

Appendix A

Air Quality and GHG Emission Calculations

SMWD Las Flores Recycled Water Pipeline Project - Orange County, Summer

SMWD Las Flores Recycled Water Pipeline Project

Orange County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	70.00	1000sqft	1.61	70,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	30
Climate Zone	8			Operational Year	2022
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MW hr)	448.3	CH4 Intensity (lb/MW hr)	0.018	N2O Intensity (lb/MW hr)	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted GHG intensity factors based on 2017 Power Content Label for SDG&E

Land Use - Per SMWD, approximately 40,200 SF would be graded/disturbed for pipe trenching, and 70,000 SF area would be paved

Construction Phase - Adjusted construction phases and duration based on input from SMWD

Off-road Equipment - Revised equipment list based on input from SMWD

Trips and VMT - Revised construction trips based on input from SMWD

Grading - Approximately 7,500 CY of soils to be exported

Area Coating - No operational architectural coatings

Energy Use -

Construction Off-road Equipment Mitigation - Water Exposed Area, Frequency: 2 times per day. Unpaved Road Mitigation, Vehicle Speed: 15 mph.

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	4200	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	2.00	18.00
tblConstructionPhase	NumDays	4.00	173.00
tblConstructionPhase	NumDays	200.00	130.00
tblConstructionPhase	NumDays	10.00	6.00
tblConstructionPhase	NumDays	200.00	5.00
tblGrading	AcresOfGrading	0.00	1.60
tblGrading	MaterialExported	0.00	7,500.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00

tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.018
tblProjectCharacteristics	CO2IntensityFactor	720.49	448.3
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004
tblTripsAndVMT	HaulingTripNumber	0.00	72.00
tblTripsAndVMT	HaulingTripNumber	0.00	24.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	11.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	11.00	2.00
tblTripsAndVMT	WorkerTripNumber	5.00	8.00
tblTripsAndVMT	WorkerTripNumber	10.00	8.00
tblTripsAndVMT	WorkerTripNumber	29.00	6.00
tblTripsAndVMT	WorkerTripNumber	29.00	8.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.1918	13.6216	12.3294	0.0280	0.4565	0.6605	1.0762	0.1217	0.6083	0.7197	0.0000	2,860.8615	2,860.8615	0.6173	0.0000	2,876.2935
2021	1.6417	12.4357	10.9280	0.0241	0.6242	0.5748	1.1990	0.1626	0.5292	0.6917	0.0000	2,463.0999	2,463.0999	0.5200	0.0000	2,476.1005
Maximum	1.6417	13.6216	12.3294	0.0280	0.6242	0.6605	1.1990	0.1626	0.6083	0.7197	0.0000	2,860.8615	2,860.8615	0.6173	0.0000	2,876.2935

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.1918	13.6216	12.3294	0.0280	0.4485	0.6605	1.0681	0.1207	0.6083	0.7187	0.0000	2,860.8615	2,860.8615	0.6173	0.0000	2,876.2935
2021	1.6417	12.4357	10.9280	0.0241	0.6161	0.5748	1.1909	0.1616	0.5292	0.6907	0.0000	2,463.0999	2,463.0999	0.5200	0.0000	2,476.1005
Maximum	1.6417	13.6216	12.3294	0.0280	0.6161	0.6605	1.1909	0.1616	0.6083	0.7187	0.0000	2,860.8615	2,860.8615	0.6173	0.0000	2,876.2935

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	1.50	0.00	0.71	0.70	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0255	7.0000e-005	7.1600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	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	0.0255	7.0000e-005	7.1600e-003	0.0000	0.0000	3.0000e-005	3.0000e-005	0.0000	3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005	0.0000	0.0163

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0255	7.0000e-005	7.1600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	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	0.0255	7.0000e-005	7.1600e-003	0.0000	0.0000	3.0000e-005	3.0000e-005	0.0000	3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005	0.0000	0.0163

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/7/2020	7/1/2020	5	18	
2	Pipeline Trenching/Grading	Grading	7/1/2020	2/26/2021	5	173	
3	Conversion of Lift Station	Building Construction	11/1/2020	5/1/2021	5	130	
4	Paving	Paving	3/1/2021	3/8/2021	5	6	
5	Demobilization	Building Construction	4/24/2021	4/30/2021	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.61

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Excavators	1	6.00	158	0.38
Site Preparation	Graders	0	0.00	187	0.41
Site Preparation	Rough Terrain Forklifts	1	6.00	100	0.40
Site Preparation	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Pipeline Trenching/Grading	Excavators	1	6.00	158	0.38
Pipeline Trenching/Grading	Graders	0	0.00	187	0.41
Pipeline Trenching/Grading	Rough Terrain Forklifts	1	6.00	100	0.40
Pipeline Trenching/Grading	Rubber Tired Dozers	0	0.00	247	0.40
Pipeline Trenching/Grading	Sweepers/Scrubbers	1	2.00	64	0.46
Pipeline Trenching/Grading	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Pipeline Trenching/Grading	Trenchers	1	6.00	78	0.50
Conversion of Lift Station	Cranes	0	0.00	231	0.29
Conversion of Lift Station	Forklifts	0	0.00	89	0.20

Conversion of Lift Station	Generator Sets	0	0.00	84	0.74
Conversion of Lift Station	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Conversion of Lift Station	Trenchers	1	4.00	78	0.50
Conversion of Lift Station	Welders	0	0.00	46	0.45
Paving	Cement and Mortar Mixers	0	0.00	9	0.56
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	0	0.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Demobilization	Cranes	0	0.00	231	0.29
Demobilization	Excavators	1	6.00	158	0.38
Demobilization	Forklifts	1	6.00	89	0.20
Demobilization	Generator Sets	0	0.00	84	0.74
Demobilization	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Demobilization	Welders	0	0.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	8.00	4.00	72.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pipeline Trenching/Grading	4	8.00	8.00	938.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Conversion of Lift Station	2	6.00	12.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	8.00	10.00	24.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demobilization	2	8.00	2.00	20.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.2839	3.1070	4.1735	6.4600e-003		0.1419	0.1419		0.1306	0.1306		625.3492	625.3492	0.2023		630.4055
Total	0.2839	3.1070	4.1735	6.4600e-003	0.0000	0.1419	0.1419	0.0000	0.1306	0.1306		625.3492	625.3492	0.2023		630.4055

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0302	1.0999	0.2779	3.0600e-003	0.0697	3.5600e-003	0.0732	0.0191	3.4100e-003	0.0225		341.2232	341.2232	0.0354		342.1074
Vendor	0.0128	0.4167	0.1100	1.0000e-003	0.0256	2.1700e-003	0.0277	7.3500e-003	2.0800e-003	9.4300e-003		108.4516	108.4516	8.7700e-003		108.6709
Worker	0.0307	0.0194	0.2619	8.7000e-004	0.0894	5.9000e-004	0.0900	0.0237	5.4000e-004	0.0243		87.2035	87.2035	1.9900e-003		87.2532
Total	0.0737	1.5360	0.6498	4.9300e-003	0.1846	6.3200e-003	0.1910	0.0501	6.0300e-003	0.0562		536.8782	536.8782	0.0461		538.0315

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000

Off-Road	0.2839	3.1070	4.1735	6.4600e-003		0.1419	0.1419		0.1306	0.1306	0.0000	625.3492	625.3492	0.2023		630.4055
Total	0.2839	3.1070	4.1735	6.4600e-003	0.0000	0.1419	0.1419	0.0000	0.1306	0.1306	0.0000	625.3492	625.3492	0.2023		630.4055

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0302	1.0999	0.2779	3.0600e-003	0.0697	3.5600e-003	0.0732	0.0191	3.4100e-003	0.0225		341.2232	341.2232	0.0354		342.1074
Vendor	0.0128	0.4167	0.1100	1.0000e-003	0.0256	2.1700e-003	0.0277	7.3500e-003	2.0800e-003	9.4300e-003		108.4516	108.4516	8.7700e-003		108.6709
Worker	0.0307	0.0194	0.2619	8.7000e-004	0.0894	5.9000e-004	0.0900	0.0237	5.4000e-004	0.0243		87.2035	87.2035	1.9900e-003		87.2532
Total	0.0737	1.5360	0.6498	4.9300e-003	0.1846	6.3200e-003	0.1910	0.0501	6.0300e-003	0.0562		536.8782	536.8782	0.0461		538.0315

3.3 Pipeline Trenching/Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0147	0.0000	0.0147	1.8000e-003	0.0000	1.8000e-003			0.0000			0.0000
Off-Road	0.6662	6.5362	6.6476	9.6200e-003		0.4018	0.4018		0.3697	0.3697		932.0024	932.0024	0.3014		939.5381
Total	0.6662	6.5362	6.6476	9.6200e-003	0.0147	0.4018	0.4166	1.8000e-003	0.3697	0.3715		932.0024	932.0024	0.3014		939.5381

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	0.0409	1.4909	0.3767	4.1500e-003	0.1167	4.8300e-003	0.1215	0.0313	4.6200e-003	0.0359		462.5250	462.5250	0.0479		463.7236
Vendor	0.0256	0.8334	0.2200	1.9900e-003	0.0511	4.3500e-003	0.0555	0.0147	4.1600e-003	0.0189		216.9032	216.9032	0.0175		217.3417
Worker	0.0307	0.0194	0.2619	8.7000e-004	0.0894	5.9000e-004	0.0900	0.0237	5.4000e-004	0.0243		87.2035	87.2035	1.9900e-003		87.2532
Total	0.0972	2.3437	0.8585	7.0100e-003	0.2572	9.7700e-003	0.2670	0.0697	9.3200e-003	0.0791		766.6317	766.6317	0.0675		768.3185

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6200e-003	0.0000	6.6200e-003	8.1000e-004	0.0000	8.1000e-004			0.0000			0.0000
Off-Road	0.6662	6.5362	6.6476	9.6200e-003		0.4018	0.4018		0.3697	0.3697	0.0000	932.0024	932.0024	0.3014		939.5381
Total	0.6662	6.5362	6.6476	9.6200e-003	6.6200e-003	0.4018	0.4085	8.1000e-004	0.3697	0.3705	0.0000	932.0024	932.0024	0.3014		939.5381

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	0.0409	1.4909	0.3767	4.1500e-003	0.1167	4.8300e-003	0.1215	0.0313	4.6200e-003	0.0359		462.5250	462.5250	0.0479		463.7236

Vendor	0.0256	0.8334	0.2200	1.9900e-003	0.0511	4.3500e-003	0.0555	0.0147	4.1600e-003	0.0189		216.9032	216.9032	0.0175		217.3417
Worker	0.0307	0.0194	0.2619	8.7000e-004	0.0894	5.9000e-004	0.0900	0.0237	5.4000e-004	0.0243		87.2035	87.2035	1.9900e-003		87.2532
Total	0.0972	2.3437	0.8585	7.0100e-003	0.2572	9.7700e-003	0.2670	0.0697	9.3200e-003	0.0791		766.6317	766.6317	0.0675		768.3185

3.3 Pipeline Trenching/Grading - 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					0.0147	0.0000	0.0147	1.8000e-003	0.0000	1.8000e-003			0.0000			0.0000
Off-Road	0.6083	5.9726	6.6170	9.6300e-003		0.3543	0.3543		0.3259	0.3259		932.2069	932.2069	0.3015		939.7443
Total	0.6083	5.9726	6.6170	9.6300e-003	0.0147	0.3543	0.3690	1.8000e-003	0.3259	0.3277		932.2069	932.2069	0.3015		939.7443

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	0.0391	1.3783	0.3787	4.0900e-003	0.3252	4.3300e-003	0.3295	0.0825	4.1400e-003	0.0866		456.8645	456.8645	0.0474		458.0486
Vendor	0.0214	0.7505	0.2035	1.9700e-003	0.0511	1.5600e-003	0.0527	0.0147	1.4900e-003	0.0162		215.0340	215.0340	0.0169		215.4555
Worker	0.0289	0.0175	0.2430	8.4000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		84.1755	84.1755	1.8000e-003		84.2206
Total	0.0893	2.1463	0.8252	6.9000e-003	0.4657	6.4700e-003	0.4722	0.1209	6.1600e-003	0.1271		756.0740	756.0740	0.0660		757.7248

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6200e-003	0.0000	6.6200e-003	8.1000e-004	0.0000	8.1000e-004			0.0000			0.0000
Off-Road	0.6083	5.9726	6.6170	9.6300e-003		0.3543	0.3543		0.3259	0.3259	0.0000	932.2069	932.2069	0.3015		939.7443
Total	0.6083	5.9726	6.6170	9.6300e-003	6.6200e-003	0.3543	0.3609	8.1000e-004	0.3259	0.3267	0.0000	932.2069	932.2069	0.3015		939.7443

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	0.0391	1.3783	0.3787	4.0900e-003	0.3252	4.3300e-003	0.3295	0.0825	4.1400e-003	0.0866		456.8645	456.8645	0.0474		458.0486
Vendor	0.0214	0.7505	0.2035	1.9700e-003	0.0511	1.5600e-003	0.0527	0.0147	1.4900e-003	0.0162		215.0340	215.0340	0.0169		215.4555
Worker	0.0289	0.0175	0.2430	8.4000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		84.1755	84.1755	1.8000e-003		84.2206
Total	0.0893	2.1463	0.8252	6.9000e-003	0.4657	6.4700e-003	0.4722	0.1209	6.1600e-003	0.1271		756.0740	756.0740	0.0660		757.7248

3.4 Conversion of Lift Station - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3670	3.4771	3.0279	4.0100e-003		0.2420	0.2420		0.2226	0.2226		388.9824	388.9824	0.1258		392.1275

Total	0.3670	3.4771	3.0279	4.0100e-003		0.2420	0.2420		0.2226	0.2226		388.9824	388.9824	0.1258		392.1275
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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	0.0383	1.2501	0.3300	2.9900e-003	0.0767	6.5200e-003	0.0832	0.0221	6.2400e-003	0.0283		325.3547	325.3547	0.0263		326.0126
Worker	0.0231	0.0145	0.1964	6.6000e-004	0.0671	4.4000e-004	0.0675	0.0178	4.1000e-004	0.0182		65.4026	65.4026	1.4900e-003		65.4399
Total	0.0614	1.2647	0.5264	3.6500e-003	0.1437	6.9600e-003	0.1507	0.0399	6.6500e-003	0.0465		390.7573	390.7573	0.0278		391.4525

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	0.3670	3.4771	3.0279	4.0100e-003		0.2420	0.2420		0.2226	0.2226	0.0000	388.9824	388.9824	0.1258		392.1275
Total	0.3670	3.4771	3.0279	4.0100e-003		0.2420	0.2420		0.2226	0.2226	0.0000	388.9824	388.9824	0.1258		392.1275

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	0.0383	1.2501	0.3300	2.9900e-003	0.0767	6.5200e-003	0.0832	0.0221	6.2400e-003	0.0283		325.3547	325.3547	0.0263		326.0126
Worker	0.0231	0.0145	0.1964	6.6000e-004	0.0671	4.4000e-004	0.0675	0.0178	4.1000e-004	0.0182		65.4026	65.4026	1.4900e-003		65.4399
Total	0.0614	1.2647	0.5264	3.6500e-003	0.1437	6.9600e-003	0.1507	0.0399	6.6500e-003	0.0465		390.7573	390.7573	0.0278		391.4525

3.4 Conversion of Lift Station - 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	0.3317	3.1779	2.9983	4.0200e-003		0.2113	0.2113		0.1944	0.1944		389.1363	389.1363	0.1259		392.2827
Total	0.3317	3.1779	2.9983	4.0200e-003		0.2113	0.2113		0.1944	0.1944		389.1363	389.1363	0.1259		392.2827

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	0.0320	1.1258	0.3053	2.9600e-003	0.0767	2.3400e-003	0.0790	0.0221	2.2400e-003	0.0243		322.5510	322.5510	0.0253		323.1833
Worker	0.0217	0.0131	0.1822	6.3000e-004	0.0671	4.3000e-004	0.0675	0.0178	4.0000e-004	0.0182		63.1317	63.1317	1.3500e-003		63.1655
Total	0.0537	1.1389	0.4876	3.5900e-003	0.1437	2.7700e-003	0.1465	0.0399	2.6400e-003	0.0425		385.6827	385.6827	0.0266		386.3488

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	0.3317	3.1779	2.9983	4.0200e-003		0.2113	0.2113		0.1944	0.1944	0.0000	389.1363	389.1363	0.1259		392.2827
Total	0.3317	3.1779	2.9983	4.0200e-003		0.2113	0.2113		0.1944	0.1944	0.0000	389.1363	389.1363	0.1259		392.2827

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	0.0320	1.1258	0.3053	2.9600e-003	0.0767	2.3400e-003	0.0790	0.0221	2.2400e-003	0.0243		322.5510	322.5510	0.0253		323.1833
Worker	0.0217	0.0131	0.1822	6.3000e-004	0.0671	4.3000e-004	0.0675	0.0178	4.0000e-004	0.0182		63.1317	63.1317	1.3500e-003		63.1655
Total	0.0537	1.1389	0.4876	3.5900e-003	0.1437	2.7700e-003	0.1465	0.0399	2.6400e-003	0.0425		385.6827	385.6827	0.0266		386.3488

3.5 Paving - 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	0.4689	4.8326	4.9992	7.4600e-003		0.2705	0.2705		0.2489	0.2489		722.4290	722.4290	0.2337		728.2702
Paving	0.7030					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.1720	4.8326	4.9992	7.4600e-003		0.2705	0.2705		0.2489	0.2489		722.4290	722.4290	0.2337		728.2702

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	0.0288	1.0169	0.2794	3.0200e-003	0.0696	3.1900e-003	0.0728	0.0191	3.0600e-003	0.0221		337.0471	337.0471	0.0349		337.9207
Vendor	0.0267	0.9381	0.2544	2.4700e-003	0.0639	1.9500e-003	0.0658	0.0184	1.8600e-003	0.0203		268.7925	268.7925	0.0211		269.3194
Worker	0.0289	0.0175	0.2430	8.4000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		84.1755	84.1755	1.8000e-003		84.2206
Total	0.0844	1.9725	0.7768	6.3300e-003	0.2230	5.7200e-003	0.2287	0.0612	5.4500e-003	0.0666		690.0152	690.0152	0.0578		691.4608

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	0.4689	4.8326	4.9992	7.4600e-003		0.2705	0.2705		0.2489	0.2489	0.0000	722.4290	722.4290	0.2337		728.2702

Paving	0.7030					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.1720	4.8326	4.9992	7.4600e-003		0.2705	0.2705		0.2489	0.2489	0.0000	722.4290	722.4290	0.2337		728.2702

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	0.0288	1.0169	0.2794	3.0200e-003	0.0696	3.1900e-003	0.0728	0.0191	3.0600e-003	0.0221		337.0471	337.0471	0.0349		337.9207
Vendor	0.0267	0.9381	0.2544	2.4700e-003	0.0639	1.9500e-003	0.0658	0.0184	1.8600e-003	0.0203		268.7925	268.7925	0.0211		269.3194
Worker	0.0289	0.0175	0.2430	8.4000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		84.1755	84.1755	1.8000e-003		84.2206
Total	0.0844	1.9725	0.7768	6.3300e-003	0.2230	5.7200e-003	0.2287	0.0612	5.4500e-003	0.0666		690.0152	690.0152	0.0578		691.4608

3.6 Demobilization - 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	0.2689	2.4994	3.3297	5.0200e-003		0.1411	0.1411		0.1298	0.1298		486.1671	486.1671	0.1572		490.0980
Total	0.2689	2.4994	3.3297	5.0200e-003		0.1411	0.1411		0.1298	0.1298		486.1671	486.1671	0.1572		490.0980

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	0.0288	1.0169	0.2794	3.0200e-003	0.0696	3.1900e-003	0.0728	0.0191	3.0600e-003	0.0221		337.0471	337.0471	0.0349		337.9207
Vendor	5.3400e-003	0.1876	0.0509	4.9000e-004	0.0128	3.9000e-004	0.0132	3.6800e-003	3.7000e-004	4.0500e-003		53.7585	53.7585	4.2200e-003		53.8639
Worker	0.0289	0.0175	0.2430	8.4000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		84.1755	84.1755	1.8000e-003		84.2206
Total	0.0630	1.2220	0.5732	4.3500e-003	0.1718	4.1600e-003	0.1760	0.0465	3.9600e-003	0.0504		474.9812	474.9812	0.0410		476.0052

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	0.2689	2.4994	3.3297	5.0200e-003		0.1411	0.1411		0.1298	0.1298	0.0000	486.1671	486.1671	0.1572		490.0980
Total	0.2689	2.4994	3.3297	5.0200e-003		0.1411	0.1411		0.1298	0.1298	0.0000	486.1671	486.1671	0.1572		490.0980

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	0.0288	1.0169	0.2794	3.0200e-003	0.0696	3.1900e-003	0.0728	0.0191	3.0600e-003	0.0221		337.0471	337.0471	0.0349		337.9207

Vendor	5.3400e-003	0.1876	0.0509	4.9000e-004	0.0128	3.9000e-004	0.0132	3.6800e-003	3.7000e-004	4.0500e-003		53.7585	53.7585	4.2200e-003		53.8639
Worker	0.0289	0.0175	0.2430	8.4000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		84.1755	84.1755	1.8000e-003		84.2206
Total	0.0630	1.2220	0.5732	4.3500e-003	0.1718	4.1600e-003	0.1760	0.0465	3.9600e-003	0.0504		474.9812	474.9812	0.0410		476.0052

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.561378	0.043284	0.209473	0.111826	0.015545	0.005795	0.025829	0.017125	0.001747	0.001542	0.004926	0.000594	0.000934

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas
Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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

Mitigated

	Natural Gas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0255	7.0000e-005	7.1600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163
Unmitigated	0.0255	7.0000e-005	7.1600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0248					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.7000e-004	7.0000e-005	7.1600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163
Total	0.0255	7.0000e-005	7.1600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0248					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.7000e-004	7.0000e-005	7.1600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163
Total	0.0255	7.0000e-005	7.1600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

Fire Pumps and Emergency Generators

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

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

Equipment Type	Number
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11.0 Vegetation

SMWD Las Flores Recycled Water Pipeline Project - Orange County, Winter

SMWD Las Flores Recycled Water Pipeline Project

Orange County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	70.00	1000sqft	1.61	70,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	30
Climate Zone	8			Operational Year	2022
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MW hr)	448.3	CH4 Intensity (lb/MW hr)	0.018	N2O Intensity (lb/MW hr)	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted GHG intensity factors based on 2017 Power Content Label for SDG&E

Land Use - Per SMWD, approximately 40,200 SF would be graded/disturbed for pipe trenching, and 70,000 SF area would be paved

Construction Phase - Adjusted construction phases and duration based on input from SMWD

Off-road Equipment - Revised equipment list based on input from SMWD

Trips and VMT - Revised construction trips based on input from SMWD

Grading - Approximately 7,500 CY of soils to be exported

Area Coating - No operational architectural coatings

Energy Use -

Construction Off-road Equipment Mitigation - Water Exposed Area, Frequency: 2 times per day. Unpaved Road Mitigation, Vehicle Speed: 15 mph.

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	4200	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	2.00	18.00
tblConstructionPhase	NumDays	4.00	173.00
tblConstructionPhase	NumDays	200.00	130.00
tblConstructionPhase	NumDays	10.00	6.00
tblConstructionPhase	NumDays	200.00	5.00
tblGrading	AcresOfGrading	0.00	1.60
tblGrading	MaterialExported	0.00	7,500.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00

tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.018
tblProjectCharacteristics	CO2IntensityFactor	720.49	448.3
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004
tblTripsAndVMT	HaulingTripNumber	0.00	72.00
tblTripsAndVMT	HaulingTripNumber	0.00	24.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	11.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	11.00	2.00
tblTripsAndVMT	WorkerTripNumber	5.00	8.00
tblTripsAndVMT	WorkerTripNumber	10.00	8.00
tblTripsAndVMT	WorkerTripNumber	29.00	6.00
tblTripsAndVMT	WorkerTripNumber	29.00	8.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.2026	13.6431	12.3560	0.0278	0.4565	0.6608	1.0765	0.1217	0.6085	0.7199	0.0000	2,831.3848	2,831.3848	0.6204	0.0000	2,846.8944
2021	1.6520	12.4506	10.9634	0.0239	0.6242	0.5751	1.1992	0.1626	0.5294	0.6919	0.0000	2,435.0797	2,435.0797	0.5230	0.0000	2,448.1541
Maximum	1.6520	13.6431	12.3560	0.0278	0.6242	0.6608	1.1992	0.1626	0.6085	0.7199	0.0000	2,831.3848	2,831.3848	0.6204	0.0000	2,846.8944

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.2026	13.6431	12.3560	0.0278	0.4485	0.6608	1.0684	0.1207	0.6085	0.7189	0.0000	2,831.3848	2,831.3848	0.6204	0.0000	2,846.8944
2021	1.6520	12.4506	10.9634	0.0239	0.6161	0.5751	1.1912	0.1616	0.5294	0.6910	0.0000	2,435.0797	2,435.0797	0.5230	0.0000	2,448.1541
Maximum	1.6520	13.6431	12.3560	0.0278	0.6161	0.6608	1.1912	0.1616	0.6085	0.7189	0.0000	2,831.3848	2,831.3848	0.6204	0.0000	2,846.8944

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	1.50	0.00	0.71	0.70	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0255	7.0000e-005	7.1600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	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	0.0255	7.0000e-005	7.1600e-003	0.0000	0.0000	3.0000e-005	3.0000e-005	0.0000	3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005	0.0000	0.0163

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0255	7.0000e-005	7.1600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	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	0.0255	7.0000e-005	7.1600e-003	0.0000	0.0000	3.0000e-005	3.0000e-005	0.0000	3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005	0.0000	0.0163

[illegible]

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/7/2020	7/1/2020	5	18	
2	Pipeline Trenching/Grading	Grading	7/1/2020	2/26/2021	5	173	
3	Conversion of Lift Station	Building Construction	11/1/2020	5/1/2021	5	130	
4	Paving	Paving	3/1/2021	3/8/2021	5	6	
5	Demobilization	Building Construction	4/24/2021	4/30/2021	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.61

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Excavators	1	6.00	158	0.38
Site Preparation	Graders	0	0.00	187	0.41
Site Preparation	Rough Terrain Forklifts	1	6.00	100	0.40
Site Preparation	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Pipeline Trenching/Grading	Excavators	1	6.00	158	0.38
Pipeline Trenching/Grading	Graders	0	0.00	187	0.41
Pipeline Trenching/Grading	Rough Terrain Forklifts	1	6.00	100	0.40
Pipeline Trenching/Grading	Rubber Tired Dozers	0	0.00	247	0.40
Pipeline Trenching/Grading	Sweepers/Scrubbers	1	2.00	64	0.46
Pipeline Trenching/Grading	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Pipeline Trenching/Grading	Trenchers	1	6.00	78	0.50
Conversion of Lift Station	Cranes	0	0.00	231	0.29
Conversion of Lift Station	Forklifts	0	0.00	89	0.20

Conversion of Lift Station	Generator Sets	0	0.00	84	0.74
Conversion of Lift Station	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Conversion of Lift Station	Trenchers	1	4.00	78	0.50
Conversion of Lift Station	Welders	0	0.00	46	0.45
Paving	Cement and Mortar Mixers	0	0.00	9	0.56
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	0	0.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Demobilization	Cranes	0	0.00	231	0.29
Demobilization	Excavators	1	6.00	158	0.38
Demobilization	Forklifts	1	6.00	89	0.20
Demobilization	Generator Sets	0	0.00	84	0.74
Demobilization	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Demobilization	Welders	0	0.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	8.00	4.00	72.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pipeline Trenching/Grading	4	8.00	8.00	938.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Conversion of Lift Station	2	6.00	12.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	8.00	10.00	24.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demobilization	2	8.00	2.00	20.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.2839	3.1070	4.1735	6.4600e-003		0.1419	0.1419		0.1306	0.1306		625.3492	625.3492	0.2023		630.4055
Total	0.2839	3.1070	4.1735	6.4600e-003	0.0000	0.1419	0.1419	0.0000	0.1306	0.1306		625.3492	625.3492	0.2023		630.4055

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	0.0310	1.1137	0.2926	3.0200e-003	0.0697	3.6300e-003	0.0733	0.0191	3.4700e-003	0.0225		336.0720	336.0720	0.0362		336.9773
Vendor	0.0133	0.4166	0.1206	9.7000e-004	0.0256	2.2100e-003	0.0278	7.3500e-003	2.1200e-003	9.4700e-003		105.7864	105.7864	9.2100e-003		106.0168
Worker	0.0347	0.0213	0.2420	8.3000e-004	0.0894	5.9000e-004	0.0900	0.0237	5.4000e-004	0.0243		82.5297	82.5297	1.8800e-003		82.5768
Total	0.0790	1.5516	0.6552	4.8200e-003	0.1846	6.4300e-003	0.1911	0.0501	6.1300e-003	0.0563		524.3881	524.3881	0.0473		525.5708

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000

Off-Road	0.2839	3.1070	4.1735	6.4600e-003		0.1419	0.1419		0.1306	0.1306	0.0000	625.3492	625.3492	0.2023		630.4055
Total	0.2839	3.1070	4.1735	6.4600e-003	0.0000	0.1419	0.1419	0.0000	0.1306	0.1306	0.0000	625.3492	625.3492	0.2023		630.4055

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	0.0310	1.1137	0.2926	3.0200e-003	0.0697	3.6300e-003	0.0733	0.0191	3.4700e-003	0.0225		336.0720	336.0720	0.0362		336.9773
Vendor	0.0133	0.4166	0.1206	9.7000e-004	0.0256	2.2100e-003	0.0278	7.3500e-003	2.1200e-003	9.4700e-003		105.7864	105.7864	9.2100e-003		106.0168
Worker	0.0347	0.0213	0.2420	8.3000e-004	0.0894	5.9000e-004	0.0900	0.0237	5.4000e-004	0.0243		82.5297	82.5297	1.8800e-003		82.5768
Total	0.0790	1.5516	0.6552	4.8200e-003	0.1846	6.4300e-003	0.1911	0.0501	6.1300e-003	0.0563		524.3881	524.3881	0.0473		525.5708

3.3 Pipeline Trenching/Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0147	0.0000	0.0147	1.8000e-003	0.0000	1.8000e-003			0.0000			0.0000
Off-Road	0.6662	6.5362	6.6476	9.6200e-003		0.4018	0.4018		0.3697	0.3697		932.0024	932.0024	0.3014		939.5381
Total	0.6662	6.5362	6.6476	9.6200e-003	0.0147	0.4018	0.4166	1.8000e-003	0.3697	0.3715		932.0024	932.0024	0.3014		939.5381

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	0.0420	1.5096	0.3966	4.0900e-003	0.1167	4.9200e-003	0.1216	0.0313	4.7000e-003	0.0360		455.5426	455.5426	0.0491		456.7697
Vendor	0.0267	0.8331	0.2411	1.9400e-003	0.0511	4.4200e-003	0.0555	0.0147	4.2300e-003	0.0189		211.5728	211.5728	0.0184		212.0335
Worker	0.0347	0.0213	0.2420	8.3000e-004	0.0894	5.9000e-004	0.0900	0.0237	5.4000e-004	0.0243		82.5297	82.5297	1.8800e-003		82.5768
Total	0.1034	2.3641	0.8798	6.8600e-003	0.2572	9.9300e-003	0.2671	0.0697	9.4700e-003	0.0792		749.6452	749.6452	0.0694		751.3800

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6200e-003	0.0000	6.6200e-003	8.1000e-004	0.0000	8.1000e-004			0.0000			0.0000
Off-Road	0.6662	6.5362	6.6476	9.6200e-003		0.4018	0.4018		0.3697	0.3697	0.0000	932.0024	932.0024	0.3014		939.5381
Total	0.6662	6.5362	6.6476	9.6200e-003	6.6200e-003	0.4018	0.4085	8.1000e-004	0.3697	0.3705	0.0000	932.0024	932.0024	0.3014		939.5381

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	0.0420	1.5096	0.3966	4.0900e-003	0.1167	4.9200e-003	0.1216	0.0313	4.7000e-003	0.0360		455.5426	455.5426	0.0491		456.7697

Vendor	0.0267	0.8331	0.2411	1.9400e-003	0.0511	4.4200e-003	0.0555	0.0147	4.2300e-003	0.0189		211.5728	211.5728	0.0184		212.0335
Worker	0.0347	0.0213	0.2420	8.3000e-004	0.0894	5.9000e-004	0.0900	0.0237	5.4000e-004	0.0243		82.5297	82.5297	1.8800e-003		82.5768
Total	0.1034	2.3641	0.8798	6.8600e-003	0.2572	9.9300e-003	0.2671	0.0697	9.4700e-003	0.0792		749.6452	749.6452	0.0694		751.3800

3.3 Pipeline Trenching/Grading - 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					0.0147	0.0000	0.0147	1.8000e-003	0.0000	1.8000e-003			0.0000			0.0000
Off-Road	0.6083	5.9726	6.6170	9.6300e-003		0.3543	0.3543		0.3259	0.3259		932.2069	932.2069	0.3015		939.7443
Total	0.6083	5.9726	6.6170	9.6300e-003	0.0147	0.3543	0.3690	1.8000e-003	0.3259	0.3277		932.2069	932.2069	0.3015		939.7443

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	0.0400	1.3946	0.3975	4.0300e-003	0.3252	4.4100e-003	0.3296	0.0825	4.2200e-003	0.0867		449.9420	449.9420	0.0484		451.1526
Vendor	0.0224	0.7488	0.2233	1.9300e-003	0.0511	1.6200e-003	0.0527	0.0147	1.5500e-003	0.0163		209.7512	209.7512	0.0177		210.1934
Worker	0.0327	0.0192	0.2242	8.0000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		79.6666	79.6666	1.7100e-003		79.7092
Total	0.0951	2.1626	0.8450	6.7600e-003	0.4657	6.6100e-003	0.4723	0.1209	6.3000e-003	0.1272		739.3598	739.3598	0.0678		741.0552

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.6200e-003	0.0000	6.6200e-003	8.1000e-004	0.0000	8.1000e-004			0.0000			0.0000
Off-Road	0.6083	5.9726	6.6170	9.6300e-003		0.3543	0.3543		0.3259	0.3259	0.0000	932.2069	932.2069	0.3015		939.7443
Total	0.6083	5.9726	6.6170	9.6300e-003	6.6200e-003	0.3543	0.3609	8.1000e-004	0.3259	0.3267	0.0000	932.2069	932.2069	0.3015		939.7443

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	0.0400	1.3946	0.3975	4.0300e-003	0.3252	4.4100e-003	0.3296	0.0825	4.2200e-003	0.0867		449.9420	449.9420	0.0484		451.1526
Vendor	0.0224	0.7488	0.2233	1.9300e-003	0.0511	1.6200e-003	0.0527	0.0147	1.5500e-003	0.0163		209.7512	209.7512	0.0177		210.1934
Worker	0.0327	0.0192	0.2242	8.0000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		79.6666	79.6666	1.7100e-003		79.7092
Total	0.0951	2.1626	0.8450	6.7600e-003	0.4657	6.6100e-003	0.4723	0.1209	6.3000e-003	0.1272		739.3598	739.3598	0.0678		741.0552

3.4 Conversion of Lift Station - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3670	3.4771	3.0279	4.0100e-003		0.2420	0.2420		0.2226	0.2226		388.9824	388.9824	0.1258		392.1275

