 18 inches with a 140-pound hammer falling freely from a height of 30 inches in general accordance with ASTM D 1586. The blow counts were recorded for every 6 inches of penetration; the blow counts reported on the logs are those for the last 12 inches of penetration. Soil samples were observed and removed from the sampler bagged, sealed, and transported to the laboratory for testing.

Field Procedure for the Collection of Relatively Undisturbed Samples
Relatively undisturbed soil samples were obtained in the field using the following method.

The Modified Split-Barrel Drive Sampler
The sampler, with an external diameter of 3 inches, was lined with 1-inch-long, thin brass rings with inside diameters of approximately 2.4 inches. The sample barrel was driven into the ground with the weight of a hammer or the kelly bar of the drill rig in general accordance with ASTM D 3550. The driving weight was permitted to fall freely. The approximate length of the fall, the weight of the hammer or bar, and the number of blows per foot of driving are presented on the boring logs as an index to the relative resistance of the materials sampled. The samples were removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

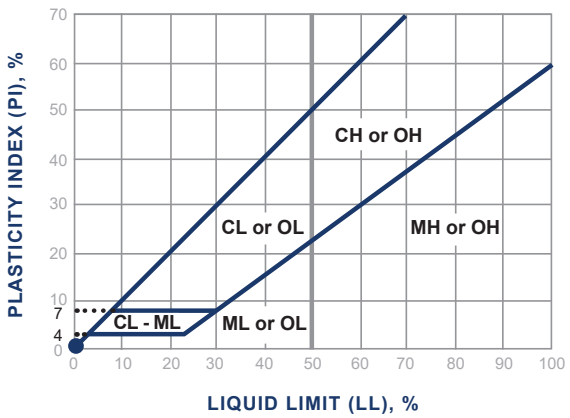
Soil Classification Chart Per ASTM D 2488

Primary Divisions			Secondary Divisions	
			Group Symbol	Group Name
COARSE-GRAINED SOILS more than 50% retained on No. 200 sieve	**GRAVEL** more than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVEL less than 5% fines	GW	well-graded GRAVEL
			GP	poorly graded GRAVEL
		GRAVEL with DUAL CLASSIFICATIONS 5% to 12% fines	GW-GM	well-graded GRAVEL with silt
			GP-GM	poorly graded GRAVEL with silt
			GW-GC	well-graded GRAVEL with clay
			GP-GC	poorly graded GRAVEL with
		GRAVEL with FINES more than 12% fines	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND 50% or more of coarse fraction passes No. 4 sieve	CLEAN SAND less than 5% fines	SW	well-graded SAND
			SP	poorly graded SAND
		SAND with DUAL CLASSIFICATIONS 5% to 12% fines	SW-SM	well-graded SAND with silt
			SP-SM	poorly graded SAND with silt
			SW-SC	well-graded SAND with clay
			SP-SC	poorly graded SAND with clay
		SAND with FINES more than 12% fines	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOILS 50% or more passes No. 200 sieve	**SILT and CLAY** liquid limit less than 50%	INORGANIC	CL	lean CLAY
			ML	SILT
			CL-ML	silty CLAY
		ORGANIC	OL (PI > 4)	organic CLAY
			OL (PI < 4)	organic SILT
	SILT and CLAY liquid limit 50% or more	INORGANIC	CH	fat CLAY
			MH	elastic SILT
		ORGANIC	OH (plots on or above "A"-line)	organic CLAY
			OH (plots below "A"-line)	organic SILT
	Highly Organic Soils		PT	Peat

Grain Size

Description		Sieve Size	Grain Size	Approximate Size
Boulders		> 12"	> 12"	Larger than basketball-sized
Cobbles		3 - 12"	3 - 12"	Fist-sized to basketball-sized
Gravel	Coarse	3/4 - 3"	3/4 - 3"	Thumb-sized to fist-sized
	Fine	#4 - 3/4"	0.19 - 0.75"	Pea-sized to thumb-sized
Sand	Coarse	#10 - #4	0.079 - 0.19"	Rock-salt-sized to pea-sized
	Medium	#40 - #10	0.017 - 0.079"	Sugar-sized to rock-salt-sized
	Fine	#200 - #40	0.0029 - 0.017"	Flour-sized to sugar-sized
Fines		Passing #200	< 0.0029"	Flour-sized and smaller

Plasticity Chart



Apparent Density - Coarse-Grained Soil

Apparent Density	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Loose	≤ 4	≤ 8	≤ 3	≤ 5
Loose	5 - 10	9 - 21	4 - 7	6 - 14
Medium Dense	11 - 30	22 - 63	8 - 20	15 - 42
Dense	31 - 50	64 - 105	21 - 33	43 - 70
Very Dense	> 50	> 105	> 33	> 70

Consistency - Fine-Grained Soil

Consis-tency	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Soft	< 2	< 3	< 1	< 2
Soft	2 - 4	3 - 5	1 - 3	2 - 3
Firm	5 - 8	6 - 10	4 - 5	4 - 6
Stiff	9 - 15	11 - 20	6 - 10	7 - 13
Very Stiff	16 - 30	21 - 39	11 - 20	14 - 26
Hard	> 30	> 39	> 20	> 26

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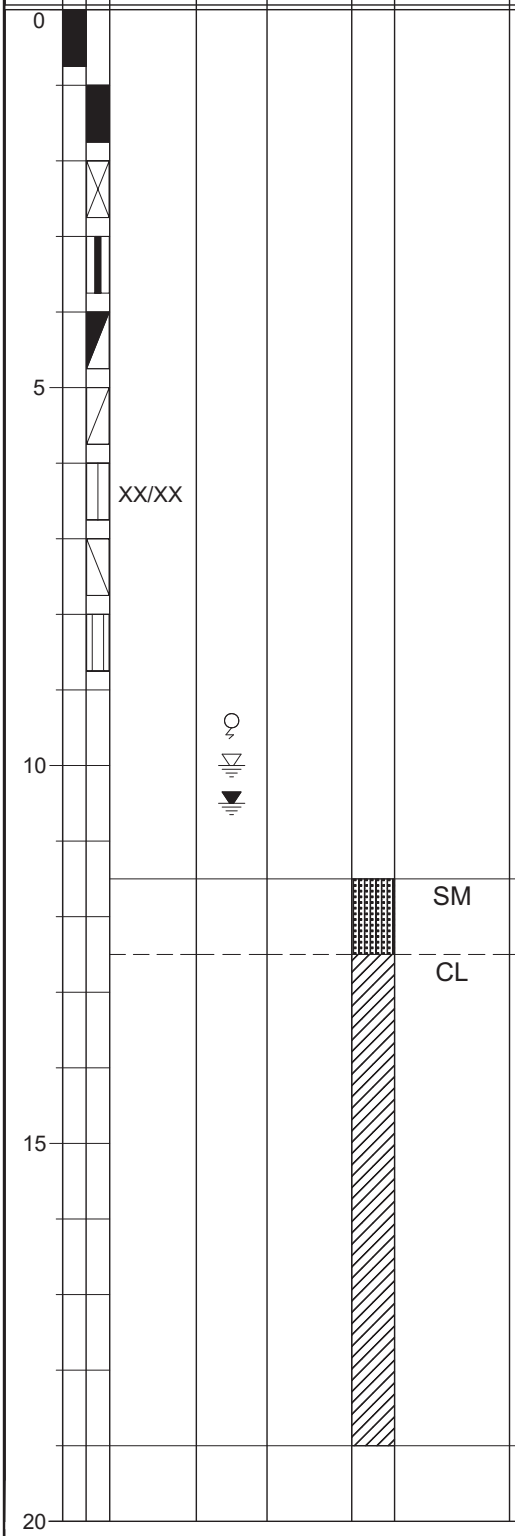
USCS METHOD OF SOIL CLASSIFICATION

BORING LOG EXPLANATION SHEET



Bulk sample.

Modified split-barrel drive sampler.

No recovery with modified split-barrel drive sampler.

Sample retained by others.

Standard Penetration Test (SPT).

No recovery with a SPT.

Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.

No recovery with Shelby tube sampler.

Continuous Push Sample.

Seepage.

Groundwater encountered during drilling.

Groundwater measured after drilling.

SM

MAJOR MATERIAL TYPE (SOIL):

Solid line denotes unit change.

CL

Dashed line denotes material change.

Attitudes: Strike/Dip
b: Bedding
c: Contact
j: Joint
f: Fracture
F: Fault
cs: Clay Seam
s: Shear
bss: Basal Slide Surface
sf: Shear Fracture
sz: Shear Zone
sbs: Shear Bedding Surface

The total depth line is a solid line that is drawn at the bottom of the boring.

DATE DRILLED 4/19/16 BORING NO. B-1

GROUND ELEVATION 20' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Cal Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY SMR LOGGED BY SMR REVIEWED BY JRS

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0						SM	ASPHALT CONCRETE: Approximately 3 inches thick.
						SC	AGGREGATE BASE: Gray, moist, loose to medium dense, silty SAND with gravel; approximately 6 inches thick.
							ASPHALT CONCRETE: Approximately 3 inches thick.
							ALLUVIUM: Olive, moist, loose to medium dense, clayey SAND with gravel; cobbles.
		18	8.3	105.7			Medium dense.
10		10					@ 10': Groundwater encountered during drilling. Olive brown; wet.
							@ 12': Groundwater measured after drilling complete.
		11	13.9	106.0			
20		10					
		10					
							@ 28': Drill rig auger bouncing on possible cobbles.
						SP-SM	Gray, wet, medium dense, poorly graded SAND with silt and gravel.
30		12				SC	Olive gray, wet, medium dense, clayey SAND.
						SP	Olive gray, wet, medium dense, poorly graded fine SAND.
		11				SC	Olive gray, wet, medium dense, clayey SAND.
40							

FIGURE A- 1

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Geotechnical & Environmental Sciences Consultants

LIFT STATION NO. 2 REPLACEMENT PROJECT
LAGUNA BEACH, CALIFORNIA

DATE DRILLED 4/19/16 BORING NO. B-1

GROUND ELEVATION 20' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 6" Hollow-Stem Auger (Cal Pac Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY SMR LOGGED BY SMR REVIEWED BY JRS

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
40			50/4"					SAN ONOFRE BRECCIA: (Continued) Light bluish green, wet, moderately soft to moderately hard, SANDSTONE; fine- to coarse-grained, intensely weathered.
			50/5"					Bluish gray; moderately weathered; fine- to medium-grained.
50			50/1"					Light bluish gray. Total Depth = 50 feet. Groundwater encountered at approximately 10 feet during drilling and measured at approximately 12 feet after drilling complete. Backfilled with cement-bentonite grout and capped with rapid-set concrete on 4/19/16. Notes: Groundwater may rise to a level higher than that measured in borehole due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
60								
70								
80								

DATE DRILLED 2/10/20 BORING NO. PW-1

GROUND ELEVATION 20' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 12" Hollow-Stem Auger (ABC Liovin Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY MLP

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	PID READING (PPM)	SYMBOL	CLASSIFICATION U.S.C.S.	WELL CONSTRUCTION	DESCRIPTION/INTERPRETATION
0							SM / SC		ASPHALT CONCRETE: Approximately 3 inches thick. BASE: Gray, moist, loose to medium dense, silty SAND with gravel; approximately 4.5 inches thick.
	Driven	10	8.1	108.9					ALLUVIUM: Olive brown, moist, loose, clayey SAND with gravel; trace to few cobbles.
10	Driven	5	11.9						@12': Groundwater measured after well installation approximately 1 day after drilling.
	Driven	14	14.7	123.9					@16': Groundwater encountered during drilling; wet.
20	Driven	7	13.8						Olive brown.
	Driven	90/9"							SAN ONOFRE BRECCIA: Olive brown to light blueish green, wet, moderately soft to moderately hard, BRECCIA; fine to coarse sand with angular gravel; intensely weathered.
30	Driven	52							
	Driven	50/5"							Moderately weathered; moderately hard.
40									

FIGURE A- 3

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LIFT STATION NO. 2 REPLACEMENT PROJECT
LAGUNA BEACH, CALIFORNIA

209638002 | 6/20

DATE DRILLED 2/10/20 BORING NO. PW-1

GROUND ELEVATION 20' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 12" Hollow-Stem Auger (ABC Liovin Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY MLP

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	PID READING (PPM)	SYMBOL	CLASSIFICATION U.S.C.S.	WELL CONSTRUCTION	DESCRIPTION/INTERPRETATION
40			50/5"							SAN ONOFRE BRECCIA: (Continued) Light bluish gray, wet, moderately hard, BRECCIA; moderately weathered.
			50/2"							Decrease in moisture content.
50			50/3"							Total Depth = 50.3 feet. Groundwater encountered during drilling at approximately 16 feet. Groundwater measured at approximately 12 feet after well installation on 2/11/20. Groundwater measured at approximately 13.2 feet prior to well development on 2/14/20. Groundwater measured at approximately 11.4 feet prior to pump test on 3/19/20. Well installed on 2/11/20. Well Construction: 6-inch-diameter PVC casing from 0.5' - 10.0'. 6-inch-diameter PVC 0.020 slotted casing from 10.0' - 50.0'. Traffic-rated vault cover and Portland cement concrete from 0' - 2.0'. Cement-bentonite grout from 2.0' - 8.5'. No. 2/12 sand from 8.5' - 50.3'. Notes: Groundwater may rise to a level higher than that measured in borehole due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
60										
70										
80										

DATE DRILLED 2/11/20 BORING NO. MW-1

GROUND ELEVATION 20' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 8" Hollow-Stem Auger (ABC Liovin Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY MLP

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	PID READING (PPM)	SYMBOL	CLASSIFICATION U.S.C.S.	WELL CONSTRUCTION	DESCRIPTION/INTERPRETATION
0							SM		ASPHALT CONCRETE: Approximately 3.5 inches thick.
							SC		BASE: Gray, moist, loose to medium dense, silty SAND with gravel; approximately 5 inches thick.
									ALLUVIUM: Olive brown, moist, loose, clayey SAND with gravel; trace to few cobbles.
		7							
10		16	8.0	117.7					Medium dense.
									@ 12': Groundwater measured prior to tidal fluctuation survey on 3/18/20.
		53							Very dense.
									@16': Groundwater encountered during drilling; wet.
20		8							Medium dense.
		8							
30									Total Depth = 26.5 feet. Groundwater encountered at approximately 16 feet during drilling. Groundwater measured at approximately 12.8 feet prior to well development on 2/14/20. Groundwater measured at approximately 12 feet prior to tidal fluctuation survey on 3/18/20. Well installed on 2/11/20.
									Well Construction: 2-inch-diameter PVC casing from 0.5' - 5.0'. 2-inch-diameter PVC 0.020 slotted casing from 5.0' - 25.0'. Traffic-rated vault cover and Portland cement concrete from 0' - 2.0'. Cement-bentonite grout from 2.0' - 4.0'. No. 2/12 sand from 4.0' - 26.5'.
									Notes: Groundwater may rise to a level higher than that measured in borehole due to seasonal variations in precipitation and several other factors as discussed in the report.
40									

FIGURE A- 5

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LIFT STATION NO. 2 REPLACEMENT PROJECT
LAGUNA BEACH, CALIFORNIA

DATE DRILLED 2/11/20 BORING NO. MW-1

GROUND ELEVATION 20' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 8" Hollow-Stem Auger (ABC Liovin Drilling)

DRIVE WEIGHT 140 lbs. (Auto. Trip Hammer) DROP 30"

SAMPLED BY GM LOGGED BY GM REVIEWED BY MLP

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	PID READING (PPM)	SYMBOL	CLASSIFICATION U.S.C.S.	WELL CONSTRUCTION	DESCRIPTION/INTERPRETATION
40										The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
50										
60										
70										
80										

FIGURE A- 6

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LIFT STATION NO. 2 REPLACEMENT PROJECT
LAGUNA BEACH, CALIFORNIA

209638002 | 6/20

APPENDIX B

Cone Penetration Test Logs

SUMMARY

OF

CONE PENETRATION TEST DATA

Project:

AKM/SCWD/LIFT STATION NO. 2
Laguna Beach, CA
February 6, 2020

Prepared for:

Ms. Jennifer Schmidt
Ninyo & Moore
475 Goddard, Ste 200
Irvine, CA 92618-4605
Office (949) 753-7070 / Fax (949) 753-7071

Prepared by:

KEHOE TESTING & ENGINEERING
5415 Industrial Drive
Huntington Beach, CA 92649-1518
Office (714) 901-7270 / Fax (714) 901-7289
www.kehoetesting.com

TABLE OF CONTENTS

1. **INTRODUCTION**
2. **SUMMARY OF FIELD WORK**
3. **FIELD EQUIPMENT & PROCEDURES**
4. **CONE PENETRATION TEST DATA & INTERPRETATION**

APPENDIX

- CPT Plots
- CPT Classification/Soil Behavior Chart
- Summary of Shear Wave Velocities
- CPT Data Files (sent via email)

SUMMARY

OF

CONE PENETRATION TEST DATA

1. INTRODUCTION

This report presents the results of a Cone Penetration Test (CPT) program carried out for the AKM/SCWD/LIFT STATION NO. 2 project located in Laguna Beach, California. The work was performed by Kehoe Testing & Engineering (KTE) on February 6, 2020. The scope of work was performed as directed by Ninyo & Moore personnel.

2. SUMMARY OF FIELD WORK

The fieldwork consisted of performing CPT soundings at three locations to determine the soil lithology. A summary is provided in **TABLE 2.1**.

LOCATION	DEPTH OF CPT (ft)	COMMENTS/NOTES:
CPT-1	20	Refusal
CPT-2	22	Refusal
CPT-3	70	

TABLE 2.1 - Summary of CPT Soundings

3. FIELD EQUIPMENT & PROCEDURES

The CPT soundings were carried out by **KTE** using an integrated electronic cone system manufactured by Vertek. The CPT soundings were performed in accordance with ASTM standards (D5778). The cone penetrometers were pushed using a 30-ton CPT rig. The cone used during the program was a 15 cm^2 cone and recorded the following parameters at approximately 2.5 cm depth intervals:

- Cone Resistance (qc)
- Sleeve Friction (fs)
- Dynamic Pore Pressure (u)
- Inclination
- Penetration Speed

At location CPT-3, shear wave measurements were obtained at various depths The shear wave is generated using an air-actuated hammer, which is located inside the front jack of the CPT rig. The cone has a triaxial geophone, which recorded the shear wave signal generated by the air hammer.

The above parameters were recorded and viewed in real time using a laptop computer. Data is stored at the KTE office for up to 2 years for future analysis and reference. A complete set of baseline readings was taken prior to each sounding to determine temperature shifts and any zero load offsets. Monitoring base line readings ensures that the cone electronics are operating properly.

4. CONE PENETRATION TEST DATA & INTERPRETATION

The Cone Penetration Test data is presented in graphical form in the attached Appendix. These plots were generated using the CPeT-IT program. Penetration depths are referenced to ground surface. The soil behavior type on the CPT plots is derived from the attached CPT SBT plot (Robertson, "Interpretation of Cone Penetration Test…", 2009) and presents major soil lithologic changes. The stratigraphic interpretation is based on relationships between cone resistance (qc), sleeve friction (fs), and penetration pore pressure (u). The friction ratio (Rf), which is sleeve friction divided by cone resistance, is a calculated parameter that is used along with cone resistance to infer soil behavior type. Generally, cohesive soils (clays) have high friction ratios, low cone resistance and generate excess pore water pressures. Cohesionless soils (sands) have lower friction ratios, high cone bearing and generate little (or negative) excess pore water pressures.

The CPT data files have also been provided. These files can be imported in CPeT-IT (software by GeoLogismiki) and other programs to calculate various geotechnical parameters.

It should be noted that it is not always possible to clearly identify a soil type based on qc, fs and u. In these situations, experience, judgement and an assessment of the pore pressure data should be used to infer the soil behavior type.

If you have any questions regarding this information, please do not hesitate to call our office at (714) 901-7270.

Sincerely,

KEHOE TESTING & ENGINEERING

Steven P. Kehoe
President

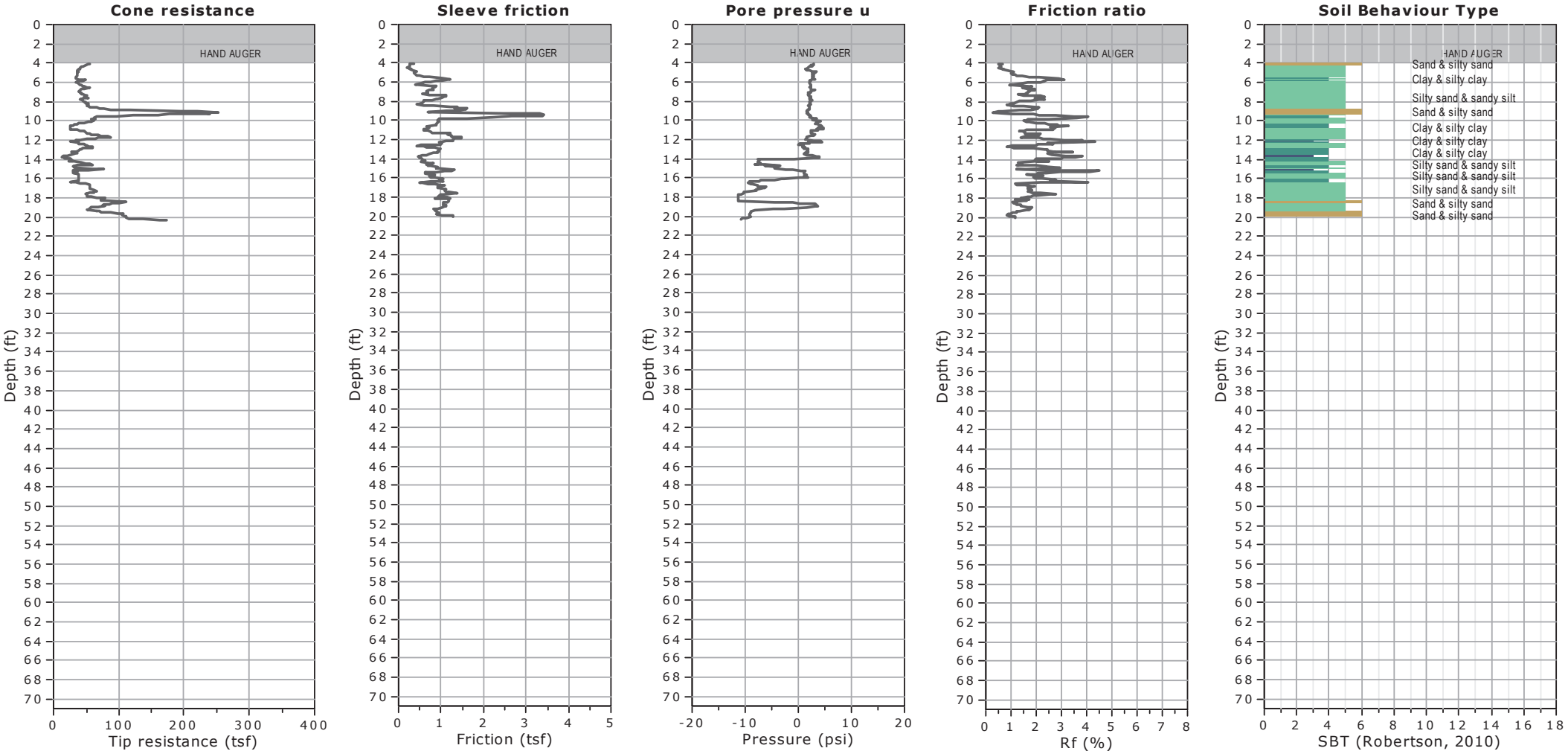
02/12/20-wt-0947

APPENDIX

Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: **Ninyo & Moore / Lift Station No. 2**
Location: **Laguna Beach, CA**

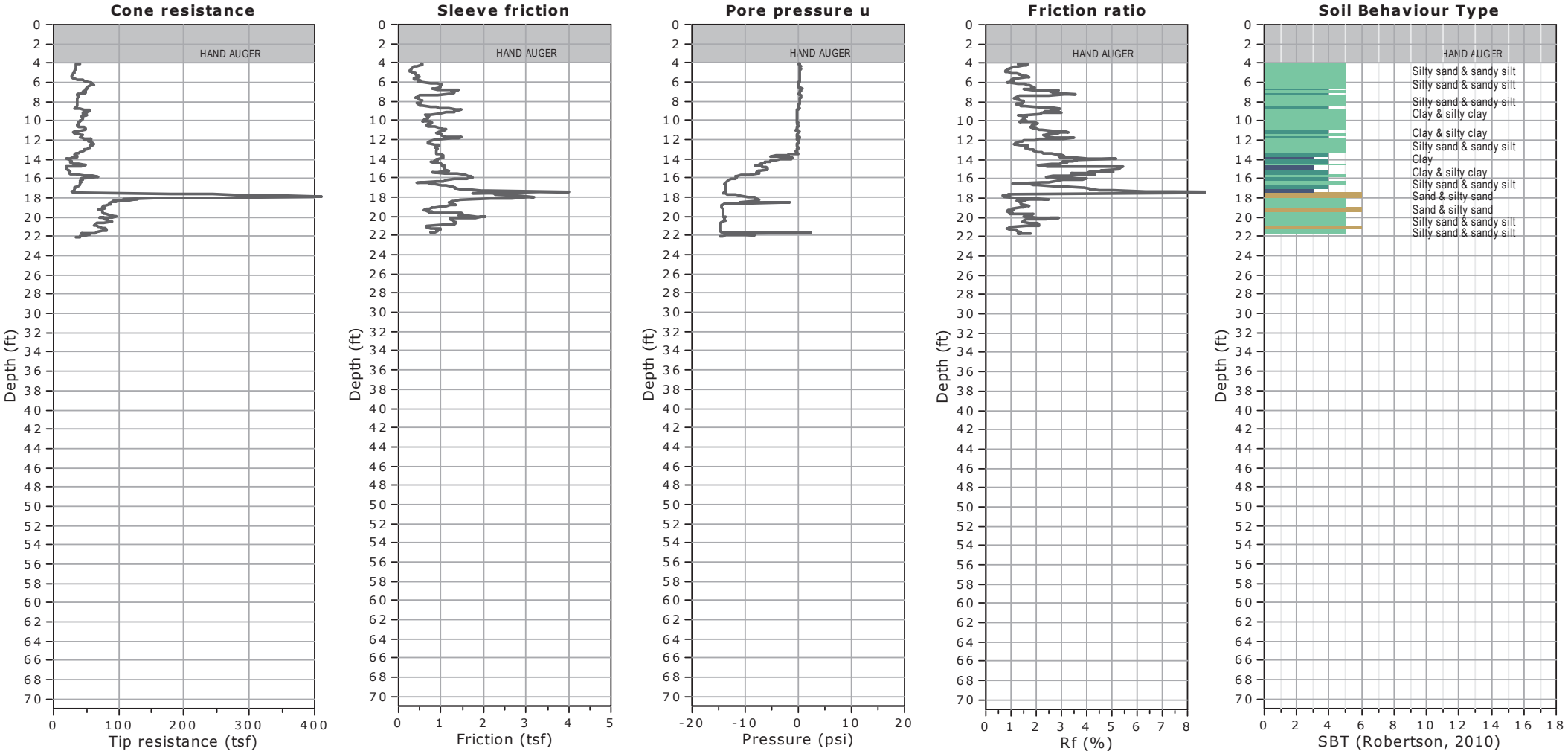
CPT-1
Total depth: 20.34 ft, Date: 2/6/2020



Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: **Ninyo & Moore / Lift Station No. 2**
Location: **Laguna Beach, CA**

CPT-2
Total depth: 22.12 ft, Date: 2/6/2020



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714-901-7270
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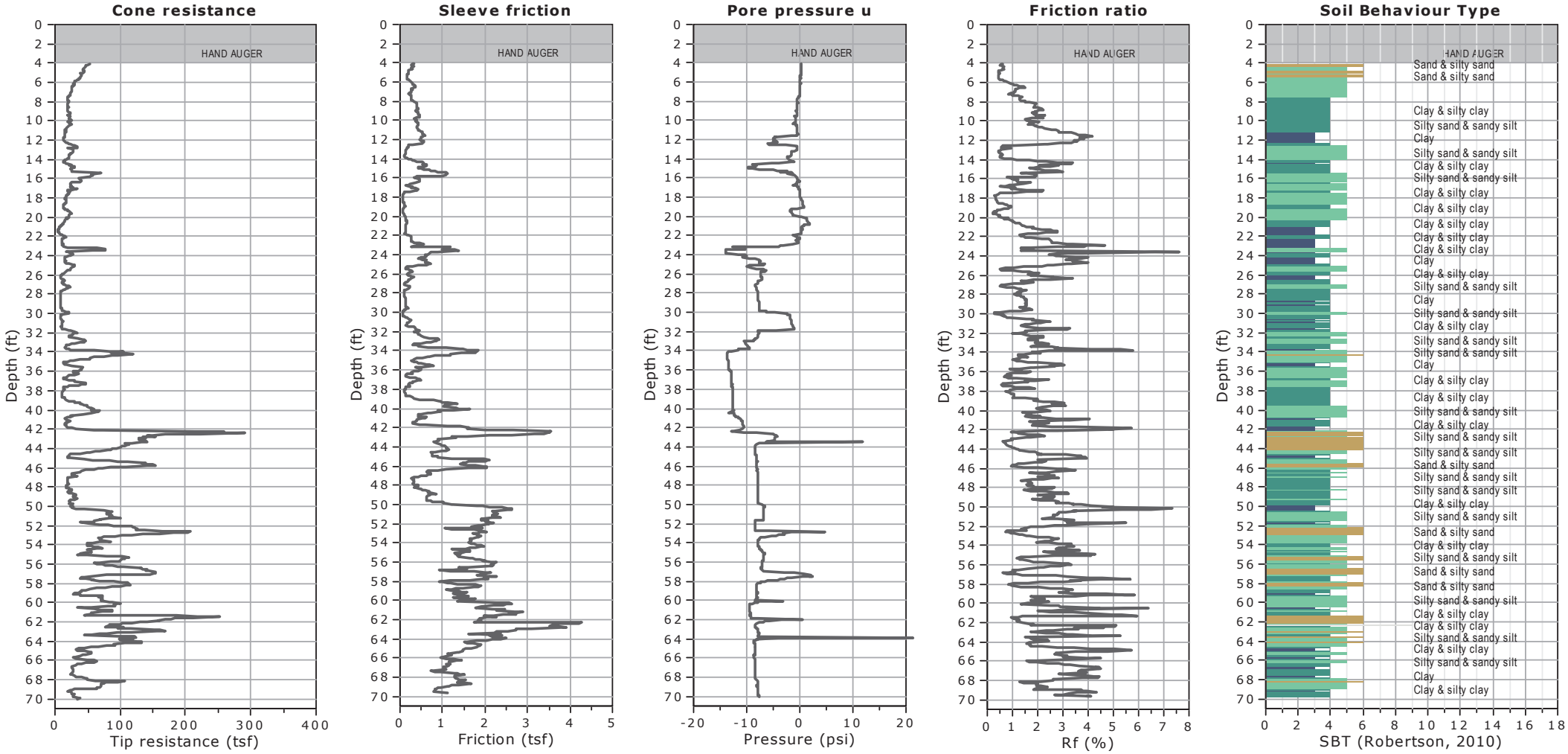
Project: **Ninyo & Moore / Lift Station No. 2**
Location: **Laguna Beach, CA**

CPT-3
Total depth: 70.10 ft, Date: 2/6/2020



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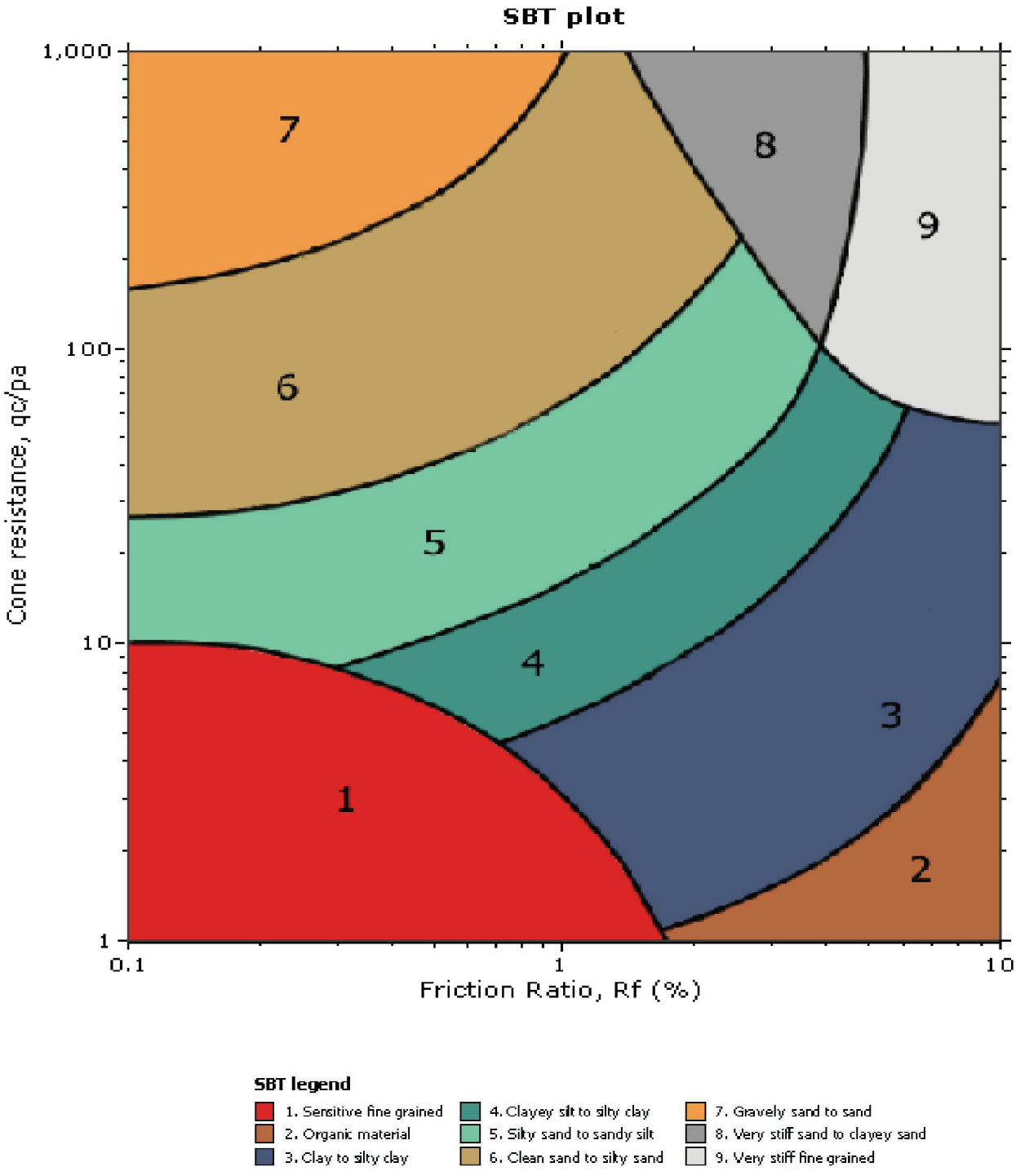


Ninyo & Moore
Lift Station No. 2
Laguna Beach, CA

CPT Shear Wave Measurements

Location	Tip Depth (ft)	Geophone Depth (ft)	Travel Distance (ft)	S-Wave Arrival (msec)	S-Wave Velocity from Surface (ft/sec)	Interval S-Wave Velocity (ft/sec)
CPT-3	10.04	9.04	9.26	11.66	794	
	20.01	19.01	19.11	31.25	612	503
	31.73	30.73	30.80	53.72	573	520
	40.55	39.55	39.60	65.96	600	719
	50.03	49.03	49.07	75.88	647	955
	60.04	59.04	59.07	84.24	701	1197
	70.11	69.11	69.14	94.52	731	979

Shear Wave Source Offset - 2 ft

S-Wave Velocity from Surface = Travel Distance/S-Wave Arrival
Interval S-Wave Velocity = (Travel Dist2-Travel Dist1)/(Time2-Time1)

APPENDIX C

Geotechnical Laboratory Testing

APPENDIX C

GEOTECHNICAL LABORATORY TESTING

Classification
Soils were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488. Soil classifications are indicated on the logs of the exploratory borings in Appendix A.

In-Place Moisture and Density Tests
The moisture content and dry density of relatively undisturbed samples obtained from the exploratory borings were evaluated in general accordance with ASTM D 2937. The test results are presented on the logs of the exploratory borings in Appendix A.

Gradation Analysis
Gradation analysis tests were performed on selected representative soil samples in general accordance with ASTM D 422 or ASTM D 6913. The grain-size distribution curves are shown on Figures C-1 through C-4. These test results were utilized in evaluating the soil classifications in accordance with the Unified Soil Classification System (USCS).

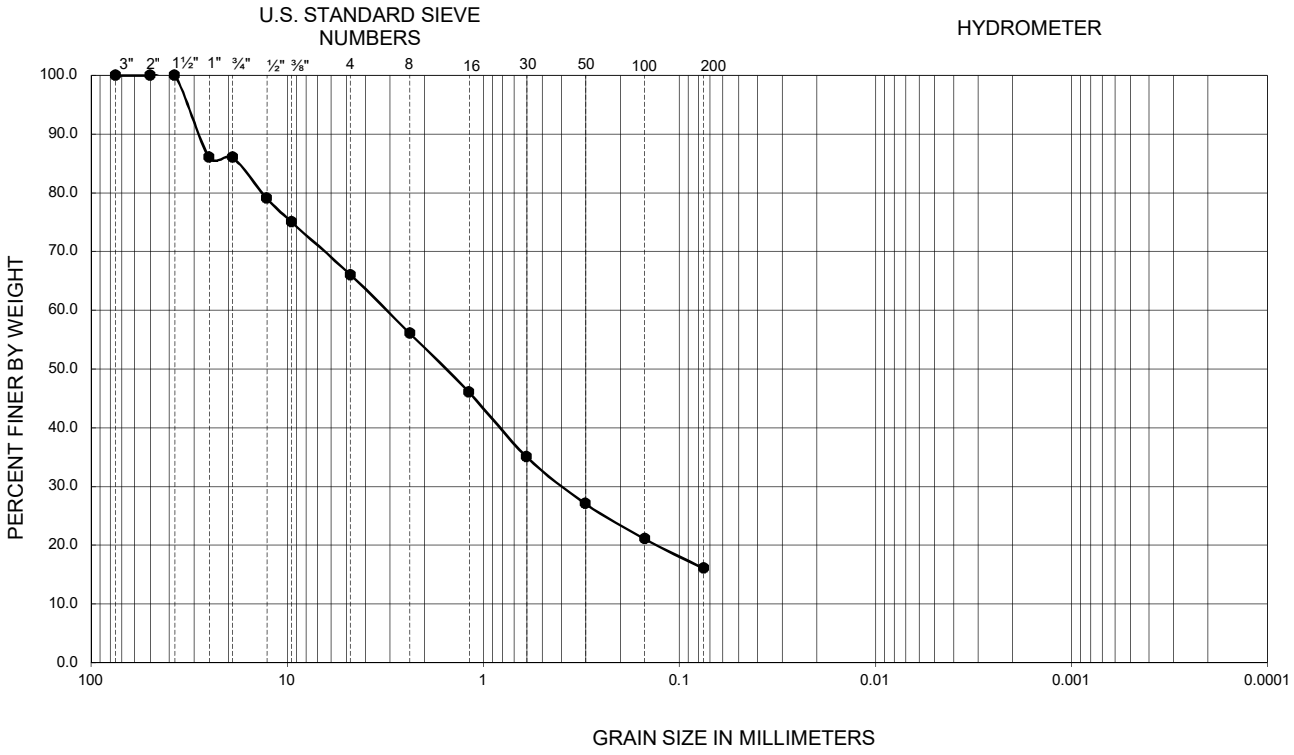
200 Wash
An evaluation of the percentage of particles finer than the No. 200 sieve in selected soil samples was performed in general accordance with ASTM D 1140. The results of these tests are presented on Figure C-5.

Atterberg Limits
Tests were performed on selected representative fine-grained soil samples to evaluate the liquid limit, plastic limit, and plasticity index in general accordance with ASTM D 4318. These test results were used to evaluate the soil classification in accordance with the USCS. The test results and classifications are shown on Figure C-6

Direct Shear Tests
Direct shear tests were performed on relatively undisturbed and remolded samples in general accordance with ASTM D 3080 to evaluate the shear strength characteristics of the selected materials. The samples were inundated during shearing to represent adverse field conditions. The results are shown on Figures C-7 and C-8.

Soil Corrosivity Tests
Soil pH and resistivity tests were performed on representative samples in general accordance with California Test (CT) 643. The soluble sulfate and chloride content of the selected samples were evaluated in general accordance with CT 417 and CT 422, respectively. The test results are presented on Figure C-9

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-1	15.0-16.5	30	21	9	--	--	--	--	--	16	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE C-1

GRADATION TEST RESULTS

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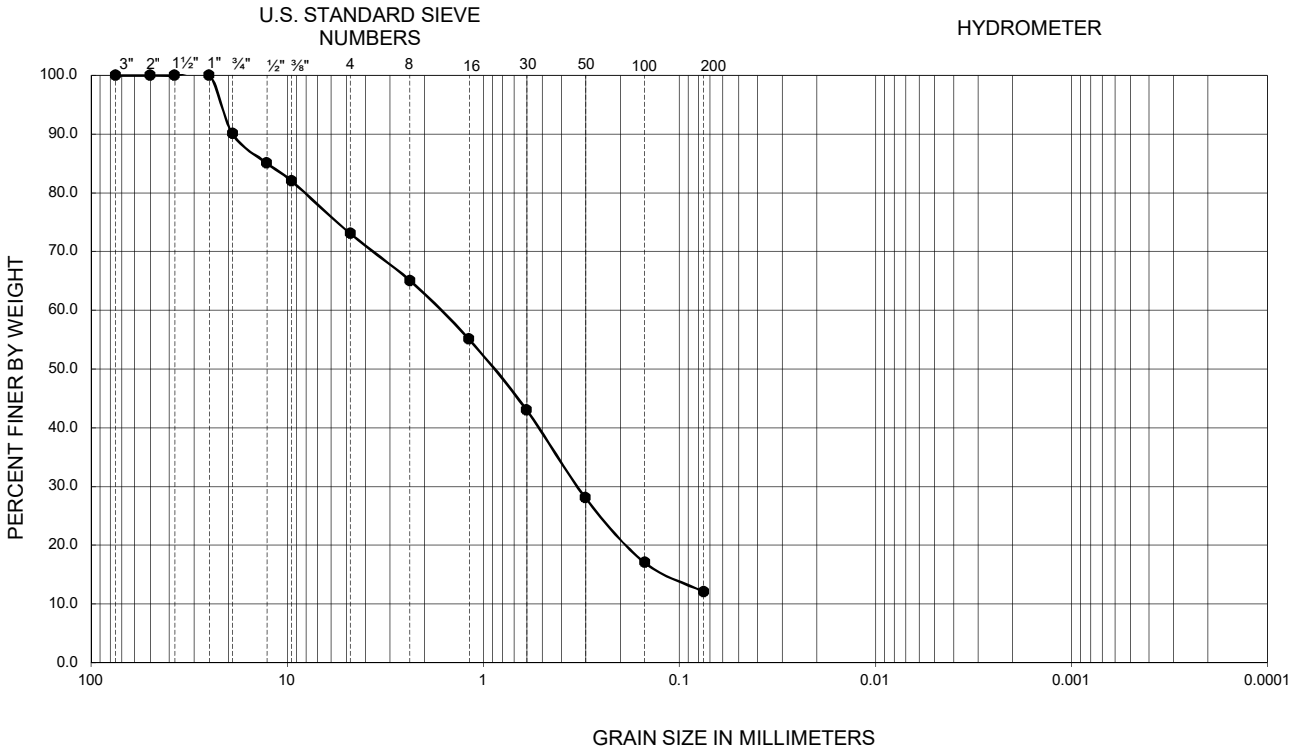
LIFT STATION NO. 2 REPLACEMENT PROJECT, SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA

209638002 | 6/20

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-1	35.0-36.5	--	--	--	--	--	--	--	--	12	SW-SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE C-2

GRADATION TEST RESULTS

LIFT STATION NO. 2 REPLACEMENT PROJECT, SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA

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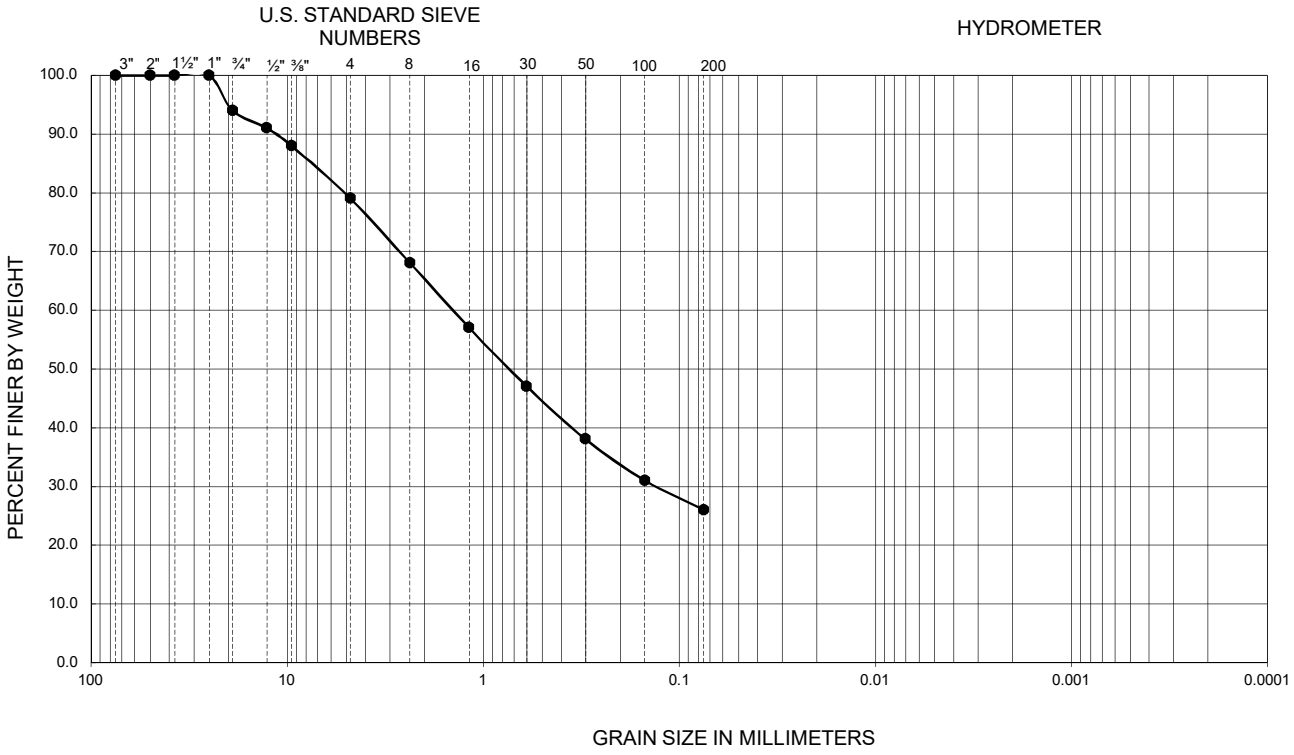
GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	PW-1	20.0-21.5	--	--	--	--	--	--	--	--	26	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 6913

FIGURE C-3

GRADATION TEST RESULTS

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LIFT STATION NO. 2 REPLACEMENT PROJECT, SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA

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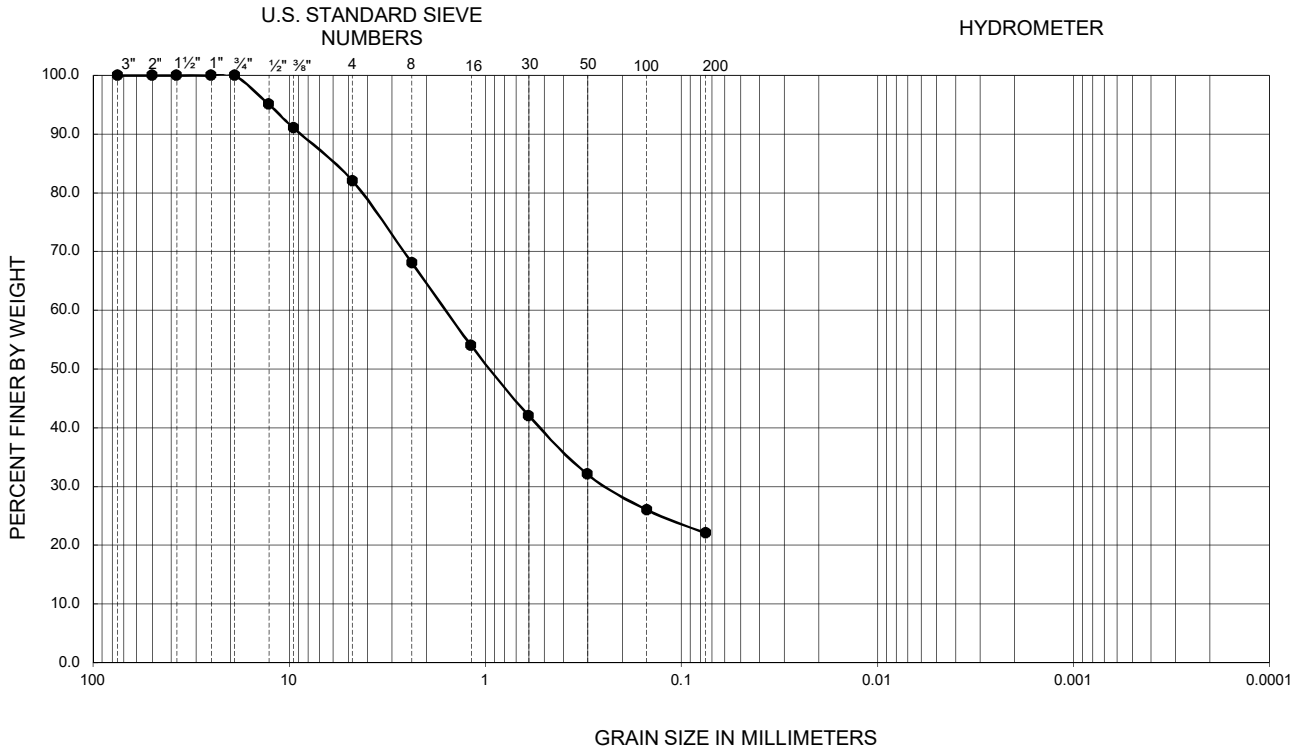
GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	MW-1	25.0-26.5	30	20	10	--	--	--	--	--	22	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 6913

FIGURE C-4

GRADATION TEST RESULTS

LIFT STATION NO. 2 REPLACEMENT PROJECT, SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA

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SAMPLE LOCATION	SAMPLE DEPTH (ft)	DESCRIPTION	PERCENT PASSING NO. 4	PERCENT PASSING NO. 200	USCS (TOTAL SAMPLE)
B-1	10.0-11.5	CLAYEY SAND WITH GRAVEL	76	18	SC
B-1	25.0-26.5	CLAYEY SAND WITH GRAVEL	77	17	SC
B-1	30.0-31.5	POORLY GRADED SAND WITH SILT AND GRAVEL	79	9	SP-SM
PW-1	5.0-6.5	CLAYEY SAND WITH GRAVEL	77	21	SC
MW-1	10.0-11.5	CLAYEY SAND WITH GRAVEL	57	18	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 1140

FIGURE C-5

NO. 200 SIEVE ANALYSIS TEST RESULTS

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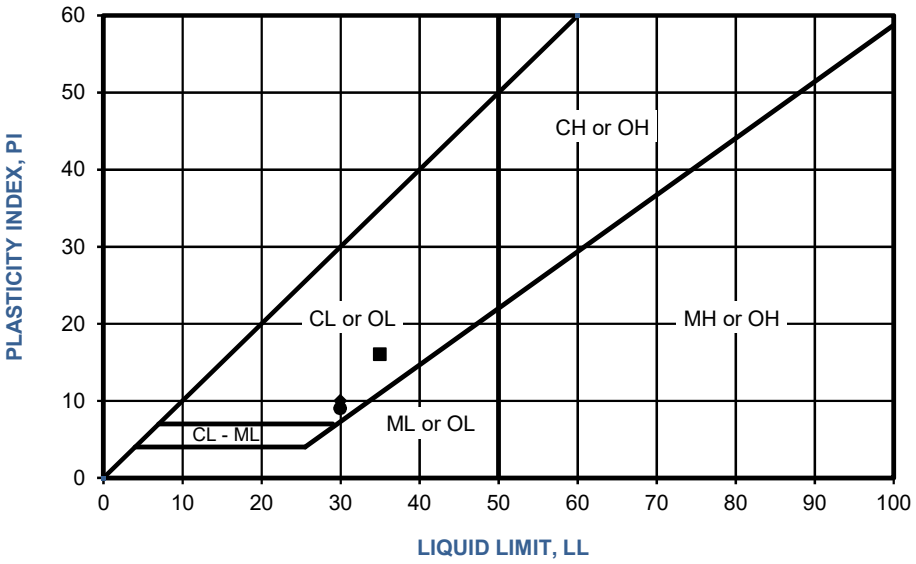
LIFT STATION NO. 2 REPLACEMENT PROJECT, SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA

209638002 | 6/20

SYMBOL	LOCATION	DEPTH (ft)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS
●	B-1	15.0-16.5	30	21	9	CL	SC
■	PW-1	5.0-6.5	35	19	16	CL	SC
◆	MW-1	25.0-26.5	30	20	10	CL	SC



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318

FIGURE C-6

ATTERBERG LIMITS TEST RESULTS

LIFT STATION NO. 2 REPLACEMENT PROJECT, SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA

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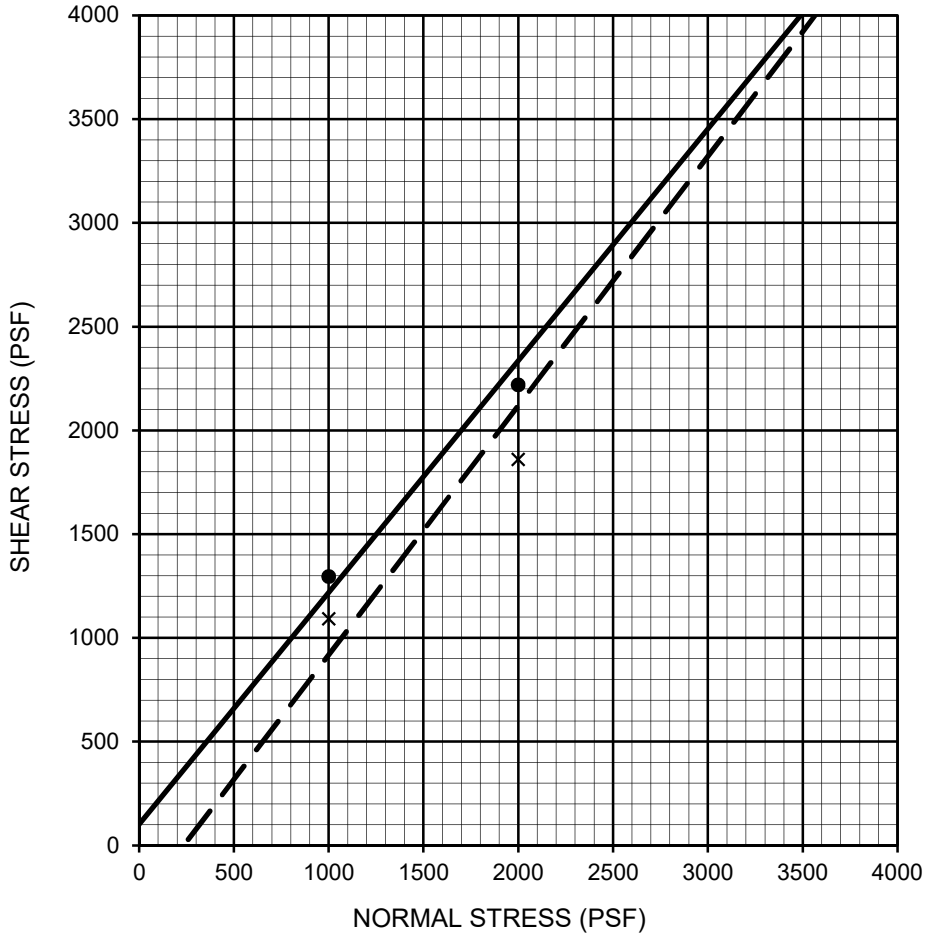

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
CLAYEY SAND WITH GRAVEL	●——	B-1	15.0-16.5	Peak	102	48	SC
CLAYEY SAND WITH GRAVEL	– – X – –	B-1	15.0-16.5	Ultimate	0	50	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE C-7

DIRECT SHEAR TEST RESULTS

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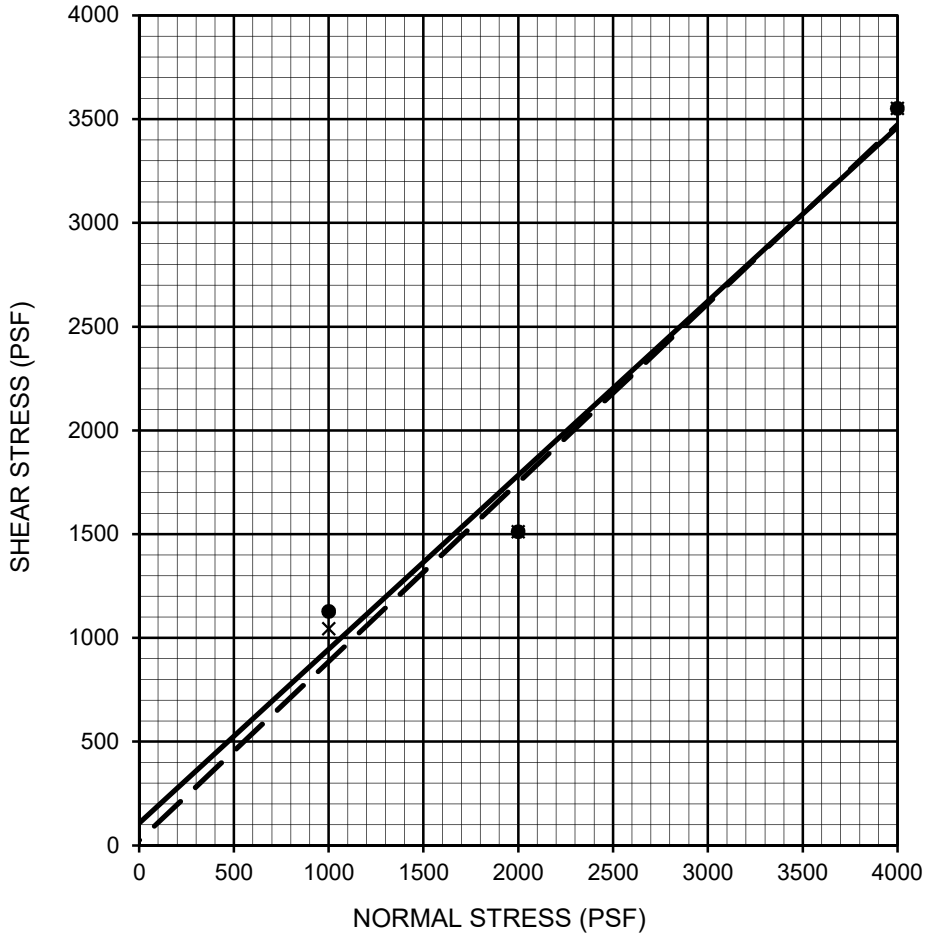
LIFT STATION NO. 2 REPLACEMENT PROJECT, SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA

209638002 | 6/20



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
CLAYEY SAND WITH GRAVEL	●——	PW-1	5.0-6.5	Peak	108	40	SC
CLAYEY SAND WITH GRAVEL	– – X – –	PW-1	5.0-6.5	Ultimate	24	41	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE C-8

DIRECT SHEAR TEST RESULTS

LIFT STATION NO. 2 REPLACEMENT PROJECT, SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA

209638002 | 6/20

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

SAMPLE LOCATION	SAMPLE DEPTH (ft)	pH [1]	RESISTIVITY [1] (ohm-cm)	SULFATE CONTENT [2]		CHLORIDE CONTENT [3] (ppm)
				(ppm)	(%)	
B-1	0.0-3.0	8.2	2,460	70	0.007	50

[1] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 643
[2] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 417
[3] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 422

FIGURE C-9

CORROSIVITY TEST RESULTS

LIFT STATION NO. 2 REPLACEMENT PROJECT, SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

209638002 | 6/20

APPENDIX D

Analytical Laboratory Testing - Soil

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
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19 February 2020

Jennifer Schmidt
Ninyo & Moore
475 Goddard, Ste. 200
Irvine, CA 92618

RE: Lift Station No. 2

Enclosed are the results of analyses for samples received by the laboratory on 02/12/20 12:46. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Mike Jaroudi
Project Manager

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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Ninyo & Moore	Project: Lift Station No. 2	
475 Goddard, Ste. 200	Project Number: 209638002	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/19/20 15:23

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
COMPOSITE	T201414-03	Soil	02/11/20 13:30	02/12/20 12:46

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Mike Jaroudi, Project Manager

SunStar Laboratories, Inc.
Providing Quality Analytical Services Nationwide

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Ninyo & Moore	Project: Lift Station No. 2	
475 Goddard, Ste. 200	Project Number: 209638002	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/19/20 15:23

DETECTIONS SUMMARY

Sample ID: COMPOSITE **Laboratory ID:** T201414-03

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	**22**	1.0	mg/kg	EPA 6010b	
Chromium	**55**	2.0	mg/kg	EPA 6010b	
Cobalt	**8.3**	2.0	mg/kg	EPA 6010b	
Copper	**21**	1.0	mg/kg	EPA 6010b	
Nickel	**59**	2.0	mg/kg	EPA 6010b	
Vanadium	**18**	5.0	mg/kg	EPA 6010b	
Zinc	**13**	1.0	mg/kg	EPA 6010b	

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Ninyo & Moore	Project: Lift Station No. 2	
475 Goddard, Ste. 200	Project Number: 209638002	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/19/20 15:23

COMPOSITE

T201414-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
Extractable Petroleum Hydrocarbons by 8015B									
C6-C12 (GRO)	ND	10	mg/kg	1	0021210	02/13/20	02/13/20	EPA 8015B	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	ND	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*88.5 %*	*65-135*		"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	0021220	02/12/20	02/13/20	EPA 6010b	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**22**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**55**	2.0	"	"	"	"	"	"	
Cobalt	**8.3**	2.0	"	"	"	"	"	"	
Copper	**21**	1.0	"	"	"	"	"	"	
Lead	ND	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**59**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	5.0	"	"	"	"	"	"	
Vanadium	**18**	5.0	"	"	"	"	"	"	
Zinc	**13**	1.0	"	"	"	"	"	"	
Volatile Organic Compounds by EPA Method 8260B									
Bromobenzene	ND	4.9	ug/kg	1	0021118	02/12/20	02/12/20	EPA 8260B	
Bromochloromethane	ND	4.9	"	"	"	"	"	"	
Bromodichloromethane	ND	4.9	"	"	"	"	"	"	
Bromoform	ND	4.9	"	"	"	"	"	"	
Bromomethane	ND	4.9	"	"	"	"	"	"	
n-Butylbenzene	ND	4.9	"	"	"	"	"	"	
sec-Butylbenzene	ND	4.9	"	"	"	"	"	"	
tert-Butylbenzene	ND	4.9	"	"	"	"	"	"	
Carbon tetrachloride	ND	4.9	"	"	"	"	"	"	

SunStar Laboratories, Inc.

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Mike Jaroudi, Project Manager

SunStar Laboratories, Inc.
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Ninyo & Moore	Project: Lift Station No. 2	
475 Goddard, Ste. 200	Project Number: 209638002	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/19/20 15:23

COMPOSITE

T201414-03 (Soil)

SunStar Laboratories, Inc.

