Appendix A

CalEEMod Calculations

Coronado Municipal Golf Course Modernization Project

San Diego County APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	5.00	1000sqft	0.11	5,000.00	0
General Light Industry	4.00	1000sqft	0.09	4,000.00	0
Unrefrigerated Warehouse-No Rail	0.94	1000sqft	0.02	940.00	0
Other Asphalt Surfaces	1.36	Acre	1.36	59,241.60	0
General Office Building	3.00	1000sqft	0.07	3,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2022
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	448.3	**CH4 Intensity (lb/MWhr)**	0.018	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - In accordance with 2017 Power Content Label for SDG&E.

Land Use - Based on project description.

Construction Phase - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - CalEEMod defaults.

Off-road Equipment - CalEEMod defaults.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Grading - Based on project description.

Trips and VMT - Based on project description.

On-road Fugitive Dust - CalEEMod defaults.

Architectural Coating - CalEEmod defaults.

Vehicle Trips - Based on project description.

Consumer Products - CalEEMod defaults.

Area Coating - CalEEMod defaults.

Landscape Equipment - CalEEMod defaults.

Energy Use - Based on the project description.

Water And Wastewater - CalEEMod defaults for office building. The other facilities won't use water.

Solid Waste - Based on project description for SWRF.

Construction Off-road Equipment Mitigation - In accordance with SDAPCD Rule 55.

Waste Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps - A 50 kW backup genertor.

Stationary Sources - Emergency Generators and Fire Pumps EF - CalEEMod defaults.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	200.00	120.00
tblConstructionPhase	NumDays	20.00	135.00
tblConstructionPhase	NumDays	2.00	45.00
tblConstructionPhase	NumDays	2.00	90.00
tblConstructionPhase	NumDays	200.00	240.00
tblConstructionPhase	NumDays	2.00	175.00
tblConstructionPhase	NumDays	200.00	45.00
tblConstructionPhase	NumDays	2.00	180.00
tblConstructionPhase	NumDays	2.00	120.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
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tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	PhaseEndDate	5/10/2021	5/7/2021
tblConstructionPhase	PhaseEndDate	4/12/2021	11/23/2020

tblConstructionPhase	PhaseEndDate	6/26/2020	11/4/2020
tblConstructionPhase	PhaseEndDate	4/26/2021	4/23/2021
tblConstructionPhase	PhaseEndDate	6/30/2020	8/18/2020
tblEnergyUse	LightingElect	2.83	0.00
tblEnergyUse	NT24E	4.27	0.00
tblEnergyUse	NT24E	1.11	0.00
tblEnergyUse	NT24NG	7.25	0.00
tblEnergyUse	NT24NG	0.11	0.00
tblEnergyUse	T24E	1.21	584.00
tblEnergyUse	T24E	0.88	0.00
tblEnergyUse	T24NG	4.31	0.00
tblEnergyUse	T24NG	1.56	0.00
tblGrading	MaterialExported	0.00	34,000.00
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.20	0.20
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.43	0.43
tblOffRoadEquipment	LoadFactor	0.42	0.42

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tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Pavers
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Pavers
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Concrete/Industrial Saws
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
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tblOffRoadEquipment	OffRoadEquipmentType		Excavators
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tblOffRoadEquipment	OffRoadEquipmentType		Trenchers

tblOffRoadEquipment	OffRoadEquipmentType		Pavers
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
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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	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
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tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	7.00	12.00
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tblOffRoadEquipment	UsageHours	6.00	12.00
tblOffRoadEquipment	UsageHours	6.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.018
tblProjectCharacteristics	CO2IntensityFactor	720.49	448.3
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004
tblSolidWaste	SolidWasteGenerationRate	6.20	173.00
tblSolidWaste	SolidWasteGenerationRate	4.96	0.00
tblSolidWaste	SolidWasteGenerationRate	0.88	0.00
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	86.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	1.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	52.00

tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	4,250.00
tblTripsAndVMT	PhaseName		Recycled Water Distribution System
tblTripsAndVMT	PhaseName		Discharge Pipeline
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
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tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	13.00	14.00
tblTripsAndVMT	WorkerTripNumber	5.00	6.00
tblTripsAndVMT	WorkerTripNumber	30.00	8.00
tblTripsAndVMT	WorkerTripNumber	30.00	12.00
tblTripsAndVMT	WorkerTripNumber	13.00	14.00
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tblTripsAndVMT	WorkerTripNumber	5.00	16.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00
tblTripsAndVMT	WorkerTripNumber	8.00	12.00
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tblTripsAndVMT	WorkerTripNumber	10.00	12.00
tblVehicleTrips	ST_TR	1.50	0.80
tblVehicleTrips	ST_TR	1.32	5.50
tblVehicleTrips	ST_TR	2.46	0.00

tblVehicleTrips	ST_TR	1.68	0.00
tblVehicleTrips	SU_TR	1.50	0.80
tblVehicleTrips	SU_TR	0.68	5.50
tblVehicleTrips	SU_TR	1.05	0.00
tblVehicleTrips	SU_TR	1.68	0.00
tblVehicleTrips	WD_TR	1.50	0.80
tblVehicleTrips	WD_TR	6.97	5.50
tblVehicleTrips	WD_TR	11.03	0.00
tblVehicleTrips	WD_TR	1.68	0.00
tblWater	IndoorWaterUseRate	1,156,250.00	0.00
tblWater	IndoorWaterUseRate	925,000.00	0.00
tblWater	IndoorWaterUseRate	217,375.00	0.00

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	0.5866	6.5752	4.5233	9.9300e-003	0.3540	0.3005	0.6545	0.1408	0.2798	0.4206	0.0000	894.3238	894.3238	0.2029	0.0000	899.3961
2021	1.2155	10.1603	8.0652	0.0137	0.0861	0.5613	0.6474	0.0232	0.5195	0.5428	0.0000	1,207.6627	1,207.6627	0.3255	0.0000	1,215.7992
Maximum	**1.2155**	**10.1603**	**8.0652**	**0.0137**	**0.3540**	**0.5613**	**0.6545**	**0.1408**	**0.5195**	**0.5428**	**0.0000**	**1,207.6627**	**1,207.6627**	**0.3255**	**0.0000**	**1,215.7992**

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	0.5866	6.5752	4.5233	9.9300e-003	0.2016	0.3005	0.5020	0.0749	0.2798	0.3547	0.0000	894.3230	894.3230	0.2029	0.0000	899.3953
2021	1.2155	10.1602	8.0651	0.0137	0.0861	0.5613	0.6474	0.0232	0.5195	0.5428	0.0000	1,207.6614	1,207.6614	0.3255	0.0000	1,215.7979
Maximum	**1.2155**	**10.1602**	**8.0651**	**0.0137**	**0.2016**	**0.5613**	**0.6474**	**0.0749**	**0.5195**	**0.5428**	**0.0000**	**1,207.6614**	**1,207.6614**	**0.3255**	**0.0000**	**1,215.7979**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**34.64**	**0.00**	**11.71**	**40.17**	**0.00**	**6.84**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	6-1-2020	8-31-2020	3.6365	3.6365
2	9-1-2020	11-30-2020	3.1662	3.1662
3	12-1-2020	2-28-2021	1.7314	1.7314
4	3-1-2021	5-31-2021	3.0500	3.0500
5	6-1-2021	8-31-2021	4.1981	4.1981
6	9-1-2021	9-30-2021	0.9723	0.9723
		Highest	4.1981	4.1981