Total	0.3670	3.4771	3.0279	4.0100e-003		0.2420	0.2420		0.2226	0.2226		388.9824	388.9824	0.1258		392.1275
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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	0.0400	1.2497	0.3617	2.9200e-003	0.0767	6.6300e-003	0.0833	0.0221	6.3500e-003	0.0284		317.3593	317.3593	0.0276		318.0503
Worker	0.0261	0.0160	0.1815	6.2000e-004	0.0671	4.4000e-004	0.0675	0.0178	4.1000e-004	0.0182		61.8973	61.8973	1.4100e-003		61.9326
Total	0.0661	1.2657	0.5432	3.5400e-003	0.1437	7.0700e-003	0.1508	0.0399	6.7600e-003	0.0466		379.2565	379.2565	0.0291		379.9829

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	0.3670	3.4771	3.0279	4.0100e-003		0.2420	0.2420		0.2226	0.2226	0.0000	388.9824	388.9824	0.1258		392.1275
Total	0.3670	3.4771	3.0279	4.0100e-003		0.2420	0.2420		0.2226	0.2226	0.0000	388.9824	388.9824	0.1258		392.1275

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	0.0400	1.2497	0.3617	2.9200e-003	0.0767	6.6300e-003	0.0833	0.0221	6.3500e-003	0.0284		317.3593	317.3593	0.0276		318.0503
Worker	0.0261	0.0160	0.1815	6.2000e-004	0.0671	4.4000e-004	0.0675	0.0178	4.1000e-004	0.0182		61.8973	61.8973	1.4100e-003		61.9326
Total	0.0661	1.2657	0.5432	3.5400e-003	0.1437	7.0700e-003	0.1508	0.0399	6.7600e-003	0.0466		379.2565	379.2565	0.0291		379.9829

3.4 Conversion of Lift Station - 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	0.3317	3.1779	2.9983	4.0200e-003		0.2113	0.2113		0.1944	0.1944		389.1363	389.1363	0.1259		392.2827
Total	0.3317	3.1779	2.9983	4.0200e-003		0.2113	0.2113		0.1944	0.1944		389.1363	389.1363	0.1259		392.2827

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	0.0336	1.1231	0.3350	2.8900e-003	0.0767	2.4300e-003	0.0791	0.0221	2.3200e-003	0.0244		314.6268	314.6268	0.0265		315.2900
Worker	0.0245	0.0144	0.1682	6.0000e-004	0.0671	4.3000e-004	0.0675	0.0178	4.0000e-004	0.0182		59.7499	59.7499	1.2800e-003		59.7819
Total	0.0581	1.1375	0.5031	3.4900e-003	0.1437	2.8600e-003	0.1466	0.0399	2.7200e-003	0.0426		374.3767	374.3767	0.0278		375.0720

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	0.3317	3.1779	2.9983	4.0200e-003		0.2113	0.2113		0.1944	0.1944	0.0000	389.1363	389.1363	0.1259		392.2827
Total	0.3317	3.1779	2.9983	4.0200e-003		0.2113	0.2113		0.1944	0.1944	0.0000	389.1363	389.1363	0.1259		392.2827

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	0.0336	1.1231	0.3350	2.8900e-003	0.0767	2.4300e-003	0.0791	0.0221	2.3200e-003	0.0244		314.6268	314.6268	0.0265		315.2900
Worker	0.0245	0.0144	0.1682	6.0000e-004	0.0671	4.3000e-004	0.0675	0.0178	4.0000e-004	0.0182		59.7499	59.7499	1.2800e-003		59.7819
Total	0.0581	1.1375	0.5031	3.4900e-003	0.1437	2.8600e-003	0.1466	0.0399	2.7200e-003	0.0426		374.3767	374.3767	0.0278		375.0720

3.5 Paving - 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	0.4689	4.8326	4.9992	7.4600e-003		0.2705	0.2705		0.2489	0.2489		722.4290	722.4290	0.2337		728.2702
Paving	0.7030					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.1720	4.8326	4.9992	7.4600e-003		0.2705	0.2705		0.2489	0.2489		722.4290	722.4290	0.2337		728.2702

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	0.0295	1.0289	0.2933	2.9700e-003	0.0696	3.2500e-003	0.0729	0.0191	3.1100e-003	0.0222		331.9401	331.9401	0.0357		332.8333
Vendor	0.0280	0.9359	0.2791	2.4100e-003	0.0639	2.0200e-003	0.0659	0.0184	1.9300e-003	0.0203		262.1890	262.1890	0.0221		262.7417
Worker	0.0327	0.0192	0.2242	8.0000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		79.6666	79.6666	1.7100e-003		79.7092
Total	0.0902	1.9840	0.7966	6.1800e-003	0.2230	5.8500e-003	0.2288	0.0612	5.5700e-003	0.0668		673.7957	673.7957	0.0596		675.2842

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	0.4689	4.8326	4.9992	7.4600e-003		0.2705	0.2705		0.2489	0.2489	0.0000	722.4290	722.4290	0.2337		728.2702

Paving	0.7030					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.1720	4.8326	4.9992	7.4600e-003		0.2705	0.2705		0.2489	0.2489	0.0000	722.4290	722.4290	0.2337		728.2702

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	0.0295	1.0289	0.2933	2.9700e-003	0.0696	3.2500e-003	0.0729	0.0191	3.1100e-003	0.0222		331.9401	331.9401	0.0357		332.8333
Vendor	0.0280	0.9359	0.2791	2.4100e-003	0.0639	2.0200e-003	0.0659	0.0184	1.9300e-003	0.0203		262.1890	262.1890	0.0221		262.7417
Worker	0.0327	0.0192	0.2242	8.0000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		79.6666	79.6666	1.7100e-003		79.7092
Total	0.0902	1.9840	0.7966	6.1800e-003	0.2230	5.8500e-003	0.2288	0.0612	5.5700e-003	0.0668		673.7957	673.7957	0.0596		675.2842

3.6 Demobilization - 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	0.2689	2.4994	3.3297	5.0200e-003		0.1411	0.1411		0.1298	0.1298		486.1671	486.1671	0.1572		490.0980
Total	0.2689	2.4994	3.3297	5.0200e-003		0.1411	0.1411		0.1298	0.1298		486.1671	486.1671	0.1572		490.0980

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	0.0295	1.0289	0.2933	2.9700e-003	0.0696	3.2500e-003	0.0729	0.0191	3.1100e-003	0.0222		331.9401	331.9401	0.0357		332.8333
Vendor	5.6000e-003	0.1872	0.0558	4.8000e-004	0.0128	4.0000e-004	0.0132	3.6800e-003	3.9000e-004	4.0600e-003		52.4378	52.4378	4.4200e-003		52.5483
Worker	0.0327	0.0192	0.2242	8.0000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		79.6666	79.6666	1.7100e-003		79.7092
Total	0.0678	1.2353	0.5733	4.2500e-003	0.1718	4.2300e-003	0.1761	0.0465	4.0300e-003	0.0505		464.0445	464.0445	0.0419		465.0909

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	0.2689	2.4994	3.3297	5.0200e-003		0.1411	0.1411		0.1298	0.1298	0.0000	486.1671	486.1671	0.1572		490.0980
Total	0.2689	2.4994	3.3297	5.0200e-003		0.1411	0.1411		0.1298	0.1298	0.0000	486.1671	486.1671	0.1572		490.0980

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	0.0295	1.0289	0.2933	2.9700e-003	0.0696	3.2500e-003	0.0729	0.0191	3.1100e-003	0.0222		331.9401	331.9401	0.0357		332.8333

Vendor	5.6000e-003	0.1872	0.0558	4.8000e-004	0.0128	4.0000e-004	0.0132	3.6800e-003	3.9000e-004	4.0600e-003		52.4378	52.4378	4.4200e-003		52.5483
Worker	0.0327	0.0192	0.2242	8.0000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		79.6666	79.6666	1.7100e-003		79.7092
Total	0.0678	1.2353	0.5733	4.2500e-003	0.1718	4.2300e-003	0.1761	0.0465	4.0300e-003	0.0505		464.0445	464.0445	0.0419		465.0909

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.561378	0.043284	0.209473	0.111826	0.015545	0.005795	0.025829	0.017125	0.001747	0.001542	0.004926	0.000594	0.000934

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas
Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0255	7.0000e-005	7.1600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163
Unmitigated	0.0255	7.0000e-005	7.1600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0248					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.7000e-004	7.0000e-005	7.1600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163
Total	0.0255	7.0000e-005	7.1600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0248					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.7000e-004	7.0000e-005	7.1600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163
Total	0.0255	7.0000e-005	7.1600e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005		0.0153	0.0153	4.0000e-005		0.0163

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

Fire Pumps and Emergency Generators

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

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

Equipment Type	Number
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11.0 Vegetation

SMWD Las Flores Recycled Water Pipeline Project - Orange County, Annual

SMWD Las Flores Recycled Water Pipeline Project

Orange County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	70.00	1000sqft	1.61	70,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	30
Climate Zone	8			Operational Year	2022
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MW hr)	448.3	CH4 Intensity (lb/MW hr)	0.018	N2O Intensity (lb/MW hr)	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted GHG intensity factors based on 2017 Power Content Label for SDG&E

Land Use - Per SMWD, approximately 40,200 SF would be graded/disturbed for pipe trenching, and 70,000 SF area would be paved

Construction Phase - Adjusted construction phases and duration based on input from SMWD

Off-road Equipment - Revised equipment list based on input from SMWD

Trips and VMT - Revised construction trips based on input from SMWD

Grading - Approximately 7,500 CY of soils to be exported

Area Coating - No operational architectural coatings

Energy Use -

Construction Off-road Equipment Mitigation - Water Exposed Area, Frequency: 2 times per day. Unpaved Road Mitigation, Vehicle Speed: 15 mph.

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	4200	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	2.00	18.00
tblConstructionPhase	NumDays	4.00	173.00
tblConstructionPhase	NumDays	200.00	130.00
tblConstructionPhase	NumDays	10.00	6.00
tblConstructionPhase	NumDays	200.00	5.00
tblGrading	AcresOfGrading	0.00	1.60
tblGrading	MaterialExported	0.00	7,500.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00

tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.018
tblProjectCharacteristics	CO2IntensityFactor	720.49	448.3
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004
tblTripsAndVMT	HaulingTripNumber	0.00	72.00
tblTripsAndVMT	HaulingTripNumber	0.00	24.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	11.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	11.00	2.00
tblTripsAndVMT	WorkerTripNumber	5.00	8.00
tblTripsAndVMT	WorkerTripNumber	10.00	8.00
tblTripsAndVMT	WorkerTripNumber	29.00	6.00
tblTripsAndVMT	WorkerTripNumber	29.00	8.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0632	0.7374	0.6175	1.3600e-003	0.0227	0.0340	0.0567	6.0000e-003	0.0313	0.0373	0.0000	126.0688	126.0688	0.0272	0.0000	126.7499
2021	0.0356	0.3840	0.3299	7.3000e-004	0.0178	0.0178	0.0356	4.5800e-003	0.0164	0.0210	0.0000	67.2275	67.2275	0.0141	0.0000	67.5791
Maximum	0.0632	0.7374	0.6175	1.3600e-003	0.0227	0.0340	0.0567	6.0000e-003	0.0313	0.0373	0.0000	126.0688	126.0688	0.0272	0.0000	126.7499

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0632	0.7374	0.6175	1.3600e-003	0.0220	0.0340	0.0560	5.9100e-003	0.0313	0.0372	0.0000	126.0687	126.0687	0.0272	0.0000	126.7499
2021	0.0356	0.3840	0.3299	7.3000e-004	0.0171	0.0178	0.0349	4.4900e-003	0.0164	0.0209	0.0000	67.2275	67.2275	0.0141	0.0000	67.5790
Maximum	0.0632	0.7374	0.6175	1.3600e-003	0.0220	0.0340	0.0560	5.9100e-003	0.0313	0.0372	0.0000	126.0687	126.0687	0.0272	0.0000	126.7499

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	3.46	0.00	1.52	1.70	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	6-7-2020	9-6-2020	0.2788	0.2788
2	9-7-2020	12-6-2020	0.3806	0.3806
3	12-7-2020	3-6-2021	0.4390	0.4390
4	3-7-2021	6-6-2021	0.1100	0.1100
		Highest	0.4390	0.4390

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.6100e-003	1.0000e-005	8.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7400e-003	1.7400e-003	0.0000	0.0000	1.8500e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	4.6100e-003	1.0000e-005	8.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.7400e-003	1.7400e-003	0.0000	0.0000	1.8500e-003

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.6100e-003	1.0000e-005	8.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7400e-003	1.7400e-003	0.0000	0.0000	1.8500e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	4.6100e-003	1.0000e-005	8.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.7400e-003	1.7400e-003	0.0000	0.0000	1.8500e-003

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/7/2020	7/1/2020	5	18	
2	Pipeline Trenching/Grading	Grading	7/1/2020	2/26/2021	5	173	
3	Conversion of Lift Station	Building Construction	11/1/2020	5/1/2021	5	130	
4	Paving	Paving	3/1/2021	3/8/2021	5	6	
5	Demobilization	Building Construction	4/24/2021	4/30/2021	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.61

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Excavators	1	6.00	158	0.38
Site Preparation	Graders	0	0.00	187	0.41
Site Preparation	Rough Terrain Forklifts	1	6.00	100	0.40
Site Preparation	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Pipeline Trenching/Grading	Excavators	1	6.00	158	0.38
Pipeline Trenching/Grading	Graders	0	0.00	187	0.41
Pipeline Trenching/Grading	Rough Terrain Forklifts	1	6.00	100	0.40
Pipeline Trenching/Grading	Rubber Tired Dozers	0	0.00	247	0.40
Pipeline Trenching/Grading	Sweepers/Scrubbers	1	2.00	64	0.46
Pipeline Trenching/Grading	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Pipeline Trenching/Grading	Trenchers	1	6.00	78	0.50
Conversion of Lift Station	Cranes	0	0.00	231	0.29
Conversion of Lift Station	Forklifts	0	0.00	89	0.20
Conversion of Lift Station	Generator Sets	0	0.00	84	0.74
Conversion of Lift Station	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Conversion of Lift Station	Trenchers	1	4.00	78	0.50

Conversion of Lift Station	Welders	0	0.00	46	0.45
Paving	Cement and Mortar Mixers	0	0.00	9	0.56
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	0	0.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Demobilization	Cranes	0	0.00	231	0.29
Demobilization	Excavators	1	6.00	158	0.38
Demobilization	Forklifts	1	6.00	89	0.20
Demobilization	Generator Sets	0	0.00	84	0.74
Demobilization	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Demobilization	Welders	0	0.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	8.00	4.00	72.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Pipeline Trenching/Grading	4	8.00	8.00	938.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Conversion of Lift Station	2	6.00	12.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	8.00	10.00	24.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demobilization	2	8.00	2.00	20.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

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

Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.5500e-003	0.0280	0.0376	6.0000e-005		1.2800e-003	1.2800e-003		1.1800e-003	1.1800e-003	0.0000	5.1058	5.1058	1.6500e-003	0.0000	5.1471
Total	2.5500e-003	0.0280	0.0376	6.0000e-005	0.0000	1.2800e-003	1.2800e-003	0.0000	1.1800e-003	1.1800e-003	0.0000	5.1058	5.1058	1.6500e-003	0.0000	5.1471

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7000e-004	0.0102	2.5600e-003	3.0000e-005	6.2000e-004	3.0000e-005	6.5000e-004	1.7000e-004	3.0000e-005	2.0000e-004	0.0000	2.7683	2.7683	2.9000e-004	0.0000	2.7756
Vendor	1.2000e-004	3.8200e-003	1.0400e-003	1.0000e-005	2.3000e-004	2.0000e-005	2.5000e-004	7.0000e-005	2.0000e-005	8.0000e-005	0.0000	0.8763	0.8763	7.0000e-005	0.0000	0.8782
Worker	2.8000e-004	2.0000e-004	2.2300e-003	1.0000e-005	7.9000e-004	1.0000e-005	8.0000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.6841	0.6841	2.0000e-005	0.0000	0.6845
Total	6.7000e-004	0.0142	5.8300e-003	5.0000e-005	1.6400e-003	6.0000e-005	1.7000e-003	4.5000e-004	5.0000e-005	4.9000e-004	0.0000	4.3288	4.3288	3.8000e-004	0.0000	4.3383

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.5500e-003	0.0280	0.0376	6.0000e-005		1.2800e-003	1.2800e-003		1.1800e-003	1.1800e-003	0.0000	5.1058	5.1058	1.6500e-003	0.0000	5.1470
Total	2.5500e-003	0.0280	0.0376	6.0000e-005	0.0000	1.2800e-003	1.2800e-003	0.0000	1.1800e-003	1.1800e-003	0.0000	5.1058	5.1058	1.6500e-003	0.0000	5.1470

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7000e-004	0.0102	2.5600e-003	3.0000e-005	6.2000e-004	3.0000e-005	6.5000e-004	1.7000e-004	3.0000e-005	2.0000e-004	0.0000	2.7683	2.7683	2.9000e-004	0.0000	2.7756
Vendor	1.2000e-004	3.8200e-003	1.0400e-003	1.0000e-005	2.3000e-004	2.0000e-005	2.5000e-004	7.0000e-005	2.0000e-005	8.0000e-005	0.0000	0.8763	0.8763	7.0000e-005	0.0000	0.8782
Worker	2.8000e-004	2.0000e-004	2.2300e-003	1.0000e-005	7.9000e-004	1.0000e-005	8.0000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.6841	0.6841	2.0000e-005	0.0000	0.6845
Total	6.7000e-004	0.0142	5.8300e-003	5.0000e-005	1.6400e-003	6.0000e-005	1.7000e-003	4.5000e-004	5.0000e-005	4.9000e-004	0.0000	4.3288	4.3288	3.8000e-004	0.0000	4.3383

3.3 Pipeline Trenching/Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.2700e-003	0.0000	1.2700e-003	1.6000e-004	0.0000	1.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0440	0.4314	0.4387	6.4000e-004		0.0265	0.0265		0.0244	0.0244	0.0000	55.8029	55.8029	0.0181	0.0000	56.2541
Total	0.0440	0.4314	0.4387	6.4000e-004	1.2700e-003	0.0265	0.0278	1.6000e-004	0.0244	0.0246	0.0000	55.8029	55.8029	0.0181	0.0000	56.2541

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
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Category	tons/yr										MT/yr					
Hauling	2.7300e-003	0.1016	0.0254	2.7000e-004	7.5700e-003	3.2000e-004	7.8900e-003	2.0400e-003	3.1000e-004	2.3400e-003	0.0000	27.5177	27.5177	2.9000e-003	0.0000	27.5902
Vendor	1.7200e-003	0.0560	0.0152	1.3000e-004	3.3200e-003	2.9000e-004	3.6100e-003	9.6000e-004	2.8000e-004	1.2400e-003	0.0000	12.8529	12.8529	1.0700e-003	0.0000	12.8797
Worker	2.0600e-003	1.4400e-003	0.0164	6.0000e-005	5.8000e-003	4.0000e-005	5.8400e-003	1.5400e-003	4.0000e-005	1.5800e-003	0.0000	5.0169	5.0169	1.1000e-004	0.0000	5.0197
Total	6.5100e-003	0.1590	0.0570	4.6000e-004	0.0167	6.5000e-004	0.0173	4.5400e-003	6.3000e-004	5.1600e-003	0.0000	45.3874	45.3874	4.0800e-003	0.0000	45.4897

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.7000e-004	0.0000	5.7000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0440	0.4314	0.4387	6.4000e-004		0.0265	0.0265		0.0244	0.0244	0.0000	55.8028	55.8028	0.0181	0.0000	56.2540
Total	0.0440	0.4314	0.4387	6.4000e-004	5.7000e-004	0.0265	0.0271	7.0000e-005	0.0244	0.0245	0.0000	55.8028	55.8028	0.0181	0.0000	56.2540

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7300e-003	0.1016	0.0254	2.7000e-004	7.5700e-003	3.2000e-004	7.8900e-003	2.0400e-003	3.1000e-004	2.3400e-003	0.0000	27.5177	27.5177	2.9000e-003	0.0000	27.5902
Vendor	1.7200e-003	0.0560	0.0152	1.3000e-004	3.3200e-003	2.9000e-004	3.6100e-003	9.6000e-004	2.8000e-004	1.2400e-003	0.0000	12.8529	12.8529	1.0700e-003	0.0000	12.8797
Worker	2.0600e-003	1.4400e-003	0.0164	6.0000e-005	5.8000e-003	4.0000e-005	5.8400e-003	1.5400e-003	4.0000e-005	1.5800e-003	0.0000	5.0169	5.0169	1.1000e-004	0.0000	5.0197

Total	6.5100e-003	0.1590	0.0570	4.6000e-004	0.0167	6.5000e-004	0.0173	4.5400e-003	6.3000e-004	5.1600e-003	0.0000	45.3874	45.3874	4.0800e-003	0.0000	45.4897
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3.3 Pipeline Trenching/Grading - 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	tons/yr										MT/yr					
Fugitive Dust					1.2700e-003	0.0000	1.2700e-003	1.6000e-004	0.0000	1.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0125	0.1224	0.1357	2.0000e-004		7.2600e-003	7.2600e-003		6.6800e-003	6.6800e-003	0.0000	17.3365	17.3365	5.6100e-003	0.0000	17.4767
Total	0.0125	0.1224	0.1357	2.0000e-004	1.2700e-003	7.2600e-003	8.5300e-003	1.6000e-004	6.6800e-003	6.8400e-003	0.0000	17.3365	17.3365	5.6100e-003	0.0000	17.4767

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.1000e-004	0.0291	7.9300e-003	8.0000e-005	6.5400e-003	9.0000e-005	6.6300e-003	1.6600e-003	9.0000e-005	1.7500e-003	0.0000	8.4424	8.4424	8.9000e-004	0.0000	8.4646
Vendor	4.5000e-004	0.0156	4.3800e-003	4.0000e-005	1.0300e-003	3.0000e-005	1.0600e-003	3.0000e-004	3.0000e-005	3.3000e-004	0.0000	3.9578	3.9578	3.2000e-004	0.0000	3.9658
Worker	6.0000e-004	4.0000e-004	4.7100e-003	2.0000e-005	1.8000e-003	1.0000e-005	1.8100e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.5042	1.5042	3.0000e-005	0.0000	1.5050
Total	1.8600e-003	0.0452	0.0170	1.4000e-004	9.3700e-003	1.3000e-004	9.5000e-003	2.4400e-003	1.3000e-004	2.5700e-003	0.0000	13.9044	13.9044	1.2400e-003	0.0000	13.9354

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.7000e-004	0.0000	5.7000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0125	0.1224	0.1357	2.0000e-004		7.2600e-003	7.2600e-003		6.6800e-003	6.6800e-003	0.0000	17.3365	17.3365	5.6100e-003	0.0000	17.4767
Total	0.0125	0.1224	0.1357	2.0000e-004	5.7000e-004	7.2600e-003	7.8300e-003	7.0000e-005	6.6800e-003	6.7500e-003	0.0000	17.3365	17.3365	5.6100e-003	0.0000	17.4767

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.1000e-004	0.0291	7.9300e-003	8.0000e-005	6.5400e-003	9.0000e-005	6.6300e-003	1.6600e-003	9.0000e-005	1.7500e-003	0.0000	8.4424	8.4424	8.9000e-004	0.0000	8.4646
Vendor	4.5000e-004	0.0156	4.3800e-003	4.0000e-005	1.0300e-003	3.0000e-005	1.0600e-003	3.0000e-004	3.0000e-005	3.3000e-004	0.0000	3.9578	3.9578	3.2000e-004	0.0000	3.9658
Worker	6.0000e-004	4.0000e-004	4.7100e-003	2.0000e-005	1.8000e-003	1.0000e-005	1.8100e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.5042	1.5042	3.0000e-005	0.0000	1.5050
Total	1.8600e-003	0.0452	0.0170	1.4000e-004	9.3700e-003	1.3000e-004	9.5000e-003	2.4400e-003	1.3000e-004	2.5700e-003	0.0000	13.9044	13.9044	1.2400e-003	0.0000	13.9354

3.4 Conversion of Lift Station - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.0700e-003	0.0765	0.0666	9.0000e-005		5.3200e-003	5.3200e-003		4.9000e-003	4.9000e-003	0.0000	7.7633	7.7633	2.5100e-003	0.0000	7.8261
Total	8.0700e-003	0.0765	0.0666	9.0000e-005		5.3200e-003	5.3200e-003		4.9000e-003	4.9000e-003	0.0000	7.7633	7.7633	2.5100e-003	0.0000	7.8261

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.6000e-004	0.0280	7.6100e-003	7.0000e-005	1.6600e-003	1.4000e-004	1.8100e-003	4.8000e-004	1.4000e-004	6.2000e-004	0.0000	6.4264	6.4264	5.4000e-004	0.0000	6.4399
Worker	5.1000e-004	3.6000e-004	4.0900e-003	1.0000e-005	1.4500e-003	1.0000e-005	1.4600e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.2542	1.2542	3.0000e-005	0.0000	1.2549
Total	1.3700e-003	0.0284	0.0117	8.0000e-005	3.1100e-003	1.5000e-004	3.2700e-003	8.6000e-004	1.5000e-004	1.0100e-003	0.0000	7.6806	7.6806	5.7000e-004	0.0000	7.6948

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.0700e-003	0.0765	0.0666	9.0000e-005		5.3200e-003	5.3200e-003		4.9000e-003	4.9000e-003	0.0000	7.7633	7.7633	2.5100e-003	0.0000	7.8261
Total	8.0700e-003	0.0765	0.0666	9.0000e-005		5.3200e-003	5.3200e-003		4.9000e-003	4.9000e-003	0.0000	7.7633	7.7633	2.5100e-003	0.0000	7.8261

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.6000e-004	0.0280	7.6100e-003	7.0000e-005	1.6600e-003	1.4000e-004	1.8100e-003	4.8000e-004	1.4000e-004	6.2000e-004	0.0000	6.4264	6.4264	5.4000e-004	0.0000	6.4399
Worker	5.1000e-004	3.6000e-004	4.0900e-003	1.0000e-005	1.4500e-003	1.0000e-005	1.4600e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.2542	1.2542	3.0000e-005	0.0000	1.2549
Total	1.3700e-003	0.0284	0.0117	8.0000e-005	3.1100e-003	1.5000e-004	3.2700e-003	8.6000e-004	1.5000e-004	1.0100e-003	0.0000	7.6806	7.6806	5.7000e-004	0.0000	7.6948

3.4 Conversion of Lift Station - 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	tons/yr										MT/yr					
Off-Road	0.0143	0.1367	0.1289	1.7000e-004		9.0900e-003	9.0900e-003		8.3600e-003	8.3600e-003	0.0000	15.1798	15.1798	4.9100e-003	0.0000	15.3025
Total	0.0143	0.1367	0.1289	1.7000e-004		9.0900e-003	9.0900e-003		8.3600e-003	8.3600e-003	0.0000	15.1798	15.1798	4.9100e-003	0.0000	15.3025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.4100e-003	0.0492	0.0138	1.3000e-004	3.2500e-003	1.0000e-004	3.3500e-003	9.4000e-004	1.0000e-004	1.0300e-003	0.0000	12.4526	12.4526	1.0100e-003	0.0000	12.4778

Worker	9.5000e-004	6.4000e-004	7.4100e-003	3.0000e-005	2.8300e-003	2.0000e-005	2.8500e-003	7.5000e-004	2.0000e-005	7.7000e-004	0.0000	2.3664	2.3664	5.0000e-005	0.0000	2.3676
Total	2.3600e-003	0.0498	0.0212	1.6000e-004	6.0800e-003	1.2000e-004	6.2000e-003	1.6900e-003	1.2000e-004	1.8000e-003	0.0000	14.8189	14.8189	1.0600e-003	0.0000	14.8454

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0143	0.1367	0.1289	1.7000e-004		9.0900e-003	9.0900e-003		8.3600e-003	8.3600e-003	0.0000	15.1798	15.1798	4.9100e-003	0.0000	15.3025
Total	0.0143	0.1367	0.1289	1.7000e-004		9.0900e-003	9.0900e-003		8.3600e-003	8.3600e-003	0.0000	15.1798	15.1798	4.9100e-003	0.0000	15.3025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.4100e-003	0.0492	0.0138	1.3000e-004	3.2500e-003	1.0000e-004	3.3500e-003	9.4000e-004	1.0000e-004	1.0300e-003	0.0000	12.4526	12.4526	1.0100e-003	0.0000	12.4778
Worker	9.5000e-004	6.4000e-004	7.4100e-003	3.0000e-005	2.8300e-003	2.0000e-005	2.8500e-003	7.5000e-004	2.0000e-005	7.7000e-004	0.0000	2.3664	2.3664	5.0000e-005	0.0000	2.3676
Total	2.3600e-003	0.0498	0.0212	1.6000e-004	6.0800e-003	1.2000e-004	6.2000e-003	1.6900e-003	1.2000e-004	1.8000e-003	0.0000	14.8189	14.8189	1.0600e-003	0.0000	14.8454

3.5 Paving - 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	tons/yr										MT/yr					
Off-Road	1.4100e-003	0.0145	0.0150	2.0000e-005		8.1000e-004	8.1000e-004		7.5000e-004	7.5000e-004	0.0000	1.9661	1.9661	6.4000e-004	0.0000	1.9820
Paving	2.1100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	3.5200e-003	0.0145	0.0150	2.0000e-005		8.1000e-004	8.1000e-004		7.5000e-004	7.5000e-004	0.0000	1.9661	1.9661	6.4000e-004	0.0000	1.9820

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.0000e-005	3.1500e-003	8.6000e-004	1.0000e-005	2.1000e-004	1.0000e-005	2.2000e-004	6.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.9115	0.9115	1.0000e-004	0.0000	0.9139
Vendor	8.0000e-005	2.8600e-003	8.0000e-004	1.0000e-005	1.9000e-004	1.0000e-005	1.9000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.7240	0.7240	6.0000e-005	0.0000	0.7255
Worker	9.0000e-005	6.0000e-005	6.9000e-004	0.0000	2.6000e-004	0.0000	2.7000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2201	0.2201	0.0000	0.0000	0.2202
Total	2.6000e-004	6.0700e-003	2.3500e-003	2.0000e-005	6.6000e-004	2.0000e-005	6.8000e-004	1.8000e-004	2.0000e-005	2.0000e-004	0.0000	1.8556	1.8556	1.6000e-004	0.0000	1.8596

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.4100e-003	0.0145	0.0150	2.0000e-005		8.1000e-004	8.1000e-004		7.5000e-004	7.5000e-004	0.0000	1.9661	1.9661	6.4000e-004	0.0000	1.9820

Paving	2.1100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	3.5200e-003	0.0145	0.0150	2.0000e-005		8.1000e-004	8.1000e-004		7.5000e-004	7.5000e-004	0.0000	1.9661	1.9661	6.4000e-004	0.0000	1.9820

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.0000e-005	3.1500e-003	8.6000e-004	1.0000e-005	2.1000e-004	1.0000e-005	2.2000e-004	6.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.9115	0.9115	1.0000e-004	0.0000	0.9139
Vendor	8.0000e-005	2.8600e-003	8.0000e-004	1.0000e-005	1.9000e-004	1.0000e-005	1.9000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.7240	0.7240	6.0000e-005	0.0000	0.7255
Worker	9.0000e-005	6.0000e-005	6.9000e-004	0.0000	2.6000e-004	0.0000	2.7000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2201	0.2201	0.0000	0.0000	0.2202
Total	2.6000e-004	6.0700e-003	2.3500e-003	2.0000e-005	6.6000e-004	2.0000e-005	6.8000e-004	1.8000e-004	2.0000e-005	2.0000e-004	0.0000	1.8556	1.8556	1.6000e-004	0.0000	1.8596

3.6 Demobilization - 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	tons/yr										MT/yr					
Off-Road	6.7000e-004	6.2500e-003	8.3200e-003	1.0000e-005		3.5000e-004	3.5000e-004		3.2000e-004	3.2000e-004	0.0000	1.1026	1.1026	3.6000e-004	0.0000	1.1115
Total	6.7000e-004	6.2500e-003	8.3200e-003	1.0000e-005		3.5000e-004	3.5000e-004		3.2000e-004	3.2000e-004	0.0000	1.1026	1.1026	3.6000e-004	0.0000	1.1115

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.0000e-005	2.6200e-003	7.1000e-004	1.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	5.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.7596	0.7596	8.0000e-005	0.0000	0.7616
Vendor	1.0000e-005	4.8000e-004	1.3000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1207	0.1207	1.0000e-005	0.0000	0.1209
Worker	7.0000e-005	5.0000e-005	5.7000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1834	0.1834	0.0000	0.0000	0.1835
Total	1.5000e-004	3.1500e-003	1.4100e-003	1.0000e-005	4.2000e-004	1.0000e-005	4.3000e-004	1.2000e-004	1.0000e-005	1.2000e-004	0.0000	1.0637	1.0637	9.0000e-005	0.0000	1.0660

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.7000e-004	6.2500e-003	8.3200e-003	1.0000e-005		3.5000e-004	3.5000e-004		3.2000e-004	3.2000e-004	0.0000	1.1026	1.1026	3.6000e-004	0.0000	1.1115
Total	6.7000e-004	6.2500e-003	8.3200e-003	1.0000e-005		3.5000e-004	3.5000e-004		3.2000e-004	3.2000e-004	0.0000	1.1026	1.1026	3.6000e-004	0.0000	1.1115

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.0000e-005	2.6200e-003	7.1000e-004	1.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	5.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.7596	0.7596	8.0000e-005	0.0000	0.7616

Vendor	1.0000e-005	4.8000e-004	1.3000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1207	0.1207	1.0000e-005	0.0000	0.1209
Worker	7.0000e-005	5.0000e-005	5.7000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1834	0.1834	0.0000	0.0000	0.1835
Total	1.5000e-004	3.1500e-003	1.4100e-003	1.0000e-005	4.2000e-004	1.0000e-005	4.3000e-004	1.2000e-004	1.0000e-005	1.2000e-004	0.0000	1.0637	1.0637	9.0000e-005	0.0000	1.0660

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.561378	0.043284	0.209473	0.111826	0.015545	0.005795	0.025829	0.017125	0.001747	0.001542	0.004926	0.000594	0.000934

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas
Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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

	Natural Gas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			

Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.6100e-003	1.0000e-005	8.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7400e-003	1.7400e-003	0.0000	0.0000	1.8500e-003
Unmitigated	4.6100e-003	1.0000e-005	8.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7400e-003	1.7400e-003	0.0000	0.0000	1.8500e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.5200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	8.0000e-005	1.0000e-005	8.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7400e-003	1.7400e-003	0.0000	0.0000	1.8500e-003

Total	4.6000e-003	1.0000e-005	8.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7400e-003	1.7400e-003	0.0000	0.0000	1.8500e-003
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Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.5200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	8.0000e-005	1.0000e-005	8.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7400e-003	1.7400e-003	0.0000	0.0000	1.8500e-003
Total	4.6000e-003	1.0000e-005	8.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7400e-003	1.7400e-003	0.0000	0.0000	1.8500e-003

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
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	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

9.0 Operational Offroad

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

Fire Pumps and Emergency Generators

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

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

Equipment Type	Number
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11.0 Vegetation

SMWD Las Flores Recycled Water Pipeline Project
Orange County, Mitigation Report

Construction Mitigation Summary

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Conversion of Lift Station	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demobilization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pipeline Trenching/Grading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Cement and Mortar Mixers	Diesel	No Change	0	0	No Change	0.00
Cranes	Diesel	No Change	0	0	No Change	0.00
Excavators	Diesel	No Change	0	3	No Change	0.00
Forklifts	Diesel	No Change	0	1	No Change	0.00
Generator Sets	Diesel	No Change	0	0	No Change	0.00
Graders	Diesel	No Change	0	0	No Change	0.00
Pavers	Diesel	No Change	0	1	No Change	0.00
Paving Equipment	Diesel	No Change	0	0	No Change	0.00
Rollers	Diesel	No Change	0	2	No Change	0.00