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chlorobenzene	ND	4.9	ug/kg	1	0021118	02/12/20	02/12/20	EPA 8260B	
Chloroethane	ND	4.9	"	"	"	"	"	"	
Chloroform	ND	4.9	"	"	"	"	"	"	
Chloromethane	ND	4.9	"	"	"	"	"	"	
2-Chlorotoluene	ND	4.9	"	"	"	"	"	"	
4-Chlorotoluene	ND	4.9	"	"	"	"	"	"	
Dibromochloromethane	ND	4.9	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	9.8	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	4.9	"	"	"	"	"	"	
Dibromomethane	ND	4.9	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	4.9	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	4.9	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	4.9	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	4.9	"	"	"	"	"	"	
1,1-Dichloroethane	ND	4.9	"	"	"	"	"	"	
1,2-Dichloroethane	ND	4.9	"	"	"	"	"	"	
1,1-Dichloroethene	ND	4.9	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	4.9	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	4.9	"	"	"	"	"	"	
1,2-Dichloropropane	ND	4.9	"	"	"	"	"	"	
1,3-Dichloropropane	ND	4.9	"	"	"	"	"	"	
2,2-Dichloropropane	ND	4.9	"	"	"	"	"	"	
1,1-Dichloropropene	ND	4.9	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	4.9	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	4.9	"	"	"	"	"	"	
Hexachlorobutadiene	ND	4.9	"	"	"	"	"	"	
Isopropylbenzene	ND	4.9	"	"	"	"	"	"	
p-Isopropyltoluene	ND	4.9	"	"	"	"	"	"	
Methylene chloride	ND	20	"	"	"	"	"	"	
Naphthalene	ND	4.9	"	"	"	"	"	"	
n-Propylbenzene	ND	4.9	"	"	"	"	"	"	
Styrene	ND	4.9	"	"	"	"	"	"	

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Ninyo & Moore	Project: Lift Station No. 2	
475 Goddard, Ste. 200	Project Number: 209638002	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/19/20 15:23

COMPOSITE

T201414-03 (Soil)

SunStar Laboratories, Inc.

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
1,1,2,2-Tetrachloroethane	ND	4.9	ug/kg	1	0021118	02/12/20	02/12/20	EPA 8260B	
1,1,1,2-Tetrachloroethane	ND	4.9	"	"	"	"	"	"	
Tetrachloroethene	ND	3.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	4.9	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	4.9	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	4.9	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	4.9	"	"	"	"	"	"	
Trichloroethene	ND	3.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	4.9	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	4.9	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	4.9	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	4.9	"	"	"	"	"	"	
Vinyl chloride	ND	4.9	"	"	"	"	"	"	
Benzene	ND	4.9	"	"	"	"	"	"	
Toluene	ND	4.9	"	"	"	"	"	"	
Ethylbenzene	ND	4.9	"	"	"	"	"	"	
m,p-Xylene	ND	9.8	"	"	"	"	"	"	
o-Xylene	ND	4.9	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*102 %*	*75.4-139*		"	"	"	"	
Surrogate: Dibromofluoromethane		*112 %*	*73.1-125*		"	"	"	"	
Surrogate: Toluene-d8		*102 %*	*82.6-117*		"	"	"	"	

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Ninyo & Moore	Project: Lift Station No. 2	
475 Goddard, Ste. 200	Project Number: 209638002	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/19/20 15:23

Extractable Petroleum Hydrocarbons by 8015B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0021210 - EPA 3550B GC										
Blank (0021210-BLK1)				Prepared & Analyzed: 02/13/20						
C6-C12 (GRO)	ND	10	mg/kg							
C13-C28 (DRO)	ND	10	"							
C29-C40 (MORO)	ND	10	"							
Surrogate: p-Terphenyl	*83.4*		*"*	*100*		*83.4*	*65-135*			
LCS (0021210-BS1)				Prepared & Analyzed: 02/13/20						
C13-C28 (DRO)	510	10	mg/kg	500		102	75-125			
Surrogate: p-Terphenyl	*88.1*		*"*	*100*		*88.1*	*65-135*			
LCS Dup (0021210-BSD1)				Prepared & Analyzed: 02/13/20						
C13-C28 (DRO)	430	10	mg/kg	500		86.5	75-125	16.4	20	
Surrogate: p-Terphenyl	*85.5*		*"*	*100*		*85.5*	*65-135*			

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Ninyo & Moore	Project: Lift Station No. 2	
475 Goddard, Ste. 200	Project Number: 209638002	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/19/20 15:23

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0021220 - EPA 3050B										
Blank (0021220-BLK1)				Prepared: 02/12/20 Analyzed: 02/13/20						
Antimony	ND	3.0	mg/kg							
Silver	ND	2.0	"							
Arsenic	ND	5.0	"							
Barium	ND	1.0	"							
Beryllium	ND	1.0	"							
Cadmium	ND	2.0	"							
Chromium	ND	2.0	"							
Cobalt	ND	2.0	"							
Copper	ND	1.0	"							
Lead	ND	3.0	"							
Molybdenum	ND	5.0	"							
Nickel	ND	2.0	"							
Selenium	ND	5.0	"							
Thallium	ND	5.0	"							
Vanadium	ND	5.0	"							
Zinc	ND	1.0	"							
LCS (0021220-BS1)				Prepared: 02/12/20 Analyzed: 02/13/20						
Arsenic	98.2	5.0	mg/kg	100		98.2	75-125			
Barium	103	1.0	"	100		103	75-125			
Cadmium	103	2.0	"	100		103	75-125			
Chromium	102	2.0	"	100		102	75-125			
Lead	98.1	3.0	"	100		98.1	75-125			
Matrix Spike (0021220-MS1)	**Source: T201411-01**			Prepared: 02/12/20 Analyzed: 02/13/20						
Arsenic	65.6	5.0	mg/kg	91.7	2.31	69.0	75-125			QM-05
Barium	225	1.0	"	91.7	160	70.5	75-125			QM-05
Cadmium	60.8	2.0	"	91.7	0.452	65.8	75-125			QM-05
Chromium	86.7	2.0	"	91.7	23.2	69.2	75-125			QM-05
Lead	67.1	3.0	"	91.7	8.81	63.5	75-125			QM-05

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475 Goddard, Ste. 200	Project Number: 209638002	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/19/20 15:23

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0021220 - EPA 3050B										
Matrix Spike Dup (0021220-MSD1)	**Source: T201411-01**			Prepared: 02/12/20 Analyzed: 02/13/20						
Arsenic	69.9	5.0	mg/kg	97.1	2.31	69.6	75-125	6.32	20	QM-05
Barium	228	1.0	"	97.1	160	69.6	75-125	1.26	20	QM-05
Cadmium	64.9	2.0	"	97.1	0.452	66.4	75-125	6.48	20	QM-05
Chromium	90.8	2.0	"	97.1	23.2	69.6	75-125	4.55	20	QM-05
Lead	71.6	3.0	"	97.1	8.81	64.7	75-125	6.57	20	QM-05

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Ninyo & Moore	Project: Lift Station No. 2	
475 Goddard, Ste. 200	Project Number: 209638002	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/19/20 15:23

Volatile Organic Compounds by EPA Method 8260B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0021118 - EPA 5030 GCMS										
Blank (0021118-BLK1)				Prepared: 02/11/20 Analyzed: 02/12/20						
Bromobenzene	ND	5.0	ug/kg							
Bromochloromethane	ND	5.0	"							
Bromodichloromethane	ND	5.0	"							
Bromoform	ND	5.0	"							
Bromomethane	ND	5.0	"							
n-Butylbenzene	ND	5.0	"							
sec-Butylbenzene	ND	5.0	"							
tert-Butylbenzene	ND	5.0	"							
Carbon tetrachloride	ND	5.0	"							
Chlorobenzene	ND	5.0	"							
Chloroethane	ND	5.0	"							
Chloroform	ND	5.0	"							
Chloromethane	ND	5.0	"							
2-Chlorotoluene	ND	5.0	"							
4-Chlorotoluene	ND	5.0	"							
Dibromochloromethane	ND	5.0	"							
1,2-Dibromo-3-chloropropane	ND	10	"							
1,2-Dibromoethane (EDB)	ND	5.0	"							
Dibromomethane	ND	5.0	"							
1,2-Dichlorobenzene	ND	5.0	"							
1,3-Dichlorobenzene	ND	5.0	"							
1,4-Dichlorobenzene	ND	5.0	"							
Dichlorodifluoromethane	ND	5.0	"							
1,1-Dichloroethane	ND	5.0	"							
1,2-Dichloroethane	ND	5.0	"							
1,1-Dichloroethene	ND	5.0	"							
cis-1,2-Dichloroethene	ND	5.0	"							
trans-1,2-Dichloroethene	ND	5.0	"							
1,2-Dichloropropane	ND	5.0	"							
1,3-Dichloropropane	ND	5.0	"							
2,2-Dichloropropane	ND	5.0	"							
1,1-Dichloropropene	ND	5.0	"							
cis-1,3-Dichloropropene	ND	5.0	"							
trans-1,3-Dichloropropene	ND	5.0	"							
Hexachlorobutadiene	ND	5.0	"							
Isopropylbenzene	ND	5.0	"							

SunStar Laboratories, Inc.

Mike Jaroudi, Project Manager

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Ninyo & Moore	Project: Lift Station No. 2	
475 Goddard, Ste. 200	Project Number: 209638002	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/19/20 15:23

Volatile Organic Compounds by EPA Method 8260B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0021118 - EPA 5030 GCMS										
Blank (0021118-BLK1)				Prepared: 02/11/20 Analyzed: 02/12/20						
p-Isopropyltoluene	ND	5.0	ug/kg							
Methylene chloride	ND	20	"							
Naphthalene	ND	5.0	"							
n-Propylbenzene	ND	5.0	"							
Styrene	ND	5.0	"							
1,1,2,2-Tetrachloroethane	ND	5.0	"							
1,1,1,2-Tetrachloroethane	ND	5.0	"							
Tetrachloroethene	ND	3.0	"							
1,2,3-Trichlorobenzene	ND	5.0	"							
1,2,4-Trichlorobenzene	ND	5.0	"							
1,1,2-Trichloroethane	ND	5.0	"							
1,1,1-Trichloroethane	ND	5.0	"							
Trichloroethene	ND	3.0	"							
Trichlorofluoromethane	ND	5.0	"							
1,2,3-Trichloropropane	ND	5.0	"							
1,3,5-Trimethylbenzene	ND	5.0	"							
1,2,4-Trimethylbenzene	ND	5.0	"							
Vinyl chloride	ND	5.0	"							
Benzene	ND	5.0	"							
Toluene	ND	5.0	"							
Ethylbenzene	ND	5.0	"							
m,p-Xylene	ND	10	"							
o-Xylene	ND	5.0	"							
Surrogate: 4-Bromofluorobenzene	*104*		*"*	*100*		*104*	*75.4-139*			
Surrogate: Dibromofluoromethane	*107*		*"*	*100*		*107*	*73.1-125*			
Surrogate: Toluene-d8	*102*		*"*	*100*		*102*	*82.6-117*			
LCS (0021118-BS1)				Prepared: 02/11/20 Analyzed: 02/12/20						
Chlorobenzene	94.7	5.0	ug/kg	100		94.7	65.2-124			
1,1-Dichloroethene	91.7	5.0	"	100		91.7	60.9-131			
Trichloroethene	96.4	3.0	"	100		96.4	62.1-126			
Benzene	97.3	5.0	"	100		97.3	65.3-127			
Toluene	92.7	5.0	"	100		92.7	64.3-122			
Surrogate: 4-Bromofluorobenzene	*102*		*"*	*100*		*102*	*75.4-139*			
Surrogate: Dibromofluoromethane	*109*		*"*	*100*		*109*	*73.1-125*			
Surrogate: Toluene-d8	*103*		*"*	*100*		*103*	*82.6-117*			

SunStar Laboratories, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Mike Jaroudi, Project Manager

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Ninyo & Moore	Project: Lift Station No. 2	
475 Goddard, Ste. 200	Project Number: 209638002	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/19/20 15:23

Volatile Organic Compounds by EPA Method 8260B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0021118 - EPA 5030 GCMS										
Matrix Spike (0021118-MS1)	**Source: T201394-01**			Prepared: 02/11/20 Analyzed: 02/12/20						
Chlorobenzene	89.8	5.0	ug/kg	100	ND	89.8	65.2-125			
1,1-Dichloroethene	93.6	5.0	"	100	ND	93.6	60.9-131			
Trichloroethene	94.2	3.0	"	100	ND	94.2	62.1-126			
Benzene	96.7	5.0	"	100	ND	96.7	65.3-127			
Toluene	90.2	5.0	"	100	ND	90.2	64.3-125			
Surrogate: 4-Bromofluorobenzene	*101*		"	*100*		*101*	*75.4-139*			
Surrogate: Dibromofluoromethane	*109*		"	*100*		*109*	*73.1-125*			
Surrogate: Toluene-d8	*103*		"	*100*		*103*	*82.6-117*			
Matrix Spike Dup (0021118-MSD1)	**Source: T201394-01**			Prepared: 02/11/20 Analyzed: 02/12/20						
Chlorobenzene	92.4	5.0	ug/kg	99.2	ND	93.2	65.2-125	2.90	20	
1,1-Dichloroethene	96.2	5.0	"	99.2	ND	97.0	60.9-131	2.79	20	
Trichloroethene	95.0	3.0	"	99.2	ND	95.8	62.1-126	0.867	20	
Benzene	98.7	5.0	"	99.2	ND	99.5	65.3-127	2.10	20	
Toluene	91.8	5.0	"	99.2	ND	92.5	64.3-125	1.81	20	
Surrogate: 4-Bromofluorobenzene	*101*		"	*99.2*		*102*	*75.4-139*			
Surrogate: Dibromofluoromethane	*107*		"	*99.2*		*108*	*73.1-125*			
Surrogate: Toluene-d8	*102*		"	*99.2*		*103*	*82.6-117*			

SunStar Laboratories, Inc.

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Mike Jaroudi, Project Manager

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Ninyo & Moore	Project: Lift Station No. 2	
475 Goddard, Ste. 200	Project Number: 209638002	**Reported:**
Irvine CA, 92618	Project Manager: Jennifer Schmidt	02/19/20 15:23

Notes and Definitions

QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to possible matrix interference. The LCS was within acceptance criteria. The data is acceptable as no negative impact on data is expected.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

SunStar Laboratories, Inc.

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Mike Jaroudi, Project Manager

SunStar Laboratories, Inc.
25712 Commercentre Dr
Lake Forest, CA 92630
949-297-5020

Chain of Custody Record

Client: Ninyo & Moore
Address: 475 Goddard, Suite 299
Phone: (949) 753-7070 Fax: (949) 753-7071
Project Manager: Jennifer Schmidt

Date: 2/ /2020 Page: 1 Of 1
Project Name: Lift Station No. 2
Collector: Garrett Mottle (GM) Client Project #: 209638002
Batch #: T20 1414 EDF #:

Sample ID	Date Sampled	Time	Sample Type	Container Type	8260	8260 + OXY	8260 BTEX, OXY only	8270	8021 BTEX	8015M (gasoline)	8015M (diesel)	8015M Ext./Carbon Chain	6010/7000 Title 22 Metals	TPH 8015B Carbon Chain	VOCs 8260B	T22 Metals (6010B/7421	Laboratory ID #	Comments/Preservative	Total # of containers
MW-2 Composite	2/10/2020	12:30 PM	Soil	8oz Glass Jar										/	/	/	01	Composite	1
MW-1 Composite	2/11/2020	1:00 PM	Soil	8oz Glass Jar										/	/	/	02		1

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
	2/12/2020 12:46		2-12-20 1246
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers: 2
Chain of Custody seals Y/N/NA: (N)
Seals intact? Y/N/NA: (N)
Received good condition/cold: 3.9c

Turn around time: Standard

Notes: Composite into one sample

Sample disposal Instructions: Disposal @ $2.00 each ____ Return to client ____ Pickup ____

SunStar Laboratories, Inc.
Providing Quality Analytical Services Nationwide

SAMPLE RECEIVING REVIEW SHEET

Batch/Work Order #: T201414

Client Name: Ninyo & Moore Project: Lift Station No. 2

Delivered by: ☑ Client ☐ SunStar Courier ☐ GSO ☐ FedEx ☐ Other

If Courier, Received by: Date/Time Courier Received:

Lab Received by: Dan Date/Time Lab Received: 2-12-20 12:46

Total number of coolers received: 0 Thermometer ID: 52-1 Calibration due : 6/27/20

Temperature: Cooler #1	2.7 °C +/- the CF (+ 1.2°C) =	3.9	°C corrected temperature	
Temperature: Cooler #2	°C +/- the CF (+ 1.2°C) =		°C corrected temperature	
Temperature: Cooler #3	°C +/- the CF (+ 1.2°C) =		°C corrected temperature	
Temperature criteria = ≤ 6°C (no frozen containers)	Within criteria?		☑ **Yes** ☐ **No**	
If NO:				
Samples received on ice?	☐ Yes		☐ **No → Complete Non-Conformance Sheet**	
If on ice, samples received same day collected?	☐ Yes → Acceptable		☐ **No → Complete Non-Conformance Sheet**	

Custody seals intact on cooler/sample	☐ Yes	☐ No*	☑ N/A
Sample containers intact	☑ Yes	☐ No*	
Sample labels match Chain of Custody IDs	☐ Yes	☑ No*	
Total number of containers received match COC	☑ Yes	☐ No*	
Proper containers received for analyses requested on COC	☑ Yes	☐ No*	
Proper preservative indicated on COC/containers for analyses requested	☐ Yes	☐ No*	☑ N/A
Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times	☐ **Yes**	☑ **No***	

* Complete Non-Conformance Receiving Sheet if checked

Cooler/Sample Review - Initials and date: TB 2-12-20

Comments:

(949) 297-5020 ■ www.sunstarlabs.com ■ 25712 Commercentre Drive ■ Lake Forest, CA 92630

SunStar Laboratories, Inc.
Providing Quality Analytical Services Nationwide

SAMPLE NON-CONFORMANCE SHEET

Batch/Work Order # T201414

- **COOLERS**
  - ☐ Not Received (received COC only)
  - ☐ Leaking/Damaged
  - ☐ Other:
- **CUSTODY SEALS**
  - ☐ None
  - ☐ Not Intact
- **TEMPERATURE (Temp criteria ≤ 6°C)**
  - ☐ Cooler/Sample Temp(s)
  - ☐ Temperature Blank(s)
- **CHAIN OF CUSTODY (COC)**
  - ☐ Not relinquished by client; No date/time relinquished
  - ☐ Incomplete information provided
  - ☐ COC not received – notify PM
- **CONTAINERS**
  - ☐ Leaking ☐ Broken
  - ☐ Extra ☐ Missing
- **LABELS**
  - ☑ Not the same sample ID / info as on the COC
  - ☐ Incomplete Information
  - ☐ Markings/Info illegible
- **SAMPLES**
  - ☐ Samples **NOT RECEIVED** but listed on COC
  - ☐ Samples received but **NOT LISTED** on COC
  - ☐ Logged based on Label Information and not COC
  - ☐ Logged according to Work Plan and not COC
  - ☐ Logged in, **ON HOLD** until further notice
  - ☐ Insufficient quantities for analysis
  - ☐ Improper container used
  - ☐ Mislabeled as to tests, preservatives, etc.
  - ☐ Holding time expired – list sample ID and test
  - ☐ Not preserved/Improper preservative used
  - ☐ Without Labels, no information on containers
  - ☐ VOA vial(s) containing headspace >6mm
  - ☐ Other

Project Manager notified of sample non-conformance(s) ☑ Yes ☐ No

All samples accepted for processing and distributing to laboratory(ies) ☑ Yes ☐ No

For samples not accepted due to non-conformance, specify each specific sample ID being rejected in the comments section below:

Comments: Sample #2 on COC says "MW-1 composite," on sample it says "MW-2 Comp." the times match, and other samples match COC.

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

WORK ORDER

T201414

Client: **Ninyo & Moore** **Project Manager:** **Mike Jaroudi**
Project: **Lift Station No. 2** **Project Number:** **209638002**

Report To:
Ninyo & Moore
Jennifer Schmidt
475 Goddard, Ste. 200
Irvine, CA 92618

Date Due: 02/19/20 17:00 (5 day TAT)
Received By: Dan Marteski Date Received: 02/12/20 12:46
Logged In By: Travis Berner Date Logged In: 02/12/20 13:09

Samples Received at: **3.9°C**
Custody Seals No Received On Ice Yes
Containers Intact Yes
COC/Labels Agree Yes
Preservation Confirı No

Analysis	Due	TAT	Expires	Comments
T201414-01 MW-2 composite [Soil] Sampled 02/10/20 12:30 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T201414-02 MW-1 composite [Soil] Sampled 02/11/20 13:30 (GMT-08:00) Pacific Time (US &				
[NO ANALYSES]				
T201414-03 COMPOSITE [Soil] Sampled 02/11/20 13:30 (GMT-08:00) Pacific Time (US &				**COMPOSITE 2:1 (SAMPLE 1 AND SAMPLE 2)**
6010 Title 22	02/19/20 15:00	5	08/09/20 13:30	
8015 Carbon Chain	02/19/20 15:00	5	02/25/20 13:30	
8260	02/19/20 15:00	5	02/25/20 13:30	

6010 Title 22
subgroup 6010B T22

Reviewed By Date

APPENDIX E

Analytical Laboratory Testing - Groundwater

Enthalpy Analytical, LLC
931 W. Barkley Ave - Orange, CA 92868
Tel: (714)771-6900 Fax: (714)538-1209
www.enthalpy.com
info-sc@enthalpy.com

MONTROSE ENVIRONMENTAL

Client:	Ninyo & Moore	Lab Request:	424923
Address:	475 Goddard Suite 200 Irvine, CA 92618	Report Date:	03/12/2020
		Date Received:	02/19/2020
		Client ID:	15461
Attn:	Jennifer Schmidt		

Comments: AKM/SCWD/LIFT STATION NO.2
31004 Pacific Coast Hwy., Laguna Beach, CA 92651
#209638002

Final Report - See attached reports for EPA 608 Resticides/PCBs and EPA 1613 Dioxins/Furans results.

This laboratory request covers the following listed samples which were analyzed for the parameters indicated on the attached Analytical Result Report. All analyses were conducted using the appropriate methods. Methods accredited by NELAC are indicated on the report. This cover letter is an integral part of the final report.

Sample #	Client Sample ID
424923-001	MW-2

Thank you for the opportunity to be of service to your company. Please feel free to call if there are any questions regarding this report or if we can be of further service.

Ranjit K. K. Clarke

Report Review performed by: Ranjit Clarke, Project Manager

NOTE: Unless notified in writing, all samples will be discarded by appropriate disposal protocol 45 days from date received.

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Matrix:	Water	**Client:**	Ninyo & Moore	**Collector:**	Client
Sampled:	02/19/2020 09:22	**Site:**			
Sample #:	**424923-001**	**Client Sample #:**	MW-2	**Sample Type:**	

Analyte	Result	DF	MDL	RDL	Units	Prepared	Analyzed	By	Notes
Method: ALCH 4025	Prep Method: None						QCBatchID:		
Total Nitrogen	**3.80**	1	0.03	0.4	mg/L		02/27/20	SLL	
Method: EPA 1613B	Prep Method: See Attached						QCBatchID:		
See Attached		1							
Method: EPA 200.7	Prep Method: EPA 200.7						QCBatchID:		QC1214561
Antimony	**0.022 J**	1	0.014	0.04	mg/L		02/20/20	SBW	J
Arsenic	ND	1	0.009	0.01	mg/L		02/20/20	SBW	
Barium	**0.030**	1	0.002	0.01	mg/L		02/20/20	SBW	
Beryllium	ND	1	0.001	0.001	mg/L		02/20/20	SBW	
Cadmium	ND	1	0.002	0.005	mg/L		02/20/20	SBW	
Chromium	**0.021**	1	0.002	0.01	mg/L		02/20/20	SBW	
Cobalt	**0.008**	1	0.002	0.005	mg/L		02/20/20	SBW	
Copper	**0.010**	1	0.008	0.01	mg/L		02/20/20	SBW	
Lead	ND	1	0.007	0.01	mg/L		02/20/20	SBW	
Molybdenum	**0.026**	1	0.007	0.01	mg/L		02/20/20	SBW	
Nickel	**0.033**	1	0.004	0.01	mg/L		02/20/20	SBW	
Selenium	ND	1	0.025	0.03	mg/L		02/20/20	SBW	
Silver	ND	1	0.005	0.005	mg/L		02/20/20	SBW	
Sodium %	**36.5**	1	.19e-005	5e-005	%		02/20/20	SBW	
Thallium	ND	1	0.019	0.05	mg/L		02/20/20	SBW	
Vanadium	**0.004 J**	1	0.003	0.005	mg/L		02/20/20	SBW	J
Zinc	**0.025 J**	1	0.017	0.05	mg/L		02/20/20	SBW	J
Method: EPA 218.6	Prep Method: EPA 218.6						QCBatchID:		QC1214641
Hexavalent Chromium	**0.3 J**	1	0.112	1	ug/L		02/24/20	JP	J,P2
Method: EPA 245.1	Prep Method: Method						QCBatchID:		QC1214581
Mercury	ND	1	0.094	0.4	ug/L	02/20/20	02/24/20		
Method: EPA 300.0	Prep Method: Method						QCBatchID:		QC1214565
Nitrate, as Nitrogen	**1.08**	1	0.046	0.1	mg/L		02/20/20 10:53	K	
Nitrite, as Nitrogen	**1.32**	1	0.012	0.1	mg/L		02/20/20 10:53	K	
Method: EPA 335.4	Prep Method: Method						QCBatchID:		QC1214700
Cyanide	ND	1	0.008	0.01	mg/L	02/24/20	02/26/20	TP	
Method: EPA 351.2	Prep Method: Method						QCBatchID:		QC1214537
Total Kjeldahl Nitrogen	**1.4**	1	0.052	0.4	mg/L	02/19/20	02/19/20	TP	
Method: EPA 608	Prep Method: Method						QCBatchID:		
See Attached		1							
Method: EPA 624	Prep Method: 5030B						QCBatchID:		QC1214515
1,1,1-Trichloroethane	ND	1	0.063	0.5	ug/L		02/19/20	LZ	
1,1,2,2-Tetrachloroethane	ND	1	0.063	0.5	ug/L		02/19/20	LZ	
1,1,2-Trichloroethane	ND	1	0.045	0.5	ug/L		02/19/20	LZ	
1,1-Dichloroethane	ND	1	0.078	0.5	ug/L		02/19/20	LZ	
1,1-Dichloroethene	ND	1	0.13	0.5	ug/L		02/19/20	LZ	
1,2-Dibromoethane	ND	1	0.043	0.5	ug/L		02/19/20	LZ	
1,2-Dichlorobenzene	ND	1	0.051	0.5	ug/L		02/19/20	LZ	
1,2-Dichloroethane	ND	1	0.066	0.5	ug/L		02/19/20	LZ	
1,2-Dichloropropane	ND	1	0.06	0.5	ug/L		02/19/20	LZ	
1,3-Dichlorobenzene	ND	1	0.052	0.5	ug/L		02/19/20	LZ	
1,4-Dichlorobenzene	ND	1	0.12	0.5	ug/L		02/19/20	LZ	
2-Butanone (MEK)	ND	1	0.3	5	ug/L		02/19/20	LZ	
2-Chloroethyl Vinyl Ether	ND	1	0.23	1	ug/L		02/19/20	LZ	
Acetone	ND	1	0.2	10	ug/L		02/19/20	LZ	
Acrolein	ND	1	3.3	5	ug/L		02/19/20	LZ	
Acrylonitrile	ND	1	1.6	2	ug/L		02/19/20	LZ	

Matrix:	Water	**Client:**	Ninyo & Moore	**Collector:**	Client
Sampled:	02/19/2020 09:22	**Site:**			
Sample #:	**424923-001**	**Client Sample #:**	MW-2	**Sample Type:**	

Analyte	Result	DF	MDL	RDL	Units	Prepared	Analyzed	By	Notes
Benzene	ND	1	0.071	0.5	ug/L		02/19/20	LZ	
Bromodichloromethane	ND	1	0.06	0.5	ug/L		02/19/20	LZ	
Bromoform	ND	1	0.053	0.5	ug/L		02/19/20	LZ	
Bromomethane	ND	1	0.13	1	ug/L		02/19/20	LZ	
Carbon Tetrachloride	ND	1	0.045	0.5	ug/L		02/19/20	LZ	
Chlorobenzene	ND	1	0.075	0.5	ug/L		02/19/20	LZ	
Chlorodibromomethane	ND	1	0.045	0.5	ug/L		02/19/20	LZ	
Chloroethane	ND	1	0.4	0.5	ug/L		02/19/20	LZ	
Chloroform	**0.533**	1	0.044	0.5	ug/L		02/19/20	LZ	
Chloromethane	ND	1	0.055	0.5	ug/L		02/19/20	LZ	
cis-1,3-dichloropropene	ND	1	0.061	0.5	ug/L		02/19/20	LZ	
Dichlorodifluoromethane	ND	1	0.062	0.5	ug/L		02/19/20	LZ	
Di-isopropyl ether (DIPE)	ND	1	0.2	1	ug/L		02/19/20 18:37	LZ	
Ethylbenzene	ND	1	0.091	0.5	ug/L		02/19/20	LZ	
Ethyl-tertbutylether (ETBE)	ND	1	0.23	1	ug/L		02/19/20 18:37	LZ	
Methylene chloride	**9.0**	1	0.15	0.5	ug/L		02/19/20	LZ	B,C
Methyl-t-butyl Ether (MTBE)	ND	1	0.19	5	ug/L		02/19/20 18:37	LZ	
Methyl-t-butyl Ether (MTBE)	ND	1	0.068	0.5	ug/L		02/19/20	LZ	
t-Butyl alcohol (TBA)	ND	1	5.2	10	ug/L		02/19/20 18:37	LZ	
Tert-amylmethylether (TAME)	ND	1	0.19	1	ug/L		02/19/20 18:37	LZ	
Tetrachloroethene	ND	1	0.15	0.5	ug/L		02/19/20	LZ	
Toluene	ND	1	0.078	0.5	ug/L		02/19/20	LZ	
Total Trihalomethanes (THM's)	ND	1	0.044	0.5	ug/L		02/19/20	LZ	
trans-1,2-dichloroethene	ND	1	0.17	0.5	ug/L		02/19/20	LZ	
trans-1,3-dichloropropene	ND	1	0.056	0.5	ug/L		02/19/20	LZ	
Trichloroethene	ND	1	0.078	0.5	ug/L		02/19/20	LZ	
Vinyl Chloride	ND	1	0.08	0.5	ug/L		02/19/20	LZ	
Xylenes (Total)	ND	1	0.25	0.5	ug/L		02/19/20	LZ	

Surrogate	*% Recovery*	*Limits*	*Notes*
1,2-Dichloroethane-d4 (SUR)	*100*	*70-135*	
4-Bromofluorobenzene (SUR)	*100*	*70-135*	
Dibromofluoromethane (SUR)	*104*	*70-135*	
Toluene-d8 (SUR)	*102*	*70-135*	

Method: EPA 625 Prep Method: See Attached QCBatchID:

See Attached		1							

Method: EPA 8015B *NELAC* Prep Method: EPA 3510C QCBatchID: QC1214538

DRO (C10 to C28)	**0.05 J**	1	0.04	0.1	mg/L	02/19/20	02/24/20		B1,J
ORO (C28 to C40)	ND	1	0.3	0.3	mg/L	02/19/20	02/24/20		

Surrogate	*% Recovery*	*Limits*	*Notes*
Triacontane (SUR)	*80*	*50-150*	

Method: EPA 8015B *NELAC* Prep Method: EPA 5030B QCBatchID: QC1214028

TPH Gasoline	ND	1	16	50	ug/L		02/20/20	EW	

Surrogate	*% Recovery*	*Limits*	*Notes*
4-Bromofluorobenzene (SUR)	*103*	*60-140*	

Method: SM 4500-Cl Prep Method: Method QCBatchID: QC1214575

Chlorine, Total Residual	ND	1	0.016	0.1	mg/L		02/20/20 09:49	WW	T2

Method: SM 4500-F-C Prep Method: Method QCBatchID: QC1214781

Fluoride	**0.361**	1	0.003	0.1	mg/L	02/28/20	02/28/20	NP	

Method: SM 4500-H+B Prep Method: Method QCBatchID: QC1214568

pH	**7.23**	1			SU		02/20/20 12:00	WW	T2
Temp. at Time of pH Measurement	**20**	1			°C		02/20/20 12:00	WW	

Method: SM 4500-O-G Prep Method: Method QCBatchID: QC1214546

Matrix:	Water	**Client:**	Ninyo & Moore	**Collector:**	Client
Sampled:	02/19/2020 09:22	**Site:**			
Sample #:	**424923-001**	**Client Sample #:**	MW-2	**Sample Type:**	

Analyte	Result	DF	MDL	RDL	Units	Prepared	Analyzed	By	Notes
Dissolved Oxygen	**4.3**	1	1	1	mg/L		02/19/20 20:30	EC	T2
Method: SM 4500-P-B-5-E	Prep Method: 4500-P-B-5						QCBatchID:		QC1214765
Total Phosphorous as P	**0.041**	1	0.01	0.02	mg/L	02/27/20	02/27/20	TP	
Total Phosphorous as PO4	**0.126**	1	0.03	0.06	mg/L	02/27/20	02/27/20	TP	
Method: SM 4500-S-D	Prep Method: Method						QCBatchID:		QC1214637
Dissolved Sulfide	ND	1	0.1	0.1	mg/L	02/20/20 09:00	02/20/20 09:00	TP	
Method: SM 4500-S-H	Prep Method: Method						QCBatchID:		
Hydrogen Sulfide	ND	1	0.1	0.1	mg/L		02/28/20	TP	
Method: SM 5540-C	Prep Method: Method						QCBatchID:		QC1214653
MBAS	ND	1	0.027	0.04	mg/L	02/20/20 07:50	02/20/20 22:41	NP	
Method: SM 9221-B	Prep Method: Method						QCBatchID:		QC1214524
Coliform, Total	**290**	1			MPN/100ml	02/19/20 12:50	02/22/20 12:38	LH	
Method: SM 9221-E	Prep Method: Method						QCBatchID:		QC1214524
Coliform, Fecal	**<1.8**	1			MPN/100ml	02/19/20 12:50	02/22/20 12:38	LH	

QCBatchID: QC1214028 **Analyst:** sandyw **Method:** EPA 8015B

Matrix: Water **Analyzed:** 02/20/2020 **Instrument:** VOA-GC (group)

Blank Summary

Analyte	Blank Result	Units	MDL	RDL	Notes
QC1214028MB1					
TPH (C6 to C10)	ND	ug/L	16	50	
TPH Gasoline	ND	ug/L	16	50	

Lab Control Spike/ Lab Control Spike Duplicate Summary

Analyte	Spike Amount LCS	Spike Amount LCSD	Spike Result LCS	Spike Result LCSD	Units	Recoveries LCS	Recoveries LCSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214028LCS1, QC1214028LCSD1											
TPH Gasoline	500	500	510	530	ug/L	102	106	4	70-130	30	

Matrix Spike/Matrix Spike Duplicate Summary

Analyte	Sample Amount	Spike Amount MS	Spike Amount MSD	Spike Result MS	Spike Result MSD	Units	Recoveries MS	Recoveries MSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214028MS1, QC1214028MSD1												**Source: 424917-001**
TPH Gasoline	ND	500	500	510	500	ug/L	102	100	2.0	70-130	30	

QCBatchID: QC1214515	**Analyst:** lucy	**Method:** EPA 624	
Matrix: Water	**Analyzed:** 02/19/2020	**Instrument:** VOA-MS (group)	

Blank Summary

Analyte	Blank Result	Units	MDL	RDL	Notes
QC1214515MB1					
1,1,1,2-Tetrachloroethane	ND	ug/L	0.25	5	
1,1,1-Trichloroethane	ND	ug/L	0.38	5	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.25	5	
1,1,2-Trichloroethane	ND	ug/L	0.25	5	
1,1,2-Trichlorotrifluoroethane	ND	ug/L	0.29	5	
1,1-Dichloroethane	ND	ug/L	0.32	5	
1,1-Dichloroethene	ND	ug/L	0.3	5	
1,1-Dichloropropene	ND	ug/L	0.25	5	
1,2,3-Trichlorobenzene	ND	ug/L	0.28	5	
1,2,3-Trichloropropane	ND	ug/L	0.16	5	
1,2,4-Trichlorobenzene	ND	ug/L	0.27	5	
1,2,4-Trimethylbenzene	ND	ug/L	0.28	5	
1,2-Dibromo-3-chloropropane	ND	ug/L	0.12	5	
1,2-Dibromoethane	ND	ug/L	0.19	5	
1,2-Dichlorobenzene	ND	ug/L	0.26	5	
1,2-Dichloroethane	ND	ug/L	0.2	5	
1,2-Dichloropropane	ND	ug/L	0.36	5	
1,3,5-Trimethylbenzene	ND	ug/L	0.24	5	
1,3-Dichlorobenzene	ND	ug/L	0.34	5	
1,3-Dichloropropane	ND	ug/L	0.19	5	
1,4-Dichlorobenzene	ND	ug/L	0.43	5	
2,2-Dichloropropane	ND	ug/L	0.32	5	
2-Butanone (MEK)	ND	ug/L	0.78	100	
2-Chloroethyl Vinyl Ether	ND	ug/L	0.23	10	
2-Chlorotoluene	ND	ug/L	0.33	5	
4-Chlorotoluene	ND	ug/L	0.31	5	
4-Isopropyltoluene	ND	ug/L	0.32	5	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	0.12	5	
Acetone	ND	ug/L	50	100	
Acrolein	ND	ug/L	3.3	200	
Acrylonitrile	ND	ug/L	1	10	
Allyl Chloride	ND	ug/L	0.19	5	
Benzene	ND	ug/L	0.18	1	
Bromobenzene	ND	ug/L	0.53	5	
Bromochloromethane	ND	ug/L	0.17	5	
Bromodichloromethane	ND	ug/L	0.31	5	
Bromoform	ND	ug/L	0.13	5	
Bromomethane	ND	ug/L	0.68	5	
Carbon Tetrachloride	ND	ug/L	0.27	5	
Chlorobenzene	ND	ug/L	0.19	5	
Chlorodibromomethane	ND	ug/L	0.21	5	
Chloroethane	ND	ug/L	0.45	5	
Chloroform	ND	ug/L	0.18	5	
Chloromethane	ND	ug/L	0.27	5	
cis-1,2-Dichloroethene	ND	ug/L	0.27	5	
cis-1,3-dichloropropene	ND	ug/L	0.25	5	
cis-1,4-dichloro-2-butene	ND	ug/L	0.17	5	
Dibromomethane	ND	ug/L	0.23	5	
Dichlorodifluoromethane	ND	ug/L	0.33	5	
Di-isopropyl ether (DIPE)	ND	ug/L	0.2	1	
Ethylbenzene	ND	ug/L	0.21	5	
Ethyl-tertbutylether (ETBE)	ND	ug/L	0.23	1	

QCBatchID: QC1214515 **Analyst:** lucy **Method:** EPA 624

Matrix: Water **Analyzed:** 02/19/2020 **Instrument:** VOA-MS (group)

Analyte	Blank Result	Units	MDL	RDL	Notes
QC1214515MB1					
Hexachlorobutadiene	ND	ug/L	0.51	5	
Isopropylbenzene	ND	ug/L	0.24	5	
m and p-Xylene	ND	ug/L	0.45	5	
Methylene chloride	**4.2 J**	ug/L	0.16	5	
Methyl-t-butyl Ether (MTBE)	ND	ug/L	0.19	1	
Naphthalene	ND	ug/L	0.25	5	
N-butylbenzene	ND	ug/L	0.25	5	
N-propylbenzene	ND	ug/L	0.31	5	
o-Xylene	ND	ug/L	0.29	5	
Sec-butylbenzene	ND	ug/L	0.32	5	
Styrene	ND	ug/L	0.22	5	
t-Butyl alcohol (TBA)	ND	ug/L	5.2	10	
Tert-amylmethylether (TAME)	ND	ug/L	0.19	1	
Tert-butylbenzene	ND	ug/L	0.4	5	
Tetrachloroethene	ND	ug/L	0.18	5	
Toluene	ND	ug/L	0.24	5	
trans-1,2-dichloroethene	ND	ug/L	0.33	5	
trans-1,3-dichloropropene	ND	ug/L	0.23	5	
trans-1,4-dichloro-2-butene	ND	ug/L	0.17	5	
Trichloroethene	ND	ug/L	0.39	5	
Trichlorofluoromethane	ND	ug/L	0.25	5	
Vinyl Chloride	ND	ug/L	0.18	5	
Xylenes (Total)	ND	ug/L	0.45	5	

Lab Control Spike/ Lab Control Spike Duplicate Summary

Analyte	Spike Amount LCS	Spike Amount LCSD	Spike Result LCS	Spike Result LCSD	Units	Recoveries LCS	Recoveries LCSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214515LCS1											
1,1-Dichloroethene	50		49		ug/L	98			59-172		
Benzene	50		51		ug/L	102			62-137		
Chlorobenzene	50		47		ug/L	94			60-133		
Methyl-t-butyl Ether (MTBE)	50		42		ug/L	84			62-137		
Toluene	50		48		ug/L	96			59-139		
Trichloroethene	50		51		ug/L	102			66-142		

Matrix Spike/Matrix Spike Duplicate Summary

Analyte	Sample Amount	Spike Amount MS	Spike Amount MSD	Spike Result MS	Spike Result MSD	Units	Recoveries MS	Recoveries MSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214515MS1, QC1214515MSD1												**Source: 424708-008**
1,1-Dichloroethene	ND	50	50	49	47	ug/L	98	94	4.2	59-172	22	
Benzene	ND	50	50	51	49	ug/L	102	98	4.0	62-137	24	
Chlorobenzene	ND	50	50	48	46	ug/L	96	92	4.3	60-133	24	
Methyl-t-butyl Ether (MTBE)	ND	50	50	44	45	ug/L	88	90	2.2	62-137	21	
Toluene	ND	50	50	48	46	ug/L	96	92	4.3	59-139	21	
Trichloroethene	ND	50	50	51	49	ug/L	102	98	4.0	66-142	21	

QCBatchID: QC1214537 **Analyst:** trinh **Method:** EPA 351.2

Matrix: Water **Analyzed:** 02/19/2020 **Instrument:** CHEM (group)

Blank Summary

Analyte	Blank Result	Units	MDL	RDL	Notes
QC1214537MB1					
Total Kjeldahl Nitrogen	ND	mg/L	0.052	0.4	

Lab Control Spike/ Lab Control Spike Duplicate Summary

Analyte	Spike Amount LCS	Spike Amount LCSD	Spike Result LCS	Spike Result LCSD	Units	Recoveries LCS	Recoveries LCSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214537LCS1											
Total Kjeldahl Nitrogen	2.5		2.5		mg/L	100			90-110		

Matrix Spike/Matrix Spike Duplicate Summary

Analyte	Sample Amount	Spike Amount MS	Spike Amount MSD	Spike Result MS	Spike Result MSD	Units	Recoveries MS	Recoveries MSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214537MS1, QC1214537MSD1												**Source: 424815-001**
Total Kjeldahl Nitrogen	0.157	12.5	12.5	12	12	mg/L	95	95	0.0	90-110	20	

QCBatchID: QC1214538	**Analyst:** bmorris	**Method:** EPA 8015B	
Matrix: Water	**Analyzed:** 02/21/2020	**Instrument:** SVOA-GC (group)	

Blank Summary

Analyte	Blank Result	Units	MDL	RDL	Notes
QC1214538MB1					
DRO (C10 to C28)	**0.05 J**	mg/L	0.04	0.1	
ORO (C28 to C40)	ND	mg/L	0.3	0.3	
TPH (C10 to C22)	**0.05 J**	mg/L	0.04	0.1	
TPH (C22 to C36)	ND	mg/L	0.07	0.3	
TPH Diesel	**0.05 J**	mg/L	0.04	0.1	

Lab Control Spike/ Lab Control Spike Duplicate Summary

Analyte	Spike Amount LCS	Spike Amount LCSD	Spike Result LCS	Spike Result LCSD	Units	Recoveries LCS	Recoveries LCSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214538LCS1, QC1214538LCSD1											
TPH Diesel	1	1	0.76	0.78	mg/L	76	78	3	53.1-99	20	

QCBatchID: QC1214561 **Analyst:** rvenegas **Method:** EPA 200.7

Matrix: Water **Analyzed:** 02/20/2020 **Instrument:** AAICP (group)

Blank Summary

Analyte	Blank Result	Units	MDL	RDL	Notes
QC1214561MB1					
Antimony	ND	mg/L	0.014	0.04	
Arsenic	**0.013**	mg/L	0.009	0.01	B
Barium	ND	mg/L	0.002	0.01	
Beryllium	ND	mg/L	0.001	0.001	
Cadmium	ND	mg/L	0.002	0.005	
Chromium	ND	mg/L	0.002	0.01	
Cobalt	ND	mg/L	0.002	0.005	
Copper	ND	mg/L	0.008	0.01	
Iron	ND	mg/L	0.019	0.02	
Lead	ND	mg/L	0.007	0.01	
Manganese	ND	mg/L	0.006	0.01	
Molybdenum	ND	mg/L	0.007	0.01	
Nickel	ND	mg/L	0.004	0.01	
Selenium	ND	mg/L	0.025	0.03	
Silver	ND	mg/L	0.005	0.005	
Sodium %	ND	%	0.0000119	0.00005	
Thallium	ND	mg/L	0.019	0.05	
Vanadium	ND	mg/L	0.003	0.005	
Zinc	ND	mg/L	0.017	0.05	

Lab Control Spike/ Lab Control Spike Duplicate Summary

Analyte	Spike Amount LCS	Spike Amount LCSD	Spike Result LCS	Spike Result LCSD	Units	Recoveries LCS	Recoveries LCSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214561LCS1											
Antimony	2		1.91		mg/L	96			85-115		
Arsenic	2		1.95		mg/L	98			85-115		
Barium	2		2.11		mg/L	106			85-115		
Beryllium	2		2.06		mg/L	103			85-115		
Cadmium	2		2.06		mg/L	103			85-115		
Chromium	2		2.08		mg/L	104			85-115		
Cobalt	2		2.04		mg/L	102			85-115		
Copper	2		1.99		mg/L	100			85-115		
Iron	2		2.07		mg/L	104			85-115		
Lead	2		1.97		mg/L	99			85-115		
Manganese	2		2.16		mg/L	108			85-115		
Molybdenum	2		1.94		mg/L	97			85-115		
Nickel	2		2.09		mg/L	105			85-115		
Selenium	2		1.84		mg/L	92			85-115		
Silver	2		1.85		mg/L	93			85-115		
Thallium	2		1.96		mg/L	98			85-115		
Vanadium	2		2.18		mg/L	109			85-115		
Zinc	2		2.19		mg/L	110			85-115		

Matrix Spike/Matrix Spike Duplicate Summary

Analyte	Sample Amount	Spike Amount MS	Spike Amount MSD	Spike Result MS	Spike Result MSD	Units	Recoveries MS	Recoveries MSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214561MS1												**Source: 424923-001**
Antimony	0.022	1		0.916		mg/L	89			75-125		
Arsenic	ND	1		0.916		mg/L	92			75-125		
Barium	0.030	1		0.988		mg/L	96			75-125		
Beryllium	ND	1		0.932		mg/L	93			75-125		
Cadmium	ND	1		0.927		mg/L	93			75-125		

QCBatchID: QC1214561 **Analyst:** rvenegas **Method:** EPA 200.7

Matrix: Water **Analyzed:** 02/20/2020 **Instrument:** AAICP (group)

Analyte	Sample Amount	Spike Amount MS	Spike Amount MSD	Spike Result MS	Spike Result MSD	Units	Recoveries MS	Recoveries MSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214561MS1												**Source: 424923-001**
Chromium	0.021	1		0.955		mg/L	93			75-125		
Cobalt	0.008	1		0.856		mg/L	85			75-125		
Copper	0.010	1		0.922		mg/L	91			75-125		
Iron	2.14	1		3.39		mg/L	125			75-125		
Lead	ND	1		0.841		mg/L	84			75-125		
Manganese	0.560	1		1.58		mg/L	102			75-125		
Molybdenum	0.026	1		0.894		mg/L	87			75-125		
Nickel	0.033	1		0.889		mg/L	86			75-125		
Selenium	ND	1		0.847		mg/L	85			75-125		
Silver	ND	1		0.882		mg/L	88			75-125		
Thallium	ND	1		0.776		mg/L	78			75-125		
Vanadium	0.004	1		1.01		mg/L	101			75-125		
Zinc	0.025	1		0.943		mg/L	92			75-125		

QCBatchID: QC1214565 **Analyst:** rvenegas **Method:** EPA 300.0

Matrix: Water **Analyzed:** 02/20/2020 **Instrument:** AAICP (group)

Blank Summary

Analyte	Blank Result	Units	MDL	RDL	Notes
QC1214565MB1					
Bromide	ND	mg/L	0.034	0.3	
Chloride	ND	mg/L	0.086	1	
Nitrate + Nitrite, as Nitrogen	ND	mg/L	0.018	0.44	
Nitrate, as Nitrogen	ND	mg/L	0.012	0.1	
Nitrate, as NO3	ND	mg/L	0.053	0.44	
Nitrite, as Nitrogen	ND	mg/L	0.018	0.1	
Nitrite, as NO2	ND	mg/L	0.06	0.33	
Sulfate	ND	mg/L	0.077	0.5	

Lab Control Spike/ Lab Control Spike Duplicate Summary

Analyte	Spike Amount LCS	Spike Amount LCSD	Spike Result LCS	Spike Result LCSD	Units	Recoveries LCS	Recoveries LCSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214565LCS1											
Bromide	15		14.9		mg/L	99			90-110		
Chloride	100		107		mg/L	107			90-110		
Nitrate, as Nitrogen	9.03		9.23		mg/L	102			90-110		
Nitrate, as NO3	40		40.9		mg/L	102			90-110		
Nitrite, as Nitrogen	9.15		9.96		mg/L	109			90-110		
Nitrite, as NO2	30		32.7		mg/L	109			90-110		
Sulfate	50		50.6		mg/L	101			90-110		

Matrix Spike/Matrix Spike Duplicate Summary

Analyte	Sample Amount	Spike Amount MS	Spike Amount MSD	Spike Result MS	Spike Result MSD	Units	Recoveries MS	Recoveries MSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214565MS1, QC1214565MSD1												**Source: 424938-001**
Bromide	ND	15	15	15.4	15.9	mg/L	103	106	3.2	80-120	20	
Chloride	78.6	100	100	171	173	mg/L	92	94	1.2	80-120	20	
Nitrate, as Nitrogen	ND	9.03	9.03	9.49	9.78	mg/L	105	108	3.0	80-120	20	
Nitrate, as NO3	ND	40	40	42.0	43.3	mg/L	105	108	3.0	80-120	20	
Nitrite, as Nitrogen	ND	9.15	9.15	9.87	10.2	mg/L	108	111	3.3	80-120	20	
Nitrite, as NO2	ND	30	30	32.4	33.5	mg/L	108	112	3.3	80-120	20	
Sulfate	16.3	50	50	65.9	67.3	mg/L	99	102	2.1	80-120	20	
QC1214565MS2, QC1214565MSD2												**Source: 424944-004**
Bromide	ND	15	15	15.4	15.6	mg/L	103	104	1.3	80-120	20	
Chloride	177	100	100	245	246	mg/L	68	69	0.4	80-120	20	M
Nitrate, as Nitrogen	3.41	9.03	9.03	12.9	13.0	mg/L	105	106	0.8	80-120	20	
Nitrate, as NO3	15.1	40	40	56.9	57.6	mg/L	105	106	1.2	80-120	20	
Nitrite, as Nitrogen	ND	9.15	9.15	9.57	9.83	mg/L	105	107	2.7	80-120	20	
Nitrite, as NO2	ND	30	30	31.4	32.2	mg/L	105	107	2.5	80-120	20	
Sulfate	0.616	50	50	51.2	51.5	mg/L	101	102	0.6	80-120	20	

QCBatchID:	QC1214568	**Analyst:**	Echavez	**Method:**	SM 4500-H+B
Matrix:	Water	**Analyzed:**	02/20/2020	**Instrument:**	CHEM (group)

Duplicate Summary

Analyte	Sample Amount	Duplicate Amount	Units	RPD	Limits RPD	Notes
QC1214568DUP1						**Source: 424923-001**
pH	7.23	7.22	SU	0.1	20	
Temp. at Time of pH Measurement	20	20.1	°C	0.5	20	

QCBatchID: QC1214575 **Analyst:** Echavez **Method:** SM 4500-Cl

Matrix: Water **Analyzed:** 02/20/2020 **Instrument:** CHEM (group)

Blank Summary

Analyte	Blank Result	Units	MDL	RDL	Notes
QC1214575MB1					
Chlorine, Total Residual	ND	mg/L	0.016	0.1	

Lab Control Spike/ Lab Control Spike Duplicate Summary

Analyte	Spike Amount LCS	Spike Amount LCSD	Spike Result LCS	Spike Result LCSD	Units	Recoveries LCS	Recoveries LCSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214575LCS1											
Chlorine, Total Residual	1		1.03		mg/L	103			80-120		

Duplicate Summary

Analyte	Sample Amount	Duplicate Amount	Units	RPD	Limits RPD	Notes
QC1214575DUP1						**Source: 424941-002**
Chlorine, Total Residual	2.10	2.10	mg/L	0.0	20	

QCBatchID: QC1214581	**Analyst:** jbarrios	**Method:** EPA 245.1			
Matrix: Water	**Analyzed:** 02/20/2020	**Instrument:** AAICP-HG1			

Blank Summary

Analyte	Blank Result	Units	MDL	RDL	Notes
QC1214581MB1					
Mercury	ND	ug/L	0.094	0.4	

Lab Control Spike/ Lab Control Spike Duplicate Summary

Analyte	Spike Amount LCS	Spike Amount LCSD	Spike Result LCS	Spike Result LCSD	Units	Recoveries LCS	Recoveries LCSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214581LCS1											
Mercury	5		4.67		ug/L	93			80-120		

Matrix Spike/Matrix Spike Duplicate Summary

Analyte	Sample Amount	Spike Amount MS	Spike Amount MSD	Spike Result MS	Spike Result MSD	Units	Recoveries MS	Recoveries MSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214581MS1, QC1214581MSD1												**Source: 424923-001**
Mercury	ND	5	5	4.21	4.14	ug/L	84	83	1.7	75-125	20	

QCBatchID: QC1214637 **Analyst:** Echavez **Method:** SM 4500-S-D

Matrix: Water **Analyzed:** 02/20/2020 **Instrument:** CHEM (group)

Blank Summary

Analyte	Blank Result	Units	MDL	RDL	Notes
QC1214637MB1					
Dissolved Sulfide	ND	mg/L	0.1	0.1	

Lab Control Spike/ Lab Control Spike Duplicate Summary

Analyte	Spike Amount LCS	Spike Amount LCSD	Spike Result LCS	Spike Result LCSD	Units	Recoveries LCS	Recoveries LCSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214637LCS1											
Dissolved Sulfide	1		1.0		mg/L	100			80-120		

Matrix Spike/Matrix Spike Duplicate Summary

Analyte	Sample Amount	Spike Amount MS	Spike Amount MSD	Spike Result MS	Spike Result MSD	Units	Recoveries MS	Recoveries MSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214637MS1, QC1214637MSD1												**Source: 424865-001**
Dissolved Sulfide	ND	1	1	1.0	1.0	mg/L	100	100	0.0	80-120	20	

QCBatchID: QC1214641 **Analyst:** JParedes **Method:** EPA 218.6

Matrix: Water **Analyzed:** 02/24/2020 **Instrument:** CHEM (group)

Blank Summary

Analyte	Blank Result	Units	MDL	RDL	Notes
QC1214641MB1					
Hexavalent Chromium	ND	ug/L	0.112	1	

Lab Control Spike/ Lab Control Spike Duplicate Summary

Analyte	Spike Amount LCS	Spike Amount LCSD	Spike Result LCS	Spike Result LCSD	Units	Recoveries LCS	Recoveries LCSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214641LCS1											
Hexavalent Chromium	50		51.7		ug/L	103			80-120		

Matrix Spike/Matrix Spike Duplicate Summary

Analyte	Sample Amount	Spike Amount MS	Spike Amount MSD	Spike Result MS	Spike Result MSD	Units	Recoveries MS	Recoveries MSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214641MS1, QC1214641MSD1												**Source: 424923-001**
Hexavalent Chromium	0.3	50	50	53.4	52.7	ug/L	106	105	1.3	75-125	20	

QCBatchID: QC1214653 **Analyst:** npham **Method:** SM 5540-C

Matrix: Water **Analyzed:** 02/20/2020 **Instrument:** CHEM (group)

Blank Summary

Analyte	Blank Result	Units	MDL	RDL	Notes
QC1214653MB1					
MBAS	ND	mg/L	0.027	0.04	

Lab Control Spike/ Lab Control Spike Duplicate Summary

Analyte	Spike Amount LCS	Spike Amount LCSD	Spike Result LCS	Spike Result LCSD	Units	Recoveries LCS	Recoveries LCSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214653LCS1											
MBAS	1		0.99		mg/L	99			80-120		

Matrix Spike/Matrix Spike Duplicate Summary

Analyte	Sample Amount	Spike Amount MS	Spike Amount MSD	Spike Result MS	Spike Result MSD	Units	Recoveries MS	Recoveries MSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214653MS1, QC1214653MSD1												**Source: 424920-001**
MBAS	ND	1	1	1.1	1.1	mg/L	110	110	0.0	75-125	20	

QCBatchID: QC1214700	**Analyst:** trinh		**Method:** EPA 335.4		
Matrix: Water	**Analyzed:** 02/26/2020		**Instrument:** CHEM (group)		

Blank Summary

Analyte	Blank Result	Units	MDL	RDL	Notes
QC1214700MB1					
Cyanide	ND	mg/L	0.008	0.01	

Lab Control Spike/ Lab Control Spike Duplicate Summary

Analyte	Spike Amount LCS	Spike Amount LCSD	Spike Result LCS	Spike Result LCSD	Units	Recoveries LCS	Recoveries LCSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214700LCS1											
Cyanide	0.2		0.21		mg/L	105			85-115		

Matrix Spike/Matrix Spike Duplicate Summary

Analyte	Sample Amount	Spike Amount MS	Spike Amount MSD	Spike Result MS	Spike Result MSD	Units	Recoveries MS	Recoveries MSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214700MS1, QC1214700MSD1												**Source: 424917-001**
Cyanide	ND	0.2	0.2	0.26	0.26	mg/L	130	130	0.0	80-120	20	M

QCBatchID: QC1214765 **Analyst:** trinh **Method:** SM 4500-P-B-5-E

Matrix: Water **Analyzed:** 02/27/2020 **Instrument:** CHEM (group)

Blank Summary

Analyte	Blank Result	Units	MDL	RDL	Notes
QC1214765MB1					
Total Phosphorous as P	ND	mg/L	0.01	0.02	
Total Phosphorous as PO4	ND	mg/L	0.03	0.06	

Lab Control Spike/ Lab Control Spike Duplicate Summary

Analyte	Spike Amount LCS	Spike Amount LCSD	Spike Result LCS	Spike Result LCSD	Units	Recoveries LCS	Recoveries LCSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214765LCS1											
Total Phosphorous as P	0.4		0.403		mg/L	101			80-120		
Total Phosphorous as PO4	1.23		1.236		mg/L	100			80-120		

Matrix Spike/Matrix Spike Duplicate Summary

Analyte	Sample Amount	Spike Amount MS	Spike Amount MSD	Spike Result MS	Spike Result MSD	Units	Recoveries MS	Recoveries MSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214765MS1, QC1214765MSD1												**Source: 424923-001**
Total Phosphorous as P	0.041	0.4	0.4	0.435	0.436	mg/L	99	99	0.2	75-125	20	
Total Phosphorous as PO4	0.126	1.23	1.23	1.334	1.337	mg/L	98	98	0.2	75-125	20	

QCBatchID: QC1214781 **Analyst:** npham **Method:** SM 4500-F-C

Matrix: Water **Analyzed:** 02/28/2020 **Instrument:** CHEM (group)

Blank Summary

Analyte	Blank Result	Units	MDL	RDL	Notes
QC1214781MB1					
Fluoride	ND	mg/L	0.003	0.1	

Lab Control Spike/ Lab Control Spike Duplicate Summary

Analyte	Spike Amount LCS	Spike Amount LCSD	Spike Result LCS	Spike Result LCSD	Units	Recoveries LCS	Recoveries LCSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214781LCS1											
Fluoride	1		1.03		mg/L	103			80-120		

Matrix Spike/Matrix Spike Duplicate Summary

Analyte	Sample Amount	Spike Amount MS	Spike Amount MSD	Spike Result MS	Spike Result MSD	Units	Recoveries MS	Recoveries MSD	RPD	Limits %Rec	Limits RPD	Notes
QC1214781MS1, QC1214781MSD1												**Source: 424923-001**
Fluoride	0.361	1	1	1.34	1.35	mg/L	98	99	0.7	75-125	20	

Data Qualifiers and Definitions

Qualifiers

A	See Report Comments.
B	Analyte was present in an associated method blank.
B1	Analyte was present in a sample and associated method blank greater than MDL but less than RDL.
BQ1	No valid test replicates. Sample Toxicity is possible. Best result was reported.
BQ2	No valid test replicates.
BQ3	No valid test replicates. Final DO is less than 1.0 mg/L. Result may be greater.
BQ4	Minor Dissolved Oxygen loss was observed in the blank water check, however, the LCS was within criteria, validating the batch.
BQ5	Minor Dissolved Oxygen loss was observed in the blank water check.
C	Possible laboratory contamination.
D	RPD was not within control limits. The sample data was reported without further clarification.
D1	Lesser amount of sample was used due to insufficient amount of sample supplied.
D2	Reporting limit is elevated due to sample matrix. Target analyte was not detected above the elevated reporting limit.
D3	Insufficient sample was supplied for TCLP. Client was notified. TCLP was performed per the Client's instructions.
DW	Sample result is calculated on a dry weigh basis.
E	Concentration is estimated because it exceeds the quantification limits of the method.
I	The sample was read outside of the method required incubation period.
IR	Inconclusive Result. Legionella is present, however, there is possible non-specific agglutination preventing specific identification.
J	Reported value is estimated
L	The laboratory control sample (LCS) or laboratory control sample duplicate (LCSD) was out of control limits. Associated sample data was reported with qualifier.
L2	LCS did not meet recovery criteria, however, the MS and/or MSD met LCS recovery criteria, validating the batch.
M	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits due to matrix interference. The associated LCS and/or LCSD was within control limits and the sample data was reported without further clarification.
M1	The matrix spike (MS) or matrix spike duplicate (MSD) is not within control limits due to matrix interference.
M2	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits. The associated LCS and/or LCSD was not within control limits. Sample result is estimated.
N1	Sample chromatography does not match the specified TPH standard pattern.
NC	The analyte concentration in the sample exceeded the spike level by a factor of four or greater, spike recovery and limits do not apply.
P	Sample was received without proper preservation according to EPA guidelines.
P1	Temperature of sample storage refrigerator was out of acceptance limits.
P2	The sample was preserved within 24 hours of collection in accordance with EPA 218.6.
P3	Per Client request, sample was composited for volatile analysis. Sample compositing for volatile analysis is not recommended due to potential loss of target analytes. Results may be biased low.
Q1	Analyte Calibration Verification exceeds criteria. The result is estimated.
Q2	Analyte calibration was not verified and the result was estimated.
Q3	Analyte initial calibration was not available or exceeds criteria. The result was estimated.
S	The surrogate recovery was out of control limits due to matrix interference. The associated method blank surrogate recovery was within control limits and the sample data was reported without further clarification.
S1	The associated surrogate recovery was out of control limits; result is estimated.
S2	The surrogate was diluted out due to the presence of high concentrations of target and/or non-target compounds. Surrogate recoveries in the associated batch QC met recovery criteria.
S3	Internal Standard did not meet recovery limits. Analyte concentration is estimated.
T	Sample was extracted/analyzed past the holding time.
T1	Reanalysis was reported past hold time due to failing replicates in the original analysis (BOD only).
T2	Sample was analyzed ASAP but received and analyzed past the 15 minute holding time.
T3	Sample received and analyzed out of hold time per client's request.
T4	Sample was analyzed out of hold time per client's request.
T5	Reanalysis was reported past hold time. The original analysis was within hold time, but not reportable.
T6	Hold time is indeterminable due to unspecified sampling time.
T7	Sample was analyzed past hold time due to insufficient time remaining at time of receipt.