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0714	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.6000e-004	2.6000e-004	0.0000	0.0000	2.7000e-004
Energy	5.8000e-004	5.2400e-003	4.4000e-003	3.0000e-005		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	614.7439	614.7439	0.0246	5.5400e-003	617.0086
Mobile	7.4900e-003	0.0336	0.0911	3.2000e-004	0.0286	2.7000e-004	0.0289	7.6600e-003	2.5000e-004	7.9100e-003	0.0000	29.7501	29.7501	1.5400e-003	0.0000	29.7886
Stationary	3.6700e-003	0.0120	0.0133	2.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	1.7029	1.7029	2.4000e-004	0.0000	1.7089
Waste						0.0000	0.0000		0.0000	0.0000	35.6838	0.0000	35.6838	2.1089	0.0000	88.4051
Water						0.0000	0.0000		0.0000	0.0000	0.1692	2.1501	2.3193	0.0175	4.3000e-004	2.8837
Total	**0.0832**	**0.0508**	**0.1090**	**3.7000e-004**	**0.0286**	**1.2100e-003**	**0.0298**	**7.6600e-003**	**1.1900e-003**	**8.8500e-003**	**35.8529**	**648.3473**	**684.2003**	**2.1527**	**5.9700e-003**	**739.7951**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0714	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.6000e-004	2.6000e-004	0.0000	0.0000	2.7000e-004
Energy	5.8000e-004	5.2400e-003	4.4000e-003	3.0000e-005		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	614.7439	614.7439	0.0246	5.5400e-003	617.0086
Mobile	7.4900e-003	0.0336	0.0911	3.2000e-004	0.0286	2.7000e-004	0.0289	7.6600e-003	2.5000e-004	7.9100e-003	0.0000	29.7501	29.7501	1.5400e-003	0.0000	29.7886
Stationary	3.6700e-003	0.0120	0.0133	2.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	1.7029	1.7029	2.4000e-004	0.0000	1.7089
Waste						0.0000	0.0000		0.0000	0.0000	35.6838	0.0000	35.6838	2.1089	0.0000	88.4051
Water						0.0000	0.0000		0.0000	0.0000	0.1692	2.1501	2.3193	0.0175	4.3000e-004	2.8837
Total	**0.0832**	**0.0508**	**0.1090**	**3.7000e-004**	**0.0286**	**1.2100e-003**	**0.0298**	**7.6600e-003**	**1.1900e-003**	**8.8500e-003**	**35.8529**	**648.3473**	**684.2003**	**2.1527**	**5.9700e-003**	**739.7951**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Golf Course Master Planning Construction	Demolition	6/1/2020	11/4/2020	6	135	
2	Access Lane	Site Preparation	6/27/2020	8/18/2020	6	45	
3	SWRF and Turf Care Buildings	Building Construction	7/7/2020	11/23/2020	6	120	
4	Paving	Paving	4/13/2021	4/23/2021	6	10	
5	Architectural Coating	Architectural Coating	4/27/2021	5/7/2021	6	10	
6	Recycled Water Storage Ponds	Site Preparation	6/27/2020	10/9/2020	6	90	
7	Recycled Water Treatment System	Building Construction	7/31/2020	5/6/2021	6	240	
8	Wastewater Diversion Pump Station and Pipeline	Site Preparation	5/6/2021	11/25/2021	6	175	
9	Discharge Pipeline	Trenching	5/6/2021	11/25/2021	6	175	
10	SWRF Startup	Building Construction	11/1/2021	12/22/2021	6	45	
11	Recycled Water Distribution System	Trenching	1/1/2021	8/21/2021	6	200	
12	Irrigation System	Site Preparation	5/5/2021	11/30/2021	6	180	
13	Turf Establishment of New Holes	Site Preparation	5/5/2021	9/21/2021	6	120	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.36

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 19,410; Non-Residential Outdoor: 6,470; Striped Parking Area: 3,554 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Wastewater Diversion Pump Station and Pipeline	Pavers	1	12.00	130	0.42
Discharge Pipeline	Trenchers	1	12.00	78	0.50

Discharge Pipeline	Tractors/Loaders/Backhoes	1	12.00	97	0.37
Discharge Pipeline	Rubber Tired Dozers	1	12.00	247	0.40
Discharge Pipeline	Pavers	1	12.00	130	0.42
Recycled Water Distribution System	Trenchers	1	12.00	78	0.50
Recycled Water Distribution System	Tractors/Loaders/Backhoes	1	12.00	97	0.37
Recycled Water Distribution System	Rubber Tired Dozers	1	12.00	247	0.40
Recycled Water Distribution System	Pavers	1	12.00	130	0.42
Irrigation System	Trenchers	2	12.00	78	0.50
Irrigation System	Excavators	1	12.00	158	0.38
Irrigation System	Rollers	1	12.00	80	0.38
Irrigation System	Concrete/Industrial Saws	1	12.00	81	0.73
Turf Establishment of New Holes	Forklifts	1	12.00	89	0.20
Turf Establishment of New Holes	Other Construction Equipment	1	12.00	172	0.42
Architectural Coating	Air Compressors	1	12.00	78	0.48
Paving	Cement and Mortar Mixers	1	12.00	9	0.56
Golf Course Master Planning Construction	Concrete/Industrial Saws	1	12.00	81	0.73
SWRF and Turf Care Buildings	Generator Sets	0	8.00	84	0.74
SWRF and Turf Care Buildings	Cranes	1	12.00	231	0.29
SWRF and Turf Care Buildings	Forklifts	0	6.00	89	0.20
Access Lane	Graders	0	8.00	187	0.41
Paving	Pavers	1	12.00	130	0.42
Paving	Rollers	1	12.00	80	0.38
Golf Course Master Planning Construction	Rubber Tired Dozers	0	8.00	247	0.40
SWRF Startup	Cranes	0	6.00	231	0.29
SWRF and Turf Care Buildings	Tractors/Loaders/Backhoes	2	12.00	97	0.37
Golf Course Master Planning Construction	Tractors/Loaders/Backhoes	2	12.00	97	0.37

Recycled Water Treatment System	Cranes	1	12.00	231	0.29
Paving	Tractors/Loaders/Backhoes	1	12.00	97	0.37
Access Lane	Tractors/Loaders/Backhoes	1	12.00	97	0.37
SWRF Startup	Forklifts	0	6.00	89	0.20
Paving	Paving Equipment	1	12.00	132	0.36
Access Lane	Rubber Tired Dozers	1	12.00	247	0.40
SWRF and Turf Care Buildings	Welders	0	8.00	46	0.45
Recycled Water Treatment System	Forklifts	1	12.00	89	0.20
SWRF Startup	Generator Sets	0	8.00	84	0.74
Recycled Water Treatment System	Generator Sets	0	8.00	84	0.74
Irrigation System	Graders	0	8.00	187	0.41
Turf Establishment of New Holes	Graders	0	8.00	187	0.41
Recycled Water Storage Ponds	Graders	0	8.00	187	0.41
Wastewater Diversion Pump Station and Pipeline	Graders	0	8.00	187	0.41
Irrigation System	Rubber Tired Dozers	0	7.00	247	0.40
Turf Establishment of New Holes	Rubber Tired Dozers	0	7.00	247	0.40
Recycled Water Storage Ponds	Rubber Tired Dozers	0	7.00	247	0.40
Wastewater Diversion Pump Station and Pipeline	Rubber Tired Dozers	0	7.00	247	0.40
SWRF Startup	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Recycled Water Treatment System	Tractors/Loaders/Backhoes	1	12.00	97	0.37
Irrigation System	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Turf Establishment of New Holes	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Recycled Water Storage Ponds	Tractors/Loaders/Backhoes	2	12.00	97	0.37
Wastewater Diversion Pump Station and Pipeline	Tractors/Loaders/Backhoes	1	12.00	97	0.37
SWRF Startup	Welders	0	8.00	46	0.45
Recycled Water Treatment System	Welders	0	8.00	46	0.45