Rough Terrain Forklifts	Diesel	No Change	0	2	No Change	0.00
Rubber Tired Dozers	Diesel	No Change	0	0	No Change	0.00
Sweepers/Scrubbers	Diesel	No Change	0	1	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	No Change	0	1	No Change	0.00
Trenchers	Diesel	No Change	0	2	No Change	0.00
Welders	Diesel	No Change	0	0	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Unmitigated tons/yr							Unmitigated mt/yr					
Cement and Mortar Mixers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Cranes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Excavators	1.77300E-002	1.72860E-001	2.40250E-001	3.80000E-004	8.38000E-003	7.71000E-003	0.00000E+000	3.33481E+001	3.33481E+001	1.07900E-002	0.00000E+000	3.36177E+001
Forklifts	2.40000E-004	2.21000E-003	2.19000E-003	0.00000E+000	1.60000E-004	1.40000E-004	0.00000E+000	2.51800E-001	2.51800E-001	8.00000E-005	0.00000E+000	2.53830E-001
Generator Sets	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Pavers	5.50000E-004	5.84000E-003	6.54000E-003	1.00000E-005	2.80000E-004	2.60000E-004	0.00000E+000	9.28850E-001	9.28850E-001	3.00000E-004	0.00000E+000	9.36360E-001
Paving Equipment	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Rollers	8.50000E-004	8.66000E-003	8.46000E-003	1.00000E-005	5.30000E-004	4.90000E-004	0.00000E+000	1.03728E+000	1.03728E+000	3.40000E-004	0.00000E+000	1.04566E+000
Rough Terrain Forklifts	9.40000E-003	1.22100E-001	1.64470E-001	2.50000E-004	5.03000E-003	4.63000E-003	0.00000E+000	2.16828E+001	2.16828E+001	7.01000E-003	0.00000E+000	2.18582E+001
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Sweepers/Scrubbers	5.63000E-003	4.89400E-002	4.27900E-002	5.00000E-005	3.86000E-003	3.55000E-003	0.00000E+000	4.82946E+000	4.82946E+000	1.56000E-003	0.00000E+000	4.86851E+000
Tractors/Loaders/Backhoes	9.50000E-003	9.58700E-002	1.10510E-001	1.50000E-004	5.80000E-003	5.34000E-003	0.00000E+000	1.33054E+001	1.33054E+001	4.30000E-003	0.00000E+000	1.34130E+001
Trenchers	3.95000E-002	3.59200E-001	2.55600E-001	3.30000E-004	2.66000E-002	2.44700E-002	0.00000E+000	2.88733E+001	2.88733E+001	9.34000E-003	0.00000E+000	2.91068E+001
Welders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Mitigated tons/yr							Mitigated mt/yr					
Cement and Mortar Mixers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Cranes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Excavators	1.77300E-002	1.72860E-001	2.40250E-001	3.80000E-004	8.38000E-003	7.71000E-003	0.00000E+000	3.33481E+001	3.33481E+001	1.07900E-002	0.00000E+000	3.36177E+001
Forklifts	2.40000E-004	2.21000E-003	2.19000E-003	0.00000E+000	1.60000E-004	1.40000E-004	0.00000E+000	2.51800E-001	2.51800E-001	8.00000E-005	0.00000E+000	2.53830E-001
Generator Sets	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Pavers	5.50000E-004	5.84000E-003	6.54000E-003	1.00000E-005	2.80000E-004	2.60000E-004	0.00000E+000	9.28850E-001	9.28850E-001	3.00000E-004	0.00000E+000	9.36360E-001
Paving Equipment	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Rollers	8.50000E-004	8.66000E-003	8.46000E-003	1.00000E-005	5.30000E-004	4.90000E-004	0.00000E+000	1.03727E+000	1.03727E+000	3.40000E-004	0.00000E+000	1.04566E+000
Rough Terrain Forklifts	9.40000E-003	1.22100E-001	1.64470E-001	2.50000E-004	5.03000E-003	4.63000E-003	0.00000E+000	2.16828E+001	2.16828E+001	7.01000E-003	0.00000E+000	2.18581E+001
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Sweepers/Scrubbers	5.63000E-003	4.89400E-002	4.27900E-002	5.00000E-005	3.86000E-003	3.55000E-003	0.00000E+000	4.82945E+000	4.82945E+000	1.56000E-003	0.00000E+000	4.86850E+000
Tractors/Loaders/Bac	9.50000E-003	9.58700E-002	1.10510E-001	1.50000E-004	5.80000E-003	5.34000E-003	0.00000E+000	1.33054E+001	1.33054E+001	4.30000E-003	0.00000E+000	1.34130E+001
khops												
Trenchers	3.95000E-002	3.59200E-001	2.55600E-001	3.30000E-004	2.66000E-002	2.44700E-002	0.00000E+000	2.88733E+001	2.88733E+001	9.34000E-003	0.00000E+000	2.91068E+001
Welders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Cement and Mortar Mixers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Cranes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Excavators	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.19947E-006	1.19947E-006	0.00000E+000	0.00000E+000	1.18985E-006
Forklifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Generator Sets	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Pavers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Paving Equipment	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Rollers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	9.64060E-006	9.64060E-006	0.00000E+000	0.00000E+000	0.00000E+000
Rough Terrain Forklifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	9.22389E-007	9.22389E-007	0.00000E+000	0.00000E+000	1.37249E-006
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Sweepers/Scrubbers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	2.07062E-006	2.07062E-006	0.00000E+000	0.00000E+000	2.05402E-006
Tractors/Loaders/Bac khos	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	7.51574E-007	7.51574E-007	0.00000E+000	0.00000E+000	7.45546E-007
Trenchers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.03902E-006	1.03902E-006	0.00000E+000	0.00000E+000	1.37425E-006
Welders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Fugitive Dust Mitigation

Yes/No Mitigation Measure Mitigation Input Mitigation Input Mitigation Input

No	Soil Stabilizer for unpaved Roads	PM10 Reduction	0.00	PM2.5 Reduction	0.00		
No	Replace Ground Cover of Area Disturbed	PM10 Reduction	0.00	PM2.5 Reduction	0.00		
Yes	Water Exposed Area	PM10 Reduction	55.00	PM2.5 Reduction	55.00	Frequency (per day)	2.00
No	Unpaved Road Mitigation	Moisture Content %	0.00	Vehicle Speed (mph)	15.00		
No	Clean Paved Road	% PM Reduction	0.00				

Phase	Source	Unmitigated		Mitigated		Percent Reduction	
		PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Conversion of Lift Station	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Conversion of Lift Station	Roads	0.01	0.00	0.01	0.00	0.00	0.00
Demobilization	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Demobilization	Roads	0.00	0.00	0.00	0.00	0.00	0.00
Paving	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Paving	Roads	0.00	0.00	0.00	0.00	0.00	0.00
Pipeline Trenching/Grading	Fugitive Dust	0.00	0.00	0.00	0.00	0.55	0.55
Pipeline Trenching/Grading	Roads	0.03	0.01	0.03	0.01	0.00	0.00
Site Preparation	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	Roads	0.00	0.00	0.00	0.00	0.00	0.00

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting:

Mitigation	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value 3
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	0.00	0.15		
No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			
No	Neighborhood Enhancements	Improve Pedestrian Network				
No	Neighborhood Enhancements	Provide Traffic Calming Measures				

No	Neighborhood Enhancements	Implement NEV Network	0.00		
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.00		
No	Parking Policy Pricing	Limit Parking Supply	0.00		
No	Parking Policy Pricing	Unbundle Parking Costs	0.00		
No	Parking Policy Pricing	On-street Market Pricing	0.00		
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00		
No	Transit Improvements	Provide BRT System	0.00		
No	Transit Improvements	Expand Transit Network	0.00		
No	Transit Improvements	Increase Transit Frequency	0.00		
	Transit Improvements	Transit Improvements Subtotal	0.00		
		Land Use and Site Enhancement Subtotal	0.00		
No	Commute	Implement Trip Reduction Program			
No	Commute	Transit Subsidy			
No	Commute	Implement Employee Parking "Cash Out"			
No	Commute	Workplace Parking Charge			
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00		
No	Commute	Market Commute Trip Reduction Option	0.00		
No	Commute	Employee Vanpool/Shuttle	0.00		2.00
No	Commute	Provide Ride Sharing Program			
	Commute	Commute Subtotal	0.00		
No	School Trip	Implement School Bus Program	0.00		
		Total VMT Reduction	0.00		

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
No	No Hearth	

No	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	50.00
No	Use Low VOC Paint (Residential Exterior)	50.00
No	Use Low VOC Paint (Non-residential Interior)	100.00
No	Use Low VOC Paint (Non-residential Exterior)	100.00
No	Use Low VOC Paint (Parking)	100.00
No	% Electric Lawnmower	
No	% Electric Leafblower	
No	% Electric Chainsaw	

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Exceed Title 24		
No	Install High Efficiency Lighting		
No	On-site Renewable		

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Apply Water Conservation on Strategy		
No	Use Reclaimed Water		
No	Use Grey Water		
No	Install low-flow bathroom faucet	32.00	

No	Install low-flow Kitchen faucet	18.00
No	Install low-flow Toilet	20.00
No	Install low-flow Shower	20.00
No	Turf Reduction	
No	Use Water Efficient Irrigation Systems	6.10
No	Water Efficient Landscape	

Solid Waste Mitigation

Mitigation Measures	Input Value
Institute Recycling and Composting Services Percent Reduction in Waste Disposed	

SMWD Las Flores Recycled Water Pipeline Project
Project Construction Energy Demand

Construction Worker Gasoline Demand

Phase	Trips	Vehicle CO ₂ (MT)	Kg CO2/Gallon	Gallons
Site Preparation	144	0.68	8.78	77.92
Pipeline Trenching/Grading	1,384	6.52	8.78	742.72
Conversion of Lift Station	780	3.62	8.78	412.37
Paving	48	0.22	8.78	25.07
Demobilization	40	0.18	8.78	20.89
Total				1,278.96

Construction Vendor Diesel Demand

Phase	Trips	Vehicle CO ₂ (MT)	Kg CO2/Gallon	Gallons
Site Preparation	72	0.88	10.21	85.83
Pipeline Trenching/Grading	1,384	16.81	10.21	1,646.49
Conversion of Lift Station	1,560	18.88	10.21	1,849.07
Paving	60	0.72	10.21	70.91
Demobilization	10	0.12	10.21	11.82
Total				3,664.12

Construction Haul Diesel Demand

Phase	Trips	Vehicle CO ₂ (MT)	Kg CO2/Gallon	Gallons
Site Preparation	72	2.77	10.21	271.14
Pipeline Trenching/Grading	938	35.96	10.21	3,522.05
Conversion of Lift Station	0	0.00	10.21	0.00
Paving	24	0.91	10.21	89.28
Demobilization	20	0.76	10.21	74.40
Total				3,956.86

Construction Equipment Diesel Demand

Phase	Pieces of Equipment	Equipment CO ₂ (MT)	Kg CO2/Gallon	Gallons
Site Preparation	2	5.11	10.21	500.08
Pipeline Trenching/Grading	4	73.14	10.21	7,163.51
Conversion of Lift Station	2	22.94	10.21	2,247.12
Paving	3	1.97	10.21	192.57
Demobilization	2	1.10	10.21	107.99
Total				10,211.26

Construction Equipment Usage

Phase	Hours of Use
Site Preparation	216
Pipeline Trenching/Grading	3,460
Conversion of Lift Station	1,300
Paving	108
Demobilization	60
Total	5,144

Project Construction Assumptions

PhaseName	OffRoadEquipmentType	OffRoadEquipmentUsageHours	Days	Total Hours	Pieces of Equipment	Equip Hours
Site Preparation	Excavators	1	6	18	2	216
Site Preparation	Rough Terrain Forklifts	1	6	18		
Pipeline Trenching/Grading	Excavators	1	6	173	4	3,460
Pipeline Trenching/Grading	Rough Terrain Forklifts	1	6	173		
Pipeline Trenching/Grading	Sweepers/Scrubbers	1	2	173		
Pipeline Trenching/Grading	Trenchers	1	6	173		
Conversion of Lift Station	Tractors/Loaders/Backhoes	1	6	130	2	1,300
Conversion of Lift Station	Trenchers	1	4	130		
Paving	Pavers	1	6	6	3	108
Paving	Rollers	2	6	6		
Demobilization	Excavators	1	6	5	2	60
Demobilization	Forklifts	1	6	5		
Total						5,144

PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDays	NumDays
Site Preparation	Site Preparation	2020/06/07	2020/07/01	5	18
Pipeline Trenching/Grading	Grading	2020/07/01	2021/02/26	5	173
Conversion of Lift Station	Building Construction	2020/11/01	2021/05/01	5	130
Paving	Paving	2021/03/01	2021/03/08	5	6
Demobilization	Building Construction	2021/04/24	2021/04/30	5	5

PhaseName	WorkerTripNumber	VendorTripNumber	HaulingTripNumber	Days	Worker Trips	Vendor Trips	Hauling Trips
Site Preparation	8	4	72	18	144	72	72
Pipeline Trenching/Grading	8	8	938	173	1,384	1,384	938
Conversion of Lift Station	6	12	0	130	780	1,560	0
Paving	8	10	24	6	48	60	24
Demobilization	8	2	20	5	40	10	20

Appendix B

Biological Resources Attachments



Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad< IS (San Juan Capistrano (3311756) OR Canada Gobernadora (3311755) OR Laguna Beach (3311757) OR Dana Point (3311746) OR San Clemente (3311745) OR Santiago Peak (3311765) OR El Toro (3311766) OR Tustin (3311767))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Accipiter cooperii</i> Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
<i>Agelaius tricolor</i> tricolored blackbird	ABPBXB0020	None	Threatened	G2G3	S1S2	SSC
<i>Aimophila ruficeps canescens</i> southern California rufous-crowned sparrow	ABPBX91091	None	None	G5T3	S3	WL
<i>Ammodramus savannarum</i> grasshopper sparrow	ABPBXA0020	None	None	G5	S3	SSC
<i>Anaxyrus californicus</i> arroyo toad	AAABB01230	Endangered	None	G2G3	S2S3	SSC
<i>Anniella stebbinsi</i> southern California legless lizard	ARACC01060	None	None	G3	S3	SSC
<i>Antrozous pallidus</i> pallid bat	AMACC10010	None	None	G5	S3	SSC
<i>Aphanisma blitoides</i> aphanisma	PDCHE02010	None	None	G3G4	S2	1B.2
<i>Aquila chrysaetos</i> golden eagle	ABNKC22010	None	None	G5	S3	FP
<i>Arizona elegans occidentalis</i> California glossy snake	ARADB01017	None	None	G5T2	S2	SSC
<i>Asio otus</i> long-eared owl	ABNSB13010	None	None	G5	S3?	SSC
<i>Aspidoscelis hyperythra</i> orange-throated whiptail	ARACJ02060	None	None	G5	S2S3	WL
<i>Aspidoscelis tigris stejnegeri</i> coastal whiptail	ARACJ02143	None	None	G5T5	S3	SSC
<i>Athene cunicularia</i> burrowing owl	ABNSB10010	None	None	G4	S3	SSC
<i>Atriplex coulteri</i> Coulter's saltbush	PDCHE040E0	None	None	G3	S1S2	1B.2
<i>Atriplex pacifica</i> south coast saltscale	PDCHE041C0	None	None	G4	S2	1B.2
<i>Atriplex parishii</i> Parish's brittlescale	PDCHE041D0	None	None	G1G2	S1	1B.1
<i>Atriplex serenana var. davidsonii</i> Davidson's saltscale	PDCHE041T1	None	None	G5T1	S1	1B.2
<i>Bombus crotchii</i> Crotch bumble bee	IIHYM24480	None	Candidate Endangered	G3G4	S1S2	



Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Branchinecta sandiegonensis</i> San Diego fairy shrimp	ICBRA03060	Endangered	None	G2	S2	
<i>Brodiaea filifolia</i> thread-leaved brodiaea	PMLIL0C050	Threatened	Endangered	G2	S2	1B.1
<i>Buteo regalis</i> ferruginous hawk	ABNKC19120	None	None	G4	S3S4	WL
<i>Calochortus weedii</i> var. <i>intermedius</i> intermediate mariposa-lily	PMLIL0D1J1	None	None	G3G4T2	S2	1B.2
<i>Campylorhynchus brunneicapillus sandiegonensis</i> coastal cactus wren	ABPBG02095	None	None	G5T3Q	S3	SSC
<i>Canyon Live Oak Ravine Forest</i> Canyon Live Oak Ravine Forest	CTT61350CA	None	None	G3	S3.3	
<i>Centromadia parryi</i> ssp. <i>australis</i> southern tarplant	PDAST4R0P4	None	None	G3T2	S2	1B.1
<i>Chaenactis glabriuscula</i> var. <i>orcuttiana</i> Orcutt's pincushion	PDAST20095	None	None	G5T1T2	S1	1B.1
<i>Chaetodipus californicus femoralis</i> Dulzura pocket mouse	AMAFD05021	None	None	G5T3	S3	SSC
<i>Chaetodipus fallax fallax</i> northwestern San Diego pocket mouse	AMAFD05031	None	None	G5T3T4	S3S4	SSC
<i>Choeronycteris mexicana</i> Mexican long-tongued bat	AMACB02010	None	None	G4	S1	SSC
<i>Chorizanthe polygonoides</i> var. <i>longispina</i> long-spined spineflower	PDPGN040K1	None	None	G5T3	S3	1B.2
<i>Circus hudsonius</i> northern harrier	ABNKC11011	None	None	G5	S3	SSC
<i>Clinopodium chandleri</i> San Miguel savory	PDLAM08030	None	None	G3	S2	1B.2
<i>Coccyzus americanus occidentalis</i> western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
<i>Coelus globosus</i> globose dune beetle	IICOL4A010	None	None	G1G2	S1S2	
<i>Comarostaphylis diversifolia</i> ssp. <i>diversifolia</i> summer holly	PDERI0B011	None	None	G3T2	S2	1B.2
<i>Coturnicops noveboracensis</i> yellow rail	ABNME01010	None	None	G4	S1S2	SSC
<i>Crotalus ruber</i> red-diamond rattlesnake	ARADE02090	None	None	G4	S3	SSC
<i>Danaus plexippus</i> pop. 1 monarch - California overwintering population	IILEPP2012	None	None	G4T2T3	S2S3	
<i>Dipodomys stephensi</i> Stephens' kangaroo rat	AMAFD03100	Endangered	Threatened	G2	S2	



Selected Elements by Scientific Name
California Department of Fish and Wildlife
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Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Dudleya blochmaniae ssp. blochmaniae</i> Blochman's dudleya	PDCRA04051	None	None	G3T2	S2	1B.1
<i>Dudleya multicaulis</i> many-stemmed dudleya	PDCRA040H0	None	None	G2	S2	1B.2
<i>Dudleya stolonifera</i> Laguna Beach dudleya	PDCRA040P0	Threatened	Threatened	G1	S1	1B.1
<i>Dudleya viscida</i> sticky dudleya	PDCRA040T0	None	None	G2	S2	1B.2
<i>Elanus leucurus</i> white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
<i>Epidonax traillii extimus</i> southwestern willow flycatcher	ABPAE33043	Endangered	Endangered	G5T2	S1	
<i>Emys marmorata</i> western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
<i>Eremophila alpestris actia</i> California horned lark	ABPAT02011	None	None	G5T4Q	S4	WL
<i>Eryngium pendletonense</i> Pendleton button-celery	PDAP10Z120	None	None	G1	S1	1B.1
<i>Eucyclogobius newberryi</i> tidewater goby	AFCQN04010	Endangered	None	G3	S3	SSC
<i>Eumops perotis californicus</i> western mastiff bat	AMACD02011	None	None	G5T4	S3S4	SSC
<i>Euphorbia misera</i> cliff spurge	PDEUP0Q1B0	None	None	G5	S2	2B.2
<i>Gila orcuttii</i> arroyo chub	AFCJB13120	None	None	G2	S2	SSC
<i>Harpagonella palmeri</i> Palmer's grapplinghook	PDBOR0H010	None	None	G4	S3	4.2
<i>Helianthus nuttallii ssp. parishii</i> Los Angeles sunflower	PDAST4N102	None	None	G5TH	SH	1A
<i>Hesperocyparis forbesii</i> Tecate cypress	PGCUP040C0	None	None	G2	S2	1B.1
<i>Horkelia cuneata var. puberula</i> mesa horkelia	PDROS0W045	None	None	G4T1	S1	1B.1
<i>Icteria virens</i> yellow-breasted chat	ABPBX24010	None	None	G5	S3	SSC
<i>Imperata brevifolia</i> California satintail	PMPOA3D020	None	None	G4	S3	2B.1
<i>Isocoma menziesii var. decumbens</i> decumbent goldenbush	PDAST57091	None	None	G3G5T2T3	S2	1B.2
<i>Lasiurus blossevillii</i> western red bat	AMACC05060	None	None	G5	S3	SSC



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California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Lasthenia glabrata ssp. coulteri</i> Coulter's goldfields	PDAST5L0A1	None	None	G4T2	S2	1B.1
<i>Laterallus jamaicensis coturniculus</i> California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
<i>Lepechinia cardiophylla</i> heart-leaved pitcher sage	PDLAM0V020	None	None	G3	S2S3	1B.2
<i>Lepidium virginicum var. robinsonii</i> Robinson's pepper-grass	PDBRA1M114	None	None	G5T3	S3	4.3
<i>Lycium brevipes var. hassei</i> Santa Catalina Island desert-thorn	PDSOL0G0N0	None	None	G5T1Q	S1	3.1
<i>Monardella hypoleuca ssp. intermedia</i> intermediate monardella	PDLAM180A4	None	None	G4T2?	S2?	1B.3
<i>Monardella macrantha ssp. hallii</i> Hall's monardella	PDLAM180E1	None	None	G5T3	S3	1B.3
<i>Myosurus minimus ssp. apus</i> little mousetail	PDRAN0H031	None	None	G5T2Q	S2	3.1
<i>Myotis yumanensis</i> Yuma myotis	AMACC01020	None	None	G5	S4	
<i>Nama stenocarpa</i> mud nama	PDHYD0A0H0	None	None	G4G5	S1S2	2B.2
<i>Nasturtium gambelii</i> Gambel's water cress	PDBRA270V0	Endangered	Threatened	G1	S1	1B.1
<i>Navarretia prostrata</i> prostrate vernal pool navarretia	PDPLM0C0Q0	None	None	G2	S2	1B.2
<i>Neotoma lepida intermedia</i> San Diego desert woodrat	AMAFF08041	None	None	G5T3T4	S3S4	SSC
<i>Nolina cismontana</i> chaparral nolina	PMAGA080E0	None	None	G3	S3	1B.2
<i>Nyctinomops femorosaccus</i> pocketed free-tailed bat	AMACD04010	None	None	G4	S3	SSC
<i>Nyctinomops macrotis</i> big free-tailed bat	AMACD04020	None	None	G5	S3	SSC
<i>Oncorhynchus mykiss irideus pop. 10</i> steelhead - southern California DPS	AFCHA0209J	Endangered	None	G5T1Q	S1	
<i>Onychomys torridus ramona</i> southern grasshopper mouse	AMAFF06022	None	None	G5T3	S3	SSC
<i>Passerculus sandwichensis beldingi</i> Belding's savannah sparrow	ABPBX99015	None	Endangered	G5T3	S3	
<i>Pentachaeta aurea ssp. allenii</i> Allen's pentachaeta	PDAST6X021	None	None	G4T1	S1	1B.1
<i>Perognathus longimembris pacificus</i> Pacific pocket mouse	AMAFD01042	Endangered	None	G5T1	S1	SSC



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Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Phacelia keckii</i> Santiago Peak phacelia	PDHYD0C4G1	None	None	G1	S1	1B.3
<i>Phrynosoma blainvillii</i> coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
<i>Plestiodon skiltonianus interparietalis</i> Coronado skink	ARACH01114	None	None	G5T5	S2S3	WL
<i>Poliophtila californica californica</i> coastal California gnatcatcher	ABPBJ08081	Threatened	None	G4G5T2Q	S2	SSC
<i>Pseudognaphalium leucocephalum</i> white rabbit-tobacco	PDAST440C0	None	None	G4	S2	2B.2
<i>Quercus dumosa</i> Nuttall's scrub oak	PDFAG050D0	None	None	G3	S3	1B.1
<i>Rallus obsoletus levipes</i> light-footed Ridgway's rail	ABNME05014	Endangered	Endangered	G5T1T2	S1	FP
<i>Rhinichthys osculus ssp. 3</i> Santa Ana speckled dace	AFCJB3705K	None	None	G5T1	S1	SSC
<i>Salvadora hexalepis virgultea</i> coast patch-nosed snake	ARADB30033	None	None	G5T4	S2S3	SSC
<i>Senecio aphanactis</i> chaparral ragwort	PDAST8H060	None	None	G3	S2	2B.2
<i>Setophaga petechia</i> yellow warbler	ABPBX03010	None	None	G5	S3S4	SSC
<i>Sidalcea neomexicana</i> salt spring checkerbloom	PDMAL110J0	None	None	G4	S2	2B.2
<i>Sorex ornatus salicornicus</i> southern California saltmarsh shrew	AMABA01104	None	None	G5T1?	S1	SSC
<i>Southern Coast Live Oak Riparian Forest</i> Southern Coast Live Oak Riparian Forest	CTT61310CA	None	None	G4	S4	
<i>Southern Coastal Salt Marsh</i> Southern Coastal Salt Marsh	CTT52120CA	None	None	G2	S2.1	
<i>Southern Cottonwood Willow Riparian Forest</i> Southern Cottonwood Willow Riparian Forest	CTT61330CA	None	None	G3	S3.2	
<i>Southern Dune Scrub</i> Southern Dune Scrub	CTT21330CA	None	None	G1	S1.1	
<i>Southern Foredunes</i> Southern Foredunes	CTT21230CA	None	None	G2	S2.1	
<i>Southern Mixed Riparian Forest</i> Southern Mixed Riparian Forest	CTT61340CA	None	None	G2	S2.1	
<i>Southern Riparian Scrub</i> Southern Riparian Scrub	CTT63300CA	None	None	G3	S3.2	
<i>Southern Sycamore Alder Riparian Woodland</i> Southern Sycamore Alder Riparian Woodland	CTT62400CA	None	None	G4	S4	



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Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<i>Spea hammondi</i> western spadefoot	AAABF02020	None	None	G3	S3	SSC
<i>Sternula antillarum browni</i> California least tern	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2	FP
<i>Streptocephalus woottoni</i> Riverside fairy shrimp	ICBRA07010	Endangered	None	G1G2	S1S2	
<i>Suaeda esteroa</i> estuary seablite	PDCHE0P0D0	None	None	G3	S2	1B.2
<i>Symphyotrichum defoliatum</i> San Bernardino aster	PDASTE80C0	None	None	G2	S2	1B.2
<i>Taricha torosa</i> Coast Range newt	AAAAF02032	None	None	G4	S4	SSC
<i>Taxidea taxus</i> American badger	AMAJF04010	None	None	G5	S3	SSC
<i>Thamnophis hammondi</i> two-striped gartersnake	ARADB36160	None	None	G4	S3S4	SSC
<i>Tryonia imitator</i> mimic tryonia (=California brackishwater snail)	IMGASJ7040	None	None	G2	S2	
<i>Valley Needlegrass Grassland</i> Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	
<i>Verbesina dissita</i> big-leaved crownbeard	PDAST9R050	Threatened	Threatened	G1G2	S1	1B.1
<i>Vireo bellii pusillus</i> least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S2	

Record Count: 115



*The database used to provide updates to the Online Inventory is under construction. [View updates and changes made since May 2019 here.](#)

Plant List

70 matches found. [Click on scientific name for details](#)

Search Criteria

Found in Quads 3311767, 3311766, 3311765, 3311757, 3311756, 3311755 3311746 and 3311745;

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Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Aphanisma blitoides	aphanisma	Chenopodiaceae	annual herb	Feb-Jun	1B.2	S2	G3G4
Artemisia palmeri	San Diego sagewort	Asteraceae	perennial deciduous shrub	(Feb)May-Sep	4.2	S3?	G3?
Asplenium vespertinum	western spleenwort	Aspleniaceae	perennial rhizomatous herb	Feb-Jun	4.2	S4	G4
Atriplex coulteri	Coulter's saltbush	Chenopodiaceae	perennial herb	Mar-Oct	1B.2	S1S2	G3
Atriplex pacifica	South Coast saltscale	Chenopodiaceae	annual herb	Mar-Oct	1B.2	S2	G4
Atriplex parishii	Parish's brittlescale	Chenopodiaceae	annual herb	Jun-Oct	1B.1	S1	G1G2
Atriplex serenana var. davidsonii	Davidson's saltscale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S1	G5T1
Brodiaea filifolia	thread-leaved brodiaea	Themidaceae	perennial bulbiferous herb	Mar-Jun	1B.1	S2	G2
Calochortus catalinae	Catalina mariposa lily	Liliaceae	perennial bulbiferous herb	(Feb)Mar-Jun	4.2	S3S4	G3G4
Calochortus weedii var. intermedius	intermediate mariposa lily	Liliaceae	perennial bulbiferous herb	May-Jul	1B.2	S2	G3G4T2
Camissoniopsis lewisii	Lewis' evening- primrose	Onagraceae	annual herb	Mar-May(Jun)	3	S4	G4
Caulanthus simulans	Payson's jewelflower	Brassicaceae	annual herb	(Feb)Mar-May(Jun)	4.2	S4	G4
Centromadia parryi ssp. australis	southern tarplant	Asteraceae	annual herb	May-Nov	1B.1	S2	G3T2
Chaenactis glabriuscula var. orcuttiana	Orcutt's pincushion	Asteraceae	annual herb	Jan-Aug	1B.1	S1	G5T1T2

<u>Chorizanthe leptotheca</u>	Peninsular spineflower	Polygonaceae	annual herb	May-Aug	4.2	S3	G3
<u>Chorizanthe polygonoides var. longispina</u>	long-spined spineflower	Polygonaceae	annual herb	Apr-Jul	1B.2	S3	G5T3
<u>Cistanthe maritima</u>	seaside cistanthe	Montiaceae	annual herb	(Feb)Mar-Jun(Aug)	4.2	S3	G3G4
<u>Clinopodium chandleri</u>	San Miguel savory	Lamiaceae	perennial shrub	Mar-Jul	1B.2	S2	G3
<u>Comarostaphylis diversifolia ssp. diversifolia</u>	summer holly	Ericaceae	perennial evergreen shrub	Apr-Jun	1B.2	S2	G3T2
<u>Convolvulus simulans</u>	small-flowered morning-glory	Convolvulaceae	annual herb	Mar-Jul	4.2	S4	G4
<u>Deinandra paniculata</u>	paniculate tarplant	Asteraceae	annual herb	(Mar)Apr-Nov(Dec)	4.2	S4	G4
<u>Dichondra occidentalis</u>	western dichondra	Convolvulaceae	perennial rhizomatous herb	(Jan)Mar-Jul	4.2	S3S4	G3G4
<u>Diplacus clevelandii</u>	Cleveland's bush monkeyflower	Phrymaceae	perennial rhizomatous herb	Apr-Jul	4.2	S4	G4
<u>Dodecahema leptoceras</u>	slender-horned spineflower	Polygonaceae	annual herb	Apr-Jun	1B.1	S1	G1
<u>Dudleya blochmaniae ssp. blochmaniae</u>	Blochman's dudleya	Crassulaceae	perennial herb	Apr-Jun	1B.1	S2	G3T2
<u>Dudleya cymosa ssp. ovatifolia</u>	Santa Monica dudleya	Crassulaceae	perennial herb	Mar-Jun	1B.1	S1	G5T1
<u>Dudleya multicaulis</u>	many-stemmed dudleya	Crassulaceae	perennial herb	Apr-Jul	1B.2	S2	G2
<u>Dudleya stolonifera</u>	Laguna Beach dudleya	Crassulaceae	perennial stoloniferous herb	May-Jul	1B.1	S1	G1
<u>Dudleya viscida</u>	sticky dudleya	Crassulaceae	perennial herb	May-Jun	1B.2	S2	G2
<u>Eryngium pendletonense</u>	Pendleton button-celery	Apiaceae	perennial herb	Apr-Jun(Jul)	1B.1	S1	G1
<u>Erythranthe diffusa</u>	Palomar monkeyflower	Phrymaceae	annual herb	Apr-Jun	4.3	S3	G4
<u>Euphorbia misera</u>	cliff spurge	Euphorbiaceae	perennial shrub	Dec-Aug(Oct)	2B.2	S2	G5
<u>Harpagonella palmeri</u>	Palmer's grapplinghook	Boraginaceae	annual herb	Mar-May	4.2	S3	G4
<u>Hesperocyparis forbesii</u>	Tecate cypress	Cupressaceae	perennial evergreen tree		1B.1	S2	G2
<u>Hordeum intercedens</u>	vernal barley	Poaceae	annual herb	Mar-Jun	3.2	S3S4	G3G4
<u>Horkelia cuneata var. puberula</u>	mesa horkelia	Rosaceae	perennial herb	Feb-Jul(Sep)	1B.1	S1	G4T1
<u>Imperata brevifolia</u>	California satintail	Poaceae	perennial rhizomatous herb	Sep-May	2B.1	S3	G4
<u>Isocoma menziesii var. decumbens</u>	decumbent goldenbush	Asteraceae	perennial shrub	Apr-Nov	1B.2	S2	G3G5T2T3
<u>Lasthenia glabrata ssp. coulteri</u>	Coulter's goldfields	Asteraceae	annual herb	Feb-Jun	1B.1	S2	G4T2

<u>Lepechinia cardiophylla</u>	heart-leaved pitcher sage	Lamiaceae	perennial shrub	Apr-Jul	1B.2	S2S3	G3
<u>Lepidium virginicum var. robinsonii</u>	Robinson's pepper-grass	Brassicaceae	annual herb	Jan-Jul	4.3	S3	G5T3
<u>Lycium brevipes var. hassei</u>	Santa Catalina Island desert-thorn	Solanaceae	perennial deciduous shrub	Jun(Aug)	3.1	S1	G5T1Q
<u>Lycium californicum</u>	California box-thorn	Solanaceae	perennial shrub	(Dec)Mar,Jun,Jul,Aug	4.2	S4	G4
<u>Malacothrix saxatilis var. saxatilis</u>	cliff malacothrix	Asteraceae	perennial rhizomatous herb	Mar-Sep	4.2	S4	G5T4
<u>Microseris douglasii ssp. platycarpa</u>	small-flowered microseris	Asteraceae	annual herb	Mar-May	4.2	S4	G4T4
<u>Monardella hypoleuca ssp. intermedia</u>	intermediate monardella	Lamiaceae	perennial rhizomatous herb	Apr-Sep	1B.3	S2?	G4T2?
<u>Monardella hypoleuca ssp. lanata</u>	felt-leaved monardella	Lamiaceae	perennial rhizomatous herb	Jun-Aug	1B.2	S3	G4T3
<u>Monardella macrantha ssp. hallii</u>	Hall's monardella	Lamiaceae	perennial rhizomatous herb	Jun-Oct	1B.3	S3	G5T3
<u>Myosurus minimus ssp. apus</u>	little mousetail	Ranunculaceae	annual herb	Mar-Jun	3.1	S2	G5T2Q
<u>Nama stenocarpa</u>	mud nama	Namaceae	annual / perennial herb	Jan-Jul	2B.2	S1S2	G4G5
<u>Nasturtium gambelii</u>	Gambel's water cress	Brassicaceae	perennial rhizomatous herb	Apr-Oct	1B.1	S1	G1
<u>Navarretia prostrata</u>	prostrate vernal pool navarretia	Polemoniaceae	annual herb	Apr-Jul	1B.1	S2	G2
<u>Nolina cismontana</u>	chaparral nolina	Ruscaceae	perennial evergreen shrub	(Mar)May-Jul	1B.2	S3	G3
<u>Pentachaeta aurea ssp. allenii</u>	Allen's pentachaeta	Asteraceae	annual herb	Mar-Jun	1B.1	S1	G4T1
<u>Phacelia keckii</u>	Santiago Peak phacelia	Hydrophyllaceae	annual herb	May-Jun	1B.3	S1	G1
<u>Phacelia ramosissima var. austrolitoralis</u>	south coast branching phacelia	Hydrophyllaceae	perennial herb	Mar-Aug	3.2	S3	G5?T3Q
<u>Piperia cooperi</u>	chaparral rein orchid	Orchidaceae	perennial herb	Mar-Jun	4.2	S3S4	G3G4
<u>Piperia leptopetala</u>	narrow-petaled rein orchid	Orchidaceae	perennial herb	May-Jul	4.3	S4	G4
<u>Polygala cornuta var. fishiae</u>	Fish's milkwort	Polygalaceae	perennial deciduous shrub	May-Aug	4.3	S4	G5T4
<u>Pseudognaphalium leucocephalum</u>	white rabbit-tobacco	Asteraceae	perennial herb	(Jul)Aug-Nov(Dec)	2B.2	S2	G4
<u>Quercus dumosa</u>	Nuttall's scrub oak	Fagaceae	perennial evergreen shrub	Feb-Apr(May-Aug)	1B.1	S3	G3
<u>Romneya coulteri</u>	Coulter's matilija poppy	Papaveraceae	perennial rhizomatous	Mar-Jul(Aug)	4.2	S4	G4

			herb				
<u>Senecio aphanactis</u>	chaparral ragwort	Asteraceae	annual herb	Jan-Apr(May)	2B.2	S2	G3
<u>Sidalcea neomexicana</u>	salt spring checkerbloom	Malvaceae	perennial herb	Mar-Jun	2B.2	S2	G4
<u>Suaeda esteroa</u>	estuary seablite	Chenopodiaceae	perennial herb	(May)Jul-Oct(Jan)	1B.2	S2	G3
<u>Suaeda taxifolia</u>	woolly seablite	Chenopodiaceae	perennial evergreen shrub	Jan-Dec	4.2	S4	G4
<u>Symphyotrichum defoliatum</u>	San Bernardino aster	Asteraceae	perennial rhizomatous herb	Jul-Nov(Dec)	1B.2	S2	G2
<u>Tetracoccus dioicus</u>	Parry's tetracoccus	Picrodendraceae	perennial deciduous shrub	Apr-May	1B.2	S2	G2G3
<u>Verbesina dissita</u>	big-leaved crownbeard	Asteraceae	perennial herb	(Mar)Apr-Jul	1B.1	S1	G1G2
<u>Viguiera laciniata</u>	San Diego County viguiera	Asteraceae	perennial shrub	Feb-Jun(Aug)	4.3	S4	G4

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Questions and Comments

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Appendix C

Cultural Resources Inventory Report

CULTURAL RESOURCES INVENTORY REPORT FOR THE LAS FLORES ENHANCED WATER RELIABILITY PROJECT, ORANGE COUNTY, CALIFORNIA

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Cultural Resources Inventory Report for the Las Flores Enhanced Water Reliability Project, Orange County, California

NATIONAL ARCHAEOLOGICAL DATABASE (NADB) INFORMATION

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Project Proponent: Santa Margarita Water District

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Updated Sites: None

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Acreage: Approximately 13,840 linear feet

Permit Numbers: Permitting pending

Key Words: Negative results; pedestrian survey; CA-LAN-899/H; CA-LAN-36/H

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MANAGEMENT SUMMARY

This report presents the results of Dudek's Phase I resources Inventory for the Santa Margarita Water District (SMWD) Las Flores Water Reliability Project (Project), located in the community of Las Flores, Orange County, California. The Project proposes approximately 13,840 linear feet of 8-inch, 10-inch, and 16-inch recycled water pipeline within existing SMWD easements and within existing road rights-of-way throughout the community. The Project site is situated in Sections 5 and 8, Township 7 South, Range 7 West and Sections 4 and 9, Township 7 South Range 7 West of the San Juan Capistrano and Canada Gobernadora U.S. Geological Survey 7.5-minute topographic maps, respectively.