Definitions

DF	Dilution Factor
MDL	Method Detection Limit. Result is reported ND when it is less than or equal to MDL.
ND	Analyte was not detected or was less than the detection limit.
NR	Not Reported. See Report Comments.
RDL	Reporting Detection Limit
TIC	Tentatively Identified Compounds

ENTHALPHY ANALYTICAL, INC.	Chain of Custody Record	Turn Around Time (Rush by advanced notice only)
931 W. Barkley Ave., Orange, CA 92868	Lab No:	Standard: x / 4 Day: / 3 Day:
Phone: (714) 771-6900 Fax: (714) 538-1209	Page: 1 of 2	2 Day: / 1 Day: / Same Day:
Billing: Enthalpy - SoCal c/o Montrose Environmental Group 1 Park Plaza, Suite 1000, Irvine, CA 92614	**Matrix:** A = Air DW = Drinking Water FL = Food Liquid FS = Food Solid L = Liquid PP = Pure Product S = Solid SeaW = Sea Water SW = Swab W = Water WP = Wipe O = Other	**Preservatives:** 1 = $Na_2S_2O_3$ 2 = HCl 3 = HNO_3 4 = H_2SO_4 5 = NaOH 6 = Other

CUSTOMER INFORMATION		PROJECT INFORMATION	
Company:	Ninyo and Moore	Name:	AKM/SCWD/LIFT STATION NO.2
Report To:	Jennifer Schmidt	Number:	209638002
Email:	jschmidt@ninyoandmoore.com	P.O. #:	
Address:	475 Goddard, Suite 200	Address:	31104 Pacific Coast Hwy.
	Irvine, CA 92618		Laguna Beach, CA 92651
Phone:	(949)673-7070	Global ID:	
Cell:		Sampled By:	Garrett Mottle/Linda Ton

Sample ID	Sampling Date	Sampling Time	Matrix	Container No. / Size	Pres.	SM 4500-S-H (Hydrogen Sulfide)	SM 4500-Cl (Total Residual Chlorine)	SM 5540C (MBAS)	EPA 624 LL (VOCs + OXYs)	EPA 608 LL (OC Pesticides & PCBs)	EPA 625 LL (SVOCs)	EPA 1613 (Dioxins/Furans)	EPA 8015B (TPH-g)	EPA 8015B (TPH-d/o)	EPA 200.7 (% Sodium)	Test Instructions / Comments
MW-2	2/19/2020	9:22	W	29	various	X	X	X	X	X	X	X	X	X	X	See attached for analysis

	Signature	Print Name	Company / Title	Date / Time
[1] Relinquished By:		Garrett Mottle	Ninyo & Moore	2/19/2020 11:37
[1] Received By:		Christine C.	EA	2/19/2020 1137
[2] Relinquished By:				
[2] Received By:				
[3] Relinquished By:				
[3] Received By:				

10.3/1.6 11.5/10.5

ENTHALPHY ANALYTICAL, INC.	Chain of Custody Record	Turn Around Time (Rush by advanced notice only)
931 W. Barkley Ave., Orange, CA 92868	Lab No:	Standard: x / 4 Day: / 3 Day:
Phone: (714) 771-6900 Fax: (714) 538-1209	Page: 2 of 2	2 Day: / 1 Day: / Same Day:
Billing: Enthalpy - SoCal c/o Montrose Environmental Group 1 Park Plaza, Suite 1000, Irvine, CA 92614	**Matrix:** A = Air DW = Drinking Water FL = Food Liquid FS = Food Solid L = Liquid PP = Pure Product S = Solid SeaW = Sea Water SW = Swab W = Water WP = Wipe O = Other	**Preservatives:** 1 = $Na_2S_2O_3$ 2 = HCl 3 = HNO_3 4 = H_2SO_4 5 = NaOH 6 = Other

CUSTOMER INFORMATION		PROJECT INFORMATION	
Company:	Ninyo and Moore	Name:	AKM/SCWD/LIFT STATION NO.2
Report To:	Jennifer Schmidt	Number:	209638002
Email:	jschmidt@ninyoandmoore.com	P.O. #:	
Address:	475 Goddard, Suite 200	Address:	31104 Pacific Coast Hwy.
	Irvine, CA 92618		Laguna Beach, CA 92651
Phone:	(949)673-7070	Global ID:	
Cell:		Sampled By:	Garrett Mottle/Linda Ton

Sample ID	Sampling Date	Sampling Time	Matrix	Container No. / Size	Pres.	Total Nitrogen (TKN, Nitrate, Nitrite)	SM 4500-P-B-E (Total Phosphorus)	SM 4500-F-C (Flouride)	SM 4500-O-G (Dissolved Oxygen)	SM 9221B, E (Total/Fecal Coliform)	EPA 200.7/245.1 (Title 22 Metals)	EPA 335.4 (Cyanide)	EPA 218.6 (Hexavalent Chromium)			Test Instructions / Comments
MW-2	2/19/2020	9:22	W	29	various	X	X	X	X	X	X	X	X			See attached For Analysis

	Signature	Print Name	Company / Title	Date / Time
[1] Relinquished By:		Garrett Mottle	Ninyo & Moore	2/19/2020 11:38
[1] Received By:		Christine C.	EA	2/19/2020 1136
[2] Relinquished By:				
[2] Received By:				
[3] Relinquished By:				
[3] Received By:				

ENTHALPY ANALYTICAL

SAMPLE ACCEPTANCE CHECKLIST

Section 1

Client: Ninyo & Moore

Project: AKM/SCWD/Lift Station No. 2

Date Received: 2/19/2020

Sampler's Name Present: ☑ Yes ☐ No

Section 2

Sample(s) received in a cooler? ☑ Yes, How many? 2 ☐ No (skip section 2)

Sample Temp (°C) (No Cooler): _____

Sample Temp (°C), One from each cooler: #1: 6.3 #2: 11.5 #3: _____ #4: _____

(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)

Shipping Information: _____

Section 3

Was the cooler packed with: ☑ Ice ☐ Ice Packs ☐ Bubble Wrap ☐ Styrofoam ☐ Paper ☐ None ☐ Other _____

Cooler Temp (°C): #1: 1.0 #2: 6.5 #3: _____ #4: _____

Section 4	YES	NO	N/A
Was a COC received?	✓		
Are sample IDs present?	✓		
Are sampling dates & times present?	✓		
Is a relinquished signature present?	✓		
Are the tests required clearly indicated on the COC?	✓		
Are custody seals present?		✓	
If custody seals are present, were they intact?			✓
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)			✓
Did all samples arrive intact? If no, indicate in Section 4 below.	✓		
Did all bottle labels agree with COC? (ID, dates and times)	✓		
Were the samples collected in the correct containers for the required tests?	✓		
Are the containers labeled with the correct preservatives?	✓		
Is there headspace in the VOA vials greater than 5-6 mm in diameter?		✓	
Was a sufficient amount of sample submitted for the requested tests?	✓		

Section 5 Explanations/Comments

Section 6

For discrepancies, how was the Project Manager notified? ☐ Verbal PM Initials: _____ Date/Time _____

☐ Email (email sent to/on): _____ / _____

Project Manager's response:

Completed By: _____ Date: 2/19/2020

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 2002785

Report Created for: Enthalpy Analytical

1108 West Barkley Avenue
Orange, CA 92868

Project Contact: Ranjit Clarke
Project P.O.: 1047355
Project: 424923

Project Received: 02/20/2020

Analytical Report reviewed & approved for release on 02/27/2020 by:

Yen Cao
Project Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

McCampbell Analytical, Inc.
"When Quality Counts"

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: Enthalpy Analytical
Project: 424923
WorkOrder: 2002785

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
LQL	Lowest Quantitation Level
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
TZA	TimeZone Net Adjustment for sample collected outside of MAI's UTC.
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Glossary of Terms & Qualifier Definitions

Client: Enthalpy Analytical
Project: 424923
WorkOrder: 2002785

Analytical Qualifiers

J	Result is less than the RL/ML but greater than the MDL. The reported concentration is an estimated value.
P	Agreement between quantitative confirmation results exceed method recommended limits.

Quality Control Qualifiers

F2	LCS/LCSD recovery and/or RPD/RSD is out of acceptance criteria.

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Analytical Report

Client:	Enthalpy Analytical	**WorkOrder:**	2002785
Date Received:	02/20/2020 9:12	**Extraction Method:**	E608.3/SW3620B
Date Prepared:	02/24/2020	**Analytical Method:**	E608.3
Project:	424923	**Unit:**	µg/L

Organochlorine Pesticides &/or PCBs (Low-Level) w/ Florisil Clean-up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-2 (424923-001)	2002785-001A	Water	02/19/2020 09:22	GC20 02252031.D	194457

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aldrin	ND		0.00028	0.0010	1	02/26/2020 01:16
a-BHC	ND		0.00031	0.0010	1	02/26/2020 01:16
b-BHC	ND		0.00069	0.0010	1	02/26/2020 01:16
d-BHC	ND		0.00014	0.0010	1	02/26/2020 01:16
g-BHC	ND		0.00045	0.0010	1	02/26/2020 01:16
Chlordane (Technical)	ND		0.0023	0.020	1	02/26/2020 01:16
a-Chlordane	ND		0.00085	0.0010	1	02/26/2020 01:16
g-Chlordane	ND		0.00015	0.0010	1	02/26/2020 01:16
p,p-DDD	**0.00021**	JP	0.00011	0.0010	1	02/26/2020 01:16
p,p-DDE	ND		0.00018	0.0010	1	02/26/2020 01:16
p,p-DDT	**0.00022**	JP	0.00017	0.0010	1	02/26/2020 01:16
Dieldrin	ND		0.00014	0.0010	1	02/26/2020 01:16
Endosulfan I	ND		0.00011	0.0010	1	02/26/2020 01:16
Endosulfan II	ND		0.00046	0.0010	1	02/26/2020 01:16
Endosulfan sulfate	ND		0.00033	0.0020	1	02/26/2020 01:16
Endrin	ND		0.00018	0.0010	1	02/26/2020 01:16
Endrin aldehyde	ND		0.00053	0.0010	1	02/26/2020 01:16
Endrin ketone	ND		0.00026	0.0010	1	02/26/2020 01:16
Heptachlor	ND		0.00041	0.0010	1	02/26/2020 01:16
Heptachlor epoxide	ND		0.00025	0.0010	1	02/26/2020 01:16
Methoxychlor	ND		0.00012	0.0010	1	02/26/2020 01:16
Toxaphene	ND		0.0020	0.020	1	02/26/2020 01:16
Aroclor1016	ND		0.0019	0.020	1	02/26/2020 01:16
Aroclor1221	ND		0.0024	0.020	1	02/26/2020 01:16
Aroclor1232	ND		0.0038	0.020	1	02/26/2020 01:16
Aroclor1242	ND		0.0028	0.020	1	02/26/2020 01:16
Aroclor1248	ND		0.0018	0.020	1	02/26/2020 01:16
Aroclor1254	ND		0.0015	0.020	1	02/26/2020 01:16
Aroclor1260	ND		0.0028	0.020	1	02/26/2020 01:16
PCBs, total	ND		N/A	0.020	1	02/26/2020 01:16

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	99	14-168	02/26/2020 01:16

Analyst(s): CK

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Analytical Report

Client:	Enthalpy Analytical	**WorkOrder:**	2002785
Date Received:	02/20/2020 9:12	**Extraction Method:**	E625.1/SW3640Am
Date Prepared:	02/24/2020	**Analytical Method:**	E625.1
Project:	424923	**Unit:**	µg/L

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-2 (424923-001)	2002785-001B	Water	02/19/2020 09:22	GC17 02242029.D	194516

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Acenaphthene	ND		0.0044	0.0097	1	02/24/2020 21:54
Acenaphthylene	ND		0.0039	0.0097	1	02/24/2020 21:54
Anthracene	ND		0.0032	0.0097	1	02/24/2020 21:54
Benzidine	ND		0.68	4.9	1	02/24/2020 21:54
Benzo (a) anthracene	ND		0.018	0.019	1	02/24/2020 21:54
Benzo (a) pyrene	ND		0.0042	0.0097	1	02/24/2020 21:54
Benzo (b) fluoranthene	ND		0.0037	0.024	1	02/24/2020 21:54
Benzo (g,h,i) perylene	ND		0.0018	0.019	1	02/24/2020 21:54
Benzo (k) fluoranthene	ND		0.0056	0.0097	1	02/24/2020 21:54
Benzyl Alcohol	ND		3.7	4.9	1	02/24/2020 21:54
Bis (2-chloroethoxy) Methane	ND		0.69	0.97	1	02/24/2020 21:54
Bis (2-chloroethyl) Ether	ND		0.0018	0.0049	1	02/24/2020 21:54
Bis (2-chloroisopropyl) Ether	ND		0.0051	0.0097	1	02/24/2020 21:54
Bis (2-ethylhexyl) Adipate	ND		2.8	2.9	1	02/24/2020 21:54
Bis (2-ethylhexyl) Phthalate	**0.26**		0.038	0.097	1	02/24/2020 21:54
4-Bromophenyl Phenyl Ether	ND		0.51	0.97	1	02/24/2020 21:54
Butylbenzyl Phthalate	ND		0.029	0.049	1	02/24/2020 21:54
4-Chloroaniline	ND		0.012	0.019	1	02/24/2020 21:54
4-Chloro-3-methylphenol	ND		0.24	0.97	1	02/24/2020 21:54
2-Chloronaphthalene	ND		0.38	0.97	1	02/24/2020 21:54
2-Chlorophenol	ND		0.011	0.019	1	02/24/2020 21:54
4-Chlorophenyl Phenyl Ether	ND		0.18	0.97	1	02/24/2020 21:54
Chrysene	ND		0.0034	0.0097	1	02/24/2020 21:54
Dibenzo (a,h) anthracene	ND		0.0052	0.0097	1	02/24/2020 21:54
Dibenzofuran	ND		0.37	0.97	1	02/24/2020 21:54
Di-n-butyl Phthalate	**0.060**		0.018	0.019	1	02/24/2020 21:54
1,2-Dichlorobenzene	ND		0.16	1.9	1	02/24/2020 21:54
1,3-Dichlorobenzene	ND		0.11	1.9	1	02/24/2020 21:54
1,4-Dichlorobenzene	ND		0.11	1.9	1	02/24/2020 21:54
3,3-Dichlorobenzidine	ND		0.012	0.019	1	02/24/2020 21:54
2,4-Dichlorophenol	ND		0.0060	0.0097	1	02/24/2020 21:54
Diethyl Phthalate	**0.017**	J	0.012	0.019	1	02/24/2020 21:54
2,4-Dimethylphenol	ND		0.51	0.97	1	02/24/2020 21:54
Dimethyl Phthalate	ND		0.011	0.019	1	02/24/2020 21:54
4,6-Dinitro-2-methylphenol	ND		3.0	4.9	1	02/24/2020 21:54
2,4-Dinitrophenol	ND		0.17	0.49	1	02/24/2020 21:54
2,4-Dinitrotoluene	ND		0.0042	0.024	1	02/24/2020 21:54

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Analytical Report

Client:	Enthalpy Analytical	**WorkOrder:**	2002785
Date Received:	02/20/2020 9:12	**Extraction Method:**	E625.1/SW3640Am
Date Prepared:	02/24/2020	**Analytical Method:**	E625.1
Project:	424923	**Unit:**	µg/L

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-2 (424923-001)	2002785-001B	Water	02/19/2020 09:22	GC17 02242029.D	194516

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
2,6-Dinitrotoluene	ND		0.0089	0.0097	1	02/24/2020 21:54
Di-n-octyl Phthalate	ND		0.013	0.12	1	02/24/2020 21:54
1,2-Diphenylhydrazine	ND		0.11	0.97	1	02/24/2020 21:54
Fluoranthene	**0.0051**	J	0.0041	0.0097	1	02/24/2020 21:54
Fluorene	**0.0052**	J	0.0049	0.0097	1	02/24/2020 21:54
Hexachlorobenzene	ND		0.0047	0.0049	1	02/24/2020 21:54
Hexachlorobutadiene	ND		0.0060	0.0097	1	02/24/2020 21:54
Hexachlorocyclopentadiene	ND		0.63	4.9	1	02/24/2020 21:54
Hexachloroethane	ND		0.0058	0.0097	1	02/24/2020 21:54
Indeno (1,2,3-cd) pyrene	ND		0.0032	0.019	1	02/24/2020 21:54
Isophorone	ND		0.53	0.97	1	02/24/2020 21:54
2-Methylnaphthalene	**0.017**		0.0059	0.0097	1	02/24/2020 21:54
2-Methylphenol (o-Cresol)	ND		0.46	0.97	1	02/24/2020 21:54
3 & 4-Methylphenol (m,p-Cresol)	ND		0.27	0.97	1	02/24/2020 21:54
Naphthalene	**0.025**		0.0054	0.0097	1	02/24/2020 21:54
2-Nitroaniline	ND		1.4	4.9	1	02/24/2020 21:54
3-Nitroaniline	ND		3.3	4.9	1	02/24/2020 21:54
4-Nitroaniline	ND		4.3	4.9	1	02/24/2020 21:54
Nitrobenzene	ND		0.86	0.97	1	02/24/2020 21:54
2-Nitrophenol	ND		3.2	4.9	1	02/24/2020 21:54
4-Nitrophenol	ND		0.61	4.9	1	02/24/2020 21:54
N-Nitrosodiphenylamine	ND		0.29	0.97	1	02/24/2020 21:54
N-Nitrosodi-n-propylamine	ND		0.83	0.97	1	02/24/2020 21:54
Pentachlorophenol	ND		0.11	0.24	1	02/24/2020 21:54
Phenanthrene	**0.015**	J	0.0039	0.019	1	02/24/2020 21:54
Phenol	**0.050**		0.0066	0.019	1	02/24/2020 21:54
Pyrene	ND		0.0042	0.019	1	02/24/2020 21:54
Pyridine	ND		0.52	0.97	1	02/24/2020 21:54
1,2,4-Trichlorobenzene	ND		0.088	0.97	1	02/24/2020 21:54
2,4,5-Trichlorophenol	ND		0.0050	0.049	1	02/24/2020 21:54
2,4,6-Trichlorophenol	ND		0.0047	0.049	1	02/24/2020 21:54
N-Nitrosodimethylamine	ND		3.4	4.9	1	02/24/2020 21:54

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Analytical Report

Client:	Enthalpy Analytical	**WorkOrder:**	2002785
Date Received:	02/20/2020 9:12	**Extraction Method:**	E625.1/SW3640Am
Date Prepared:	02/24/2020	**Analytical Method:**	E625.1
Project:	424923	**Unit:**	µg/L

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
MW-2 (424923-001)	**2002785-001B**	**Water**	**02/19/2020 09:22**	**GC17 02242029.D**	**194516**

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Surrogates	**REC (%)**			**Limits**		
2-Fluorophenol	52			8-130		02/24/2020 21:54
Phenol-d5	39			5-130		02/24/2020 21:54
Nitrobenzene-d5	80			20-140		02/24/2020 21:54
2-Fluorobiphenyl	75			40-140		02/24/2020 21:54
2,4,6-Tribromophenol	80			16-180		02/24/2020 21:54
Terphenyl-d14	56			40-170		02/24/2020 21:54

Analyst(s): REB

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Quality Control Report

Client:	Enthalpy Analytical	**WorkOrder:**	2002785
Date Prepared:	02/24/2020	**BatchID:**	194457
Date Analyzed:	02/26/2020	**Extraction Method:**	E608.3/SW3620B
Instrument:	GC20	**Analytical Method:**	E608.3
Matrix:	Water	**Unit:**	µg/L
Project:	424923	**Sample ID:**	MB/LCS/LCSD-194457

QC Summary Report for E608.3

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Aldrin	ND	0.000280	0.00100	-	-	-
a-BHC	ND	0.000310	0.00100	-	-	-
b-BHC	ND	0.000690	0.00100	-	-	-
d-BHC	ND	0.000140	0.00100	-	-	-
g-BHC	ND	0.000450	0.00100	-	-	-
a-Chlordane	ND	0.000850	0.00100	-	-	-
g-Chlordane	ND	0.000150	0.00100	-	-	-
p,p-DDD	ND	0.000110	0.00100	-	-	-
p,p-DDE	ND	0.000180	0.00100	-	-	-
p,p-DDT	ND	0.000170	0.00100	-	-	-
Dieldrin	ND	0.000140	0.00100	-	-	-
Endosulfan I	ND	0.000110	0.00100	-	-	-
Endosulfan II	ND	0.000460	0.00100	-	-	-
Endosulfan sulfate	ND	0.000330	0.00200	-	-	-
Endrin	ND	0.000180	0.00100	-	-	-
Endrin aldehyde	ND	0.000530	0.00100	-	-	-
Endrin ketone	ND	0.000260	0.00100	-	-	-
Heptachlor	ND	0.000410	0.00100	-	-	-
Heptachlor epoxide	ND	0.000250	0.00100	-	-	-
Methoxychlor	ND	0.000120	0.00100	-	-	-
Toxaphene	ND	0.00200	0.0200	-	-	-
Aroclor1016	ND	0.00190	0.0200	-	-	-
Aroclor1221	ND	0.00240	0.0200	-	-	-
Aroclor1232	ND	0.00380	0.0200	-	-	-
Aroclor1242	ND	0.00280	0.0200	-	-	-
Aroclor1248	ND	0.00180	0.0200	-	-	-
Aroclor1254	ND	0.00150	0.0200	-	-	-
Aroclor1260	ND	0.00280	0.0200	-	-	-
Surrogate Recovery						
Decachlorobiphenyl	0.0400			0.05	80	35-113

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Quality Control Report

Client:	Enthalpy Analytical	**WorkOrder:**	2002785
Date Prepared:	02/24/2020	**BatchID:**	194457
Date Analyzed:	02/26/2020	**Extraction Method:**	E608.3/SW3620B
Instrument:	GC20	**Analytical Method:**	E608.3
Matrix:	Water	**Unit:**	µg/L
Project:	424923	**Sample ID:**	MB/LCS/LCSD-194457

QC Summary Report for E608.3

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Aldrin	0.0468	0.0488	0.050	94	98	50-103	4.18	20
a-BHC	0.0488	0.0500	0.050	98	100	63-131	2.44	20
b-BHC	0.0437	0.0457	0.050	87	91	56-112	4.49	20
d-BHC	0.0493	0.0515	0.050	99	103	63-132	4.44	20
g-BHC	0.0479	0.0504	0.050	96	101	61-135	4.96	20
a-Chlordane	0.0447	0.0473	0.050	89	95	54-113	5.60	20
g-Chlordane	0.0502	0.0528	0.050	100	106	55-117	5.15	20
p,p-DDD	0.0449	0.0487	0.050	90	97	56-135	8.02	20
p,p-DDE	0.0478	0.0511	0.050	96	102	56-131	6.69	20
p,p-DDT	0.0436	0.0496	0.050	87	99	47-153	12.9	20
Dieldrin	0.0497	0.0525	0.050	99	105	67-152	5.59	20
Endosulfan I	0.0471	0.0497	0.050	94	99	56-137	5.35	20
Endosulfan II	0.0466	0.0496	0.050	93	99	50-113	6.07	20
Endosulfan sulfate	0.0398	0.0435	0.050	80	87	57-121	8.86	20
Endrin	0.0439	0.0480	0.050	88	96	60-150	9.04	20
Endrin aldehyde	0.0409	0.0437	0.050	82	87	47-121	6.62	20
Endrin ketone	0.0404	0.0444	0.050	81	89	48-130	9.35	20
Heptachlor	0.0432	0.0467	0.050	86	93	46-133	7.93	20
Heptachlor epoxide	0.0439	0.0462	0.050	88	92	54-105	4.89	20
Methoxychlor	0.0378	0.0430	0.050	76	86	54-135	12.6	20
Aroclor1016	0.141	0.142	0.15	94	95	50-114	0.703	20
Aroclor1260	0.141	0.142	0.15	94	95	42-121	1.09	20
Surrogate Recovery								
Decachlorobiphenyl	0.0402	0.0438	0.050	80	88	35-113	8.57	20

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Quality Control Report

Client:	Enthalpy Analytical	**WorkOrder:**	2002785
Date Prepared:	02/24/2020	**BatchID:**	194516
Date Analyzed:	02/24/2020	**Extraction Method:**	E625.1/SW3640Am
Instrument:	GC17	**Analytical Method:**	E625.1
Matrix:	Water	**Unit:**	µg/L
Project:	424923	**Sample ID:**	MB/LCS/LCSD-194516

QC Summary Report for E625.1

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Acenaphthene	ND	0.00450	0.0100	-	-	-
Acenaphthylene	ND	0.00400	0.0100	-	-	-
Anthracene	ND	0.00330	0.0100	-	-	-
Benzidine	ND	0.700	5.00	-	-	-
Benzo (a) anthracene	ND	0.0180	0.0200	-	-	-
Benzo (a) pyrene	ND	0.00430	0.0100	-	-	-
Benzo (b) fluoranthene	ND	0.00380	0.0250	-	-	-
Benzo (g,h,i) perylene	0.00230,J	0.00190	0.0200	-	-	-
Benzo (k) fluoranthene	ND	0.00580	0.0100	-	-	-
Benzyl Alcohol	ND	3.80	5.00	-	-	-
Bis (2-chloroethoxy) Methane	ND	0.710	1.00	-	-	-
Bis (2-chloroethyl) Ether	ND	0.00190	0.00500	-	-	-
Bis (2-chloroisopropyl) Ether	ND	0.00520	0.0100	-	-	-
Bis (2-ethylhexyl) Adipate	ND	2.90	3.00	-	-	-
Bis (2-ethylhexyl) Phthalate	ND	0.0390	0.100	-	-	-
4-Bromophenyl Phenyl Ether	ND	0.520	1.00	-	-	-
Butylbenzyl Phthalate	ND	0.0300	0.0500	-	-	-
4-Chloroaniline	ND	0.0120	0.0200	-	-	-
4-Chloro-3-methylphenol	ND	0.250	1.00	-	-	-
2-Chloronaphthalene	ND	0.390	1.00	-	-	-
2-Chlorophenol	ND	0.0110	0.0200	-	-	-
4-Chlorophenyl Phenyl Ether	ND	0.190	1.00	-	-	-
Chrysene	ND	0.00350	0.0100	-	-	-
Dibenzo (a,h) anthracene	ND	0.00530	0.0100	-	-	-
Dibenzofuran	ND	0.380	1.00	-	-	-
Di-n-butyl Phthalate	ND	0.0180	0.0200	-	-	-
1,2-Dichlorobenzene	ND	0.160	2.00	-	-	-
1,3-Dichlorobenzene	ND	0.110	2.00	-	-	-
1,4-Dichlorobenzene	ND	0.110	2.00	-	-	-
3,3-Dichlorobenzidine	ND	0.0120	0.0200	-	-	-
2,4-Dichlorophenol	ND	0.00620	0.0100	-	-	-
Diethyl Phthalate	ND	0.0120	0.0200	-	-	-
2,4-Dimethylphenol	ND	0.520	1.00	-	-	-
Dimethyl Phthalate	ND	0.0110	0.0200	-	-	-
4,6-Dinitro-2-methylphenol	ND	3.10	5.00	-	-	-
2,4-Dinitrophenol	ND	0.170	0.500	-	-	-
2,4-Dinitrotoluene	ND	0.00430	0.0250	-	-	-
2,6-Dinitrotoluene	ND	0.00910	0.0100	-	-	-

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Quality Control Report

Client:	Enthalpy Analytical	**WorkOrder:**	2002785
Date Prepared:	02/24/2020	**BatchID:**	194516
Date Analyzed:	02/24/2020	**Extraction Method:**	E625.1/SW3640Am
Instrument:	GC17	**Analytical Method:**	E625.1
Matrix:	Water	**Unit:**	µg/L
Project:	424923	**Sample ID:**	MB/LCS/LCSD-194516

QC Summary Report for E625.1

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Di-n-octyl Phthalate	ND	0.0130	0.120	-	-	-
1,2-Diphenylhydrazine	ND	0.110	1.00	-	-	-
Fluoranthene	ND	0.00420	0.0100	-	-	-
Fluorene	ND	0.00500	0.0100	-	-	-
Hexachlorobenzene	ND	0.00480	0.00500	-	-	-
Hexachlorobutadiene	ND	0.00620	0.0100	-	-	-
Hexachlorocyclopentadiene	ND	0.650	5.00	-	-	-
Hexachloroethane	ND	0.00600	0.0100	-	-	-
Indeno (1,2,3-cd) pyrene	ND	0.00330	0.0200	-	-	-
Isophorone	ND	0.540	1.00	-	-	-
2-Methylnaphthalene	ND	0.00610	0.0100	-	-	-
2-Methylphenol (o-Cresol)	ND	0.470	1.00	-	-	-
3 & 4-Methylphenol (m,p-Cresol)	ND	0.280	1.00	-	-	-
Naphthalene	ND	0.00560	0.0100	-	-	-
2-Nitroaniline	ND	1.40	5.00	-	-	-
3-Nitroaniline	ND	3.40	5.00	-	-	-
4-Nitroaniline	ND	4.40	5.00	-	-	-
Nitrobenzene	ND	0.880	1.00	-	-	-
2-Nitrophenol	ND	3.30	5.00	-	-	-
4-Nitrophenol	ND	0.630	5.00	-	-	-
N-Nitrosodiphenylamine	ND	0.300	1.00	-	-	-
N-Nitrosodi-n-propylamine	ND	0.850	1.00	-	-	-
Pentachlorophenol	ND	0.110	0.250	-	-	-
Phenanthrene	ND	0.00400	0.0200	-	-	-
Phenol	ND	0.00680	0.0200	-	-	-
Pyrene	ND	0.00430	0.0200	-	-	-
Pyridine	ND	0.530	1.00	-	-	-
1,2,4-Trichlorobenzene	ND	0.0900	1.00	-	-	-
2,4,5-Trichlorophenol	ND	0.00510	0.0500	-	-	-
2,4,6-Trichlorophenol	ND	0.00480	0.0500	-	-	-
N-Nitrosodimethylamine	ND	3.50	5.00	-	-	-

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Quality Control Report

Client:	Enthalpy Analytical	**WorkOrder:**	2002785
Date Prepared:	02/24/2020	**BatchID:**	194516
Date Analyzed:	02/24/2020	**Extraction Method:**	E625.1/SW3640Am
Instrument:	GC17	**Analytical Method:**	E625.1
Matrix:	Water	**Unit:**	µg/L
Project:	424923	**Sample ID:**	MB/LCS/LCSD-194516

QC Summary Report for E625.1

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Surrogate Recovery						
2-Fluorophenol	4.95			5	99	8-130
Phenol-d5	5.10			5	102	5-130
Nitrobenzene-d5	4.66			5	93	20-140
2-Fluorobiphenyl	4.52			5	90	40-140
2,4,6-Tribromophenol	4.39			5	88	16-180
Terphenyl-d14	3.02			5	60	40-170

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Quality Control Report

Client:	Enthalpy Analytical	**WorkOrder:**	2002785
Date Prepared:	02/24/2020	**BatchID:**	194516
Date Analyzed:	02/24/2020	**Extraction Method:**	E625.1/SW3640Am
Instrument:	GC17	**Analytical Method:**	E625.1
Matrix:	Water	**Unit:**	µg/L
Project:	424923	**Sample ID:**	MB/LCS/LCSD-194516

QC Summary Report for E625.1

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Acenaphthene	0.499	0.497	0.50	100	99	27-117	0.447	25
Acenaphthylene	0.370	0.368	0.50	74	74	18-128	0.565	25
Anthracene	0.534	0.525	0.50	107	105	31-126	1.73	25
Benzidine	43.1	41.3	50	86	83	14-115	4.34	25
Benzo (a) anthracene	0.412	0.398	0.50	82	80	27-129	3.46	25
Benzo (a) pyrene	0.422	0.420	0.50	84	84	10-161	0.508	25
Benzo (b) fluoranthene	0.349	0.367	0.50	70	73	24-140	5.06	25
Benzo (g,h,i) perylene	0.445	0.438	0.50	89	88	2-155	1.78	25
Benzo (k) fluoranthene	0.441	0.423	0.50	88	85	2-168	4.09	25
Benzyl Alcohol	46.3	45.2	50	93	90	22-114	2.47	25
Bis (2-chloroethoxy) Methane	9.37	9.86	10	94	99	28-109	5.18	25
Bis (2-chloroethyl) Ether	0.385	0.392	0.50	77	78	24-105	1.81	25
Bis (2-chloroisopropyl) Ether	0.423	0.400	0.50	85	80	21-106	5.56	25
Bis (2-ethylhexyl) Adipate	9.63	8.58	10	96	86	13-143	11.5	25
Bis (2-ethylhexyl) Phthalate	0.450	0.414	0.50	90	83	7-156	8.29	25
4-Bromophenyl Phenyl Ether	9.32	9.36	10	93	94	31-121	0.360	25
Butylbenzyl Phthalate	0.432	0.398	0.50	86	80	20-146	7.96	25
4-Chloroaniline	0.511	0.538	0.50	102	108	15-122	5.05	25
4-Chloro-3-methylphenol	10.2	10.3	10	102	103	29-125	1.20	25
2-Chloronaphthalene	9.69	9.71	10	97	97	27-113	0.163	25
2-Chlorophenol	0.403	0.416	0.50	81	83	24-108	3.27	25
4-Chlorophenyl Phenyl Ether	9.51	9.12	10	95	91	24-127	4.20	25
Chrysene	0.421	0.417	0.50	84	83	31-131	1.01	25
Dibenzo (a,h) anthracene	0.449	0.444	0.50	90	89	12-157	0.923	25
Dibenzofuran	9.10	8.87	10	91	89	21-124	2.63	25
Di-n-butyl Phthalate	0.413	0.406	0.50	83	81	18-147	1.58	25
1,2-Dichlorobenzene	8.23	8.57	10	82	86	22-101	4.08	25
1,3-Dichlorobenzene	8.18	8.38	10	82	84	20-99	2.50	25
1,4-Dichlorobenzene	8.51	8.84	10	85	88	21-99	3.84	25
3,3-Dichlorobenzidine	0.509	0.506	0.50	102	101	29-139	0.610	25
2,4-Dichlorophenol	0.512	0.533	0.50	102	107	28-115	3.99	25
Diethyl Phthalate	0.470	0.455	0.50	94	91	19-139	3.24	25
2,4-Dimethylphenol	9.78	10.1	10	98	101	23-108	3.48	25
Dimethyl Phthalate	0.457	0.449	0.50	91	90	22-132	1.83	25
4,6-Dinitro-2-methylphenol	46.6	48.3	50	93	97	27-129	3.51	25
2,4-Dinitrophenol	9.77	10.6	10	98	106	12-141	7.71	25
2,4-Dinitrotoluene	0.571	0.550	0.50	114	110	22-141	3.76	25
2,6-Dinitrotoluene	0.473	0.464	0.50	95	93	24-136	1.85	25

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	Enthalpy Analytical	**WorkOrder:**	2002785
Date Prepared:	02/24/2020	**BatchID:**	194516
Date Analyzed:	02/24/2020	**Extraction Method:**	E625.1/SW3640Am
Instrument:	GC17	**Analytical Method:**	E625.1
Matrix:	Water	**Unit:**	µg/L
Project:	424923	**Sample ID:**	MB/LCS/LCSD-194516

QC Summary Report for E625.1

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Di-n-octyl Phthalate	0.441	0.414	0.50	88	83	18-153	6.16	25
1,2-Diphenylhydrazine	9.06	8.98	10	91	90	31-121	0.991	25
Fluoranthene	0.426	0.430	0.50	85	86	30-138	0.981	25
Fluorene	0.478	0.464	0.50	96	93	24-127	2.93	25
Hexachlorobenzene	0.439	0.438	0.50	88	88	32-117	0.230	25
Hexachlorobutadiene	0.434	0.466	0.50	87	93	22-107	7.07	25
Hexachlorocyclopentadiene	43.7	47.3	50	87	95	14-102	7.93	25
Hexachloroethane	0.408	0.424	0.50	81	85	22-101	3.91	25
Indeno (1,2,3-cd) pyrene	0.438	0.432	0.50	88	86	10-160	1.45	25
Isophorone	9.66	10.1	10	97	101	27-117	4.27	25
2-Methylnaphthalene	0.444	0.463	0.50	89	93	46-120	4.30	25
2-Methylphenol (o-Cresol)	9.47	9.70	10	95	97	30-109	2.41	25
3 & 4-Methylphenol (m,p-Cresol)	9.16	9.05	10	92	91	28-112	1.14	25
Naphthalene	0.427	0.453	0.50	85	91	16-120	5.93	25
2-Nitroaniline	49.2	47.8	50	99	96	18-137	3.04	25
3-Nitroaniline	49.9	48.1	50	100	96	15-144	3.73	25
4-Nitroaniline	48.2	46.0	50	96	92	11-152	4.65	25
Nitrobenzene	9.17	9.82	10	92	98	22-115	6.83	25
2-Nitrophenol	45.9	49.4	50	92	99	29-114	7.17	25
4-Nitrophenol	50.4	49.2	50	101	98	13-150	2.51	25
N-Nitrosodiphenylamine	8.88	8.78	10	89	88	33-121	1.15	25
N-Nitrosodi-n-propylamine	8.87	8.81	10	89	88	26-112	0.637	25
Pentachlorophenol	2.14	2.23	2.5	85	89	37-140	4.20	25
Phenanthrene	0.457	0.450	0.50	91	90	32-122	1.50	25
Phenol	1.79	1.79	2	90	90	22-111	0.103	25
Pyrene	0.439	0.406	0.50	88	81	33-130	7.91	25
Pyridine	7.75	7.93	10	77	79	30-130	2.35	25
1,2,4-Trichlorobenzene	10.7	11.4	10	107	114,F2	24-107	6.12	25
2,4,5-Trichlorophenol	0.492	0.489	0.50	98	98	26-124	0.735	25
2,4,6-Trichlorophenol	0.455	0.450	0.50	91	90	28-121	1.16	25
N-Nitrosodimethylamine	43.2	44.7	50	86	89	45-111	3.56	25

(Cont.)

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Quality Control Report

Client:	Enthalpy Analytical	**WorkOrder:**	2002785
Date Prepared:	02/24/2020	**BatchID:**	194516
Date Analyzed:	02/24/2020	**Extraction Method:**	E625.1/SW3640Am
Instrument:	GC17	**Analytical Method:**	E625.1
Matrix:	Water	**Unit:**	µg/L
Project:	424923	**Sample ID:**	MB/LCS/LCSD-194516

QC Summary Report for E625.1

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Surrogate Recovery								
2-Fluorophenol	3.92	4.02	5	79	80	23-101	2.31	25
Phenol-d5	4.42	4.37	5	88	87	27-116	1.30	25
Nitrobenzene-d5	4.82	4.90	5	96	98	29-116	1.65	25
2-Fluorobiphenyl	4.56	4.51	5	91	90	29-112	1.08	25
2,4,6-Tribromophenol	4.07	3.93	5	81	79	34-125	3.51	25
Terphenyl-d14	2.91	2.49	5	58	50	23-136	15.3	25

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 2002785 **ClientCode: ENO** **QuoteID: 202149**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☑ J-flag
☐ Detection Summary ☐ Dry-Weight

Report to:
Ranjit Clarke
Enthalpy Analytical
1108 West Barkley Avenue
Orange, CA 92868
(714) 264-8209 FAX:

Email: Ranjit.Clarke@enthalpy.com; incomingrepo
cc/3rd Party:
PO: 1047355
Project: 424923

Bill to:
Accounts Payable/Enthalpy SoCal
Montrose Environmental Group
PO Box 842165
Boston, MA 02284-2165
apadvantage.meg@pnc.co; 003EL_ap

Requested TAT: 5 days;

Date Received: **02/20/2020**
Date Logged: **02/20/2020**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
2002785-001	MW-2 (424923-001)	Water	2/19/2020 09:22	☐	A	B	A									

Test Legend:

1	608_LL_W [J]	2	625_SCSM_GPC_W	3	PRDisposal Fee	4	
5		6		7		8	
9		10		11		12	

Project Manager: Angela Rydelius

Prepared by: Nancy Palacios

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: ENTHALPY ANALYTICAL **Project:** 424923 **Work Order:** 2002785
Client Contact: Ranjit Clarke **QC Level:** LEVEL 2
Contact's Email: Ranjit.Clarke@enthalpy.com; incomingreports@enthalpy.com **Comments** **Date Logged:** 2/20/2020

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☑ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
2002785-001A	MW-2 (424923-001)	Water	E608.3 (OC Pesticides+PCBs, Low-Level) w/ Florisil	1	1LA Narrow Mouth, Unpres	☐	2/19/2020 9:22	5 days		☐	
2002785-001B	MW-2 (424923-001)	Water	E625.1 (SVOCs, Low-Level)	1	1LA Narrow Mouth, Unpres	☐	2/19/2020 9:22	5 days		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

2002705

Enthalpy Analytical
Formerly Associated Labs
1 Park Plaza, Suite 1000
Irvine, CA 92614
Tel: 714.771.6900 Fax: 714.538.1209
info-sc@enthalpy.com

MONTROSE ENVIRONMENTAL

Subcontract Laboratory:

McCampbell Analytical, Inc.
1534 Willow Pass Rd.
Pittsburg, CA 94565
925-252-9262
ATTN: Angela Rydelius
PO# 1047355

Project: 424923 **Due:**
PM: Ranjit Clarke
Email: ranjit.clarke@enthalpy.com
CC: incomingreports@enthalpy.com
Require: ☑ EDD ☐ EDF ☐ EDT
Report To: ☑ MDL

Note:

Matrix	Sampled	Sample ID	Analysis	Comment
Water	02/19/20 09:22	MW-2 (424923-001)	608 Out	
Water	02/19/20 09:22	MW-2 (424923-001)	625_Low Level	

Note:
Standard TAT

Need Low Level 608 & Low Level 625 (no GPC Cleanup unless absolutely needed).

Quote# 202149

Relinquished By:	Received By:
Date/Time 2/19/20 1845	GSO Date/Time 2-20-2020 @0912
	Nancy Palacios
Date/Time	Date/Time 2-20-2020 @ 0912

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Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Sample Receipt Checklist

Client Name:	**Enthalpy Analytical**	Date and Time Received	**2/20/2020 09:12**
Project:	**424923**	Date Logged:	**2/20/2020**
		Received by:	Nancy Palacios
WorkOrder №:	**2002785** Matrix: Water	Logged by:	Nancy Palacios
Carrier:	Golden State Overnight		

Chain of Custody (COC) Information

Chain of custody present?	Yes	☑	No	☐		
Chain of custody signed when relinquished and received?	Yes	☑	No	☐		
Chain of custody agrees with sample labels?	Yes	☑	No	☐		
Sample IDs noted by Client on COC?	Yes	☑	No	☐		
Date and Time of collection noted by Client on COC?	Yes	☑	No	☐		
Sampler's name noted on COC?	Yes	☐	No	☑		
COC agrees with Quote?	Yes	☑	No	☐	NA	☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes	☐	No	☐	NA	☑
Shipping container/cooler in good condition?	Yes	☑	No	☐		
Samples in proper containers/bottles?	Yes	☑	No	☐		
Sample containers intact?	Yes	☑	No	☐		
Sufficient sample volume for indicated test?	Yes	☑	No	☐		

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes	☑	No	☐	NA	☐
Samples Received on Ice?	Yes	☑	No	☐		
(Ice Type: WET ICE)						
Sample/Temp Blank temperature	Temp: 1.4°C				NA	☐
Water - VOA vials have zero headspace / no bubbles?	Yes	☑	No	☐	NA	☐
Sample labels checked for correct preservation?	Yes	☑	No	☐		
pH acceptable upon receipt (Metal: <2; Nitrate 353.2/4500NO3: <2; 522: <4; 218.7: >8)?	Yes	☐	No	☐	NA	☑
UCMR Samples:						
pH tested and acceptable upon receipt (200.8: ≤2; 525.3: ≤4; 530: ≤7; 541: <3; 544: <6.5 & 7.5)?	Yes	☐	No	☐	NA	☑
Free Chlorine tested and acceptable upon receipt (<0.1mg/L)?	Yes	☐	No	☐	NA	☑

Comments

Enthalpy Analytical - Orange

931 W. Barkley Ave
Orange, CA 92868

Client Project # 424923
Samples Received: 02/21/2020

Analytical Report
0220-742

EPA Method 1613

PCDD/PCDF

Enthalpy Analytical, LLC – Ultratrace

Lindsay Boone
O: (910) 212-5855 / F: 910-212-5866
lboone@enthalpy.com / www.enthalpy.com
2714 Exchange Drive, Wilmington, NC 28405

I certify that to the best of my knowledge all analytical data presented in this report:

- Have been checked for completeness
- Are accurate, error-free, and legible
- Have been conducted in accordance with approved protocol, and that all deviations and analytical problems are summarized in the appropriate narrative(s)

This analytical report was prepared in Portable Document Format (.PDF) and contains 20 pages.

QA Review Performed by: Bryan A. Vining

Report Issued Date: 03/11/20

ENTHALPY ANALYTICAL

Summary of Results

ENTHALPY ANALYTICAL

Summary of Results: I-TEF TEQ

Enthalpy Ultratrace Batch # 10716

Method 1613B

Analyte	Method Blank pg/L	MW-2 (424923-001) pg/L
2,3,7,8-TCDD	(0.53)	(0.418)
1,2,3,7,8-PeCDD	(0.679)	(0.492)
1,2,3,4,7,8-HxCDD	(0.85)	(0.467)
1,2,3,6,7,8-HxCDD	(0.84)	(0.454)
1,2,3,7,8,9-HxCDD	(0.805)	(0.433)
1,2,3,4,6,7,8-HpCDD	(0.868)	(0.576)
OCDD	(1.48)	(1.2)
2,3,7,8-TCDF	(0.326)	(0.257)
1,2,3,7,8-PeCDF	(0.428)	(0.38)
2,3,4,7,8-PeCDF	(0.484)	(0.394)
1,2,3,4,7,8-HxCDF	(0.593)	(0.387)
1,2,3,6,7,8-HxCDF	(0.555)	(0.372)
2,3,4,6,7,8-HxCDF	(0.657)	(0.437)
1,2,3,7,8,9-HxCDF	(0.757)	(0.466)
1,2,3,4,6,7,8-HpCDF	(0.811)	(0.382)
1,2,3,4,7,8,9-HpCDF	(1)	(0.507)
OCDF	(1.13)	(0.633)
ND = (DL) EMPC = [ ]		
ITEF TEQ (ND=0; EMPC=0)	0.00	0.00
ITEF TEQ (ND=0; EMPC=EMPC)	0.00	0.00
ITEF TEQ (ND=EDL/2; EMPC=0)	0.851	0.612
ITEF TEQ (ND=EDL/2; EMPC=EMPC)	0.851	0.612
ITEF TEQ (ND=EDL; EMPC=EMPC)	1.70	1.22
Lab Sample ID	MB_10716_DF	0220-742_10716_001

ENTHALPY ANALYTICAL

Summary of Results: WHO-2005 TEF TEQ

Enthalpy Ultratrace Batch # 10716

Method 1613B

Analyte	Method Blank pg/L	MW-2 (424923-001) pg/L
2,3,7,8-TCDD	(0.53)	(0.418)
1,2,3,7,8-PeCDD	(0.679)	(0.492)
1,2,3,4,7,8-HxCDD	(0.85)	(0.467)
1,2,3,6,7,8-HxCDD	(0.84)	(0.454)
1,2,3,7,8,9-HxCDD	(0.805)	(0.433)
1,2,3,4,6,7,8-HpCDD	(0.868)	(0.576)
OCDD	(1.48)	(1.2)
2,3,7,8-TCDF	(0.326)	(0.257)
1,2,3,7,8-PeCDF	(0.428)	(0.38)
2,3,4,7,8-PeCDF	(0.484)	(0.394)
1,2,3,4,7,8-HxCDF	(0.593)	(0.387)
1,2,3,6,7,8-HxCDF	(0.555)	(0.372)
2,3,4,6,7,8-HxCDF	(0.657)	(0.437)
1,2,3,7,8,9-HxCDF	(0.757)	(0.466)
1,2,3,4,6,7,8-HpCDF	(0.811)	(0.382)
1,2,3,4,7,8,9-HpCDF	(1)	(0.507)
OCDF	(1.13)	(0.633)
ND = (DL) EMPC = [ ]		
WHO-2005 TEQ (ND=0; EMPC=0)	0.00	0.00
WHO-2005 TEQ (ND=0; EMPC=EMPC)	0.00	0.00
WHO-2005 TEQ (ND=EDL/2; EMPC=0)	0.967	0.691
WHO-2005 TEQ (ND=EDL/2; EMPC=EMPC)	0.967	0.691
WHO-2005 TEQ (ND=EDL; EMPC=EMPC)	1.93	1.38
Lab Sample ID	MB_10716_DF	0220-742_10716_001

ENTHALPY ANALYTICAL

Summary of Results: Totals

Enthalpy Ultratrace Batch # 10716

Method 1613B

Analyte	Method Blank pg/L	MW-2 (424923-001) pg/L
Totals		
TCDDs	(0.530)	(0.418)
PeCDDs	(0.679)	(0.492)
HxCDDs	(0.816)	(0.456)
HpCDDs	(0.868)	(0.576)
OCDD	(1.48)	(1.2)
TCDFs	(0.326)	(0.257)
PeCDFs	(0.447)	(0.386)
HxCDFs	(0.617)	(0.402)
HpCDFs	(0.893)	(0.417)
OCDF	(1.13)	(0.633)

ND = (EDL) EMPC = [ ]

Detailed Results

MW-2 (424923-001)				Detailed Results - Method 1613B			
Client Details							
Client Sample ID:	MW-2 (424923-001)			**Client Name:**	Enthalpy-Orange		
Client Project ID:	424923			**Sample Collection Date:**	2/19/2020 9:22:0	**RRFs:**	ICAL
Lab/Sample Details							
Lab Job #:	0220-742	**Matrix:**	Aqueous	**Date Received:**	21-Feb-20		
Lab Sample ID:	0220-742_10716_001	**Weight/Volume:**	1	**Date Extracted:**	21-Feb-20		
QC Batch #:	10716	**Split Factor:**	1	**Date Analyzed:**	25-Feb-20		
Dilution:	-			**Time Analyzed:**	21:16:42		

Analyte	Conc. (pg/L)	EDL (pg)	EMPC (pg/L)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	ND	0.418		U	ES 2,3,7,8-TCDD	70.3	
1,2,3,7,8-PeCDD	ND	0.492		U	ES 1,2,3,7,8-PeCDD	76.4	
1,2,3,4,7,8-HxCDD	ND	0.467		U	ES 1,2,3,4,7,8-HxCDD	65.0	
1,2,3,6,7,8-HxCDD	ND	0.454		U	ES 1,2,3,6,7,8-HxCDD	64.9	
1,2,3,7,8,9-HxCDD	ND	0.433		U	ES 1,2,3,7,8,9-HxCDD	63.2	
1,2,3,4,6,7,8-HpCDD	ND	0.576		U	ES 1,2,3,4,6,7,8-HpCDD	62.5	
OCDD	ND	1.20		U	ES OCDD	57.0	
2,3,7,8-TCDF	ND	0.257		U	ES 2,3,7,8-TCDF	74.5	
1,2,3,7,8-PeCDF	ND	0.380		U	ES 1,2,3,7,8-PeCDF	76.8	
2,3,4,7,8-PeCDF	ND	0.394		U	ES 2,3,4,7,8-PeCDF	78.1	
1,2,3,4,7,8-HxCDF	ND	0.387		U	ES 1,2,3,4,7,8-HxCDF	61.9	
1,2,3,6,7,8-HxCDF	ND	0.372		U	ES 1,2,3,6,7,8-HxCDF	57.9	
2,3,4,6,7,8-HxCDF	ND	0.437		U	ES 2,3,4,6,7,8-HxCDF	49.3	
1,2,3,7,8,9-HxCDF	ND	0.466		U	ES 1,2,3,7,8,9-HxCDF	61.5	
1,2,3,4,6,7,8-HpCDF	ND	0.382		U	ES 1,2,3,4,6,7,8-HpCDF	61.0	
1,2,3,4,7,8,9-HpCDF	ND	0.507		U	ES 1,2,3,4,7,8,9-HpCDF	57.7	
OCDF	ND	0.633		U	ES OCDF	53.7	
Totals	**Conc. (pg/L)**	**EDL (pg/L)**	**EMPC (pg/L)**		**Standard**	**CS/AS Recoveries**	
					CS 37Cl-2378-TCDD	77.9	
Total TCDDs	ND	0.418	ND	U	CS 12347-PeCDD	76.4	
Total PeCDDs	ND	0.492	ND	U	CS 12346-PeCDF	92.2	
Total HxCDDs	ND	0.456	ND	U	CS 123469-HxCDF	72.8	
Total HpCDDs	ND	0.576	ND	U	CS 1234689-HpCDF	68.1	
					AS 1368-TCDD	78.0	
Total TCDFs	ND	0.257	ND	U	AS 1368-TCDF	77.7	
Total PeCDFs	ND	0.386	ND	U			
Total HxCDFs	ND	0.402	ND	U			
Total HpCDFs	ND	0.417	ND	U			
Total PCDD/PCDFs	**ND**		**ND**				

QC Data

OPR	Detailed Results - Method 1613B

RRFs: ICAL

Lab/Sample Details

		Matrix:	Aqueous	Date Received:	N/A
Lab Sample ID:	OPR_10716_DF	Final Vol. (uL)	20.0	Date Extracted:	21-Feb-20
QC Batch #:	10716	Split Factor:	1	Date Analyzed:	25-Feb-20
Dilution:	-			Time Analyzed:	17:13:33

Analyte	Conc. (pg)	EDL (pg)	EMPC (pg)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	10.2	0.0253			ES 2,3,7,8-TCDD	78.4	
1,2,3,7,8-PeCDD	49.8	0.0593			ES 1,2,3,7,8-PeCDD	86.6	
1,2,3,4,7,8-HxCDD	52.3	0.0971			ES 1,2,3,4,7,8-HxCDD	78.0	
1,2,3,6,7,8-HxCDD	51.2	0.0897			ES 1,2,3,6,7,8-HxCDD	74.6	
1,2,3,7,8,9-HxCDD	50.4	0.0952			ES 1,2,3,7,8,9-HxCDD	75.5	
1,2,3,4,6,7,8-HpCDD	51.9	0.0735			ES 1,2,3,4,6,7,8-HpCDD	78.8	
OCDD	98.8	0.0919			ES OCDD	74.6	
2,3,7,8-TCDF	9.52	0.0266			ES 2,3,7,8-TCDF	82.9	
1,2,3,7,8-PeCDF	52.9	0.0613			ES 1,2,3,7,8-PeCDF	90.7	
2,3,4,7,8-PeCDF	53.8	0.0655			ES 2,3,4,7,8-PeCDF	86.5	
1,2,3,4,7,8-HxCDF	50.9	0.101			ES 1,2,3,4,7,8-HxCDF	72.7	
1,2,3,6,7,8-HxCDF	50.5	0.101			ES 1,2,3,6,7,8-HxCDF	72.4	
2,3,4,6,7,8-HxCDF	52.7	0.114			ES 2,3,4,6,7,8-HxCDF	63.0	
1,2,3,7,8,9-HxCDF	52.3	0.117			ES 1,2,3,7,8,9-HxCDF	72.3	
1,2,3,4,6,7,8-HpCDF	50.4	0.0890			ES 1,2,3,4,6,7,8-HpCDF	74.7	
1,2,3,4,7,8,9-HpCDF	51.3	0.118			ES 1,2,3,4,7,8,9-HpCDF	71.8	
OCDF	105	0.0828			ES OCDF	67.8	
Totals	**Conc. (pg/L)**	**EDL (pg/L)**	**EMPC (pg/L)**		**Standard**	**CS/AS Recoveries**	
					CS 37Cl-2378-TCDD	81.2	
Total TCDDs	10.2	0.0253	10.2		CS 12347-PeCDD	76.1	
Total PeCDDs	49.8	0.0593	49.8		CS 12346-PeCDF	94.3	
Total HxCDDs	154	0.0963	154		CS 123469-HxCDF	76.8	
Total HpCDDs	51.9	0.0735	51.9		CS 1234689-HpCDF	84.3	
					AS 1368-TCDD	80.0	
Total TCDFs	9.52	0.0266	9.52		AS 1368-TCDF	82.1	
Total PeCDFs	107	0.0259	107				
Total HxCDFs	206	0.112	206				
Total HpCDFs	102	0.0966	102				
Total PCDD/PCDFs	**894**		**894**				

ENTHALPY ANALYTICAL

Method Blank

Detailed Results - Method 1613B

RRFs: ICAL

Lab/Sample Details

		Matrix:	Aqueous	Date Received:	N/A
Lab Sample ID:	MB_10716_DF	Weight/Volume:	1.0	Date Extracted:	21-Feb-20
QC Batch #:	10716	Split Factor:	1	Date Analyzed:	25-Feb-20
Dilution:	-			Time Analyzed:	18:50:36

Analyte	Conc. (pg/L)	EDL (pg)	EMPC (pg/L)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	ND	0.530		U	ES 2,3,7,8-TCDD	71.6	
1,2,3,7,8-PeCDD	ND	0.679		U	ES 1,2,3,7,8-PeCDD	73.4	
1,2,3,4,7,8-HxCDD	ND	0.850		U	ES 1,2,3,4,7,8-HxCDD	69.6	
1,2,3,6,7,8-HxCDD	ND	0.840		U	ES 1,2,3,6,7,8-HxCDD	69.2	
1,2,3,7,8,9-HxCDD	ND	0.805		U	ES 1,2,3,7,8,9-HxCDD	71.4	
1,2,3,4,6,7,8-HpCDD	ND	0.868		U	ES 1,2,3,4,6,7,8-HpCDD	70.1	
OCDD	ND	1.48		U	ES OCDD	61.1	
2,3,7,8-TCDF	ND	0.326		U	ES 2,3,7,8-TCDF	75.8	
1,2,3,7,8-PeCDF	ND	0.428		U	ES 1,2,3,7,8-PeCDF	81.4	
2,3,4,7,8-PeCDF	ND	0.484		U	ES 2,3,4,7,8-PeCDF	78.0	
1,2,3,4,7,8-HxCDF	ND	0.593		U	ES 1,2,3,4,7,8-HxCDF	66.1	
1,2,3,6,7,8-HxCDF	ND	0.555		U	ES 1,2,3,6,7,8-HxCDF	65.8	
2,3,4,6,7,8-HxCDF	ND	0.657		U	ES 2,3,4,6,7,8-HxCDF	56.7	
1,2,3,7,8,9-HxCDF	ND	0.757		U	ES 1,2,3,7,8,9-HxCDF	65.5	
1,2,3,4,6,7,8-HpCDF	ND	0.811		U	ES 1,2,3,4,6,7,8-HpCDF	66.5	
1,2,3,4,7,8,9-HpCDF	ND	1.00		U	ES 1,2,3,4,7,8,9-HpCDF	61.9	
OCDF	ND	1.13		U	ES OCDF	58.0	
Totals	**Conc. (pg/L)**	**EDL (pg/L)**	**EMPC (pg/L)**		**Standard**	**CS/AS Recoveries**	
					CS 37Cl-2378-TCDD	79.0	
Total TCDDs	ND	0.530	ND	U	CS 12347-PeCDD	75.6	
Total PeCDDs	ND	0.679	ND	U	CS 12346-PeCDF	92.7	
Total HxCDDs	ND	0.816	ND	U	CS 123469-HxCDF	76.6	
Total HpCDDs	ND	0.868	ND	U	CS 1234689-HpCDF	83.4	
					AS 1368-TCDD	78.4	
Total TCDFs	ND	0.326	ND	U	AS 1368-TCDF	80.3	
Total PeCDFs	ND	0.447	ND	U			
Total HxCDFs	ND	0.617	ND	U			
Total HpCDFs	ND	0.893	ND	U			
Total PCDD/PCDFs	**ND**		**ND**				

OPR Demonstration Data

Batch ID#: 10716

Analyte	Conc. (pg)	Lower Limit	Upper Limit	Acceptable?	Standard	ES Recoveries	Lower Limit	Upper Limit	Acceptable?
2,3,7,8-TCDD	10.2	6.7	15.8	Y	ES 2,3,7,8-TCDD	78	20	175	Y
1,2,3,7,8-PeCDD	49.8	35	71	Y	ES 1,2,3,7,8-PeCDD	87	21	227	Y
1,2,3,4,7,8-HxCDD	52.3	35	82	Y	ES 1,2,3,4,7,8-HxCDD	78	21	193	Y
1,2,3,6,7,8-HxCDD	51.2	38	67	Y	ES 1,2,3,6,7,8-HxCDD	75	25	163	Y
1,2,3,7,8,9-HxCDD	50.4	32	81	Y	ES 1,2,3,7,8,9-HxCDD	76	N/A	N/A	N/A
1,2,3,4,6,7,8-HpCDD	51.9	35	70	Y	ES 1,2,3,4,6,7,8-HpCDD	79	26	166	Y
OCDD	98.8	78	144	Y	ES OCDD	149	26	397	Y
2,3,7,8-TCDF	9.5	7.5	15.8	Y	ES 2,3,7,8-TCDF	83	22	152	Y
1,2,3,7,8-PeCDF	52.9	40	67	Y	ES 1,2,3,7,8-PeCDF	91	21	192	Y
2,3,4,7,8-PeCDF	53.8	34	80	Y	ES 2,3,4,7,8-PeCDF	87	13	328	Y
1,2,3,4,7,8-HxCDF	50.9	36	67	Y	ES 1,2,3,4,7,8-HxCDF	73	19	202	Y
1,2,3,6,7,8-HxCDF	50.5	42	65	Y	ES 1,2,3,6,7,8-HxCDF	72	21	159	Y
2,3,4,6,7,8-HxCDF	52.7	39	65	Y	ES 2,3,4,6,7,8-HxCDF	63	17	205	Y
1,2,3,7,8,9-HxCDF	52.3	35	78	Y	ES 1,2,3,7,8,9-HxCDF	72	22	176	Y
1,2,3,4,6,7,8-HpCDF	50.4	41	61	Y	ES 1,2,3,4,6,7,8-HpCDF	75	21	158	Y
1,2,3,4,7,8,9-HpCDF	51.3	39	69	Y	ES 1,2,3,4,7,8,9-HpCDF	72	20	186	Y
OCDF	105.0	63	170	Y	ES OCDF	136	N/A	N/A	N/A
					CS 2,3,7,8 TCDD	8	3.1	19.1	Y

Narrative Summary

Enthalpy Analytical Narrative Summary

Company	Enthalpy Analytical - Orange
Job#	0220-742 EPA Method 1613B
Client Project #	424923

Custody	Robin Appelle of Enthalpy Analytical Wilmington received the sample (via FedEx) on 2/21/20 on ice at 1.9°C in good condition. Prior to, during, and after analysis, the samples were stored in the laboratory with access only by authorized personnel of Enthalpy Analytical, LLC.
Analysis	The sample was analyzed by EPA Method 1613B for PCDD/PCDF by HRGC/HRMS using Agilent Technologies Model# 6890 High-Resolution GC/ Waters High-Resolution Mass-Spectrometer (HRGC/HRMS "Gandalf"). After sampling by the client, the laboratory spiked the sample with Extraction Standard (ES), then extracted by separatory funnel with dichloromethane. After solvent exchange, the extract was spiked with Alternate Standard (AS) and Clean Up Standard (CS). Cleanup procedures were performed on the extract. The final sample extract was transferred to an autosampler vial and spiked with 20 µL of Injection Standard (JS), prior to analysis.
Calibration	The analytes and labeled standards in the initial calibration exhibited RSDs less than 20%. The internal calibration verification (ICV) and continuing calibration met method criteria.
QC Notes	The HRMS system displayed mass resolving power of at least 10,000 during the analysis. Labeled and sampling (surrogate) standard recovery values in the Ongoing Precision Recovery (OPR) and method blank were acceptable. GC Resolution parameters were met for TCDD and TCDF. The samples were extracted within the 30-day from collection holding time and analyzed within the 45-day from extraction to analysis holding time required by the method.
Reporting Notes	The TEQ was calculated and reported using I-TEF and WHO-2005 TEF, calculated by multiplying the concentration for each 2,3,7,8-substituted PCDD/F by its toxic equivalency factor (TEF). The Totals and Detection Limits have been included in the report. The TEQ is reported with and without EMPCs included. Additionally, the TEQ may be reported with non-detects treated as having a concentration of zero, a concentration of one-half the EDL, and/or a concentration equal to the EDL. Any deviations from the requirements of the reference method or TNI Standard have been stated above.