Golf Course Master Planning Construction	Crawler Tractors		1	12.00	212	0.43
Golf Course Master Planning Construction	Trenchers		1	12.00	78	0.50
Recycled Water Storage Ponds	Trenchers		0	12.00	78	0.50
Recycled Water Storage Ponds	Crawler Tractors		0	12.00	212	0.43
Recycled Water Storage Ponds	Pavers		0	12.00	130	0.42
Recycled Water Storage Ponds	Scrapers		1	12.00	367	0.48
Recycled Water Treatment System	Excavators		1	12.00	158	0.38
Recycled Water Treatment System	Pumps		1	12.00	84	0.74
Wastewater Diversion Pump Station and Pipeline	Trenchers		1	12.00	78	0.50

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
Golf Course Master Planning Construction	5	14.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Access Lane	2	6.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
SWRF Startup	0	8.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
SWRF and Turf Care Buildings	3	12.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	14.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	6.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Recycled Water Treatment System	5	20.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Irrigation System	5	32.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Turf Establishment of New Holes	2	16.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Recycled Water Storage Ponds	3	10.00	2.00	4,250.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Wastewater Diversion Pump Station and Pip	3	12.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Recycled Water Distribution System	4	16.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Discharge Pipeline	4	12.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Golf Course Master Planning Construction - 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	0.1859	1.8988	1.3550	2.4000e-003		0.1042	0.1042		0.0975	0.0975	0.0000	209.5524	209.5524	0.0536	0.0000	210.8928
Total	**0.1859**	**1.8988**	**1.3550**	**2.4000e-003**		**0.1042**	**0.1042**		**0.0975**	**0.0975**	**0.0000**	**209.5524**	**209.5524**	**0.0536**	**0.0000**	**210.8928**

3.2 Golf Course Master Planning Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.1000e-004	0.0154	4.0900e-003	4.0000e-005	9.0000e-004	8.0000e-005	9.7000e-004	2.6000e-004	7.0000e-005	3.3000e-004	0.0000	3.5621	3.5621	2.7000e-004	0.0000	3.5690
Worker	3.4800e-003	2.5800e-003	0.0253	8.0000e-005	7.5800e-003	5.0000e-005	7.6300e-003	2.0100e-003	5.0000e-005	2.0600e-003	0.0000	6.8501	6.8501	2.1000e-004	0.0000	6.8552
Total	**3.9900e-003**	**0.0180**	**0.0294**	**1.2000e-004**	**8.4800e-003**	**1.3000e-004**	**8.6000e-003**	**2.2700e-003**	**1.2000e-004**	**2.3900e-003**	**0.0000**	**10.4122**	**10.4122**	**4.8000e-004**	**0.0000**	**10.4242**

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	0.1859	1.8988	1.3550	2.4000e-003		0.1042	0.1042		0.0975	0.0975	0.0000	209.5521	209.5521	0.0536	0.0000	210.8925
Total	**0.1859**	**1.8988**	**1.3550**	**2.4000e-003**		**0.1042**	**0.1042**		**0.0975**	**0.0975**	**0.0000**	**209.5521**	**209.5521**	**0.0536**	**0.0000**	**210.8925**

3.2 Golf Course Master Planning Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.1000e-004	0.0154	4.0900e-003	4.0000e-005	9.0000e-004	8.0000e-005	9.7000e-004	2.6000e-004	7.0000e-005	3.3000e-004	0.0000	3.5621	3.5621	2.7000e-004	0.0000	3.5690
Worker	3.4800e-003	2.5800e-003	0.0253	8.0000e-005	7.5800e-003	5.0000e-005	7.6300e-003	2.0100e-003	5.0000e-005	2.0600e-003	0.0000	6.8501	6.8501	2.1000e-004	0.0000	6.8552
Total	**3.9900e-003**	**0.0180**	**0.0294**	**1.2000e-004**	**8.4800e-003**	**1.3000e-004**	**8.6000e-003**	**2.2700e-003**	**1.2000e-004**	**2.3900e-003**	**0.0000**	**10.4122**	**10.4122**	**4.8000e-004**	**0.0000**	**10.4242**

3.3 Access Lane - 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					0.2033	0.0000	0.2033	0.1117	0.0000	0.1117	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0435	0.4535	0.2164	3.9000e-004		0.0232	0.0232		0.0214	0.0214	0.0000	34.5399	34.5399	0.0112	0.0000	34.8192
Total	**0.0435**	**0.4535**	**0.2164**	**3.9000e-004**	**0.2033**	**0.0232**	**0.2265**	**0.1117**	**0.0214**	**0.1331**	**0.0000**	**34.5399**	**34.5399**	**0.0112**	**0.0000**	**34.8192**

3.3 Access Lane - 2020

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	1.7000e-004	5.1300e-003	1.3600e-003	1.0000e-005	3.0000e-004	3.0000e-005	3.2000e-004	9.0000e-005	2.0000e-005	1.1000e-004	0.0000	1.1874	1.1874	9.0000e-005	0.0000	1.1897
Worker	5.0000e-004	3.7000e-004	3.6100e-003	1.0000e-005	1.0800e-003	1.0000e-005	1.0900e-003	2.9000e-004	1.0000e-005	2.9000e-004	0.0000	0.9786	0.9786	3.0000e-005	0.0000	0.9793
Total	**6.7000e-004**	**5.5000e-003**	**4.9700e-003**	**2.0000e-005**	**1.3800e-003**	**4.0000e-005**	**1.4100e-003**	**3.8000e-004**	**3.0000e-005**	**4.0000e-004**	**0.0000**	**2.1660**	**2.1660**	**1.2000e-004**	**0.0000**	**2.1690**

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					0.0915	0.0000	0.0915	0.0503	0.0000	0.0503	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0435	0.4535	0.2164	3.9000e-004		0.0232	0.0232		0.0214	0.0214	0.0000	34.5399	34.5399	0.0112	0.0000	34.8192
Total	**0.0435**	**0.4535**	**0.2164**	**3.9000e-004**	**0.0915**	**0.0232**	**0.1147**	**0.0503**	**0.0214**	**0.0716**	**0.0000**	**34.5399**	**34.5399**	**0.0112**	**0.0000**	**34.8192**