SMWD is the lead agency for compliance with the California Environmental Quality Act (CEQA). As it is anticipated that the Project will be subject to review by the Bureau of Reclamation (USBR), all work has additionally been completed in compliance with Section 106 of the National Historic Preservation Act (NHPA).

The Area of Potential Effects (APE) is anticipated to include the entire 13,840 linear feet of the utility rights-of-way (ROW), although a portion of the work would be completed through trenchless construction. Trenching is anticipated to include 40,200 square feet (0.92 acres) of earth disturbance within previously disturbed utility easements. Trenches would be no more than 3 feet wide and 5.5 feet in depth, this depth representing the vertical APE.

Two cultural resources have been previously identified within the APE (CA-LAN-899/H and CA-LAN-36/H). CA-LAN-899/H consists of a scatter of prehistoric, protohistoric, and historic-era artifacts that was recorded within an area that has since been developed. CA-LAN-36/H, last documented in 1949, is reported to be an ethnohistoric Native American encampment dating between 1862 and 1867 along the historical route to Rancho Trabuco. Nine sites with prehistoric resources, three sites with historic resources, and one site with unknown resources have been recorded within the surrounding one-half mile records search area.

Based on the results of Phase I Survey, there is a low potential for the inadvertent discovery of intact cultural deposits associated with CA-LAN-899/H and a moderate potential for the inadvertent discovery of intact cultural deposits associated with CA-LAN-36/H during construction activities that will be employed to install the proposed pipelines. The NAHC Sacred Lands File search did not indicate that cultural resources are in the project area; however, Native American outreach suggests that the area is of high cultural value to the Juaneno Band of Mission Indians community.

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It is evident that the existing easement/ROW) has been subject to an extended history of disturbance. However, in consideration of the high density of significant (culturally and scientifically) archaeological sites and the obscured nature of the area along the Project alignment, there is still a possibility of unanticipated impacts to cultural resources during ground-disturbing construction activities within the unpaved portions of the Project alignment. Impacts may be appropriately addressed, or otherwise reduced to a less-than-significant level, through implementation of an archaeological and Native American construction monitoring program and post-construction reporting.

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1 INTRODUCTION

This report presents the results of Dudek's Phase I resources Inventory for the Santa Margarita Water District (SMWD) Las Flores Water Reliability Project (Project). SMWD is the lead agency for compliance with the California Environmental Quality Act (CEQA). As it is anticipated that the Project will be subject to review by the Bureau of Reclamation (USBR), all work has additionally been completed in compliance with Section 106 of the National Historic Preservation Act (NHPA).

1.1 Project Location and Present Use

The Project is located in the unincorporated community of Las Flores, in Orange County, California (Figure 1). The Project site is situated in Sections 5 and 8, Township 7 South, Range 7 West and Sections 4 and 9, Township 7 South Range 7 West of the San Juan Capistrano and Canada Gobernadora U.S. Geological Survey 7.5-minute topographic maps, respectively. The Project consists of approximately 13,840 linear feet of 8-inch, 10-inch, and 16-inch recycled water pipeline within existing SMWD easements and within existing road rights-of-way throughout the community (Figure 2). Specifically, the Project would be located within Oso Parkway, Meandering Trail Road, a portion of Antonio Parkway, and in a SMWD access road located behind the residential neighborhood located at the northwest corner of Oso Parkway and Antonio Parkway. The Project also involves the replacement of the existing Las Flores Lift Station, which is located approximately 800 feet west of the intersection of Oso Parkway and Antonio Parkway. Regional access to the Project site is provided via Interstate 5 and State Route 241.

1.2 Project Description

The Project includes installation of approximately 3,800 linear feet of 16-inch pipe and 6,390 linear feet of 8-inch pipe in residential streets and easements through previously disturbed open space. The Project also involves the conversion of the Las Flores Lift Station, currently out of service, to a recycled water booster pump station, and the rehabilitation of an approximately 3,650-foot-long 10-inch existing force main in the right-of-way (ROW) within Antonio Parkway. Rehabilitation of the 10-inch force main would be performed using a trenchless rehabilitation method where a liner would be inserted within the existing force main for structural reinforcement. Two access points at existing manholes within Antonio Parkway are necessary for proper installation of the liner.

The Area of Potential Effects (APE) is anticipated to include the entire 13,840 linear feet of the utility rights-of-way (ROW), although a portion of the work would be completed through trenchless construction. Trenching is anticipated to include 40,200 square feet (0.92 acres) of earth

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disturbance within previously disturbed utility easements. Trenches would be no more than 3 feet wide and 5.5 feet in depth, this depth representing the vertical APE.

1.3 Regulatory Context

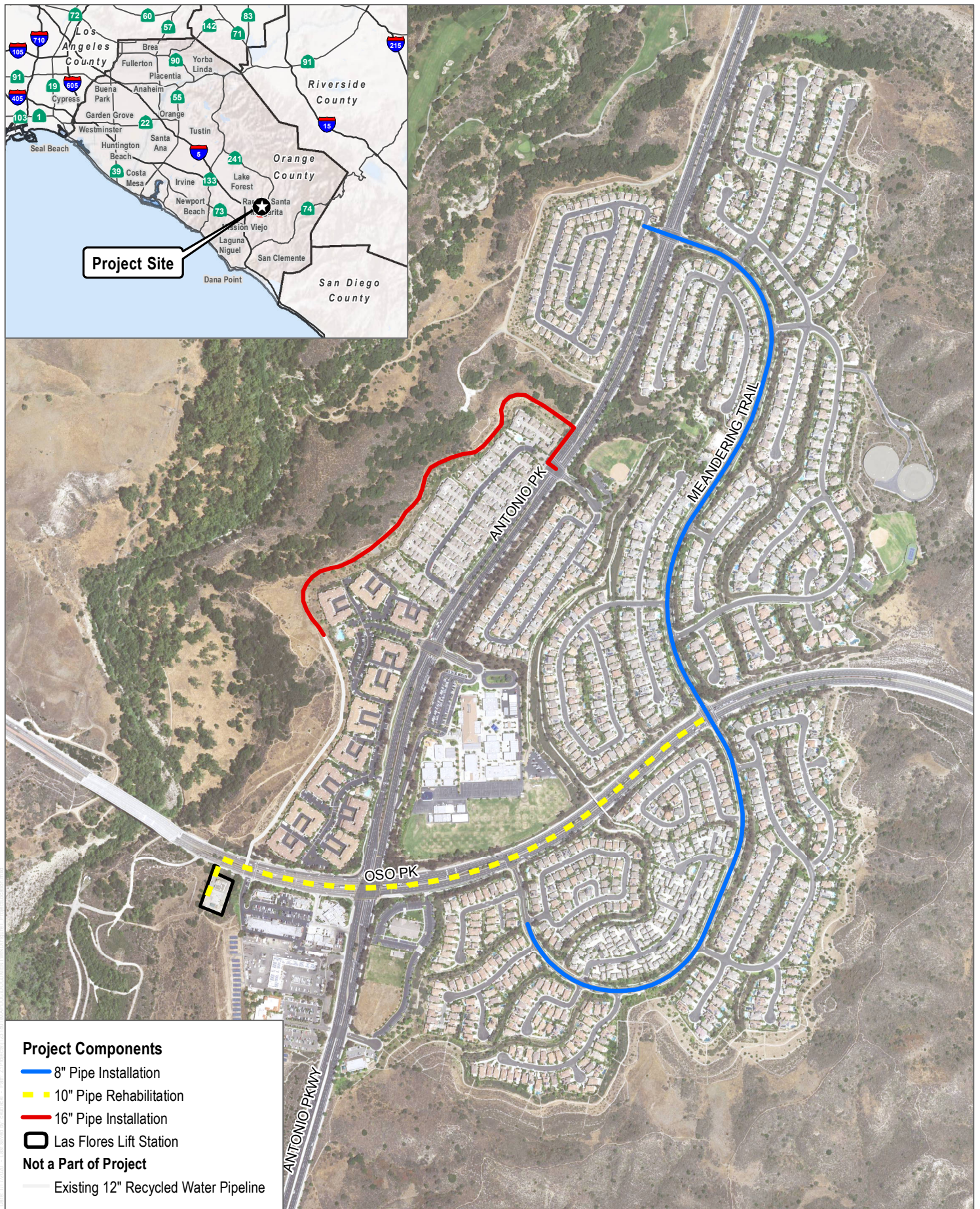
As currently planned, the Project is subject to federal, state, and local regulatory conditions and all work has been conducted in compliance with federal regulations. Applicable regulations are provided below

1.3.1 Federal Cultural Resources Regulations

1.3.1.1 *National Historic Preservation Act*

The NHPA established the National Register of Historic Places (NRHP) and the President's Advisory Council on Historic Preservation, and provided that states may establish State Historic Preservation Officers to carry out some of the functions of the NHPA. Most significantly for federal agencies responsible for managing cultural resources, Section 106 of the NHPA directs that "[t]he head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the NRHP." Section 106 also affords the President's Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking (16 USC 470f).

Part 800 of Title 36 of the Code of Federal Regulations implements Section 106 of the NHPA. It defines the steps necessary to identify historic properties (those cultural resources listed in or eligible for listing in the NRHP), including consultation with federally recognized Native American tribes to identify resources with important cultural values; to determine whether or not they may be adversely affected by a proposed undertaking; and the process for eliminating, reducing, or mitigating the adverse effects.



SOURCE: NAIP 2016; Orange County 2018

FIGURE 1

Project Location

Las Flores Enhanced Water Reliability Project

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The content of Section 60.4 of Title 36 of the Code of Federal Regulations defines criteria for determining eligibility for listing in the NRHP. The significance of cultural resources identified during an inventory must be formally evaluated for historic significance in consultation with the California State Historic Preservation Officer to determine if the resources are eligible for inclusion in the NRHP. Cultural resources may be considered eligible for listing if they possess integrity of location, design, setting, materials, workmanship, feeling, and association. The criteria for determining eligibility are essentially the same in content and order as those outlined under CEQA, but the criteria under NHPA are labeled A through D (rather than 1–4 under CEQA).

Regarding criteria A through D of Section 106, the quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, cultural resources, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that:

- A. are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. are associated with the lives of persons significant in our past; or
- C. embody 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; or
- D. have yielded or may be likely to yield, information important in prehistory or history (36 CFR 60.4).

The current cultural resources inventory is not designed to generate enough data to make eligibility recommendations on previously recorded cultural resources that are outside of the Project area, or newly discovered cultural resources; such determinations are typically made during a subsequent evaluation phase (e.g., excavations at prehistoric sites). However, the survey was designed to generate enough information to provide informal assessments of eligibility to help guide management considerations.

1.3.2 State of California

1.3.2.1 *The California Register of Historical Resources*

In California, the term “historical resource” includes “any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political,

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military, or cultural annals of California” (Public Resources Code (PRC) Section 5020.1(j)). In 1992, the California legislature established the California Register of Historical Resources (CRHR) “to be used by state and local agencies, private groups, and citizens to identify the state’s historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change” (PRC Section 5024.1(a)). The criteria for listing resources on the CRHR, enumerated in the following text, were developed to be in accordance with previously established criteria developed for listing in the NRHP. According to PRC Section 5024.1(c)(1–4), a resource is considered historically significant if it (i) retains “substantial integrity,” and (ii) meets at least one of the following 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

To understand the historic importance of a resource, sufficient time must have passed to obtain a scholarly perspective on the events or individuals associated with the resource. A resource less than 50 years old may be considered for listing in the CRHR if it can be demonstrated that sufficient time has passed to understand its historical importance (see 14 CCR 4852(d)(2)).

The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historic resources. The criteria for the CRHR are nearly identical to those for the NRHP, and properties listed or formally designated as eligible for listing in the NRHP are automatically listed in the CRHR, as are state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

1.3.2.2 California Environmental Quality Act

As described further in the following text, the following CEQA statutes and CEQA Guidelines are of relevance to the analysis of archaeological, historic, and tribal cultural resources:

- California Public Resources Code Section 21083.2(g) defines “unique archaeological resource.”

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- California Public Resources Code Section 21084.1 and CEQA Guidelines Section 15064.5(a) define “historical resources.” In addition, CEQA Guidelines Section 15064.5(b) defines the phrase “substantial adverse change in the significance of an historical resource.” It also defines the circumstances when a project would materially impair the significance of a historical resource.
- California Public Resources Code Section 21074(a) defines “tribal cultural resources.”
- California Public Resources Code Section 5097.98 and CEQA Guidelines Section 15064.5(e) set forth standards and steps to be employed following the accidental discovery of human remains in any location other than a dedicated ceremony.

The NAHC is to resolve disputes regarding the disposition of such remains. In addition, the Native American Historic Resource Protection Act makes it a misdemeanor, punishable by up to 1 year in jail, to deface or destroy a Native American historic or cultural site that is listed or may be eligible for listing in the CRHR.

1.3.2.3 California Health and Safety Code Section 7050.5

California law protects Native American burials, skeletal remains, and associated grave goods, regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. California Health and Safety Code Section 7050.5 requires that if human remains are discovered in any place other than a dedicated cemetery, no further disturbance or excavation of the site or nearby area reasonably suspected to contain human remains can occur until the county coroner has examined the remains (California Health and Safety Code Section 7050.5[b]). California Public Resources Code Section 5097.98 also outlines the process to be followed in the event that remains are discovered. If the county coroner determines or has reason to believe the remains are those of a Native American, the coroner must contact the California NAHC within 24 hours (California Health and Safety Code Section 7050.5[c]). The NAHC will notify the most likely descendant. With the permission of the landowner, the most likely descendant may inspect the site of discovery. The inspection must be completed within 48 hours of notification of the most likely descendant by the NAHC. The most likely descendant may recommend means of treating or disposing of, with appropriate dignity, the human remains and items associated with Native Americans. California Public Resources Code Sections 21083.2(b)–(c) and CEQA Guidelines Section 15126.4 provide information regarding the mitigation framework for archaeological and historic resources, including examples of preservation-in-place mitigation measures; preservation-in-place is the preferred manner of mitigating impacts to significant archaeological sites because it maintains the relationship between artifacts and the archaeological context, and may also help avoid conflict with religious or cultural values of groups associated with the archaeological site(s).

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Under CEQA, a project may have a significant effect on the environment if it may cause “a substantial adverse change in the significance of an historical resource” (California Public Resources Code Section 21084.1; CEQA Guidelines Section 15064.5[b]). If a site is either listed or eligible for listing in the CRHR, or if it is included in a local register of historic resources, or identified as significant in a historical resources survey (meeting the requirements of California Public Resources Code Section 5024.1[q]), it is a “historical resource” and is presumed to be historically or culturally significant for purposes of CEQA (California Public Resources Code Section 21084.1; CEQA Guidelines Section 15064.5[a]). The lead agency is not precluded from determining that a resource is a historical resource, even if it does not fall within this presumption (California Public Resources Code Section 21084.1; CEQA Guidelines Section 15064.5[a]).

A “substantial adverse change in the significance of an historical resource” reflecting a significant effect under CEQA means “physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired” (CEQA Guidelines Section 15064.5[b][1]; California Public Resources Code Section 5020.1[(q)]). In turn, the significance of a historical resource is materially impaired when a project does any of the following:

- (1) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register; or
- (2) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the California Public Resources Code or its identification in an historical resources survey meeting the requirements of Section 5024.1(g) of the California Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
- (3) Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register as determined by a lead agency for purposes of CEQA (CEQA Guidelines Section 15064.5[b][2]).

Pursuant to these sections, the CEQA inquiry begins with evaluating whether a project site contains any “historical resources,” then evaluates whether that project will cause a substantial adverse change in the significance of a historical resource such that the resource’s historical significance is materially impaired.

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If it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that they cannot be left undisturbed, mitigation measures are required (California Public Resources Code Section 21083.2[a]–[c]).

California Public Resources Code Section 21083.2(g) defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- (1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information
- (2) Has a special and particular quality such as being the oldest of its type or the best available example of its type
- (3) Is directly associated with a scientifically recognized important prehistoric or historic event or person

Impacts to nonunique archaeological resources are generally not considered a significant environmental impact (California Public Resources Code Section 21083.2[a]; CEQA Guidelines Section 15064.5[c][4]). However, if a nonunique archaeological resource qualifies as tribal cultural resource (California Public Resources Code 21074[c]; 21083.2[h]), further consideration of significant impacts is required.

CEQA Guidelines Section 15064.5 assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. As described in the following text, these procedures are detailed in California Public Resources Code Section 5097.98.

1.3.2.4 California State Assembly Bill 52

AB 52 of 2014 amended California Public Resources Code Section 5097.94 and added California Public Resources Code Sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3. AB 52 established that tribal cultural resources must be considered under CEQA and also provided for additional Native American consultation requirements for the lead agency. Section 21074 describes a tribal cultural resource as a site, feature, place, cultural landscape, sacred place, or object that is considered of cultural value to a California Native American Tribe. A tribal cultural resource is either:

- On the California Register of Historical Resources or a local historic register; Eligible for the California Register of Historical Resources or a local historic register; or

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- A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1.

AB 52 formalizes the lead agency–tribal consultation process, requiring the lead agency to initiate consultation with California Native American groups that are traditionally and culturally affiliated with the project, including tribes that may not be federally recognized. Lead agencies are required to begin consultation prior to the release of a negative declaration, mitigated negative declaration, or environmental impact report.

Section 1 (a)(9) of AB 52 establishes that “a substantial adverse change to a tribal cultural resource has a significant effect on the environment.” Effects on tribal cultural resources should be considered under CEQA. Section 6 of AB 52 adds Section 21080.3.2 to the California Public Resources Code, which states that parties may propose mitigation measures “capable of avoiding or substantially lessening potential significant impacts to a tribal cultural resource or alternatives that would avoid significant impacts to a tribal cultural resource.” Further, if a California Native American tribe requests consultation regarding project alternatives, mitigation measures, or significant effects to tribal cultural resources, the consultation shall include those topics (California Public Resources Code Section 21080.3.2[a]). The environmental document and the mitigation monitoring and reporting program (where applicable) shall include any mitigation measures that are adopted (California Public Resources Code Section 21082.3[a]).

1.3.2.5 Native American Human Remains

State law (California Public Resources Code Section 5097 et seq.) addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project; and established the NAHC.

In the event that Native American human remains or related cultural material are encountered, Section 15064.5(e) of the CEQA Guidelines (as incorporated from California Public Resources Code Section 5097.98) and California Health and Safety Code Section 7050.5 define the subsequent protocol. In the event of the accidental discovery or recognition of any human remains, excavation or other disturbances shall be suspended of the site or any nearby area reasonably suspected to overlie adjacent human remains or related material. Protocol requires that a county-approved coroner be contacted in order to determine if the remains are of Native American origin. Should the coroner determine the remains to be Native American, the coroner must contact the NAHC within 24 hours. The most likely descendant may make recommendations to the landowner or the person responsible for the excavation work, for means of treating, with appropriate dignity,

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the human remains and any associated grave goods as provided in California Public Resources Code Section 5097.98 (14 CCR 15064.5[e]).

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2 PROJECT CONTEXT

2.1 Environmental Context

The Project alignment is separated into three segments as seen in Figure 1: 10-inch pipeline rehabilitation, 8-inch pipe installation, and 16-inch pipe installation. The 10-inch pipeline rehabilitation and 8-inch pipe installation segments are situated within heavily disturbed, existing road rights-of-ways through residential neighborhoods and commercial, and educational developments, surrounded by undeveloped open space. The 16-inch pipeline is situated along a SMWD access road located behind a residential neighborhood. Arroyo Trabuco is located to the west of the study area that contains flowing water, associated riparian habitat. Vegetation communities within the area include coastal sage scrub (*Artemisia californica*-*Eriogonum fasciculatum* alliance), coast live oak woodland (*Quercus agrifolia* association), non-native grassland (red brome-mixed herbs semi-natural stands), parks and ornamental plantings, disturbed habitat, and urban/developed land. Elevation of the Study Area ranges from approximately 550 to 750 feet above mean sea level (AMSL). Surficial geological mapping of Morton and Miller (2006) indicates the project site is underlain by Middle to early Pleistocene (~126,000–2.58 million years ago [mya]) very old axial channel deposits, Late Miocene (~12 mya–5.33 mya) Monterey Formation, Oligocene (~34 mya–23 mya) San Onofre Breccia, and Late Eocene to Early Miocene (~38 mya–23 mya) Sespe Formation.

2.2 Cultural Context

Evidence for continuous human occupation in the region spans the last 10,000 years. Various attempts to parse out variability in archaeological assemblages over this broad time frame have led to the development of several cultural chronologies; some of these are based on geologic time, most are based on temporal trends in archaeological assemblages, and others are interpretive reconstructions. Each of these reconstructions describes essentially similar trends in assemblage composition in more or less detail. This research employs a common set of generalized terms used to describe chronological trends in assemblage composition: Paleoindian (pre-5500 BC), Archaic (8000 BC–AD 500), Late Prehistoric (AD 500–1750), and Ethnohistoric (post-AD 1750).

2.2.1 Paleoindian (pre-5500 BC)

Evidence for Paleoindian occupation in the region is tenuous; the knowledge of associated cultural pattern(s) is informed by a relatively sparse body of data that has been collected from within an area extending from coastal San Diego through the Mojave Desert and beyond. One of the earliest dated archaeological assemblages in this area (excluding the Channel Islands) derives from SDI-4669/W-12, in La Jolla, San Diego County. A human burial from SDI-4669 was radiocarbon dated

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to 9,590–9,920 years before present (95.4% probability) (Hector 2006). The burial is part of a larger site complex that contained more than 29 human burials associated with an assemblage that fits the Archaic profile (i.e., large amounts of groundstone, battered cobbles, and expedient flake tools). In contrast, typical Paleoindian assemblages include large stemmed projectile points, high proportions of formal lithic tools, bifacial lithic reduction strategies, and relatively small proportions of groundstone tools. Prime examples of this pattern are sites that were studied by Emma Lou Davis (1978) on China Lake Naval Air Weapons Station near Ridgecrest, California. These sites contained fluted and unfluted stemmed points and large numbers of formal flake tools (e.g., shaped scrapers, blades). Other typical Paleoindian sites include the Komodo site (MNO-679), a multicomponent fluted point site, and MNO-680, a single component Great Basined stemmed point site (Basgall et al. 2002). At MNO-679 and MNO-680, groundstone tools were rare, while finely made projectile points were common.

Warren et al. (2004) claimed that a biface manufacturing tradition present at the Harris site complex (SDI-149) is representative of typical Paleoindian occupation in the Southern California region that possibly dates between 10,365 and 8200 BC (Warren et al. 2004, p. 26). Termed San Dieguito (Rogers 1945), assemblages at the Harris site, located in the area now occupied by City of Escondido, are qualitatively distinct from most others in the region because the site has large numbers of finely made bifaces (including projectile points), formal flake tools, a biface reduction trajectory, and relatively small amounts of processing tools (Warren 1964, 1968). Despite the unique assemblage composition, the definition of San Dieguito as a separate cultural tradition is debated. Gallegos (1987) suggested that the San Dieguito pattern is simply an inland manifestation of a broader economic pattern. Gallegos' interpretation of San Dieguito has been widely accepted in recent years, in part because of the difficulty in distinguishing San Dieguito components from other assemblage constituents. In other words, it is easier to ignore San Dieguito as a distinct socioeconomic pattern than it is to draw it out of mixed assemblages.

The large number of finished bifaces (i.e., projectile points and non-projectile blades), along with large numbers of formal flake tools at the Harris site complex, is very different than nearly all other assemblages throughout the region, regardless of age. Warren et al. (2004) made this point, tabulating basic assemblage constituents for key early Holocene sites. Producing finely made bifaces and formal flake tools implies that relatively large amounts of time were spent for tool manufacture. Such a strategy contrasts with the expedient flake-based tools and cobble-core reduction strategy that typifies non-San Dieguito Archaic sites. It can be inferred from the uniquely high degree of San Dieguito assemblage formality that the Harris site complex represents a distinct economic strategy from non-San Dieguito assemblages.

If San Dieguito truly represents a distinct socioeconomic strategy from the non-San Dieguito Archaic processing regime, its rarity implies that it was not only short-lived, but that it was not as

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economically successful as the Archaic strategy. Such a conclusion would fit with the general trends in Southern California deserts, wherein hunting-related tools are replaced by processing tools during the early Holocene (Basgall and Hall 1990).

2.2.2 Archaic (8000 BC–AD 500)

The more than 1500-year overlap between the presumed age of Paleoindian occupations and the Archaic period highlights the difficulty in defining a cultural chronology in the region. If San Dieguito is the only recognized Paleoindian component in the region, then the dominance of hunting tools implies that it derives from Great Basin adaptive strategies and is not necessarily a local adaptation. Warren et al. (2004) admitted as much, citing strong desert connections with San Dieguito. Thus, the Archaic pattern is the earliest local socioeconomic adaptation in the region (Hale 2001, 2009).

The Archaic pattern is relatively easy to define with assemblages that consist primarily of processing tools: millingstones, handstones, battered cobbles, heavy crude scrapers, incipient flake-based tools, and cobble-core reduction. These assemblages occur in all environments across the region, with little variability in tool composition. Low assemblage variability over time and space among Archaic sites has been equated with cultural conservatism (Byrd and Reddy 2002; Warren 1968; Warren et al. 2004). Despite enormous amounts of archaeological work at Archaic sites, little change in assemblage composition occurs until the bow and arrow is adopted at around AD 500, as well as ceramics at approximately the same time (Griset 1996; Hale 2009). Even then, assemblage formality remains low. After the bow is adopted, small arrow points appear in large quantities, and already low amounts of formal flake tools are replaced by increasing amounts of expedient flake tools. Similarly, shaped millingstones and handstones decrease in proportion relative to expedient, unshaped groundstone tools (Hale 2009). Thus, the terminus of the Archaic period is equally as hard to define as its beginning because basic assemblage constituents and patterns of manufacturing investment remain stable, complimented only by the addition of the bow and ceramics.

2.2.3 Late Prehistoric (AD 500–1750)

The period of time following the Archaic and prior to Ethnohistoric times (AD 1750) is commonly referred to as the Late Prehistoric (Rogers 1945; Wallace 1955; Warren et al. 2004). However, several other subdivisions continue to be used to describe various shifts in assemblage composition, including the addition of ceramics and cremation practices. The post-AD 1450 period is called the San Luis Rey Complex (Meighan and True 1977). Rogers (1929) also subdivided the last 1,000 years into the Yuman II and III cultures, based on the distribution of ceramics. Despite these regional complexes, each is defined by the addition of arrow points and ceramics and the widespread use of

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bedrock mortars. Vagaries in the appearance of the bow and arrow and ceramics make the temporal resolution of the San Luis Rey complex difficult. For this reason, the term Late Prehistoric is well-suited to describe the last 1,500 years of prehistory in the region.

Temporal trends in socioeconomic adaptations during the Late Prehistoric period are poorly understood. This is partly due to the fact that the fundamental Late Prehistoric assemblage is very similar to the Archaic pattern but includes arrow points and large quantities of fine debitage from producing arrow points, ceramics, and cremations. While steatite was commonly the material of choice for vessel production, it was generally replaced near the time of missionization by locally procured clay to produce ceramic vessels. The appearance of mortars and pestles is difficult to place in time because most mortars are on bedrock. Some argue that the Ethnohistoric intensive acorn economy extends as far back as AD 500 (Bean and Shipek 1978). However, there is no substantial evidence that reliance on acorns, and the accompanying use of mortars and pestles, occurred prior to AD 1400. True (1980) argued that acorn processing and ceramic use in the region did not occur until the San Luis Rey pattern emerged after approximately AD 1450.

2.2.4 Ethnohistoric (post-AD 1750)

The history of the Native American communities prior to the mid-1700s has largely been reconstructed through later mission-period and early ethnographic accounts. The first records of the Native American inhabitants of the region come predominantly from European merchants, missionaries, military personnel, and explorers. These brief, and generally peripheral, accounts were prepared with the intent of furthering respective colonial and economic aims and were combined with observations of the landscape. They were not intended to be unbiased accounts regarding the cultural structures and community practices of the newly encountered cultural groups. The establishment of the missions in the region brought more extensive documentation of Native American communities, though these groups did not become the focus of formal and in-depth ethnographic study until the early twentieth century (Bean and Shipek 1978; Boscana 1846; Fages 1937; Geiger and Meighan 1976; Harrington 1934; Laylander 2000; White 1963). The principal intent of these researchers was to record the precontact, culturally specific practices, ideologies, and languages that had survived the destabilizing effects of missionization and colonialism. This research, often understood as “salvage ethnography,” was driven by the understanding that traditional knowledge was being lost due to the impacts of modernization and cultural assimilation. Alfred Kroeber applied his “memory culture” approach (Lightfoot 2005, p. 32) by recording languages and oral histories within the region. Ethnographic research by Dubois, Kroeber, Harrington, Spier, and others during the early twentieth century seemed to indicate that traditional cultural practices and beliefs survived among local Native American communities.

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It is important to note that even though there were many informants for these early ethnographies who were able to provide information from personal experiences about Native American life before European immigration, a significantly large proportion of these informants were born after 1850; therefore, the documentation of pre-contact, aboriginal culture was being increasingly supplied by individuals born in California after considerable contact with Europeans. This is an important issue to note when examining these ethnographies, since considerable culture change had undoubtedly occurred by 1850 among the Native American survivors of California.

Based on ethnographic information, it is believed that at least 88 different languages were spoken from Baja California Sur to the southern Oregon state border at the time of Spanish contact (Johnson and Lorenz 2006, p. 34). The distribution of recorded Native American languages has been dispersed as a geographic mosaic across California through six primary language families (Golla 2007, p. 71). Victor Golla has contended that one can interpret the amount of variability within specific language groups as being associated with the relative “time depth” of the speaking populations (Golla 2007, p. 80). A large amount of variation within the language of a group represents a greater time depth than a group’s language with less internal diversity. One method that he has employed is by drawing comparisons with historically documented changes in Germanic and Romantic language groups. Golla has observed that the “absolute chronology of the internal diversification within a language family” can be correlated with archaeological dates (2007, p. 71). This type of interpretation is modeled on concepts of genetic drift and gene flows that are associated with migration and population isolation in the biological sciences.

The Native American inhabitants of the region would have generally spoken Juaneño (Acjachemen) and Gabrielino (or Tongva) varieties of Takic, which may be assigned to the larger Uto-Aztecan family (Golla 2007, p. 74). Golla has interpreted the amount of internal diversity within these language-speaking communities to reflect a time depth of approximately 2,000 years. Other researchers have contended that Takic may have diverged from Uto-Aztecan ca. 2600 BC–AD 1, which was later followed by the diversification within the Takic speaking tribes, occurring approximately 1500 BC–AD 1000 (Laylander 2010). The Juaneño (Acjachemen) and Gabrielino (or Tongva) represent the descendants of local Late Prehistoric populations. They are generally considered to have migrated into the area from the Mojave Desert, possibly displacing the prehistoric ancestors of the Yuman-speaking Kumeyaay (Ipai-Tipai) that lived to the south during Ethnohistoric times. The Luiseño-Juaneño shared boundaries with the Gabrieleño and Serrano to the west and northwest, the Cahuilla to the east, the Cupeño to the southeast, and the Kumeyaay to the south (Bean and Shippek 1978; Kroeber 1925). Southern Native American tribal groups of the San Diego and southern Imperial region have traditionally spoken Yuman languages, a subgroup of the Hokan Phylum.