Enthalpy Analytical Narrative Summary
(continued)

The results presented in this report are representative of the samples as provided to the laboratory.

Enthalpy Analytical, LLC in Wilmington NC is accredited by the Louisiana Department of Environmental Quality to the 2009 TNI Standard under certificate number 05075.

General Reporting Notes – Data Qualifiers

The following are general reporting notes that are applicable to all Enthalpy Analytical, LLC - Wilmington, NC data reports, unless specifically noted otherwise.

General Data Qualifiers

- B – The analyte was found in the method blank, at a concentration that was at least 10% of the concentration in the sample.
- Cxx – Two or more congeners co-elute. In EDDs, C denotes the lowest IUPAC congener in a co-elution group and additional co-eluters for the group ('xx') are shown with the number of the lowest IUPAC co-eluter.
- E – The reported concentration exceeds the calibration range (upper point of the calibration curve). For HRMS data, this condition does not imply additional measurement uncertainty. For LC-MS/MS data, these values should be considered as having measurement uncertainty higher than values within the calibration range.
- EDL – Estimated Detection Level. Specific to Dioxin/Furan tests and equivalent to MDL
- EMPC – Estimated Maximum Possible Concentration Specific to Dioxin/Furan tests to indicate the signal/noise ratio wass not sufficient for peak identification (the determined ion-abundance ratio was outside the allowed theoretical range), or where there was a co-eluting interference. Indicates that a peak was identified but did not meet the method specified ion-abundance ratio.
- IR – The ion ratio between the primary and secondary ions was observed to be outside the method criteria therefore the actual analyte concentration cannot be accurately determined as defined by DoD QSM Table B-15.
- J – The analyte has a concentration below the minimum calibration level (LOQ value) but greater than the LOD. These values should be considered as having measurement uncertainty higher than values within the calibration range
- L - Indicates that an analyte has a concentration below the Minimum Detection Limit (MDL). The reported concentration is not recommended for regulatory use as the analyte signal may have a signal-to-noise ratio less than the criteria deemed necessary to be considered a detected analyte.
- LOD – Limit of Detection: For reports conforming to the DOD ELAP QSM, this is the QSM-defined LOD. For reports conforming to TNI requirements (but not DOD ELAP QSM requirements), this value is the minimum detection limit (MDL). The LOD is adjusted for sample weight or volume.
- LOQ – Limit of Quantiation: For reports conforming to the DOD ELAP QSM, this is the QSM-defined LOQ. For reports conforming to TNI requirements (but not DOD ELAP QSM requirements), this value is the reporting limit (RL). The LOD is adjusted for sample weight or volume.
- <LOD() – Analyte was not found at a concentration high enough to be reported as detected. It is reported as less than the LOD, and the LOD is given in the parentheses.

- ND – Indicates a non-detect.
- NR – Indicates a value that is not reportable due to issues observed in sample preparation or analysis.
- PR – The associated congener(s) is(are) poorly resolved.
- QI – Indicates the presence of a quantitative interference.
- RL – Reporting Limit. Lowest reportable value. The level is higher than the MDL.
- SI – Denotes "Single Ion Mode" and is utilized for PCBs where the secondary ion trace has a significantly elevated noise level due to background PFK. Responses for such peaks are calculated using an EMPC approach based solely on the primary ion area(s) and may be considered estimates.
- U – The analyte was not detected.
- V – The labeled standard recovery is not within method control limits.
- X – Results from re-injection/repeat/second-column analysis.

Lab Identifiers/ Data Attributes

- AR – Indicates use of the archived portion of the sample extract.
- CU – Indicates a sample that required additional clean-up prior to HRMS injection/processing.
- D – Dilution Data. Result was obtained from the analysis of a dilution. The number that follows the "D" indicates the dilution factor.
- DE – Indicates a dilution performed with the addition of ES (Extraction Standard) solution.
- DUP – Designation for a duplicate sample.
- MS – Designation for a matrix spike.
- MSD – Designation for a matrix spike duplicate.
- RJ – Indicates a reinjection of the sample extract.
- S – Indicates a sample split. The number that follows the "S" indicates the split factor.
- R – Indicates a re-extraction of the sample.

Sample Custody

Enthalpy Analytical
Formerly Associated Labs
1 Park Plaza, Suite 1000
Irvine, CA 92614
Tel: 714.771.6900 Fax: 714.538.1209
info-sc@enthalpy.com

MONTROSE

Subcontract Laboratory:

Enthalpy - Wilmington - Sub
2714 Exchange Drive
Wilmington, NC 28405
910-212-5866
ATTN: Bryan Vining
PO# 1047356

0220-742

Project: 424923 **Due:**
PM: Ranjit Clarke
Email: ranjit.clarke@enthalpy.com
CC: incomingreports@enthalpy.com
Require: ☑ EDD ☐ EDF ☐ EDT
Report To: ☑ MDL

Note:

Matrix	Sampled	Sample ID	Analysis	Comment
Water	02/19/20 09:22	MW-2 (424923-001)	1613B_Dioxin/Furans_OUT	Dioxins/Furans full list

Note:
Standard TAT

Dioxins/Furans full list

Relinquished By:	**Received By:**
	FED EX
Date/Time 2/20/20 1130	Date/Time 2/20/20
Date/Time	Date/Time 2/21/20 0945 1.9°C T9

FedEx, 7778 1967 1878, cooler, on ice, NO seal, good condition

CH 2/21/20

424923-02 02/19/20 18:12 RC

This Is The Last Page Of This Report.

APPENDIX F

Hydrogeologic Aquifer Test Analyses and Modeling

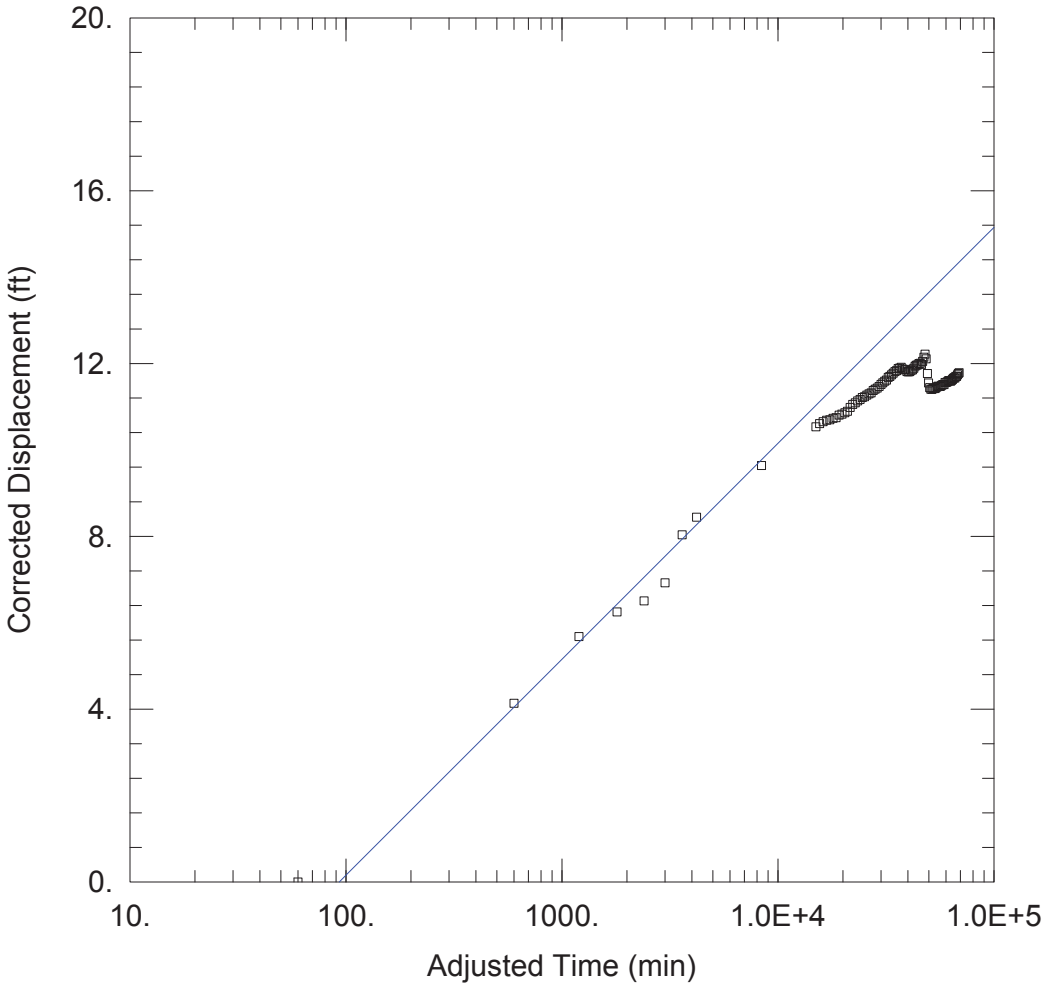
Hydrogeologic Data Sheet
Replacement Pump Station - Construction Dewatering Estimates

Tests	Method	Ouput Value		
		Hydraulic Conductivity (ft/d)	Transmissivity (ft^2/d)	Storativity (u'less)
Constant	Theis / Cooper-Jacob	0.93	35.28	81.99
Recovery	Bouwer & Rice Method	0.49		
Recovery	Hvorslev Method	0.65		

Model Estimated Pumping Data - Hydraulic Conductivity = 0.9 ft/day

Static Water Elev (ft-amsl)	Target Pumping Drawdown (ft-bs)	Pumping Rate per Well (gpm)	Pumping Rate per Well (ft^3/d)	Number of Pumping Wells	Combined Pumping Rate	Model Pumping Drawdown (ft)	Model Pumping Drawdown (ft-amsl)	Daily Pumping Discharged (g/d)
12	-9	3	578	1	3	13	-1	4320
		4	770	1	4	20	-8	5760
		5	**963**	**1**	**5**	**23**	**-11**	**7200**
		2	385	2	4	18	-6	5760
		3	**578**	**2**	**6**	**23**	**-11**	**8640**

Model Pumping Contours: K = 0.9 ft/d, Q = 5 gpm



WELL TEST ANALYSIS

Data Set: C:\Users\cbrooks\Desktop\209638002 SCWD Lift Station\CRT Single Well Cooper-Jacob.aqt
Date: 05/02/20 Time: 13:07:27

PROJECT INFORMATION

Company: Ninyo & Moore
Client: AKM
Project: 209638002
Location: SCWD PS#2
Test Well: PW-1
Test Date: 3/19/2020

AQUIFER DATA

Saturated Thickness: 38. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
PW-1	15	5

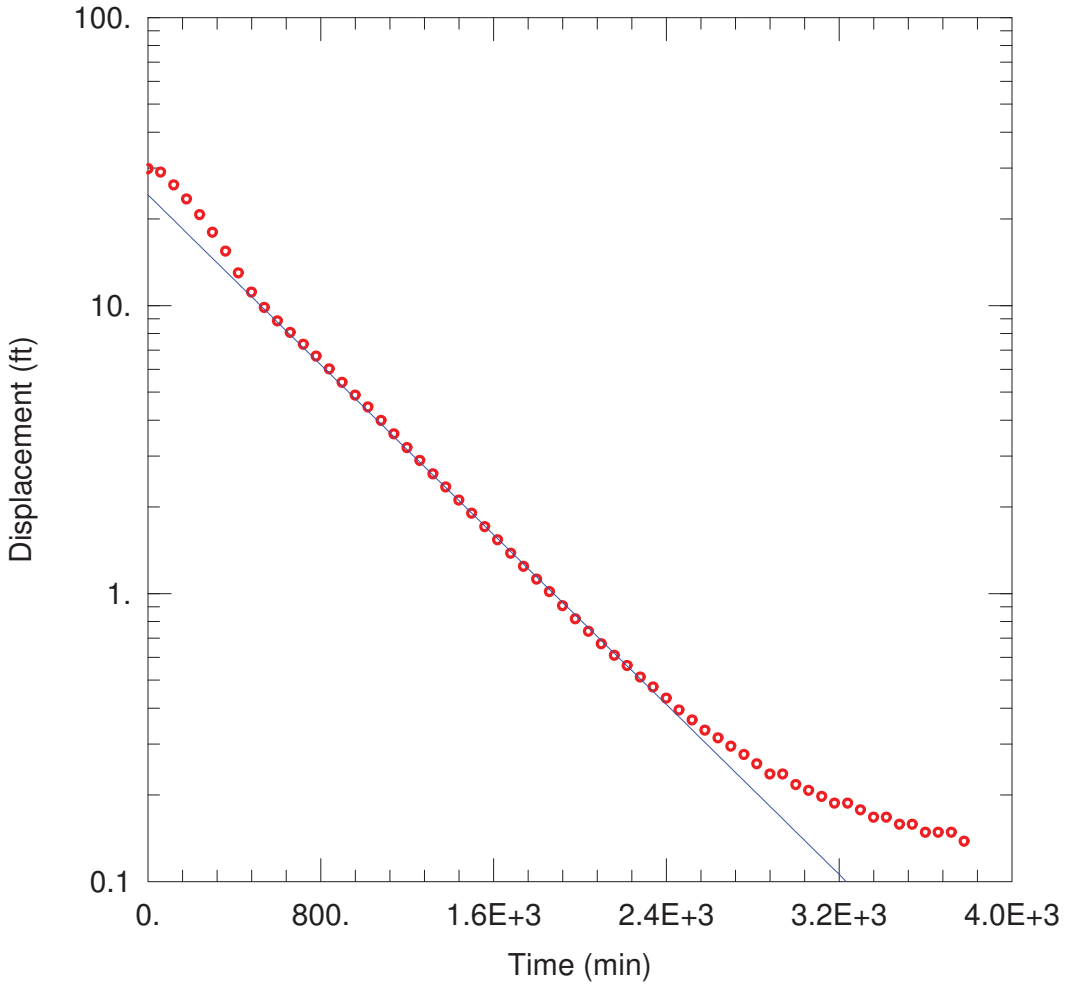
Observation Wells

Well Name	X (ft)	Y (ft)
PW-1	15	5

SOLUTION

Aquifer Model: Unconfined Solution Method: Cooper-Jacob

T = 35.28 ft^2/day S = 81.99



WELL TEST ANALYSIS

Data Set: C:\...\209638002 PW-1 Rev BR.aqt
Date: 05/04/20 Time: 11:01:56

PROJECT INFORMATION

Company: Ninyo & Moore
Client: SCWD
Project: 209638002
Location: Laguna Beach
Test Well: PW-1
Test Date: 3/20/2020

AQUIFER DATA

Saturated Thickness: 38. ft Anisotropy Ratio (Kz/Kr): 0.1

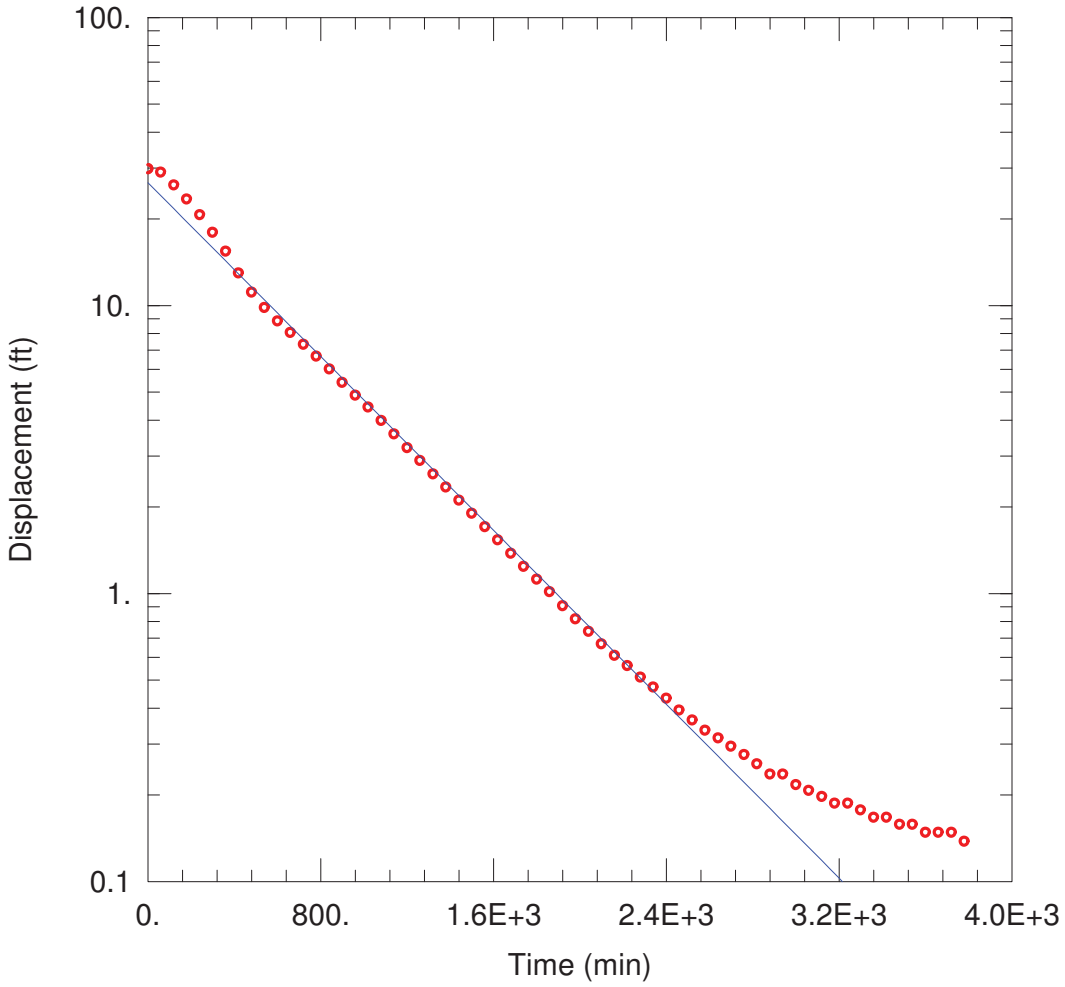
WELL DATA (PW-1)

Initial Displacement: 29.8 ft
Total Well Penetration Depth: 50. ft
Casing Radius: 0.25 ft
Static Water Column Height: 38. ft
Screen Length: 40. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.008179 ft/day y0 = 24.21 ft



WELL TEST ANALYSIS

Data Set: C:\...\209638002 PW-1 Rec H.aqt
Date: 05/04/20 Time: 11:01:30

PROJECT INFORMATION

Company: Ninyo & Moore
Client: SCWD
Project: 209638002
Location: Laguna Beach
Test Well: PW-1
Test Date: 3/20/2020

AQUIFER DATA

Saturated Thickness: 38. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (PW-1)

Initial Displacement: 29.8 ft
Total Well Penetration Depth: 50. ft
Casing Radius: 0.25 ft
Static Water Column Height: 38. ft
Screen Length: 40. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

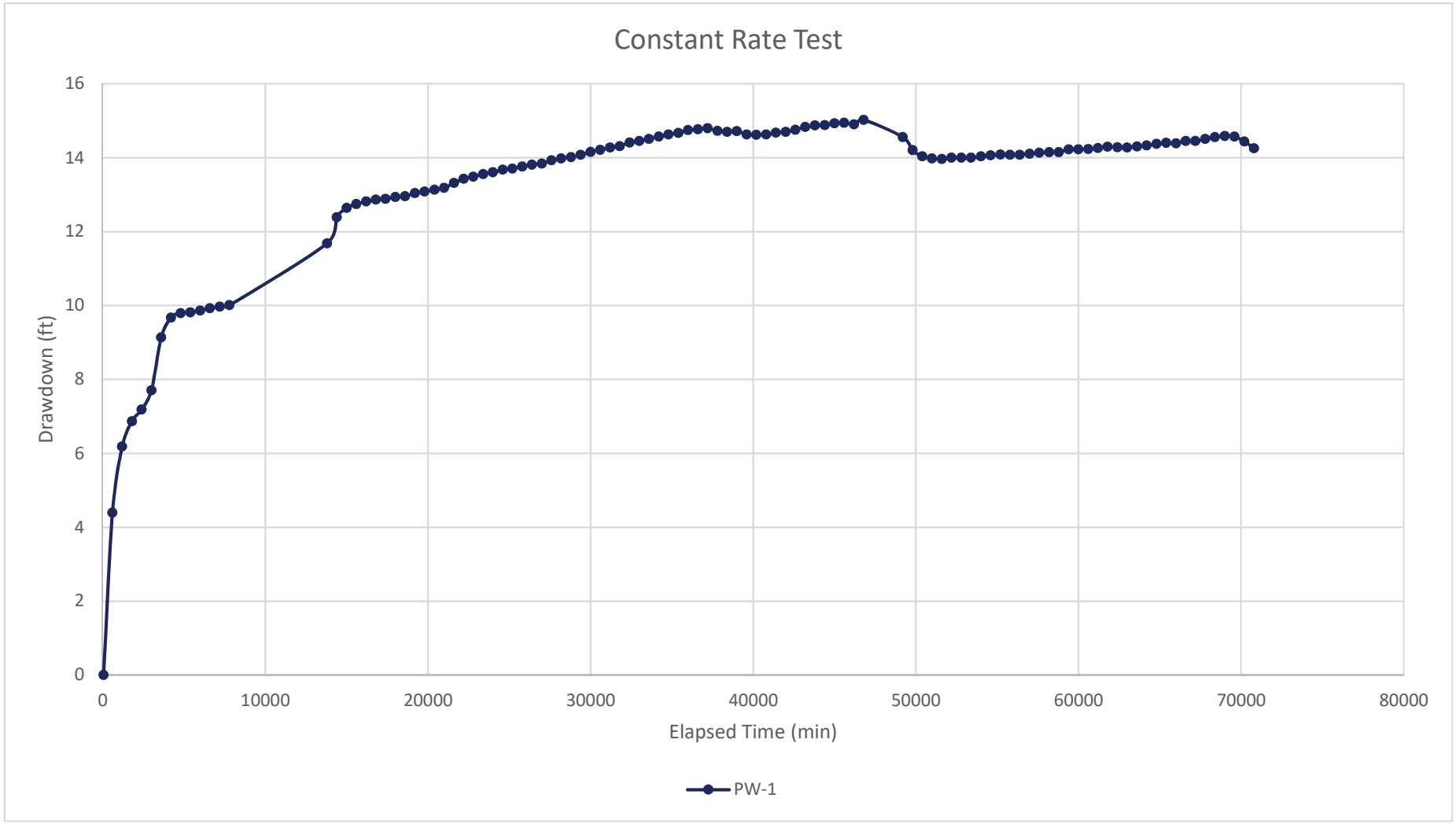
K = 0.0109 ft/day y0 = 26.68 ft

Location: MW-1
Project: SCWD Lift Station 2
Test Start: 03/19/20 15:40 Survey End: 03/20/20 11:10

Elapsed Time (min)	Displacement (ft)
0	0.00
60	4.39
600	6.18
1200	6.87
1800	7.19
2400	7.71
3000	9.13
3600	9.68
4200	9.79
4800	9.81
5400	9.86
6000	9.92
6600	9.97
7200	10.01
7800	11.68
13800	12.38
14400	12.64
15000	12.75
15600	12.82
16200	12.86
16800	12.88
17400	12.93
18000	12.95
18600	13.04
19200	13.08
19800	13.13
20400	13.18
21000	13.32
21600	13.43
22200	13.49
22800	13.55
23400	13.60
24000	13.67
24600	13.70
25200	13.76
25800	13.81
26400	13.84
27000	13.93
27600	13.98
28200	14.02

Elapsed Time (min)	Displacement (ft)
28800	14.08
29400	14.15
30000	14.21
30600	14.27
31200	14.31
31800	14.41
32400	14.45
33000	14.51
33600	14.57
34200	14.63
34800	14.67
35400	14.74
36000	14.76
36600	14.79
37200	14.73
37800	14.70
38400	14.72
39000	14.63
39600	14.62
40200	14.63
40800	14.68
41400	14.70
42000	14.75
42600	14.83
43200	14.87
43800	14.88
44400	14.93
45000	14.94
45600	14.90
46200	15.02
46800	14.56
49200	14.20
49800	14.04
50400	13.98
51000	13.97
51600	14.00
52200	14.00
52800	14.00
53400	14.04
54000	14.07

Elapsed Time (min)	Displacement (ft)
54600	14.09
55200	14.08
55800	14.08
56400	14.11
57000	14.13
57600	14.14
58200	14.14
58800	14.22
59400	14.22
60000	14.23
60600	14.26
61200	14.29
61800	14.28
62400	14.27
63000	14.30
63600	14.33
64200	14.37
64800	14.40
65400	14.39
66000	14.45
66600	14.45
67200	14.51
67800	14.56
68400	14.59
69000	14.57
69600	14.44
70200	14.25


Constant Rate Test
Drawdown (ft)
16
14
12
10
8
6
4
2
0
0
10000
20000
30000
40000
50000
60000
70000
80000
Elapsed Time (min)
PW-1

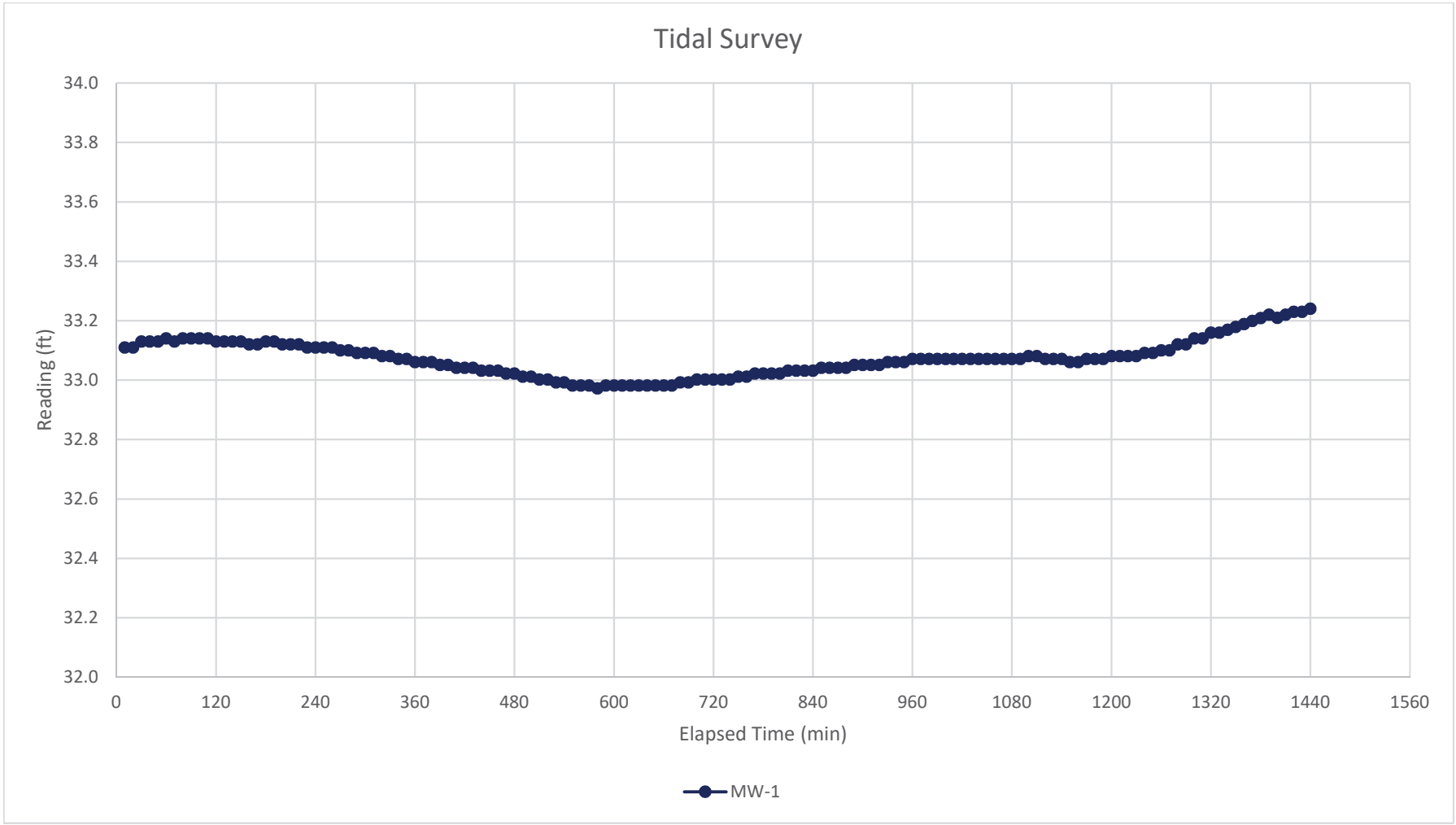
Location: MW-1
Location: SCWD Lift Station 2
Survey Start: 7:30 03/18/20 Survey End: 7:30 03/19/20

Elapsed Time (min)	Reading (ft)
10	33.11
20	33.11
30	33.13
40	33.13
50	33.13
60	33.14
70	33.13
80	33.14
90	33.14
100	33.14
110	33.14
120	33.13
130	33.13
140	33.13
150	33.13
160	33.12
170	33.12
180	33.13
190	33.13
200	33.12
210	33.12
220	33.12
230	33.11
240	33.11
250	33.11
260	33.11
270	33.1
280	33.1
290	33.091
300	33.091
310	33.091
320	33.081
330	33.081
340	33.071
350	33.071
360	33.061
370	33.061
380	33.061
390	33.051
400	33.051

Elapsed Time (min)	Reading (ft)
410	33.04
420	33.04
430	33.04
440	33.03
450	33.03
460	33.03
470	33.02
480	33.02
490	33.01
500	33.01
510	33.00
520	33.00
530	32.99
540	32.99
550	32.98
560	32.98
570	32.98
580	32.97
590	32.98
600	32.98
610	32.98
620	32.98
630	32.98
640	32.98
650	32.98
660	32.98
670	32.98
680	32.99
690	32.99
700	33.00
710	33.00
720	33.00
730	33.00
740	33.00
750	33.01
760	33.01
770	33.02
780	33.02
790	33.02
800	33.02

Elapsed Time (min)	Reading (ft)
810	33.03
820	33.03
830	33.03
840	33.03
850	33.04
860	33.04
870	33.04
880	33.04
890	33.05
900	33.05
910	33.05
920	33.05
930	33.06
940	33.06
950	33.06
960	33.07
970	33.07
980	33.07
990	33.07
1000	33.07
1010	33.07
1020	33.07
1030	33.07
1040	33.07
1050	33.07
1060	33.07
1070	33.07
1080	33.07
1090	33.07
1100	33.08
1110	33.08
1120	33.07
1130	33.07
1140	33.07
1150	33.06
1160	33.06
1170	33.07
1180	33.07
1190	33.07
1200	33.08

Elapsed Time (min)	Reading (ft)
1210	33.08
1220	33.08
1230	33.08
1240	33.09
1250	33.09
1260	33.10
1270	33.10
1280	33.12
1290	33.12
1300	33.14
1310	33.14
1320	33.16
1330	33.16
1340	33.17
1350	33.18
1360	33.19
1370	33.20
1380	33.21
1390	33.22
1400	33.21
1410	33.22
1420	33.23
1430	33.23
1440	33.24


Tidal Survey
34.0
33.8
33.6
33.4
33.2
33.0
32.8
32.6
32.4
32.2
32.0
Reading (ft)
0
120
240
360
480
600
720
840
960
1080
1200
1320
1440
1560
Elapsed Time (min)
MW-1

APPENDIX G

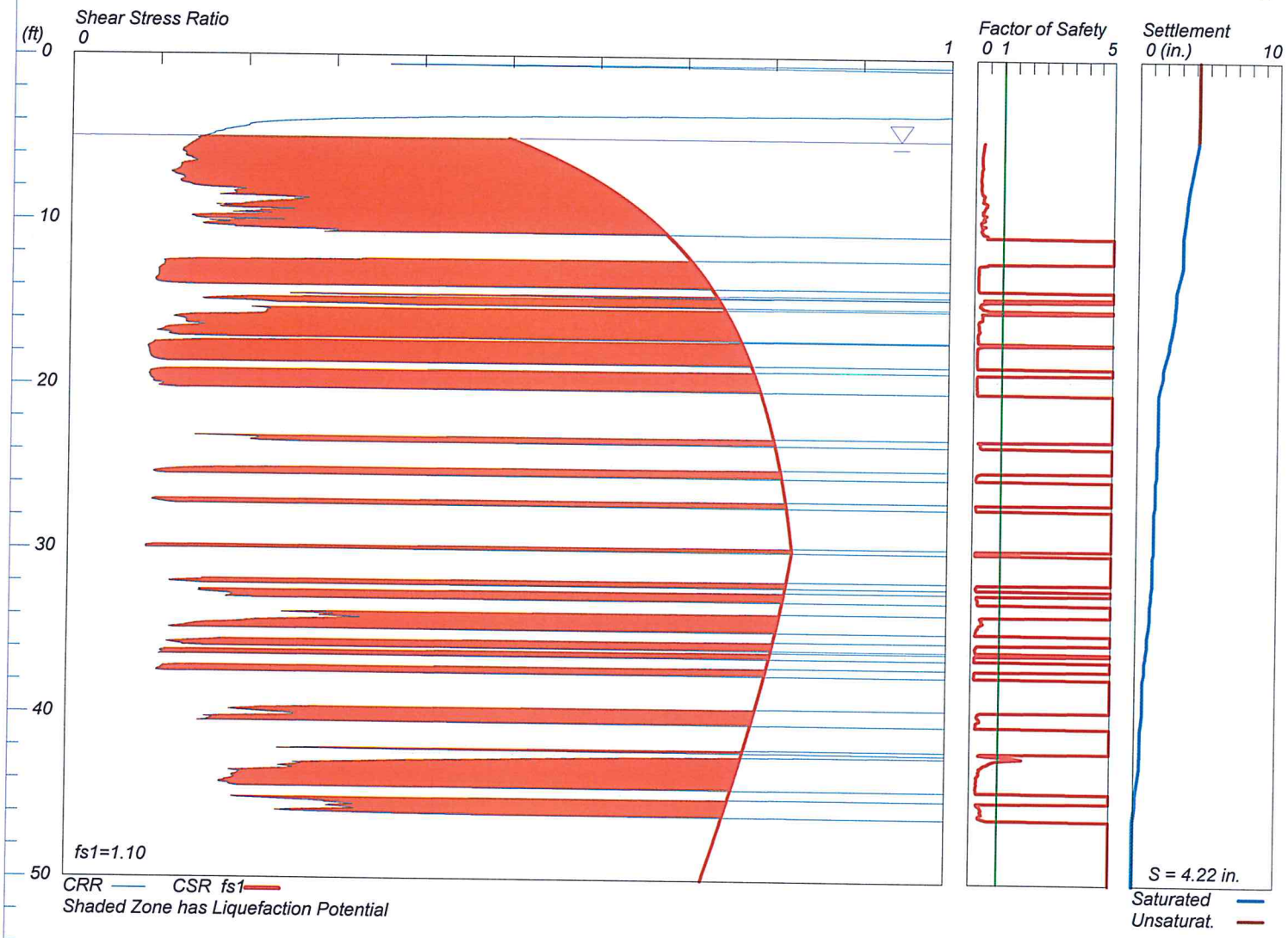
Liquefaction Analysis

LIQUEFACTION ANALYSIS

AKM Lift Station No. 2

Hole No.=CPT-3 Water Depth=5 ft Surface Elev.=20

Magnitude=7.2
Acceleration=.702g



LiquefyPro CivilTech Software USA www.civiltech.com

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LIQUEFACTION ANALYSIS CALCULATION DETAILS
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Input File Name: G:\Projects\200000 - Irvine\209600 - 209649\209638\209638002\Electronic Project File\Data Analysis & Calculations\Liquefaction\209638002 CPT-3_50ft.liq
Title: AKM Lift Station No. 2
Subtitle: 209638002

Input Data:
Surface Elev.=20
Hole No.=CPT-3
Depth of Hole=50.00 ft
Water Table during Earthquake= 5.00 ft
Water Table during In-Situ Testing= 12.00 ft
Max. Acceleration=0.7 g
Earthquake Magnitude=7.20

1. CPT Calulation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu/Seed
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1
8. Sampling Method, Cs= 1
9. User request factor of safety (apply to CSR) , User= 1.1
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

Output Results:
Calculation segment, dz=0.050 ft
User defined Print Interval, dp=1.00 ft

CSR Calculation:

Depth ft	gamma pcf	sigma atm	gamma' pcf	sigma' atm	rd	CSR	x fs1	=CSRfs
0.00	120.00	0.000	120.00	0.000	1.00	0.46	1.10	0.50
1.00	120.00	0.060	120.00	0.060	1.00	0.46	1.10	0.50
2.00	120.00	0.120	120.00	0.120	1.00	0.45	1.10	0.50

3.00	120.00	0.180	120.00	0.180	0.99	0.45	1.10	0.50
4.00	120.00	0.240	120.00	0.240	0.99	0.45	1.10	0.50
5.00	120.00	0.300	57.60	0.300	0.99	0.45	1.10	0.50
6.00	120.00	0.360	57.60	0.329	0.99	0.49	1.10	0.54
7.00	120.00	0.420	57.60	0.358	0.98	0.53	1.10	0.58
8.00	120.00	0.480	57.60	0.386	0.98	0.56	1.10	0.61
9.00	120.00	0.540	57.60	0.415	0.98	0.58	1.10	0.64
10.00	120.00	0.600	57.60	0.444	0.98	0.60	1.10	0.66
11.00	120.00	0.660	57.60	0.473	0.97	0.62	1.10	0.68
12.00	120.00	0.720	57.60	0.502	0.97	0.64	1.10	0.70
13.00	120.00	0.780	57.60	0.530	0.97	0.65	1.10	0.72
14.00	120.00	0.840	57.60	0.559	0.97	0.66	1.10	0.73
15.00	120.00	0.900	57.60	0.588	0.97	0.67	1.10	0.74
16.00	120.00	0.960	57.60	0.617	0.96	0.68	1.10	0.75
17.00	120.00	1.020	57.60	0.646	0.96	0.69	1.10	0.76
18.00	120.00	1.080	57.60	0.674	0.96	0.70	1.10	0.77
19.00	120.00	1.140	57.60	0.703	0.96	0.71	1.10	0.78
20.00	120.00	1.200	57.60	0.732	0.95	0.71	1.10	0.78
21.00	120.00	1.260	57.60	0.761	0.95	0.72	1.10	0.79
22.00	120.00	1.320	57.60	0.790	0.95	0.72	1.10	0.80
23.00	120.00	1.380	57.60	0.818	0.95	0.73	1.10	0.80
24.00	120.00	1.440	57.60	0.847	0.94	0.73	1.10	0.81
25.00	120.00	1.500	57.60	0.876	0.94	0.74	1.10	0.81
26.00	120.00	1.560	57.60	0.905	0.94	0.74	1.10	0.81
27.00	120.00	1.620	57.60	0.934	0.94	0.74	1.10	0.82
28.00	120.00	1.680	57.60	0.962	0.93	0.74	1.10	0.82
29.00	120.00	1.740	57.60	0.991	0.93	0.75	1.10	0.82
30.00	120.00	1.800	57.60	1.020	0.93	0.75	1.10	0.82
31.00	120.00	1.860	57.60	1.049	0.92	0.75	1.10	0.82
32.00	120.00	1.920	57.60	1.078	0.91	0.74	1.10	0.82
33.00	120.00	1.980	57.60	1.106	0.91	0.74	1.10	0.81
34.00	120.00	2.040	57.60	1.135	0.90	0.74	1.10	0.81
35.00	120.00	2.100	57.60	1.164	0.89	0.73	1.10	0.81
36.00	120.00	2.160	57.60	1.193	0.88	0.73	1.10	0.80
37.00	120.00	2.220	57.60	1.222	0.87	0.72	1.10	0.80
38.00	120.00	2.280	57.60	1.250	0.86	0.72	1.10	0.79
39.00	120.00	2.340	57.60	1.279	0.86	0.72	1.10	0.79
40.00	120.00	2.400	57.60	1.308	0.85	0.71	1.10	0.78
41.00	120.00	2.460	57.60	1.337	0.84	0.71	1.10	0.78
42.00	120.00	2.520	57.60	1.366	0.83	0.70	1.10	0.77
43.00	120.00	2.580	57.60	1.394	0.82	0.70	1.10	0.77
44.00	120.00	2.640	57.60	1.423	0.82	0.69	1.10	0.76
45.00	120.00	2.700	57.60	1.452	0.81	0.69	1.10	0.75
46.00	120.00	2.760	57.60	1.481	0.80	0.68	1.10	0.75
47.00	120.00	2.820	57.60	1.510	0.79	0.67	1.10	0.74
48.00	120.00	2.880	57.60	1.538	0.78	0.67	1.10	0.74
49.00	120.00	2.940	57.60	1.567	0.78	0.66	1.10	0.73
50.00	120.00	3.000	57.60	1.596	0.77	0.66	1.10	0.72

CSR is based on water table at 5.00 during earthquake

CRR Calculation from CPT data, using Modify Robertson's Method:
(Fines content is determined by qc and fric.)

Depth	qc	fric.	n	Q	Rf	Ic	Cq	Fines	Kc	qc1n	qc1f	CRR7.5
ft	atm	atm						%		atm	atm	
0.00			1.00	1.00E-4	0.00	7.97						
0.00	0.00	0.00	1.00	1.00E-4	0.00	7.97	1.00	NoLiq	1.00	0.00	0.00	2.08
1.00			1.00	9.95E2	0.32	0.87						
1.00			0.50	2.44E2	0.32	1.30						
1.00	59.78	0.19	0.50	2.44E2	0.32	1.30	4.08	0.45	0.00	244.03	244.03	1.43
2.00			1.00	1.48E3	1.08	1.29						
2.00			0.50	5.12E2	1.08	1.47						
2.00	177.36	1.92	0.50	5.12E2	1.08	1.47	2.89	2.39	0.00	500.00	500.00	2.08
3.00			1.00	5.81E2	1.89	1.66						
3.00			0.50	2.47E2	1.89	1.84						
3.00	104.82	1.98	0.50	2.47E2	1.89	1.84	2.36	9.10	0.11	247.05	277.42	2.07
4.00			1.00	2.27E2	0.62	1.51						
4.00			0.50	1.12E2	0.62	1.75						
4.00	54.78	0.34	0.50	1.12E2	0.62	1.75	2.04	7.02	0.05	111.82	118.20	0.23
5.00			1.00	1.39E2	0.45	1.59						
5.00			0.50	7.69E1	0.45	1.81						
5.00	42.13	0.19	0.50	7.69E1	0.45	1.81	1.83	8.30	0.09	76.92	84.35	0.14
6.00			1.00	8.43E1	0.87	1.93						
6.00			0.50	5.12E1	0.87	2.11						
6.00	30.73	0.27	0.50	5.12E1	0.87	2.11	1.67	16.09	0.30	51.21	72.75	0.12
7.00			1.00	5.80E1	1.08	2.12						
7.00			0.50	3.82E1	1.08	2.27						
7.00	24.79	0.26	0.50	3.82E1	1.08	2.27	1.54	21.30	0.44	38.25	67.73	0.11
8.00			1.00	4.27E1	1.55	2.32						
8.00			0.50	3.03E1	1.55	2.44						
8.00	20.97	0.32	0.50	3.03E1	1.55	2.44	1.44	27.98	0.61	30.26	78.33	0.12
9.00			1.00	3.34E1	1.94	2.46						
9.00			0.50	2.53E1	1.94	2.56						
9.00	18.60	0.35	0.50	2.53E1	1.94	2.56	1.36	33.38	0.76	25.31	104.54	0.19
10.00			1.00	3.68E1	1.69	2.39						
10.00			0.50	2.93E1	1.69	2.47						
10.00	22.68	0.37	0.50	2.93E1	1.69	2.47	1.29	29.44	0.65	29.28	84.28	0.14
11.00			1.00	2.30E1	2.95	2.70						
11.00	15.84	0.45	1.00	2.30E1	2.95	2.70	1.00	NoLiq	1.00	15.84	15.84	2.08
12.00			1.00	1.82E1	3.62	2.84						
12.00	13.80	0.47	1.00	1.82E1	3.62	2.84	1.00	NoLiq	1.00	13.80	13.80	2.08
13.00			1.00	3.60E1	0.51	2.13						
13.00			0.50	3.20E1	0.51	2.17						
13.00	27.70	0.14	0.50	3.20E1	0.51	2.17	1.16	18.04	0.35	32.01	49.10	0.09
14.00			1.00	2.10E1	1.29	2.53						
14.00			0.50	1.95E1	1.29	2.56						
14.00	17.17	0.21	0.50	1.95E1	1.29	2.56	1.13	33.21	0.75	19.48	78.92	0.13
15.00			1.00	2.85E1	2.06	2.53						
15.00			0.50	2.66E1	2.06	2.56						

15.00	23.86	0.47	0.50	2.66E1	2.06	2.56	1.11	33.28	0.76	26.57	108.48	0.20
16.00			1.00	4.41E1	1.05	2.21						
16.00			0.50	4.13E1	1.05	2.23						
16.00	37.79	0.39	0.50	4.13E1	1.05	2.23	1.09	20.05	0.40	41.35	69.13	0.11
17.00			1.00	3.15E1	1.00	2.32						
17.00			0.50	3.04E1	1.00	2.33						
17.00	28.23	0.27	0.50	3.04E1	1.00	2.33	1.08	23.71	0.50	30.38	60.70	0.10
18.00			1.00	1.67E1	0.38	2.38						
18.00			0.50	1.70E1	0.38	2.38						
18.00	16.03	0.06	0.50	1.70E1	0.38	2.38	1.06	25.50	0.55	16.96	37.48	0.08
19.00			1.00	1.22E1	0.94	2.66						
19.00	12.42	0.11	1.00	1.22E1	0.94	2.66	1.00	NoLiq	1.00	12.42	12.42	2.08
20.00			1.00	1.72E1	0.83	2.51						
20.00			0.50	1.80E1	0.83	2.49						
20.00	17.54	0.14	0.50	1.80E1	0.83	2.49	1.03	30.28	0.67	17.99	55.34	0.10
21.00			1.00	6.45E0	2.09	3.07						
21.00	7.58	0.13	1.00	6.45E0	2.09	3.07	1.00	NoLiq	1.00	7.58	7.58	2.08
22.00			1.00	1.37E1	1.59	2.73						
22.00	15.11	0.22	1.00	1.37E1	1.59	2.73	1.00	NoLiq	1.00	15.11	15.11	2.08
23.00			1.00	1.15E1	3.71	3.00						
23.00	13.35	0.44	1.00	1.15E1	3.71	3.00	1.00	NoLiq	1.00	13.35	13.35	2.08
24.00			1.00	1.89E1	2.99	2.77						
24.00	21.58	0.60	1.00	1.89E1	2.99	2.77	1.00	NoLiq	1.00	21.58	21.58	2.08
25.00			1.00	2.49E1	2.34	2.61						
25.00	28.76	0.64	1.00	2.49E1	2.34	2.61	1.00	NoLiq	1.00	28.76	28.76	2.08
26.00			1.00	7.71E0	1.99	3.00						
26.00	10.22	0.17	1.00	7.71E0	1.99	3.00	1.00	NoLiq	1.00	10.22	10.22	2.08
27.00			1.00	1.26E1	0.57	2.56						
27.00			0.50	1.50E1	0.57	2.49						
27.00	16.11	0.08	0.50	1.50E1	0.57	2.49	0.93	30.39	0.68	15.01	46.60	0.09
28.00			1.00	6.18E0	1.36	3.00						
28.00	8.98	0.10	1.00	6.18E0	1.36	3.00	1.00	NoLiq	1.00	8.98	8.98	2.08
29.00			1.00	5.58E0	1.90	3.11						
29.00	8.49	0.13	1.00	5.58E0	1.90	3.11	1.00	NoLiq	1.00	8.49	8.49	2.08
30.00			1.00	1.41E1	0.34	2.44						
30.00			0.50	1.73E1	0.34	2.36						
30.00	19.21	0.06	0.50	1.73E1	0.34	2.36	0.90	24.64	0.52	17.26	36.29	0.08
31.00			1.00	7.35E0	2.25	3.04						
31.00	11.17	0.21	1.00	7.35E0	2.25	3.04	1.00	NoLiq	1.00	11.17	11.17	2.08
32.00			1.00	2.51E1	1.11	2.43						
32.00			0.50	3.03E1	1.11	2.36						
32.00	34.47	0.36	0.50	3.03E1	1.11	2.36	0.88	24.69	0.53	30.28	63.84	0.10
33.00			1.00	2.83E1	2.23	2.56						
33.00			0.50	3.43E1	2.23	2.49						
33.00	39.49	0.84	0.50	3.43E1	2.23	2.49	0.87	30.28	0.67	34.31	105.55	0.19
34.00			1.00	6.39E1	2.11	2.27						
34.00			0.50	7.61E1	2.11	2.22						
34.00	88.49	1.83	0.50	7.61E1	2.11	2.22	0.86	19.54	0.39	76.06	124.31	0.26
35.00			1.00	1.05E1	1.95	2.88						
35.00	16.58	0.28	1.00	1.05E1	1.95	2.88	1.00	NoLiq	1.00	16.58	16.58	2.08
36.00			1.00	1.93E1	1.79	2.64						

36.00	29.33	0.49	1.00	1.93E1	1.79	2.64	1.00	NoLiq	1.00	29.33	29.33	2.08
37.00			1.00	1.98E1	1.67	2.61						
37.00	30.74	0.48	1.00	1.98E1	1.67	2.61	1.00	NoLiq	1.00	30.74	30.74	2.08
38.00			1.00	7.33E0	1.09	2.89						
38.00	13.05	0.12	1.00	7.33E0	1.09	2.89	1.00	NoLiq	1.00	13.05	13.05	2.08
39.00			1.00	1.03E1	2.07	2.90						
39.00	17.78	0.32	1.00	1.03E1	2.07	2.90	1.00	NoLiq	1.00	17.78	17.78	2.08
40.00			1.00	3.49E1	2.52	2.52						
40.00			0.50	4.50E1	2.52	2.44						
40.00	55.63	1.34	0.50	4.50E1	2.52	2.44	0.81	27.87	0.61	45.03	115.67	0.22
41.00			1.00	9.42E0	4.05	3.09						
41.00	17.12	0.59	1.00	9.42E0	4.05	3.09	1.00	NoLiq	1.00	17.12	17.12	2.08
42.00			1.00	1.89E1	5.36	2.93						
42.00	32.52	1.61	1.00	1.89E1	5.36	2.93	1.00	NoLiq	1.00	32.52	32.52	2.08
43.00			1.00	7.79E1	0.99	1.99						
43.00			0.50	1.01E2	0.99	1.90						
43.00	128.14	1.24	0.50	1.01E2	0.99	1.90	0.79	10.47	0.15	100.90	118.17	0.23
44.00			1.00	5.50E1	1.21	2.17						
44.00			0.50	7.26E1	1.21	2.07						
44.00	92.98	1.09	0.50	7.26E1	1.21	2.07	0.78	14.93	0.27	72.57	98.75	0.17
45.00			1.00	1.18E1	4.26	3.03						
45.00	22.48	0.84	1.00	1.18E1	4.26	3.03	1.00	NoLiq	1.00	22.48	22.48	2.08
46.00			1.00	4.17E1	2.76	2.49						
46.00			0.50	5.65E1	2.76	2.39						
46.00	73.64	1.96	0.50	5.65E1	2.76	2.39	0.77	25.98	0.56	56.49	128.45	0.28
47.00			1.00	1.08E1	3.19	2.98						
47.00	21.46	0.59	1.00	1.08E1	3.19	2.98	1.00	NoLiq	1.00	21.46	21.46	2.08
48.00			1.00	7.62E0	3.02	3.10						
48.00	16.26	0.40	1.00	7.62E0	3.02	3.10	1.00	NoLiq	1.00	16.26	16.26	2.08
49.00			1.00	1.35E1	2.93	2.88						
49.00	27.05	0.71	1.00	1.35E1	2.93	2.88	1.00	NoLiq	1.00	27.05	27.05	2.08
50.00			1.00	1.26E1	4.63	3.03						
50.00	25.91	1.06	1.00	1.26E1	4.63	3.03	1.00	NoLiq	1.00	25.91	25.91	2.08

Fines have been calculated, and correction is made by Modify Robertson Method.
Fines=NoLiq means the soils are not liquefiable.
CRR is based on water table at 12.00 during In-Situ Testing

Factor of Safety, - Earthquake Magnitude= 7.20:

Depth ft	sigC' atm	CRR7.5	x Ksig	=CRRv	x MSF	=CRRm	CSRfs	F.S.=CRRm/CSRfs	
0.00	0.00	2.08	1.00	2.08	1.11	2.00	0.50	5.00	^
1.00	0.04	1.43	1.00	1.43	1.11	1.59	0.50	5.00	
2.00	0.08	2.08	1.00	2.08	1.11	2.31	0.50	5.00	
3.00	0.12	2.07	1.00	2.07	1.11	2.29	0.50	5.00	
4.00	0.16	0.23	1.00	0.23	1.11	0.26	0.50	5.00	
5.00	0.20	0.14	1.00	0.14	1.11	0.15	0.50	0.30	*
6.00	0.23	0.12	1.00	0.12	1.11	0.13	0.54	0.24	*
7.00	0.27	0.11	1.00	0.11	1.11	0.12	0.58	0.21	*

8.00	0.31	0.12	1.00	0.12	1.11	0.14	0.61	0.23 *
9.00	0.35	0.19	1.00	0.19	1.11	0.21	0.64	0.32 *
10.00	0.39	0.14	1.00	0.14	1.11	0.15	0.66	0.23 *
11.00	0.43	2.08	1.00	2.08	1.11	2.00	0.68	5.00 ^
12.00	0.47	2.08	1.00	2.08	1.11	2.00	0.70	5.00 ^
13.00	0.49	0.09	1.00	0.09	1.11	0.10	0.72	0.14 *
14.00	0.51	0.13	1.00	0.13	1.11	0.14	0.73	0.19 *
15.00	0.52	0.20	1.00	0.20	1.11	0.22	0.74	0.30 *
16.00	0.54	0.11	1.00	0.11	1.11	0.12	0.75	0.16 *
17.00	0.56	0.10	1.00	0.10	1.11	0.11	0.76	0.15 *
18.00	0.58	0.08	1.00	0.08	1.11	0.09	0.77	0.12 *
19.00	0.60	2.08	1.00	2.08	1.11	2.00	0.78	5.00 ^
20.00	0.62	0.10	1.00	0.10	1.11	0.11	0.78	0.14 *
21.00	0.64	2.08	1.00	2.08	1.11	2.00	0.79	5.00 ^
22.00	0.66	2.08	1.00	2.08	1.11	2.00	0.80	5.00 ^
23.00	0.67	2.08	1.00	2.08	1.11	2.00	0.80	5.00 ^
24.00	0.69	2.08	1.00	2.08	1.11	2.00	0.81	5.00 ^
25.00	0.71	2.08	1.00	2.08	1.11	2.00	0.81	5.00 ^
26.00	0.73	2.08	1.00	2.08	1.11	2.00	0.81	5.00 ^
27.00	0.75	0.09	1.00	0.09	1.11	0.10	0.82	0.12 *
28.00	0.77	2.08	1.00	2.08	1.11	2.00	0.82	5.00 ^
29.00	0.79	2.08	1.00	2.08	1.11	2.00	0.82	5.00 ^
30.00	0.80	0.08	1.00	0.08	1.11	0.09	0.82	0.11 *
31.00	0.82	2.08	1.00	2.08	1.11	2.00	0.82	5.00 ^
32.00	0.84	0.10	1.00	0.10	1.11	0.12	0.82	0.14 *
33.00	0.86	0.19	1.00	0.19	1.11	0.21	0.81	0.26 *
34.00	0.88	0.26	1.00	0.26	1.11	0.29	0.81	0.35 *
35.00	0.90	2.08	1.00	2.08	1.11	2.00	0.81	5.00 ^
36.00	0.92	2.08	1.00	2.08	1.11	2.00	0.80	5.00 ^
37.00	0.94	2.08	1.00	2.08	1.11	2.00	0.80	5.00 ^
38.00	0.95	2.08	1.00	2.08	1.11	2.00	0.79	5.00 ^
39.00	0.97	2.08	1.00	2.08	1.11	2.00	0.79	5.00 ^
40.00	0.99	0.22	1.00	0.22	1.11	0.25	0.78	0.32 *
41.00	1.01	2.08	1.00	2.09	1.11	2.00	0.78	5.00 ^
42.00	1.03	2.08	1.00	2.08	1.11	2.00	0.77	5.00 ^
43.00	1.05	0.23	1.00	0.23	1.11	0.26	0.77	0.34 *
44.00	1.07	0.17	1.00	0.17	1.11	0.19	0.76	0.25 *
45.00	1.09	2.08	0.99	2.06	1.11	2.00	0.75	5.00 ^
46.00	1.10	0.28	0.99	0.27	1.11	0.30	0.75	0.41 *
47.00	1.12	2.08	0.99	2.05	1.11	2.00	0.74	5.00 ^
48.00	1.14	2.08	0.98	2.05	1.11	2.00	0.74	5.00 ^
49.00	1.16	2.08	0.98	2.04	1.11	2.00	0.73	5.00 ^
50.00	1.18	2.08	0.98	2.03	1.11	2.00	0.72	5.00 ^

* F.S.<1: Liquefaction Potential Zone. (If above water table: F.S.=5)
^ No-liquefiable Soils or above Water Table.
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

CPT convert to SPT for Settlement Analysis:
Fines Correction for Settlement Analysis:

Depth ft	Ic	qc/N60	qc1 atm	(N1)60	Fines %	d(N1)60	(N1)60s
0.00	7.97	1.02	0.00	0.10	NoLiq	0.00	0.10
1.00	1.30	6.09	244.03	40.07	0.45	0.00	40.07
2.00	1.47	5.79	500.00	86.39	2.39	0.00	86.39
3.00	1.84	5.09	277.42	54.49	9.10	0.00	54.49
4.00	1.75	5.27	118.20	22.42	7.02	0.00	22.42
5.00	1.81	5.16	84.35	16.35	8.30	0.00	16.35
6.00	2.11	4.60	72.75	15.81	16.09	0.00	15.81
7.00	2.27	4.31	67.73	15.71	21.30	0.00	15.71
8.00	2.44	4.00	78.33	19.61	27.98	0.00	19.61
9.00	2.56	3.77	104.54	27.72	33.38	0.00	27.72
10.00	2.47	3.93	84.28	21.43	29.44	0.00	21.43
11.00	2.70	3.51	15.84	4.52	NoLiq	0.00	4.52
12.00	2.84	3.26	13.80	4.24	NoLiq	0.00	4.24
13.00	2.17	4.49	49.10	10.94	18.04	0.00	10.94
14.00	2.56	3.78	78.92	20.89	33.21	0.00	20.89
15.00	2.56	3.78	108.48	28.73	33.28	0.00	28.73
16.00	2.23	4.38	69.13	15.79	20.05	0.00	15.79
17.00	2.33	4.19	60.70	14.48	23.71	0.00	14.48
18.00	2.38	4.11	37.48	9.13	25.50	0.00	9.13
19.00	2.66	3.58	12.42	3.47	NoLiq	0.00	3.47
20.00	2.49	3.90	55.34	14.20	30.28	0.00	14.20
21.00	3.07	2.82	7.58	2.69	NoLiq	0.00	2.69
22.00	2.73	3.45	15.11	4.38	NoLiq	0.00	4.38
23.00	3.00	2.96	13.35	4.52	NoLiq	0.00	4.52
24.00	2.77	3.38	21.58	6.39	NoLiq	0.00	6.39
25.00	2.61	3.67	28.76	7.83	NoLiq	0.00	7.83
26.00	3.00	2.96	10.22	3.45	NoLiq	0.00	3.45
27.00	2.49	3.89	46.60	11.97	30.39	0.00	11.97
28.00	3.00	2.95	8.98	3.04	NoLiq	0.00	3.04
29.00	3.11	2.76	8.49	3.08	NoLiq	0.00	3.08
30.00	2.36	4.15	36.29	8.75	24.64	0.00	8.75
31.00	3.04	2.88	11.17	3.88	NoLiq	0.00	3.88
32.00	2.36	4.14	63.84	15.40	24.69	0.00	15.40
33.00	2.49	3.90	105.55	27.08	30.28	0.00	27.08
34.00	2.22	4.41	124.31	28.22	19.54	0.00	28.22
35.00	2.88	3.18	16.58	5.21	NoLiq	0.00	5.21
36.00	2.64	3.63	29.33	8.08	NoLiq	0.00	8.08
37.00	2.61	3.68	30.74	8.35	NoLiq	0.00	8.35
38.00	2.89	3.16	13.05	4.13	NoLiq	0.00	4.13
39.00	2.90	3.15	17.78	5.65	NoLiq	0.00	5.65
40.00	2.44	4.00	115.67	28.92	27.87	0.00	28.92
41.00	3.09	2.78	17.12	6.15	NoLiq	0.00	6.15
42.00	2.93	3.08	32.52	10.56	NoLiq	0.00	10.56
43.00	1.90	4.98	118.17	23.72	10.47	0.00	23.72
44.00	2.07	4.67	98.75	21.13	14.93	0.00	21.13
45.00	3.03	2.91	22.48	7.74	NoLiq	0.00	7.74
46.00	2.39	4.08	128.45	31.45	25.98	0.00	31.45
47.00	2.98	2.98	21.46	7.19	NoLiq	0.00	7.19

48.00	3.10	2.78	16.26	5.86	NoLiq	0.00	5.86
49.00	2.88	3.17	27.05	8.53	NoLiq	0.00	8.53
50.00	3.03	2.91	25.91	8.92	NoLiq	0.00	8.92

(N1)60s has been fines corrected in liquefaction analysis, therefore d(N1)60=0.
(N1)60 is converted from qc1, (N1)60s is after fines correction
Fines=NoLiq means the soils are not liquefiable.