3.3 Access Lane - 2020

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	1.7000e-004	5.1300e-003	1.3600e-003	1.0000e-005	3.0000e-004	3.0000e-005	3.2000e-004	9.0000e-005	2.0000e-005	1.1000e-004	0.0000	1.1874	1.1874	9.0000e-005	0.0000	1.1897
Worker	5.0000e-004	3.7000e-004	3.6100e-003	1.0000e-005	1.0800e-003	1.0000e-005	1.0900e-003	2.9000e-004	1.0000e-005	2.9000e-004	0.0000	0.9786	0.9786	3.0000e-005	0.0000	0.9793
Total	**6.7000e-004**	**5.5000e-003**	**4.9700e-003**	**2.0000e-005**	**1.3800e-003**	**4.0000e-005**	**1.4100e-003**	**3.8000e-004**	**3.0000e-005**	**4.0000e-004**	**0.0000**	**2.1660**	**2.1660**	**1.2000e-004**	**0.0000**	**2.1690**

3.4 SWRF and Turf Care Buildings - 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	0.0785	0.8642	0.6007	1.0800e-003		0.0440	0.0440		0.0405	0.0405	0.0000	94.7368	94.7368	0.0306	0.0000	95.5028
Total	**0.0785**	**0.8642**	**0.6007**	**1.0800e-003**		**0.0440**	**0.0440**		**0.0405**	**0.0405**	**0.0000**	**94.7368**	**94.7368**	**0.0306**	**0.0000**	**95.5028**

3.4 SWRF and Turf Care Buildings - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.7400e-003	0.0821	0.0218	2.0000e-004	4.7800e-003	4.0000e-004	5.1800e-003	1.3800e-003	3.8000e-004	1.7600e-003	0.0000	18.9980	18.9980	1.4600e-003	0.0000	19.0344
Worker	2.6500e-003	1.9600e-003	0.0193	6.0000e-005	5.7700e-003	4.0000e-005	5.8200e-003	1.5300e-003	4.0000e-005	1.5700e-003	0.0000	5.2191	5.2191	1.6000e-004	0.0000	5.2230
Total	**5.3900e-003**	**0.0840**	**0.0411**	**2.6000e-004**	**0.0106**	**4.4000e-004**	**0.0110**	**2.9100e-003**	**4.2000e-004**	**3.3300e-003**	**0.0000**	**24.2171**	**24.2171**	**1.6200e-003**	**0.0000**	**24.2575**

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	0.0785	0.8642	0.6007	1.0800e-003		0.0440	0.0440		0.0405	0.0405	0.0000	94.7366	94.7366	0.0306	0.0000	95.5026
Total	**0.0785**	**0.8642**	**0.6007**	**1.0800e-003**		**0.0440**	**0.0440**		**0.0405**	**0.0405**	**0.0000**	**94.7366**	**94.7366**	**0.0306**	**0.0000**	**95.5026**

3.4 SWRF and Turf Care Buildings - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.7400e-003	0.0821	0.0218	2.0000e-004	4.7800e-003	4.0000e-004	5.1800e-003	1.3800e-003	3.8000e-004	1.7600e-003	0.0000	18.9980	18.9980	1.4600e-003	0.0000	19.0344
Worker	2.6500e-003	1.9600e-003	0.0193	6.0000e-005	5.7700e-003	4.0000e-005	5.8200e-003	1.5300e-003	4.0000e-005	1.5700e-003	0.0000	5.2191	5.2191	1.6000e-004	0.0000	5.2230
Total	**5.3900e-003**	**0.0840**	**0.0411**	**2.6000e-004**	**0.0106**	**4.4000e-004**	**0.0110**	**2.9100e-003**	**4.2000e-004**	**3.3300e-003**	**0.0000**	**24.2171**	**24.2171**	**1.6200e-003**	**0.0000**	**24.2575**

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	6.5500e-003	0.0654	0.0742	1.1000e-004		3.4900e-003	3.4900e-003		3.2200e-003	3.2200e-003	0.0000	9.8998	9.8998	3.1300e-003	0.0000	9.9780
Paving	1.7800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.3300e-003**	**0.0654**	**0.0742**	**1.1000e-004**		**3.4900e-003**	**3.4900e-003**		**3.2200e-003**	**3.2200e-003**	**0.0000**	**9.8998**	**9.8998**	**3.1300e-003**	**0.0000**	**9.9780**

3.5 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.0000e-005	2.0600e-003	5.5000e-004	1.0000e-005	1.3000e-004	0.0000	1.4000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.5229	0.5229	4.0000e-005	0.0000	0.5239
Worker	2.4000e-004	1.7000e-004	1.7500e-003	1.0000e-005	5.6000e-004	0.0000	5.7000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.4904	0.4904	1.0000e-005	0.0000	0.4907
Total	**3.0000e-004**	**2.2300e-003**	**2.3000e-003**	**2.0000e-005**	**6.9000e-004**	**0.0000**	**7.1000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**1.0133**	**1.0133**	**5.0000e-005**	**0.0000**	**1.0146**

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	6.5500e-003	0.0654	0.0742	1.1000e-004		3.4900e-003	3.4900e-003		3.2200e-003	3.2200e-003	0.0000	9.8998	9.8998	3.1300e-003	0.0000	9.9780
Paving	1.7800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.3300e-003**	**0.0654**	**0.0742**	**1.1000e-004**		**3.4900e-003**	**3.4900e-003**		**3.2200e-003**	**3.2200e-003**	**0.0000**	**9.8998**	**9.8998**	**3.1300e-003**	**0.0000**	**9.9780**

3.5 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.0000e-005	2.0600e-003	5.5000e-004	1.0000e-005	1.3000e-004	0.0000	1.4000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.5229	0.5229	4.0000e-005	0.0000	0.5239
Worker	2.4000e-004	1.7000e-004	1.7500e-003	1.0000e-005	5.6000e-004	0.0000	5.7000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.4904	0.4904	1.0000e-005	0.0000	0.4907
Total	**3.0000e-004**	**2.2300e-003**	**2.3000e-003**	**2.0000e-005**	**6.9000e-004**	**0.0000**	**7.1000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**1.0133**	**1.0133**	**5.0000e-005**	**0.0000**	**1.0146**

3.6 Architectural Coating - 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					
Archit. Coating	0.1705					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1900e-003	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	**0.1727**	**0.0153**	**0.0182**	**3.0000e-005**		**9.4000e-004**	**9.4000e-004**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.8000e-004**	**0.0000**	**2.5576**

3.6 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	7.0000e-005	7.5000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	7.0000e-005	0.0000	0.2102	0.2102	1.0000e-005	0.0000	0.2103
Total	**1.0000e-004**	**7.0000e-005**	**7.5000e-004**	**0.0000**	**2.4000e-004**	**0.0000**	**2.4000e-004**	**6.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2102**	**0.2102**	**1.0000e-005**	**0.0000**	**0.2103**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1705					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1900e-003	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	**0.1727**	**0.0153**	**0.0182**	**3.0000e-005**		**9.4000e-004**	**9.4000e-004**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.8000e-004**	**0.0000**	**2.5576**

3.6 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	7.0000e-005	7.5000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	7.0000e-005	0.0000	0.2102	0.2102	1.0000e-005	0.0000	0.2103
Total	**1.0000e-004**	**7.0000e-005**	**7.5000e-004**	**0.0000**	**2.4000e-004**	**0.0000**	**2.4000e-004**	**6.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2102**	**0.2102**	**1.0000e-005**	**0.0000**	**0.2103**