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The Uto-Aztecan inhabitants of the region were called Juaneño and Gabrielino or Gabrieleño) by Franciscan friars who established the Missions San Juan Capistrano and San Gabriel Arcángel the traditional territory of these two respective tribes. The project area is east of Aliso Creek, which is considered by Kroeber (1925) to be the ethnographic boundary marker between the Gabrieleño (or Tongva) (west of the Aliso Creek) and Juaneño (east of the Aliso Creek). A brief description of both ethnographic groups is provided in the following text.

The Gabrieleño may have numbered as many as 5,000 people during their peak in the pre-contact period; however, population estimates are difficult due to the gradual process of missionization (Kroeber 1925). The Gabrieleño territory included the Los Angeles Basin, the coast of Aliso Creek in Orange County to the south, and Topanga Canyon in the north, the four southern Channel Islands, and watersheds of the Los Angeles, San Gabriel, and Santa Ana Rivers. At the time of European contact, the Gabrieleño were actively involved in trade using shell and beads as currency. The Gabrieleño produced pipes, ornaments, cooking implements, inlay work, and basketry. Dwellings were constructed of tule mats on a framework of poles, but size and shape have not been recorded (Kroeber 1925). Basketry and steatite vessels were used rather than ceramics until near the end of the mission period in the nineteenth century (Garcia et al. 2011).

The Juaneño, or Acjachemen, territory was bounded to the north by Aliso Creek, the east by the crest of the Santa Ana Mountains, the south by San Onofre Creek, and west by the Pacific Ocean (Kroeber 1925:636). Ethnographic, linguistic, and archaeological evidence indicate that Juaneño and Luiseño are one cultural/tribal group. There is no existing record of the Juaneño population during the pre-contact period. Records indicated that approximately 1,300 individuals culturally affiliated with the Juaneño resided at Mission San Juan Capistrano in the year 1800 (Engelhardt 1922). The mission death register shows as many as 4,000 native burials in the mission cemetery (White 1963). It is clear from that arrival of the Spanish decimated Native peoples through disease and changed living conditions (Bean and Shipek 1978).

The tribes of the region were organized into patrilineal clans or bands centered on a chief, composed of 25–30 people (Kroeber 1925), each of which had their own territorial land or range where food and other resources were collected at different locations throughout the year (Sparkman 1908). The title of chief was heritable along family lines. Inter-band conflict was most common over trespassing. Sparkman observed that “when questioned as to when or how the land was divided and subdivided, the Indians say they cannot tell, that their fathers told them that it had always been thus” (1908). Place names were assigned to each territory, often reflecting common animals, plants, physical landmarks, or cosmological elements that were understood as being related to that location. Marriages were generally arranged by parents or guardians. Free and widowed women had the option to choose their partner. Polygamy occurred though was not common, often with a single man marrying a number of sisters and wives. Shamanism was a major

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component in tribal life. The physical body and its components was thought to be related to the power of an individual, and wastes such as fluids, hair, and nails were discarded with intent. Hair, once cut, was often carefully collected and buried to avoid being affected negatively or controlled by someone who wishes them harm. Some locations and natural resources were of cultural significance. Springs and other water-related features were thought to be related with spirits. These resources, often a component of origin stories, had power that came with a variety of risks and properties to those who became affected. Puberty ceremonies for both boys and girls were complex and rigorous. Mourning ceremonies were similar throughout the region, generally involving cutting of the hair, burning the deceased's clothes a year after death, and redistributing personal items to individuals outside of the immediate tribal group (Sparkman 1908; Kroeber 1925). The center of the Juaneño and Gabrielino religion was *Chinigchinich*, the last of a series of heroic mythological figures. The heroes were originally from the stars and the sagas told of them formed the Juaneño religious beliefs. The most obvious expression of the religion was the *Wankech*, a brush enclosed area where religious observances were performed. The *Wankech* contained an inner enclosure housing a representation of *Chinigchinich*, a coyote skin stuffed with feathers, claws, beaks, and arrows.

The staple food of the Native American inhabitants of this region during the ethnohistoric period was acorns (Sparkman 1908). Of the six or more oak species within this traditional territory, the most desirable of these was the black oak (*Quercus kelloggii*) due to its ease of processing, protein content, and digestibility. Acorns were stored in granaries to be removed and used as needed. The acorns were generally processed into flour using a mortar and pestle. The meal was most commonly leached with hot water and the use of a rush basket; however, there are also accounts of placing meal into excavated sand and gravel pits to allow the water to drain naturally. The acorn was then prepared in a variety of ways, though often with the use of an earthen vessel (Sparkman 1908). Other edible and medicinal plants of common use included wild plums, choke cherries, Christmas berry, gooseberry, elderberry, willow, *Juncus*, buckwheat, lemonade berry, sugar bush, sage scrub, currants, wild grapes, prickly pear, watercress, wild oats and other plants. More arid plants such as *Yucca*, *Agave*, mesquite, chia, bird-claw fern, *Datura*, yerba santa, *Ephedra*, and cholla were also of common use by some Juaneño and Gabrielino populations. A number of mammals were commonly eaten. Game animals included black-tailed deer, antelope, rabbits, hares, birds, ground squirrels, woodrats, bears, mountain lions, bobcats, coyotes, and others. In lesser numbers, reptiles and amphibians may have been consumed. Fish and marine resources provided some portion of many tribal communities, though most notably those nearest the coast. Shellfish would have been procured and transported inland from three primary environments, including the sandy open coast, bay and lagoon, and rocky open coast. The availability of these marine resources changed with the rising sea levels, siltation of lagoon and bay environments, changing climatic conditions, and intensity of use by humans and animals.

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Areas or regions, identified by known physical landmarks, could be recognized as band-specific territories that might be violently defended. Other areas or resources, such as water sources and other locations that were rich in natural resources, were generally understood as communal land to be shared. The coastal Juaneño and Gabrieleño exchanged a number of local goods, such as seafood, coastal plants, and various types of shell, for items including acorns, agave, mesquite beans, gourds, and other more interior plants of use (Luomala 1978). Shellfish would have been procured from three primary environments, including the sandy open coast, bay and lagoon, and rocky open coast. The availability of these marine resources changed with the rising sea levels, siltation of lagoon and bay environments, changing climatic conditions, and intensity of use by humans and animals (Gallegos and Kyle 1988; Pigniolo 2005; Warren 1964). Shellfish from sandy environments included *Donax*, *Saxidomas*, *Tivela*, and others. Rocky coast shellfish dietary contributions consisted of *Pseudochama*, *Megastraea*, *Saxidomus*, *Protothaca*, *Megathura*, *Mytilus*, and others. Lastly, the bay environment would have provided *Argopecten*, *Chione*, *Ostrea*, *Neverita*, *Macoma*, *Tagelus*, and others. While marine resources were obviously consumed, terrestrial animals and other resources likely provided a large portion of sustenance. Game animals consisted of rabbits, hares (*Leporidae*), birds, ground squirrels, woodrats (*Neotoma*), deer, bears, mountain lions (*Puma concolor*), bobcats (*Lynx rufus*), coyotes (*Canus latrans*), and others. In lesser numbers, reptiles and amphibians may have been consumed.

A number of local plants were used for food and medicine. These were exploited seasonally, and were both traded between regional groups and gathered as a single triblet moved between habitation areas. Some of the more common of these that might have been procured locally, or as higher elevation varieties, would have included buckwheat (*Eriogonum fasciculatum*), Agave, Yucca, lemonade berry (*Rhus integrifolia*), sugar brush (*Rhus ovata*), sage scrub (*Artemisia californica*), yerba santa (*Eriodictyon*), sage (*Salvia*), *Ephedra*, prickly pear (*Opuntia*), mulefat (*Baccharis salicifolia*), chamise (*Adenostoma fasciculatum*), elderberry (*Sambucus nigra*), oak (*Quercus*), willow (*Salix*), and *Juncus* grass, among many others (Wilken 2012).

2.2.5 The Historic Period (post-AD 1542)

European activity in the region began as early as AD 1542, when Juan Rodríguez Cabrillo landed in San Diego Bay. Sebastián Vizcaíno returned in 1602, and it is possible that there were subsequent contacts that went unrecorded. These brief encounters made the local native people aware of the existence of other cultures that were technologically more complex than their own. Epidemic diseases may also have been introduced into the region at an early date, either by direct contacts with the infrequent European visitors or through waves of diffusion emanating from native peoples farther to the east or south. Father Juan Crespi, a member of the 1769 Spanish Portolà expedition, authored the first written account of interaction between Europeans and the indigenous population in the region that makes up Orange County today. It is possible, but as yet

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unproven, that the precipitous demographic decline of native peoples had already begun prior to the arrival of Gaspar de Portolá and Junípero Serra in 1769.

Spanish colonial settlement was initiated in 1769, when multiple expeditions arrived in San Diego by land and sea, and then continued northward through the coastal plain toward Monterey. A military presidio and a mission were soon firmly established at San Diego, despite violent resistance to them from a coalition of native communities in 1776. Mission San Juan Capistrano was established this same year, on November 1st. Private ranchos subsequently established by Spanish and Mexican soldiers, as well as other non-natives, appropriated much of the remaining coastal or near-coastal locations (Pourade 1960–1967).

Mexico's separation from the Spanish empire in 1821 and the secularization of the California missions in the 1830s caused further disruptions to native populations. Some former mission neophytes were absorbed into the work forces on the ranchos, while others drifted toward the urban centers at San Diego and Los Angeles or moved to the eastern portions of the county where they were able to join still largely autonomous native communities. United States conquest and annexation, together with the gold rush in Northern California, brought many additional outsiders into the region. Development during the following decades was fitful, undergoing cycles of boom and bust. With rising populations in the nineteenth century throughout the Southern California region, there were increased demands for important commodities such as salt.

The Project location falls at the western limits of Rancho Trabuco, which was bordered to the west by Rancho Cañada de Los Alisos. This rancho was granted by the Mexican Government to Santiago Argüello in 1841, with additional acreage provided to John Forster in 1846. The area included nearly 22,000 acres east of Trabuco Canyon (Garcia et al. 2011).

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3 METHODS

3.1 Intensive Pedestrian Survey

Dudek cross-trained paleontologist and archaeologist, Michael Williams, Ph.D., under the direction of Adam Giacinto, MA, RPA and Micah Hale, Ph.D., RPA, inspected all areas of the planned alignment on February 18, 2020. Much of the area is covered with roads, although the open space area north of Oso Pkwy consists of open space. This area was subject to intensive-level survey spaced no more than 10 meters apart. Archaeological survey exceeded the applicable Secretary of Interior Professional Qualifications Standards for archaeological survey and evaluation. Survey crew was equipped with a Global Positioning System (GPS) receiver with sub-meter accuracy. Location-specific photographs were taken. Evidence for buried cultural deposits was opportunistically sought through inspection of natural or artificial erosion exposures and the spoils from rodent burrows. No artifacts were identified nor collected during the survey.

3.2 Disturbances

Disturbances to the Project AP have included a number of development-related impacts. Evident surface and subsurface disturbances have been caused through construction of paved and gravel roads, installation of existing water lines, and residential and commercial developments. Dudek reviewed historical aerials (available since 1938) and topographic maps (available since 1949) (NETR 2020a, 2020b). These maps and aerial photographs did not indicate the presence of historical built-environment resources within the APE.

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4 RESULTS

4.1 Previous Cultural Resource Investigations

A records search of the APE and the surrounding one-half mile was completed by SCCIC staff on January 23, 2020 (Confidential Appendix A). This search included their collection of mapped prehistoric, historical and built-environment resources, Department of Parks and Recreation (DPR) Site Records, technical reports, archival resources, and ethnographic references. Additional consulted sources included the NRHP, California Inventory of Historical Resources/CRHR and listed OHP Archaeological Determinations of Eligibility, California Points of Historical Interest, California Historical Landmarks, and California Department of Transportation Bridge Survey information.

4.1.1 Cultural Resources

Two cultural resources have been previously identified within the APE (CA-LAN-899/H and CA-LAN-36/H). CA-LAN-899/H consists of prehistoric, protohistoric, and historic artifacts; and CA-LAN-36/H consists of prehistoric and historic artifacts. Nine sites with prehistoric resources, three sites with historic resources, and one site with unknown resources have been recorded within the surrounding one-half mile records search area (Table 1) (Confidential Appendix A).

Table 1.
Cultural Resources in Relation to the APE

Primary	Trinomial	Age	Description	Relation to APE
P-19-000036	CA-LAN-000036/H	Prehistoric, Protohistoric, and Historic	Ceramic Scatter, Caches, Rock Shelter/Cave	Inside
P-19-000470	CA-LAN-000470	Prehistoric	Rock Shelter/Cave and Habitation Debris	Outside
P-19-000784	CA-LAN-000784	Prehistoric	Lithic Scatter, Rock Shelter/Cave, and Habitation Debris	Outside
P-19-000785	CA-LAN-000785	Prehistoric	Bedrock Milling Feature, Petroglyphs, and Pictographs	Outside
P-19-000895	CA-LAN-000895	Prehistoric	Lithic Scatter, Hearth/Pits, and Habitation Debris	Outside
P-19-000896	CA-LAN-000896	Prehistoric	Lithic Scatter and Habitation Debris	Outside
P-19-000897	CA-LAN-000897	Prehistoric	Lithic Scatter	Outside
P-19-000898	CA-LAN-000898	Prehistoric	Lithic Scatter and Quarry	Outside
P-19-000899	CA-LAN-000899/H	Prehistoric and Historic	Foundations/Structure Pads. Lithic Scatter, and Adobe Building/Structure	Inside

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Primary	Trinomial	Age	Description	Relation to APE
P-19-000900	CA-LAN-000900H	Historic	Foundations/Structure Pads, Privies/Dumps/Trash Scatters, and Adobe Building/Structure	Outside
P-19-000901	CA-LAN-000901	Unknown	Petroglyphs	Outside
P-19-100318	—	Historic	Privies/Dumps/Trash Scatters	Outside
P-19-100319	—	Historic	Privies/Dumps/Trash Scatters	Outside
P-19-100320	—	Prehistoric	Lithic Scatter	Outside
P-19-100321	—	Prehistoric	Lithic Scatter	Outside

4.1.1.1 P-19-000036 (CA-LAN-36/H)

CA-LAN-36/H, located inside the APE, was recorded in 1949 by the University of California, Los Angeles. Records on file with the SCCIC indicate the resource is documented to include a historic-era ceramic scatter, artifact caches, rock shelter, and habitation debris. No midden or subsurface deposits of cultural material were noted. The site record described CA-LAN-36/H as an encampment along the route to Rancho Trabuco that was occupied until 1867 by Native Americans that had survived the smallpox epidemic of 1862.

4.1.1.2 P-19-000899 (CA-LAN-899/H)

CA-LAN-899/H, located inside the APE, was recorded in 1980 by T. Cooley. The site was observed to include “a thin scatter of milling stone assemblage artifacts over a large area” according to the DPR site record. No specification regarding the age of the artifacts were noted on the site record, and no midden or subsurface deposits of cultural material were noted. The SCCIC records search indicated the site contained foundations/structure pads and adobe building/structures; however, these were not observed in the historical aerial images reviewed. Cooley observed that the site was likely disturbed by previous brush clearing and grading. The portion of the site within the Project APE has been destroyed by housing development. Historical aerial imagery (from 1994 and 1997) indicate the site was developed between those years.

4.1.2 Previous Technical Studies

SCCIC records indicate that 25 previous cultural resources technical investigations have been conducted within a one-half-mile radius of the Project alignment. Of these, 2 studies (Del Chario and Demcak 1989; Julian and Demcak 1993) are known to have directly included portions of the current APE, and 1 is a paleontological resources study (Table 1).

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Table 2.
Previous Studies That Have Included the Project Alignment

Author	Year	Company	Title
Bean, Lowell	1979	Cultural Systems Research, Inc.	Cultural Resources and the High Voltage Transmission Line From San Onofre to Santiago and Black Star Canyon
Cottrell, Marie G.	1977	Archaeological Research, Inc.	Report of Archaeological Investigations Conducted at CA-ORA-470 Planning Area 8, Mission Viejo
Cottrell, Marie G.	1980	Archaeological Research, Inc.	Archaeological Resources Assessment Conducted for the Trabuco Land and Cattle Company and the Plano Trabuco Properties in the Trabuco Area of Orange County
Anonymous	1980	Not Listed	Archaeological Resources Assessment Conducted for 7,000 Acres in South Orange County Referred to As the Horno Parcel
Cottrell, Marie G.	1984	Not Listed	Archaeological Investigations of CA-ORA-896, Trabuco Area of Orange County, California
Bissell, Ronald M.	1989	RMW Paleo Associates, Inc.	Cultural Resources Management Plan for O'Neill Regional Park Orange County, California
Del Chario, Kathleen C. and Carol R. Demcak	1989	Archaeological Resource Management Corporation	Preliminary Report of Test-level Investigations Conducted at CA-ORA-899, -36, and -895, Las Flores Village Project, Rancho Santa Margarita, Orange County, California
Demcak, Carol R.	1991	Archaeological Resource Management Corporation	Cultural Resources Assessment for the Santa Margarita Water District (SMWD) Emergency Operational Storage Reservoir Alternative, South Orange County, California
Julien, Melissa R. and Carol R. Demcak	1993	Archaeological Resource Management Corporation	Archaeological Monitoring Report for Contract 1485 and Contract 1485a, South County Pipeline Project, Orange County, California
Padon, Beth and Fran Govean	1993	Petra Resources Inc.	An Archaeological and Paleontological Resource Assessment of the Proposed High School Site, Chiquita Canyon, Orange County
Demcak, Carol R.	1994	Archaeological Resource Management Corporation	Report of Cultural Resources Assessment for Antonio Parkway Alignment From Oso Parkway to La Pata Drive, South Orange County, California
McCoy, Lesley C. and Philips Roxana	1980	Westec Services, Inc.	National register Assessment Program of Cultural Resources for the 230 kV Transmission Line Rights-of-Way from San Onofre Nuclear Generating Station to Black Star Canyon and Santiago Substation and to Encina and Mission Valley Substation
Carleton, Jones S., Sue A. Wade, Kathleen C. Allen, and Carol R. Demcak	1995	Archaeological Resource Management Corporation	Report of Archaeological Test and Salvage Investigations at the Golf Course Village Sites, Plano Trabuco, Orange County, California

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Author	Year	Company	Title
Demcak, Carol R. and Milos Velechovsky	1996	Archaeological Resource Management Corporation	Archaeological Investigations for the Antonio Parkway Extension, Oso Parkway to Ortega Highway, South Orange County, California
Lapin, Philippe	2000	LSA Associates, Inc.	Cultural Resource Assessment for Pacific Bell Wireless Facility CM 371-01, County of Orange, California
Demcak, Carol R.	1999	Archaeological Resource Management Corporation	Report of Cultural Resources Records Search for Project 2000, Rancho Mission Viejo, Orange County
Demcak, Carol R.	2000	Archaeological Resource Management Corporation	Report of Archaeological Resources Survey for Rancho Mission Viejo, Project 2000, South Orange County
Evans, Nancy H.	2000	Archaeological Resource Management Corporation	Rancho Mission Viejo: An Ethnohistory
Bonner, Wayne H.	2005	Michael Brandman Associates	Cultural Resources Records Search and Site Visit for Cingular Wireless Oc-024-01 (SMWD Pump Station), 29634 Oso Parkway, Trabuco Canyon, Orange County, California
Demcak, Carol R. and Stephen R. Van Wormer	2003	Archaeological Resource Management Corp.	Report of Archaeological Testing for the Project 2000, Phase II-b, Rancho Mission Viejo, South Orange County, California
Velechovsky, Milos	2000	Archaeological Resource Management Corporation	Report of Paleontological Resources Survey for the Ranch Plan, Rancho Mission Viejo, South Orange County, California
Demcak, Carol R.	2002	Archaeological Resource Management Corporation	Report of Archaeological Testing for the Ranch Plan, Phase II-A, Rancho Mission Viejo, South Orange County, California
Evans, Nancy H.	2000	Archaeological Resource Management Corporation	(duplicate of OR-2394) Rancho Mission Viejo: An Ethnohistory
Demcak, Carol R. and Stephen R. Van Wormer	2003	Archaeological Resource Management Corporation	Report of Archaeological Testing for the Ranch Plan, Phase II-B, Rancho Mission Viejo, South Orange County, California
Deering, Mark and Mason, Roger D.	2011	ECORP Consulting, Inc	Cultural Resources Documentation and Monitoring of Southern California Edison Access Roads During Maintenance by the Orange County Fire Authority, 2010 Orange County, California

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4.2 NAHC Search and Tribal Coordination

Dudek requested a NAHC search of the Sacred Lands File for the Project site, and the NAHC provided results on February 20, 2020. This search indicated the presence of Native American resources listed in the Sacred Lands File within the Project site or the surrounding one-half-mile buffer (Confidential Appendix B). The NAHC additionally provided a list of Native American tribes and individuals/organizations that might have knowledge of cultural resources in this area.

4.3 Pedestrian Survey

An intensive pedestrian survey was conducted of the area of potential effects, consisting of the Project alignment, by Dudek cross-trained paleontologist and archaeologist, Michael Williams, on February 18, 2020. No archaeological or historic-era built-environment artifacts or features were identified. The majority of the Project alignment is within paved road rights-of-way through residential neighborhoods. The area of the Project not within residential areas is the 16-inch pipeline on the west side of the Project alignment along the SMWD access road behind a residential area. With the exception of portions of the alignment along the SMWD access road, all areas of the APE appeared to have been previously disturbed through paving for roads and water pump stations (Figures 3 – 5). The SMWD access road is heavily traveled and portions appear to have been overlain with gravel.

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Figure 3. Photograph showing paved street at western beginning of 10-inch pipeline along Oso Parkway. View to the east.

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Figure 4. Photograph at western terminus of 8-inch pipeline showing development within Site 899. View to the west.

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Figure 5. Photograph of southern terminus of 16-inch pipeline within Site 36. View to the northwest.

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Cultural Resources Inventory Report for the Las Flores Enhanced Water Reliability Project, Orange County, California

4.4 Tribal Coordination

Following the NAHC response, letters were sent on March 3 and 4, 2020, to the listed tribal representatives with the intent of requesting information, opinions or concerns relating to the Project impacts (Confidential Appendix B). These letters contained a brief description of the planned Project, reference maps, and a summary of the NAHC Sacred Lands File search results.

To date, the Agua Caliente Band of Cahuilla Indians, Pala Band of Mission Indians, Juaneño Band of Mission Indians, and Rincon Band of Luiseño Indians have responded to our tribal inquiries. The Agua Caliente Band of Cahuilla Indians, Pala Band of Mission Indians, and Rincon Band of Luiseño Indians indicated the Project is not located within their traditional use area and deferred to tribes that are located closer to the Project. The Juaneño Band of Mission Indians stated they wanted to consult on the Project and requested that Native American and archaeological monitors be present during all ground disturbing activities, (Confidential Appendix B).

The Project is subject to compliance with AB 52 (California Public Resources Code Section 21074), which requires consideration of impacts to “tribal cultural resources” as part of the CEQA process, and requires the CEQA lead agency to notify any groups (who have requested notification) of the proposed project who are traditionally or culturally affiliated with the geographic area of the project. SMWD sent AB 52 notification letters to tribal representatives in early March. Because AB 52 is a government-to-government process, all records of correspondence related to AB 52 notification and any subsequent consultation are on file with SMWD.

4.5 Geomorphology

4.5.1 Archaeological Sensitivity

The potential for yet-identified cultural resources in the vicinity was reviewed against geologic and topographic geographic information system (GIS) data for the area and information from other nearby projects. The “archaeological sensitivity,” or potential to support the presence of buried prehistoric archaeological deposits, is generally interpreted based on geologic landform and environmental parameters (i.e., distance to water and landform slope). The Project alignment is underlain by the following geological units from youngest to oldest:

- Middle to early Pleistocene (~ 126,000–2.58 million years ago [mya]) very old axial channel deposits (map unit Qvoaa)
- Late Miocene (~12 mya–5.33 mya) Monterey Formation (map unit Tm)

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- Late Eocene to early Miocene (~ 38 mya–23 mya) Sespe Formation (map unit Ts)

These soils predate human occupation of the region and, as such, the formation of cultural deposits is relatively unlikely. However, given that the APE is located along areas of relatively low slope, it should be assumed that there has been some Holocene-era soil accumulation and, as such, there is potential for archaeological resources to persist, if present, in areas where disturbances have been limited. Some areas of the APE run along existing paved roads; subsurface soils in these areas are likely highly disturbed.

Based on the process of soil formation and the level of previous disturbance, the likelihood for significant unanticipated prehistoric archaeological deposits to be present within the APE is considered low to moderate. Given the presence of permanent water (Tijeras Creek) and other previously recorded prehistoric resources within and near the APE, there is potential for prehistoric archaeological resources to be present. The potential for small historic-period sites such as trash scatters and water-related features within the Project site is considered low to moderate, because such sites would likely been observable during archaeological survey.

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5 SUMMARY AND MANAGEMENT CONSIDERATIONS

5.1 Impact Analysis

Two previously recorded archaeological resources (CA-LAN-36/H and CA-LAN-899/H) were identified within SCCIC records to fall within the Project APE, and a number of additional sites are recorded in the surrounding vicinity. CA-LAN-36/H, an ethnohistoric Native American encampment dating between 1862 and 1867 along the road to Rancho Trabuco, was last documented in 1949. CA-LAN-899/H, a prehistoric lithic scatter, was last documented in 1980 and was noted to be at risk of destruction. These resources were not identified within the APE during archaeological survey, and have likely been destroyed where they intersect the Project. Based on geomorphological evidence and the level of previous disturbance, areas within existing roads have a low potential to contain unanticipated cultural resources. The portion of the APE that includes the unpaved access road north of Oso Parkway has a moderate potential to contain unanticipated cultural deposits. The NAHC Sacred Lands File search did not indicate that cultural resources are in the project area; however, Native American outreach for the Project suggests that the area is of high cultural value to Juaneño Band of Mission Indians community. Management recommendations to reduce potential impacts to unanticipated archaeological resources and human remains during Project construction activities are provided as follows.

5.2 Recommendations

A qualified archaeologist (project archaeologist), as defined by CEQA, should be retained to manage the implementation of the cultural resources mitigation program as outlined below. Prior to the initiation of ground-disturbing work, construction crews will be made aware of the potential to encounter cultural resources and the requirement for cultural monitors to be present during these activities. Areas observed to have potential to contain yet-identified subsurface cultural material or deposits are located within portions of the APE along the unpaved access road north of Oso Parkway. Other areas within the APE are not recommended to require archaeological monitoring, as any potential resources have likely been destroyed through previous road and utility construction. Archaeological monitoring may be adjusted at the recommendation of the qualified archaeological principal investigator, and in consultation with SMWD, based on inspection of exposed subsurface soils and their observed potential to contain intact cultural deposits or material.

Cultural Resources Inventory Report for the Las Flores Enhanced Water Reliability Project, Orange County, California

CUL-1:

- A. Prior to beginning construction activities, the project archaeologist will attend any pertinent preconstruction meetings with the construction manager and/or pipeline contractor in order to provide recommendations and answer questions relating to the archaeological monitoring program. The Project archaeologist will be familiar with the cultural inventory conducted for the current Project and prepared to introduce any pertinent information concerning expectations and probabilities of discovery during ground disturbing activities.
- B. A qualified archaeological monitor will be present full time during the initial disturbances of soil with potential to contain cultural deposits, which includes the unpaved access road north of Oso Parkway. Archaeological monitoring of initial ground disturbance will not exceed a depth of 5.5 feet unless cultural resources are identified. Cultural monitoring will not be required within paved roads or for demolition of existing buildings, nor for subsurface soils currently beneath these structures. With consultation of the SMWD, Cultural resources monitoring may be reduced from initial full-time monitoring to periodic spot checks, or discontinued if appropriate, once the project archaeologist determines that there is little or no risk to encounter cultural material.
- C. Daily archaeological monitoring logs will be prepared. Logs will include monitor names and affiliations, a description of general activities observed, and cultural discoveries, as well as comments or concerns as applicable.
- D. In the event that archaeological resources (e.g., sites, features, or artifacts) are exposed during construction activities for the Project, all construction work occurring within 100 feet of the find shall immediately stop until the qualified archaeological principal investigator, meeting the Secretary of the Interior's Professional Qualification Standards, can evaluate the significance of the find and determine whether additional study is warranted. If there is any indication that the find could be of interest of Native Americans, the archaeological principal investigator shall notify a representative from the Juaneño Band of Mission Indians, Acjachemen Nation of the find. Should it be required, temporary flagging may be installed around this resource in order to avoid any disturbances from construction equipment. Depending upon the significance of the find under CEQA (14 CCR 15064.5[f]; California Public Resources Code Section

Cultural Resources Inventory Report for the Las Flores Enhanced Water Reliability Project, Orange County, California

21082), the archaeological monitor in correspondence with the qualified archaeological principal investigator may simply record the find to appropriate standards (thereby addressing any data potential) and allow work to continue. If the qualified archaeological principal investigator, in consultation with the Native American representative (if applicable), observes the discovery to be potentially significant under CEQA or Section 106 of the NHPA, additional efforts (such as preparation of an archaeological treatment plan, testing, and/or data recovery) may be warranted prior to allowing construction to proceed in this area. The feasibility for avoidance will also be discussed with SMWD, the Native American representative (if applicable), and other appropriate parties prior to any investigation that may result in disturbance to archaeological resources.

- E. The project archaeologist will be responsible for ensuring that all cultural materials collected will be cleaned, catalogued, and permanently curated with an appropriate institution; that a letter of acceptance from the curation institution has been submitted to the lead agency; that all artifacts are analyzed to identify function and chronology as they relate to the history of the area; that faunal material will be identified as to species; and specialty studies are completed, as appropriate.
- F. All construction crew members should be alerted to the potential to encounter archaeological material. In the event that cultural resources (e.g., sites, features, artifacts, or fossilized material) are exposed during construction activities for the Project, all construction work occurring within 100 feet of the find shall immediately stop until a qualified specialist, meeting the Secretary of the Interior's Professional Qualification Standards, can evaluate the significance of the find and determine whether additional study is warranted. Prehistoric archaeological deposits may be indicated by the presence of discolored or dark soil, fire-affected material, concentrations of fragmented or whole freshwater bivalve shell, burned or complete bone, non-local lithic materials, or the characteristic observed to be atypical of the surrounding area. Common prehistoric artifacts may include modified or battered lithic materials; lithic or bone tools that appear to have been used for chopping, drilling, or grinding; projectile points; fired clay ceramics or non-functional items; and other items. Historic-age deposits are often indicated by the presence of glass bottles and shards, ceramic material, building or domestic refuse, ferrous metal, or old features such as concrete foundations or privies. Depending upon the

Cultural Resources Inventory Report for the Las Flores Enhanced Water Reliability Project, Orange County, California

significance of the find under CEQA (14 CCR 15064.5[f]; California Public Resources Code Section 21082), the archaeologist may simply record the find and allow work to continue. If the discovery proves significant under CEQA, additional work, such as preparation of an archaeological treatment plan, testing, or data recovery may be warranted.

- G. In accordance with Section 7050.5 of the California Health and Safety Code, if human remains are found, the county coroner shall be immediately notified of the discovery. No further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall occur until the county coroner has determined, within 2 working days of notification of the discovery, the appropriate treatment and disposition of the human remains. If the county coroner determines that the remains are, or are believed to be, Native American, the coroner shall notify the NAHC in Sacramento within 24 hours. In accordance with California Public Resources Code, Section 5097.98, the NAHC must immediately notify those persons it believes to be the most likely descendant from the deceased Native American. The most likely descendant shall inspect the remains within 48 hours of being granted access to the site. The designated Native American representative would then determine, in consultation with the property owner, the disposition of the human remains.
- H. Within 3 months following the completion of monitoring, two copies of a monitoring results report (even if negative) and/or evaluation report, if applicable, that describes the results, analysis, and conclusions of the archaeological monitoring program (with appropriate graphics) will be submitted to the lead agency. It is recommended that the lead agency consult directly with the State Historic Preservation Office on the findings of this report.
- I. The archaeologist will be responsible for recording (on the appropriate California Department of Parks and Recreation forms—DPR 523 A and B) any significant or potentially significant resources encountered during the archaeological monitoring program in accordance with the California Environmental Quality Act Cultural Resources Guidelines, and submitting such forms to the South Central Coast Information Center at California State University, Fullerton, with the final monitoring results report.

Cultural Resources Inventory Report for the Las Flores Enhanced Water Reliability Project, Orange County, California

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APPENDIX A (CONFIDENTIAL)

SCCIC Records Search Results

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APPENDIX B
*NAHC Sacred Lands Search
and Tribal Coordination*

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NATIVE AMERICAN HERITAGE COMMISSION

February 20, 2020

Ted Roberts
Dudek

Via Email to: troberts@dudek.com

Re: 12318 Las Flores Enhanced Water Reliability Project, Orange County

Dear Mr. Roberts:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were positive. Please contact the Juaneno Band of Mission Indians – Acjachemen Nation on the attached list for more information. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: steven.quinn@nahc.ca.gov

Sincerely,

Steven Quinn
Cultural Resources Analyst

Attachment

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
Chumash

SECRETARY
Merri Lopez-Keifer
Luiseño

PARLIAMENTARIAN
Russell Attebery
Karuk

COMMISSIONER
Marshall McKay
Wintun

COMMISSIONER
William Mungary
Paiute/White Mountain
Apache

COMMISSIONER
Joseph Myers
Pomo

COMMISSIONER
Julie Tumamait-Stenslie
Chumash

COMMISSIONER
[Vacant]

EXECUTIVE SECRETARY
Christina Snider
Pomo

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**Native American Heritage Commission
Native American Contact List
Orange County
2/20/2020**

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Palm Springs, CA, 92264
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Fax: (760) 699-6919

Cahuilla

Juaneno Band of Mission Indians Acjachemen Nation - Romero

Teresa Romero, Chairperson
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Juaneno

Agua Caliente Band of Cahuilla Indians

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Cahuilla

La Jolla Band of Luiseno Indians

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Luiseno

Juaneno Band of Mission Indians

Sonia Johnston, Chairperson
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sonia.johnston@sbcglobal.net

Juaneno

Pala Band of Mission Indians

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Cupeno
Luiseno

Juaneno Band of Mission Indians Acjachemen Nation - Belardes

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Juaneno

Pauma Band of Luiseno Indians

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Luiseno

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Juaneno

Pechanga Band of Luiseno Indians

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Luiseno

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 12318 Las Flores Enhanced Water Reliability Project, Orange County.

**Native American Heritage Commission
Native American Contact List
Orange County
2/20/2020**

***Pechanga Band of Luiseno
Indians***

Mark Macarro, Chairperson
P.O. Box 1477 Luiseno
Temecula, CA, 92593
Phone: (951) 770 - 6000
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***Soboba Band of Luiseno
Indians***

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P.O. BOX 487 Cahuilla
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Rincon Band of Luiseno Indians

Cheryl Madrigal, Tribal Historic
Preservation Officer
One Government Center Lane Luiseno
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Rincon Band of Luiseno Indians

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***San Luis Rey Band of Mission
Indians***

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1889 Sunset Drive Luiseno
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Indians***

1889 Sunset Drive Luiseno
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***Soboba Band of Luiseno
Indians***

Scott Cozart, Chairperson
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Fax: (951) 654-4198
jontiveros@soboba-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 12318 Las Flores Enhanced Water Reliability Project, Orange County.