Settlement of Saturated Sands:
Settlement Analysis Method: Tokimatsu/Seed

Depth ft	CSRsf	/ MSF*	=CSRm	F.S.	Fines %	(N1)60s	Dr %	ec %	dsz in.	dsp in.	S in.
49.95	0.72	1.00	0.72	5.00	NoLiq	8.91	47.86	2.745	0.0E0	0.000	0.000
49.00	0.73	1.00	0.73	5.00	NoLiq	8.53	46.88	2.814	0.0E0	0.000	0.000
48.00	0.74	1.00	0.74	5.00	NoLiq	5.86	39.40	3.649	0.0E0	0.000	0.000
47.00	0.74	1.00	0.74	5.00	NoLiq	7.19	43.28	3.126	0.0E0	0.000	0.000
46.00	0.75	1.00	0.75	0.41	25.98	31.45	93.42	0.565	3.4E-3	0.004	0.004
45.00	0.75	1.00	0.75	5.00	NoLiq	7.74	44.78	2.960	0.0E0	0.116	0.120
44.00	0.76	1.00	0.76	0.25	14.93	21.13	72.57	1.432	8.6E-3	0.081	0.201
43.00	0.77	1.00	0.77	0.34	10.47	23.72	77.30	1.270	7.6E-3	0.169	0.370
42.00	0.77	1.00	0.77	5.00	NoLiq	10.56	51.86	2.460	0.0E0	0.045	0.415
41.00	0.78	1.00	0.78	5.00	NoLiq	6.15	40.28	3.535	0.0E0	0.000	0.415
40.00	0.78	1.00	0.78	0.32	27.87	28.92	87.66	0.888	5.3E-3	0.082	0.497
39.00	0.79	1.00	0.79	5.00	NoLiq	5.65	38.78	3.729	0.0E0	0.051	0.548
38.00	0.79	1.00	0.79	5.00	NoLiq	4.13	33.94	4.437	0.0E0	0.000	0.548
37.00	0.80	1.00	0.80	5.00	NoLiq	8.35	46.42	2.847	0.0E0	0.115	0.663
36.00	0.80	1.00	0.80	5.00	NoLiq	8.08	45.70	2.897	0.0E0	0.085	0.748
35.00	0.81	1.00	0.81	5.00	NoLiq	5.21	37.42	3.901	0.0E0	0.097	0.845
34.00	0.81	1.00	0.81	0.35	19.54	28.22	86.17	0.977	5.9E-3	0.153	0.998
33.00	0.81	1.00	0.81	0.26	30.28	27.08	83.82	1.059	6.4E-3	0.028	1.027

32.00	0.82	1.00	0.82	0.14	24.69	15.40	62.06	1.887	1.1E-2	0.120
1.147										
31.00	0.82	1.00	0.82	5.00	NoLiq	3.88	33.08	4.574	0.0E0	0.027
1.173										
30.00	0.82	1.00	0.82	0.11	24.64	8.75	47.44	2.775	1.7E-2	0.017
1.190										
29.00	0.82	1.00	0.82	5.00	NoLiq	3.08	30.30	4.998	0.0E0	0.065
1.255										
28.00	0.82	1.00	0.82	5.00	NoLiq	3.04	30.16	5.085	0.0E0	0.000
1.255										
27.00	0.82	1.00	0.82	0.12	30.39	11.97	55.05	2.274	1.4E-2	0.091
1.345										
26.00	0.81	1.00	0.81	5.00	NoLiq	3.45	31.60	4.802	0.0E0	0.000
1.345										
25.00	0.81	1.00	0.81	5.00	NoLiq	7.83	45.03	2.943	0.0E0	0.114
1.459										
24.00	0.81	1.00	0.81	5.00	NoLiq	6.39	41.00	3.439	0.0E0	0.000
1.459										
23.00	0.80	1.00	0.80	5.00	NoLiq	4.52	35.20	4.235	0.0E0	0.062
1.521										
22.00	0.80	1.00	0.80	5.00	NoLiq	4.38	34.76	4.307	0.0E0	0.000
1.521										
21.00	0.79	1.00	0.79	5.00	NoLiq	2.69	28.88	5.950	0.0E0	0.000
1.521										
20.00	0.78	1.00	0.78	0.14	30.28	14.20	59.70	1.988	1.2E-2	0.072
1.593										
19.00	0.78	1.00	0.78	5.00	NoLiq	3.47	31.68	4.789	0.0E0	0.278
1.871										
18.00	0.77	1.00	0.77	0.12	25.50	9.13	48.39	2.706	1.6E-2	0.211
2.082										
17.00	0.76	1.00	0.76	0.15	23.71	14.48	60.26	1.965	1.2E-2	0.241
2.323										
16.00	0.75	1.00	0.75	0.16	20.05	15.79	62.80	1.855	1.1E-2	0.222
2.545										
15.00	0.74	1.00	0.74	0.30	33.28	28.73	87.26	0.911	5.5E-3	0.122
2.667										
14.00	0.73	1.00	0.73	0.19	33.21	20.89	72.13	1.447	8.7E-3	0.059
2.727										
13.00	0.72	1.00	0.72	0.14	18.04	10.94	52.74	2.410	1.4E-2	0.286
3.013										
12.00	0.70	1.00	0.70	5.00	NoLiq	4.24	34.28	4.383	0.0E0	0.144
3.156										
11.00	0.68	1.00	0.68	5.00	NoLiq	4.52	35.20	4.234	0.0E0	0.000
3.156										
10.00	0.66	1.00	0.66	0.23	29.44	21.43	73.12	1.412	8.5E-3	0.094
3.251										
9.00	0.64	1.00	0.64	0.32	33.38	27.72	85.12	1.020	6.1E-3	0.142
3.392										
8.00	0.61	1.00	0.61	0.23	27.98	19.61	69.83	1.536	9.2E-3	0.124
3.516										
7.00	0.58	1.00	0.58	0.21	21.30	15.71	62.64	1.862	1.1E-2	0.214

3.730											
	6.00	0.54	1.00	0.54	0.24	16.09	15.81	62.83	1.854	1.1E-2	0.212
3.942											
	5.00	0.50	1.00	0.50	0.30	8.30	16.35	63.87	1.805	1.1E-2	0.228
4.170											

Settlement of Saturated Sands=4.170 in.
qc1 and (N1)60 is after fines correction in liquefaction analysis
(N1)60s is converted from qc1 and after fines correction
dsz is per each segment, dz=0.05 ft
dsp is per each print interval, dp=1.00 ft
S is cumulated settlement at this depth

Settlement of Unsaturated Sands:

Depth	sigma'	sigC'	(N1)60s	CSRsf	Gmax	g*Ge/Gm	g_eff	ec7.5	Cec	ec	dsz	dsp	S
ft	atm	atm			atm			%		%	in.	in.	in.
4.95	0.30	0.19	16.58	0.50	500.58	2.9E-4	0.2815	0.3537	0.98	0.3477			
4.00	0.24	0.16	22.42	0.50	497.55	2.4E-4	0.0618	0.0525	0.98	0.0516	4.17E-3	0.004	0.004
3.00	0.18	0.12	54.49	0.50	579.16	1.5E-4	0.0310	0.0098	0.98	0.0096	6.19E-4	0.031	0.035
2.00	0.12	0.08	86.39	0.50	551.34	1.1E-4	0.0227	0.0072	0.98	0.0070	1.16E-4	0.009	0.044
1.00	0.06	0.04	40.07	0.50	301.87	1.0E-4	0.0198	0.0063	0.98	0.0062	8.45E-5	0.002	0.046
0.00	0.00	0.00	0.10	0.50	0.53	9.5E-6	0.0010	0.0048	0.98	0.0047	7.39E-5	0.002	0.048
											0.00E0	0.001	0.049

Settlement of Unsaturated Sands=0.049 in.
(N1)60s is converted from qc1 and after fines correction
dsz is per each segment, dz=0.05 ft
dsp is per each print interval, dp=1.00 ft
S is cumulated settlement at this depth

Total Settlement of Saturated and Unsaturated Sands=4.219 in.
Differential Settlement=2.109 to 2.784 in.

Units: Depth = ft, Stress or Pressure = atm (tsf), Unit Weight = pcf, Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)
SPT Field data from Standard Penetration Test (SPT)

BPT	Field data from Becker Penetration Test (BPT)
qc	Field data from Cone Penetration Test (CPT) [atm (tsf)]
fs	Friction from CPT testing [atm (tsf)]
gamma	Total unit weight of soil
gamma'	Effective unit weight of soil
Fines	Fines content [%]
D50	Mean grain size
Dr	Relative Density
sigma	Total vertical stress [atm (tsf)]
sigma'	Effective vertical stress [atm (tsf)]
sigC'	Effective confining pressure [atm (tsf)]
rd	Stress reduction coefficient
CRRv	CRR after overburden stress correction, CRRv=CRR7.5 * Ksig
CRR7.5	Cyclic resistance ratio (M=7.5)
Ksig	Overburden stress correction factor for CRR7.5
CRRm	After magnitude scaling correction CRRm=CRRv * MSF
MSF	Magnitude scaling factor from M=7.5 to user input M
CSR	Cyclic stress ratio induced by earthquake
CSRfs	CSRfs=CSR*fs1 (Default fs1=1)
fs1	First CSR curve in graphic defined in #9 of Advanced page
fs2	2nd CSR curve in graphic defined in #9 of Advanced page
F.S.	Calculated factor of safety against liquefaction F.S.=CRRm/CSRsf
Cebs	Energy Ratio, Borehole Dia., and Sampling Method Corrections
Cr	Rod Length Corrections
Cn	Overburden Pressure Correction
(N1)60	SPT after corrections, (N1)60=SPT * Cr * Cn * Cebs
d(N1)60	Fines correction of SPT
(N1)60f	(N1)60 after fines corrections, (N1)60f=(N1)60 + d(N1)60
Cq	Overburden stress correction factor
qc1	CPT after Overburden stress correction
dqc1	Fines correction of CPT
qc1f	CPT after Fines and Overburden correction, qc1f=qc1 + dqc1
qc1n	CPT after normalization in Robertson's method
Kc	Fine correction factor in Robertson's Method
qc1f	CPT after Fines correction in Robertson's Method
Ic	Soil type index in Suzuki's and Robertson's Methods
(N1)60s	(N1)60 after settlement fines corrections
CSRm	After magnitude scaling correction for Settlement calculation CSRm=CSRsf / MSF*
CSRfs	Cyclic stress ratio induced by earthquake with user inputed fs
MSF*	Scaling factor from CSR, MSF*=1, based on Item 2 of Page C.
ec	Volumetric strain for saturated sands
dz	Calculation segment, dz=0.050 ft
dsz	Settlement in each segment, dz
dp	User defined print interval
dsp	Settlement in each print interval, dp
Gmax	Shear Modulus at low strain
g_eff	gamma_eff, Effective shear Strain
g*Ge/Gm	gamma_eff * G_eff/G_max, Strain-modulus ratio
ec7.5	Volumetric Strain for magnitude=7.5
Cec	Magnitude correction factor for any magnitude

ec	Volumetric strain for unsaturated sands, ec=Cec * ec7.5
NoLiq	No-Liquefy Soils

References:

1. NCEER Workshop on Evaluation of Liquefaction Resistance of Soils. Youd, T.L., and Idriss, I.M., eds., Technical Report NCEER 97-0022.

SP117. Southern California Earthquake Center. Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for

Analyzing and Mitigating Liquefaction in California. University of Southern California. March 1999.

2. RECENT ADVANCES IN SOIL LIQUEFACTION ENGINEERING AND SEISMIC SITE RESPONSE EVALUATION, Paper No. SPL-2, PROCEEDINGS: Fourth

International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, San Diego, CA, March 2001.

3. RECENT ADVANCES IN SOIL LIQUEFACTION ENGINEERING: A UNIFIED AND CONSISTENT FRAMEWORK, Earthquake Engineering Research Center,

Report No. EERC 2003-06 by R.B Seed and etc. April 2003.

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October 18, 2016

Dr. Sam McLeod
Natural History Museum of Los Angeles County
Vertebrate Paleontology
900 Exposition Blvd.
Los Angeles, CA 90007
213.763.3325

Subject: Request for a Database Search for the SCWD Lift Station No. 2 Project, City of Laguna Beach, Orange County, California (D160053.00)

Dear Dr. McLeod:

Environmental Science Associates (ESA) is preparing an Initial Study/ Mitigated Negative Declaration (IS/MND) for the South Coast Water District (SCWD) Lift Station No. 2 Project (Project). The Project is located in the City of Laguna Beach, within Orange County. The Project includes the construction of a new lift station along Country Club Drive in the City. Part of Country Club Drive would be used for construction staging and equipment access. For this reason, a temporary asphalt road is proposed on the south side of the existing road so that access is maintained for The Ranch at Laguna Beach. The temporary road is proposed in an area that is currently a flat dirt area.

The enclosed map shows the Project area located in:

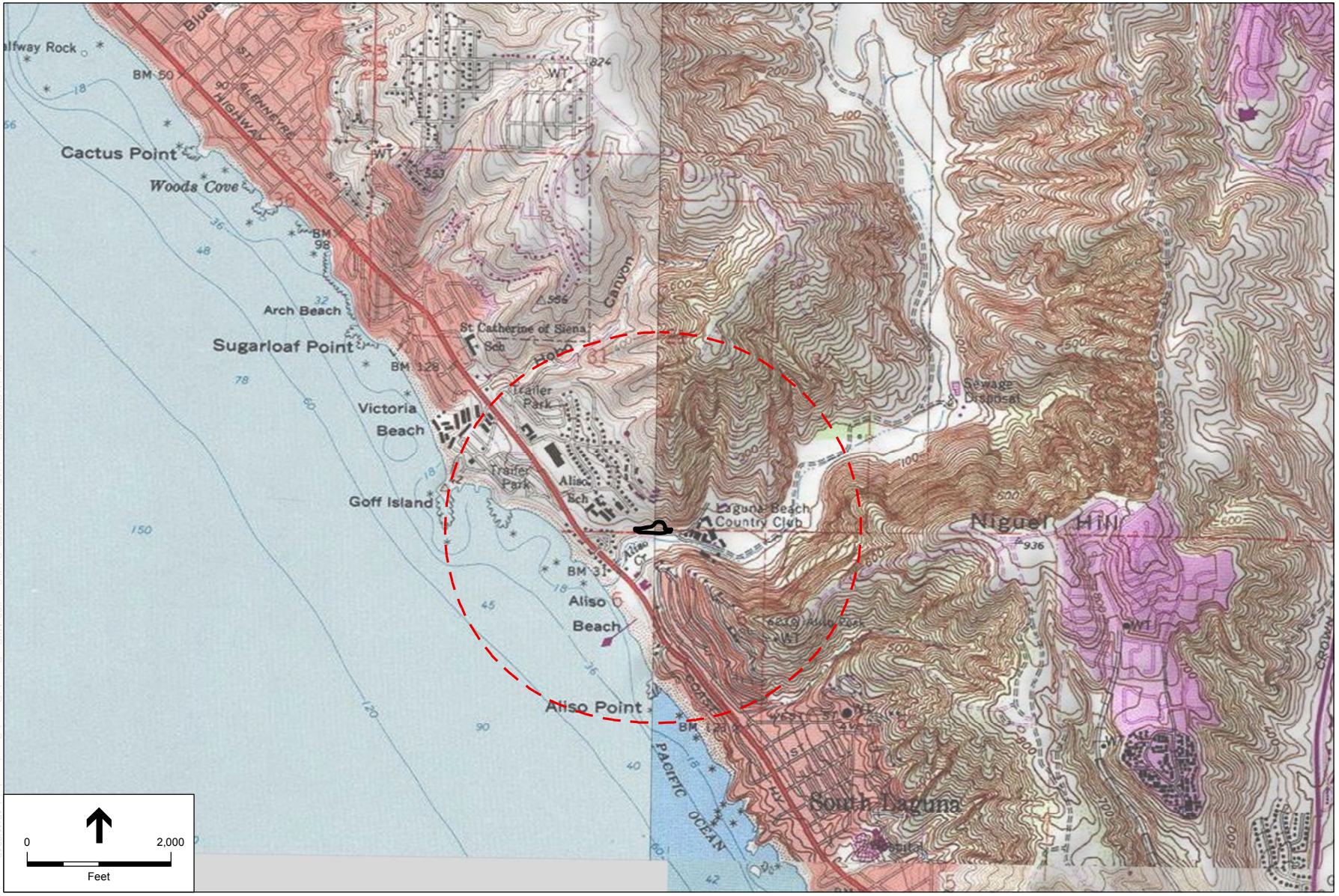
- Section 31 area of the Laguna Beach USGS 7.5' Quadrangle, Township 8 South, Range 8 West.

In an effort to provide an adequate appraisal of all potential impacts that may result from the proposed Project, ESA is requesting that a paleontological resource records search be conducted paleontological resources that may exist within the Project area.

Thank you for your time and cooperation regarding this matter. To expedite the delivery of search results, please email them to aabdelwahed@esassoc.com. Please contact me at 949.753.7001 or email if you have any questions.

Sincerely,

Arabesque Said-Abdelwahed, MPP
Senior Associate



SOURCE: USGS 7.5' Topo Quad Laguna Beach 1977; San Juan Capistrano 1977

South Coast. D160053

Figure 1
Records Search

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

NATURAL HISTORY MUSEUM
LOS ANGELES COUNTY

Vertebrate Paleontology Section
Telephone: (213) 763-3325
Fax: (213) 746-7431
e-mail: smcleod@nhm.org

10 November 2016

ESA
2121 Alton Parkway, Suite 100
Irvine, CA 92606

Attn: Arabesque Said-Abdelwahed, Senior Associate

re: Paleontological resources for the proposed, South Coast Water District (SCWD) Lift Station No. 2 Project, ESA Project # D160053.00, in the City of Laguna Beach, Orange County, project area

Dear Arabesque:

I have thoroughly searched our paleontology collection records for the locality and specimen data for the proposed, South Coast Water District (SCWD) Lift Station No. 2 Project, ESA Project # D160053.00, in the City of Laguna Beach, Orange County, project area as outlined on the portions of the Laguna Beach and San Juan Capistrano USGS topographic quadrangle maps that you sent to me via e-mail on 19 October 2016. We do not have any vertebrate fossil localities that lie within the proposed project area boundaries, but we do have localities nearby from the same sedimentary units that may occur subsurface in the proposed project area.

In the southern portion of the proposed project area there are surface deposits of younger Quaternary Alluvium, derived from the Aliso Creek drainage adjacent to the south. These deposits typically do not contain significant vertebrate fossils in the uppermost layers but may be underlain at relatively shallow depth by older Quaternary deposits that do contain significant fossil vertebrate remains. In the far western portion of the proposed project area there may be some surface deposits of older Quaternary Alluvium or terrace deposits. Our closest vertebrate fossil locality from older Quaternary deposits is LACM 1115, east-southeast of the proposed project area in the Salt Creek drainage, that produced fossil specimens of mammoth, *Mammuthus*

imperator. The more elevated terrain in most of the proposed project area has bedrock deposits of the middle Miocene San Onofre Breccia. This coarse rock unit is unlikely to contain significant vertebrate fossils and we have no vertebrate fossil localitiess from these deposits.

Excavations in the coarse San Onofre Breccia deposits exposed in the more elevated terrain in most of the proposed project area probably will not uncover significant fossil vertebrate remains. Shallow excavations in the younger Quaternary Alluvium exposed in the southern portion of the proposed project area likewise probably will not uncover significant vertebrate fossil remains. Deeper excavations in the latter portion of the proposed project area, or any excavations in the older Quaternary deposits in the far western portion of the proposed project area, however, may well encounter significant vertebrate fossils. Any substantial excavations in the finer-grained sedimentary deposits in the proposed project area, therefore, should be monitored closely to quickly and professionally recover any fossil remains discovered while not impeding development. Sediment samples should also be collected and processed to determine the small fossil potential in the proposed project area. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Sincerely,

Samuel A. McLeod

Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosure: invoice

Appendix G

Greenhouse Gas Assumptions and Modeling

ESA

APPENDIX G
Greenhouse Gas Assumptions and Modeling

1. Assumptions
    a. Construction Assumptions
    b. Schedule
    c. Equipment List
2. Emissions
3. CalEEMod Output - See Appendix A
4. EMFAC2017 - See Appendix A

1. Assumptions
a. Construction Assumptions

Lift Station
Assumptions

CalEEMod Inputs (Non-Default information only)

Project Location			
County	Orange County		
Air District	SCAQMD		
Climate Zone	8		
Construction Year start	2021		
Operational Year Project	2024		
Utility Provider	Southern California Edison		
Source Receptor Area (SCAQMD)	20	Central Orange County Costal	

	2021	2022	2024
CO intensity	483.27	462.58	421.21
% renewable	35.75%	38.50%	44.00%

1 Southern California Edison, 2018. ESG/Sustainability Template. Report date: September 27, 2018. Available: https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf. Accessed April 5, 2019.

2 SCE 2017 Power Content Label https://www.sce.com/sites/default/files/inline-files/2017PCL_0.pdf

3 SB-100 California Renewables Portfolio Standard Program: Emissions of Greenhouse Gases, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180

Project Description

The proposed project includes the removal of an existing water well and the construction of a new water well approximately 40 feet southwest of the existing well within the existing fenced well facility. The following is a description of the facilities proposed to be removed and the construction of the proposed facilities.

Land Use	Building SQFT	Building KFS	Units/ Spaces	Acres	CalEEMod Category
Lift Station	5,666			1.50	Light Industrial

Site Buildings:

1,006	Generator Building	
520	Electrical Building	
4,139	Lift Station	
1,294	Existing	To Be demolished

Lift Station
Assumptions

Construction Schedule

Phase Name	Start Date	End Date		
Emergency Intertie Valve Vault and Piping	9/6/2021	11/19/2021	**32**	**Months**
Overhead Power Relocation	10/4/2021	11/19/2021		
Sewer Grinder Vault	11/1/2021	7/4/2023		
Storm Drain and Creek Outlet Structure	11/22/2021	2/6/2024		
Country Club Drive Relocation	1/24/2022	4/8/2022		
Temporary Sewer Relocation	4/11/2022	4/27/2022		
New Lift Station Site Demolition	4/11/2022	4/20/2022		
Wetwell/Drywell Construction	5/23/2022	3/17/2023		
Perimeter Wall Construction	3/13/2023	5/30/2023		
2'X3' RCB Construction	6/5/2023	7/10/2023		
Slope Grading Behind Perimeter Wall	8/7/2023	9/15/2023		
Influent Sewer Extension	8/15/2022	1/13/2023		
Generator Building Construction	4/3/2023	7/10/2023		
Pump Building Construction	4/24/2023	7/28/2023		
Generator Building Mechanical	8/14/2023	8/15/2023		
Pump Building Mechanical	7/3/2023	7/3/2023		
Scrubber Installation	5/23/2023	3/11/2024		
Miscellaneous Pump Station Site Improvements	10/6/2023	4/26/2024		
Existing Pump Station Demolition	1/22/2024	2/16/2024		
Miscellaneous Items	9/6/2021	2/16/2024		

Note:

The above schedule contains the start and end date for each construction phase. However, subphases and equipment use may be intermittentb between these dates. It is not intended that construction of these phases will occur on every day, or even every work day, within the start and end date listed. See the detailed phasing below for numer of days per sub phase and the accompanying construction schedule for detaild days of activities per phase and subphase.

Lift Station
Assumptions

Phase Name	Days	Haul Trips	Concrete	Vendor
Emergency Intertie Valve Vault and Piping				
Dewatering Wells	2	0	0	0
Vault and Tapping Sleeve Excavation /Shoring	10	2	0	0
Line Stop Installation/Removal	1	0	0	2
Subgrade Preparation	2	0	0	1
Vault Delivery and Placement	1	0	0	1
Vault Backfill and Compaction	5	0	0	0
Valve and Pipe Installation	15	2	0	0
Overhead Power Relocation				
Power Conduit installation	10	1	0	0
Communication Conduit Installation	15	1	0	0
Pavement Repair	2	0	0	2
Sewer Grinder Vault				
Dewatering Wells	1	0	0	0
Excavation/Shoring	10	2	0	0
Subgrade Preparation	2	0	0	1
Vault Base Forming/Rebar/Concrete	5	0	3	0
Vault Placement/Backfill	3	0	0	1
Set Grinder	1	0	0	0
Storm Drain and Creek Outlet Structure				
Outlet Structure Excavation	3	1	0	0
Subgrade Preparation	1	0	0	0
Outlet Structure Forming/Rebar/Concrete	3	0	1	0
Outlet Structure Backfill	1	0	0	0
Rip Rap Excavation and Placement	3	1	0	3
4'x1' RCB Excavation	2	2	0	0
4'x1' RCB Subgrade Preparation	1	0	0	0
4'x1' RCB Concrete	1	0	2	0
42 inch RCP Excavation	2	1	0	0
42 inch RCP Subgrade Preparation	1	0	0	0
42 Inch RCP Installation/Backfill	2	0	0	0
Catch Basin Excavation	1	1	0	0
Catch Basin Concrete	1	0	1	0
Catch Basin Backfill	1	0	0	0
18 Inch RCP Excavation	5	1	0	0
18 Inch RCP Subgrade Preparation	2	0	0	0
18 Inch RCP Installation Backfill	13	0	0	0
Country Club Drive Relocation				
Road Grading/Subgrade Preparation	15	1	0	0
Road Base and Compaction	10	0	0	3
AC Pavement	20	0	0	1
DG Pedestrian Path	10	0	0	2

Lift Station
Assumptions

Phase Name	Days	Haul Trips	Concrete	Vendor
Temporary Sewer Relocation				
Manhole Excavation/Shoring	1	2	0	0
Manhole Base Placement	1	0	1	0
Manhole Riser Placement/Backfill	2	0	0	1
8-inch Pipe Excavation/Shoring	2	1	0	0
8-inch Pipe Subgrade Preparation	1	0	0	0
8-inch Pipe Installation/Backfill	5	0	0	0
New Lift Station Site Demolition				
Building Demolition	5	3	0	0
Pipe Removals	3	0	0	0
Wetwell/Drywell Construction				
Deep Soil Mixing	35	4	6	0
Dewatering Wells	3	0	0	0
Excavation/Shoring	25	20	0	0
Subgrade Preparation	5	0	0	3
Wetwell/Drywell Base Construction	10	0	35	0
Wetwell/Drywell Wall Construction	30	0	11	0
Wetwell/Drywell Deck Construction	30	0	9	0
Backfill/Compaction	20	0	0	13
Stair Installation	5	0	0	0
Perimeter Wall Construction				
Footing Excavation	5	0	0	0
Footing Construction	1	0	6	0
Wall Construction	30	0	4	0
2'X3' RCB Construction				
Fill to Subgrade	5	0	0	5
2'x3' RCB Construction	2	0	3	0
Slope Grading Behind Perimeter Wall				
Fill Placement	5	0	0	4
Rip Rap Placement	2	0	1	2
Concrete Maintenance Walk	5	0	2	0
Influent Sewer Extension				
Dewatering Wells	5	0	0	0
Jacking and Receiving Pit Excavation/shoring	15	5	0	0
Jack and Bore 42 inch Casing	10	4	1	0
Jacking Pit Backfill/Compaction	10	0	0	2
Sewer Open Cut Excavation	10	2	0	0
Pipe Subgrade Preparation	4	0	0	0
Pipe Installation/Backfill	15	0	1	2
Manhole Excavation/Shoring	5	1	0	0
Manhole Base Placement	1	0	2	0
Manhole Shaft Placement/Backfill	3	0	0	1

Lift Station
Assumptions

Phase Name	Days	Haul Trips	Concrete	Vendor
Generator Building Construction				
Footing and Equipment Bases	7	1	4	0
Masonry Building and Roof	35	0	2	0
Pump Building Construction				
Masonry Building and Roof	30	0	2	0
Generator Building Mechanical				
Set Generator and Diesel Pump	2	0	0	0
Pump Building Mechanical				
Set Pumps	1	0	0	0
Scrubber Installation				
Foul Air Piping Excavation	6	2	0	0
Foul Air Piping Subgrade Preparation	2	0	0	0
Piping Installation/Backfill	10	0	0	2
Scrubber Installation	1	0	1	0
Miscellaneous Pump Station Site Improvements				
Yard Paving	3	0	3	0
Yard Piping	10	0	0	0
Drain Boxes/Radio Antenna	10	0	1	0
Curb and Gutter/Drive Way	5	0	1	0
Existing Pump Station Site Paving	2	0	0	3
Old Country Club Drive Repaving	5	3	0	3
Existing Pump Station Demolition				
Remove Buildings/Paving and Structure 6 feet BGS	10	2	1	3
Miscellaneous Items				
Street Sweeping	360	0	0	0
Dust Control	360	0	0	0
Pneumatic Tools	360	0	0	0

Note: Onroad Emissions modeled Outside of CalEEMod using EMFAC2017. Due to the variety of vehicle trips per phase, each category (Haul Truck (Haul and Concrete Trucks), Vendor Truck, and Worker Vehicles) were only modeled for 1 vehicle. Modeling accounts for 2 one-way trips or 1 round trip.

Lift Station
Assumptions

Soil Import/Export

11,745	cubic yards excavation
7,869	cubic yards of backfill/compaction
4,176	cubic yards export

Equipment Used Onsite

The following equipment is used for various phases throughout the project. Due to the number of phases and the overlap of equipment, each piece of equimpent is only modeled once in CalEEMod. To determine accurate fugitive dust emissions from grading for 1.2 acres would be graded with a maximum of 1 acre per day. Default horse power and load factor are used where CalEEmod defautlts exist for the equpiment.

Type	#	Hrs/day	CalEEMod Designation
Backhoe	1	8	Tractor/Loader/Backhoe
Bobcat Loader	1	8	Skidsteer Loader
Boom Truck	1	8	Offhighway Truck
Compressor	1	8	Air Compressor
Concrete Pumper Truck	1	8	Offhighway Truck
Concrete Saw	1	8	Concrete/Industrial Saw
Concrete Truck		Modeled Outside CalEEMod	
Crane	1	8	Crane
Delivery Truck		Modeled Outside CalEEMod	
Delivery Truck with Boom		Modeled Outside CalEEMod	
Dozer	1	8	Rubber Tired Dozer
Drill Rig	1	8	Bore/Drill Rig
Excavator	1	8	Excavator
Forklift	1	8	Forklift
Grader	1	8	Grader
Haul Truck		Modeled Outside CalEEMod	
Industrial Saw	1	8	Concrete/Industrial Saw
Jacking Machine	1	8	Other Construction equipment
Loader	1	8	Tractor/Loader/Backhoe
Material Truck		Modeled Outside CalEEMod	
Paver	1	8	Paver
Rock Delivery Truck		Modeled Outside CalEEMod	
Roller/Compactor	1	8	Roller
Soil Mixing Drill Rig	1	8	Bore/Drill Rig
Sweeper Truck	1	8	Sweeper/Scrubber
Vibratory Plate Compactor	1	8	Plate Compactor
Vibratory Rammer	1	8	Plate Compactor
Water Truck	1	8	Water
Pneumatic Tools	1	8	Air Compressor

1. Assumptions
b. Schedule

Lift Station No. 2 Construction Equipment Estimate

Schedule by Main Phase	Compiled Schedule	Start	End
Emergency Intertie Valve Vault and Piping	9/6/2021 - 11/19/2021	9/6/2021	11/19/2021
Overhead Power Relocation	10/4/2021 - 11/19/2021	10/4/2021	11/19/2021
Sewer Grinder Vault	11/1/2021 - 7/4/2023	11/1/2021	7/4/2023
Storm Drain and Creek Outlet Structure	11/22/2021 - 2/26/2024	11/22/2021	2/6/2024
Country Club Drive Relocation	1/24/2022 - 4/8/2022	1/24/2022	4/8/2022
Temporary Sewer Relocation	4/11/2022 - 4/27/2022	4/11/2022	4/27/2022
New Lift Station Site Demolition	4/11/2022 - 4/20/2022	4/11/2022	4/20/2022
Wetwell/Drywell Construction	5/23/2022 - 3/17/2023	5/23/2022	3/17/2023
Perimeter Wall Construction	3/13/2023 - 5/30/2023	3/13/2023	5/30/2023
2'X3' RCB Construction	6/5/2023 - 7/10/2023	6/5/2023	7/10/2023
Slope Grading Behind Perimeter Wall	8/7/2023 - 9/15/2023	8/7/2023	9/15/2023
Influent Sewer Extension	8/15/2022 - 1/13/2023	8/15/2022	1/13/2023
Generator Building Construction	4/3/2023 - 7/10/2023	4/3/2023	7/10/2023
Pump Building Construction	4/24/2023 - 7/28/2023	4/24/2023	7/28/2023
Generator Building Mechanical	8/14/2023 - 8/15/2023	8/14/2023	8/15/2023
Pump Building Mechanical	7/3/2023	7/3/2023	7/3/2023
Scrubber Installation	5/23/2023 - 3/11/2024	5/23/2023	3/11/2024
Miscellaneous Pump Station Site Improvements	10/6/2023 - 4/26/2024	10/6/2023	4/26/2024
Existing Pump Station Demolition	1/22/2024 - 2/16/2024	1/22/2024	2/16/2024
Miscellaneous Items	9/6/2021 - 2/16/2024	9/6/2021	2/16/2024

Lift Station No. 2 Construction Equipment Estimate

				Schedule Dates
A	**Emergency Intertie Valve Vault and Piping**			**9/6/2021 - 11/19/2021**
1	Dewatering Wells	Drill Rig	2 Days	9/6/21-9/7/21
2	Vault and Tapping Sleeve Excavation /Shoring	Excavator	10 Days	9/8/21-9/14/21;9/30/21-10/8/21
		Haul Truck	4 Trips	9/8/21-10/8/21
3	Line Stop Installation/Removal	Delivery Truck	2 Trips	9/16/21;10/29/21
		Boom Truck	8 hours	9/16/21;10/29/21
4	Subgrade Preparation	Excavator	1 Day	10/13/2021
		Material Truck	1 trip	10/13/2021
		Vibratory Plate Compactor	2 Days	10/14/21-10/15/21
5	Vault Delivery and Placement	Delivery Truck with Boom	1Trip/1Day	10/18/2021
6	Vault Backfill and Compaction	Excavator	5 Days	11/1/21-11/5/21
		Vibratory Rammer	5 Days	11/1/21-11/6/21
7	Valve and Pipe Installation	Excavator	15 days	10/25/21-10/28/21;11/8/21-11/19/21
		Vibratory Rammer	5 Days	11/14/21-11/19/21
		Haul Truck	2 Trips	11/11/21;11/16/21
		Crane	1 Day	10/25/2021
B	**Overhead Power Relocation**			**10/4/2021 - 11/19/2021**
8	Power Conduit installation	Industrial Saw	1 Day	10/4/2021
		Backhoe	10 days	10/5/21-10/18/21
		Vibratory Rammer	5 Days	10/12/21-10/18/21
		Haul Truck	1 Trip	10/11/2021
9	Communication Conduit Installation	Industrial Saw	1 Day	10/25/2021
		Backhoe	15 days	10/26/21-11/15/21
		Vibratory Rammer	5 Days	10/13/21-10/16/21;11/16/21-11/17/21
		Haul Truck	1 Trip	11/8/2021
10	Pavement Repair	Material Truck	2 trips	11/18/21-11/19/21
		Roller/Compactor	2 Day	11/18/21-11/19/21
C	**Sewer Grinder Vault**			**11/1/2021 - 7/4/2023**
11	Dewatering Wells	Drill Rig	1 Day	11/1/2021
12	Excavation/Shoring	Excavator	10 Days	11/4/21-11/17/21
		Haul Truck	12 Trips	11/8/21-11/19/21
13	Subgrade Preparation	Excavator	1 Day	11/18/2021
		Material Truck	1 Trip	11/18/2019
		Vibratory Plate Compactor	2 Days	11/18/21-11/19/21
14	Vault Base Forming/Rebar/Concrete	Excavator	5 Days	11/22/2021-11/26/21
		Concrete Truck	3 Trips	11/29/2021
		Concrete Pumper Truck	1 Day	11/29/2021
15	Vault Placement/Backfill	Delivery Truck with Boom	1 Day/1Trip	12/20/2021
		Excavator	3 Days	1/5/22-1/7/22
		Vibratory Rammer	3 Days	1/5/22-1/7/22
16	Set Grinder	Crane	1 Day	7/24/2023
D	**Storm Drain and Creek Outlet Structure**			**11/22/2021 - 2/26/2024**
17	Outlet Structure Excavation	Excavator	3 Days	11/22/21-11/24/21
		Haul Truck	3 Trips	11/22/21-11/24/21
18	Subgrade Preparation	Excavator	1 Day	
		Vibratory Plate Compactor	1 Day	11/30/2021
19	Outlet Structure Forming/Rebar/Concrete	Excavator	3 Days	12/1/21-12/3/21
		Concrete Truck	2 Trips	11/29/21,12/6/21
		Concrete Pumper Truck	2 Days	11/29/21;12/6/21
20	Outlet Structure Backfill	Excavator	1 Day	12/20/2021
		Vibratory Rammer	1 Day	12/20/2021

Lift Station No. 2 Construction Equipment Estimate

				Schedule Dates
A	**Emergency Intertie Valve Vault and Piping**			**9/6/2021 - 11/19/2021**
21	Rip Rap Excavation and Placement	Excavator	3 Days	12/21/21-12/24/21
		Haul Truck	3 Trips	12/21/2021-12/23/21
		Rock Delivery Truck	5 Trips	12/24/2021
22	4'x1' RCB Excavation	Backhoe	2 Days	12/27/21-12/28/21
		Haul Truck	4 Trips	12/27/21-12/28/21
23	4'x1' RCB Subgrade Preparation	Backhoe	1 Day	12/29/2021
		Vibratory Plate Compactor	1 Day	12/29/2021
24	4'x1' RCB Concrete	Concrete Truck	2 Trips	1/10/2022
25	42 inch RCP Excavation	Excavator	2 Day	12/7/21-12/8/21
		Haul Truck	1 Trip	12/8/2021
26	42 inch RCP Subgrade Preparation	Excavator	1 Day	12/9/2021
		Vibratory Plate Compactor	1 Day	12/9/2021
27	42 Inch RCP Installation/Backfill	Excavator	2 Days	12/10/21;12/23/21
		Vibratory Rammer	1 Days	12/23/2021
28	Catch Basin Excavation	Backhoe	1 Day	2/12/2024
		Haul Truck	1 Trip	2/12/2024
29	Catch Basin Concrete	Concrete Truck	1 Trip	2/19/2024
30	Catch Basin Backfill	Backhoe	1 Day	2/26/2024
		Vibratory Rammer	1 Day	2/26/2024
31	18 Inch RCP Excavation	Industrial Saw	1 Day	5/1/2023
		Backhoe	5 Days	5/2/23-5/8/23
		Haul Truck	1 Trip	5/8/2023
32	18 Inch RCP Subgrade Preparation	Backhoe	2 Days	5/15/23-5/16/23
		Vibratory Plate Compactor	2 Days	5/15/23-5/16/23
33	18 Inch RCP Installation Backfill	Backhoe	13 Days	5/17/23-5/26/23;5/29/23-6/2/23
		Vibratory Rammer	5 Days	5/29/23-6/2/23
E	**Country Club Drive Relocation**			**1/24/2022 - 4/8/2022**
34	Road Grading/Subgrade Preparation	Grader	10 Days	1/24/2022-2/4/22
		Loader	10 Days	1/24/2022-2/4/22
		Haul Truck	3 Trips	1/24/2022-2/4/22
		Water Truck	15 Days	1/24/2022-2/11/22
		Roller/Compactor	5 Days	2/7/22-2/11/22
35	Road Base and Compaction	Material Truck	30 Trips	2/14/22-2/25/22
		Roller/Compactor	10 Days	2/14/22-2/25/22
36	AC Pavement	Material Truck	18 Trips	2/28/22-3/25/22
		Paver	20 Days	2/28/22-3/25/22
		Roller/Compactor	20 Days	2/28/22-3/25/22
37	DG Pedestrian Path	Material Truck	2 Trips	3/28/2022;4/4/22
		Vibratory Plate Compactor	10 Days	3/28/22-4/8/22
		Backhoe	10 Days	3/28/22-4/8/22
F	**Temporary Sewer Relocation**			**4/11/2022 - 4/27/2022**
38	Manhole Excavation/Shoring	Backhoe	1 Day	4/11/2022
		Haul Truck	2 Trips	4/11/2022
39	Manhole Base Placement	Concrete Truck	1 Trip	4/12/2022
40	Manhole Riser Placement/Backfill	Delivery Truck with Boom	1Trip/1Day	4/14/2022
		Backhoe	2 Days	4/14/22-4/15/22
		Vibratory Rammer	2 Days	4/14/22-4/15/22
41	8-inch Pipe Excavation/Shoring	Backhoe	2 Days	4/18/22-4/19/22
		Haul Truck	1 Trip	4/19/2022
42	8-inch Pipe Subgrade Preparation	Backhoe	1 Day	4/20/2022
		Vibratory Plate Compactor	1 Day	4/20/2022

Lift Station No. 2 Construction Equipment Estimate

				Schedule Dates
A	**Emergency Intertie Valve Vault and Piping**			**9/6/2021 - 11/19/2021**
43	8-inch Pipe Installation/Backfill	Backhoe	5 Day	4/21/22-4/27/22
		Vibratory Rammer	3 Day	4/25/22-4/27/22
G	**New Lift Station Site Demolition**			**4/11/2022 - 4/20/2022**
44	Building Demolition	Concrete Saw	5 Days	4/11/22-4/15/22
		Dozer	5 Days	4/11/22-4/15/22
		Backhoe	5 Days	4/11/22-4/15/22
		Water Truck	5 Days	4/11/22-4/15/22
		Haul Truck	3 Trips	4/12/22;4/14/22;4/15/22
45	Pipe Removals	Backhoe	3 Days	4/18/22-4/20/22
H	**Wetwell/Drywell Construction**			**5/23/2022 - 3/17/2023**
46	Deep Soil Mixing	Soil Mixing Drill Rig	35 Days	5/23/22-7/8/22
		Concrete Truck	200 Trips	5/23/22-7/8/22
		Loader	35 Days	5/23/22-7/8/22
		Haul Truck	130 Trips	5/23/22-7/8/22
47	Dewatering Wells	Drill Rig	3 Days	6/16/22-6/18/22
48	Excavation/Shoring	Excavator	25 Days	7/11/22-8/12/22
		Haul Truck	500 Trips	7/11/22-8/12/22
		Crane	10 Days	7/25/22-8/12/22
49	Subgrade Preparation	Bobcat Loader	5 days	8/15/22-8/19/22
		Material Truck	12 Trips	8/15/22-8/19/22
		Roller/Compactor	5 Days	8/15/22-8/19/22
50	Wetwell/Drywell Base Construction	Crane	10 Days	8/22/22-9/2/22
		Concrete Truck	35 Trips	9/2/2022
		Concrete Pumper Truck	1 Day	9/2/2022
51	Wetwell/Drywell Wall Construction	Crane	30 Days	9/6/22-9/19/22; **9/28/22**;9/29/22-10/13/22; **10/20/22-10/21/22** ;11/7/22-11/11/22**; 11/14/22;** 12/5/22
		Concrete Truck	62 Trips	9/26/22-9/27/22; 10/24/22-10/25/22; 11/14/22-11/15/22
		Concrete Pumper Truck	6 Days	9/26/22-9/27/22; 10/24/22-10/25/22; 11/14/22-11/15/22
52	Wetwell/Drywell Deck Construction	Crane	30 Days	11/21/22-12/2/22; 12/19/22-1/3/23; 1/16/23-1/27/23
		Concrete Truck	25 Trips	12/12/22; 1/9/23; 2/6/23
		Concrete Pumper Truck	3 Days	12/12/22; 1/9/23; 2/6/23
53	Backfill/Compaction	Loader	20 Days	3/6/23-3/31/23
		Vibratory Plate Compactor	20 Days	3/6/23-3/31/23
		Material Truck	250 Trips	3/6/23-3/31/23
54	Stair Installation	Crane	5 Days	3/13/23-3/17/23
I	**Perimeter Wall Construction**			**3/13/2023 - 5/30/2023**
55	Footing Excavation	Backhoe	5 Days	3/13/23-3/17/23
56	Footing Construction	Concrete Truck	6 Trips	4/3/2023
		Concrete Pumper Truck	1 Day	4/3/2023
57	Wall Construction	Crane	30 Days	4/4/23-4/13/23; 4/18/23-4/27/23; 5/2/23-5/11/23; 5/16/23-5/17/23; 5/22/23-5/23/23; 5/29/23-5/30/23
		Concrete Truck	10 Trips	4/17/23; 5/1/23; 5/16/23
		Concrete Pumper Truck	3 Days	4/17/23; 5/1/23; 5/16/23

Lift Station No. 2 Construction Equipment Estimate

				Schedule Dates
A	**Emergency Intertie Valve Vault and Piping**			**9/6/2021 - 11/19/2021**
J	**2'X3' RCB Construction**			**6/5/2023 - 7/10/2023**
58	Fill to Subgrade	Material Truck	25 Trips	6/5/23-6/9/23
		Loader	5 Days	6/5/23-6/9/23
		Roller/Compactor	5 Days	6/5/23-6/9/23
		Water Truck	5 Days	6/5/23-6/9/23
59	2'x3' RCB Construction	Concrete Truck	5 Trips	6/26/23; 7/10/23
		Concrete Pumper Truck	2 Days	6/26/23; 7/10/23
K	**Slope Grading Behind Perimeter Wall**			**8/7/2023 - 9/15/2023**
60	Fill Placement	Material Truck	20 Trips	8/7/23-8/11/23
		Dozer	5 Days	9/4/23-9/8/23
		Backhoe	5 Days	8/7/23-8/11/23
61	Rip Rap Placement	Material Truck	2 Trips	9/1/2023
		Concrete Truck	1 Trip	9/1/2023
		Excavator	2 Days	8/28/23; 9/1/23
62	Concrete Maintenance Walk	Concrete Truck	2 Trips	9/22/2023
		Backhoe	5 Day	9/11/23-/9/15/23
L	**Influent Sewer Extension**			**8/15/2022 - 1/13/2023**
63	Dewatering Wells	Drill Rig	5 Days	8/15/22-8/19/22
64	Jacking and Receiving Pit Excavation/shoring	Excavator	15 days	8/29/22-9/16/22
		Haul Truck	20 trips	8/29/22-9/16/22
		Crane	5 Days	9/12/22-9/16/22
65	Jack and Bore 42 inch Casing	Jacking Machine	10 Days	9/19/22-9/23/22; 9/26/22-9/30/22
		Boom Truck	10 Days	9/19/22-9/23/22; 9/26/22-9/30/22
		Haul Truck	4 Trips	9/19/22-9/23/22
		Concrete Truck	1 Trip	9/30/2022
		Concrete Pumper Truck	1 Day	9/30/2022
66	Jacking Pit Backfill/Compaction	Excavator	10 Days	10/24/22-11/4/22
		Vibratory Plate Compactor	10 Days	10/24/22-11/4/22
		Material Truck	20 Trips	10/24/22-11/4/22
67	Sewer Open Cut Excavation	Excavator	10 Days	10/3/22-10/4/22; 11/7/22-11/9/22; 11/28/22-11/30/22;12/29/22-12/30/22
		Haul Truck	12 trips	10/3/22-10/4/22; 11/7/22-11/9/22; 11/28/22-11/30/22;12/29/22-12/30/22
68	Pipe Subgrade Preparation	Excavator	4 Days	10/5/22 ;11/10/22; 12/1/22; 1/3/23
		Vibratory Plate Compactor	4 Days	10/6/22; 11/11/22; 12/2/22; 1/4/23
69	Pipe Installation/Backfill	Excavator	15 Days	11/14/22-11/18/22; 11/21/22-11/22/22; 12/5/22-12/7/22; 12/8/22-12/9/22; 1/4/23-1/6/23
		Material Truck	10 Trips	11/21/22; 12/8/22;1/6/23
		Vibratory Plate Compactor	5 Days	11/21/22-11/22/22; 12/8/22-12/9/22; 1/6/23
		Concrete Truck	3 Trips	11/18/22; 12/7/22; 1/6/22
		Concrete Pumper Truck	3 Days	11/18/22; 12/7/22; 1/6/22
70	Manhole Excavation/Shoring	Excavator	5 Days	12/12/22-12/16/22
		Haul Truck	5 Trips	12/12/22-12/16/22
71	Manhole Base Placement	Concrete Truck	2 Trips	12/28/2022
		Concrete Pumper Truck	1 Day	12/28/2022
72	Manhole Shaft Placement/Backfill	Delivery Truck with Boom	1 Day	1/9/2023
		Material Truck	3 Trips	1/11/23-1/13/23
		Vibratory Rammer	2 Days	1/11/23-1/13/23
		Excavator	3 Days	1/11/23-1/13/23

Lift Station No. 2 Construction Equipment Estimate

				Schedule Dates
A	**Emergency Intertie Valve Vault and Piping**			**9/6/2021 - 11/19/2021**
M	**Generator Building Construction**			**4/3/2023 - 7/10/2023**
73	Footing and Equipment Bases	Backhoe	7 Days	4/3/23-4/7/23;4/11/23-4/12/23
		Haul Truck	1 Trip	4/12/2023
		Concrete Truck	4 Trips	4/10/2023;4/19/23
74	Masonry Building and Roof	Forklift	35 Days	5/28/23-6/23/23
		Concrete Truck	2 Trips	6/26/2023
		Concrete Pumper Truck	1 Day	6/26/2023
		Crane	5 Days	7/3/23-7/10/23
N	**Pump Building Construction**			**4/24/2023 - 7/28/2023**
75	Masonry Building and Roof	Forklift	30 Days	4/24/23-6/9/23
		Concrete Truck	2 Trips	6/27/2023
		Concrete Pumper Truck	1 Day	6/27/2023
		Crane	5 Days	7/24/23-7/28/23
O	**Generator Building Mechanical**			**8/14/2023 - 8/15/2023**
76	Set Generator and Diesel Pump	Crane	2 Days	8/14/2023;8/15/23
P	**Pump Building Mechanical**			**7/3/2023**
77	Set Pumps	Crane	1 Day	7/3/2023
Q	**Scrubber Installation**			**5/23/2023 - 3/11/2024**
78	Foul Air Piping Excavation	Backhoe	6 Days	5/2/23-5/9/23
		Industrial Saw	1 Day	5/1/2023
		Haul Truck	3 Trips	5/3/23; 5/5/23; 5/10/23
79	Foul Air Piping Subgrade Preparation	Backhoe	2 Days	5/15/23-5/16/23
		Vibratory Rammer	2 Days	5/15/23-5/16/23
80	Piping Installation/Backfill	Backhoe	10 Days	5/17/23-5/30/23
		Vibratory Rammer	3 Days	5/29/23-5/31/23
		Material Truck	2 Trips	5/29/23-5/31/23
81	Scrubber Installation	Concrete Truck	1 Trip	2/23/2024
		Crane	1 Day	3/11/2024

Lift Station No. 2 Construction Equipment Estimate

				Schedule Dates
A	**Emergency Intertie Valve Vault and Piping**			**9/6/2021 - 11/19/2021**
R	**Miscellaneous Pump Station Site Improvements**			**10/6/2023 - 4/26/2024**
82	Yard Paving	Concrete Truck	3 Trips	10/6/2023
		Concrete Pumper Truck	1 Day	10/6/2023
		Vibratory Plate Compactor	3 Days	9/26/23-9/29/23
83	Yard Piping	Backhoe	10 Days	7/4/23-8/4/23
		Vibratory Rammer	10 Days	7/4/23-8/4/23
84	Drain Boxes/Radio Antenna	Backhoe	10 Days	6/5/23-6/16/23
		Concrete Truck	1 Trip	6/19/2023
		Crane	1 Day	6/23/2023
85	Curb and Gutter/Drive Way	Backhoe	5 Days	2/8/24-2/12/24
		Vibratory Plate Compactor	2 Days	2/14/24-2/15/24
		Concrete Truck	1 Trip	3/1/2024
86	Existing Pump Station Site Paving	Backhoe	2 Days	3/26/24-3/27/24
		Material Truck	3 Trips	4/1/2024
		Roller/Compactor	1 Day	4/1/2024
87	Old Country Club Drive Repaving	Loader	5 Days	3/26/24-3/30/24
		Haul Truck	15 Trips	3/26/24-3/30/24
		Material Truck	15 Trips	4/24/24-4/26/24
		Paver	3 Days	4/24/24-4/26/24
		Roller/Compactor	3 Days	4/24/24-4/26/24
S	**Existing Pump Station Demolition**			**1/22/2024 - 2/16/2024**
88	Remove Buildings/Paving and Structure 6 feet BGS	Compressor	10 days	1/22/24-2/2/24
		Crane	3 days	1/17/24-1/19/24
		Excavator	5 Days	1/22/24-1/26/24
		Loader	5 Days	2/12/24-2/16/24
		Haul Truck	10 trips	1/22/24-2/2/24
		Material Truck	3 Trips	2/12/24-2/16/24
		Concrete Truck	1 Trip	2/7/2024
89	**Miscellaneous Items**			**9/6/2021 - 2/16/2024**
	Street Sweeping	Sweeper Truck	360 Days	9/6/21-2/16/24
	Dust Control	Water Truck	360 Days	9/6/21-2/16/24
	Pneumatic Tools	Compressor	360 Days	9/6/21-2/16/24

1. Assumptions
c. Equipment List

Lift Station No. 2 Construction Equipment Estimate

					Total Round Trips		
				Days	Haul Trips	Concrete	Vendor
Emergency Intertie Valve Vault and Piping							
Dewatering Wells	Drill Rig	2 Days	Days	2			
Vault and Tapping Sleeve Excavation /Shoring	Excavator	10 Days	Days	10	4		
	Haul Truck	4 Trips	Trips				
Line Stop Installation/Removal	Delivery Truck	2 Trips	Trips	1			2
	Boom Truck	8 hours	Trips				
Subgrade Preparation	Excavator	1 Day	Days	2			1
	Material Truck	1 trip	Trips				
	Vibratory Plate Compactor	2 Days	Days				
Vault Delivery and Placement	Delivery Truck with Boom	1Trip/1Day	trips/day	1			1
Vault Backfill and Compaction	Excavator	5 Days	Days	5			
	Vibratory Rammer	5 Days	Days				
Valve and Pipe Installation	Excavator	15 days	Days	15	2		
	Vibratory Rammer	5 Days	Days				
	Haul Truck	2 Trips	Trips				
	Crane	1 Day	Days				
Overhead Power Relocation							
Power Conduit installation	Industrial Saw	1 Day	Days	10	1		
	Backhoe	10 days	Days				
	Vibratory Rammer	5 Days	Days				
	Haul Truck	1 Trip	Trips				
Communication Conduit Installation	Industrial Saw	1 Day	Days	15	1		
	Backhoe	15 days	Days				
	Vibratory Rammer	5 Days	Days				
	Haul Truck	1 Trip	Trips				
Pavement Repair	Material Truck	2 trips	Trips	2			2
	Roller/Compactor	2 Day	Days				
Sewer Grinder Vault							
Dewatering Wells	Drill Rig	1 Day	Days	1			
Excavation/Shoring	Excavator	10 Days	Days	10	12		
	Haul Truck	12 Trips	Trips				
Subgrade Preparation	Excavator	1 Day	Days	2			1
	Material Truck	1 Trip	Trips				
	Vibratory Plate Compactor	2 Days	Days				
Vault Base Forming/Rebar/Concrete	Excavator	5 Days	Days	5		3	
	Concrete Truck	3 Trips	Trips				
	Concrete Pumper Truck	1 Day	Days				
Vault Placement/Backfill	Delivery Truck with Boom	1 Day/1Trip	trips/day	3			1
	Excavator	3 Days	Days				
	Vibratory Rammer	3 Days	Days				
Set Grinder	Crane	1 Day	Days	1			

Lift Station No. 2 Construction Equipment Estimate

					Total Round Trips		
				Days	Haul Trips	Concrete	Vendor
Storm Drain and Creek Outlet Structure							
Outlet Structure Excavation	Excavator	3 Days	Days	3	3		
	Haul Truck	3 Trips	Trips				
Subgrade Preparation	Excavator	1 Day	Days	1			
	Vibratory Plate Compactor	1 Day	Days				
Outlet Structure Forming/Rebar/Concrete	Excavator	3 Days	Days	3		2	
	Concrete Truck	2 Trips	Trips				
	Concrete Pumper Truck	2 Days	Days				
Outlet Structure Backfill	Excavator	1 Day	Days	1			
	Vibratory Rammer	1 Day	Days				
Rip Rap Excavation and Placement	Excavator	3 Days	Days	3	3		5
	Haul Truck	3 Trips	Trips				
	Rock Delivery Truck	5 Trips	Trips				
4'x1' RCB Excavation	Backhoe	2 Days	Days	2	4		
	Haul Truck	4 Trips	Trips				
4'x1' RCB Subgrade Preparation	Backhoe	1 Day	Days	1			
	Vibratory Plate Compactor	1 Day	Days				
4'x1' RCB Concrete	Concrete Truck	2 Trips	Trips	1		2	
42 inch RCP Excavation	Excavator	2 Day	Days	2	1		
	Haul Truck	1 Trip	Trips				
42 inch RCP Subgrade Preparation	Excavator	1 Day	Days	1			
	Vibratory Plate Compactor	1 Day	Days				
42 Inch RCP Installation/Backfill	Excavator	2 Days	Days	2			
	Vibratory Rammer	1 Days	Days				
Catch Basin Excavation	Backhoe	1 Day	Days	1	1		
	Haul Truck	1 Trip	Trips				
Catch Basin Concrete	Concrete Truck	1 Trip	Trips	1		1	
Catch Basin Backfill	Backhoe	1 Day	Days	1			
	Vibratory Rammer	1 Day	Days				
18 Inch RCP Excavation	Industrial Saw	1 Day	Days	5	1		
	Backhoe	5 Days	Days				
	Haul Truck	1 Trip	Trips				
18 Inch RCP Subgrade Preparation	Backhoe	2 Days	Days	2			
	Vibratory Plate Compactor	2 Days	Days				
18 Inch RCP Installation Backfill	Backhoe	13 Days	Days	13			
	Vibratory Rammer	5 Days	Days				
Country Club Drive Relocation							
Road Grading/Subgrade Preparation	Grader	10 Days	Days	15	3		
	Loader	10 Days	Days				
	Haul Truck	3 Trips	Trips				
	Water Truck	15 Days	Days				
	Roller/Compactor	5 Days	Days				

Lift Station No. 2 Construction Equipment Estimate

					Total Round Trips		
				Days	Haul Trips	Concrete	Vendor
Road Base and Compaction	Material Truck	30 Trips	Trips	10			30
	Roller/Compactor	10 Days	Days				
AC Pavement	Material Truck	18 Trips	Trips	20			18
	Paver	20 Days	Days				
	Roller/Compactor	20 Days	Days				
DG Pedestrian Path	Material Truck	2 Trips	Trips	10			2
	Vibratory Plate Compactor	10 Days	Days				
	Backhoe	10 Days	Days				
Temporary Sewer Relocation							
Manhole Excavation/Shoring	Backhoe	1 Day	Days	1	2		
	Haul Truck	2 Trips	Trips				
Manhole Base Placement	Concrete Truck	1 Trip	Trips	1		1	
Manhole Riser Placement/Backfill	Delivery Truck with Boom	1Trip/1Day	trips/day	2			1
	Backhoe	2 Days	Days				
	Vibratory Rammer	2 Days	Days				
8-inch Pipe Excavation/Shoring	Backhoe	2 Days	Days	2	1		
	Haul Truck	1 Trip	Trips				
8-inch Pipe Subgrade Preparation	Backhoe	1 Day	Days	1			
	Vibratory Plate Compactor	1 Day	Days				
8-inch Pipe Installation/Backfill	Backhoe	5 Day	Days	5			
	Vibratory Rammer	3 Day	Days				
New Lift Station Site Demolition							
Building Demolition	Concrete Saw	5 Days	Days	5	3		
	Dozer	5 Days	Days				
	Backhoe	5 Days	Days				
	Water Truck	5 Days	Days				
	Haul Truck	3 Trips	Trips				
Pipe Removals	Backhoe	3 Days	Days	3			
Wetwell/Drywell Construction							
Deep Soil Mixing	Soil Mixing Drill Rig	35 Days	Days	35	130	200	
	Concrete Truck	200 Trips	Trips				
	Loader	35 Days	Days				
	Haul Truck	130 Trips	Trips				
Dewatering Wells	Drill Rig	3 Days	Days	3			
Excavation/Shoring	Excavator	25 Days	Days	25	500		
	Haul Truck	500 Trips	Trips				
	Crane	10 Days	Days				
Subgrade Preparation	Bobcat Loader	5 days	Days	5			12
	Material Truck	12 Trips	Trips				
	Roller/Compactor	5 Days	Days				
Wetwell/Drywell Base Construction	Crane	10 Days	Days	10		35	
	Concrete Truck	35 Trips	Trips				
	Concrete Pumper Truck	1 Day	Days				

Lift Station No. 2 Construction Equipment Estimate

					Total Round Trips		
				Days	**Haul Trips**	**Concrete**	**Vendor**
Wetwell/Drywell Wall Construction	Crane	30 Days	Days	30		62	
	Concrete Truck	62 Trips	Trips				
	Concrete Pumper Truck	6 Days	Days				
Wetwell/Drywell Deck Construction	Crane	30 Days	Days	30		25	
	Concrete Truck	25 Trips	Trips				
	Concrete Pumper Truck	3 Days	Days				
Backfill/Compaction	Loader	20 Days	Days	20			250
	Vibratory Plate Compactor	20 Days	Days				
	Material Truck	250 Trips	Trips				
Stair Installation	Crane	5 Days	Days	5			
Perimeter Wall Construction							
Footing Excavation	Backhoe	5 Days	Days	5			
Footing Construction	Concrete Truck	6 Trips	Trips	1		6	
	Concrete Pumper Truck	1 Day	Days				
Wall Construction	Crane	30 Days	Days	30		10	
	Concrete Truck	10 Trips	Trips				
	Concrete Pumper Truck	3 Days	Days				
2'X3' RCB Construction							
Fill to Subgrade	Material Truck	25 Trips	Trips	5			25
	Loader	5 Days	Days				
	Roller/Compactor	5 Days	Days				
	Water Truck	5 Days	Days				
2'x3' RCB Construction	Concrete Truck	5 Trips	Trips	2		5	
	Concrete Pumper Truck	2 Days	Days				
Slope Grading Behind Perimeter Wall							
Fill Placement	Material Truck	20 Trips	Trips	5			20
	Dozer	5 Days	Days				
	Backhoe	5 Days	Days				
Rip Rap Placement	Material Truck	2 Trips	Trips	2		1	2
	Concrete Truck	1 Trip	Trips				
	Excavator	2 Days	Days				
Concrete Maintenance Walk	Concrete Truck	2 Trips	Trips	5		2	
	Backhoe	5 Day	Days				
Influent Sewer Extension							
Dewatering Wells	Drill Rig	5 Days	Days	5			
Jacking and Receiving Pit Excavation/shoring	Excavator	15 days	Days	15	20		
	Haul Truck	20 trips	Trips				
	Crane	5 Days	Days				
Jack and Bore 42 inch Casing	Jacking Machine	10 Days	Days	10	4	1	
	Boom Truck	10 Days	Days				
	Haul Truck	4 Trips	Trips				
	Concrete Truck	1 Trip	Trips				
	Concrete Pumper Truck	1 Day	Days				

Lift Station No. 2 Construction Equipment Estimate

					Total Round Trips		
				Days	**Haul Trips**	**Concrete**	**Vendor**
Jacking Pit Backfill/Compaction	Excavator	10 Days	Days	10			20
	Vibratory Plate Compactor	10 Days	Days				
	Material Truck	20 Trips	Trips				
Sewer Open Cut Excavation	Excavator	10 Days	Days	10	12		
	Haul Truck	12 trips	Trips				
Pipe Subgrade Preparation	Excavator	4 Days	Days	4			
	Vibratory Plate Compactor	4 Days	Days				
Pipe Installation/Backfill	Excavator	15 Days	Days	15		3	10
	Material Truck	10 Trips	Trips				
	Vibratory Plate Compactor	5 Days	Days				
	Concrete Truck	3 Trips	Trips				
	Concrete Pumper Truck	3 Days	Days				
Manhole Excavation/Shoring	Excavator	5 Days	Days	5	5		
	Haul Truck	5 Trips	Trips				
Manhole Base Placement	Concrete Truck	2 Trips	Trips	1		2	
	Concrete Pumper Truck	1 Day	Days				
Manhole Shaft Placement/Backfill	Delivery Truck with Boom	1 Day	Days	3			3
	Material Truck	3 Trips	Trips				
	Vibratory Rammer	2 Days	Days				
	Excavator	3 Days	Days				
Generator Building Construction							
Footing and Equipment Bases	Backhoe	7 Days	Days	7	1	4	
	Haul Truck	1 Trip	Trips				
	Concrete Truck	4 Trips	Trips				
Masonry Building and Roof	Forklift	35 Days	Days	35		2	
	Concrete Truck	2 Trips	Trips				
	Concrete Pumper Truck	1 Day	Days				
	Crane	5 Days	Days				
Pump Building Construction							
Masonry Building and Roof	Forklift	30 Days	Days	30		2	
	Concrete Truck	2 Trips	Trips				
	Concrete Pumper Truck	1 Day	Days				
	Crane	5 Days	Days				
Generator Building Mechanical							
Set Generator and Diesel Pump	Crane	2 Days	Days	2			
Pump Building Mechanical							
Set Pumps	Crane	1 Day	Days	1			
Scrubber Installation							
Foul Air Piping Excavation	Backhoe	6 Days	Days	6	3		
	Industrial Saw	1 Day	Days				
	Haul Truck	3 Trips	Trips				