3.7 Recycled Water Storage Ponds - 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					0.0740	0.0000	0.0740	8.0900e-003	0.0000	8.0900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0956	1.0814	0.8137	1.4500e-003		0.0491	0.0491		0.0451	0.0451	0.0000	127.1169	127.1169	0.0411	0.0000	128.1447
Total	**0.0956**	**1.0814**	**0.8137**	**1.4500e-003**	**0.0740**	**0.0491**	**0.1230**	**8.0900e-003**	**0.0451**	**0.0532**	**0.0000**	**127.1169**	**127.1169**	**0.0411**	**0.0000**	**128.1447**

3.7 Recycled Water Storage Ponds - 2020

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	0.0170	0.6045	0.1385	1.6500e-003	0.0364	1.9100e-003	0.0383	9.9900e-003	1.8300e-003	0.0118	0.0000	163.8904	163.8904	0.0148	0.0000	164.2593
Vendor	3.4000e-004	0.0103	2.7300e-003	2.0000e-005	6.0000e-004	5.0000e-005	6.5000e-004	1.7000e-004	5.0000e-005	2.2000e-004	0.0000	2.3748	2.3748	1.8000e-004	0.0000	2.3793
Worker	1.6600e-003	1.2300e-003	0.0120	4.0000e-005	3.6100e-003	3.0000e-005	3.6300e-003	9.6000e-004	2.0000e-005	9.8000e-004	0.0000	3.2619	3.2619	1.0000e-004	0.0000	3.2644
Total	**0.0190**	**0.6160**	**0.1532**	**1.7100e-003**	**0.0406**	**1.9900e-003**	**0.0426**	**0.0111**	**1.9000e-003**	**0.0130**	**0.0000**	**169.5271**	**169.5271**	**0.0150**	**0.0000**	**169.9030**

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					0.0333	0.0000	0.0333	3.6400e-003	0.0000	3.6400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0956	1.0814	0.8137	1.4500e-003		0.0491	0.0491		0.0451	0.0451	0.0000	127.1167	127.1167	0.0411	0.0000	128.1445
Total	**0.0956**	**1.0814**	**0.8137**	**1.4500e-003**	**0.0333**	**0.0491**	**0.0824**	**3.6400e-003**	**0.0451**	**0.0488**	**0.0000**	**127.1167**	**127.1167**	**0.0411**	**0.0000**	**128.1445**

3.7 Recycled Water Storage Ponds - 2020

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	0.0170	0.6045	0.1385	1.6500e-003	0.0364	1.9100e-003	0.0383	9.9900e-003	1.8300e-003	0.0118	0.0000	163.8904	163.8904	0.0148	0.0000	164.2593
Vendor	3.4000e-004	0.0103	2.7300e-003	2.0000e-005	6.0000e-004	5.0000e-005	6.5000e-004	1.7000e-004	5.0000e-005	2.2000e-004	0.0000	2.3748	2.3748	1.8000e-004	0.0000	2.3793
Worker	1.6600e-003	1.2300e-003	0.0120	4.0000e-005	3.6100e-003	3.0000e-005	3.6300e-003	9.6000e-004	2.0000e-005	9.8000e-004	0.0000	3.2619	3.2619	1.0000e-004	0.0000	3.2644
Total	**0.0190**	**0.6160**	**0.1532**	**1.7100e-003**	**0.0406**	**1.9900e-003**	**0.0426**	**0.0111**	**1.9000e-003**	**0.0130**	**0.0000**	**169.5271**	**169.5271**	**0.0150**	**0.0000**	**169.9030**

3.8 Recycled Water Treatment System - 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	0.1462	1.4600	1.2496	2.1900e-003		0.0769	0.0769		0.0724	0.0724	0.0000	191.5893	191.5893	0.0472	0.0000	192.7696
Total	**0.1462**	**1.4600**	**1.2496**	**2.1900e-003**		**0.0769**	**0.0769**		**0.0724**	**0.0724**	**0.0000**	**191.5893**	**191.5893**	**0.0472**	**0.0000**	**192.7696**

3.8 Recycled Water Treatment System - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0200e-003	0.0903	0.0240	2.1000e-004	5.2600e-003	4.4000e-004	5.7000e-003	1.5200e-003	4.2000e-004	1.9400e-003	0.0000	20.8978	20.8978	1.6000e-003	0.0000	20.9379
Worker	4.8700e-003	3.6000e-003	0.0353	1.1000e-004	0.0106	8.0000e-005	0.0107	2.8100e-003	7.0000e-005	2.8800e-003	0.0000	9.5684	9.5684	2.9000e-004	0.0000	9.5755
Total	**7.8900e-003**	**0.0939**	**0.0593**	**3.2000e-004**	**0.0159**	**5.2000e-004**	**0.0164**	**4.3300e-003**	**4.9000e-004**	**4.8200e-003**	**0.0000**	**30.4662**	**30.4662**	**1.8900e-003**	**0.0000**	**30.5134**

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	0.1462	1.4600	1.2496	2.1900e-003		0.0769	0.0769		0.0724	0.0724	0.0000	191.5890	191.5890	0.0472	0.0000	192.7694
Total	**0.1462**	**1.4600**	**1.2496**	**2.1900e-003**		**0.0769**	**0.0769**		**0.0724**	**0.0724**	**0.0000**	**191.5890**	**191.5890**	**0.0472**	**0.0000**	**192.7694**

3.8 Recycled Water Treatment System - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0200e-003	0.0903	0.0240	2.1000e-004	5.2600e-003	4.4000e-004	5.7000e-003	1.5200e-003	4.2000e-004	1.9400e-003	0.0000	20.8978	20.8978	1.6000e-003	0.0000	20.9379
Worker	4.8700e-003	3.6000e-003	0.0353	1.1000e-004	0.0106	8.0000e-005	0.0107	2.8100e-003	7.0000e-005	2.8800e-003	0.0000	9.5684	9.5684	2.9000e-004	0.0000	9.5755
Total	**7.8900e-003**	**0.0939**	**0.0593**	**3.2000e-004**	**0.0159**	**5.2000e-004**	**0.0164**	**4.3300e-003**	**4.9000e-004**	**4.8200e-003**	**0.0000**	**30.4662**	**30.4662**	**1.8900e-003**	**0.0000**	**30.5134**

3.8 Recycled Water Treatment System - 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	0.1086	1.0772	1.0076	1.8000e-003		0.0547	0.0547		0.0515	0.0515	0.0000	156.7663	156.7663	0.0384	0.0000	157.7261
Total	**0.1086**	**1.0772**	**1.0076**	**1.8000e-003**		**0.0547**	**0.0547**		**0.0515**	**0.0515**	**0.0000**	**156.7663**	**156.7663**	**0.0384**	**0.0000**	**157.7261**

3.8 Recycled Water Treatment System - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-003	0.0666	0.0178	1.7000e-004	4.3000e-003	1.4000e-004	4.4400e-003	1.2400e-003	1.3000e-004	1.3800e-003	0.0000	16.9413	16.9413	1.2600e-003	0.0000	16.9728
Worker	3.7500e-003	2.6800e-003	0.0270	8.0000e-005	8.6600e-003	6.0000e-005	8.7200e-003	2.3000e-003	6.0000e-005	2.3600e-003	0.0000	7.5656	7.5656	2.2000e-004	0.0000	7.5711
Total	**5.7500e-003**	**0.0693**	**0.0447**	**2.5000e-004**	**0.0130**	**2.0000e-004**	**0.0132**	**3.5400e-003**	**1.9000e-004**	**3.7400e-003**	**0.0000**	**24.5070**	**24.5070**	**1.4800e-003**	**0.0000**	**24.5438**