March 03, 2020

Mr. Temet Aguilar, Chairperson
Pauma & Yuima Reservation
P.O. Box 369
Pauma Valley, CA 92061

***Subject: Information Request for the Las Flores Enhanced Water Reliability Project,
Orange County, California***

Dear Mr. Aguilar,

The Santa Margarita Water District is planning the installation of approximately 3,800 linear feet of 16-inch pipe and 6,390 linear feet of 8-inch pipe in residential streets and easements through previously disturbed open space (Figure 1). The Project also involves the conversion of the Las Flores Lift Station, currently out of service, to a recycled water booster pump station, and the rehabilitation of an approximately 3,650 foot long 10-inch existing force main in the right-of-way within Antonio Parkway (Figure 1). Rehabilitation of the 10-inch force main would be performed using a trenchless rehabilitation method where a liner would be inserted within the existing forcemain for structural reinforcement. The area is currently comprised of paved roads and a gravel access road on an undeveloped parcel of land. This project is located in Sections 5 and 8, Township 7 South, Range 7 West and Sections 4 and 9, Township 7 South Range 7 West of the San Juan Capistrano and Canada Gobernadora U.S. Geological Survey 7.5' topographic maps, respectively.

The Native American Heritage Commission conducted a Sacred Lands file search, and indicated that Native American cultural resources were identified within a one-half mile distance of the proposed project area. A SCCIC records search indicated previously-identified cultural resources that intersected the project APE. A pedestrian survey did not identify any cultural resources that would be disturbed by the proposed project activities. I am writing as part of the Inventory process in order to find out if you, or your tribal community, have any knowledge of cultural resources or places that may be impacted by the proposed project. Any consultation relating to AB 52 should be directed to the lead agency:

Mrs. Karla Houlihan
Santa Margarita Water District
26111 Antonio Parkway
Rancho Santa Margarita, CA 92688

If you have any information or concerns pertaining to such information, please contact me by phone or email.

Respectfully,

A handwritten signature in black ink, reading "Adam Giacinto". The signature is fluid and cursive, with the first name "Adam" and last name "Giacinto" clearly distinguishable.

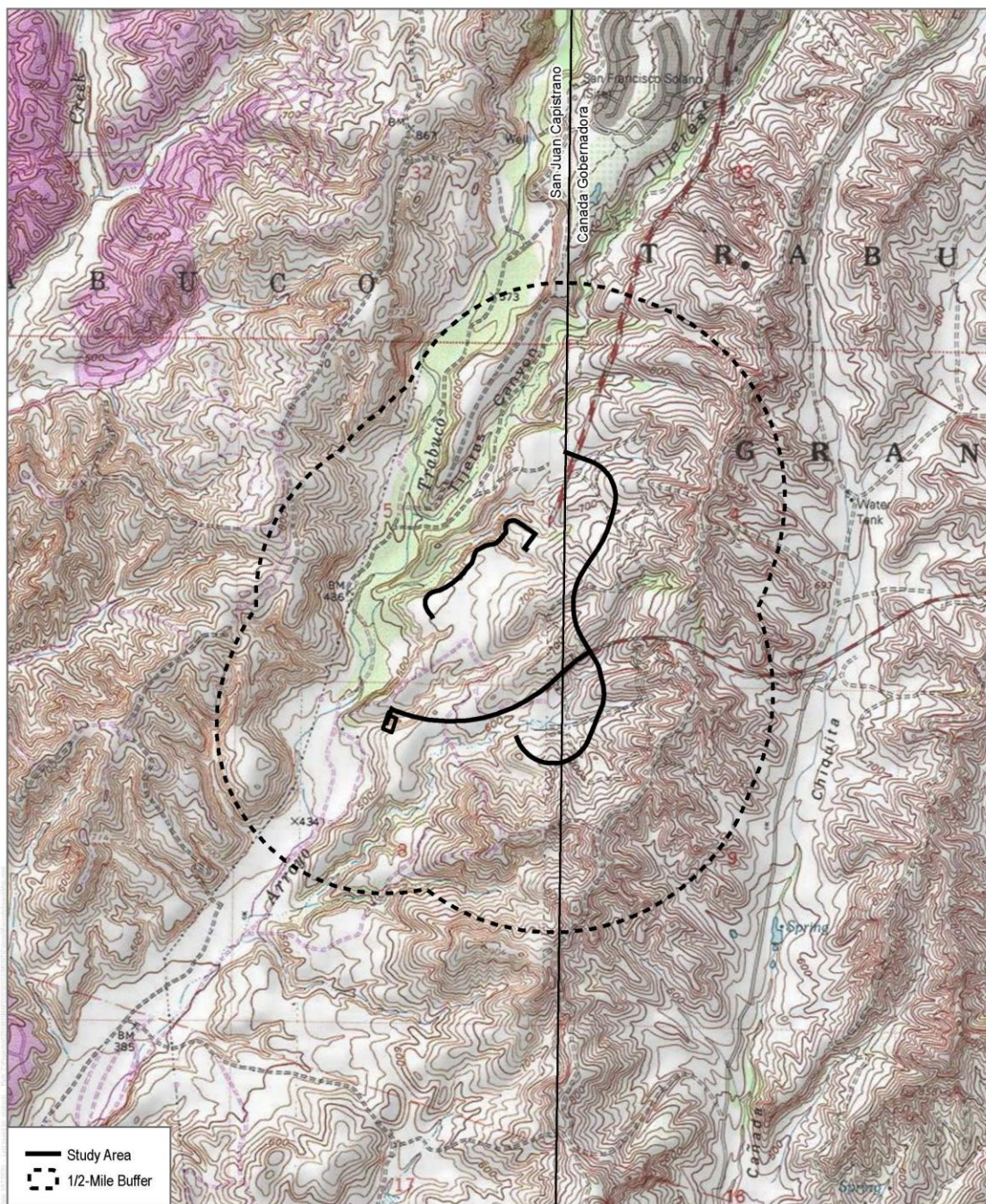
Adam Giacinto, M.A., RPA
Archaeologist

DUDEK

Phone: (760) 942-4252

Email: agiacinto@dudek.com

Attachments: Figure 1. Records Search Map



SOURCE: USGS 7.5-Minute Series San Juan Capistrano and Canada Gobernadora Quadrangles
Trabuco Land Grant (Township 7 South; Range 7 West, Projected)



Records Search Map
Las Flores Enhanced Water Reliability Project

March 03, 2020

Mr. Matias Belardes, Chairperson
Juaneno Band of Mission Indians Acjachemen Nation
32161 Avenida Los Amigos
San Juan Capistrano, CA 92675

***Subject: Information Request for the Las Flores Enhanced Water Reliability Project,
Orange County, California***

Dear Mr. Belardes,

The Santa Margarita Water District is planning the installation of approximately 3,800 linear feet of 16-inch pipe and 6,390 linear feet of 8-inch pipe in residential streets and easements through previously disturbed open space (Figure 1). The Project also involves the conversion of the Las Flores Lift Station, currently out of service, to a recycled water booster pump station, and the rehabilitation of an approximately 3,650 foot long 10-inch existing force main in the right-of-way within Antonio Parkway (Figure 1). Rehabilitation of the 10-inch force main would be performed using a trenchless rehabilitation method where a liner would be inserted within the existing forcemain for structural reinforcement. The area is currently comprised of paved roads and a gravel access road on an undeveloped parcel of land. This project is located in Sections 5 and 8, Township 7 South, Range 7 West and Sections 4 and 9, Township 7 South Range 7 West of the San Juan Capistrano and Canada Gobernadora U.S. Geological Survey 7.5' topographic maps, respectively.

The Native American Heritage Commission conducted a Sacred Lands file search, and indicated that Native American cultural resources were identified within a one-half mile distance of the proposed project area. A SCCIC records search indicated previously-identified cultural resources that intersected the project APE. A pedestrian survey did not identify any cultural resources that would be disturbed by the proposed project activities. I am writing as part of the Inventory process in order to find out if you, or your tribal community, have any knowledge of cultural resources or places that may be impacted by the proposed project. Any consultation relating to AB 52 should be directed to the lead agency:

Mrs. Karla Houlihan
Santa Margarita Water District
26111 Antonio Parkway
Rancho Santa Margarita, CA 92688

If you have any information or concerns pertaining to such information, please contact me by phone or email.

Respectfully,

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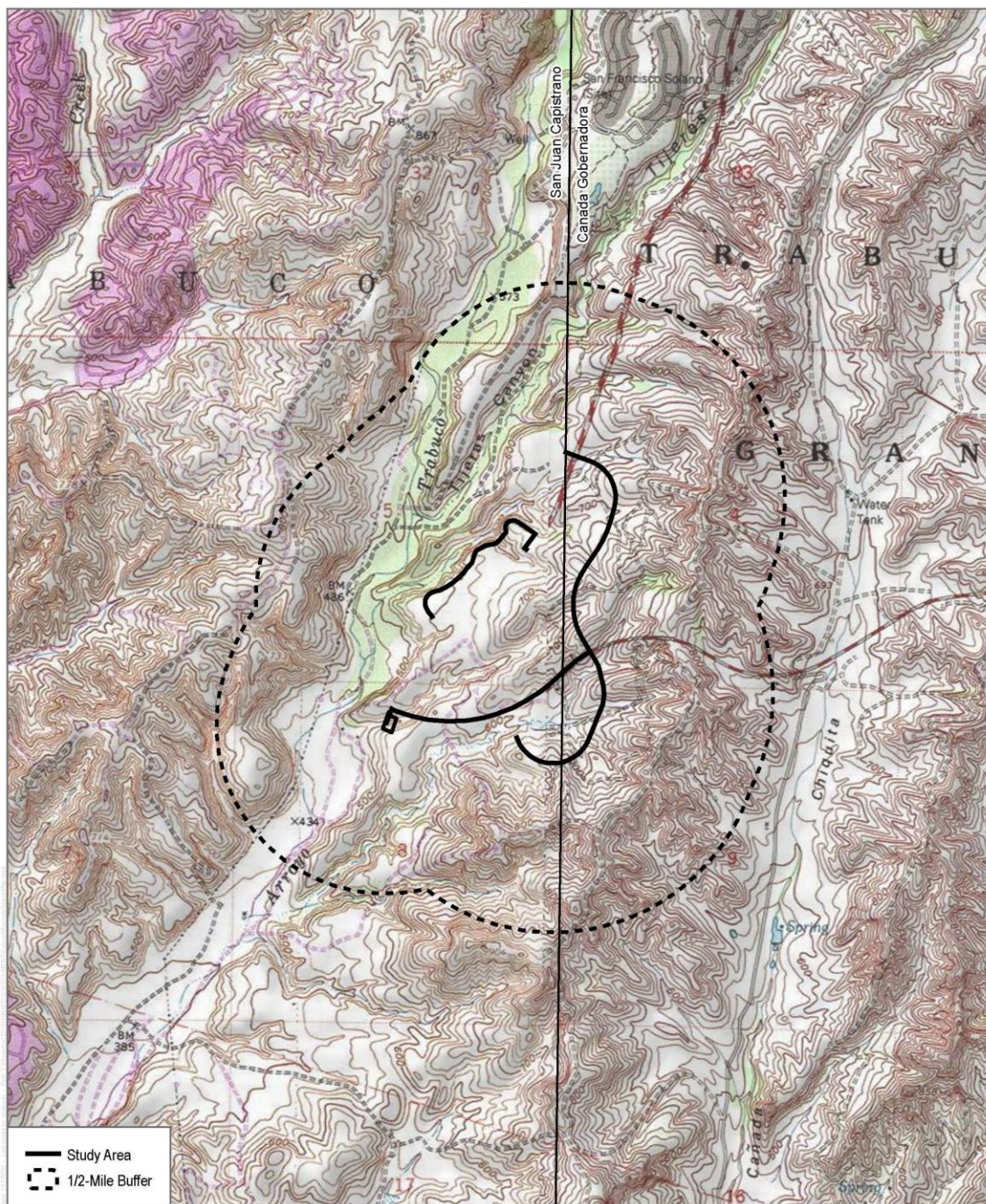
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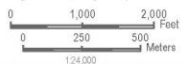
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Trabuco Land Grant (Township 7 South; Range 7 West, Projected)

DUDEK



Records Search Map

Las Flores Enhanced Water Reliability Project

March 04, 2020

Mr. Scott Cozart, Chairperson
Soboba Band of Luiseno Indians
P.O. Box 487
San Jacinto, CA 92583

***Subject: Information Request for the Las Flores Enhanced Water Reliability Project,
Orange County, California***

Dear Mr. Cozart,

The Santa Margarita Water District is planning the installation of approximately 3,800 linear feet of 16-inch pipe and 6,390 linear feet of 8-inch pipe in residential streets and easements through previously disturbed open space (Figure 1). The Project also involves the conversion of the Las Flores Lift Station, currently out of service, to a recycled water booster pump station, and the rehabilitation of an approximately 3,650 foot long 10-inch existing force main in the right-of-way within Antonio Parkway (Figure 1). Rehabilitation of the 10-inch force main would be performed using a trenchless rehabilitation method where a liner would be inserted within the existing forcemain for structural reinforcement. The area is currently comprised of paved roads and a gravel access road on an undeveloped parcel of land. This project is located in Sections 5 and 8, Township 7 South, Range 7 West and Sections 4 and 9, Township 7 South Range 7 West of the San Juan Capistrano and Canada Gobernadora U.S. Geological Survey 7.5' topographic maps, respectively.

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Mrs. Karla Houlihan
Santa Margarita Water District
26111 Antonio Parkway
Rancho Santa Margarita, CA 92688

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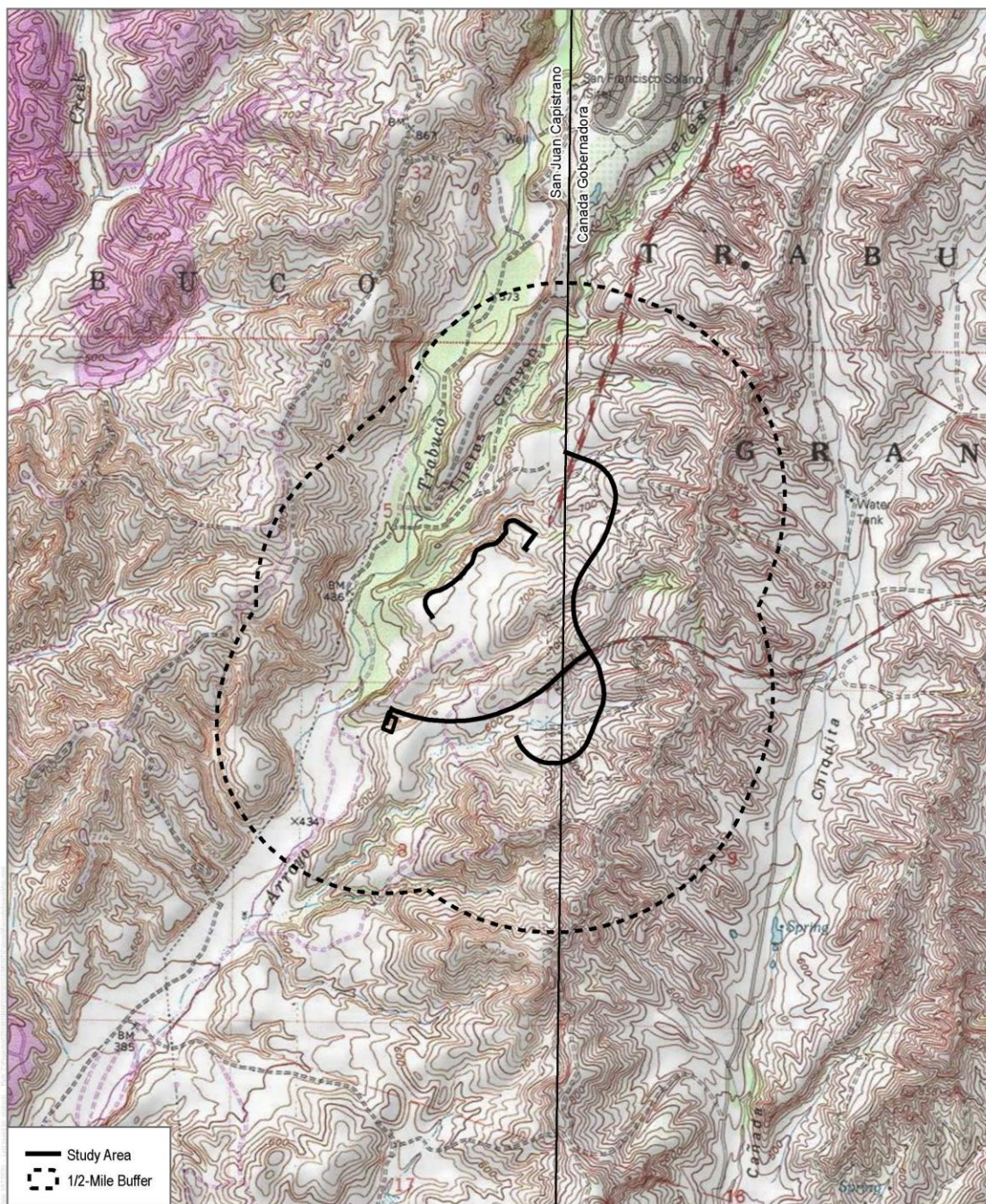
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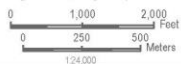
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Attachments: Figure 1. Records Search Map



SOURCE: USGS 7.5-Minute Series San Juan Capistrano and Canada Gobernadora Quadrangles
Trabuco Land Grant (Township 7 South; Range 7 West, Projected)

DUDEK



Records Search Map

Las Flores Enhanced Water Reliability Project

March 04, 2020

Ms. Patricia Garcia-Plotkin, Tribal Historic Preservation Officer
Agua Caliente Band of Cahuilla Indians
5401 Dinah Shore Drive
Palm Springs, CA 92262

***Subject: Information Request for the Las Flores Enhanced Water Reliability Project,
Orange County, California***

Dear Ms. Garcia-Plotkin,

The Santa Margarita Water District is planning the installation of approximately 3,800 linear feet of 16-inch pipe and 6,390 linear feet of 8-inch pipe in residential streets and easements through previously disturbed open space (Figure 1). The Project also involves the conversion of the Las Flores Lift Station, currently out of service, to a recycled water booster pump station, and the rehabilitation of an approximately 3,650 foot long 10-inch existing force main in the right-of-way within Antonio Parkway (Figure 1). Rehabilitation of the 10-inch force main would be performed using a trenchless rehabilitation method where a liner would be inserted within the existing forcemain for structural reinforcement. The area is currently comprised of paved roads and a gravel access road on an undeveloped parcel of land. This project is located in Sections 5 and 8, Township 7 South, Range 7 West and Sections 4 and 9, Township 7 South Range 7 West of the San Juan Capistrano and Canada Gobernadora U.S. Geological Survey 7.5' topographic maps, respectively.

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Mrs. Karla Houlihan
Santa Margarita Water District
26111 Antonio Parkway
Rancho Santa Margarita, CA 92688

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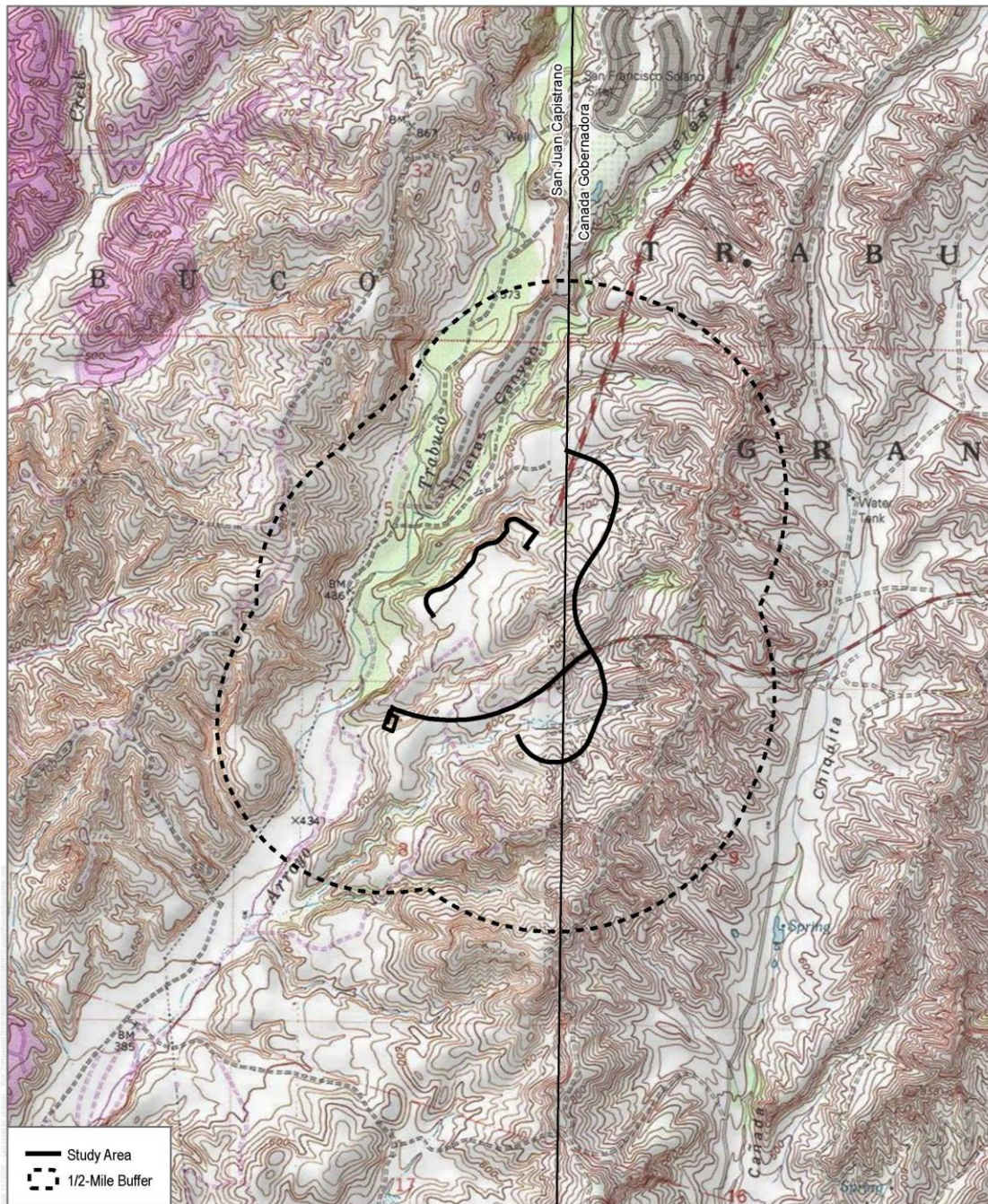
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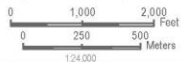
Email: agiacinto@dudek.com

Attachments: Figure 1. Records Search Map



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Trabuco Land Grant (Township 7 South; Range 7 West, Projected)

DUDEK



Records Search Map

Las Flores Enhanced Water Reliability Project

March 04, 2020

Ms. Shasta Gaughen, Assistant Director
Kupa Cultural Center
35008 Pala Temecula Rd.
Pala, CA 92059

***Subject: Information Request for the Las Flores Enhanced Water Reliability Project,
Orange County, California***

Dear Ms. Gaughen,

The Santa Margarita Water District is planning the installation of approximately 3,800 linear feet of 16-inch pipe and 6,390 linear feet of 8-inch pipe in residential streets and easements through previously disturbed open space (Figure 1). The Project also involves the conversion of the Las Flores Lift Station, currently out of service, to a recycled water booster pump station, and the rehabilitation of an approximately 3,650 foot long 10-inch existing force main in the right-of-way within Antonio Parkway (Figure 1). Rehabilitation of the 10-inch force main would be performed using a trenchless rehabilitation method where a liner would be inserted within the existing forcemain for structural reinforcement. The area is currently comprised of paved roads and a gravel access road on an undeveloped parcel of land. This project is located in Sections 5 and 8, Township 7 South, Range 7 West and Sections 4 and 9, Township 7 South Range 7 West of the San Juan Capistrano and Canada Gobernadora U.S. Geological Survey 7.5' topographic maps, respectively.

The Native American Heritage Commission conducted a Sacred Lands file search, and indicated that Native American cultural resources were identified within a one-half mile distance of the proposed project area. A SCCIC records search indicated previously-identified cultural resources that intersected the project APE. A pedestrian survey did not identify any cultural resources that would be disturbed by the proposed project activities. I am writing as part of the Inventory process in order to find out if you, or your tribal community, have any knowledge of cultural resources or places that may be impacted by the proposed project. Any consultation relating to AB 52 should be directed to the lead agency:

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Santa Margarita Water District
26111 Antonio Parkway
Rancho Santa Margarita, CA 92688

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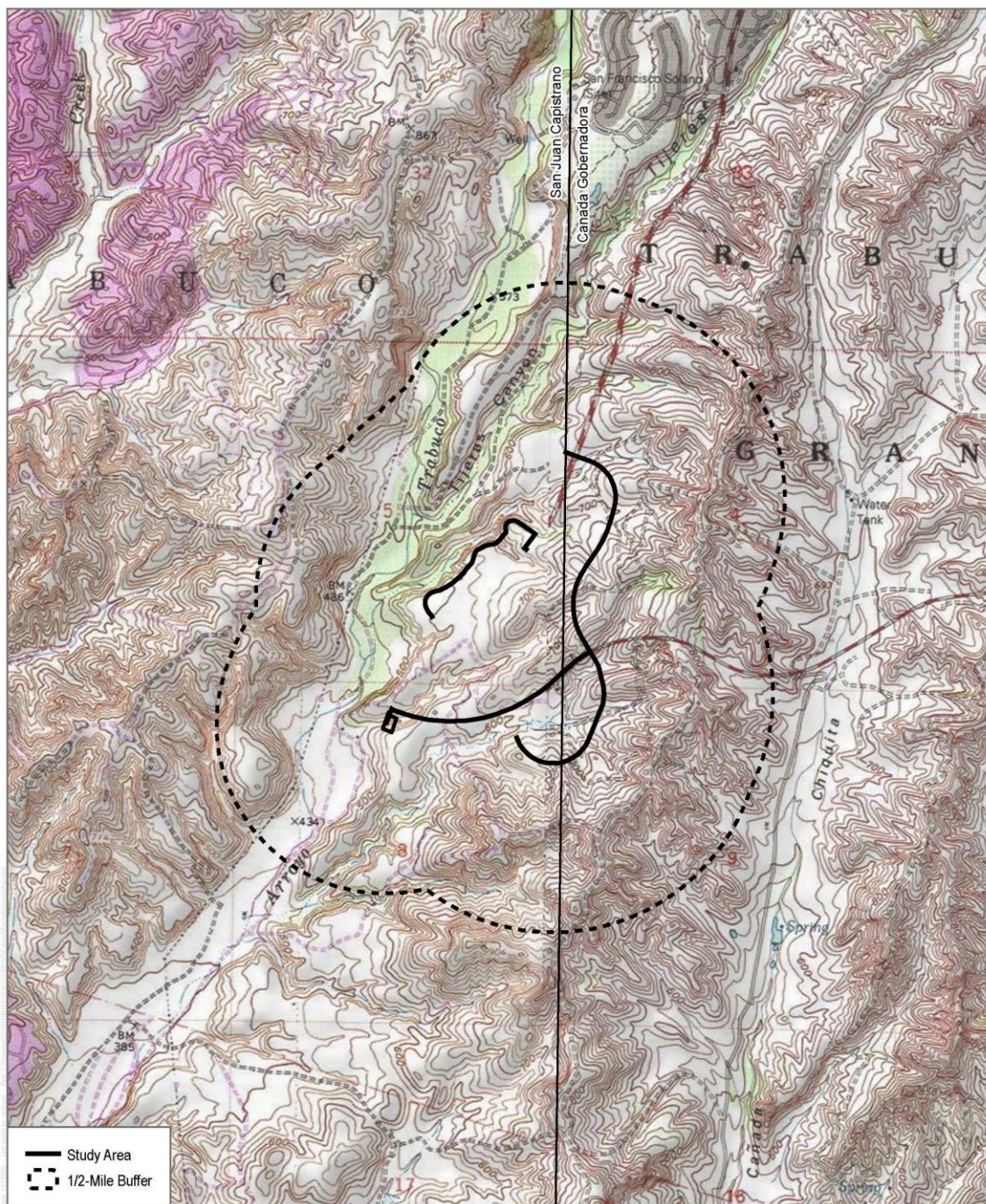
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SOURCE: USGS 7.5-Minute Series San Juan Capistrano and Canada Gobernadora Quadrangles
Trabuco Land Grant (Township 7 South; Range 7 West, Projected)



Records Search Map
Las Flores Enhanced Water Reliability Project

March 04, 2020

Mr. Jeff Grubbe, Chairperson
Agua Caliente Band of Cahuilla Indians
5401 Dinah Shore Drive
Palm Springs, CA 92262

***Subject: Information Request for the Las Flores Enhanced Water Reliability Project,
Orange County, California***

Dear Mr. Grubbe,

The Santa Margarita Water District is planning the installation of approximately 3,800 linear feet of 16-inch pipe and 6,390 linear feet of 8-inch pipe in residential streets and easements through previously disturbed open space (Figure 1). The Project also involves the conversion of the Las Flores Lift Station, currently out of service, to a recycled water booster pump station, and the rehabilitation of an approximately 3,650 foot long 10-inch existing force main in the right-of-way within Antonio Parkway (Figure 1). Rehabilitation of the 10-inch force main would be performed using a trenchless rehabilitation method where a liner would be inserted within the existing forcemain for structural reinforcement. The area is currently comprised of paved roads and a gravel access road on an undeveloped parcel of land. This project is located in Sections 5 and 8, Township 7 South, Range 7 West and Sections 4 and 9, Township 7 South Range 7 West of the San Juan Capistrano and Canada Gobernadora U.S. Geological Survey 7.5' topographic maps, respectively.

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Mrs. Karla Houlihan
Santa Margarita Water District
26111 Antonio Parkway
Rancho Santa Margarita, CA 92688

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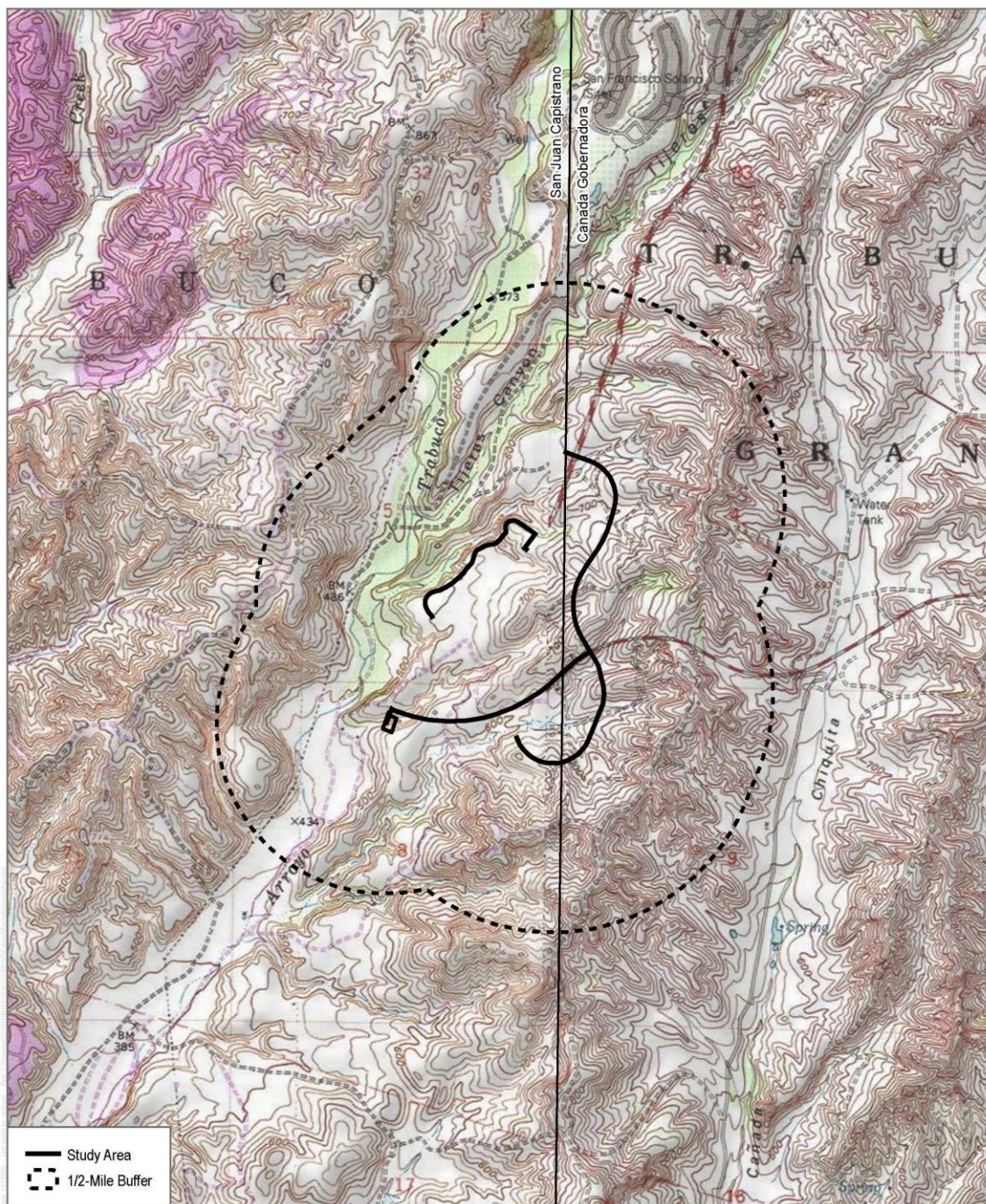
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SOURCE: USGS 7.5-Minute Series San Juan Capistrano and Canada Gobernadora Quadrangles
Trabuco Land Grant (Township 7 South; Range 7 West, Projected)



Records Search Map
Las Flores Enhanced Water Reliability Project

March 04, 2020

Ms. Sonia Johnston, Tribal Chairperson
Juaneno Band of Mission Indians
P.O. Box 25628
Santa Ana, CA 92799

***Subject: Information Request for the Las Flores Enhanced Water Reliability Project,
Orange County, California***

Dear Ms. Johnston,

The Santa Margarita Water District is planning the installation of approximately 3,800 linear feet of 16-inch pipe and 6,390 linear feet of 8-inch pipe in residential streets and easements through previously disturbed open space (Figure 1). The Project also involves the conversion of the Las Flores Lift Station, currently out of service, to a recycled water booster pump station, and the rehabilitation of an approximately 3,650 foot long 10-inch existing force main in the right-of-way within Antonio Parkway (Figure 1). Rehabilitation of the 10-inch force main would be performed using a trenchless rehabilitation method where a liner would be inserted within the existing forcemain for structural reinforcement. The area is currently comprised of paved roads and a gravel access road on an undeveloped parcel of land. This project is located in Sections 5 and 8, Township 7 South, Range 7 West and Sections 4 and 9, Township 7 South Range 7 West of the San Juan Capistrano and Canada Gobernadora U.S. Geological Survey 7.5' topographic maps, respectively.