Lift Station No. 2 Construction Equipment Estimate

				Total Round Trips			
				Days	**Haul Trips**	**Concrete**	**Vendor**
Foul Air Piping Subgrade Preparation	Backhoe	2 Days	Days	2			
	Vibratory Rammer	2 Days	Days				
Piping Installation/Backfill	Backhoe	10 Days	Days	10			2
	Vibratory Rammer	3 Days	Days				
	Material Truck	2 Trips	Trips				
Scrubber Installation	Concrete Truck	1 Trip	Trips	1		1	
	Crane	1 Day	Days				
Miscellaneous Pump Station Site Improvements							
Yard Paving	Concrete Truck	3 Trips	Trips	3		3	
	Concrete Pumper Truck	1 Day	Days				
	Vibratory Plate Compactor	3 Days	Days				
Yard Piping	Backhoe	10 Days	Days	10			
	Vibratory Rammer	10 Days	Days				
Drain Boxes/Radio Antenna	Backhoe	10 Days	Days	10		1	
	Concrete Truck	1 Trip	Trips				
	Crane	1 Day	Days				
Curb and Gutter/Drive Way	Backhoe	5 Days	Days	5		1	
	Vibratory Plate Compactor	2 Days	Days				
	Concrete Truck	1 Trip	Trips				
Existing Pump Station Site Paving	Backhoe	2 Days	Days	2			3
	Material Truck	3 Trips	Trips				
	Roller/Compactor	1 Day	Days				
Old Country Club Drive Repaving	Loader	5 Days	Days	5	15		15
	Haul Truck	15 Trips	Trips				
	Material Truck	15 Trips	Trips				
	Paver	3 Days	Days				
	Roller/Compactor	3 Days	Days				
Existing Pump Station Demolition							
Remove Buildings/Paving and Structure 6 feet BGS	Compressor	10 days	Days	10	10	1	3
	Crane	3 days	Days				
	Excavator	5 Days	Days				
	Loader	5 Days	Days				
	Haul Truck	10 trips	Trips				
	Material Truck	3 Trips	Trips				
	Concrete Truck	1 Trip	Trips				
Miscellaneous Items							
Street Sweeping	Sweeper Truck	360 Days	Days	360			
Dust Control	Water Truck	360 Days	Days	360			
Pneumatic Tools	Compressor	360 Days	Days	360			

Lift Station No. 2 Construction Equipment Estimate

		Daily Round Trips		
		Haul Trips	**Concrete**	**Vendor**
Emergency Intertie Valve Vault and Piping				
Dewatering Wells	Drill Rig			
Vault and Tapping Sleeve Excavation /Shoring	Excavator	2		
	Haul Truck			
Line Stop Installation/Removal	Delivery Truck			2
	Boom Truck			
Subgrade Preparation	Excavator			1
	Material Truck			
	Vibratory Plate Compactor			
Vault Delivery and Placement	Delivery Truck with Boom			1
Vault Backfill and Compaction	Excavator			
	Vibratory Rammer			
Valve and Pipe Installation	Excavator	2		
	Vibratory Rammer			
	Haul Truck			
	Crane			
Overhead Power Relocation				
Power Conduit installation	Industrial Saw	1		
	Backhoe			
	Vibratory Rammer			
	Haul Truck			
Communication Conduit Installation	Industrial Saw	1		
	Backhoe			
	Vibratory Rammer			
	Haul Truck			
Pavement Repair	Material Truck			2
	Roller/Compactor			
Sewer Grinder Vault				
Dewatering Wells	Drill Rig			
Excavation/Shoring	Excavator	2		
	Haul Truck			
Subgrade Preparation	Excavator			1
	Material Truck			
	Vibratory Plate Compactor			
Vault Base Forming/Rebar/Concrete	Excavator		3	
	Concrete Truck			
	Concrete Pumper Truck			
Vault Placement/Backfill	Delivery Truck with Boom			1
	Excavator			
	Vibratory Rammer			
Set Grinder	Crane			

Lift Station No. 2 Construction Equipment Estimate

		Daily Round Trips		
		Haul Trips	**Concrete**	**Vendor**
Storm Drain and Creek Outlet Structure				
Outlet Structure Excavation	Excavator	1		
	Haul Truck			
Subgrade Preparation	Excavator			
	Vibratory Plate Compactor			
Outlet Structure Forming/Rebar/Concrete	Excavator		1	
	Concrete Truck			
	Concrete Pumper Truck			
Outlet Structure Backfill	Excavator			
	Vibratory Rammer			
Rip Rap Excavation and Placement	Excavator	1		3
	Haul Truck			
	Rock Delivery Truck			
4'x1' RCB Excavation	Backhoe	2		
	Haul Truck			
4'x1' RCB Subgrade Preparation	Backhoe			
	Vibratory Plate Compactor			
4'x1' RCB Concrete	Concrete Truck		2	
42 inch RCP Excavation	Excavator	1		
	Haul Truck			
42 inch RCP Subgrade Preparation	Excavator			
	Vibratory Plate Compactor			
42 Inch RCP Installation/Backfill	Excavator			
	Vibratory Rammer			
Catch Basin Excavation	Backhoe	1		
	Haul Truck			
Catch Basin Concrete	Concrete Truck		1	
Catch Basin Backfill	Backhoe			
	Vibratory Rammer			
18 Inch RCP Excavation	Industrial Saw	1		
	Backhoe			
	Haul Truck			
18 Inch RCP Subgrade Preparation	Backhoe			
	Vibratory Plate Compactor			
18 Inch RCP Installation Backfill	Backhoe			
	Vibratory Rammer			
Country Club Drive Relocation				
Road Grading/Subgrade Preparation	Grader	1		
	Loader			
	Haul Truck			
	Water Truck			
	Roller/Compactor			

Lift Station No. 2 Construction Equipment Estimate

		Daily Round Trips		
		Haul Trips	**Concrete**	**Vendor**
Road Base and Compaction	Material Truck			3
	Roller/Compactor			
AC Pavement	Material Truck			1
	Paver			
	Roller/Compactor			
DG Pedestrian Path	Material Truck			2
	Vibratory Plate Compactor			
	Backhoe			
Temporary Sewer Relocation				
Manhole Excavation/Shoring	Backhoe	2		
	Haul Truck			
Manhole Base Placement	Concrete Truck		1	
Manhole Riser Placement/Backfill	Delivery Truck with Boom			1
	Backhoe			
	Vibratory Rammer			
8-inch Pipe Excavation/Shoring	Backhoe	1		
	Haul Truck			
8-inch Pipe Subgrade Preparation	Backhoe			
	Vibratory Plate Compactor			
8-inch Pipe Installation/Backfill	Backhoe			
	Vibratory Rammer			
New Lift Station Site Demolition				
Building Demolition	Concrete Saw	3		
	Dozer			
	Backhoe			
	Water Truck			
	Haul Truck			
Pipe Removals	Backhoe			
Wetwell/Drywell Construction				
Deep Soil Mixing	Soil Mixing Drill Rig	4	6	
	Concrete Truck			
	Loader			
	Haul Truck			
Dewatering Wells	Drill Rig			
Excavation/Shoring	Excavator	20		
	Haul Truck			
	Crane			
Subgrade Preparation	Bobcat Loader			3
	Material Truck			
	Roller/Compactor			
Wetwell/Drywell Base Construction	Crane		35	
	Concrete Truck			
	Concrete Pumper Truck			

Lift Station No. 2 Construction Equipment Estimate

		Daily Round Trips		
		Haul Trips	**Concrete**	**Vendor**
Wetwell/Drywell Wall Construction	Crane		11	
	Concrete Truck			
	Concrete Pumper Truck			
Wetwell/Drywell Deck Construction	Crane		9	
	Concrete Truck			
	Concrete Pumper Truck			
Backfill/Compaction	Loader			13
	Vibratory Plate Compactor			
	Material Truck			
Stair Installation	Crane			
Perimeter Wall Construction				
Footing Excavation	Backhoe			
Footing Construction	Concrete Truck		6	
	Concrete Pumper Truck			
Wall Construction	Crane		4	
	Concrete Truck			
	Concrete Pumper Truck			
2'X3' RCB Construction				
Fill to Subgrade	Material Truck			5
	Loader			
	Roller/Compactor			
	Water Truck			
2'x3' RCB Construction	Concrete Truck		3	
	Concrete Pumper Truck			
Slope Grading Behind Perimeter Wall				
Fill Placement	Material Truck			4
	Dozer			
	Backhoe			
Rip Rap Placement	Material Truck		1	2
	Concrete Truck			
	Excavator			
Concrete Maintenance Walk	Concrete Truck		2	
	Backhoe			
Influent Sewer Extension				
Dewatering Wells	Drill Rig			
Jacking and Receiving Pit Excavation/shoring	Excavator	5		
	Haul Truck			
	Crane			
Jack and Bore 42 inch Casing	Jacking Machine	4	1	
	Boom Truck			
	Haul Truck			
	Concrete Truck			
	Concrete Pumper Truck			

Lift Station No. 2 Construction Equipment Estimate

		Daily Round Trips		
		Haul Trips	**Concrete**	**Vendor**
Jacking Pit Backfill/Compaction	Excavator			2
	Vibratory Plate Compactor			
	Material Truck			
Sewer Open Cut Excavation	Excavator	2		
	Haul Truck			
Pipe Subgrade Preparation	Excavator			
	Vibratory Plate Compactor			
Pipe Installation/Backfill	Excavator		1	2
	Material Truck			
	Vibratory Plate Compactor			
	Concrete Truck			
	Concrete Pumper Truck			
Manhole Excavation/Shoring	Excavator	1		
	Haul Truck			
Manhole Base Placement	Concrete Truck		2	
	Concrete Pumper Truck			
Manhole Shaft Placement/Backfill	Delivery Truck with Boom			1
	Material Truck			
	Vibratory Rammer			
	Excavator			
Generator Building Construction				
Footing and Equipment Bases	Backhoe	1	4	
	Haul Truck			
	Concrete Truck			
Masonry Building and Roof	Forklift		2	
	Concrete Truck			
	Concrete Pumper Truck			
	Crane			
Pump Building Construction				
Masonry Building and Roof	Forklift		2	
	Concrete Truck			
	Concrete Pumper Truck			
	Crane			
Generator Building Mechanical				
Set Generator and Diesel Pump	Crane			
Pump Building Mechanical				
Set Pumps	Crane			
Scrubber Installation				
Foul Air Piping Excavation	Backhoe	2		
	Industrial Saw			
	Haul Truck			

Lift Station No. 2 Construction Equipment Estimate

		Daily Round Trips		
		Haul Trips	**Concrete**	**Vendor**
Foul Air Piping Subgrade Preparation	Backhoe			
	Vibratory Rammer			
Piping Installation/Backfill	Backhoe			2
	Vibratory Rammer			
	Material Truck			
Scrubber Installation	Concrete Truck		1	
	Crane			
Miscellaneous Pump Station Site Improvements				
Yard Paving	Concrete Truck		3	
	Concrete Pumper Truck			
	Vibratory Plate Compactor			
Yard Piping	Backhoe			
	Vibratory Rammer			
Drain Boxes/Radio Antenna	Backhoe		1	
	Concrete Truck			
	Crane			
Curb and Gutter/Drive Way	Backhoe		1	
	Vibratory Plate Compactor			
	Concrete Truck			
Existing Pump Station Site Paving	Backhoe			3
	Material Truck			
	Roller/Compactor			
Old Country Club Drive Repaving	Loader	3		3
	Haul Truck			
	Material Truck			
	Paver			
	Roller/Compactor			
Existing Pump Station Demolition				
Remove Buildings/Paving and Structure 6 feet BGS	Compressor	2	1	3
	Crane			
	Excavator			
	Loader			
	Haul Truck			
	Material Truck			
	Concrete Truck			
Miscellaneous Items				
Street Sweeping	Sweeper Truck			
Dust Control	Water Truck			
Pneumatic Tools	Compressor			

2. Emissions

Lift Station

Unmitigated GHG Summary

CalEEMod: Lift Station Date: 12/12/2020

EMFAC2017: Lift Station Date: 12/12/2020

Unmitigated Construction Emissions - Max Annual

Phase	MT/year
Emergency Intertie Valve Vault and Piping	21
Overhead Power Relocation	7
Sewer Grinder Vault	10
Storm Drain and Creek Outlet Structure	13
Country Club Drive Relocation	21
Temporary Sewer Relocation	3
New Lift Station Site Demolition	7
Wetwell/Drywell Construction	1,214
Perimeter Wall Construction	18
2'X3' RCB Construction	8
Slope Grading Behind Perimeter Wall	7
Influent Sewer Extension	49
Generator Building Construction	11
Pump Building Construction	7
Generator Building Mechanical	1
Pump Building Mechanical	0
Scrubber Installation	5
Miscellaneous Pump Station Site Improvements	15
Existing Pump Station Demolition	8
Miscellaneous Items	171
Total	**1,595**
Amortized Total	**53**

Lift Station
Unmitigated GHG Summary

		Days	Trips	Lbs/day	lbs/year	MT/year
Emergency Intertie Valve Vault and Piping						**20.50569287**
Dewatering Wells	Bore/Drill Rig	2		919.4369	1,839	0.83
	Worker		4	0.0129	0	0.05
Vault and Tapping Sleeve Excavation /Shoring	Excavator	10		504.2363	5,042	2.29
	Haul		4	0.1527	1	0.61
	Worker		20	0.0129	0	0.26
Line Stop Installation/Removal	Vendor		2	0.0532	0	0.11
	Offhighway Truck	1		1288.8605	1,289	0.58
	Worker		2	0.0129	0	0.03
Subgrade Preparation	Excavator	1		504.2363	504	0.23
	Vendor		1	0.0266	0	0.03
	Plate Compactor	2		34.5689	69	0.03
	Worker		6	0.0194	0	0.12
Vault Delivery and Placement	Haul		1	0.0764	0	0.08
	Offhighway Truck	1		1288.8605	1,289	0.58
	Worker		2	0.0129	0	0.03
Vault Backfill and Compaction	Excavator	5		504.2363	2,521	1.14
	Plate Compactor	5		34.5689	173	0.08
	Worker		15	0.0194	0	0.29
Valve and Pipe Installation	Excavator	15		504.2363	7,564	3.43
	Plate Compactor	5		34.5689	173	0.08
	Haul		2	0.1527	0	0.31
	Crane	1		563.2565	563	0.26
	Worker		60	0.0258	2	1.55
Overhead Power Relocation						**7.26**
Power Conduit installation	Concrete/Industrial Saw	1		593.5250	594	0.27
	Tractor/Loader/Backhoe	10		303.3330	3,033	1.38
	Plate Compactor	5		34.5689	173	0.08
	Haul		1	0.0764	0	0.08
	Worker		40	0.0258	1	1.03

Lift Station
Unmitigated GHG Summary

Communication Conduit Installation	Concrete/Industrial Saw	1		593.5250	594	0.27
	Tractor/Loader/Backhoe	15		303.3330	4,550	2.06
	Plate Compactor	5		34.5689	173	0.08
	Haul		1	0.0764	0	0.08
	Worker		60	0.0258	2	1.55
Pavement Repair	Vendor		2	0.0532	0	0.11
	Roller	2		256.1433	512	0.23
	Worker		4	0.0129	0	0.05
Sewer Grinder Vault						**9.78**
Dewatering Wells	Bore/Drill Rig	1		919.4369	919	0.42
	Worker		2	0.0129	0	0.03
Excavation/Shoring	Excavator	10		504.2363	5,042	2.29
	Haul		12	0.1527	2	1.83
	Worker		20	0.0129	0	0.26
Subgrade Preparation	Excavator	1		504.2363	504	0.23
	Vendor		1	0.0266	0	0.03
	Plate Compactor	2		34.5689	69	0.03
	Worker		6	0.0194	0	0.12
Vault Base Forming/Rebar/Concrete	Excavator	5		504.2363	2,521	1.14
	Haul		3	0.2291	1	0.69
	Offhighway Truck	1		1288.8605	1,289	0.58
	Worker		15	0.0194	0	0.29
Vault Placement/Backfill	Haul		1	0.0764	0	0.08
	Excavator	3		504.2363	1,513	0.69
	Plate Compactor	3		34.5689	104	0.05
	Offhighway Truck	1		1288.8605	1,289	0.58
	Worker		9	0.0194	0	0.17
Set Grinder	Crane	1		563.2565	563	0.26
	Worker		2	0.0129	0	0.03

Lift Station
Unmitigated GHG Summary

Storm Drain and Creek Outlet Structure						**13.45**
Outlet Structure Excavation	Excavator	3		504.2363	1,513	0.69
	Haul		3	0.0764	0	0.23
	Worker		6	0.0129	0	0.08
Subgrade Preparation	Excavator	1		504.2363	504	0.23
	Plate Compactor	1		34.5689	35	0.02
	Worker		3	0.0194	0	0.06
Outlet Structure Forming/Rebar/Concrete	Excavator	3		504.2363	1,513	0.69
	Haul		2	0.0764	0	0.15
	Offhighway Truck	2		1288.8605	2,578	1.17
	Worker		9	0.0194	0	0.17
Outlet Structure Backfill	Excavator	1		504.2363	504	0.23
	Plate Compactor	1		34.5689	35	0.02
	Worker		3	0.0194	0	0.06
Rip Rap Excavation and Placement	Excavator	3		504.2363	1,513	0.69
	Haul		3	0.0764	0	0.23
	Haul		5	0.2291	1	1.15
	Worker		6	0.0129	0	0.08
4'x1' RCB Excavation	Tractor/Loader/Backhoe	2		303.3330	607	0.28
	Haul		2	0.1527	0	0.31
	Worker		4	0.0129	0	0.05
4'x1' RCB Subgrade Preparation	Tractor/Loader/Backhoe	1		303.3330	303	0.14
	Plate Compactor	1		34.5689	35	0.02
	Worker		3	0.0194	0	0.06
4'x1' RCB Concrete	Haul		2	0.1527	0	0.31
	Worker		1	0.0065	0	0.01
42 inch RCP Excavation	Excavator	2		504.2363	1,008	0.46
	Haul		1	0.0764	0	0.08
	Worker		4	0.0129	0	0.05
42 inch RCP Subgrade Preparation	Excavator	1		504.2363	504	0.23
	Plate Compactor	1		34.5689	35	0.02
	Worker		3	0.0194	0	0.06

Lift Station
Unmitigated GHG Summary

42 Inch RCP Installation/Backfill	Excavator	2		504.2363	1,008	0.46
	Plate Compactor	1		34.5689	35	0.02
	Worker		6	0.0194	0	0.12
Catch Basin Excavation	Tractor/Loader/Backhoe	1		303.3330	303	0.14
	Haul		1	0.0764	0	0.08
	Worker		2	0.0129	0	0.03
Catch Basin Concrete	Haul		1	0.0764	0	0.08
	Worker		1	0.0065	0	0.01
Catch Basin Backfill	Tractor/Loader/Backhoe	1		303.3330	303	0.14
	Plate Compactor	1		34.5689	35	0.02
	Worker		3	0.0194	0	0.06
18 Inch RCP Excavation	Concrete/Industrial Saw	1		593.5250	594	0.27
	Tractor/Loader/Backhoe	5		303.3330	1,517	0.69
	Haul		1	0.0764	0	0.08
	Worker		15	0.0194	0	0.29
18 Inch RCP Subgrade Preparation	Tractor/Loader/Backhoe	2		303.3330	607	0.28
	Plate Compactor	2		34.5689	69	0.03
	Worker		6	0.0194	0	0.12
18 Inch RCP Installation Backfill	Tractor/Loader/Backhoe	13		303.3330	3,943	1.79
	Plate Compactor	5		34.5689	173	0.08
	Worker		39	0.0194	1	0.75
Country Club Drive Relocation						**20.91**
Road Grading/Subgrade Preparation	Grader	10		646.8725	6,469	2.93
	Tractor/Loader/Backhoe	10		303.3330	3,033	1.38
	Haul		3	0.0764	0	0.23
	Water	15		322.2151	4,833	2.19
	Roller	5		256.1433	1,281	0.58
	Worker		75	0.0323	2	2.42
Road Base and Compaction	Vendor		30	0.0000	0	0.00
	Roller	10		256.1433	2,561	1.16
	Worker		20	0.0129	0	0.26

Lift Station
Unmitigated GHG Summary

AC Pavement	Vendor		18	0.0000	0	0.00
	Paver	20		458.7402	9,175	4.16
	Roller	20		256.1433	5,123	2.32
	Worker		60	0.0194	1	1.16
DG Pedestrian Path	Vendor		2	0.0000	0	0.00
	Plate Compactor	10		34.5689	346	0.16
	Tractor/Loader/Backhoe	10		303.3330	3,033	1.38
	Worker		30	0.0194	1	0.58
Temporary Sewer Relocation						**3.29**
Manhole Excavation/Shoring	Tractor/Loader/Backhoe	1		303.3330	303	0.14
	Haul		2	0.1527	0	0.31
	Worker		2	0.0129	0	0.03
Manhole Base Placement	Haul		1	0.0764	0	0.08
	Worker		2	0.0129	0	0.03
Manhole Riser Placement/Backfill	Haul		1	0.0764	0	0.08
	Tractor/Loader/Backhoe	2		303.3330	607	0.28
	Plate Compactor	2		34.5689	69	0.03
	Offhighway Truck	1		1288.8605	1,289	0.58
	Worker		6	0.0194	0	0.12
8-inch Pipe Excavation/Shoring	Tractor/Loader/Backhoe	2		303.3330	607	0.28
	Haul		1	0.0764	0	0.08
	Worker		4	0.0129	0	0.05
8-inch Pipe Subgrade Preparation	Tractor/Loader/Backhoe	1		303.3330	303	0.14
	Plate Compactor	1		34.5689	35	0.02
	Worker		3	0.0194	0	0.06
8-inch Pipe Installation/Backfill	Tractor/Loader/Backhoe	5		303.3330	1,517	0.69
	Plate Compactor	3		34.5689	104	0.05
	Worker		15	0.0194	0	0.29
New Lift Station Site Demolition						**6.64**
Building Demolition	Concrete/Industrial Saw	5		593.5250	2,968	1.35
	Rubber Tired Dozer	5		834.0418	4,170	1.89
	Tractor/Loader/Backhoe	5		303.3330	1,517	0.69

Lift Station
Unmitigated GHG Summary

	Water	5		322.2151	1,611	0.73
	Haul		3	0.2291	1	0.69
	Worker		25	0.0323	1	0.81
Pipe Removals	Tractor/Loader/Backhoe	3		303.3330	910	0.41
	Worker		6	0.0129	0	0.08
Wetwell/Drywell Construction						**1,213.98**
Deep Soil Mixing	Bore/Drill Rig	35		919.4369	32,180	14.60
	Haul		130	0.3054	40	39.70
	Tractor/Loader/Backhoe	35		303.3330	10,617	4.82
	Haul		200	0.4581	92	91.62
	Worker		140	0.0258	4	3.61
Dewatering Wells	Bore/Drill Rig	3		919.4369	2,758	1.25
	Worker		9	0.0194	0	0.17
Excavation/Shoring	Excavator	25		504.2363	12,606	5.72
	Haul		500	1.5270	764	763.52
	Crane	10		563.2565	5,633	2.55
	Worker		75	0.0194	1	1.45
Subgrade Preparation	Skidsteer Loader	5		201.8171	1,009	0.46
	Vendor		12	0.0798	1	0.96
	Roller	5		256.1433	1,281	0.58
	Worker		15	0.0194	0	0.29
Wetwell/Drywell Base Construction	Crane	10		563.2565	5,633	2.55
	Haul		35	2.6723	94	93.53
	Offhighway Truck	1		1288.8605	1,289	0.58
	Worker		30	0.0194	1	0.58
Wetwell/Drywell Wall Construction	Crane	30		563.2565	16,898	7.66
	Haul		62	0.8399	52	52.07
	Offhighway Truck	6		1288.8605	7,733	3.51
	Worker		90	0.0194	2	1.74

Lift Station
Unmitigated GHG Summary

Wetwell/Drywell Deck Construction	Crane	30		563.2565	16,898	7.66
	Haul		25	0.6872	17	17.18
	Offhighway Truck	3		1288.8605	3,867	1.75
	Worker		90	0.0194	2	1.74
Backfill/Compaction	Tractor/Loader/Backhoe	20		303.3330	6,067	2.75
	Plate Compactor	20		34.5689	691	0.31
	Vendor		250	0.3459	86	86.47
	Worker		60	0.0194	1	1.16
Stair Installation	Crane	5		563.2565	2,816	1.28
	Worker		10	0.0129	0	0.13
Perimeter Wall Construction						**18.49**
Footing Excavation	Tractor/Loader/Backhoe	5		303.3330	1,517	0.69
	Worker		10	0.0129	0	0.13
Footing Construction	Haul		6	0.4581	3	2.75
	Offhighway Truck	1		1288.8605	1,289	0.58
	Worker		10	0.0129	0	0.13
Wall Construction	Crane	30		563.2565	16,898	7.66
	Haul		10	0.3054	3	3.05
	Offhighway Truck	3		1288.8605	3,867	1.75
	Worker		90	0.0194	2	1.74
2'X3' RCB Construction						**8.21**
Fill to Subgrade	Vendor		25	0.1330	3	3.33
	Tractor/Loader/Backhoe	5		303.3330	1,517	0.69
	Roller	5		256.1433	1,281	0.58
	Water	5		322.2151	1,611	0.73
	Worker		20	0.0258	1	0.52
2'x3' RCB Construction	Haul		5	0.2291	1	1.15
	Offhighway Truck	2		1288.8605	2,578	1.17
	Worker		4	0.0129	0	0.05

Lift Station
Unmitigated GHG Summary

Slope Grading Behind Perimeter Wall						**6.81**
Fill Placement	Vendor		20	0.1064	2	2.13
	Rubber Tired Dozer	5		834.0418	4,170	1.89
	Tractor/Loader/Backhoe	5		303.3330	1,517	0.69
	Worker		15	0.0194	0	0.29
Rip Rap Placement	Vendor		2	0.0532	0	0.11
	Haul		1	0.0764	0	0.08
	Excavator	2		504.2363	1,008	0.46
	Worker		4	0.0129	0	0.05
Concrete Maintenance Walk	Haul		2	0.1527	0	0.31
	Tractor/Loader/Backhoe	5		303.3330	1,517	0.69
	Worker		10	0.0129	0	0.13
Influent Sewer Extension						**48.53**
Dewatering Wells	Bore/Drill Rig	5		919.4369	4,597	2.09
	Worker		15	0.0194	0	0.29
Jacking and Receiving Pit Excavation/shoring	Excavator	15		504.2363	7,564	3.43
	Haul		20	0.3818	8	7.64
	Crane	5		563.2565	2,816	1.28
	Worker		45	0.0194	1	0.87
Jack and Bore 42 inch Casing	Other Construction equipment	10		603.3638	6,034	2.74
	Offhighway Truck	10		1288.8605	12,889	5.85
	Haul		4	0.3054	1	1.22
	Haul		1	0.0764	0	0.08
	Offhighway Truck	1		1288.8605	1,289	0.58
	Worker		40	0.0258	1	1.03
Jacking Pit Backfill/Compaction	Excavator	10		504.2363	5,042	2.29
	Plate Compactor	10		34.5689	346	0.16
	Vendor		20	0.0532	1	1.06
	Worker		40	0.0194	1	0.77
Sewer Open Cut Excavation	Excavator	10		504.2363	5,042	2.29
	Haul		12	0.1527	2	1.83
	Worker		20	0.0129	0	0.26

Lift Station
Unmitigated GHG Summary

Pipe Subgrade Preparation	Excavator	4		504.2363	2,017	0.91
	Plate Compactor	4		34.5689	138	0.06
	Worker		12	0.0194	0	0.23
Pipe Installation/Backfill	Excavator	15		504.2363	7,564	3.43
	Vendor		10	0.0532	1	0.53
	Plate Compactor	5		34.5689	173	0.08
	Haul		3	0.0764	0	0.23
	Offhighway Truck	3		1288.8605	3,867	1.75
	Worker		60	0.0258	2	1.55
Manhole Excavation/Shoring	Excavator	5		504.2363	2,521	1.14
	Haul		5	0.0764	0	0.38
	Worker		10	0.0000	0	0.00
Manhole Base Placement	Haul		2	0.1527	0	0.31
	Offhighway Truck	1		1288.8605	1,289	0.58
	Worker		2	0.0129	0	0.03
Manhole Shaft Placement/Backfill	Offhighway Truck	1		1288.8605	1,289	0.58
	Vendor		3	0.0266	0	0.08
	Plate Compactor	2		34.5689	69	0.03
	Excavator	3		504.2363	1,513	0.69
	Worker		9	0.0194	0	0.17
Generator Building Construction						**10.59**
Footing and Equipment Bases	Tractor/Loader/Backhoe	7		303.3330	2,123	0.96
	Haul		1	0.0764	0	0.08
	Haul		4	0.3054	1	1.22
	Worker		14	0.0129	0	0.18
Masonry Building and Roof	Forklift	35		149.2277	5,223	2.37
	Haul		2	0.1527	0	0.31
	Offhighway Truck	1		1288.8605	1,289	0.58
	Crane	5		563.2565	2,816	1.28
	Worker		140	0.0258	4	3.61

Lift Station
Unmitigated GHG Summary

Pump Building Construction						**7.29**
Masonry Building and Roof	Forklift	30		149.2277	4,477	2.03
	Haul		2	0.1527	0	0.31
	Offhighway Truck	1		1288.8605	1,289	0.58
	Crane	5		563.2565	2,816	1.28
	Worker		120	0.0258	3	3.10
Generator Building Mechanical						**0.56**
Set Generator and Diesel Pump	Crane	2		563.2565	1,127	0.51
	Worker		4	0.0129	0	0.05
Pump Building Mechanical						**0.28**
Set Pumps	Crane	1		563.2565	563	0.26
	Worker		2	0.0129	0	0.03
Scrubber Installation						**4.79**
Foul Air Piping Excavation	Tractor/Loader/Backhoe	6		303.3330	1,820	0.83
	Concrete/Industrial Saw	1		593.5250	594	0.27
	Haul		3	0.1527	0	0.46
	Worker		18	0.0194	0	0.35
Foul Air Piping Subgrade Preparation	Tractor/Loader/Backhoe	2		303.3330	607	0.28
	Plate Compactor	2		34.5689	69	0.03
	Worker		6	0.0194	0	0.12
Piping Installation/Backfill	Tractor/Loader/Backhoe	10		303.3330	3,033	1.38
	Plate Compactor	3		34.5689	104	0.05
	Vendor		2	0.0532	0	0.11
	Worker		30	0.0194	1	0.58
Scrubber Installation	Haul		1	0.0764	0	0.08
	Crane	1		563.2565	563	0.26
	Worker		2	0.0129	0	0.03
Miscellaneous Pump Station Site Improvements						**14.54**
Yard Paving	Haul		3	0.2291	1	0.69
	Offhighway Truck	1		1288.8605	1,289	0.58
	Plate Compactor	3		34.5689	104	0.05
	Worker		9	0.0194	0	0.17

Lift Station
Unmitigated GHG Summary

Yard Piping	Tractor/Loader/Backhoe	10		303.3330	3,033	1.38
	Plate Compactor	10		34.5689	346	0.16
	Worker		30	0.0194	1	0.58
Drain Boxes/Radio Antenna	Tractor/Loader/Backhoe	10		303.3330	3,033	1.38
	Haul		1	0.0764	0	0.08
	Crane	1		563.2565	563	0.26
	Worker		30	0.0194	1	0.58
Curb and Gutter/Drive Way	Tractor/Loader/Backhoe	5		303.3330	1,517	0.69
	Plate Compactor	2		34.5689	69	0.03
	Haul		1	0.0764	0	0.08
	Worker		15	0.0194	0	0.29
Existing Pump Station Site Paving	Tractor/Loader/Backhoe	2		303.3330	607	0.28
	Vendor		3	0.0798	0	0.24
	Roller	1		256.1433	256	0.12
	Worker		6	0.0194	0	0.12
Old Country Club Drive Repaving	Tractor/Loader/Backhoe	5		303.3330	1,517	0.69
	Haul		15	0.2291	3	3.44
	Vendor		15	0.0798	1	1.20
	Paver	3		458.7402	1,376	0.62
	Roller	3		256.1433	768	0.35
	Worker		20	0.0258	1	0.52
Existing Pump Station Demolition						**7.76**
Remove Buildings/Paving and Structure 6 feet BGS	Air Compressor	10		375.9079	3,759	1.71
	Crane	3		563.2565	1,690	0.77
	Excavator	5		504.2363	2,521	1.14
	Tractor/Loader/Backhoe	5		303.3330	1,517	0.69
	Haul		10	0.1527	2	1.53
	Vendor		3	0.0798	0	0.24
	Haul		1	0.0764	0	0.08
	Worker		50	0.0323	2	1.61

Lift Station
Unmitigated GHG Summary

Miscellaneous Items						**171.41**
Street Sweeping	Sweeper/Scrubber	360		124.0834	44,670	20.26
Dust Control	Water	360		322.2151	115,997	52.62
Pneumatic Tools	Air Compressor	360		375.9079	135,327	61.38
	Worker		1440	0.0258	37	37.15

3. CalEEMod Output

- See Appendix A for CalEEMod Outputs

4. EMFAC2017

- See Appendix A for EMFAC2017 Outputs

Appendix H
Water Quality Management Plan

ESA

Water Quality Management Plan (WQMP)

Use for Private Development Projects in South Orange County

Project Name:

Sewer Lift Station No. 2 Relocation Project, South Coast Water District

Prepared for:

South Coast Water District

Sanitary Lift Station No. 2

31104C Pacific Coast Highway

Laguna Beach, CA 92651

949-499-4555

Prepared by:

AKM Consulting Engineers

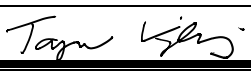
553 Wald, Irvine, CA 92618

949-753-7333, 949-753-7320 (FAX)

Project Owner's Certification			
Permit/Application No.	N/A	Grading Permit No.	N/A
Tract/Parcel Map No.	056-24-61	Building Permit No.	N/A
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract)			N/A

This Water Quality Management Plan (WQMP) has been prepared for South Coast Water District by AKM Consulting Engineers. The WQMP is intended to comply with the requirements of the local NPDES Stormwater Program requiring the preparation of the plan.

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 the current Orange County Drainage Area Management Plan (DAMP) and the intent of the non-point source NPDES Permit for Waste Discharge Requirements for the County of Orange, Orange County Flood Control District and the incorporated Cities of Orange County within the San Diego Region (South Orange County). Once the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement and amend the WQMP. An appropriate number of approved and signed copies of this document shall be available on the subject site in perpetuity.

Owner:			
Title	Taryn Kjolsing		
Company	South Coast Water District		
Address	31592 West Street Laguna Beach, CA 92607		
Email	tkjolsing@scwd.org		
Telephone #	949-541-1327		
Signature		Date	November 19, 2020

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Attachment B: Operations and Maintenance Plan (see Attached Agreement)...56

Attachment C: South Coast Water District Lift Station No. 2 Project, Final Initial Study, dated January 2017, by Environmental Science Associates (ESA). (see Volume 2 of 3) 57

Attachment D: Site Specific Health and Safety Plan, South Coast Water District, Lift Station #2, Laguna Beach, California, dated January 21, 2020, Project No. 209638002 by Ninyo & Moore Geotechnical & Environmental Sciences Consultants. (see Volume 3 of 3). 58

Attachment D: Geotechnical Evaluation, Lift Station No. 2 Replacement Project, South Coast Water District, Laguna Beach, California, dated June 5, 2020, Project No. 209638002, by Ninyo & Moore Geotechnical & Environmental Sciences Consultants. (see Volume 3 of 3).58

Attachment E: Aliso Creek Watershed Rainfall and Infiltration Feasibility Exhibits, Hydromodification Susceptibility Map, and Potential Critical Coarse Sediment Yield Areas by Watershed Map 59

Section 1 Discretionary Permit(s) and Water Quality Conditions

Project Infomation			
Permit/Application No.	N/A	Site Address or Tract/Parcel Map No.	31104C Pacific Coast Highway Laguna Beach, CA 92651 APN-056-24-61
Additional Information/ Comments:	This project is to remove existing two buildings with their parking lot, and to reconstruct a larger sewer wet well and dry well pump station facility (Sewer Lift Station No. 2). Adjacent to the lift station, the associated facilities such as: perimeter walls, storm drain system, granular structure backfill at over-excavated area, front landscaping yard, and the front road improvement are also part of this project's construction tasks.		
Water Quality Conditions			
Water Quality Conditions from prior approvals or applicable watershed-based plans	This project was not assigned to a discretionary permit or conditions of approval related to water quality.		

Section 2 Project Description

2.1 General Description

Description of Proposed Project		
Site Location	Project Location: It is located about 960 feet northerly from Pacific Coast Highway along Country Club Drive; at Lat. 33.5128, Log. 117.7506 Legal Address: 31104C Pacific Coast Highway, Laguna Beach, CA 92651 Parcel Number: APN-056-24-61.	
Project Area (ft^2):	Number of Dwelling Units: Zero	SIC Code: 1542
Narrative Project ***Description No. 1:*** ***Area north of Country Club Drive***	There are a few stages for completion of the project. The first stage is to demolish two existing buildings and its asphalt concrete (AC) paved parking lot. The next stage is to expand the lot to its required size and elevate the ground to its designed level in order to meet FEMA's flood protection criteria. And then, construct new sewer lift station for including a generator building (36' x 26' size) for housing generator and diesel pumps, and an electrical building (36' x 18' size) for housing electrical and control equipment. The off-site excavation and structure backfill are required for constructing its associated facilities; such as: a) grouted riprap slope protection with debris posts and concrete apron at bottom of the northerly eroding canyon entrance; b) perimeter wall and concrete maintenance path enclosing the pump station yard for protecting the site; c) grated concrete open channel drainage system adjacent to the westerly and northerly retaining wall; and d) perforated sub-drain pipe for outlet the saturated sub-grade groundwater to area drain. At the over-excavated area, granular structure backfill (Greenbook 300-3.5) is conducted for mitigating the surface runoff generating from the surrounding hill site. The final stage is the completion of front yard landscaping work and the front road improvement. The sub-total square footage of disturbed area is 9,042 sq-ft, and it can be subdivided into:	

<table>
<tr><td></td><td colspan="4">1) Building, parking lot, facility operation area and retaining wall = 4,780 sq-ft (100% imperious);
2) Grated concrete open channel area = 542 sq-ft (100% impervious);
3) Grouted riprap slope protection area = 325 sq-ft (100% impervious);
4) Concrete apron slope protection and Maintenance Path area = 497 sq-ft (100% impervious);
5) Landscaping only area = 1,952 sq-ft (100% pervious);
6) Off-site backcut slope for Structure Backfill area = 1,768 sq-ft (100% pervious).

Please note that the structure backfill area starts from outside edge of retaining wall (see Figure 9); therefore, the areas of grouted riprap, concrete apron, and maintenance path are on top of it; therefore, the total disturbed area is 9,042 sq-ft (1,768 + 1,952 + 542 + 4,780 = 9,042).

For equal comparison of the pervious and impervious percentage unto the disturbed area, The Table below under the Pre-Project Condition includes the surrounding natural barren rockland area for matching the sub-total of 9,042 sq-ft.</td></tr>
<tr><td rowspan="2"><u>Project Area No. 1</u>
(Facility Site with Surrounding Area)</td><td colspan="2">Pervious</td><td colspan="2">Impervious</td></tr>
<tr><td>Sub-total Area (sq - ft)</td><td>Percentage</td><td>Sub-total Area (sq - ft)</td><td>Percentage</td></tr>
<tr><td>Pre-Project Conditions at Pump Station Site</td><td>5,070 sq-ft (natural barren rockland)</td><td>15%</td><td>3,972 sq-ft</td><td>100%</td></tr>
<tr><td>Post-Project Conditions at Pump Station Site</td><td>1,952+1,768 - 325 - 497 = 2,898 sq-ft (including the landscaping & structure backfill area)</td><td>100%</td><td>4,780+542+325 +497 = 6,144 sq-ft</td><td>100%</td></tr>
<tr><td>Narrative Project <u>Description No. 2:</u> Area along the Country Club Drive Improvement</td><td colspan="4">This description is focused on the road improvement area at Country Club Drive (see Figure 7). In behalf of the drivers' safety and District Facility's operation, the District conducts a 902 feet of road improvement on front of the facility site, which</td></tr>
</table>

	is still within the District's easement boundary. The road improvement includes resurfacing portion of the existing paved road and a 25-foot width of new road (24,154 sq-ft, 100% impervious), two separated planting trip areas (6,436 sq-ft, 100% pervious), 4-foot width decomposed granite walking path (3,330 sq-ft, 50% impervious), and a 4-foot width riprap V-ditch (2,058 sq-ft, 100% pervious) for a total of 35,978 sq-ft.			
Project Area No. 2 (Country Club Drive)	Pervious		Impervious	
	Sub-total Area (sq - ft)	Percentage	Sub-total Area (sq - ft)	Percentage
Pre-Project Conditions on front of Pump Station Site at Country Club Drive				
Road Paved area and Parking Lot	0 sq-ft	0%	2,295 sq-ft	100%
Road Adjacent Area	33,683 sq-ft	80%	33,683 sq-ft	20%
Post-Project Conditions on front of Pump Station Site at Country Club Drive				
Construction of Proposed New Road on Country Club Dr.	0 sq-ft	0%	24,154 sq-ft	100%
Two Planting Areas	6,436 sq-ft	100%	0 sq-ft	0%
Decomposed Granite Walking Path	3,330 sq-ft	50%	3,330 sq-ft	50%
Riprap V-ditch	2,058 sq-ft	100%	0 sq-ft	0%

2.2 Post Development Drainage Characteristics

The project site is protected by 4-side perimeter wall with motorized gate at entrance. The surface flow pattern of the post-project condition remains the same as in the existing condition. It is sheet-flowing southerly from hillside towards Country Club Drive. In order to provide a 100-year flood protection level to the property, the site and the front road on Country Club Drive are elevated, but the flow pattern remains the same comparing to the pre-project condition. The on-site area-drains are constructed to intercept majority of the surface runoff to its drainage system. Once the residual surface runoff leaves the site, it flows westerly and be intercepted at an existing local sump area located at the existing pump station front entrance and eventually drains into Aliso Creek through a proposed drainage system.

2.3 Property Ownership/Management

The project construction is within the South Coast Water District (SCWD) owned property. The SCWD has full responsibility of operating and long-term maintenance of the drainage facility including the off-site surrounding area as long as it is within the SCWD property.

Section 3 Site & Watershed Characterization

3.1 Existing Site Conditions

3.1.1 Existing Site Conditions

The existing site of 3,972 sq-ft is a fully developed lot adjacent to Country Club Drive and facing Aliso Creek, occupied with two buildings, AC paved parking lot (see Google Earth Map, Figure 1) surrounding by natural barren rockland (the geologic cross-section A-A' is shown on its Figure 5 of geotechnical report). The on-site elevation varies from 21.3' to 20.7' with average sheet flow slope of 1.8% from north towards south. From the local Hydrology Map (Figure 2 & Figure 3), the total drainage boundary from the hillside to Country Club Drive is about 1.26 acres (1.01 acres from the north, 0.11 acres from the west, and 0.14 acres from the east), and the project site is located directly at the mouth of a small but significantly eroding canyon. From the biological resources data and environmental evaluation results, Checklists on the project site were marked as either "No Impact" or "Less Than Significant with Mitigation Incorporated" (please see Attachment C - South Coast Water District Lift Station No. 2 Project, Final Initial Study, dated January 2017, by Environmental Science Associates (ESA). The source of surface runoff is naturally generated only from the rainfall.

Figure 1 - Existing Project Site

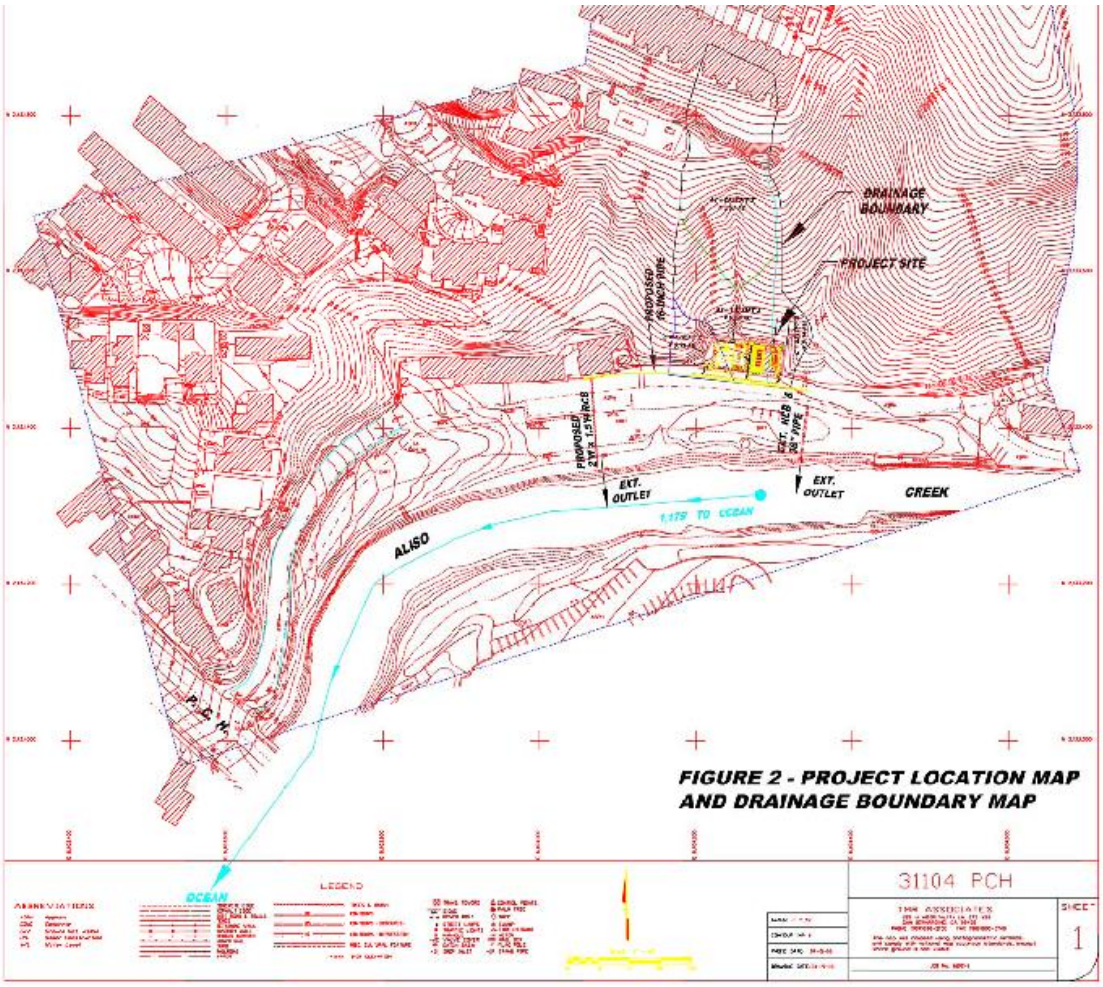
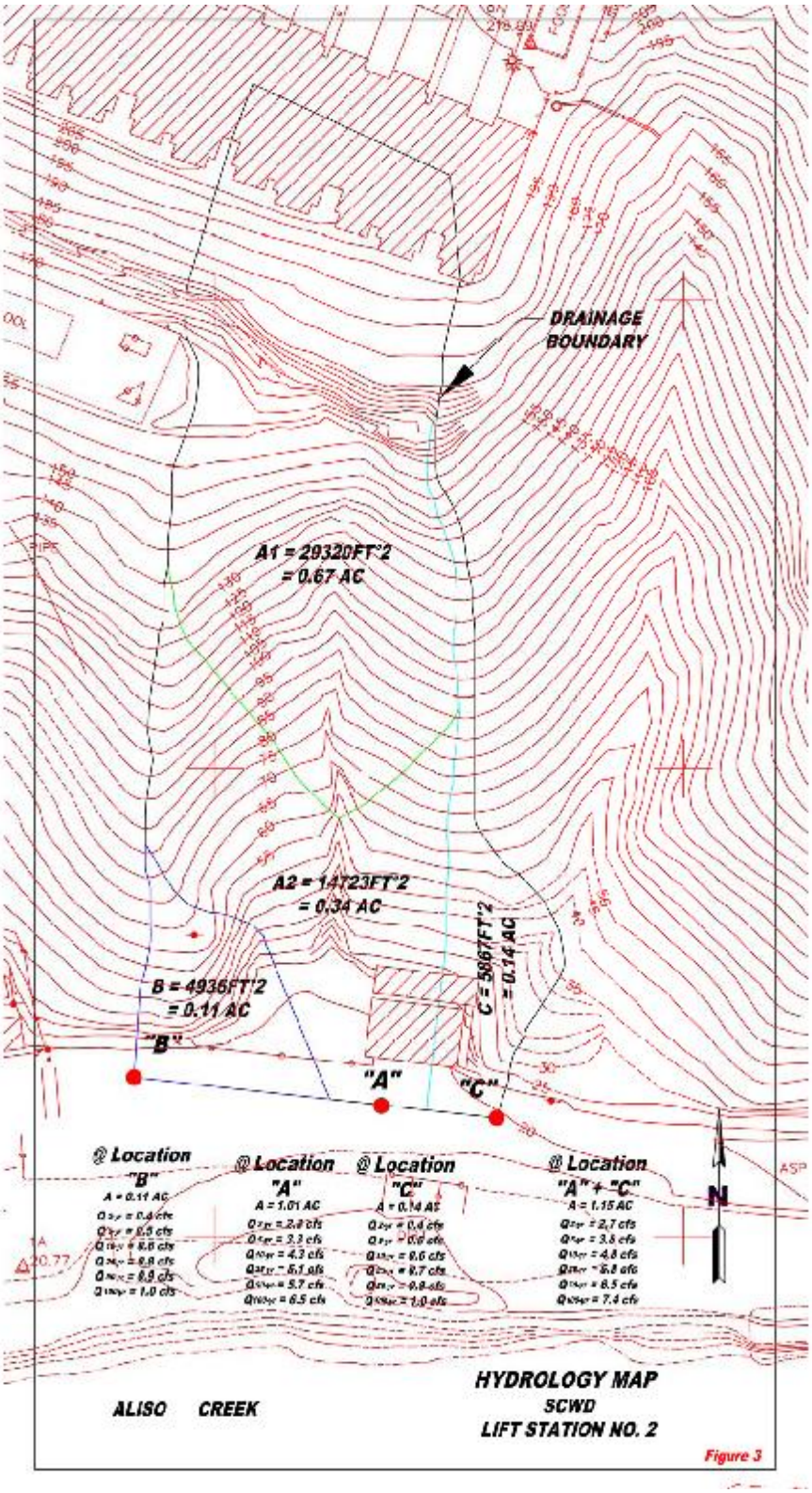


FIGURE 2 - PROJECT LOCATION MAP AND DRAINAGE BOUNDARY MAP


DRAINAGE BOUNDARY
A1 = 29320FT^2 = 0.67 AC
A2 = 14723FT^2 = 0.34 AC
B = 4936FT^2 = 0.11 AC
C = 5867FT^2 = 0.14 AC
"B"
"A"
"C"
@ Location "B"
A = 0.11 AC
@ Location "A"
A = 1.01 AC
@ Location "C"
A = 0.14 AC
@ Location "A" + "C"
A = 1.15 AC
N
ALISO CREEK
HYDROLOGY MAP
SCWD
LIFT STATION NO. 2
Figure 3

Existing Land Uses				
Land Use Description	Sub-total Area (sq – ft)	Impervious Area (sq – ft)	Pervious Area (sq - ft)	Imperviousness (%)
Two Existing Buildings and Parking Lot	3,972	3,972	0.	100%
Sounding Rocky Open Space Area	5,070	4,309	761	85%
Country Club Drive	2,295	2,295	0.	100%
Country Club Drive Shoulder Area	33,683	6,737	26,946	20%
Grand Total Ground Disturbed Area	45,020	17,313	27,707	38.5%

3.1.2 Existing Infiltration-Related Characteristics

3.1.2.1 Existing Hydrogeologic Conditions

The on-site groundwater level depends on the seasonal rain conditions. From a historical perspective data, it can be 5-foot below the ground. The current boring locations are shown on Figure 4 and Figure 5 of the geotechnical report. Based on the field boring data, the updated groundwater information is 10 feet depth below the ground in 2016 boring data (site B-1), and 12 feet depth in 2020 data (site PW-1 & MW-1).

During the geotechnical investigation, Engineers did not observe odors or other indicators of contamination in the boring sites. Also, the excess soils cuttings and groundwater from well development were tested for disposal purposes and were classified as non-hazardous waste. These test results are included in Geotechnical Evaluation Report (their report on Appendix D and Appendix E).

The San Juan Basin Authority is the primary groundwater management agency for South Orange County, and the project is located outside the Agency's jurisdictions.

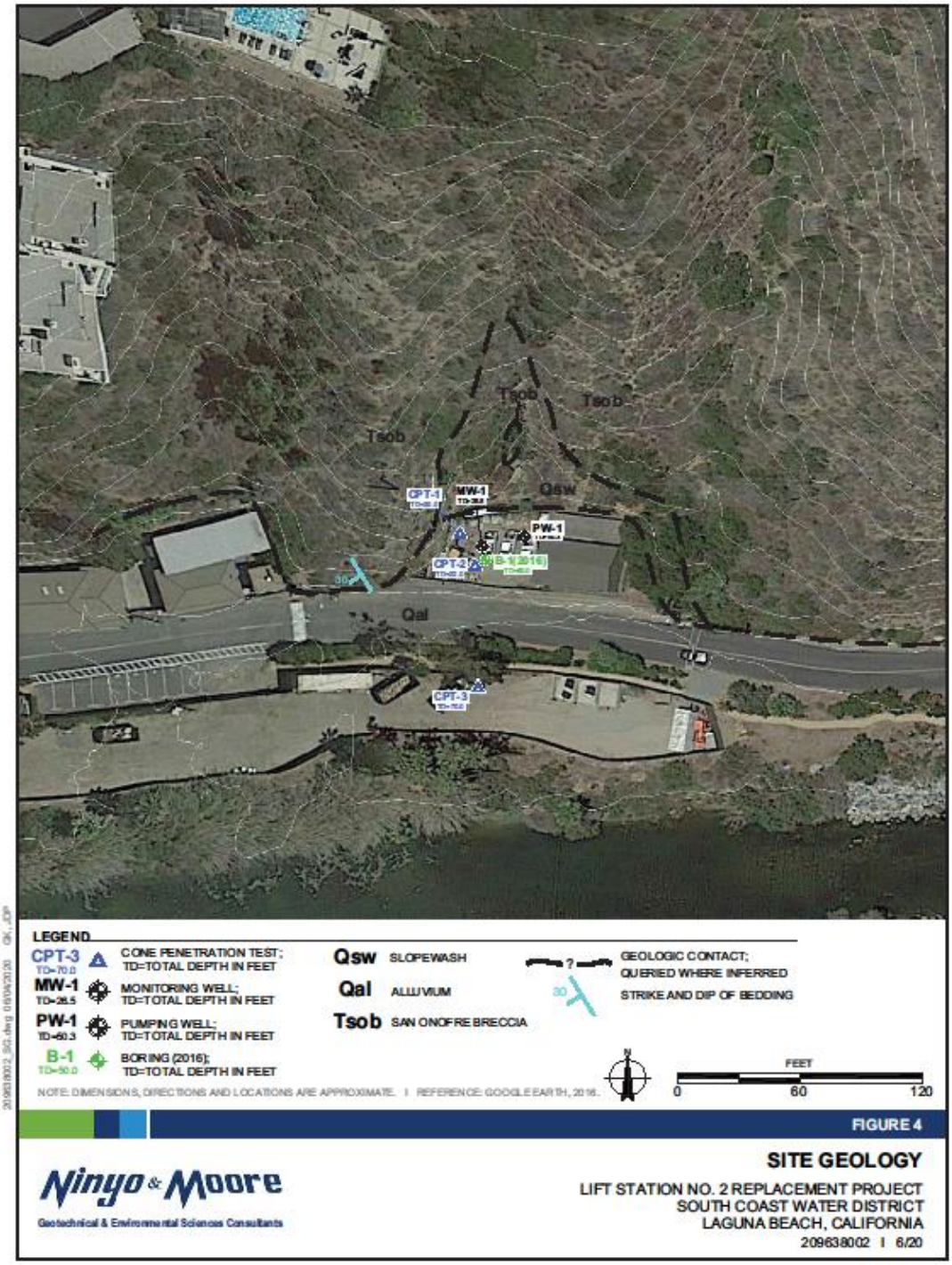
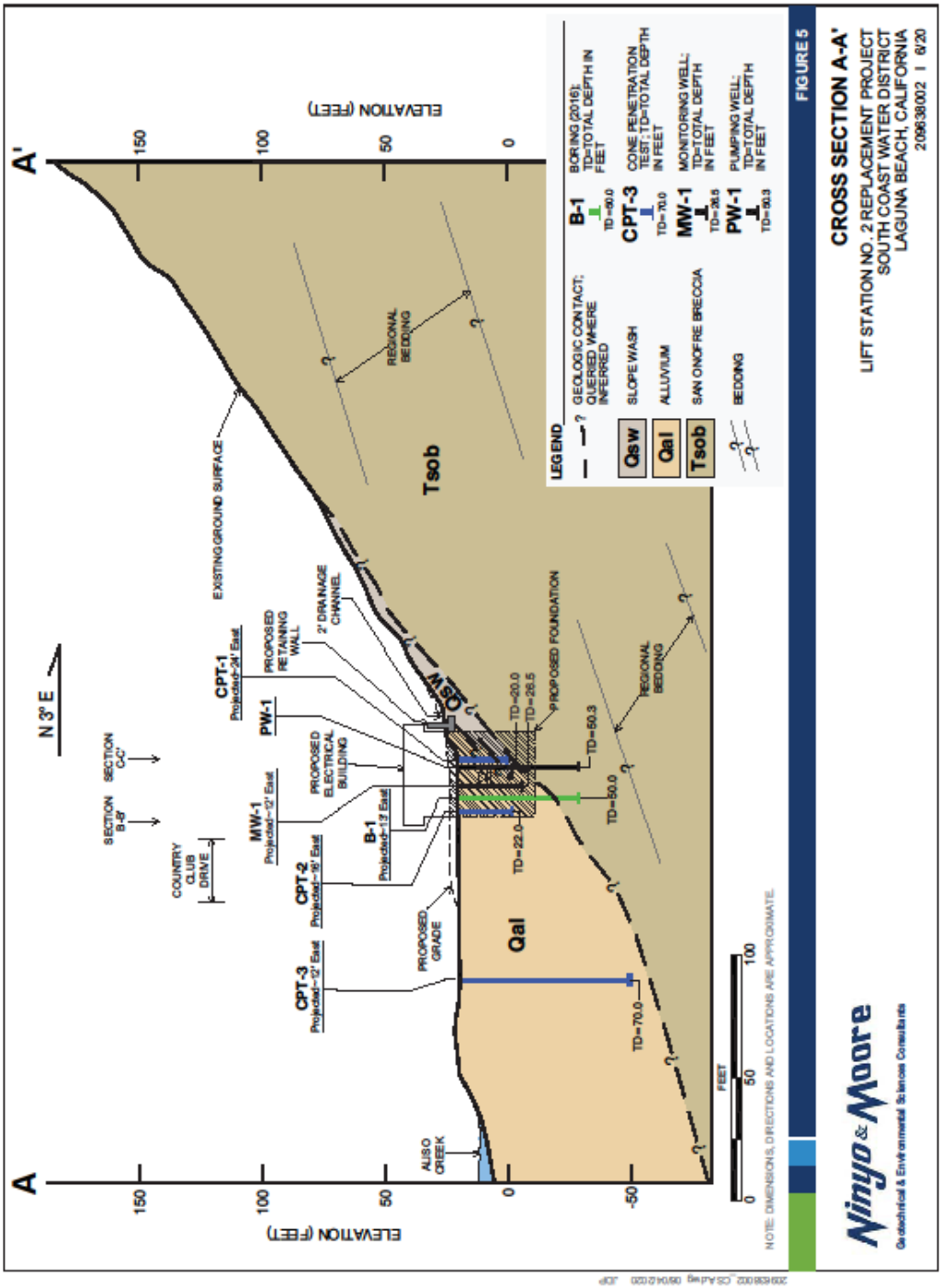


FIGURE 4

SITE GEOLOGY

LIFT STATION NO. 2 REPLACEMENT PROJECT
SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA
209638002 I 6/20

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants


A
A'
ELEVATION (FEET)
150
100
50
0
-50
N 3° E
LEGEND
GEOLOGIC CONTACT: QUERIED WHERE INFERRED
SLOPE WASH
ALLUVIUM
SAN ONOFRE BRECCIA
BEDDING
Qsw
Qal
Tsob
BORING (2016): TD=TOTAL DEPTH IN FEET
CONE PENETRATION TEST: TD=TOTAL DEPTH IN FEET
MONITORING WELL: TD=TOTAL DEPTH IN FEET
PUMPING WELL: TD=TOTAL DEPTH IN FEET
B-1 TD=50.0
CPT-3 TD=70.0
MW-1 TD=26.5
PW-1 TD=50.3
EXISTING GROUND SURFACE
REGIONAL BEDDING
PROPOSED RETAINING WALL
2' DRAINAGE CHANNEL
PROPOSED ELECTRICAL BUILDING
PROPOSED FOUNDATION
PROPOSED GRADE
CPT-1 Projected~24' East
PW-1
MW-1 Projected~0' East
B-1 Projected~13' East
CPT-2 Projected~16' East
CPT-3 Projected~0' East
TD=20.0
TD=26.5
TD=50.3
TD=50.0
TD=22.0
TD=70.0
MSD
Qal
Tsob
SECTION C-C'
SECTION B-B'
COUNTRY CLUB DRIVE
ALISO CREEK
FEET
0
50
100
NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.
FIGURE 5
CROSS SECTION A-A'
LIFT STATION NO. 2 REPLACEMENT PROJECT
SOUTH COAST WATER DISTRICT
LAGUNA BEACH, CALIFORNIA
20963802 | 6/20
Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

3.1.2.2 Existing Soil and Geologic Infiltration Characteristics

The project is located within the hydrologic "Soil Group D" boundary as shown on TGD FIGURE 7.9a map (see Attachment E), which is within a "Low Permeability Soil" area, and it can be confirmed by field observation and Geotechnical Evaluation Report, Section 6.2.3 Bedrock – San Onofre Breccia (Tsob).

3.1.2.3 Existing Geotechnical Conditions

The most current geotechnical report is entitled "*Geotechnical Evaluation, Lift Station No. 2 Replacement Project, South Coast Water District, Laguna Beach, California*", dated June 5, 2020, Project No. 209638002, by Ninyo & Moore Geotechnical & Environmental Sciences Consultants (see Attachment D, Volume 3 of 3).

According to the geotechnical report, the project site is not located within a State of California Earthquake Fault Zone (Alquist-Priolo Special Studies Zone), but it is located within a State of California Seismic Hazard Zone for liquefaction. Based on the laboratory corrosion testing, it indicates that the near-surface soils at the site should be considered non-corrosive in accordance with the Caltrans (Caltrans, 2018) corrosion guidelines.

The collapsible soil consideration is not a design issue in this specific project since the subsurface soils have undergone repeated cycled of wetting due to groundwater fluctuations, so future hydro-collapse of soils should not occur. Furthermore, the pump station structure is below the groundwater table.

The surficial soil consists of granular clayey sand, which is to have a very low to low expansion potential. All the proposed exterior flatwork is underlain by low-expansion material.