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	0.1086	1.0772	1.0076	1.8000e-003		0.0547	0.0547		0.0515	0.0515	0.0000	156.7661	156.7661	0.0384	0.0000	157.7259
Total	**0.1086**	**1.0772**	**1.0076**	**1.8000e-003**		**0.0547**	**0.0547**		**0.0515**	**0.0515**	**0.0000**	**156.7661**	**156.7661**	**0.0384**	**0.0000**	**157.7259**

3.8 Recycled Water Treatment System - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-003	0.0666	0.0178	1.7000e-004	4.3000e-003	1.4000e-004	4.4400e-003	1.2400e-003	1.3000e-004	1.3800e-003	0.0000	16.9413	16.9413	1.2600e-003	0.0000	16.9728
Worker	3.7500e-003	2.6800e-003	0.0270	8.0000e-005	8.6600e-003	6.0000e-005	8.7200e-003	2.3000e-003	6.0000e-005	2.3600e-003	0.0000	7.5656	7.5656	2.2000e-004	0.0000	7.5711
Total	**5.7500e-003**	**0.0693**	**0.0447**	**2.5000e-004**	**0.0130**	**2.0000e-004**	**0.0132**	**3.5400e-003**	**1.9000e-004**	**3.7400e-003**	**0.0000**	**24.5070**	**24.5070**	**1.4800e-003**	**0.0000**	**24.5438**

3.9 Wastewater Diversion Pump Station and Pipeline - 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					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	0.1070	1.0490	1.0175	1.4600e-003		0.0646	0.0646		0.0594	0.0594	0.0000	128.5380	128.5380	0.0416	0.0000	129.5773
Total	**0.1070**	**1.0490**	**1.0175**	**1.4600e-003**	**0.0000**	**0.0646**	**0.0646**	**0.0000**	**0.0594**	**0.0594**	**0.0000**	**128.5380**	**128.5380**	**0.0416**	**0.0000**	**129.5773**

3.9 Wastewater Diversion Pump Station and Pipeline - 2021

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	1.0800e-003	0.0360	9.5900e-003	9.0000e-005	2.3200e-003	8.0000e-005	2.4000e-003	6.7000e-004	7.0000e-005	7.4000e-004	0.0000	9.1504	9.1504	6.8000e-004	0.0000	9.1674
Worker	3.6500e-003	2.6000e-003	0.0262	8.0000e-005	8.4200e-003	6.0000e-005	8.4800e-003	2.2400e-003	5.0000e-005	2.2900e-003	0.0000	7.3555	7.3555	2.1000e-004	0.0000	7.3608
Total	**4.7300e-003**	**0.0386**	**0.0358**	**1.7000e-004**	**0.0107**	**1.4000e-004**	**0.0109**	**2.9100e-003**	**1.2000e-004**	**3.0300e-003**	**0.0000**	**16.5059**	**16.5059**	**8.9000e-004**	**0.0000**	**16.5281**

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	0.1070	1.0490	1.0175	1.4600e-003		0.0646	0.0646		0.0594	0.0594	0.0000	128.5378	128.5378	0.0416	0.0000	129.5771
Total	**0.1070**	**1.0490**	**1.0175**	**1.4600e-003**	**0.0000**	**0.0646**	**0.0646**	**0.0000**	**0.0594**	**0.0594**	**0.0000**	**128.5378**	**128.5378**	**0.0416**	**0.0000**	**129.5771**

3.9 Wastewater Diversion Pump Station and Pipeline - 2021

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	1.0800e-003	0.0360	9.5900e-003	9.0000e-005	2.3200e-003	8.0000e-005	2.4000e-003	6.7000e-004	7.0000e-005	7.4000e-004	0.0000	9.1504	9.1504	6.8000e-004	0.0000	9.1674
Worker	3.6500e-003	2.6000e-003	0.0262	8.0000e-005	8.4200e-003	6.0000e-005	8.4800e-003	2.2400e-003	5.0000e-005	2.2900e-003	0.0000	7.3555	7.3555	2.1000e-004	0.0000	7.3608
Total	**4.7300e-003**	**0.0386**	**0.0358**	**1.7000e-004**	**0.0107**	**1.4000e-004**	**0.0109**	**2.9100e-003**	**1.2000e-004**	**3.0300e-003**	**0.0000**	**16.5059**	**16.5059**	**8.9000e-004**	**0.0000**	**16.5281**

3.10 Discharge Pipeline - 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	0.2426	2.4710	1.5401	2.5700e-003		0.1336	0.1336		0.1229	0.1229	0.0000	225.7464	225.7464	0.0730	0.0000	227.5717
Total	**0.2426**	**2.4710**	**1.5401**	**2.5700e-003**		**0.1336**	**0.1336**		**0.1229**	**0.1229**	**0.0000**	**225.7464**	**225.7464**	**0.0730**	**0.0000**	**227.5717**

3.10 Discharge Pipeline - 2021

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	1.0800e-003	0.0360	9.5900e-003	9.0000e-005	2.3200e-003	8.0000e-005	2.4000e-003	6.7000e-004	7.0000e-005	7.4000e-004	0.0000	9.1504	9.1504	6.8000e-004	0.0000	9.1674
Worker	3.6500e-003	2.6000e-003	0.0262	8.0000e-005	8.4200e-003	6.0000e-005	8.4800e-003	2.2400e-003	5.0000e-005	2.2900e-003	0.0000	7.3555	7.3555	2.1000e-004	0.0000	7.3608
Total	**4.7300e-003**	**0.0386**	**0.0358**	**1.7000e-004**	**0.0107**	**1.4000e-004**	**0.0109**	**2.9100e-003**	**1.2000e-004**	**3.0300e-003**	**0.0000**	**16.5059**	**16.5059**	**8.9000e-004**	**0.0000**	**16.5281**

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	0.2426	2.4710	1.5401	2.5700e-003		0.1336	0.1336		0.1229	0.1229	0.0000	225.7461	225.7461	0.0730	0.0000	227.5714
Total	**0.2426**	**2.4710**	**1.5401**	**2.5700e-003**		**0.1336**	**0.1336**		**0.1229**	**0.1229**	**0.0000**	**225.7461**	**225.7461**	**0.0730**	**0.0000**	**227.5714**

3.10 Discharge Pipeline - 2021

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	1.0800e-003	0.0360	9.5900e-003	9.0000e-005	2.3200e-003	8.0000e-005	2.4000e-003	6.7000e-004	7.0000e-005	7.4000e-004	0.0000	9.1504	9.1504	6.8000e-004	0.0000	9.1674
Worker	3.6500e-003	2.6000e-003	0.0262	8.0000e-005	8.4200e-003	6.0000e-005	8.4800e-003	2.2400e-003	5.0000e-005	2.2900e-003	0.0000	7.3555	7.3555	2.1000e-004	0.0000	7.3608
Total	**4.7300e-003**	**0.0386**	**0.0358**	**1.7000e-004**	**0.0107**	**1.4000e-004**	**0.0109**	**2.9100e-003**	**1.2000e-004**	**3.0300e-003**	**0.0000**	**16.5059**	**16.5059**	**8.9000e-004**	**0.0000**	**16.5281**

3.11 SWRF Startup - 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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.11 SWRF Startup - 2021