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Mrs. Karla Houlihan
Santa Margarita Water District
26111 Antonio Parkway
Rancho Santa Margarita, CA 92688

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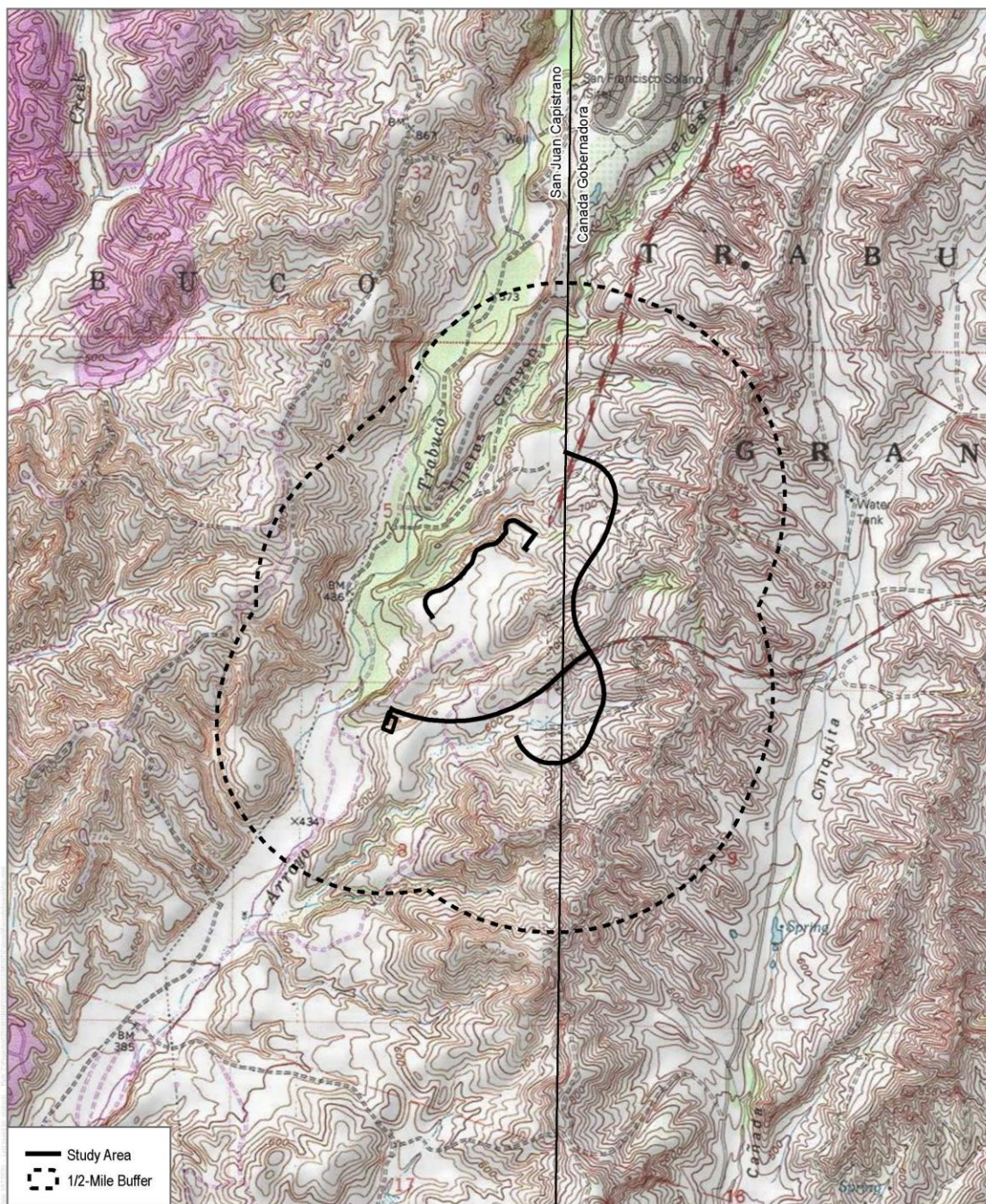
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Attachments: Figure 1. Records Search Map



SOURCE: USGS 7.5-Minute Series San Juan Capistrano and Canada Gobernadora Quadrangles
Trabuco Land Grant (Township 7 South; Range 7 West, Projected)



Records Search Map
Las Flores Enhanced Water Reliability Project

March 04, 2020

Mr. Mark Macarro, Chairperson
Pechanga Band of Mission Indians
P.O. Box 1477
Temecula, CA 92593

***Subject: Information Request for the Las Flores Enhanced Water Reliability Project,
Orange County, California***

Dear Mr. Macarro,

The Santa Margarita Water District is planning the installation of approximately 3,800 linear feet of 16-inch pipe and 6,390 linear feet of 8-inch pipe in residential streets and easements through previously disturbed open space (Figure 1). The Project also involves the conversion of the Las Flores Lift Station, currently out of service, to a recycled water booster pump station, and the rehabilitation of an approximately 3,650 foot long 10-inch existing force main in the right-of-way within Antonio Parkway (Figure 1). Rehabilitation of the 10-inch force main would be performed using a trenchless rehabilitation method where a liner would be inserted within the existing forcemain for structural reinforcement. The area is currently comprised of paved roads and a gravel access road on an undeveloped parcel of land. This project is located in Sections 5 and 8, Township 7 South, Range 7 West and Sections 4 and 9, Township 7 South Range 7 West of the San Juan Capistrano and Canada Gobernadora U.S. Geological Survey 7.5' topographic maps, respectively.

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Mrs. Karla Houlihan
Santa Margarita Water District
26111 Antonio Parkway
Rancho Santa Margarita, CA 92688

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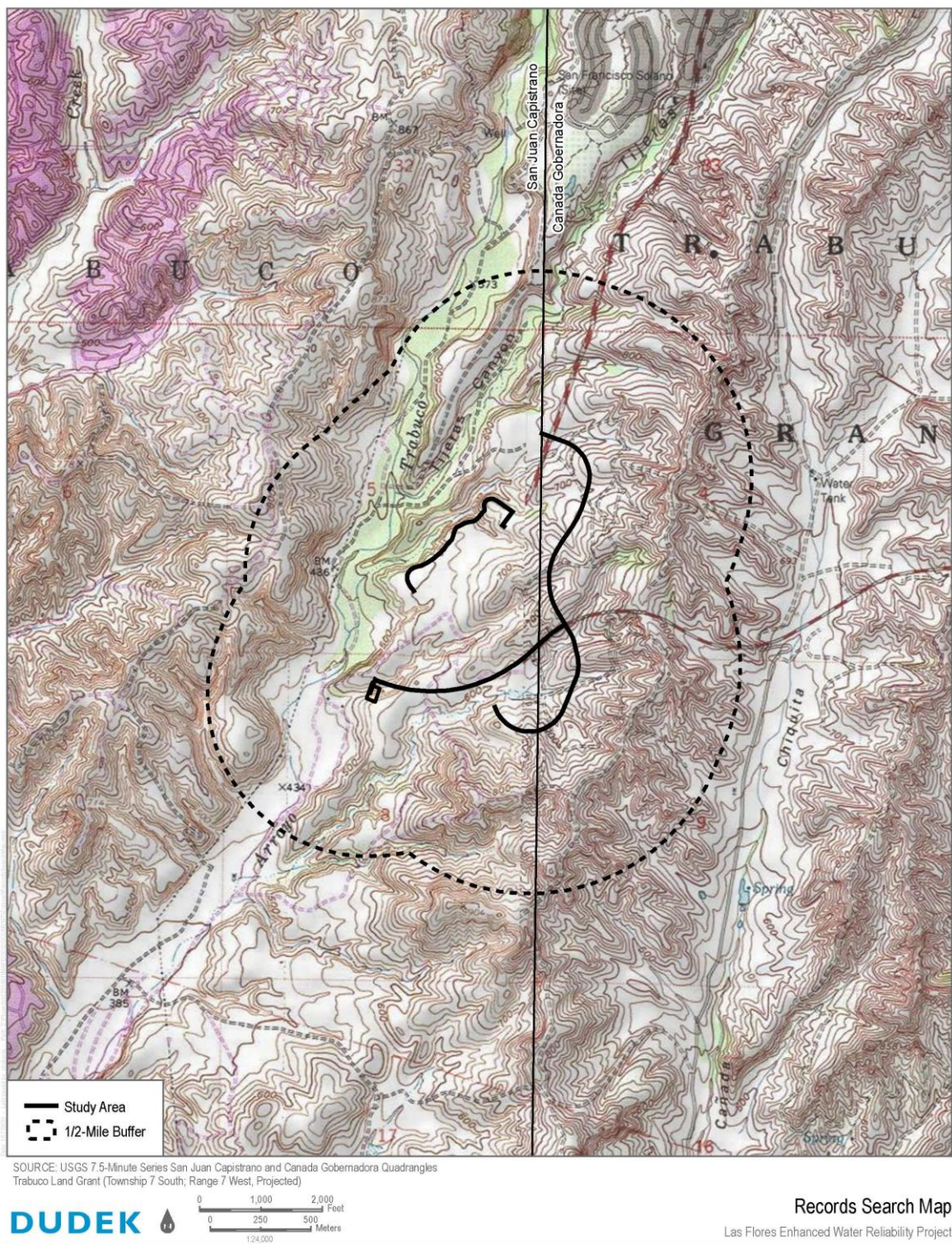
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Attachments: Figure 1. Records Search Map



March 04, 2020

Ms. Cheryl Madrigal, Tribal Historic Preservation Officer
Rincon Band of Mission Indians
One Government Center Lane
Valley Center, CA 92082

***Subject: Information Request for the Las Flores Enhanced Water Reliability Project,
Orange County, California***

Dear Ms. Madrigal,

The Santa Margarita Water District is planning the installation of approximately 3,800 linear feet of 16-inch pipe and 6,390 linear feet of 8-inch pipe in residential streets and easements through previously disturbed open space (Figure 1). The Project also involves the conversion of the Las Flores Lift Station, currently out of service, to a recycled water booster pump station, and the rehabilitation of an approximately 3,650 foot long 10-inch existing force main in the right-of-way within Antonio Parkway (Figure 1). Rehabilitation of the 10-inch force main would be performed using a trenchless rehabilitation method where a liner would be inserted within the existing forcemain for structural reinforcement. The area is currently comprised of paved roads and a gravel access road on an undeveloped parcel of land. This project is located in Sections 5 and 8, Township 7 South, Range 7 West and Sections 4 and 9, Township 7 South Range 7 West of the San Juan Capistrano and Canada Gobernadora U.S. Geological Survey 7.5' topographic maps, respectively.

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Mrs. Karla Houlihan
Santa Margarita Water District
26111 Antonio Parkway
Rancho Santa Margarita, CA 92688

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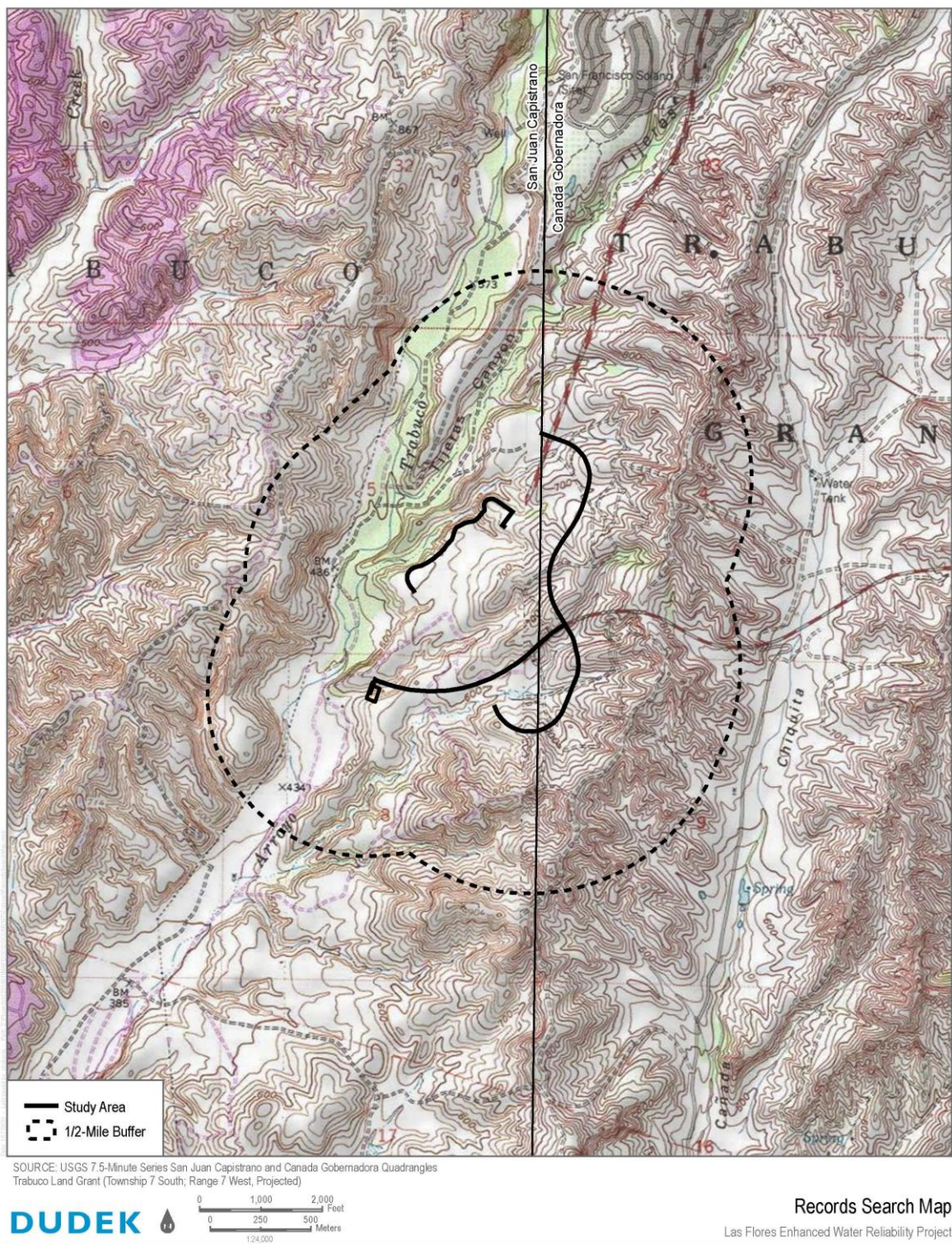
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Attachments: Figure 1. Records Search Map



March 04, 2020

Mr. Bo Mazzetti, Tribal Chairman
Rincon Band of Mission Indians
1 W. Tribal Road
Valley Center, CA 92082

***Subject: Information Request for the Las Flores Enhanced Water Reliability Project,
Orange County, California***

Dear Mr. Mazzetti,

The Santa Margarita Water District is planning the installation of approximately 3,800 linear feet of 16-inch pipe and 6,390 linear feet of 8-inch pipe in residential streets and easements through previously disturbed open space (Figure 1). The Project also involves the conversion of the Las Flores Lift Station, currently out of service, to a recycled water booster pump station, and the rehabilitation of an approximately 3,650 foot long 10-inch existing force main in the right-of-way within Antonio Parkway (Figure 1). Rehabilitation of the 10-inch force main would be performed using a trenchless rehabilitation method where a liner would be inserted within the existing forcemain for structural reinforcement. The area is currently comprised of paved roads and a gravel access road on an undeveloped parcel of land. This project is located in Sections 5 and 8, Township 7 South, Range 7 West and Sections 4 and 9, Township 7 South Range 7 West of the San Juan Capistrano and Canada Gobernadora U.S. Geological Survey 7.5' topographic maps, respectively.

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Mrs. Karla Houlihan
Santa Margarita Water District
26111 Antonio Parkway
Rancho Santa Margarita, CA 92688

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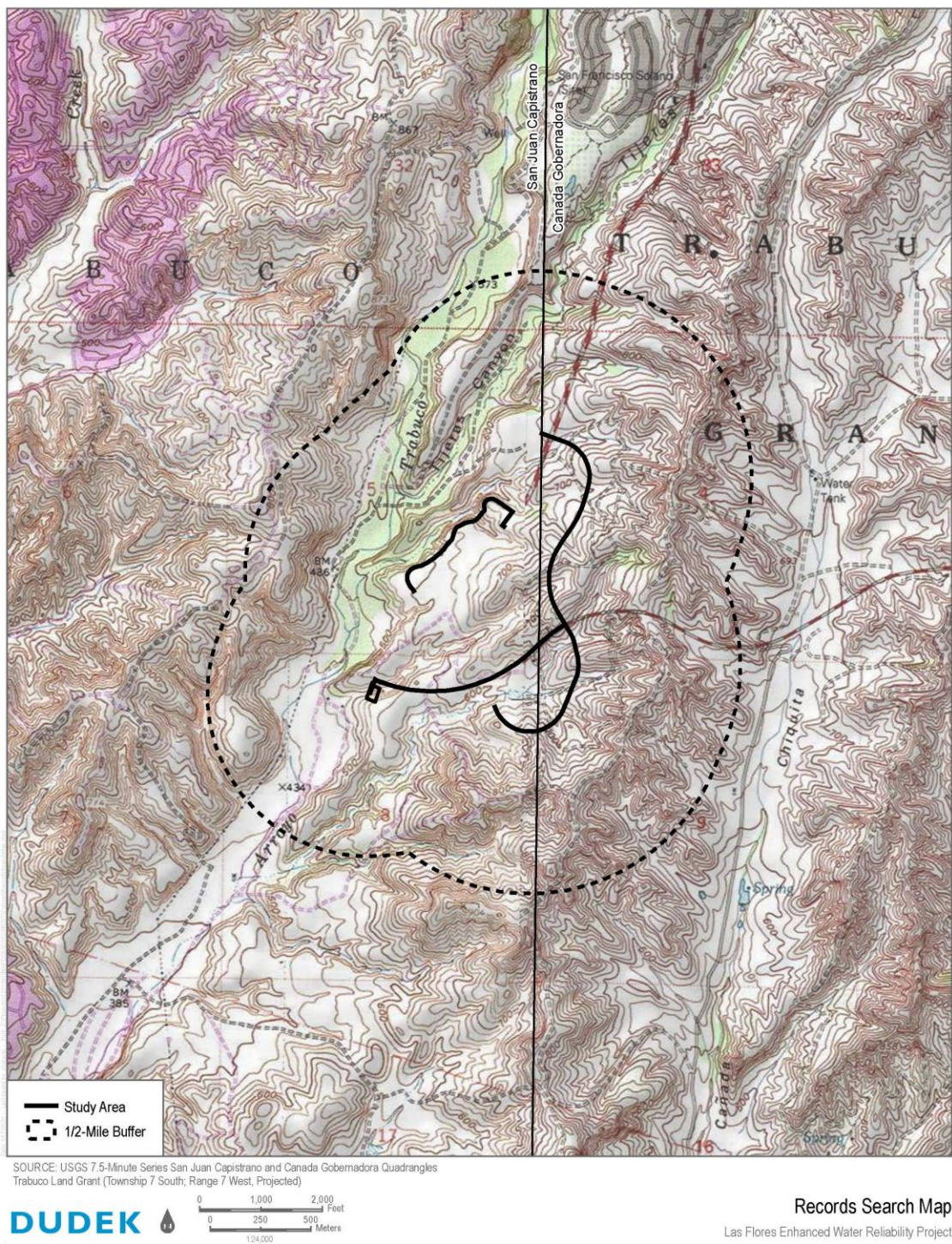
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Attachments: Figure 1. Records Search Map



March 04, 2020

Mr. Fred Nelson, Chairperson
La Jolla Band of Mission Indians
22000 Highway 76
Pauma Valley, CA 92061

***Subject: Information Request for the Las Flores Enhanced Water Reliability Project,
Orange County, California***

Dear Mr. Nelson,

The Santa Margarita Water District is planning the installation of approximately 3,800 linear feet of 16-inch pipe and 6,390 linear feet of 8-inch pipe in residential streets and easements through previously disturbed open space (Figure 1). The Project also involves the conversion of the Las Flores Lift Station, currently out of service, to a recycled water booster pump station, and the rehabilitation of an approximately 3,650 foot long 10-inch existing force main in the right-of-way within Antonio Parkway (Figure 1). Rehabilitation of the 10-inch force main would be performed using a trenchless rehabilitation method where a liner would be inserted within the existing forcemain for structural reinforcement. The area is currently comprised of paved roads and a gravel access road on an undeveloped parcel of land. This project is located in Sections 5 and 8, Township 7 South, Range 7 West and Sections 4 and 9, Township 7 South Range 7 West of the San Juan Capistrano and Canada Gobernadora U.S. Geological Survey 7.5' topographic maps, respectively.

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Santa Margarita Water District
26111 Antonio Parkway
Rancho Santa Margarita, CA 92688

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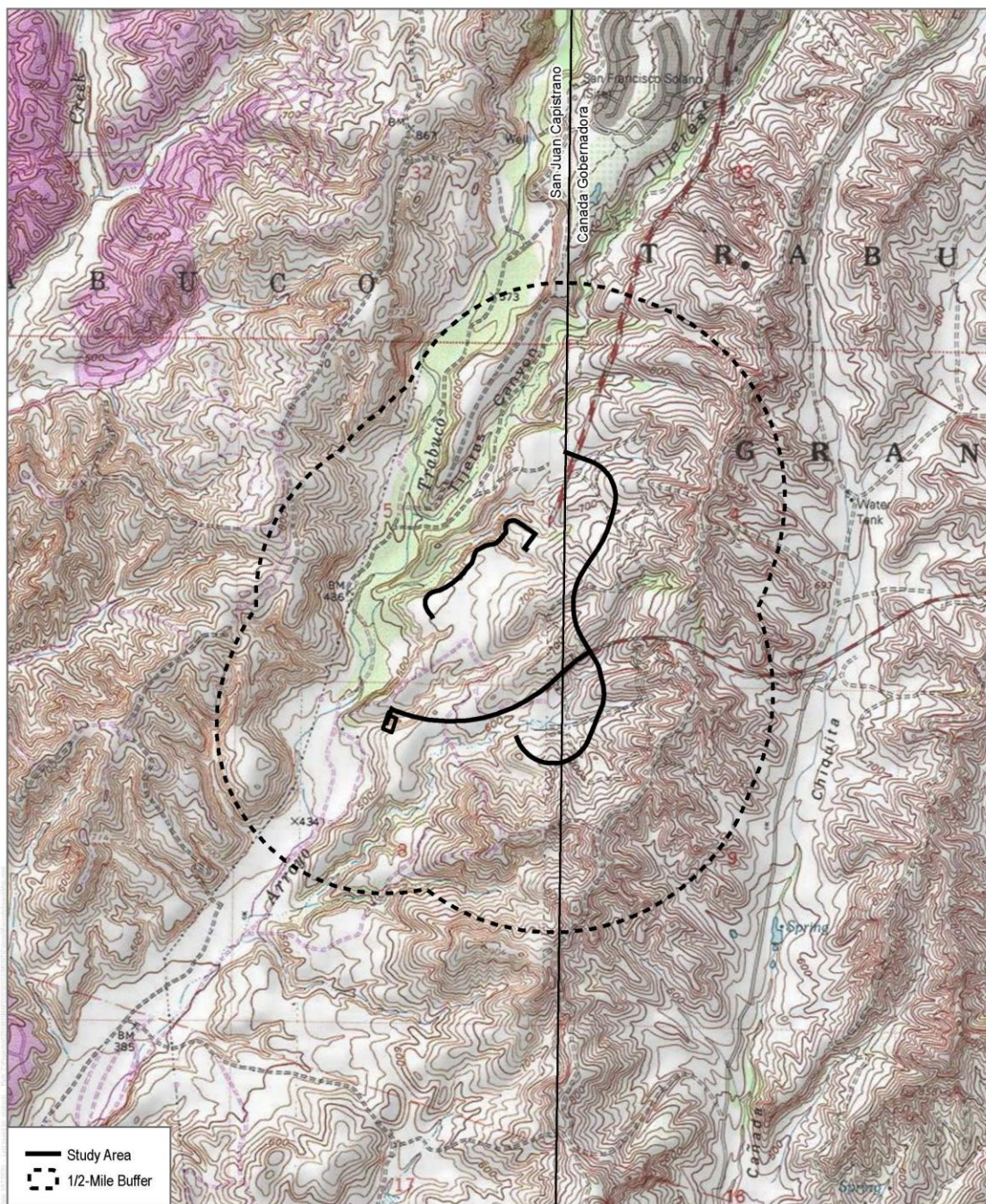
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Attachments: Figure 1. Records Search Map



SOURCE: USGS 7.5-Minute Series San Juan Capistrano and Canada Gobernadora Quadrangles
Trabuco Land Grant (Township 7 South; Range 7 West, Projected)



Records Search Map
Las Flores Enhanced Water Reliability Project

March 04, 2020

Mr. Joseph Ontiveros, Cultural Resource Department
Soboba Band of Luiseno Indians
P.O. Box 487
San Jacinto, CA 92581

***Subject: Information Request for the Las Flores Enhanced Water Reliability Project,
Orange County, California***

Dear Mr. Ontiveros,

The Santa Margarita Water District is planning the installation of approximately 3,800 linear feet of 16-inch pipe and 6,390 linear feet of 8-inch pipe in residential streets and easements through previously disturbed open space (Figure 1). The Project also involves the conversion of the Las Flores Lift Station, currently out of service, to a recycled water booster pump station, and the rehabilitation of an approximately 3,650 foot long 10-inch existing force main in the right-of-way within Antonio Parkway (Figure 1). Rehabilitation of the 10-inch force main would be performed using a trenchless rehabilitation method where a liner would be inserted within the existing forcemain for structural reinforcement. The area is currently comprised of paved roads and a gravel access road on an undeveloped parcel of land. This project is located in Sections 5 and 8, Township 7 South, Range 7 West and Sections 4 and 9, Township 7 South Range 7 West of the San Juan Capistrano and Canada Gobernadora U.S. Geological Survey 7.5' topographic maps, respectively.

The Native American Heritage Commission conducted a Sacred Lands file search, and indicated that Native American cultural resources were identified within a one-half mile distance of the proposed project area. A SCCIC records search indicated previously-identified cultural resources that intersected the project APE. A pedestrian survey did not identify any cultural resources that would be disturbed by the proposed project activities. I am writing as part of the Inventory process in order to find out if you, or your tribal community, have any knowledge of cultural resources or places that may be impacted by the proposed project. Any consultation relating to AB 52 should be directed to the lead agency:

Mrs. Karla Houlihan
Santa Margarita Water District
26111 Antonio Parkway
Rancho Santa Margarita, CA 92688

If you have any information or concerns pertaining to such information, please contact me by phone or email.

Respectfully,

A handwritten signature in black ink, reading "Adam Giacinto". The signature is fluid and cursive, with the first name "Adam" and last name "Giacinto" clearly distinguishable.

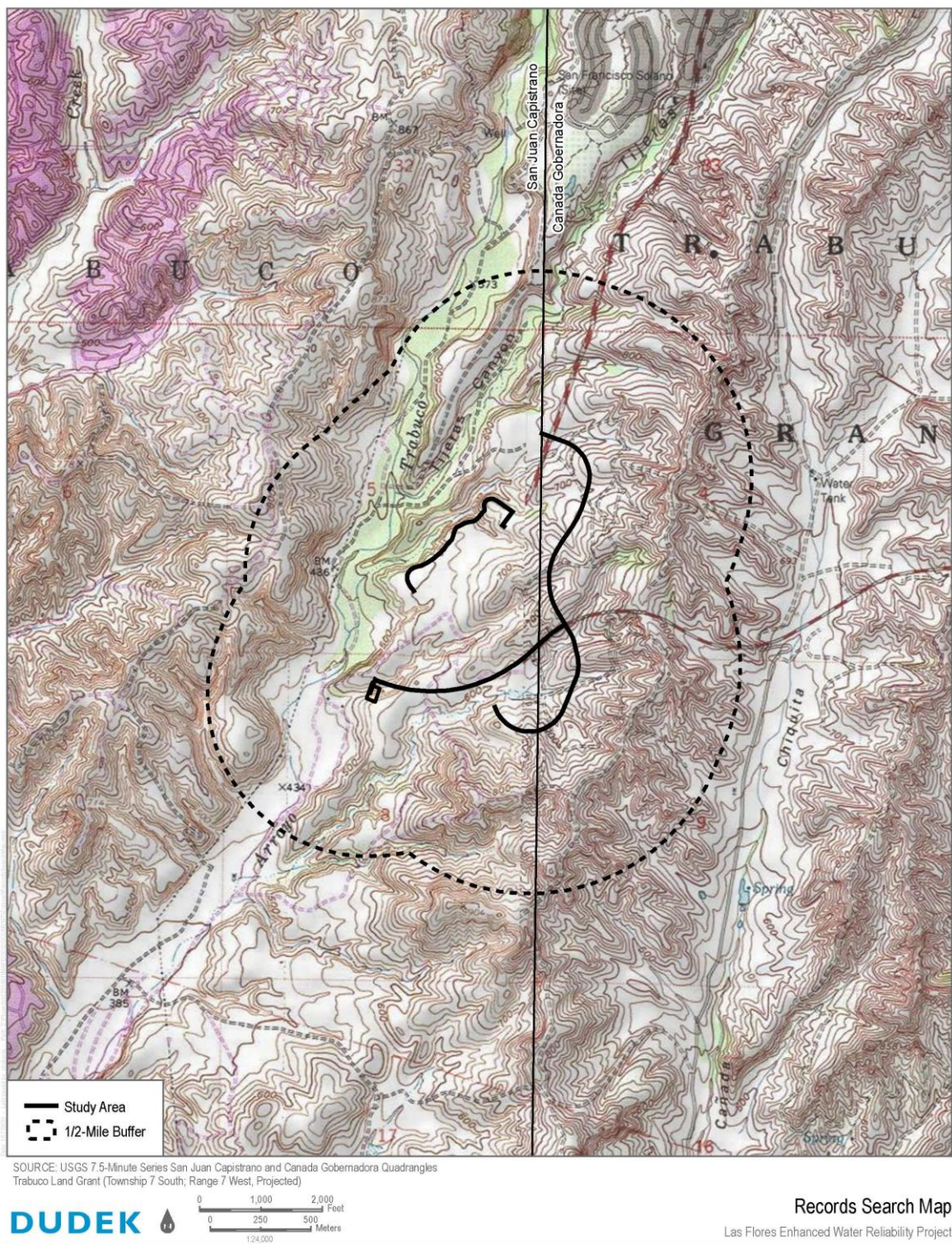
Adam Giacinto, M.A., RPA
Archaeologist

DUDEK

Phone: (760) 942-4252

Email: agiacinto@dudek.com

Attachments: Figure 1. Records Search Map



March 04, 2020

Ms. Joyce Perry, Representing Tribal Chairperson
Juaneno Band of Mission Indians Acjachemen Nation
4955 Paseo Segovia
Irvine, CA 92612

***Subject: Information Request for the Las Flores Enhanced Water Reliability Project,
Orange County, California***

Dear Ms. Perry,

The Santa Margarita Water District is planning the installation of approximately 3,800 linear feet of 16-inch pipe and 6,390 linear feet of 8-inch pipe in residential streets and easements through previously disturbed open space (Figure 1). The Project also involves the conversion of the Las Flores Lift Station, currently out of service, to a recycled water booster pump station, and the rehabilitation of an approximately 3,650 foot long 10-inch existing force main in the right-of-way within Antonio Parkway (Figure 1). Rehabilitation of the 10-inch force main would be performed using a trenchless rehabilitation method where a liner would be inserted within the existing forcemain for structural reinforcement. The area is currently comprised of paved roads and a gravel access road on an undeveloped parcel of land. This project is located in Sections 5 and 8, Township 7 South, Range 7 West and Sections 4 and 9, Township 7 South Range 7 West of the San Juan Capistrano and Canada Gobernadora U.S. Geological Survey 7.5' topographic maps, respectively.

The Native American Heritage Commission conducted a Sacred Lands file search, and indicated that Native American cultural resources were identified within a one-half mile distance of the proposed project area. A SCCIC records search indicated previously-identified cultural resources that intersected the project APE. A pedestrian survey did not identify any cultural resources that would be disturbed by the proposed project activities. I am writing as part of the Inventory process in order to find out if you, or your tribal community, have any knowledge of cultural resources or places that may be impacted by the proposed project. Any consultation relating to AB 52 should be directed to the lead agency:

Mrs. Karla Houlihan
Santa Margarita Water District
26111 Antonio Parkway
Rancho Santa Margarita, CA 92688

If you have any information or concerns pertaining to such information, please contact me by phone or email.

Respectfully,

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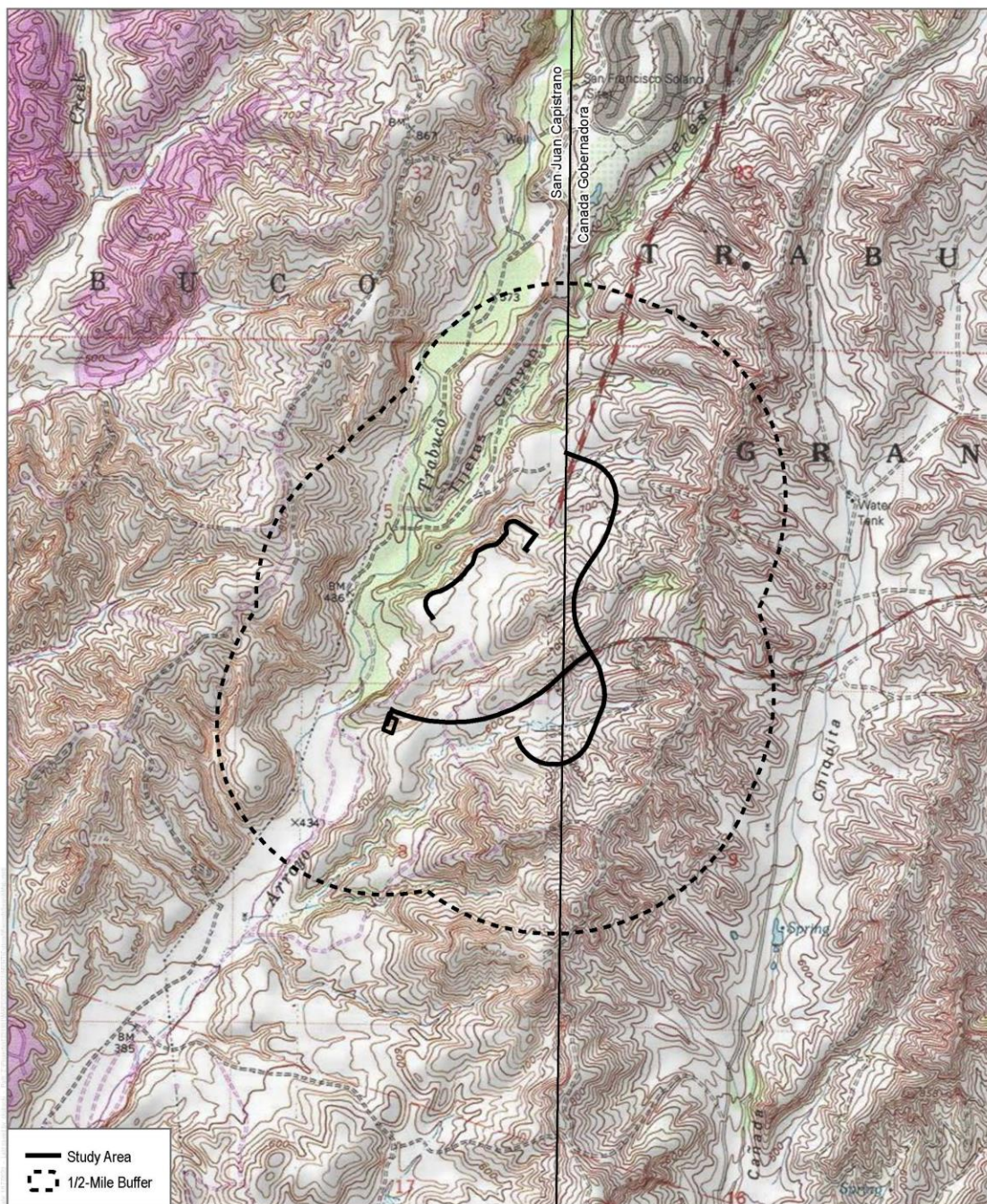
Adam Giacinto, M.A., RPA
Archaeologist

DUDEK

Phone: (760) 942-4252

Email: agiacinto@dudek.com

Attachments: Figure 1. Records Search Map



SOURCE: USGS 7.5-Minute Series San Juan Capistrano and Canada Gobernadora Quadrangles
Trabuco Land Grant (Township 7 South; Range 7 West, Projected)



Records Search Map
Las Flores Enhanced Water Reliability Project

March 04, 2020

Mr. Paul Macarro, Cultural Resources Coordinator
Pechanga Band of Mission Indians
P.O. Box 1477
Temecula, CA 92593

***Subject: Information Request for the Las Flores Enhanced Water Reliability Project,
Orange County, California***

Dear Mr. Macarro,

The Santa Margarita Water District is planning the installation of approximately 3,800 linear feet of 16-inch pipe and 6,390 linear feet of 8-inch pipe in residential streets and easements through previously disturbed open space (Figure 1). The Project also involves the conversion of the Las Flores Lift Station, currently out of service, to a recycled water booster pump station, and the rehabilitation of an approximately 3,650 foot long 10-inch existing force main in the right-of-way within Antonio Parkway (Figure 1). Rehabilitation of the 10-inch force main would be performed using a trenchless rehabilitation method where a liner would be inserted within the existing forcemain for structural reinforcement. The area is currently comprised of paved roads and a gravel access road on an undeveloped parcel of land. This project is located in Sections 5 and 8, Township 7 South, Range 7 West and Sections 4 and 9, Township 7 South Range 7 West of the San Juan Capistrano and Canada Gobernadora U.S. Geological Survey 7.5' topographic maps, respectively.