The project is located within an area subject to seismically induced landslide hazards and potentially liquefiable hazards as indicated in the State of California Seismic Hazards Zones Map. The northerly slopewash material consists of unconsolidated to moderately consolidated silty sand with gravel and scattered cobbles. Due to the steepness of the ascending slope, the slopewash area may become unstable with some addition stormwater runoff resulting in slumping and/or mudflows. Based on this condition, the perimeter retaining wall with 5-foot of freeboard adjacent to the slope is constructed as a debris wall. In order to stabilize the slope area, additional constructions of: backfilling the erosion gulley with compacted soil, debris post, 2-foot-wide with 3 feet height of grated concrete open channel at bottom of the slope along northerly and westerly retaining walls, and the over-excavated area will have structure backfill per Greenbook Section 300-3.5 to protect the property from being impacted by mud and/or debris flows.

An on-site liquefaction analysis was conducted based on the conditions of: a) groundwater depth of 5 feet; b) PGA_m of 0.7g, and c) design earthquake magnitude of 7.2. The results of the analysis indicated that the relatively loose to medium dense, sand and clayey sand between depths of approximately 5 to 45 feet below the ground surface are susceptible to liquefaction during the design seismic event. As a result of seismically-induced liquefaction, the project site may be subject to liquefaction-induced settlement of 1-inch over 40 feet in distance.

3.1.2.4 Summary of Infiltration Opportunities and Constraints of Existing Site

Based on the historically shallow groundwater at the surrounding area (on the order of 5 feet deep), the building elevated site will not meet the minimum required separation between the bottoms of the infiltration facilities and the groundwater table. Therefore, the future pump station facility site itself is not a good candidate for storm water infiltration.

According to the geotechnical recommendation, the horizontal and vertical construction joint of the underground structures will have water stops to reduce of water infiltration, and "water-tight" penetration design is conducted for pipes penetration into the structures. The pipe flexible joint is located close to the exterior of the walls, and can accommodate to withstand differential settlement of three (3) inches.

3.2 Proposed Site Development Activities

In general, the proposed site development activities can be subdivided into two tasks: a) On-site facility development; and b) Country Club Drive road widening improvement.

A) <u>On-Site Facility Development Area</u>

The proposed on-site facility development covers a total area of 9,042 sq-ft, and can be sub-divided into five (5) sub-areas as shown on Figure 6 below: 1) Pump station facility area with perimeter retaining wall (4,780 sq-ft); 2) Grated concrete open channel drainage facility area (542 sq-ft); 3) Grouted riprap slope protection area with concrete apron slope protection area, and concrete maintenance path area (822 sq-ft); 4) Off-site slope backcut structure backfill area (1,768 sq-ft); and 5) Landscaping green area at front of pump station entrance and hill side grading area (1,952 sq-ft).

After removal of the existing two buildings and its paved parking lot, an initial rough grading is conducted to prepare for the pump station facility site (see Figure 6). The on-site rough grading work includes: grading the facility site to a proper ground level and removal of debris, organics, 4-inch larger rocks and with any other unsuitable soils. Generally speaking, the site will be cut to the perimeter wall boundary. After the grading, the facility site of Area #1 will be backfilled with clean granular material and compacted to a design elevation in order to meet the flood protection criteria. The buildings' finished floor elevation will be elevated to the elevation level of 24.0-ft, which is a minimum of 1-foot above the FEMA's BFE water level (Base Flood Elevation).

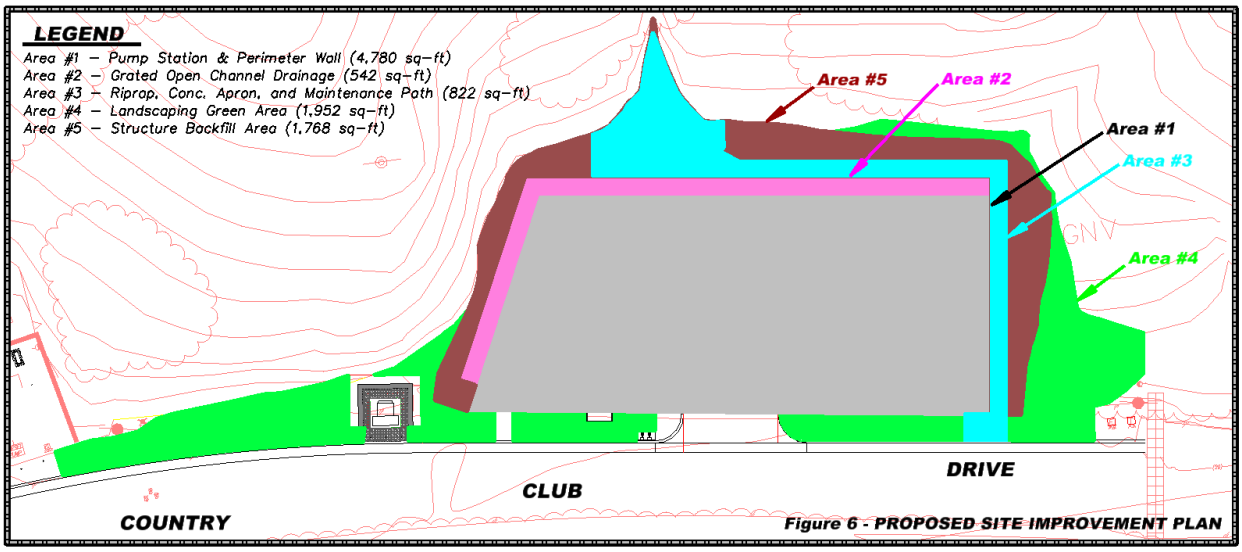


Figure 6 - PROPOSED SITE IMPROVEMENT PLAN

B) Country Club Drive Road Widening Improvement Area

The proposed Country Club Drive road widening improvement covers a total area of 35,978 sq-ft shown on Figure 7 below, and it can be sub-divided into four (4) sub-areas as shown on the exhibit: 1) Asphalt concrete pavement on the existing and new 25-foot width roads (24,154 sq-ft); 2) Two planting areas (6,436 sq-ft); 3) Walking path (3,330 sq-ft), and 4) Riprap V-ditch area (2,058 sq-ft).

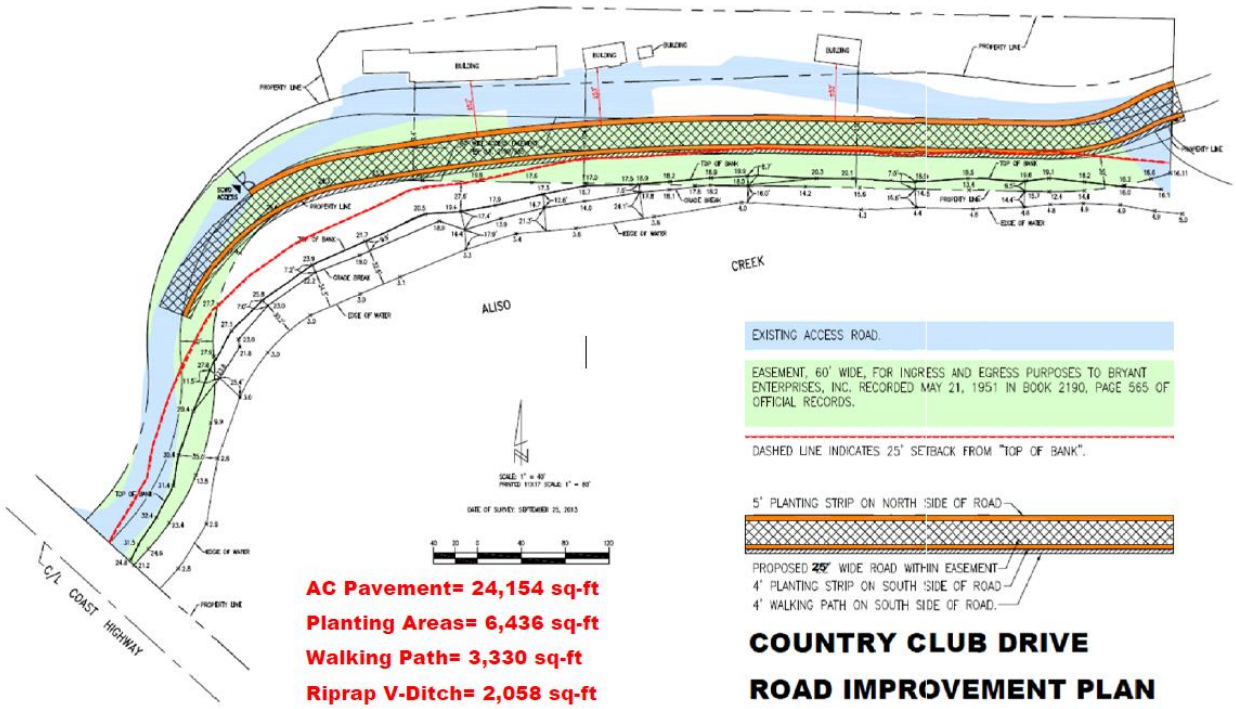


Figure 7

3.2.1 Overview of Site Development Activities

The overview activities of proposed on-site and off-site developments can be highlighted to: a) Demolishing the existing two buildings with its paved parking area (3,972 sq-ft); b) Grading the site to its required lot size with 95% compaction and backfill to its design elevation, which is one-foot minimum above the FEMA base flood elevation; c) Reconstruct a larger Lift Station No. 2 Facility to accommodate the high volume of sewage and with the construction of perimeter retaining walls to protect the property (4, 780 sq-ft); d) Construct grated concrete open channel drainage facility (adjacent to westerly and northerly retaining wall), Grouted riprap slope protection with debris posts and concrete apron at bottom of the northerly eroding canyon entrance, concrete maintenance path adjacent to northerly and easterly retaining wall, and finish it with outlet subdrain and granular structure backfill (Greenbook 300-3.5) to protect the site; e) Minor grading of landscaping green area at the facility front entrance and hill site areas, and f) Country Club Drive road widening improvement to separate the public drivers from the facility operation area.

The total disturbed ground surface area, which excluding the repaving of existing parking lot or roadway is 45,020 sq-ft, which covers 31,963 sq-ft of impervious area (71.0%), and 13,057 sq- ft of pervious area (29.0%).

The entire new development area is within the South Coast Water District's property adjacent to Country Club Drive. The pump station facility site is elevated for about 2 to 3 feet above the existing ground level, which is 1-foot minimum above the FEMA base flood elevation. Some other minor grading is conducted on the building front entrance and the hill side landscaping areas. The entire site is graded for not changing the existing surface runoff pattern and making a smoothly transition connecting to the Country Club Drive grades.

3.2.2 Project Attributes Influencing Stormwater Management

- ***Potential pollutant – generating activities at the site including:***
    - *SICs* - The project is to reconstruct a new sewer lift station for replacing an existing deficient facility, and it is classified as SIC Code: 1542.
    - *Materials/products to be used on site* - This is an underground pump station unit; therefore, only two buildings are visible above. No materials/products are used outside the buildings. The pump operation and maintenance work are conducted inside the *buildings*.
    - *Wastes to be generated* – NO.
    - *Delivery areas and loading docks* – NO.
    - *Vehicle maintenance or cleaning areas* – NO.
    - *Fueling areas* – No Fueling Area.
- ***What buildings will be on the site and how the buildings will be used* –** Two buildings are constructed for including a Generator Building and an Electrical Building.

- ***Proposed landscaping*** **–** One landscaping area for about 1,952 sq-ft is located on the pump station's front entrance along Country Club Drive and the easterly hill side area. Another planting strip is conducted along each side of the new Country Club Drive for about 5,990 sq-ft.
- ***How existing drainage patterns will be preserved/ how they will be affected by grading, cut, and fill*** **–** The existing drainage pattern is preserved as it is, which is flowing from north towards south. The cutting area is for expanding the site large enough to construct two buildings, operation space, and perimeter walls. The over-excavated area is compacted with the granular structure backfill to stabilize the hillside. After the grading, the building and its operation site is elevated to 1-foot minimum above the FEMA's base flood elevation.
- ***Proposed slopes*** **–** The average proposed on-site slope is 1.5%, which is flatter than the existing flow pattern of 1.8%.
- ***Locations of run-on and run-off from the site*** **–** From the local Hydrology Maps facing the pump station front entrance, the run-on flow path remains the same as in place, but the run-off flow path leaving the project site has major difference under the pre- and post-project conditions. Currently, the existing runoff (Figure 3, Area "A" + Area "C") from the hillside and the building area of 1.15 acres is sheet-flowing through the building front entrance. Under the post-project condition (Figure 2, Proposed Hydrology Map), area-drains are constructed on the pump station site to its drainage system and only the minor residual runoff will sheet-flow through the front entrance. Since the storm runoff from the hillside is intercepted into the perimeter grated concrete open channel and convey the flow to an underground drainage system, this proposed drainage system can dramatically reduce the flooding impact to the public road and its downstream property.
- ***Describe how any existing environmentally sensitive features will be preserved*** **–** The area outside the construction limits is protected in place. In this project, a total of 2,898 sq-ft of landscaping area is constructed to replace the current barren rockland.
- ***Describe the proposed land uses/land cover at the site including areas and imperviousness of each with a summary for the site. In addition to the narrative, include a summary table similar to the one below*** **–** The proposed land usage includes: a) Two buildings for pump station facility and operation site; b) Perimeter retaining walls; c) Grated concrete open channel and subdrain outlet for drainage; d) Structure backfill (Greenbook 300-3.5) for stabilizing the hillside; e) Front and hill side landscaping area, and f) Country Club Drive road widening improvement.

Proposed Land Uses				
Land Use Description	Sub-total Area (sq - ft)	Impervious Area (sq - ft)	Pervious Area (sq - ft)	Imperviousness (%)

A) On-Site Facility Development Area				
Pump Station Facility Site for including Two Buildings, Operation Site, and Retaining Wall.	4,780	4,780	0	100%
Drainage System Area for including: Grouted Riprap Slope Protection w/ Debris Posts and Concrete Apron, Concrete Maintenance Path, Concrete Open Channel.	1,364	1,364	0.	100%
Landscaping Area on front of Pump Station Facility and Structure backfill Area.	2,898	0	2,898	0%
B) Country Club Drive Road Widening Improvement Area				
Country Club Drive	24,154	24,154	0	100%
Planting Areas	6,436	0	6,436	0%
Decomposed Granite Walking Path Area	3,330	1,665	1,665	50%
Riprap V-Ditch Area	2,058	0	2,058	0%
Grand Total	45,020	31,963	13,057	71.0%

3.2.3 Effects on Infiltration and Harvest and Use Feasibility

As stated on Section 3.1.2.4, because of shallow groundwater at the surrounding area (on the order of 5 feet deep), the proposed site is not a good candidate for storm water infiltration. Also, the area is bounded by the rockland, the facility and operation site are limited to a minimum required size. This location is constrained by its restricted size and operation safety issue; therefore, no Harvest and Use BMP can be applied to the on-site facility area. The only applicable is the roof drain of Downspout Disconnection BMP.

3.3 Receiving Waterbodies

The project site with its drainage system is shown on the Proposed Site Hydrology Map in **Section 3 – Site & Watershed Characterization,** Figure 2. Two existing drainage systems adjacent to the project site draining into Aliso Creek. The easterly outlet is a 36-inch pipe and the westerly outlet is

a 12-inch pipe. From the hydrologic point of view, under the pre- and post- project conditions the total amount of storm runoff at front of the building entrance remains the same because the drainage boundary and the land usage are unchanged. Instead of letting the runoff running from the canyon through the project site, the proposed grated concrete open channel will intercept the runoff and transition it to an underground 18-inch reinforced concrete pipe (RCP) and conveying it to the existing 12-inch PVC outlet alignment. This existing 12-inch PVC pipe is located at a local sump area and has a very limited capacity draining into Aliso Creek. Since this deficient drainage system is located at a local sump area, street and property flooding damage frequently occurs in rainy seasons. Because of that this existing 12-inch PVC pipe is replaced with a 4'(W) x 1.0'(H) reinforced concrete box (RCB) using the same alignment outlet to Aliso Creek. Measuring along the Aliso Creek, the project site is located about 1,175 feet to the ocean.

The 303(d) Listed Impairments at Aliso Creek (mouth) pollutant assessments: Alkalinity (CaCO3), Aluminum. Arsenic, Benthic Community Effects, Bifenthrin, Cadmium, Chloride, Chlorpyifos, Chromium, Copper, Cyfluthrin, cyhalothrin Lambda, Cypermethrin, Deltamethrin, Diazinon, Esfenvalerate/Fenvalerate, Fenpropathrin, Indicator Bacteria, Iron, Lead, Malathion, Manganese, Mercury, Nickel, Nitrogen, Ammonia, Oxygen dissolved, Permethrin, pH, Phosphorus, Selenium, Silver, Sulfates, Dissolved Solids, Toxicity, Turbidity, and Zinc.

Aliso Creek (mouth) Applicable TMDLs: Benthic Community Effects, Malathion, Nitrogen.

The sub-total surface runoff at the facility entrance is generated from a 1.26-acre tributary area, which includes the runoffs from northerly canyon site, District Facility site, and its front portion of Country Club Drive. This runoff is intercepted and conveyed through a future drainage system to a local sump near the existing pump station entrance. Additional 8.49-acre major runoff coming from westerly site is also intercepted at this local sump and conveys into a future drainage system (4'W x 1'H RCB and 42-inch RCP) discharging directly into Aliso Creek. After completion of this project, variation of the total runoff at creek outlet is neglectable due to the facts of no changing in: a) tributary boundary; b) runoff conveying type of 1,550 feet (natural valley channel); c) minor improvements in drainage system and ground impervious percentage has minimum effect to the entire tributary's parameters.

As stated in the Attachment C, ESA **Final Initial Study**, the *Baccharis salicifolia* Alliance mapped within the southern portions of the project site contains a dominance of mule fat (*Baccharis salicifolia*). This Alliance is also referred to as mulefat scrub and is considered a riparian scrub community associated with waterways, such as the adjacent Aliso Creek to the south; therefore, Aliso Creek's habitat would be considered as a sensitive natural community.

But, looking at the State Water Quality Protection Areas of Special Biological Significance (ASBS), Ocean Standards Section, Aliso Creek is not included within its ASBS mapping boundary. Also, as stated in the ESA Final Initial Study, after the implementation of mitigation measures, the project has no substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

3.4 Stormwater Pollutants or Conditions of Concern

Pollutants or Conditions of Concern				
Pollutant	Expected from Proposed Land Uses/Activities (Yes or No)	Receiving Waterbody Impaired (Yes or No)	Priority Pollutant from WQIP or other Water Quality Condition? (Yes or No)	**Pollutant of Concern (Primary, Other, or No)**
Suspended-Solids	Yes	No	No	No
Nutrients	No	No	No	No
Heavy Metals	No	No	No	No
Bacteria/Virus/Pathogens	No	No	No	No
Pesticides	No	No	No	No
Oil and Grease	No	No	No	No
Toxic Organic Compounds	No	No	No	No
Trash and Debris	Yes	No	No	No
Dry Weather Runoff	Yes	No	No	No

The proposed drainage system is designed to intercept the natural hillside surface runoff; therefore, various debris/mud slide pollutants are expected. The District's routine and scheduled maintenance work will be able to minimize these potential pollutants. As from the project concern, the potential pollutants are very minimum.

3.5 Hydrologic Conditions of Concern

The project site is located within the area of Non-Engineered Channel, which is Hydromodification not in Exemption boundary per Laguna Beach Exemption Map (see Attachment E, Figure N.7).

Does a hydrologic condition of concern exist for this project?

☒ No – An HCOC does not exist for this receiving water because *(select one)*:

☐ Project discharges directly to a protected conveyance (bed and bank are concrete lined the entire way from the point(s) of discharge to a receiving lake, reservoir, embayment, or the Ocean

☒ Project discharges directly to storm drains which discharge directly to a reservoir, lake, embayment, ocean or protected conveyance (as described above)

☐ The project discharges to an area identified in the WMAA as exempt from hydromodification concerns

☐ Yes – An HCOC does exist for this receiving water because none of the above are applicable.

Repeat this checklist for each different receiving water to which the project would discharge.

3.6 Critical Course Sediment Yield Areas

The project site is not located within the Potential Coarse Sediment yield area (see Attachment E, Figure N.8), still for the protection purpose, nine (9) debris barrier posts, grouted riprap slope protection, 4-foot cut-off wall with concrete apron as shown on Figure 8 are constructed at the upper canyon mouth where mud flow might occur to prevent large debris/sediment conveying into Aliso Creek.

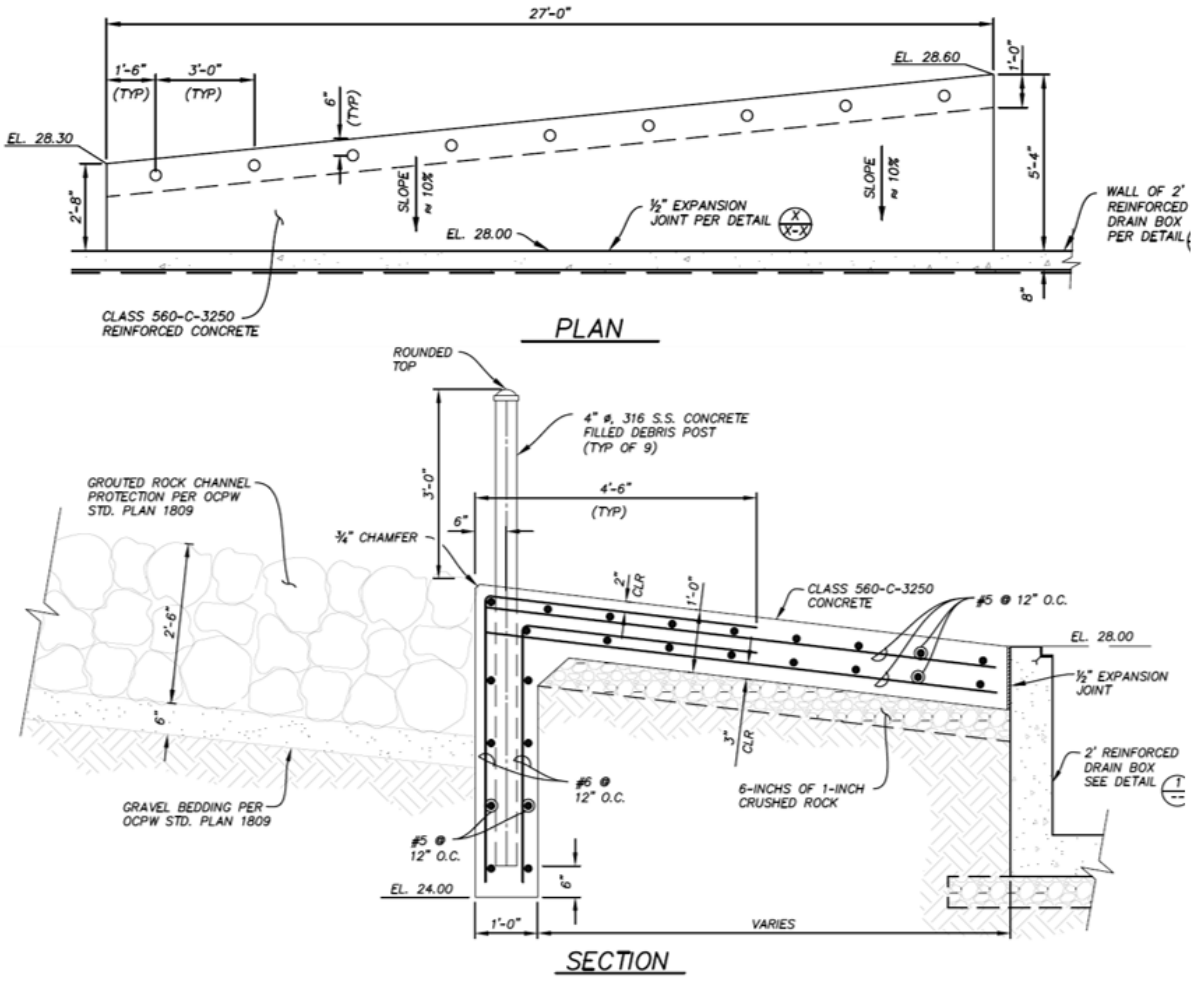


Figure 8 – Debris Post, Concrete Apron w/ Cut-off Wall, and Grouted Riprap

Section 4 Site Plan and Drainage Plan

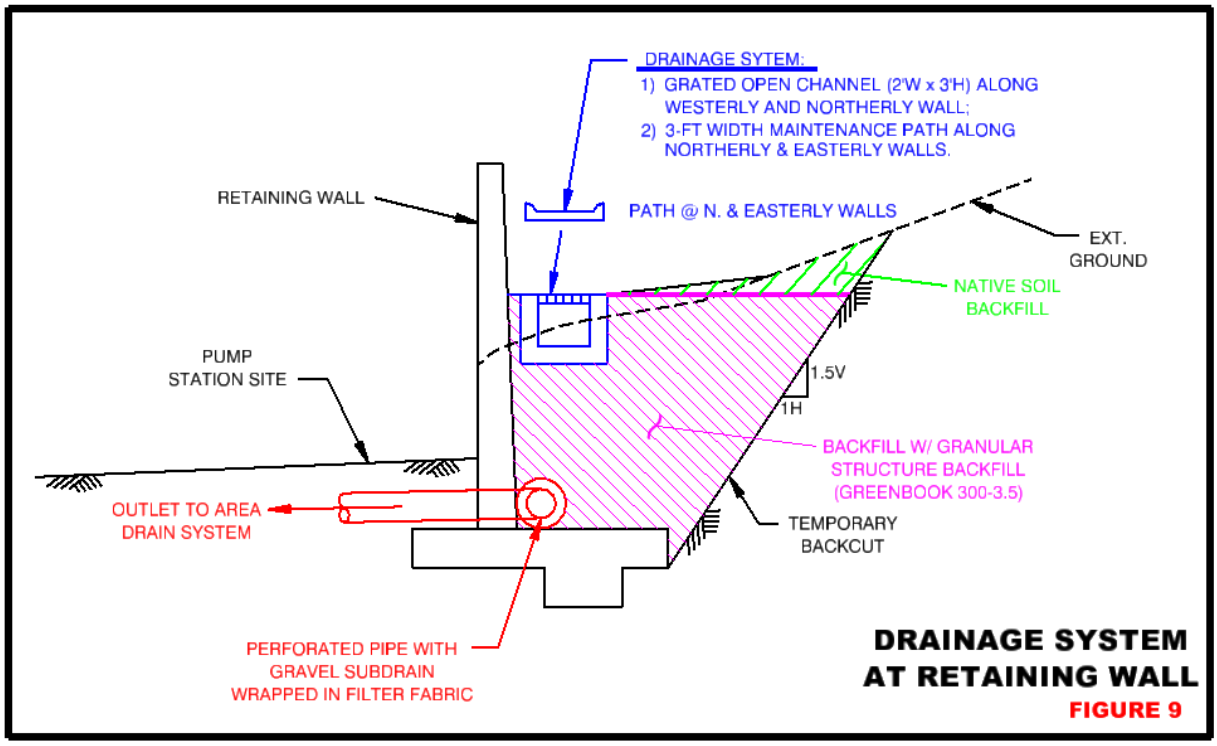
The herein described project site with its related drainage system and exhibits are presented on **Section 3.2 – Proposed Site Development Activities** and on **Section 3.3 – Receiving Waterbodies**.

4.1 Drainage Management Area Delineation

The new Lift Station No. 2 is located directly at the mouth of a small canyon, which has historically drained across and around the site. Significant erosion has and continues to occur within this upstream canyon. This has resulted in significant amounts of debris/sediment depositing behind an improvised flood barrier along the northerly border of the site and eventually upon Country Club Drive, which is adjacent to Aliso Creek.

In order to solve the erosion problem and protect the property in its safety, and in the meantime to accommodate the environmental effects from the project, the following constructions are in place:

1) For the facility's safety consideration, three-side retaining walls along the westerly, northerly, and easterly of property are constructed with the wall height 5-foot above the surrounding ground or above the open drainage channel. These retaining walls will protect the property from mud slide / debris.
2) Furthermore, in order to minimize the amount of debris/sediment running from the mouth of the small canyon towards the lift station and the downstream properties, 3-foot apart for total of nine (9) debris barrier posts (3-foot height, 4-inch diameter stainless steel pipe (316 SS) filled with concrete, sitting inside an 12-inch thickness of 4-foot deep cut-off wall, surrounding with concrete apron and grouted riprap) are installed to detain the large debris subjects as shown on **Section 3.6 – Critical Course Sediment Yield Areas**, Figure 8.
3) A typical cross-section of drainage system behind the retaining wall is shown on Section **3.2 - Proposed Site Development Activities,** Figure 6. Behind the retaining wall, reinforced concrete open channel (2-foot wide by 2 to 3-foot high) of 141 feet in length covered with traffic proof frame along the westerly and northerly walls are constructed to intercept the major storm runoff from the hillside and also to keep debris/sediment on the top of grates for removal. Along the easterly wall, the drainage tributary area is about 0.015 acres, which generates very minor runoff to the site, and it will become a sheet-flow spreading on the easterly maintenance path.
4) A temporary slope backcut is conducted from the footing of the retaining wall with 1(H) : 1.5(V) slope for daylighting to the existing ground as shown on Figure 9. This temporary excavated area will be backfilled with structure backfill per Greenbook Section 300-3.5 standards. This structure backfill materials can keep the low flow runoff and small sediment particles inside the void space prior to overtopping to the adjacent concrete open channel or concrete maintenance path. Total of the provided rock void space is about 3,298 cubic-feet, which is greater than the HSC-1 required volume of 2,657 cubic-feet (see Attachment F, Hydrologic Source Controls Fact Sheets (HSC)).



5) Two water efficient landscaping areas of 1,318 sq-ft (average of 6' W x 150' L & 5.5' W x 76' L) are provided on front of the pump station entrance. The drought tolerant California natives and low water required plants are planted with wood mulching and medium size of gravels on top.

6) The District conducts a road improvement on Country Club Drive for about 902 feet, which is located on front of the project site. It consists of: a) installing SCWD gates and reconstructing existing road for facility operation use; b) a separated 25-foot width of asphalt concrete south road for the public drivers; c) planting area on each side of the 25-ft width new AC road; d) decomposed granite walking path along the south side of the south planting strip, and e) riprap V-ditch along the walking path. The planting areas are vegetated with drought tolerant California natives. The total road improvement area is 35, 978 sq-ft, which includes the AC pavement (24,154 sq-ft, 100% imperious), planting areas (6,436 sq-ft, 0% imperious), walk path (3,330 sq-ft, 50% imperious), and riprap V-ditch area (2,058 sq-ft, 0% imperious).

The grated concrete open channel conveys the hillside surface runoff to Country Club Drive, and transitioned to an underground 18-inch reinforced concrete pipe (RCP) for 150 feet and joining to an outlet drainage system and eventually drains into Aliso Creek. As stated in **Section 3.3 – Receiving Waterbodies**, the existing outlet drainage system of 12-inch PVC is replaced with 4'(W) x 1.0'(H) of reinforced concrete box (RCB).

4.2 Overall Site Design BMPs

The property is surrounded by steep hills, and the new pump station site cannot be fully fit into this existing paved area; therefore, minor grading is required to expand the proposed site to its minimum required lot size in order to fit two new buildings, operation space, and retaining wall. Since the facility site has its restricted limitation, only limited BMPs can be applied to the on-site paved area (area drains and roof downspout drain). The suitable long-term BMPs are conducted on the areas behind retaining wall and the front roadway improvement areas.

Minimize Impervious Area – Due to the facility required lot size and the road improvement, the impervious area is increased from the existing 17,313 sq-ft (per Sub-section 3.1.1) to the proposed area of 31,963 sq-ft (per Sub-section 3.2.2). But this entire impervious area of 31,963 sq-ft is mitigated into the off-site BMPs as shown on Attachment F: Hydrologic Source Controls Fact Sheets (HSC).

Maximize Natural Infiltration Capacity – The overall site design BMPs has the function of maximizing the natural infiltration capacity due to the construction of: a) flatting the hill site with planting of native vegetations; b) structure backfill the over-excavated volume of 11,826 cubic-feet for stabilizing the hillside and at meantime for creating at least 20% void ration for infiltration; c) front entrance and easterly hill site landscaping area; d) planting strip areas on each side of the new road, and e) riprap V-ditch along the walking path.

Preserve Existing Drainage Patterns and Time of Concentration – This project preserves the existing drainage patterns and its time of concentration may get shorter for conveying the runoff into a drainage system. On-site area-drain and the off-site drainage system can minimize the surface flooding and erosion problems.

Disconnect Impervious Areas – The entrance landscaping areas and the planting strips along the proposed Country Club Drive are preserved for the purpose of disconnecting the impervious area.

Protect Existing Vegetation and Sensitive Areas – The project site is located at a toe of a barren hillside, and is not within a vegetation sensitive area. Minor grading for expanding the site to its minimum required boundary is to clean up the District's yard for site-preparation. The road improvement is in behalf of the public safety and facility operation. The off-site adjacent existing vegetation open space area is protected in place.

Revegetate Disturbed Areas – Any disturbed area related to this project is revegetated with drought tolerant California natives.

Soil Stockpiling and Site Generated Organics – Due to the site limitation, the soil stockpiling and site generated organics are scheduled to be removed in daily basis or temporally covered with plastic sheet to prevent any type of erosion.

Firescaping – The surrounding retaining wall is constructed 5-ft above the outside natural ground or the backfill grade which is a good reprotection to secure the property and its adjacent area from wildfire.

Water Efficient Landscaping – The drought tolerant California natives and low water required plants are planted, and the area is covered with wood mulching and medium size of gravels on top.

Slopes and Channel Buffers – It is not appliable to the project.

4.3 DMA Characteristics and Site Design BMPs

The overall project site can be subdivided into four (4) Drainage Management Areas (DMAs). They are: a) DAM A – Pump Station Facility Site; b) DAM B – Drainage System Area; c) DAM C – Landscaping Area at Front of Pump Station Facility Entrance, and d) DAM D – Country Club Drive road improvement. The general conditions of the following DMAs can be described below:

- The natural flow pattern is sheet flow from north to south.
- The on-site groundwater level depends on the seasonal rain conditions. From a historical perspective data, it can be 5 feet below the ground. Based on the field boring data, the updated groundwater information is 10 feet deep below the ground in 2016 boring data (B-1 boring site), and 12 feet deep in 2020 data (PW-1 & MW-1 boring sites) per Attachment D.
- The project is located within the hydrologic "Soil Group D" boundary as shown on TGD FIGURE 7.9a map (see Attachment E), which is within a "Low Permeability Soil" area, and it can be confirmed by field observation and Geotechnical Evaluation Report, Section 6.2.3 Bedrock – San Onofre Breccia (Tsob) on Attachment D.
- Alluvium (Qal) and Slope Wash (Qsw) soils are encountered to more than 20 feet in depth during the geotechnical investigation. The alluvium generally consisted of olive to olive brown, moist to wet, medium dense, clayey sand with gravel and occasional cobbles, with a few layers of sand and sand with silt and gravel as well as few thin layers of silty clay.
- No hydrogeologic nor geotechnical constraints was indicated in the geotechnical investigation results; entitled "*Geotechnical Evaluation, Lift Station No. 2 Replacement Project, South Coast Water District, Laguna Beach, CA*", dated June 5, 2020, Project No. 209638002, by Ninyo & Moore Geotechnical & Environmental Sciences Consultants (see Attachment D, Volume 3 of 3).

4.3.1 DMA A – Pump Station Facility Site

This 100% impervious DMA area of 4,780 sq-ft is identified as "Pump Station Facility Site", which includes two buildings (pump station building and electrical control building), AC and concrete pavement, operation/maintenance site, and retaining wall. The flow pattern is naturally from north towards south as sheet flow to its area drain inlets. For the safety and operation concerns, very limited LID BMP can practically be provided within this area. Pollutants generated from this area is very minimum, such as natural sandy or debris materials.

4.3.2 DMA B – Drainage System Area

This DMA area of 1,364 sq-ft is identified as "Drainage System Area" which having a 100% of impervious coverage. It includes grated concrete open channel (542 sq-ft), grouted riprap slope protection with debris posts and concrete apron, and concrete maintenance path (822 sq-ft) areas. The grated concrete open channel starts at the north-east corner parallel to the retaining wall to the north-west corner and then flows towards south to intercept the surface runoff from the hillsides, and it ends at Country Club Drive. The grouted riprap with debris posts and concrete apron are placed at the eroding canyon entrance to stabilize the eroded slope. Concrete maintenance path is constructed along the outside edge of northerly and easterly retaining walls.

4.3.3 DMA C – Landscaping Area and Structure Backfill Area

This 100% pervious DMA area of 2,898 sq-ft is identified as "Landscaping Area (1,952 sq-ft) and Structure Backfill Area (net area = 946 sq-ft for excluding the top concrete facilities). These landscaping areas are covered with water efficient landscaping plants located at the facility entrance and easterly hill site. Drought tolerant California natives and low water required plants are planted and covering with wood mulching and medium size of gravels on top. The structure backfill area will be conducted in over-excavated backcut while constructing the retaining wall. This structure backfill area has sufficient void space to intercept the hillside low flow with its debris/sediment and gradually infiltrates and flows towards south. During high frequency of storm events, the excess runoff can overtop and be intercepted into the adjacent grated concrete open channel for protecting the DMA A and DMA B facilities. The volume of the structure backfill is about 11,826 cubic-feet, which can provide at least 20% void ratio of 2,365 cubic-feet of void space for intercepting and infiltrating of the stormwater. This provided void space volume is greater than the HSC required volume of 2,014 cubic-feet.

4.3.4 DMA D – Road Improvement Area

This DMA boundary is focus on the road improvement area related to the pump station site. Due to the road safety and the Station Facility operation purposes, the District conducts a front portion of road improvements on Country Club Drive as shown on **Section 3.2 – Proposed Site Development Activities,** Figure 7 – Road Improvement Plan.

The existing Country Club Drive is a 2,000-foot-long private road starting from Pacific Coast Highway to Laguna Beach Golf Country Club house. The road was paved with asphalt concrete having the width of 18-ft to 20-ft. Because of lacking maintenance and frequent traffic, the road pavement condition is fair. The proposed ground disturbed area will be 5,978 sq-ft. The District will also repave the existing road extending to Pacific Coast Highway.

In behalf of the public safety and District Facility's operation, the District conducts a 902 feet road improvement within the District's easement boundary. It is to construct a separated 25-foot width of asphalt concrete road for the golf club's drivers, which is located on south of the existing road. SCWD gates are installed on the existing road to divert the District's staff from the traffic to their

facility. Along this new AC road, a 5-foot width of planting area is constructed on north side of the pavement, and a 4-foot width of planting area with 4-foot width decomposed granite walking path are along the south side of the road. Adjacent to the walking path is a 4-foot width and 1-foot depth riprap V-ditch to mitigate the road surface runoff. These planting areas are revegetated with drought tolerant California natives to mitigate the current soil as so-called "Low Permeability Hydrogroup Soil D" ground cover. Under the road improvement condition, the total ground disturbed area is 35,978 sq-ft, which includes the AC pavement (24,154 sq-ft, 100% imperious), planting area (6,436 sq-ft, 0% imperious), decomposed granite walking path (3,330 sq-ft, 50% imperious), riprap V-ditch area (2,058 sq-ft, 0% imperious).

4.3.5 DMA Summary

Drainage Management Areas				
DMA (Number/Description)	Sub-total Area (sq-ft)	Imperviousness (%)	Infiltration Feasibility Category (Full, Partial, or No Infiltration)	Hydrologic Source Controls Used
DMA A	4,780	100%	No Infiltration	None
DMA B	1,364	100%	No Infiltration	None
DMA C	2,898	0%	Full Infiltration	Permeable landscaping, and Permeable structure backfill & Impervious area dispersion
DMA D	35,978	80%	Partial Infiltration	Permeable landscaping and Impervious area dispersion

4.4 Source Control BMPs

Non-Structural Source Control BMPs				
Identifier	**Name**	**Check One**		**Reason Source Control is Not Applicable**
		Included	**Not Applicable**	
N1	Education for Property Owners, Tenants and Occupants	☒	☐	The District is responsible for any additional education as needed.
N2	Activity Restrictions	☒	☐	The District is responsible for preparing Conditions, Covenants and Restrictions (CC&Rs) for the site.
N3	Common Area Landscape Management	☒	☐	The District is responsible for managing the adjacent landscaping area.
N4	BMP Maintenance	☒	☐	The District is responsible for conducting the maintenance efforts per required schedule.
N5	Title 22 CCR Compliance (How development will comply)	☒	☐	Per Water Code, Division 4. Wells, Pumping Plants, Conduits and Streams [7000 – 7075].
N6	Local Industrial Permit Compliance	☐	☒	N/A
N7	Spill Contingency Plan	☒	☐	Per CASQA, Section SC-11: Spill Prevention, Control & Cleanup.
N8	Underground Storage Tank Compliance	☐	☒	N/A
N9	Hazardous Materials Disclosure Compliance	☐	☒	N/A
N10	Uniform Fire Code Implementation	☒	☐	The District is responsible for obtaining an approval from the Fire Department and compliance with Article 80 of the Uniform Fire Code enforced by fire protection agency.
N11	Common Area Litter Control	☒	☐	Per CASQA, Section SC-60: Housekeeping Practices.

N12	Employee Training	☒	☐	The District is responsible for providing training programs.
N13	Housekeeping of Loading Docks	☐	☒	N/A
N14	Common Area Catch Basin Inspection	☒	☐	Per CASQA, Section SC-74: Drainage System Maintenance.
N15	Street Sweeping Private Streets and Parking Lots	☒	☐	Per CASQA, Section SC-43: Parking / Storage Area Maintenance, and Section SC-70: Road and Street Maintenance.
N16	Retail Gasoline Outlets	☐	☒	N/A

Structural Source Control BMPs

Identifier	Name	Check One		Reason Source Control is Not Applicable
		Included	Not Applicable	
S1	Provide storm drain system stenciling and signage	☒	☐	Per CASQA, Section SD-13: Storm Drain Signage.
S2	Design and construct outdoor material storage areas to reduce pollution introduction	☐	☒	N/A
S3	Design and construct trash and waste storage areas to reduce pollution introduction	☐	☒	N/A
S4	Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control	☐	☒	N/A
S5	Protect slopes and channels and provide energy dissipation	☒	☐	Grouted Riprap Slope Protection with Debris Posts and Concrete Apron at bottom of the northerly eroding canyon entrance, Retaining Wall, Grated Concrete Open Channel, and Structure Backfill per Greenbook Section 217-3 Materials are constructed to protect the slopes.
	Incorporate requirements applicable to individual priority project categories (from SDRWQCB NPDES Permit)	☒	☐	Per individual requirement.
S6	Dock areas	☐	☒	N/A

S7	Maintenance bays	☐	☒	N/A
S8	Vehicle wash areas	☐	☒	N/A
S9	Outdoor processing areas	☐	☒	N/A
S10	Equipment wash areas	☐	☒	N/A
S11	Fueling areas	☐	☒	N/A
S12	Hillside landscaping	☒	☐	Any disturbed area related to this project is revegetated with drought tolerant California natives.
S13	Wash water control for food preparation areas	☐	☒	N/A
S14	Community car wash racks	☐	☒	N/A

Section 5 Low Impact Development BMPs

5.1 LID BMPs in DMA A

DMA A – This is a 100% paved impervious area for including two buildings, facility maintenance /operation space, and retaining wall. For the safety and operation concerns, very limited LID BMP can practically be provided within this area. Pollutants generated from this area is very minimum, such as natural sandy or debris materials. Roof drain to the nearby landscaping area is the only practical Downspout Disconnection BMP.

5.1.1 Hydrologic Source Controls for DMA A

The building rooftop runoff is directed to recharge garden via downspouts to the front landscaping areas.

TECHNICAL GUIDANCE DOCUMENT APPENDICES

HSC-2: IMPERVIOUS AREA DISPERSION

Impervious area dispersion refers to the practice of routing runoff from impervious areas, such as rooftops, walkways, and patios onto the surface of adjacent pervious areas via sheet flow. Runoff is dispersed uniformly via splash block or dispersion trench and soaks into the ground as it moves slowly across the surface of pervious areas. Minor ponding may occur, but it is not the intent of this practice to actively promote localized on-lot storage (See **MISC-2** if localized ponding is intended).

In contrast to HSC-1, this practice can be used where infiltration is either fully feasible or partially feasible.

Also known as:

- *Downspout disconnection*
- *Impervious area disconnection*
- *Sheet flow dispersion*

Simple Downspout Dispersion
Source:
toronto.ca/environment/water.htm

Recommended Selection and Siting Criteria

- Impervious area dispersion can be used in DMAs categorized as feasible for full infiltration or partial infiltration. It should be avoided if any level of infiltration would pose hazards.
- This HSC requires that there are significant pervious areas present in drainage area with shallow slopes that can receive runoff from adjacent impervious areas.
- The site plan should allow for verflow from pervious area to be appropriately managed.

5.1.2 Structural LID BMP for DMA A – Pump Station Facility Site

Only the HSC-2: Impervious Area Dispersion LID BMP is available within this DMA.

5.2 LID BMPs in DMA B

DMA B – This is a 100% impervious "Drainage System Area" for including the grouted riprap slope protection area with debris posts and concrete apron at bottom of the northerly eroding canyon entrance, concrete maintenance path adjacent to northerly and easterly retaining wall, concrete open channel drain facility for conveying the storm runoff. No LID BMP can be applied in this DMA.

5.2.1 Hydrologic Source Controls for DMA B

None of the HSC facility can be applied in this DMA.

5.2.2 Structural LID BMP for DMA B – Drainage System Area

None of the LID BMP can be applied in this DMA.

5.3 LID BMPs in DMA C

DMA C – This is a 100% pervious DMA for including the front entrance landscaping area and the off-site grading area. A total of 1,952 sq-ft is planted with drought tolerant California natives and low water required plants and covering with wood mulching and medium size of gravels on top. In order to stabilize the hillside, over-excavation is required as shown on **Section 4.1 - Drainage Management Area Delineation,** Figure 9. The over-excavated area is backfilled with granular structure backfill per Greenbook Section 217-3 materials, which provides sufficient voids for infiltration, and is a long-term LID BMP.

5.3.1 Hydrologic Source Controls for DMA C

The HSC-1: Localized On-Lot Infiltration is available within this DMA.

TECHNICAL GUIDANCE DOCUMENT APPENDICES

HSC-1: LOCALIZED ON-LOT INFILTRATION

'Localized on-lot infiltration' refers to the practice of collecting on-site runoff from small distributed areas within a catchment and diverting it to a dedicated on-site infiltration area. This technique can include disconnecting downspouts and draining sidewalks and patios into french drains, trenches, small rain gardens, or other surface depressions. This HSC is limited to systems with very shallow depth of ponding, which provides improved resiliency to infiltration rate variability and and does not require BMP-specific testing.

For downspout disconnections and other impervious area disconnection involving dispersion over pervious surfaces, but without intentional ponding, see HSC 2: Impervious Area Dispersion.

Also known as:

- *Downspout infiltration*
- *Retention grading*
- *French drains*
- *On-lot rain gardens*

On-lot rain garden
Source: lowimpactdevelopment.org

Recommended Selection and Siting Criteria

- A single application of this HSC should not be sized to retain runoff from impervious areas greater than 4,000 sq. ft (0.1 acres); if the drainage area exceeds this criteria, investigation and sizing should be based on guidelines for bioretention areas or infiltration trenches.
- 'Localized on-lot infiltration' should only be used in DMAs where full infiltration is feasible based on a reasonably-supported opinion.
- This HSC is appropriate in locations where runoff can be directed to and temporarily pond in pervious area depressions, rock trenches, or similar.
- Shallow utilities should not be present below infiltration areas.
- Setbacks from foundations or structures should be observed (minimum 8 feet or as recommended by project geotechncial professional).

5.3.2 Structural LID BMP for DMA C – Landscaping Area at Facility Entrance

The MISC-4: Recommended Plant List shall be applied within this DMA. Another option is to use the information from LID Manual for Southern California, Appendix A: Lists of Plants Suitable for Southern California of LID BMP.

TECHNICAL GUIDANCE DOCUMENT APPENDICES

MISC-4: RECOMMENDED PLANT LIST

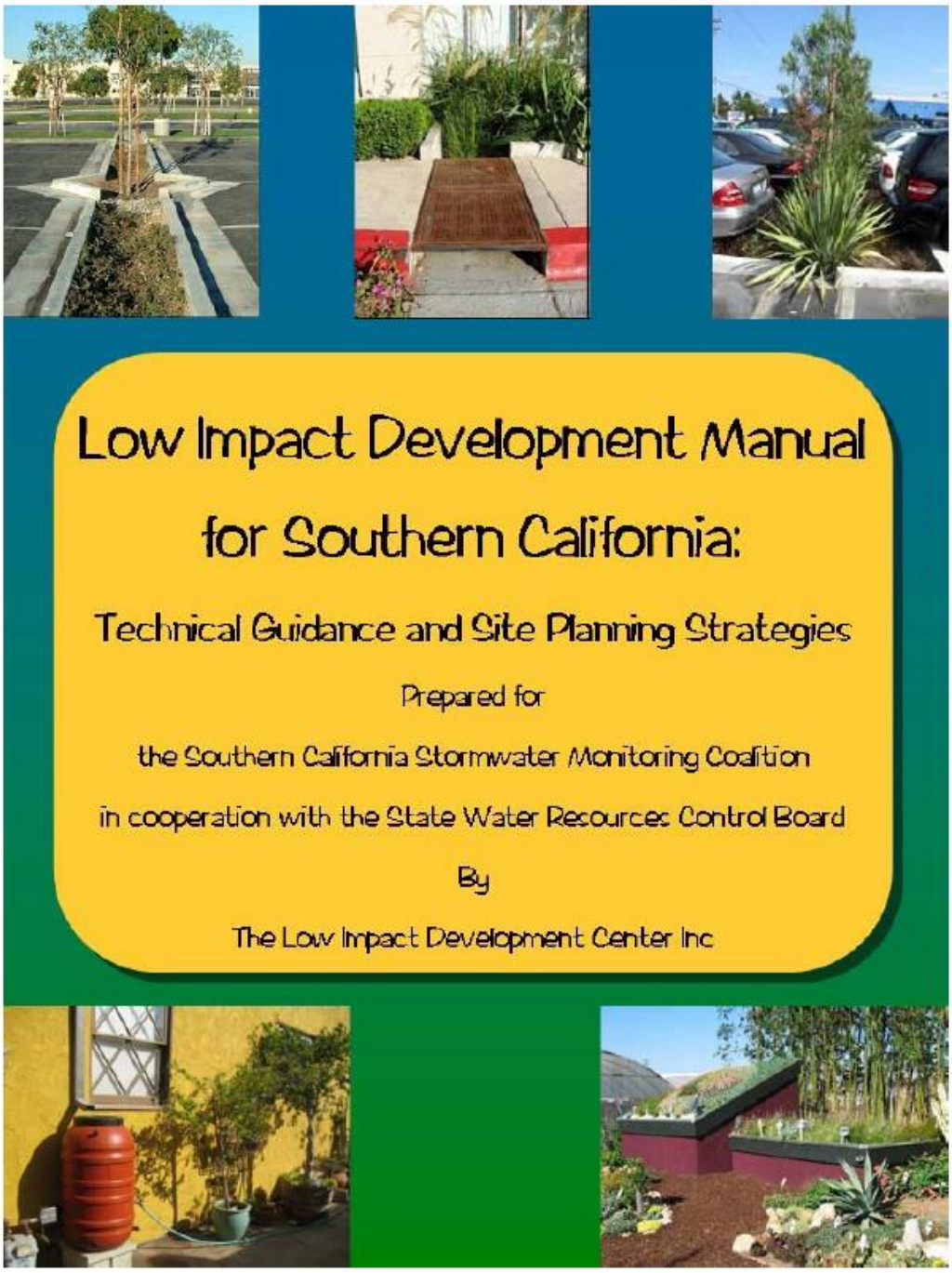
Vegetation is an integral element of biotreatment BMPs in order to help remove pollutants, stabilize soils, support soil microbial communities, and resist clogging. However, not all vegetation will be effective for each BMP type, so selecting a suitable type of vegetation is very important to BMP performance. A recommended plant list is provided in this fact sheet along with general guidelines.

Source: Geosyntec Consultants

General Guidelines for Plant Selection

- Plants should be native or climate-appropriate non-invasive species.
- Multiple species per BMP are recommended to provide diversity. A mix of grasses, bunch grasses, and shrubs should be considered.
- Species should be suited to the conditions the BMP will encounter (periodic inundation, sustained dry periods, relatively course-grained soils, etc. The climate and conditions vary by location within Orange County, by BMP type, by application type, and even within a BMP. For example, within a bioinfiltration BMP, the vegetation at the bottom of the BMP will be regularly inundated, while the vegetation on the side slopes will only rarely be inundated, so different vegetation types may be necessary.
- Species selected should not require regular use of fertilizers and pesticides. Augmentation of surface soils with a stable, well-aged, certified compost is acceptable from time to time. Slow release organic fertilizers applied at a minimum necessary rate may be acceptable.
- Plants should be compatible with the irrigation proposed. Permanent irrigation may be necessary to sustain plants. However, plants should not be dependent on frequent irrigation. Additionally, plants that require or tolerate periodic irrigation should be planted in separate areas from those that do not tolerate seasonal irrigation.
- In any case, the vegetation selected should be suited to the climate and conditions of the BMP, must not cause or contribute to contamination of runoff or invasion of habitat, and, should be selected to remove pollutants and support biological communities that remove pollutants to the extent possible.
- This is not meant to be an exhaustive list of all compatible plant species. Other plant types may be used as long as they are compatible with the purposes of vegetation in the BMP as discussed above.

A qualified landscape architect or agronomist familiar with the stormwater BMPs may be consulted to select a plant palette that fits the needs of the project. Plant selection should fit the constraints and media selected for the BMP.


Low Impact Development Manual
for Southern California:
Technical Guidance and Site Planning Strategies
Prepared for
the Southern California Stormwater Monitoring Coalition
in cooperation with the State Water Resources Control Board
By
The Low Impact Development Center Inc

5.4 LID BMPs in DMA D

DMA D – This is a partial infiltrated DMA area for road improvement as shown on **Section 3.2 – Proposed Site Development Activities,** Figure 7, which includes the new road pavement, two separated planting strips, decomposed granite walking path, and riprap V-ditch. Drought tolerant California natives and low water required plants are placed in the planting strips and they are covered with wood mulching and medium size of gravels. The decomposed granite walking path is a semi-impervious material, and the riprap V-ditch is a 100% infiltrated material and it conveys the runoff to dry wells for keeping the low flows in ground, and the excess runoff will overflow to the adjacent drainage system. The overall design can be a long-term LID BMPs.

5.4.1 Hydrologic Source Controls for DMA D

The HSC-1: Localized On-Lot Infiltration, HSC-2: Impervious Area Dispersion, and HSC-3: Street Trees are available within this DMA.

TECHNICAL GUIDANCE DOCUMENT APPENDICES

HSC-3: STREET TREES

By intercepting rainfall, trees can provide several aesthetic and stormwater benefits including peak flow control, increased infiltration and ET, and runoff temperature reduction. The volume of precipitation intercepted by the canopy reduces the treatment volume required for downstream treatment BMPs. Shading reduces the heat island effect as well as the temperature of adjacent impervious surfaces, over which stormwater flows, and thus reduces the heat transferred to downstream receiving waters. Tree roots also strengthen the soil structure and provide infiltrative pathways, simultaneously reducing erosion potential and enhancing infiltration.

Also known as:

- *Canopy interception*

Street trees

Source: Geosyntec Consultants

Recommended Selection and Siting Criteria

- Street trees can be incorporated in green streets designs along sidewalks, streets, parking lots, or driveways.
- Street trees can be used in combination with bioretention systems along medians or in traffic calming bays.
- There must be sufficient space available to accommodate both the tree canopy and root system.

5.4.2 Structural LID BMP for DMA D – Road Improvement Area

The MISC-4: Recommended Plant List shall be applied within this DMA. Another option is to use the information from LID Manual for Southern California, Appendix A: Lists of Plants Suitable for Southern California of LID BMP.

5.5 Summary of LID BMPs

The project is under the restrictions of barren rockland soil, low permeability soil, shallow groundwater, site limitation, public safety, facility operation, and flood protection criteria, limited LID BMPs can be applied. The appliable LID BMPs are: HSC-1: Localized On-Lot Infiltration; HSC-2: Impervious Area Dispersion; HSC-3: Street Trees, and LID Dry Well. The MISC-4: Recommended Plant List is applied on the planting strip and landscaping area. Since the over-excavated area behind the retaining wall is backfilled with structure backfill materials per Greenbook Section 217-3, sufficient voids generated there provides good infiltration functions. The required HSC Retention Volume is calculated from the HSC-1 fact sheet. Based on the result, the project provides enough retention storage volume to meet the TGD criteria (see Attachment F, Hydrologic Source Controls Fact Sheets (HSC)).

Section 6 Hydromodification BMPs

Per TGD guidance, the Hydromodification BMP does not apply to this project.

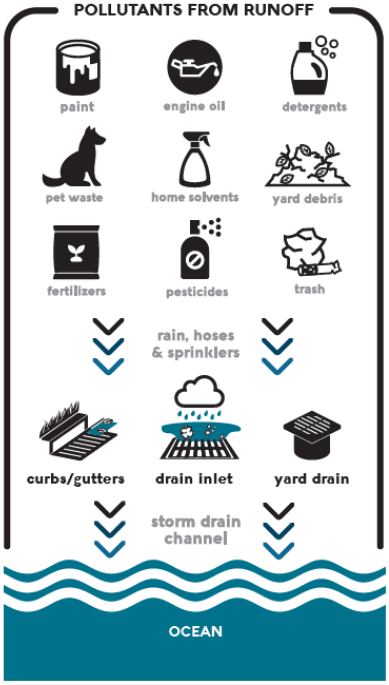
Section 7 Educational Materials Index

Educational Materials			
Residential Material (http://www.ocwatersheds.com)	**Check If Applicable**	**Business Material (http://www.ocwatersheds.com)**	**Check If Applicable**
The Ocean Begins at Your Front Door	☒	Tips for the Automotive Industry	☐
Tips for Car Wash Fund-raisers	☐	Tips for Using Concrete and Mortar	☐
Tips for the Home Mechanic	☐	Tips for the Food Service Industry	☐
Homeowners Guide for Sustainable Water Use	☒	Proper Maintenance Practices for Your Business	☐
Household Tips	☐	Compliance BMPs for Mobile Businesses	☐
Proper Disposal of Household Hazardous Waste	☒	**Other Material**	**Check If Attached**
Recycle at Your Local Used Oil Collection Center (North County)	☐		
Recycle at Your Local Used Oil Collection Center (Central County)	☐		☐
Recycle at Your Local Used Oil Collection Center (South County)	☐		☐
Tips for Maintaining a Septic Tank System	☐		☐
Responsible Pest Control	☒		☐
Sewer Spill	☒		☐
Tips for the Home Improvement Projects	☐		☐
Tips for Horse Care	☐		☐
Tips for Landscaping and Gardening	☒		☐
Tips for Pet Care	☐		☐
Tips for Projects Using Paint	☐		☐

Attachment A: Educational Materials

What Common Pollutants are Found in Runoff?

Common runoff pollutants include trash, pet waste, yard debris, fertilizer, pesticides, engine oil, paint, home solvents, and detergents. Continue reading to learn how these pollutants affect our water resources and what you can do to help.



Who is H_2OC?

H_2OC is YOU! H_2OC is also a cooperative stormwater program which includes all 34 cities in Orange County, the County of Orange, and Orange County Flood Control District. Clean and healthy beaches, creeks, rivers, bays, wetlands, and ocean are important to Orange County. H_2OC provides resources to residents and businesses to prevent water pollution and encourage personal action by working with communities to prevent polluted runoff from entering our waterways. Join us at H2OC.org to learn more about how you can protect local waterways and be the solution to runoff pollution!

Visit

H2OC.org to learn more about runoff, water pollution, and what you can do to protect our water resources!

Contact

24-Hour Pollution Reporting Hotline:
(877) 89-SPILL (77455)
24-Hour Reporting Website:
myOCeServices.ocgov.com

*For more information on household hazardous waste centers go to www.oclandfills.com/hazardous or call (714) 834-4000

**UCCE Master Gardeners: ucceocmghotline@ucanr.edu
mgorange.ucanr.edu/Gardening_Hotline/

YOU ARE THE SOLUTION TO RUNOFF POLLUTION

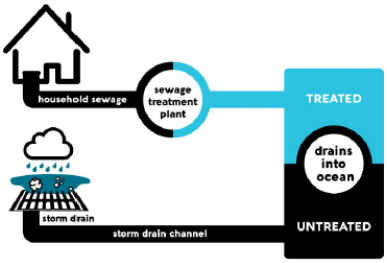
H_2OC STORMWATER PROGRAM

What is Runoff?

Runoff is water from rain and outdoor water use that drains from roofs, driveways, sidewalks, and other surfaces, which does not soak into the ground. As runoff flows over surfaces it will pick up and carry pollutants it encounters, many of which come from waste we produce or mishandle. In Orange County, runoff is captured by storm drains where it flows untreated to the ocean.

Water that flows into storm drains is NOT TREATED

Runoff from homes and businesses may contain pollutants that have harmful effects on downstream creeks, rivers, bays, and ocean. Unlike household sewage, this water is not treated and can negatively impact recreational use, wildlife habitat, and even human health.



TRASH

If trash such as cigarette butts, straws, cups, and other debris enter our waterways, it can create water flow problems and contaminate aquatic habitats. Always properly dispose of waste and recyclables and secure your trash can lid to prevent trash from being released into the environment.

ENGINE OIL

If engine oil enters our waterways, aquatic animals and plants can be negatively affected. It is important to repair leaking vehicles as soon as possible. Clean affected areas utilizing absorbents available at auto and home supply stores. Be sure to follow manufacturer's directions for proper use and disposal of absorbent. Used engine oil can be disposed at a Household Hazardous Waste Center (HHWC*) or where oil was purchased.

PET WASTE

Pet waste is a threat to human and environmental health because it contains harmful bacteria and pathogens. Being a responsible pet owner means picking up after your pet on walks and in your yard, especially before it rains.

YARD DEBRIS

If yard debris reaches local waterways, it can obstruct stormwater flow, clog storm drains, and cause other problems like flooding and erosion. Be sure to collect all debris when doing yard work and properly dispose of it in a green waste bin, or better yet, compost it.

FERTILIZER

If improperly applied, fertilizers can enter our waterways and cause ecological problems. For proper application, follow the manufacturer's instructions and stop applying fertilizers 48 hours before a forecasted rain event.

PESTICIDES

If pesticides, which include herbicides, insecticides, fungicides, and rodenticides, enter our waterways, they can be dangerous to human health and aquatic life. Be sure to limit pesticide use by using nonchemical methods or least-toxic pesticides whenever possible and contact the University of California Cooperative Extension (UCCE) Master Gardeners** with any questions. To properly apply pesticides, follow the manufacturer's instructions and stop applying 48 hours before a forecasted rain event.