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	8.3000e-004	0.0278	7.4000e-003	7.0000e-005	1.7900e-003	6.0000e-005	1.8500e-003	5.2000e-004	6.0000e-005	5.7000e-004	0.0000	7.0589	7.0589	5.2000e-004	0.0000	7.0720
Worker	6.3000e-004	4.5000e-004	4.5000e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.2609	1.2609	4.0000e-005	0.0000	1.2618
Total	**1.4600e-003**	**0.0282**	**0.0119**	**8.0000e-005**	**3.2300e-003**	**7.0000e-005**	**3.3000e-003**	**9.0000e-004**	**7.0000e-005**	**9.6000e-004**	**0.0000**	**8.3198**	**8.3198**	**5.6000e-004**	**0.0000**	**8.3338**

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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.11 SWRF Startup - 2021

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	8.3000e-004	0.0278	7.4000e-003	7.0000e-005	1.7900e-003	6.0000e-005	1.8500e-003	5.2000e-004	6.0000e-005	5.7000e-004	0.0000	7.0589	7.0589	5.2000e-004	0.0000	7.0720
Worker	6.3000e-004	4.5000e-004	4.5000e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.2609	1.2609	4.0000e-005	0.0000	1.2618
Total	**1.4600e-003**	**0.0282**	**0.0119**	**8.0000e-005**	**3.2300e-003**	**7.0000e-005**	**3.3000e-003**	**9.0000e-004**	**7.0000e-005**	**9.6000e-004**	**0.0000**	**8.3198**	**8.3198**	**5.6000e-004**	**0.0000**	**8.3338**

3.12 Recycled Water Distribution System - 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	0.2773	2.8240	1.7601	2.9300e-003		0.1527	0.1527		0.1405	0.1405	0.0000	257.9959	257.9959	0.0834	0.0000	260.0819
Total	**0.2773**	**2.8240**	**1.7601**	**2.9300e-003**		**0.1527**	**0.1527**		**0.1405**	**0.1405**	**0.0000**	**257.9959**	**257.9959**	**0.0834**	**0.0000**	**260.0819**

3.12 Recycled Water Distribution System - 2021

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	1.2400e-003	0.0411	0.0110	1.1000e-004	2.6500e-003	9.0000e-005	2.7400e-003	7.7000e-004	8.0000e-005	8.5000e-004	0.0000	10.4576	10.4576	7.8000e-004	0.0000	10.4770
Worker	5.5600e-003	3.9700e-003	0.0400	1.2000e-004	0.0128	9.0000e-005	0.0129	3.4100e-003	8.0000e-005	3.4900e-003	0.0000	11.2084	11.2084	3.2000e-004	0.0000	11.2164
Total	**6.8000e-003**	**0.0451**	**0.0509**	**2.3000e-004**	**0.0155**	**1.8000e-004**	**0.0157**	**4.1800e-003**	**1.6000e-004**	**4.3400e-003**	**0.0000**	**21.6660**	**21.6660**	**1.1000e-003**	**0.0000**	**21.6934**

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	0.2773	2.8240	1.7601	2.9300e-003		0.1527	0.1527		0.1405	0.1405	0.0000	257.9956	257.9956	0.0834	0.0000	260.0816
Total	**0.2773**	**2.8240**	**1.7601**	**2.9300e-003**		**0.1527**	**0.1527**		**0.1405**	**0.1405**	**0.0000**	**257.9956**	**257.9956**	**0.0834**	**0.0000**	**260.0816**

3.12 Recycled Water Distribution System - 2021

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	1.2400e-003	0.0411	0.0110	1.1000e-004	2.6500e-003	9.0000e-005	2.7400e-003	7.7000e-004	8.0000e-005	8.5000e-004	0.0000	10.4576	10.4576	7.8000e-004	0.0000	10.4770
Worker	5.5600e-003	3.9700e-003	0.0400	1.2000e-004	0.0128	9.0000e-005	0.0129	3.4100e-003	8.0000e-005	3.4900e-003	0.0000	11.2084	11.2084	3.2000e-004	0.0000	11.2164
Total	**6.8000e-003**	**0.0451**	**0.0509**	**2.3000e-004**	**0.0155**	**1.8000e-004**	**0.0157**	**4.1800e-003**	**1.6000e-004**	**4.3400e-003**	**0.0000**	**21.6660**	**21.6660**	**1.1000e-003**	**0.0000**	**21.6934**

3.13 Irrigation System - 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					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	0.2121	1.9118	1.8978	2.8100e-003		0.1224	0.1224		0.1145	0.1145	0.0000	245.3503	245.3503	0.0601	0.0000	246.8526
Total	**0.2121**	**1.9118**	**1.8978**	**2.8100e-003**	**0.0000**	**0.1224**	**0.1224**	**0.0000**	**0.1145**	**0.1145**	**0.0000**	**245.3503**	**245.3503**	**0.0601**	**0.0000**	**246.8526**

3.13 Irrigation System - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.6000e-004	0.0185	4.9300e-003	5.0000e-005	1.1900e-003	4.0000e-005	1.2300e-003	3.4000e-004	4.0000e-005	3.8000e-004	0.0000	4.7059	4.7059	3.5000e-004	0.0000	4.7147
Worker	0.0100	7.1400e-003	0.0720	2.2000e-004	0.0231	1.6000e-004	0.0233	6.1400e-003	1.5000e-004	6.2900e-003	0.0000	20.1751	20.1751	5.8000e-004	0.0000	20.1895
Total	**0.0106**	**0.0256**	**0.0769**	**2.7000e-004**	**0.0243**	**2.0000e-004**	**0.0245**	**6.4800e-003**	**1.9000e-004**	**6.6700e-003**	**0.0000**	**24.8810**	**24.8810**	**9.3000e-004**	**0.0000**	**24.9042**

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	0.2121	1.9118	1.8978	2.8100e-003		0.1224	0.1224		0.1145	0.1145	0.0000	245.3500	245.3500	0.0601	0.0000	246.8523
Total	**0.2121**	**1.9118**	**1.8978**	**2.8100e-003**	**0.0000**	**0.1224**	**0.1224**	**0.0000**	**0.1145**	**0.1145**	**0.0000**	**245.3500**	**245.3500**	**0.0601**	**0.0000**	**246.8523**

3.13 Irrigation System - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.6000e-004	0.0185	4.9300e-003	5.0000e-005	1.1900e-003	4.0000e-005	1.2300e-003	3.4000e-004	4.0000e-005	3.8000e-004	0.0000	4.7059	4.7059	3.5000e-004	0.0000	4.7147
Worker	0.0100	7.1400e-003	0.0720	2.2000e-004	0.0231	1.6000e-004	0.0233	6.1400e-003	1.5000e-004	6.2900e-003	0.0000	20.1751	20.1751	5.8000e-004	0.0000	20.1895
Total	**0.0106**	**0.0256**	**0.0769**	**2.7000e-004**	**0.0243**	**2.0000e-004**	**0.0245**	**6.4800e-003**	**1.9000e-004**	**6.6700e-003**	**0.0000**	**24.8810**	**24.8810**	**9.3000e-004**	**0.0000**	**24.9042**

3.14 Turf Establishment of New Holes - 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					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	0.0491	0.4966	0.4666	6.9000e-004		0.0280	0.0280		0.0257	0.0257	0.0000	60.4789	60.4789	0.0196	0.0000	60.9679
Total	**0.0491**	**0.4966**	**0.4666**	**6.9000e-004**	**0.0000**	**0.0280**	**0.0280**	**0.0000**	**0.0257**	**0.0257**	**0.0000**	**60.4789**	**60.4789**	**0.0196**	**0.0000**	**60.9679**