The Native American Heritage Commission conducted a Sacred Lands file search, and indicated that Native American cultural resources were identified within a one-half mile distance of the proposed project area. A SCCIC records search indicated previously-identified cultural resources that intersected the project APE. A pedestrian survey did not identify any cultural resources that would be disturbed by the proposed project activities. I am writing as part of the Inventory process in order to find out if you, or your tribal community, have any knowledge of cultural resources or places that may be impacted by the proposed project. Any consultation relating to AB 52 should be directed to the lead agency:

Mrs. Karla Houlihan
Santa Margarita Water District
26111 Antonio Parkway
Rancho Santa Margarita, CA 92688

If you have any information or concerns pertaining to such information, please contact me by phone or email.

Respectfully,

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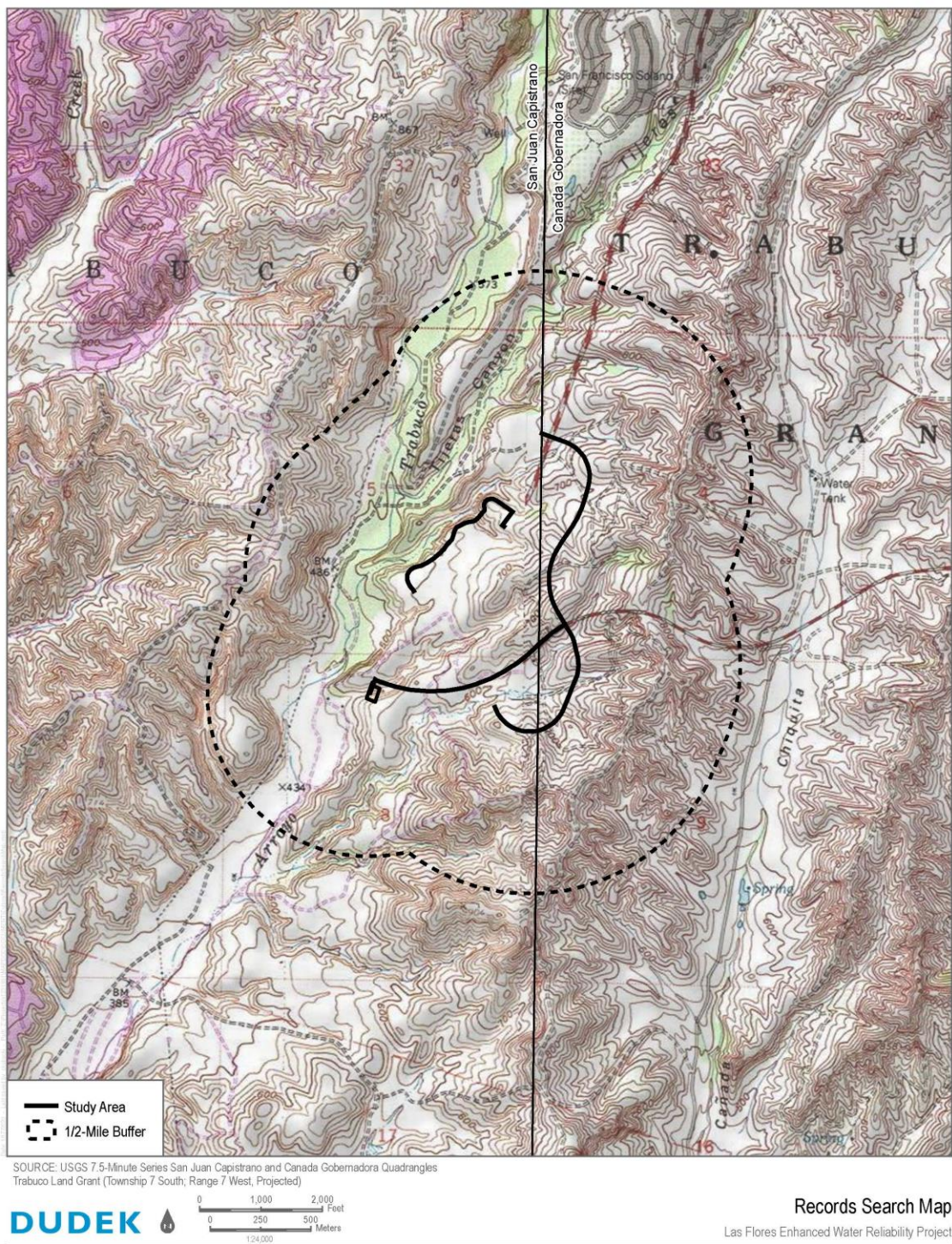
Adam Giacinto, M.A., RPA
Archaeologist

DUDEK

Phone: (760) 942-4252

Email: agiacinto@dudek.com

Attachments: Figure 1. Records Search Map



March 04, 2020

Ms. Teresa Romero, Chairwoman
Juaneno Band of Mission Indians Acjachemen Nation
31411-A La Matanza Street
San Juan Capistrano, CA 92675

***Subject: Information Request for the Las Flores Enhanced Water Reliability Project,
Orange County, California***

Dear Ms. Romero,

The Santa Margarita Water District is planning the installation of approximately 3,800 linear feet of 16-inch pipe and 6,390 linear feet of 8-inch pipe in residential streets and easements through previously disturbed open space (Figure 1). The Project also involves the conversion of the Las Flores Lift Station, currently out of service, to a recycled water booster pump station, and the rehabilitation of an approximately 3,650 foot long 10-inch existing force main in the right-of-way within Antonio Parkway (Figure 1). Rehabilitation of the 10-inch force main would be performed using a trenchless rehabilitation method where a liner would be inserted within the existing forcemain for structural reinforcement. The area is currently comprised of paved roads and a gravel access road on an undeveloped parcel of land. This project is located in Sections 5 and 8, Township 7 South, Range 7 West and Sections 4 and 9, Township 7 South Range 7 West of the San Juan Capistrano and Canada Gobernadora U.S. Geological Survey 7.5' topographic maps, respectively.

The Native American Heritage Commission conducted a Sacred Lands file search, and indicated that Native American cultural resources were identified within a one-half mile distance of the proposed project area. A SCCIC records search indicated previously-identified cultural resources that intersected the project APE. A pedestrian survey did not identify any cultural resources that would be disturbed by the proposed project activities. I am writing as part of the Inventory process in order to find out if you, or your tribal community, have any knowledge of cultural resources or places that may be impacted by the proposed project. Any consultation relating to AB 52 should be directed to the lead agency:

Mrs. Karla Houlihan
Santa Margarita Water District
26111 Antonio Parkway
Rancho Santa Margarita, CA 92688

If you have any information or concerns pertaining to such information, please contact me by phone or email.

Respectfully,

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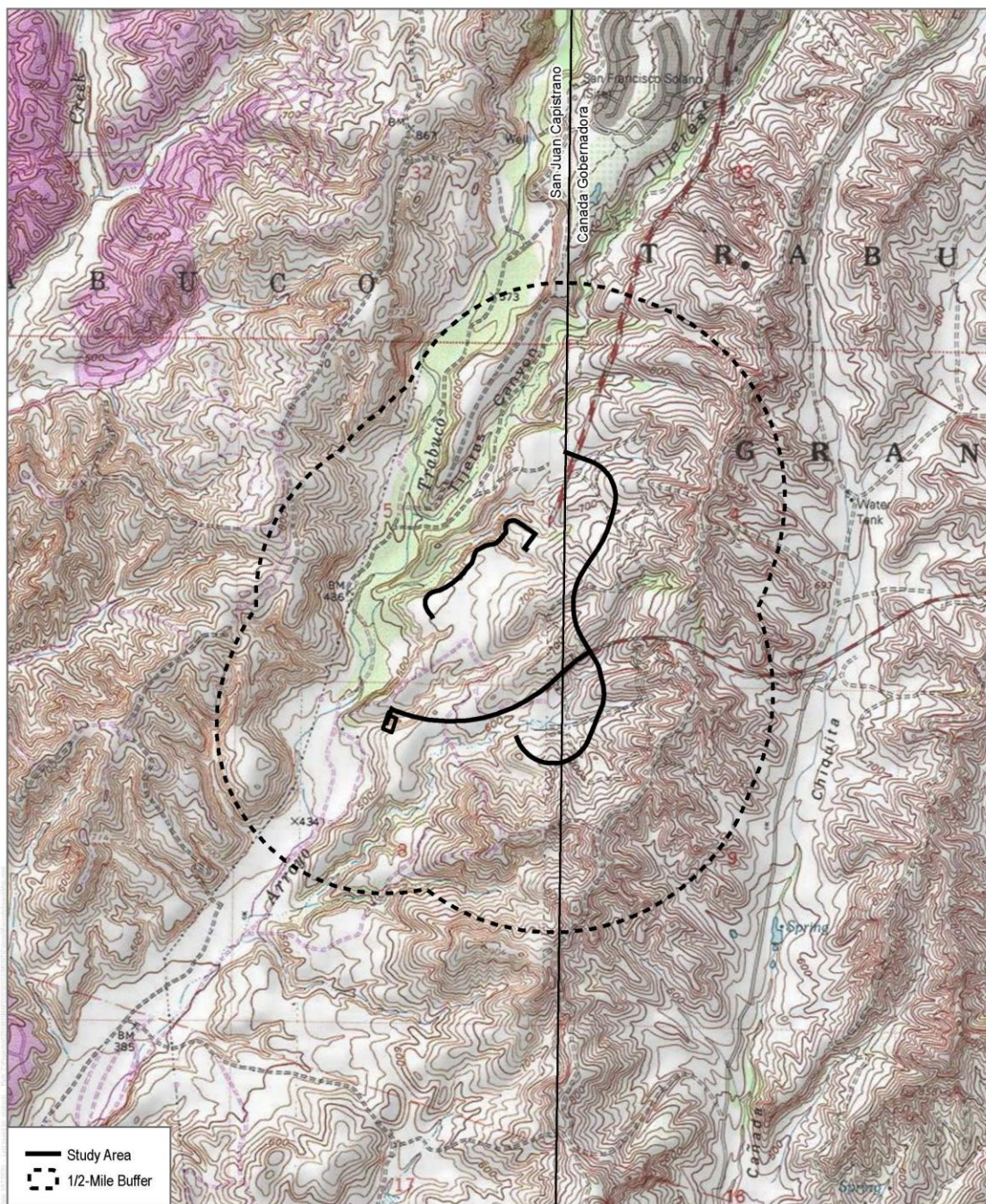
Adam Giacinto, M.A., RPA
Archaeologist

DUDEK

Phone: (760) 942-4252

Email: agiacinto@dudek.com

Attachments: Figure 1. Records Search Map



SOURCE: USGS 7.5-Minute Series San Juan Capistrano and Canada Gobernadora Quadrangles
Trabuco Land Grant (Township 7 South; Range 7 West, Projected)



Records Search Map
Las Flores Enhanced Water Reliability Project

March 04, 2020

San Luis Rey Band of Mission Indians
1889 Sunset Drive
Vista, CA, 92081

***Subject: Information Request for the Las Flores Enhanced Water Reliability Project,
Orange County, California***

To Whom It May Concern:

The Santa Margarita Water District is planning the installation of approximately 3,800 linear feet of 16-inch pipe and 6,390 linear feet of 8-inch pipe in residential streets and easements through previously disturbed open space (Figure 1). The Project also involves the conversion of the Las Flores Lift Station, currently out of service, to a recycled water booster pump station, and the rehabilitation of an approximately 3,650 foot long 10-inch existing force main in the right-of-way within Antonio Parkway (Figure 1). Rehabilitation of the 10-inch force main would be performed using a trenchless rehabilitation method where a liner would be inserted within the existing forcemain for structural reinforcement. The area is currently comprised of paved roads and a gravel access road on an undeveloped parcel of land. This project is located in Sections 5 and 8, Township 7 South, Range 7 West and Sections 4 and 9, Township 7 South Range 7 West of the San Juan Capistrano and Canada Gobernadora U.S. Geological Survey 7.5' topographic maps, respectively.

The Native American Heritage Commission conducted a Sacred Lands file search, and indicated that Native American cultural resources were identified within a one-half mile distance of the proposed project area. A SCCIC records search indicated previously-identified cultural resources that intersected the project APE. A pedestrian survey did not identify any cultural resources that would be disturbed by the proposed project activities. I am writing as part of the Inventory process in order to find out if you, or your tribal community, have any knowledge of cultural resources or places that may be impacted by the proposed project. Any consultation relating to AB 52 should be directed to the lead agency:

Mrs. Karla Houlihan
Santa Margarita Water District
26111 Antonio Parkway
Rancho Santa Margarita, CA 92688

If you have any information or concerns pertaining to such information, please contact me by phone or email.

Respectfully,

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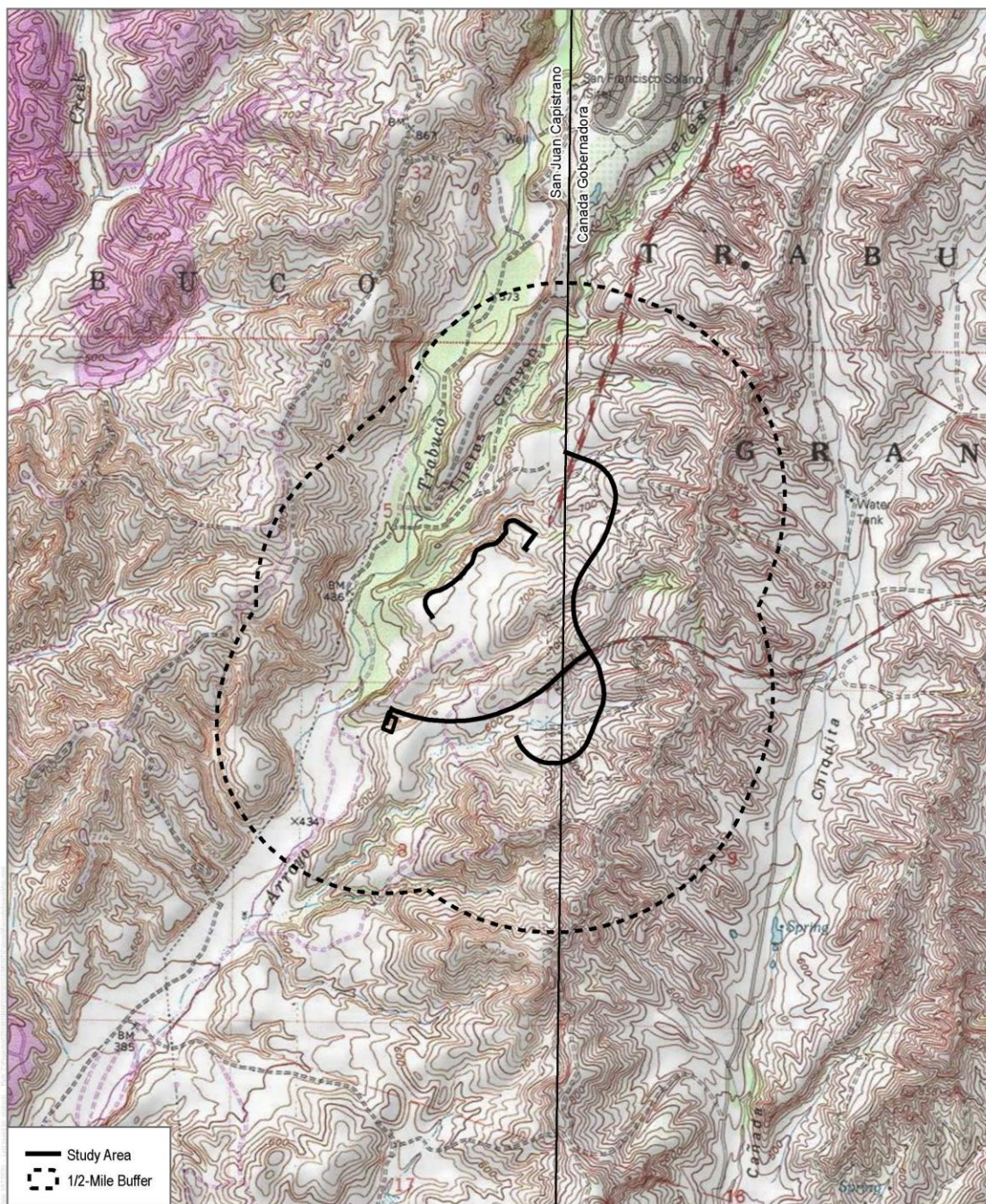
Adam Giacinto, M.A., RPA
Archaeologist

DUDEK

Phone: (760) 942-4252

Email: agiacinto@dudek.com

***Attachments:** Figure 1. Records Search Map*



Records Search Map
 Las Flores Enhanced Water Reliability Project

Appendix D

Noise Data Sheets and Modeling


APPENDIX **D**-1
Field Noise Data Sheets

FIELD NOISE MEASUREMENT DATA

PROJECT	SMWD LAS FLORES		PROJECT #	12318
SITE ID			OBSERVER(S)	PEJE VITAR
SITE ADDRESS				
START DATE	2/13/20	END DATE	2/13/20	
START TIME		END TIME		

METEOROLOGICAL CONDITIONS									
TEMP	60	F	HUMIDITY	50	% R.H.	WIND	CALM	LIGHT	MODERATE
WINDSPD		MPH	DIR.	N	NE	S	SE	S	SW
SKY	SUNNY	CLEAR	OVRCAST	PRTLY CLDY	FOG	RAIN	VARIABLE	STEADY	GUSTY
ACOUSTIC MEASUREMENTS									
MEAS. INSTRUMENT	Piccolo SLM-3					TYPE	1	2	SERIAL # 140317064
CALIBRATOR	BCWA CA 114								SERIAL # 980151
CALIBRATION CHECK	-PRE-TEST					dba SPL	POST-TEST	dba SPL	WINDSCRN YES
SETTINGS	A-WTD	SLOW	FAST	FRONTAL	RANDOM	ANSI	OTHER:		
REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC)
ST-1 18-19	10:01	10:16	64.7	71.7	54.1				
COMMENTS									
READING TAKEN AT SW CORNER OF APARTMENT BUILDING AT 1201-1275 SABLE; PRIMATE NOISE SOURCE IS TRAFFIC ON OSO PARKWAY TO THE SOUTH;									

SOURCE INFO AND TRAFFIC COUNTS											
PRIMARY NOISE SOURCE					TRAFFIC	AIRCRAFT	RAIL	INDUSTRIAL	OTHER:		
ROADWAY TYPE: ASPHALT					DIST. TO RDWY	C/L OR EOP: Apx 170' to C/L on OSO PARKWAY					
TRAFFIC COUNT DURATION: - MIN					SPEED	MIN SPEED					
COUNT 1 (OR RDWY 1)	DIRECTION	NB/EB	SB/WB	NB/EB	SB/WB	IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE	COUNT 2 (OR RDWY 2)	NB/EB	SB/WB	NB/EB	SB/WB
	AUTOS										
	MED TRKS										
	HVY TRKS										
	BUSES										
	MOTRCLS										
SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE											
POSTED SPEED LIMIT SIGNS SAY:											
OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL											
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE											
OTHER:											

DESCRIPTION / SKETCH										
TERRAIN	HARD	SOFT	MIXED	FLAT	OTHER:					
PHOTOS	7228; 7229; 7230; 7231; 7232; 7233; 7234;									
OTHER COMMENTS / SKETCH										
										

FIELD NOISE MEASUREMENT DATA

DUDEK

PROJECT	SMWD LAS FLORES		PROJECT #	12318
SITE ID			OBSERVER(S)	PEJE VITAR
SITE ADDRESS				
START DATE	2/13/20	END DATE	2/13/20	
START TIME		END TIME		

METEOROLOGICAL CONDITIONS

TEMP 63 F HUMIDITY 46 % R.H. WIND CALM (LIGHT) MODERATE
 WINDSPD 3 MPH DIR. N NE S SE S SW W NW VARIABLE STEADY GUSTY
 SKY (SUNNY) (CLEAR) OVRCAST PRTLY CLDY FOG RAIN

ACOUSTIC MEASUREMENTS

MEAS. INSTRUMENT Piccolo SLM-3 TYPE 1 2 SERIAL # 140317064
 CALIBRATOR BCWA CA 114 SERIAL # 980151
 CALIBRATION CHECK PRE-TEST dBA SPL POST-TEST dBA SPL WINDSCRN YES

SETTINGS A-WTD (SLOW) FAST FRONTAL RANDOM ANSI OTHER:

REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC)
<u>ST-2 20-21</u>	<u>10:37</u>	<u>10:52</u>	<u>53.7</u>	<u>66.1</u>	<u>48.0</u>				

COMMENTS

READING TAKEN AT SW CORNER OF RESIDENTIAL BUILDING AT
ST SEA COUNTY LANE; PRIMATE NOISE SOURCE IS TRAFFIC FROM
ANTONIO. DARKENED TO THE EAST; LOW HUM OF NEARBY POOL PUMP
MOTOR IN BACKGROUND (NOT AUDIBLE OVER TRAFFIC NOISE ON ANTONIO HWY).

SOURCE INFO AND TRAFFIC COUNTS

PRIMARY NOISE SOURCE (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL OTHER:
 ROADWAY TYPE: ASPHALT DIST. TO RDWY (C/L OR EOP): APX 420' 40' C/L ON ANTONIO
 TRAFFIC COUNT DURATION: MIN SPEED MIN SPEED

COUNT 1 (OR RDWY 1)	DIRECTION	NB/EB		SB/WB		IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE	COUNT 2 (OR RDWY 2)	NB/EB		SB/WB	
		NB/EB	SB/WB	NB/EB	SB/WB			NB/EB	SB/WB		
	AUTOS										
	MED TRKS										
	HVY TRKS										
	BUSES										
	MOTRCLS										

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE

POSTED SPEED LIMIT SIGNS SAY:

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS (BIRDS) DIST. INDUSTRIAL
 DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DIST. GARDENERS/LANDSCAPING NOISE
 OTHER:

DESCRIPTION / SKETCH

TERRAIN HARD (SLOW) MIXED FLAT OTHER:
 PHOTOS 7237; 7238; 7239; 7240; 7241; 7242; 7243; 7244; 7245;
 OTHER COMMENTS / SKETCH




FIELD NOISE MEASUREMENT DATA

DUDEK

PROJECT	SMWD LAS FLORES		PROJECT #	12318
SITE ID			OBSERVER(S)	PEJE VITAR
SITE ADDRESS				
START DATE	2/13/20	END DATE	2/13/20	
START TIME		END TIME		

METEOROLOGICAL CONDITIONS									
TEMP	64	F	HUMIDITY	43	% R.H.	WIND	CALM	<u>LIGHT</u>	MODERATE
WINDSPD	5	MPH	DIR.	N	NE	S	SE	S	SW
SKY	<u>SUNNY</u>	<u>CLEAR</u>	OVRCAST		PRTLY CLDY	FOG	RAIN	VARIABLE	STEADY
ACOUSTIC MEASUREMENTS									
MEAS. INSTRUMENT	PICCULO SLM-3					TYPE	1	2	SERIAL # 140317064
CALIBRATOR	BCWA CA 114								SERIAL # 980151
CALIBRATION CHECK	PRE-TEST					dba SPL	POST-TEST	dba SPL	WINDSCRN YES
SETTINGS	A-WTD	<u>SLOW</u>	FAST	FRONTAL	RANDOM	ANSI	OTHER:		
REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC)
<u>ST-3</u> 22-23	11:11	11:26	64.1	73.0	30.0				
COMMENTS									
READING TAKEN AT SOUTH PROPERTY BOUNDARY OF HOME AT 9 SUMMIT COURT; PRIMARY NOISE SOURCE IS TRAFFIC ON OSO HWY TO THE SOUTH;									

SOURCE INFO AND TRAFFIC COUNTS												
PRIMARY NOISE SOURCE					TRAFFIC							
ROADWAY TYPE: ASPHALT					DIST. TO RDWY: 200' TO CLK ON OSO HWY							
TRAFFIC COUNT DURATION: MIN					SPEED							
COUNT 1 (OR RDWY 1)	DIRECTION	NB/EB	SB/WB	NB/EB	SB/WB	IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE	COUNT 2 (OR RDWY 2)	DIRECTION	NB/EB	SB/WB	NB/EB	SB/WB
	AUTOS											
	MED TRKS											
	HVY TRKS											
	BUSES											
	MOTRCLS											
SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE												
POSTED SPEED LIMIT SIGNS SAY:												
OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS <u>BIRDS</u> DIST. INDUSTRIAL												
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DIST. GARDENERS / LANDSCAPING NOISE												
OTHER:												

DESCRIPTION / SKETCH										
TERRAIN	HARD	SOFT	<u>MIXED</u>	FLAT	OTHER:					
PHOTOS	7247; 7248; 7249; 7250; 7251; 7252; 7253; 7254;									
OTHER COMMENTS / SKETCH										
										


FIELD NOISE MEASUREMENT DATA

DUDEK

PROJECT	SMWD LAS FLORES		PROJECT #	12318
SITE ID			OBSERVER(S)	PEJE VITAR
SITE ADDRESS				
START DATE	2/13/20	END DATE	2/13/20	
START TIME		END TIME		

METEOROLOGICAL CONDITIONS									
TEMP	64	F	HUMIDITY	44	% R.H.	WIND	CALM	LIGHT	MODERATE
WINDSPD	5	MPH	DIR.	N	NE	S	SE	S	SW
SKY	SUNNY	CLEAR	OVRCAST	PRTLY CLDY	FOG	RAIN	VARIABLE	STEADY	GUSTY
ACOUSTIC MEASUREMENTS									
MEAS. INSTRUMENT	PICCULO SLM-3				TYPE	1	2	SERIAL #	140317064
CALIBRATOR	REWA CA 114							SERIAL #	980151
CALIBRATION CHECK	PRE-TEST				dBA SPL	POST-TEST	dBA SPL	WINDSCRN	YES
SETTINGS	A-WTD	SLOW	FAST	FRONTAL	RANDOM	ANSI	OTHER:		
REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC)
ST-4 24-25	11:43	11:58	60.3	75.9	51.3				
COMMENTS									
READING TAKEN AT SW CORNER OF PROPERTY AT 164 BLOOMFIELD LANE (RESIDENTIAL), AT THE NE CORNER OF BLOOMFIELD LANE & MORNING TRAIL; PRIMARY NOISE SOURCE IS TRAFFIC ON MORNING TRAIL; SECONDARY IS DISTANT TRAFFIC NOISE ON OSO PKWT; SOME TRAFFIC ON BLOOMFIELD LN.									

SOURCE INFO AND TRAFFIC COUNTS										
PRIMARY NOISE SOURCE					TRAFFIC	AIRCRAFT	RAIL	INDUSTRIAL	OTHER:	
ROADWAY TYPE:					ASPHALT					
TRAFFIC COUNT DURATION:					MIN	SPEED	DIST. TO RDWY C/L OR EOP: Apx 30' to BLOOMFIELD LN C/L			
COUNT 1 (OR RDWY 1)	DIRECTION	NB/EB	SB/WB	NB/EB	SB/WB	IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE	COUNT 2 (OR RDWY 2)	NB/EB	SB/WB	
	AUTOS									
	MED TRKS									
	HVY TRKS									
	BUSES									
	MOTRCLS									
SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE										
POSTED SPEED LIMIT SIGNS SAY:										
OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL										
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DIST. GARDENERS / LANDSCAPING NOISE										
OTHER: DISTANT TRAFFIC NOISE FROM OSO PKWT;										

DESCRIPTION / SKETCH										
TERRAIN	HARD	SOFT	MIXED	FLAT	OTHER:					
PHOTOS	7256; 7257; 7258; 7259; 7260; 7261; 7262; 7263; 7264; 7265									
OTHER COMMENTS / SKETCH										
										

APPENDIX **D**-2
Construction Noise Modeling
Input and Output

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 2/26/2020
Case Description: SMWD Las Flores - Site Preparation

		---- Receptor #1 ----					
		Baselines (dBA)					
Description	Land Use	Daytime	Evening	Night			
Nearest Resi - Nearest	Residential	65	60	55			
		Equipment					
		Impact		Spec	Actual	Receptor	Estimated
Description		Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Excavator		No	40		80.7	45	0
Man Lift		No	20		74.7	50	0
		Results					
		Calculated (dBA)		Noise Limits (dBA)			
				Day	Evening		
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator		81.6	77.6	N/A	N/A	N/A	N/A
Man Lift		74.7	67.7	N/A	N/A	N/A	N/A
	Total	81.6	78.1	N/A	N/A	N/A	N/A
*Calculated Lmax is the Loudest value.							

		---- Receptor #2 ----					
		Baselines (dBA)					
Description	Land Use	Daytime	Evening	Night			
Nearest Resi - Typical	Residential	65	60	55			
		Equipment					
		Impact		Spec	Actual	Receptor	Estimated
Description		Device	Usage(%)	Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Excavator		No	40		80.7	200	0
Man Lift		No	20		74.7	200	0
		Results					
		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator		68.7	64.7	N/A	N/A	N/A	N/A
Man Lift		62.7	55.7	N/A	N/A	N/A	N/A
	Total	68.7	65.2	N/A	N/A	N/A	N/A
*Calculated Lmax is the Loudest value.							

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 2/26/2020
Case Description: SMWD Las Flores - Pipeline Trenching/ Grading

		---- Receptor #1 ----					
		Baselines (dBA)					
Description	Land Use	Daytime	Evening	Night			
Nearest Resi - Nearest	Residential	65	60	55			

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Excavator	No	40		80.7	45	0
Man Lift	No	20		74.7	50	0
Vacuum Street Sweeper	No	10		81.6	55	0
Slurry Trenching Machine	No	50		80.4	60	0

Equipment	Results					
	Calculated (dBA)			Noise Limits (dBA)		
			Day	Evening		
	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	81.6	77.6	N/A	N/A	N/A	N/A
Man Lift	74.7	67.7	N/A	N/A	N/A	N/A
Vacuum Street Sweeper	80.8	70.8	N/A	N/A	N/A	N/A
Slurry Trenching Machine	78.8	75.8	N/A	N/A	N/A	N/A
Total	81.6	80.6	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----				
Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nearest Resi - Typical	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Excavator	No	40		80.7	200	0
Man Lift	No	20		74.7	200	0
Vacuum Street Sweeper	No	10		81.6	200	0
Slurry Trenching Machine	No	50		80.4	200	0

Equipment	Results					
	Calculated (dBA)			Noise Limits (dBA)		
			Day	Evening		
	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	68.7	64.7	N/A	N/A	N/A	N/A
Man Lift	62.7	55.7	N/A	N/A	N/A	N/A
Vacuum Street Sweeper	69.5	59.5	N/A	N/A	N/A	N/A
Slurry Trenching Machine	68.3	65.3	N/A	N/A	N/A	N/A
Total	69.5	68.8	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 2/26/2020
Case Description: SMWD Las Flores - Paving

---- Receptor #1 ----				
Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nearest Resi - Nearest	Residential	65	60	55

Equipment

Description	Impact Device	Usage(%)	Spec	Actual	Receptor	Estimated
			Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Paver	No	50		77.2	45	0
Roller	No	20		80	50	0
Roller	No	20		80	55	0

Results						
Calculated (dBA)			Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	78.1	75.1	N/A	N/A	N/A	N/A
Roller	80	73	N/A	N/A	N/A	N/A
Roller	79.2	72.2	N/A	N/A	N/A	N/A
Total	80	78.4	N/A	N/A	N/A	N/A
*Calculated Lmax is the Loudest value.						

---- Receptor #2 ----				
Baselines (dBA)				
Description	Land Use	Daytime	Evening	Night
Nearest Resi - Typical	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment	Actual	Receptor	Estimated
			Spec Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Paver	No	50		77.2	200	0
Roller	No	20		80	200	0
Roller	No	20		80	200	0

Results						
Calculated (dBA)			Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	65.2	62.2	N/A	N/A	N/A	N/A
Roller	68	61	N/A	N/A	N/A	N/A
Roller	68	61	N/A	N/A	N/A	N/A
Total	68	66.2	N/A	N/A	N/A	N/A
*Calculated Lmax is the Loudest value.						

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 2/26/2020
Case Description: SMWD Las Flores - Demobilization

---- Receptor #1 ----				
Baselines (dBA)				
Description	Land Use	Daytime	Evening	Night
Nearest Resi - Nearest	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment	Actual	Receptor	Estimated
			Spec Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Excavator	No	40		80.7	45	0
Man Lift	No	20		74.7	50	0

Results

Equipment	Calculated (dBA)			Noise Limits (dBA)		
	*Lmax	Leq	Day	Leq	Evening	
			Lmax		Lmax	Leq
Excavator	81.6		77.6 N/A	N/A	N/A	N/A
Man Lift	74.7		67.7 N/A	N/A	N/A	N/A
Total	81.6		78.1 N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nearest Resi - Typical	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	200	0
Man Lift	No	20		74.7	200	0

Results

Equipment	Calculated (dBA)			Noise Limits (dBA)		
	*Lmax	Leq	Day	Leq	Evening	
			Lmax		Lmax	Leq
Excavator	68.7		64.7 N/A	N/A	N/A	N/A
Man Lift	62.7		55.7 N/A	N/A	N/A	N/A
Total	68.7		65.2 N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 2/27/2020
Case Description: SMWD Las Flores - Conversion of Lift Station

---- Receptor #1 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Nearest Resi - Nearest	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	360	0
Slurry Trenching Machine	No	50		80.4	370	0

Results

Equipment	Calculated (dBA)			Noise Limits (dBA)		
	*Lmax	Leq	Day	Leq	Evening	
			Lmax		Lmax	Leq
Backhoe	60.4		56.4 N/A	N/A	N/A	N/A
Slurry Trenching Machine	63		60 N/A	N/A	N/A	N/A
Total	63		61.6 N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night

Nearest Resi - Typical	Residential	65	60	55
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Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Backhoe	No	40		77.6	500	0
Slurry Trenching Machine	No	50		80.4	500	0

Equipment	Calculated (dBA)		Results			
	*Lmax	Leq	Day		Evening	
			Lmax	Leq	Lmax	Leq
Backhoe	57.6	53.6	N/A	N/A	N/A	N/A
Slurry Trenching Machine	60.4	57.3	N/A	N/A	N/A	N/A
Total	60.4	58.9	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.