PAINT

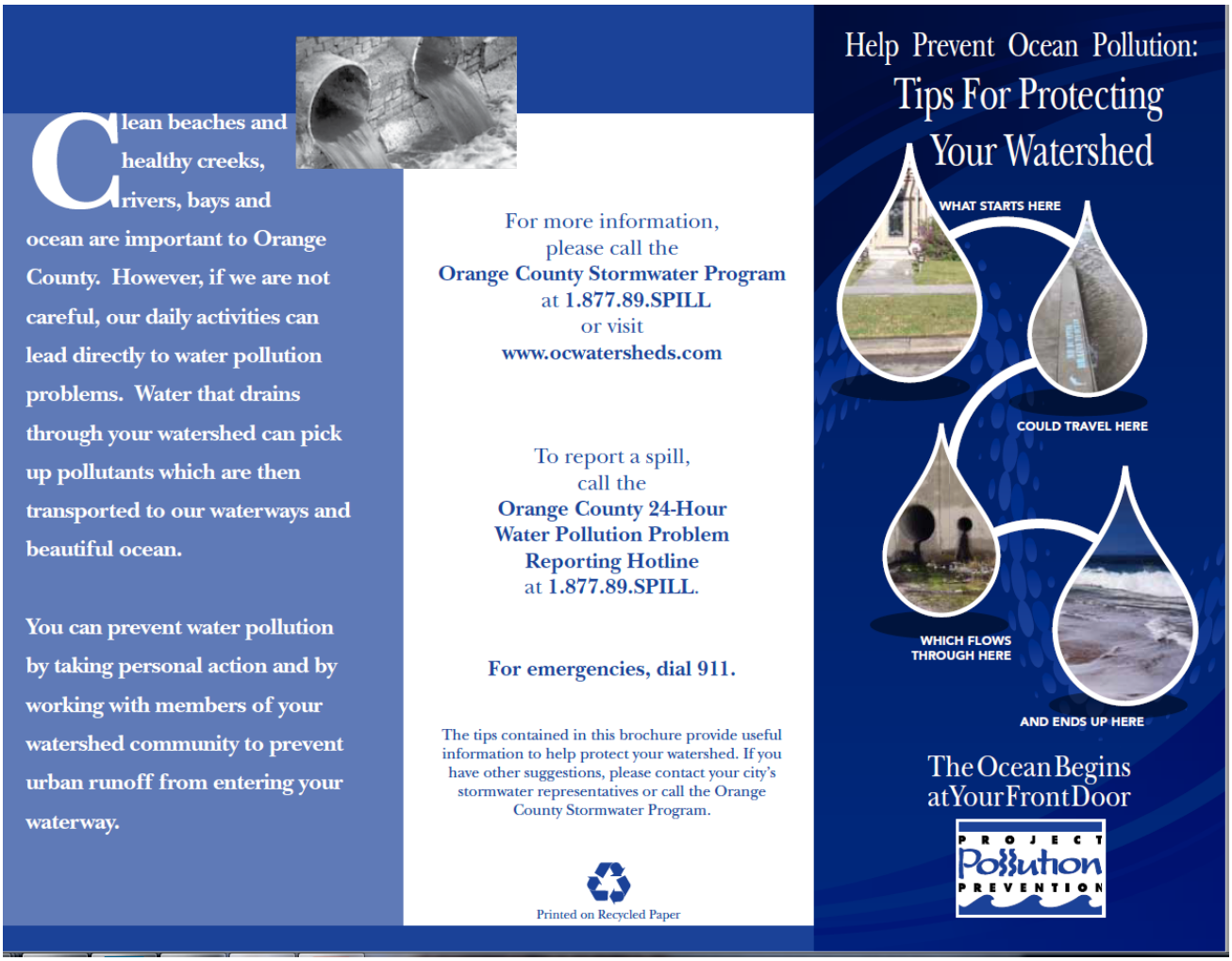
Paints, and related materials, contain a wide range of chemicals. These products should never be put in storm drains, sewers or septic systems. Instead, dispose of unused paint at your local HHWC*.

DETERGENTS

If phosphorus from detergents enters our waterways, it can cause ecological problems, including fish kills. Additionally, detergents can remove the protective mucous layer from fish, leaving them susceptible to disease. When using detergents for outdoor cleaning projects, do not allow wash water to reach the storm drain system.

HOME SOLVENTS

Many common household cleaning products contain harmful chemicals which are toxic and volatile. If not used and disposed of properly, these chemicals enter our waterways and pose a threat to both human and aquatic life. Always follow the manufacturer's instructions and dispose of the material at your local HHWC*.



Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, if we are not careful, our daily activities can lead directly to water pollution problems. Water that drains through your watershed can pick up pollutants which are then transported to our waterways and beautiful ocean.

You can prevent water pollution by taking personal action and by working with members of your watershed community to prevent urban runoff from entering your waterway.

For more information, please call the **Orange County Stormwater Program** at **1.877.89.SPILL** or visit **www.ocwatersheds.com**

To report a spill, call the **Orange County 24-Hour Water Pollution Problem Reporting Hotline** at **1.877.89.SPILL.**

For emergencies, dial 911.

The tips contained in this brochure provide useful information to help protect your watershed. If you have other suggestions, please contact your city's stormwater representatives or call the Orange County Stormwater Program.

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Help Prevent Ocean Pollution:

Tips For Protecting Your Watershed

The Ocean Begins at Your Front Door

PROJECT Pollution PREVENTION

Tips for Protecting Your Watershed

My Watershed. Our Ocean.

Water + shed, *noun: A region of land within which water flows down into a specified water body, such as a river, lake, sea, or ocean; a drainage basin or catchment basin.*

Orange County is comprised of 11 major watersheds into which most of our water flows, connecting all of Orange County to the Pacific Ocean.

As water from rain (stormwater) or sprinklers and hoses (urban runoff) runs down your driveway and into your neighborhood streets, sidewalks and gutters, it flows into storm drains that lead to waterways within your watershed. The waterways from other cities merge as they make their way through our watersheds until all the runoff water in Orange County meets at the Pacific Ocean. The water that reaches our ocean is not pure. As it flows through the watershed, it picks up pollutants such as litter, cigarette butts, fertilizer, pesticides, pet waste, motor oil and lawn clippings. Unlike water that enters the sewer (from sinks and toilets), water that enters the storm drain is not treated before it flows, ultimately, to the ocean.

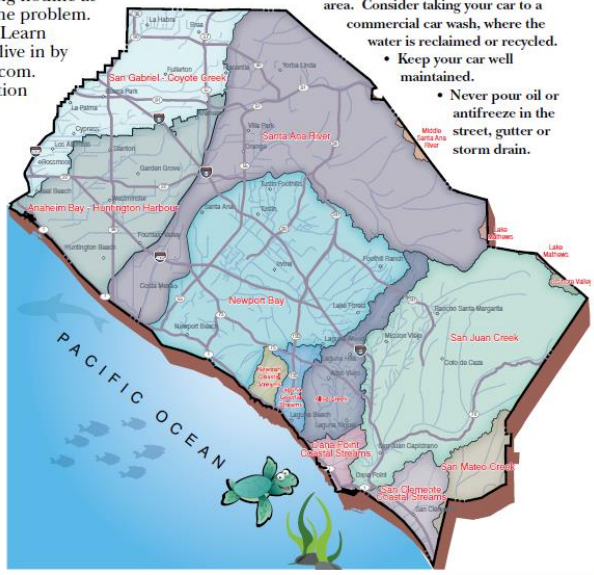
Water quality can be improved by "Adopting Your Watershed." Through this effort, we are challenging citizens and organizations to join the Orange County Stormwater Program and others who are working to protect and restore our creeks, rivers, bays and ocean.

There are many opportunities to get involved:

- Appreciate your watershed - explore the creeks, trails and ocean and make observations about its conditions. If you see anything abnormal (such as dead fish, oil spills, leaking barrels, and other pollution) contact the Orange County 24-hour water pollution problem reporting hotline at 1.877.89.SPILL to report the problem.
- Research your watershed. Learn about what watershed you live in by visiting www.ocwatersheds.com.
- Find a watershed organization in your community and volunteer to help. If there are no active groups, consider starting your own.
- Visit EPA's Adopt Your Watershed's Catalog of Watershed Groups at www.epa.gov/adopt to locate groups in your community.
- Organize or join in a creek, river, bay or ocean cleanup event such as Coastal & Inner Coastal Cleanup Day that takes place the 3rd Saturday of every September. For more information visit www.coast4u.org.

Follow these simple tips to protect the water quality of your watershed:

- Sweep up debris and dispose of it in the trash. Do not hose down driveways or sidewalks into the street or gutter.
- Use dry cleanup methods such as cat litter to absorb spills and sweep up residue.
- Set your irrigation systems to reflect seasonal water needs or use weather-based controllers. Inspect for runoff regularly.
- Cover trashcans securely.
- Take hazardous waste to a household hazardous waste collection center. (For example, paint, batteries and petroleum products)
- Pick up after your pet.
- Follow application and disposal directions for pesticides and fertilizers.
- If you wash your car at home, wash it on your lawn or divert the runoff onto a landscaped area. Consider taking your car to a commercial car wash, where the water is reclaimed or recycled.
- Keep your car well maintained.
- Never pour oil or antifreeze in the street, gutter or storm drain.



Do your part to prevent water pollution in our creeks, rivers, bays and ocean.

Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, not properly disposing of household hazardous waste can lead to water pollution. Batteries, electronics, paint, oil, gardening chemicals, cleaners and other hazardous materials cannot be thrown in the trash. They also must never be poured or thrown into yards, sidewalks, driveways, gutters or streets. Rain or other water could wash the materials into the storm drain and eventually into our waterways and the ocean. In addition, hazardous waste must not be poured in the sanitary sewers (sinks and toilets).

NEVER DISPOSE OF HOUSEHOLD HAZARDOUS WASTE IN THE TRASH, STREET, GUTTER, STORM DRAIN OR SEWER.

For more information, please call the **Orange County Stormwater Program** at **1-877-89-SPILL** (1-877-897-7455) or visit **www.ocwatersheds.com**

To Report Illegal Dumping of Household Hazardous Waste call 1-800-69-TOXIC

To report a spill, call the **Orange County 24-Hour Water Pollution Problem Reporting Hotline 1-877-89-SPILL** (1-877-897-7455).

For emergencies, dial 911.

RECYCLE USED OIL

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Help Prevent Ocean Pollution:

Proper Disposal of Household Hazardous Waste

The Ocean Begins at Your Front Door

PROJECT Pollution PREVENTION

ORANGE COUNTY

Pollution Prevention

Leftover household products that contain corrosive, toxic, ignitable, or reactive ingredients are considered to be "household hazardous waste" or "HHW." HHW can be found throughout your home, including the bathroom, kitchen, laundry room and garage.

WHEN POSSIBLE, USE NON-HAZARDOUS OR LESS-HAZARDOUS PRODUCTS.

Disposal of HHW down the drain, on the ground, into storm drains, or in the trash is illegal and unsafe.

Proper disposal of HHW is actually easy. Simply drop them off at a Household Hazardous Waste Collection Center (HHWCC) for free disposal and recycling. Many materials including anti-freeze, latex-based paint, motor oil and batteries can be recycled. Some centers have a "Stop & Swap" program that lets you take partially used home, garden, and automobile products free of charge. There are four HHWCCs in Orange County:

Anaheim:.....1071 N. Blue Gum St
Huntington Beach:.....17121 Nichols St
Irvine:..... 6411 Oak Canyon
San Juan Capistrano:... 32250 La Pata Ave

Centers are open Tuesday-Saturday, 9 a.m.-3 p.m. Centers are closed on rainy days and major holidays. For more information, call **(714) 834-6752** or visit **www.oclandfills.com.**

Common household hazardous wastes

- Batteries
- Paint and paint products
- Adhesives
- Drain openers
- Household cleaning products
- Wood and metal cleaners and polishes
- Pesticides
- Fungicides/wood preservatives
- Automotive products (antifreeze, motor oil, fluids)
- Grease and rust solvents
- Fluorescent lamps
- Mercury (thermometers & thermostats)
- All forms of electronic waste including computers and microwaves
- Pool & spa chemicals
- Cleaners
- Medications
- Propane (camping & BBQ)
- Mercury-containing lamps
- Television & monitors (CRTs, flatscreens)

Tips for household hazardous waste

- Never dispose of HHW in the trash, street, gutter, storm drain or sewer.
- Keep these materials in closed, labeled containers and store materials indoors or under a cover.
- When possible, use non-hazardous products.
- Reuse products whenever possible or share with family and friends.
- Purchase only as much of a product as you'll need. Empty containers may be disposed of in the trash.
- HHW can be harmful to humans, pets and the environment. Report emergencies to 911.

Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, many common activities can lead to water pollution if you're not careful. Fertilizers, pesticides and other chemicals that are left on yards or driveways can be blown or washed into storm drains that flow to the ocean. Overwatering lawns can also send materials into storm drains. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never pour gardening products into the ocean, so don't let them enter the storm drains. Follow these easy tips to help prevent water pollution.

For more information, please call the **Orange County Stormwater Program** at **1-877-89-SPILL** (1-877-897-7455) or visit **www.ocwatersheds.com**

UCCE Master Gardener Hotline: (714) 708-1646

To report a spill, call the **Orange County 24-Hour Water Pollution Problem Reporting Hotline 1-877-89-SPILL** (1-877-897-7455).

For emergencies, dial 911.

The tips contained in this brochure provide useful information to help prevent water pollution while landscaping or gardening. If you have other suggestions, please contact your city's stormwater representatives or call the Orange County Stormwater Program.

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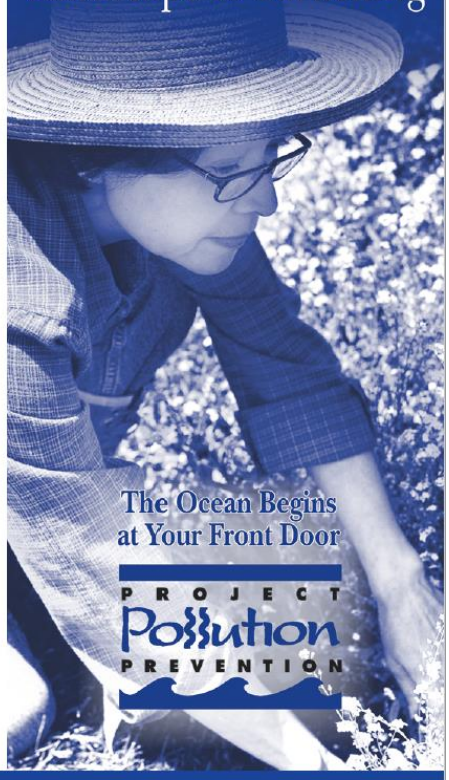
Help Prevent Ocean Pollution:

Tips for Landscape & Gardening



The Ocean Begins at Your Front Door

PROJECT Pollution PREVENTION

Tips for Landscape & Gardening

Never allow gardening products or polluted water to enter the street, gutter or storm drain.

General Landscaping Tips

- Protect stockpiles and materials from wind and rain by storing them under tarps or secured plastic sheeting.
- Prevent erosion of slopes by planting fast-growing, dense ground covering plants. These will shield and bind the soil.
- Plant native vegetation to reduce the amount of water, fertilizers, and pesticide applied to the landscape.

- Never apply pesticides or fertilizers when rain is predicted within the next 48 hours.

Garden & Lawn Maintenance

- Do not overwater. Use irrigation practices such as drip irrigation, soaker hoses or micro spray systems. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of green waste by composting, hauling it to a permitted landfill, or recycling it through your city's program.

- Use slow-release fertilizers to minimize leaching, and use organic fertilizers.
- Read labels and use only as directed. Do not over-apply pesticides or fertilizers. Apply to spots as needed, rather than blanketing an entire area.
- Store pesticides, fertilizers and other chemicals in a dry covered area to prevent exposure that may result in the deterioration of containers and packaging.

- Rinse empty pesticide containers and re-use rinse water as you would use the product. Do not dump rinse water down storm drains. Dispose of empty containers in the trash.
- When available, use non-toxic alternatives to traditional pesticides, and use pesticides specifically designed to control the pest you are targeting. For more information, visit **www.ipm.ucdavis.edu**.
- If fertilizer is spilled, sweep up the spill before irrigating. If the spill is liquid, apply an absorbent material such as cat litter, and then sweep it up and dispose of it in the trash.
- Take unwanted pesticides to a Household Hazardous Waste Collection Center to be recycled. Locations are provided below.

Household Hazardous Waste Collection Centers

Anaheim:	1071 N. Blue Gum St.
Huntington Beach:	17121 Nichols St.
Irvine:	6411 Oak Canyon
San Juan Capistrano:	32250 La Pata Ave.

For more information, call (714) 834-6752 or visit www.oclandfills.com

Update Your Irrigation System and Landscape

Switch to Rotating Sprinkler Nozzles: Consider replacing your sprinkler heads with rotating sprinkler nozzles. Rotating nozzles water more uniformly and efficiently, significantly reducing your outdoor water use. Check with your local water agency for available rebates on rotating nozzles, irrigation controllers, and other water efficient devices.

Get Smart: Consider using smart irrigation controllers. Smart irrigation controllers have internal clocks as well as sensors that will turn off the sprinklers in response to environmental changes. If it is raining, too windy, or too cold, the smart irrigation controller will automatically shut off the sprinklers.

Drip don't Douse: Drip irrigation systems prevent runoff from carrying pollutants into the storm drain by watering only the targeted plants using low volumes of water.

Reduce the Need: Replace water "thirsty" plants and grass types with water efficient natives or OC Garden Friendly plants to save water and reduce the need for pesticides and fertilizer. Please see the California Friendly® Landscape Maintenance Guide produced by the Metropolitan Water District of Southern California** and associated Southern California Water Agencies for more information.

Group Plants: When adding to or redesigning your landscaping, plants that require similar watering needs can be planted together. Grouping plants with similar watering needs helps prevent unnecessary watering.

Who is H_2OC?

H_2OC is YOU! H_2OC is also a cooperative stormwater program which includes all 34 cities in Orange County, the County of Orange, and Orange County Flood Control District (OCFCD). Clean and healthy beaches, creeks, rivers, bays, wetlands, and ocean are important to Orange County. H_2OC provides resources to residents and businesses to prevent water pollution and encourage personal action by working with communities to prevent polluted runoff from entering our waterways.

Join us

Visit **h2oc.org** to learn more about runoff, water pollution, and how you can be the solution to runoff pollution and protect our water resources!

Contact

24-Hour Pollution Reporting Hotline:
1-877-89-SPILL (1-877-897-7455)

24-Hour Reporting Website:
myOCeServices.ocgov.com

*University of California Master Gardeners of Orange County
ucceocmghotline@ucanr.edu mgorange.ucanr.edu/Gardening_Hotline/

**Visit bewaterwise.com to learn more

OVERWATERING IS OUT

TIPS TO PREVENT IRRIGATION RUNOFF

H_2OC STORMWATER PROGRAM

What is Irrigation Runoff and How Does it Lead to Pollution?

Irrigation runoff is water flowing off landscaped areas, which can carry pollutants to our storm drains and waterways. It is usually the result of landscape overwatering, and mismanaged irrigation systems. Runoff can carry pesticides, fertilizers, pet waste, and other pollutants into our storm drains, which flow untreated to the ocean. Explore the tips below to find out how to prevent irrigation runoff.

RUN YOUR SYSTEM

Run and observe your irrigation system through its entire cycle seasonally (twice a year) to look for leaks, misaligned sprinkler heads, and areas of ponding and/or runoff.

WATER AT SUNRISE

Watering early in the morning before sunrise will reduce water loss due to evaporation. Wind also tends to die down in the early morning, so the water will irrigate the lawn as intended.

WATER BY PLANT TYPE AND SEASON

Different types of grass and plants have differing water needs. This also changes throughout the year, with cooler months typically requiring less water than warmer months. Ask your landscape maintenance provider or contact the University of California Cooperative Extension Master Gardeners* for questions regarding landscape watering needs.

HAND WATER PLANTS

Garden hoses with automatic shutoff nozzles can use less water than sprinkler irrigation systems. Hand watering also ensures only those areas that need water get it and prevents irrigation runoff. An easy alternative to sprinklers, hand watering can help keep our waterways clean!

Know Your Irrigation System and Landscape:

PROPER AIM

Adjust the direction of your sprinkler heads so water does not spray on sidewalks, driveways or roads. By simply adjusting the direction of your sprinklers, you can save water, prevent irrigation runoff, and keep your landscape healthy.

FIX LEAKS

Broken or leaky sprinklers can waste thousands of gallons of water per month and significantly increase the amount of runoff from your yard. Repairing sprinklers can prevent runoff from entering our waterways and save you money.

LEAST TOXIC FIRST

Limit pesticide use by using nonchemical methods, integrated pest management, or least-toxic pesticides whenever possible. Contact the University of California Cooperative Extension Master Gardeners* for alternative suggestions and related guidance.

CYCLE AND SOAK

Running multiple, shorter cycles with an hour break in between allows the water to infiltrate into the ground so it does not run off.

RAIN SKIP

Adjusting your watering schedule when it rains prevents unnecessary watering that can lead to runoff. Keep an eye on the weather forecast and skip your normal watering schedule before, during, and after a rain to help keep our waterways clean and your landscaping looking its best.

SET A TIMER

Use an irrigation timer to minimize runoff and maximize water absorption. Water districts often provide irrigation schedules to determine the best water scheme for your yard. Contact your water provider for a weekly irrigation schedule.

GIVE IT 48 HOURS

Prevent fertilizers and pesticides from entering our waterways by not watering your lawn 48 hours after application and stopping application 48 hours before a forecasted rain event.

Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, many common activities such as pest control can lead to water pollution if you're not careful. Pesticide treatments must be planned and applied properly to ensure that pesticides do not enter the street, gutter or storm drain. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never dump pesticides into the ocean, so don't let it enter the storm drains. Pesticides can cause significant damage to our environment if used improperly. If you are thinking of using a pesticide to control a pest, there are some important things to consider.

For more information, please call University of California Cooperative Extension Master Gardeners at (714) 708-1646 or visit these Web sites:
www.uccemg.org
www.ipm.ucdavis.edu

For instructions on collecting a specimen sample visit the Orange County Agriculture Commissioner's website at: http://www.ocagcomm.com/ser_lab.asp

To report a spill, call the **Orange County 24-Hour Water Pollution Problem Reporting Hotline at 1-877-89-SPILL (1-877-897-7455).**

For emergencies, dial 911.

Information From:
Cheryl Wilen, Area IPM Advisor; Darren Haver, Watershed Management Advisor; Mary Louise Flint, IPM Education and Publication Director; Pamela M. Geisel, Environmental Horticulture Advisor; Carolyn L. Unruh, University of California Cooperative Extension staff writer. Photos courtesy of the UC Statewide IPM Program and Darren Haver.

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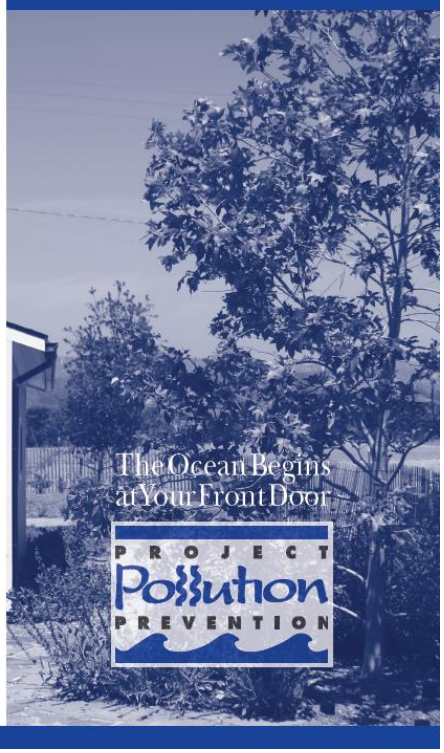
Help Prevent Ocean Pollution:

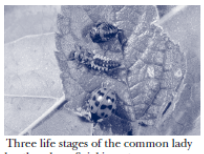
Responsible Pest Control



Tips for Pest Control

Key Steps to Follow:

Step 1: **Correctly identify the pest (insect, weed, rodent, or disease) and verify that it is actually causing the problem.**



Three life stages of the common lady beetle, a beneficial insect.

This is important because beneficial insects are often mistaken for pests and sprayed with pesticides needlessly.

Consult with a Certified Nursery Professional at a local nursery or garden center or send a sample of the pest to the Orange County Agricultural Commissioner's Office.

Determine if the pest is still present – even though you see damage, the pest may have left.

Step 2: **Determine how many pests are present and causing damage.**

Small pest populations may be controlled more safely using non-pesticide techniques. These include removing food sources, washing off leaves with a strong stream of water, blocking entry into the home using caulking and replacing problem plants with ones less susceptible to pests.

UC CE University of California Cooperative Extension

Integrated Pest Management (IPM) usually combines several least toxic pest control methods for long-term prevention and management of pest problems without harming you, your family, or the environment.

Step 3: **If a pesticide must be used, choose the least toxic chemical.**

Obtain information on the least toxic pesticides that are effective at controlling the target pest from the UC Statewide Integrated Pest Management (IPM) Program's Web site at www.ipm.ucdavis.edu.

Seek out the assistance of a Certified Nursery Professional at a local nursery or garden center when selecting a pesticide. Purchase the smallest amount of pesticide available.

Apply the pesticide to the pest during its most vulnerable life stage. This information can be found on the pesticide label.

Step 4: **Wear appropriate protective clothing.**

Follow pesticide labels regarding specific types of protective equipment you should wear. Protective clothing should always be washed separately from other clothing.

Step 5: **Continuously monitor external conditions when applying pesticides such as weather, irrigation, and the presence of children and animals.**

Never apply pesticides when rain is predicted within the next 48 hours. Also, do not water after applying pesticides unless the directions say it is necessary.

Apply pesticides when the air is still; breezy conditions may cause the spray or dust to drift away from your targeted area.

In case of an emergency call 911 and/or the regional poison control number at (714) 634-5988 or (800) 544-4404 (CA only).

For general questions you may also visit www.calpoison.org.

Step 6: **In the event of accidental spills, sweep up or use an absorbent agent to remove any excess pesticides. Avoid the use of water.**

Be prepared. Have a broom, dust pan, or dry absorbent material, such as cat litter, newspapers or paper towels, ready to assist in cleaning up spills.

Contain and clean up the spill right away. Place contaminated materials in a doubled plastic bag. All materials used to clean up the spill should be properly disposed of according to your local Household Hazardous Waste Disposal site.

Step 7: **Properly store and dispose of unused pesticides.**

Purchase Ready-To-Use (RTU) products to avoid storing large concentrated quantities of pesticides.

Store unused chemicals in a locked cabinet.

Unused pesticide chemicals may be disposed of at a Household Hazardous Waste Collection Center.

Empty pesticide containers should be triple rinsed prior to disposing of them in the trash.

Household Hazardous Waste Collection Center
(714) 834-6752
www.oclandfills.com

PROJECT Pollution PREVENTION

Sewage Spill Regulatory Requirements

Allowing sewage to discharge to a gutter or storm drain may subject you to penalties and/or out-of-pocket costs to reimburse cities or public agencies for clean-up efforts.

Here are the pertinent codes, fines, and agency contact information that apply.

Orange County Stormwater Program
24 Hour Water Pollution Reporting Hotline
1-877-89-SPILL (1-877-897-7455)

- County and city water quality ordinances prohibit discharges containing pollutants.

Orange County Health Care Agency Environmental Health
(714) 433-6419

California Health and Safety Code, Sections 5410-5416

- No person shall discharge raw or treated sewage or other waste in a manner that results in contamination, pollution or a nuisance.
- Any person who causes or permits a sewage discharge to any state waters:
  - must immediately notify the local health agency of the discharge.
  - shall reimburse the local health agency for services that protect the public's health and safety (water-contact receiving waters).
  - who fails to provide the required notice to the local health agency is guilty of a misdemeanor and shall be punished by a fine (between $500–$1,000) and/or imprisonment for less than one year.

Regional Water Quality Control Board
Santa Ana Region (951) 782-4130
San Diego Region (858) 467-2952

- Requires the prevention, mitigation, response to and reporting of sewage spills.

California Office of Emergency Services
(800) 852-7550

California Water Code, Article 4, Chapter 4, Sections 13268-13271
California Code of Regulations, Title 23, Division 3, Chapter 9.2, Article 2, Sections 2250-2260

- Any person who causes or permits sewage in excess of 1,000 gallons to be discharged to state waters **shall immediately notify the Office of Emergency Services.**
- Any person who fails to provide the notice required by this section is **guilty of a misdemeanor** and shall be punished by a fine (less than $20,000) and/or imprisonment for not more than one year.

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Sewage Spill
Reference Guide

Your Responsibilities as a Private Property Owner

Residences
Businesses
Homeowner/Condominium Associations
Federal and State Complexes
Military Facilities

Orange County Sanitation District

Health Care Agency
Environmental Health

PROJECT Pollution PREVENTION
www.ocwatersheds.com

This brochure was designed courtesy of the Orange County Sanitation District (OCSD). For additional information, call (714) 962-2411, or visit their website at www.ocsd.com

What is a Sewage Spill?

Sewage spills occur when the wastewater being transported via underground pipes overflows through a manhole, cleanout or broken pipe. Sewage spills can cause health hazards, damage to homes and businesses, and threaten the environment, local waterways and beaches.

Common Causes of Sewage Spills

Grease builds up inside and eventually blocks sewer pipes. Grease gets into the sewer from food establishments, household drains, as well as from poorly maintained commercial grease traps and interceptors.

Structure problems caused by tree roots in the lines, broken/cracked pipes, missing or broken cleanout caps or undersized sewers can cause blockages.

Infiltration and inflow (I/I) impacts pipe capacity and is caused when groundwater or rainwater enters the sewer system through pipe defects and illegal connections.

You Are Responsible for a Sewage Spill Caused by a Blockage or Break in Your Sewer Lines!

Time is of the essence in dealing with sewage spills. You are required to **immediately**:

Control and minimize the spill. Keep spills contained on private property and out of gutters, storm drains and public waterways by shutting off or not using the water.

Use sandbags, dirt and/or plastic sheeting to prevent sewage from entering the storm drain system.

Clear the sewer blockage. Always wear gloves and wash your hands. It is recommended that a plumbing professional be called for clearing blockages and making necessary repairs.

Always notify your city sewer/public works department or public sewer district of sewage spills. If the spill enters the storm drains also notify the Health Care Agency. In addition, if it exceeds 1,000 gallons notify the Office of Emergency Services. Refer to the numbers listed in this brochure.

Overflowing cleanout pipe located on private property

You Could Be Liable

Allowing sewage from your home, business or property to discharge to a gutter or storm drain may subject you to penalties and/or out-of-pocket costs to reimburse cities or public agencies for clean-up and enforcement efforts. See Regulatory Codes & Fines section for pertinent codes and fines that apply.

What to Look For

Sewage spills can be a very noticeable gushing of water from a manhole or a slow water leak that may take time to be noticed. Don't dismiss unaccounted-for wet areas.

Look for:

- Drain backups inside the building.
- Wet ground and water leaking around manhole lids onto your street.
- Leaking water from cleanouts or outside drains.
- Unusual odorous wet areas: sidewalks, external walls or ground/landscape around a building.

Caution

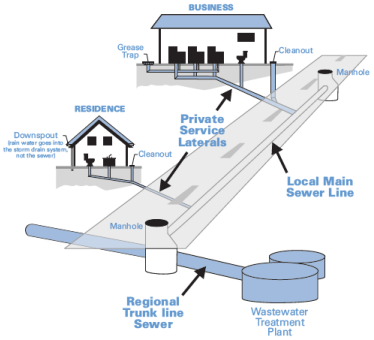
Keep people and pets away from the affected area. Untreated sewage has high levels of disease-causing viruses and bacteria. Call your local health care agency listed on the back for more information.

If You See a Sewage Spill Occurring, Notify Your City Sewer/Public Works Department or Public Sewer District IMMEDIATELY!

How a Sewer System Works

A property owner's sewer pipes are called service laterals and are connected to larger local main and regional trunk lines. Service laterals run from the connection at the home to the connection with the public sewer (including the area under the street). These laterals are the responsibility of the property owner and must be maintained by the property owner. Many city agencies have adopted ordinances requiring maintenance of service laterals. Check with your city sewer/local public works department for more information.

Operation and maintenance of **local and regional sewer lines** are the responsibility of the city sewer/public works departments and public sewer districts.



How You Can Prevent Sewage Spills

1. **Never put grease down garbage disposals, drains or toilets.**
2. **Perform periodic cleaning to eliminate grease, debris and roots in your service laterals.**
3. **Repair any structural problems in your sewer system and eliminate any rainwater infiltration/inflow leaks into your service laterals.**

Preventing Grease Blockages

The drain is not a dump! Recycle or dispose of grease properly and never pour grease down the drain.

Homeowners should mix fats, oils and grease with absorbent waste materials such as paper, coffee grounds, or kitty litter and place it in the trash. Wipe food scraps from plates and pans and dump them in the trash.

Restaurants and commercial food service establishments should always use "Kitchen Best Management Practices." These include:

- Collecting all cooking grease and liquid oil from pots, pans and fryers in covered grease containers for recycling.
- Scraping or dry-wiping excess food and grease from dishes, pots, pans and fryers into the trash.
- Installing drain screens on all kitchen drains.
- Having spill kits readily available for cleaning up spills.
- Properly maintaining grease traps or interceptors by having them serviced regularly. Check your local city codes.

Orange County Agency Responsibilites

- **City Sewer/Public Works Departments—** Responsible for protecting city property and streets, the local storm drain system, sewage collection system and other public areas.
- **Public Sewer/Sanitation District—** Responsible for collecting, treating and disposing of wastewater.
- **County of Orange Health Care Agency—** Responsible for protecting public health by closing ocean/bay waters and may close food-service businesses if a spill poses a threat to public health.
- **Regional Water Quality Control Boards—** Responsible for protecting State waters.
- **Orange County Stormwater Program—** Responsible for preventing harmful pollutants from being discharged or washed by stormwater runoff into the municipal storm drain system, creeks, bays and the ocean.

You Could Be Liable for Not Protecting the Environment

Local and state agencies have legal jurisdiction and enforcement authority to ensure that sewage spills are remedied.

They may respond and assist with containment, relieving pipe blockages, and/or clean-up of the sewage spill, especially if the spill is flowing into storm drains or onto public property.

A property owner may be charged for costs incurred by these agencies responding to spills from private properties.

Report Sewage Spills!

City Sewer/Public Works Departments

Aliso Viejo	(949) 425-2500
Anaheim	(714) 765-6860
Brea	(714) 990-7691
Buena Park	(714) 562-3655
Costa Mesa	(949) 645-8400
Cypress	(714) 229-6760
Dana Point	(949) 248-3562
Fountain Valley	(714) 593-4600
Fullerton	(714) 738-6897
Garden Grove	(714) 741-5375
Huntington Beach	(714) 536-5921
Irvine	(949) 453-5300
Laguna Beach	(949) 497-0765
Laguna Hills	(949) 707-2650
Laguna Niguel	(949) 362-4337
Laguna Woods	(949) 639-0500
La Habra	(562) 905-9792
Lake Forest	(949) 461-3480
La Palma	(714) 690-3310
Los Alamitos	(562) 431-3538
Mission Viejo	(949) 831-2500
Newport Beach	(949) 644-3011
Orange	(714) 532-6480
Orange County	(714) 567-6363
Placentia	(714) 993-8245
Rancho Santa Margarita	(949) 635-1800
San Clemente	(949) 366-1553
San Juan Capistrano	(949) 443-6363
Santa Ana	(714) 647-3380
Seal Beach	(562) 431-2527
Stanton	(714) 379-9222
Tustin	(714) 962-2411
Villa Park	(714) 998-1500
Westminster	(714) 893-3553
Yorba Linda	(714) 961-7170

Public Sewer/Water Districts

Costa Mesa Sanitary District	(714) 393-4433/ (949) 645-8400
El Toro Water District	(949) 837-0660
Emerald Bay Service District	(949) 494-8571
Garden Grove Sanitary District	(714) 741-5375
Irvine Ranch Water District	(949) 453-5300
Los Alamitos/Rossmoor Sewer District	(562) 431-2223
Midway City Sanitary District (Westminster)	(714) 893-3553
Moulton Niguel Water District	(949) 831-2500
Orange County Sanitation District	(714) 962-2411
Santa Margarita Water District	(949) 459-6420
South Coast Water District	(949) 499-4555
South Orange County Wastewater Authority	(949) 234-5400
Sunset Beach Sanitary District	(562) 493-9932
Trabuco Canyon Sanitary District	(949) 858-0277
Yorba Linda Water District	(714) 777-3018

Other Agencies

Orange County Health Care Agency	(714) 433-6419
Office of Emergency Services	(800) 852-7550

The Pollution Solution
Several residential activities can result in water pollution. Among these activities are car washing and hosing off driveways and sidewalks. Both activities can waste water and result in excess runoff. Water conservation methods described in this brochure can prevent or reduce runoff. By making your home more water efficient and by properly disposing of pollutants, you can further prevent the transport of pollutants to Orange County waterways. Here are some of the common pollutants for which you can be part of the solution:
1 Pesticides and Fertilizer
• Pollution: The same pesticides that are designed to be toxic to pests can harm or kill beneficial insects and animals. The same fertilizer that promotes plant growth in lawns and gardens can also create nuisance algae blooms, which remove oxygen from the water and clog waterways when it decomposes.
• Solution: Never use pesticides or fertilizer within 48 hours of an anticipated rainstorm. Use only as much as is directed on the label and keep it off driveways and sidewalks.
2 Dirt and Sediment
• Pollution: Dirt or sediment can impede the flow of the stormwater and negatively impact stream habitat as it travels through waterways and deposits downstream. Pollutants can attach to sediment, which can then be transported through our waterways.
• Solution: Protect dirt stockpiles by covering them with tarps or secure plastic sheets to prevent wind or rain from allowing dirt or sediment to enter the storm drain system.
3 Metals
• Pollution: Metals and other toxins present in car wash water can harm important plankton, which forms the base of the aquatic food chain.
• Solution: Take your car to a commercial car wash that recycles its wastewater or to a local wastewater treatment plant.
DID YOU KNOW?
Did you know that most of the pollution found in our waterways is not from a single source, but from a "non-point" source meaning the accumulation of pollution from residents and businesses throughout the community.
4 Pet Waste
• Pollution: Pet waste carries bacteria through our watersheds and eventually will be washed out to the ocean. This can pose a health risk to swimmers and surfers.
• Solution: Pick up after your pets!
5 Trash and Debris
• Pollution: Trash and debris can be blown by the wind, littering and careless maintenance of trash receptacles. Street sweeping collects some of this trash, however, much of what isn't captured ends up in our storm drain system where it flows untreated out to the ocean.
• Solution: Don't litter and make sure trash containers are properly covered. It is far more cost effective to keep the litter off the streets than to pick up in our waterways than it is to prevent it in the first place. Come out to one of Orange County's many locations for Coastal and Inner-Coastal Cleanup Day, which is held in September.
6 Motor Oil / Vehicle Fluids
• Pollution: Oil and petroleum products from our vehicles are toxic to people, wildlife and plants.
• Solution: Fix any leaks from your vehicle and dispose of used oil and fluids properly. Use absorbent material such as cat litter on oil spills, then sweep it up and dispose of it in the trash. Recycle used motor oil at a local Household Hazardous Waste Collection Center.
A TEAM EFFORT
The Orange County Stormwater Program has teamed with the Municipal Water District of Orange County (MWDOC) and the University of California Cooperative Extension Program (UCCE) to develop this pamphlet.
Low Impact Development (LID) and sustainable water use prevents water pollution and conserves water for drinking and reuse. Reducing your water use and the amount of water flowing from your home protects the environment and saves you money.
Thank you for making water protection a priority!
For more information, please visit:
Orange County Stormwater Program
www.ocstormnews.com/publicwi/
Municipal Water District of Orange County
www.mwdoc.com
University of California Master Gardeners of Orange County
www.ucmg.com
UC Cooperative Extension OC Water Quality and Water Resources
www.ucanr.org/sites/wdmwaterimprov/
To report a spill, call the Orange County 24-Hour Water Pollution Prevention Reporting Hotline at 1-877-89-SPILL (1-877-897-7455)
Special Thanks to
The City of Los Angeles Stormwater Program for the use of its artwork
The Metropolitan Water District of Southern California for the use of the California-Friendly Plant and Native Habitat photos
Homeowners Guide
for Sustainable Water Use
Low Impact Development, Water Conservation & Pollution Prevention
The Ocean Begins at Your Front Door

Attachment B: Operations and Maintenance Plan (see Attached Agreement)

Attachment C: South Coast Water District Lift Station No. 2 Project, Final Initial Study, dated January 2017, by Environmental Science Associates (ESA). (see Volume 2 of 3)

Attachment D: Site Specific Health and Safety Plan, South Coast Water District, Lift Station #2, Laguna Beach, California, dated January 21, 2020, Project No. 209638002 by Ninyo & Moore Geotechnical & Environmental Sciences Consultants. (see Volume 3 of 3).

Attachment D: Geotechnical Evaluation, Lift Station No. 2 Replacement Project, South Coast Water District, Laguna Beach, California, dated June 5, 2020, Project No. 209638002, by Ninyo & Moore Geotechnical & Environmental Sciences Consultants. (see Volume 3 of 3).

Attachment E: Aliso Creek Watershed Rainfall and Infiltration Feasibility Exhibits, Hydromodification Susceptibility Map, and Potential Critical Coarse Sediment Yield Areas by Watershed Map

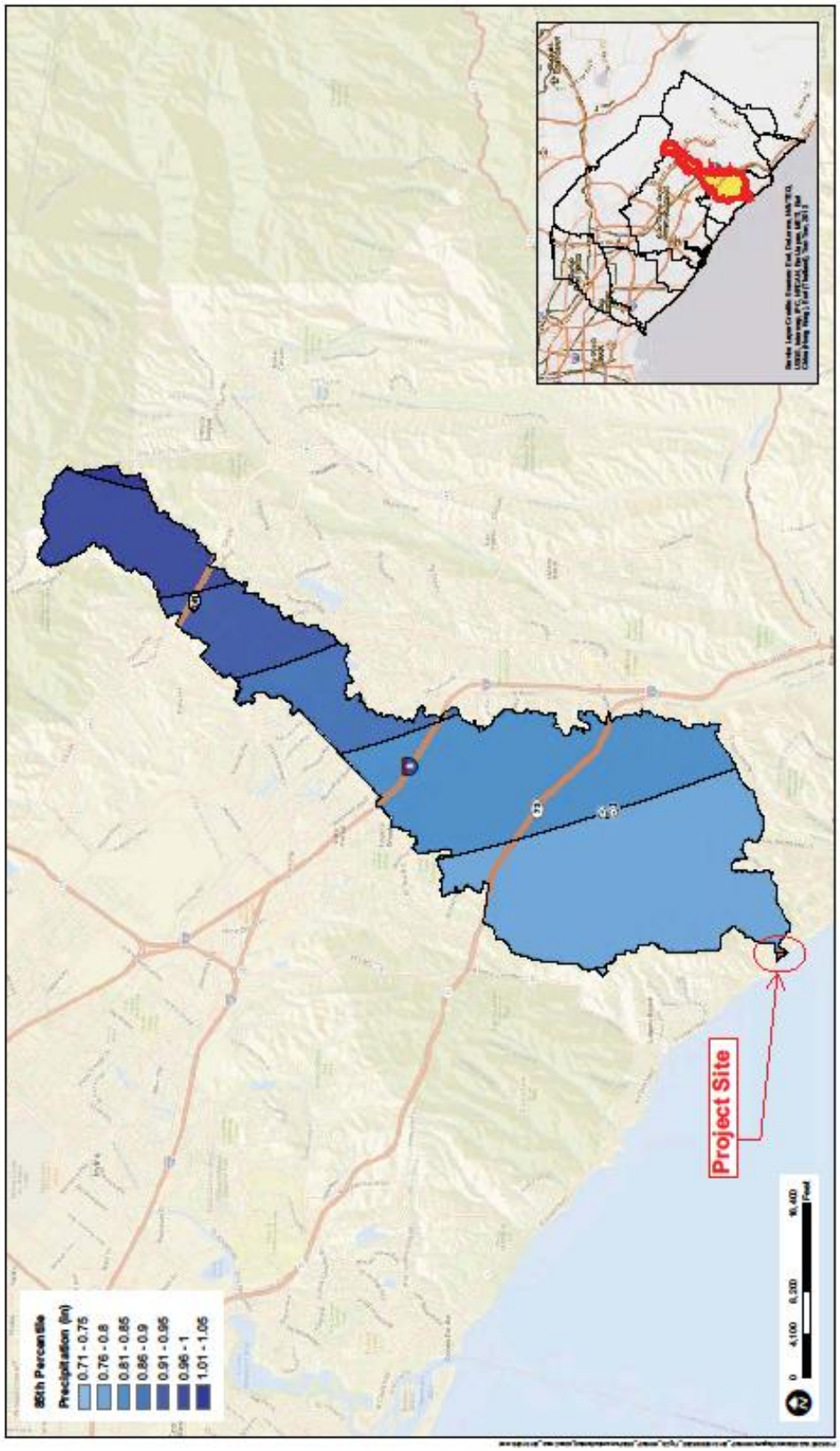


FIGURE 7.8
PRECIPITATION - 85TH PERCENTILE
ALISO CREEK WATERSHED

FIGURE 7.9
1 of Overlapping
Infiltration Constraint

FIGURE 7.9a
Low Permeability
Hydrogroup Soil D

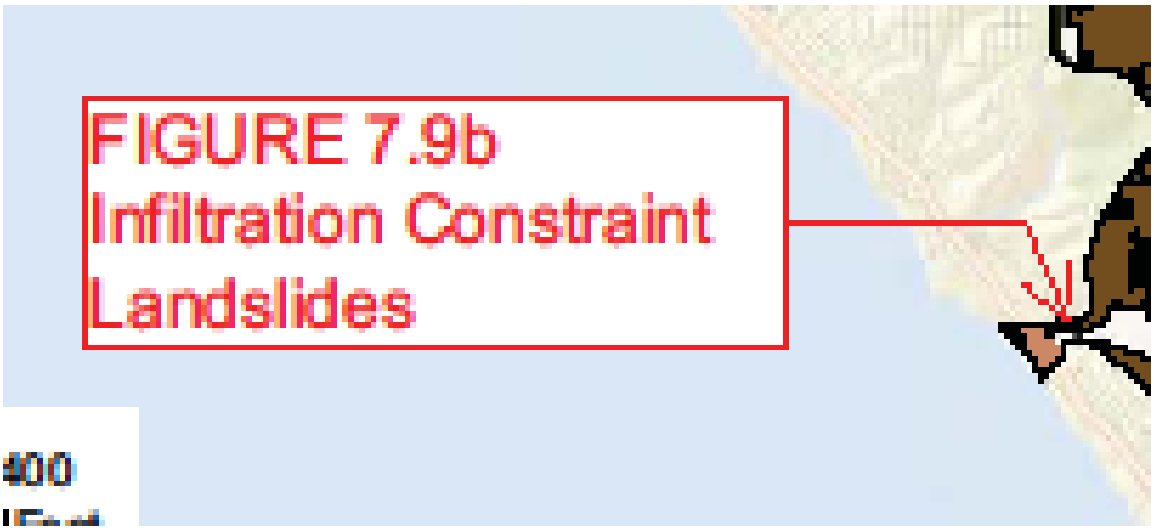


FIGURE 7.9b
Infiltration Constraint
Landslides
400

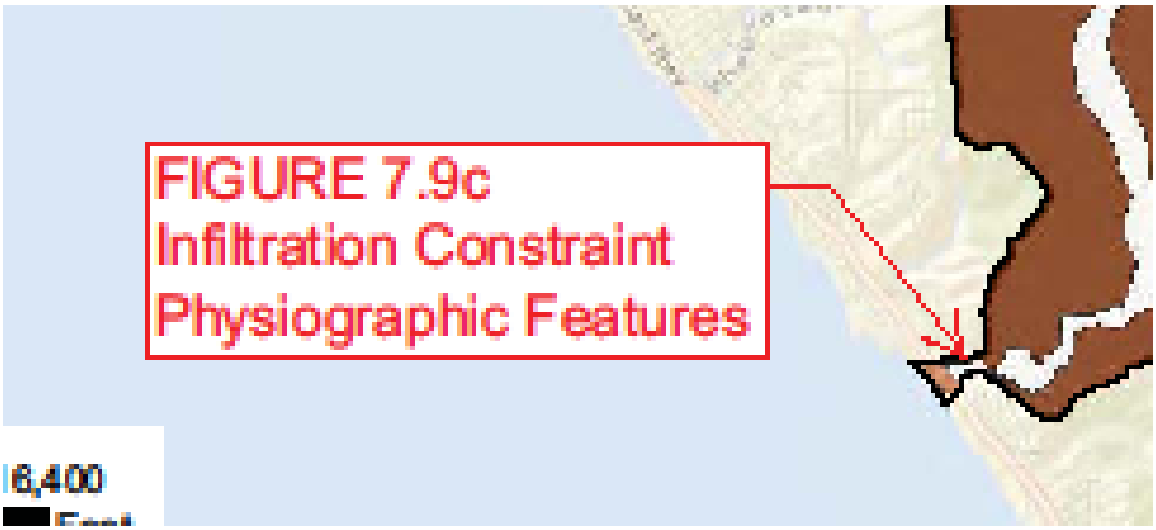
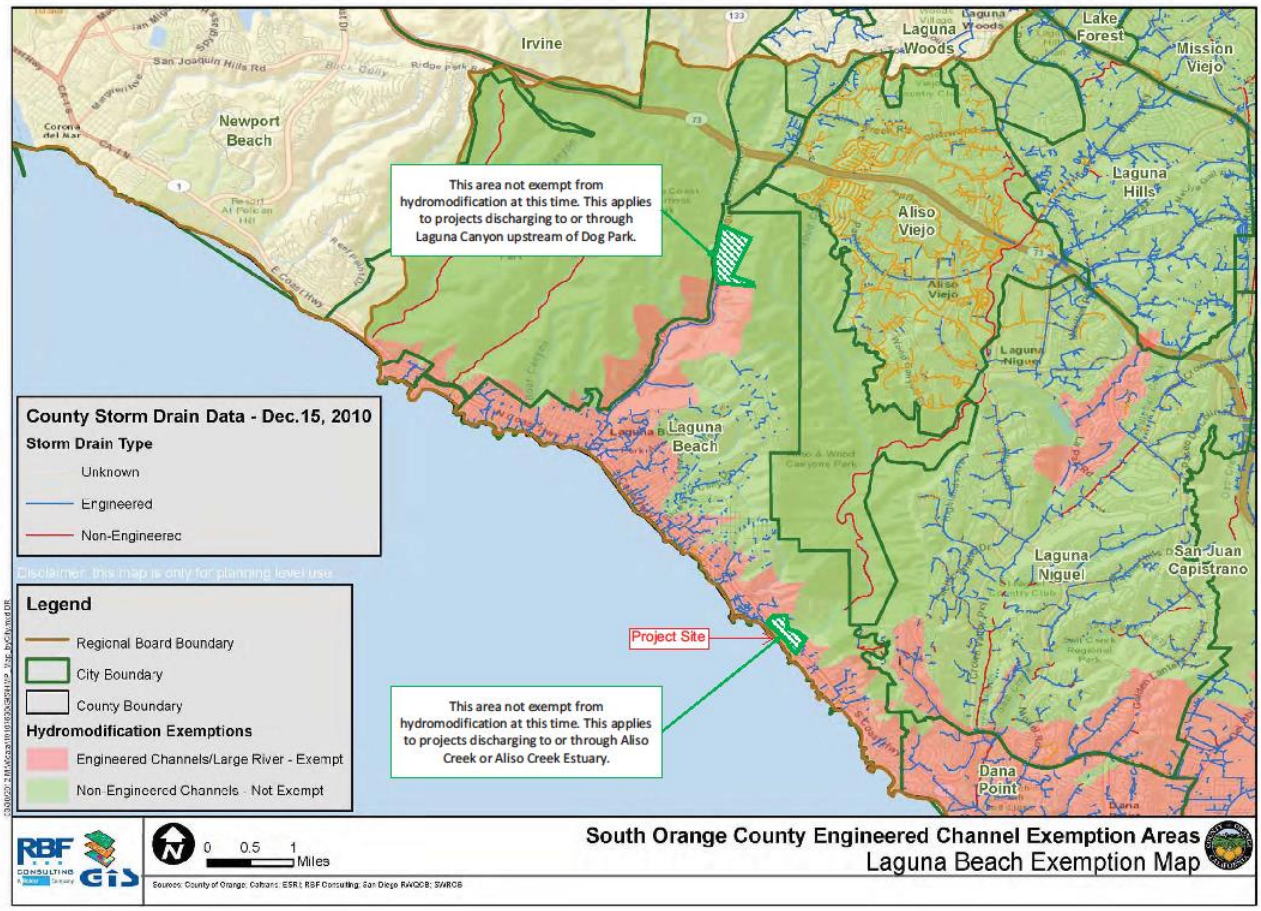
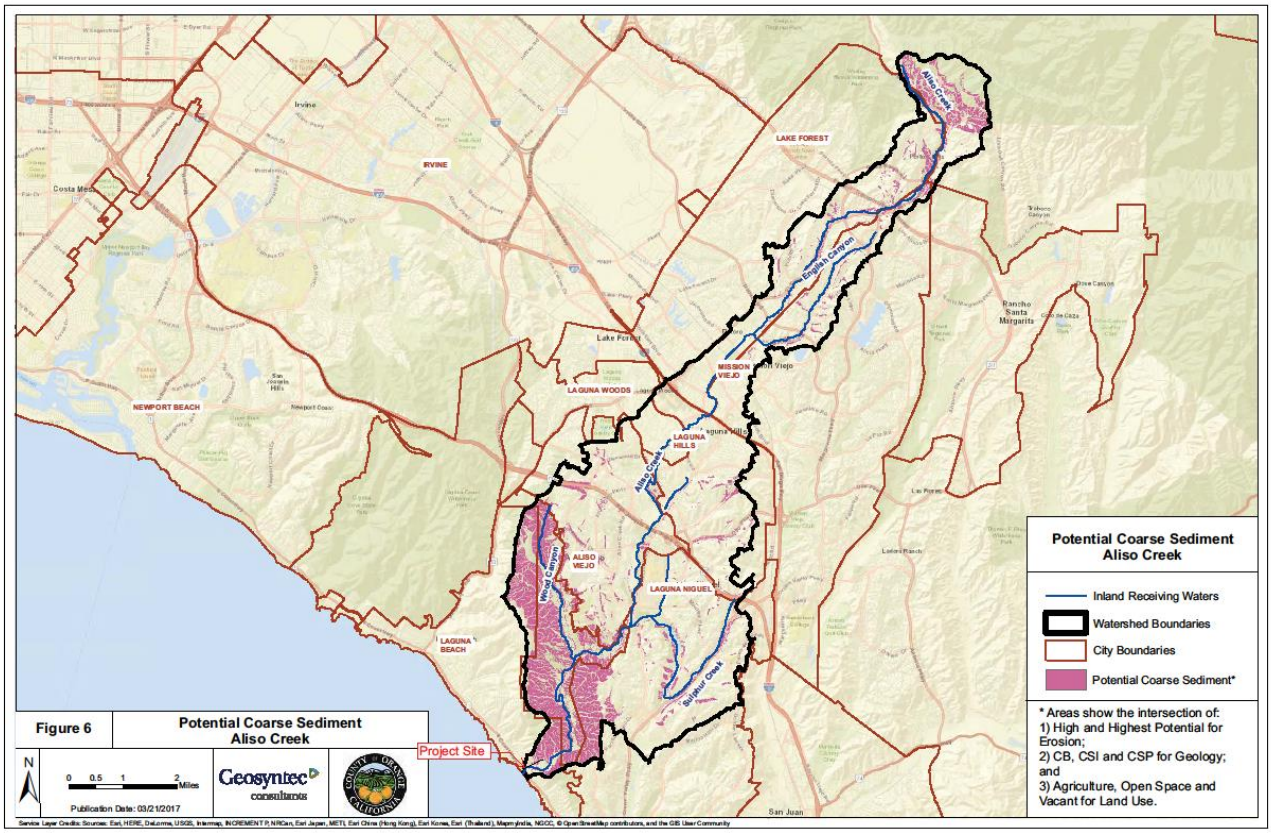


FIGURE 7.9c
Infiltration Constraint
Physiographic Features
6,400


Irvine
Newport Beach
Laguna Woods
Lake Forest
Mission Viejo
Laguna Hills
Aliso Viejo
Laguna Niguel
Laguna Beach
San Juan Capistrano
Dana Point
This area not exempt from hydromodification at this time. This applies to projects discharging to or through Laguna Canyon upstream of Dog Park.
This area not exempt from hydromodification at this time. This applies to projects discharging to or through Aliso Creek or Aliso Creek Estuary.
Project Site
County Storm Drain Data - Dec.15, 2010
Storm Drain Type
Unknown
Engineered
Non-Engineerec
Legend
Regional Board Boundary
City Boundary
County Boundary
Hydromodification Exemptions
Engineered Channels/Large River - Exempt
Non-Engineered Channels - Not Exempt
0 0.5 1 Miles
South Orange County Engineered Channel Exemption Areas
Laguna Beach Exemption Map

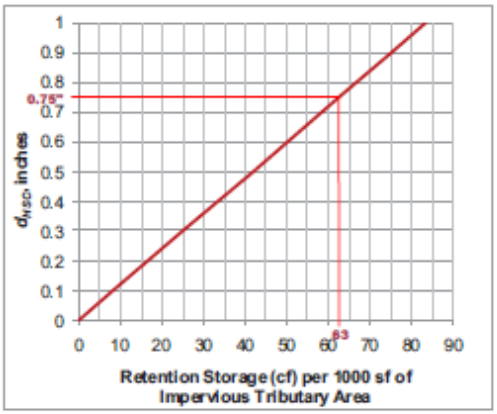

Potential Coarse Sediment
Aliso Creek
Inland Receiving Waters
Watershed Boundaries
City Boundaries
Potential Coarse Sediment*
* Areas show the intersection of:
1) High and Highest Potential for Erosion;
2) CB, CSI and CSP for Geology; and
3) Agriculture, Open Space and Vacant for Land Use.
Figure 6
Potential Coarse Sediment
Aliso Creek
Project Site
Publication Date: 03/21/2017
Geosyntec consultants
IRVINE
LAKE FOREST
NEWPORT BEACH
LAGUNA WOODS
LAGUNA HILLS
MISSION VIEJO
ALISO VIEJO
LAGUNA NIGUEL
LAGUNA BEACH
Aliso Creek
English Canyon
Wood Canyon
Sulphur Creek

Attachment F: Hydrologic Source Controls Fact Sheets (HSC)

☐ Overflow should be located such that it does not cause erosion is conveyed away from structures toward the downstream conveyance and treatment system.

Calculating HSC Retention Volume

- The retention volume provided by localized on-lot infiltration can be computed as the storage volume provided by surface ponding and the pore space within an amended soil layer or gravel trench.
- Estimate the average retention volume per 1000 square feet impervious tributary area provided by on-lot infiltration.
- Look up the storm retention depth, d_{HSC} from the chart to the right.
- The max d_{HSC} is equal to the design capture storm depth for the project site.



1) Design Storm Volume Calculation:

A= 31,963 sq-ft, Impervious percentage= 100%, Storm depth, d= 0.75", Runoff coefficient, C= 0.90, then, the Design Storm Volume = 31963 * 0.75 * 0.90 /12 = 1,798 cu-ft.

2) HSC Retention Volume Calculation:

Design capture storm depth = 0.75" >>>> Read-out ratio= 63 cf per 1000 sf of impervious tributary area.

Minimum required volume= 63 * 31963 / 1000= 2,014 cu-ft.

Since the HSC Volume is greater than the Design Storm Volume, use the HSC Volume of 2,014 cu-ft as the minimum required retention volume.

The calculated structure backfill total volume behind the retaining wall = 11,826 cu-ft.

Assuming 20% of Void Ratio = 11,826 * 20% = 2,365 cu-ft.

3) Conclusion:

The project provides 2,365 cu-ft of retention volume, which is greater than the HSC required volume of 2,014 cu-ft; therefore, the site WQMP meets the South Orange County Technical Guidance Document criteria.

Appendix I

Construction Noise Calculations

ESA

Construction Noise Calculations
South Coast Water District Lift Station No. 2 Replacement Project

Table 1
Country Club Drive Relocation Construction Noise Level at Nearest Sensitive Receptor

Construction Phase/Equipment	Usage Factor[1]/Lmax, at 50 ft[2])	Combined Noise Level at Nearest Sensitive Receptor (30 feet) from Active Construction Area, dBA Leq[3]
Road Grading/Subgrade Preparation		
Grader	0.40/85 dBA	xx
Loader	0.40/79 dBA	
Water Truck	0.10/80 dBA	

[1] Usage Factor is the percentage of time the equipment is operating in full power.

[2] Noise level (dBA Leq) measured at 50 feet when equipment is operating in full power.

[3] Nearest Sensitive Receptor is a residence located along Aliso Circle and 30 feet west of Country Club Drive Relocation

Table 2
New Lift Station Site Construction Noise Levels at Nearest Sensitive Receptor

Construction Phase/Equipment	Usage Factor[1]/Lmax, at 50 ft[2])	Combined Noise Level at Nearest Sensitive Receptor (210 feet) from Active Construction Area, dBA Leq[3]
Building Demolition		
Concrete Saw	0.20/90 dBA	x
Dozer	0.40/82 dBA	
Loader	0.40/79 dBA	
Water Truck	0.10/80 dBA	
Wetwell/Drywell Deep Soil Mixing and Dewatering Wells		
Loader	0.40/79 dBA	xx
Vibratory Plate Compactor	0.20/83 dBA	
Truck	0.50/77 dBA	
Crane	0.40/81 dBA	
Loader	0.40/79 dBA	
Wetwell/Drywell Excavation/Shoring		

Excavator	0.40/81 dBA	xx
Crane	0.40/81 dBA	
Vibratory Pile Driver	0.20/95 dBA	
Haul Truck	0.40/76 dBA	
Wetwell/Drywell Backfill/Compaction and Perimeter Wall Footing		
Loader	0.40/79 dBA	xx
Vibratory Plate Compactor	0.20/83 dBA	
Truck	0.50/77 dBA	
Crane	0.40/81 dBA	
Loader	0.40/79 dBA	
[1] Usage Factor is the percentage of time the equipment is operating in full power. [2] Noise level (dBA Leq) measured at 50 feet when equipment is operating in full power. [3] Nearest Sensitive Receptors to the New Lift Station Site are residences located along Wesley Drive and 210 feet to the northwest		

Table 3
Storm Drain and Creek Outlet Structure Construction Noise Levels at Nearest Sensitive Receptor

Construction Phase/Equipment	**Usage Factor[1]/Lmax, at 50 ft[2])**	**Combined Noise Level at Nearest Sensitive Receptor (140 feet) from Active Construction Area, dBA Leq**
Outlet Structure Excavation		
Excavator	0.40/81 dBA	x
Haul Truck	0.40/76 dBA	
Outlet Structure Backfill		
Excavator	0.40/81 dBA	x
Vibratory Rammer/Compactor	0.20/80 dBA	
Storm Drain Subgrade Preparation		
Backhoe	0.20/81 dBA	x
Vibratory Plate Compactor	0.20/80 dBA	
[1] Usage Factor is the percentage of time the equipment is operating in full power. [2] Noise level (dBA Leq) measured at 50 feet when equipment is operating in full power. [3] Nearest Sensitive Receptors are residences located along Wesley Drive and 140 feet north of the Storm Drain and Creek Outlet Structure		

Table 4
Existing Pump Station Demolition Noise Level at Nearest Sensitive Receptor

Construction Phase/Equipment	Usage Factor[1]/Lmax, at 50 ft[2])	Combined Noise Level at Nearest Sensitive Receptor (100 feet) from Active Construction Area, dBA Leq
Remove Buildings/Paving and Structure		
Air Compressor	0.78/80 dBA	xx
Excavator	0.40/81 dBA	
Haul Truck	0.40/76 dBA	
[1] Usage Factor is the percentage of time the equipment is operating in full power. [2] Noise level (dBA Leq) measured at 50 feet when equipment is operating in full power. [3] Nearest Sensitive Receptors are residences located along Wesley Drive and 100 feet north of the Existing Lift Station Site		

Table 4
Emergency Intertie Construction Noise Level at Nearest Sensitive Receptor

Construction Phase/Equipment	Usage Factor[1]/Lmax, at 50 ft[2])	Combined Noise Level at Nearest Sensitive Receptor (250 feet) from Active Construction Area, dBA Leq
Valve and Pipe Installation		
Excavator	0.40/81 dBA	xx
Vibratory Rammer/Compactor	0.20/80 dBA	
Haul Truck	0.40/76 dBA	
[1] Usage Factor is the percentage of time the equipment is operating in full power. [2] Noise level (dBA Leq) measured at 50 feet when equipment is operating in full power. [3] Nearest Sensitive Receptors are residences located along Wesley Drive and 250 feet northwest of the Proposed Emergency Intertie Valve Vault and Piping		