3.14 Turf Establishment of New Holes - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3400e-003	2.3800e-003	0.0240	7.0000e-005	7.7000e-003	5.0000e-005	7.7500e-003	2.0500e-003	5.0000e-005	2.1000e-003	0.0000	6.7250	6.7250	1.9000e-004	0.0000	6.7298
Total	**3.3400e-003**	**2.3800e-003**	**0.0240**	**7.0000e-005**	**7.7000e-003**	**5.0000e-005**	**7.7500e-003**	**2.0500e-003**	**5.0000e-005**	**2.1000e-003**	**0.0000**	**6.7250**	**6.7250**	**1.9000e-004**	**0.0000**	**6.7298**

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	0.0491	0.4966	0.4666	6.9000e-004		0.0280	0.0280		0.0257	0.0257	0.0000	60.4789	60.4789	0.0196	0.0000	60.9679
Total	**0.0491**	**0.4966**	**0.4666**	**6.9000e-004**	**0.0000**	**0.0280**	**0.0280**	**0.0000**	**0.0257**	**0.0257**	**0.0000**	**60.4789**	**60.4789**	**0.0196**	**0.0000**	**60.9679**

3.14 Turf Establishment of New Holes - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3400e-003	2.3800e-003	0.0240	7.0000e-005	7.7000e-003	5.0000e-005	7.7500e-003	2.0500e-003	5.0000e-005	2.1000e-003	0.0000	6.7250	6.7250	1.9000e-004	0.0000	6.7298
Total	**3.3400e-003**	**2.3800e-003**	**0.0240**	**7.0000e-005**	**7.7000e-003**	**5.0000e-005**	**7.7500e-003**	**2.0500e-003**	**5.0000e-005**	**2.1000e-003**	**0.0000**	**6.7250**	**6.7250**	**1.9000e-004**	**0.0000**	**6.7298**

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	7.4900e-003	0.0336	0.0911	3.2000e-004	0.0286	2.7000e-004	0.0289	7.6600e-003	2.5000e-004	7.9100e-003	0.0000	29.7501	29.7501	1.5400e-003	0.0000	29.7886
Unmitigated	7.4900e-003	0.0336	0.0911	3.2000e-004	0.0286	2.7000e-004	0.0289	7.6600e-003	2.5000e-004	7.9100e-003	0.0000	29.7501	29.7501	1.5400e-003	0.0000	29.7886

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	4.00	4.00	4.00	11,678	11,678
General Light Industry	22.00	22.00	22.00	64,229	64,229
General Office Building	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	0.00	0.00	0.00		
Total	26.00	26.00	26.00	75,907	75,907

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Heavy Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Heavy Industry	0.598645	0.040929	0.181073	0.106149	0.015683	0.005479	0.016317	0.023976	0.001926	0.001932	0.006016	0.000753	0.001122
General Light Industry	0.598645	0.040929	0.181073	0.106149	0.015683	0.005479	0.016317	0.023976	0.001926	0.001932	0.006016	0.000753	0.001122
General Office Building	0.598645	0.040929	0.181073	0.106149	0.015683	0.005479	0.016317	0.023976	0.001926	0.001932	0.006016	0.000753	0.001122
Other Asphalt Surfaces	0.598645	0.040929	0.181073	0.106149	0.015683	0.005479	0.016317	0.023976	0.001926	0.001932	0.006016	0.000753	0.001122
Unrefrigerated Warehouse-No Rail	0.598645	0.040929	0.181073	0.106149	0.015683	0.005479	0.016317	0.023976	0.001926	0.001932	0.006016	0.000753	0.001122

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	609.0441	609.0441	0.0245	5.4300e-003	611.2749
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	609.0441	609.0441	0.0245	5.4300e-003	611.2749
NaturalGas Mitigated	5.8000e-004	5.2400e-003	4.4000e-003	3.0000e-005		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	5.6998	5.6998	1.1000e-004	1.0000e-004	5.7337
NaturalGas Unmitigated	5.8000e-004	5.2400e-003	4.4000e-003	3.0000e-005		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	5.6998	5.6998	1.1000e-004	1.0000e-004	5.7337

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					
General Heavy Industry	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
General Light Industry	46240	2.5000e-004	2.2700e-003	1.9000e-003	1.0000e-005		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004	0.0000	2.4675	2.4675	5.0000e-005	5.0000e-005	2.4822
General Office Building	60570	3.3000e-004	2.9700e-003	2.4900e-003	2.0000e-005		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004	0.0000	3.2323	3.2323	6.0000e-005	6.0000e-005	3.2515
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
Unrefrigerated Warehouse-No Rail	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		**5.8000e-004**	**5.2400e-003**	**4.3900e-003**	**3.0000e-005**		**4.0000e-004**	**4.0000e-004**		**4.0000e-004**	**4.0000e-004**	**0.0000**	**5.6998**	**5.6998**	**1.1000e-004**	**1.1000e-004**	**5.7337**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	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
General Light Industry	46240	2.5000e-004	2.2700e-003	1.9000e-003	1.0000e-005		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004	0.0000	2.4675	2.4675	5.0000e-005	5.0000e-005	2.4822
General Office Building	60570	3.3000e-004	2.9700e-003	2.4900e-003	2.0000e-005		2.3000e-004	2.3000e-004		2.3000e-004	2.3000e-004	0.0000	3.2323	3.2323	6.0000e-005	6.0000e-005	3.2515
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
Unrefrigerated Warehouse-No Rail	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		**5.8000e-004**	**5.2400e-003**	**4.3900e-003**	**3.0000e-005**		**4.0000e-004**	**4.0000e-004**		**4.0000e-004**	**4.0000e-004**	**0.0000**	**5.6998**	**5.6998**	**1.1000e-004**	**1.1000e-004**	**5.7337**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	2.92e +006	593.7687	0.0238	5.3000e-003	595.9436
General Light Industry	33240	6.7592	2.7000e-004	6.0000e-005	6.7840
General Office Building	40320	8.1989	3.3000e-004	7.0000e-005	8.2289
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	1560.4	0.3173	1.0000e-005	0.0000	0.3185
Total		**609.0441**	**0.0245**	**5.4300e-003**	**611.2749**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	2.92e +006	593.7687	0.0238	5.3000e-003	595.9436
General Light Industry	33240	6.7592	2.7000e-004	6.0000e-005	6.7840
General Office Building	40320	8.1989	3.3000e-004	7.0000e-005	8.2289
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	1560.4	0.3173	1.0000e-005	0.0000	0.3185
Total		**609.0441**	**0.0245**	**5.4300e-003**	**611.2749**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0714	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.6000e-004	2.6000e-004	0.0000	0.0000	2.7000e-004
Unmitigated	0.0714	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.6000e-004	2.6000e-004	0.0000	0.0000	2.7000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0171					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0544					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.6000e-004	2.6000e-004	0.0000	0.0000	2.7000e-004
Total	**0.0714**	**0.0000**	**1.3000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.6000e-004**	**2.6000e-004**	**0.0000**	**0.0000**	**2.7000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0171					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0544					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.3000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.6000e-004	2.6000e-004	0.0000	0.0000	2.7000e-004
Total	**0.0714**	**0.0000**	**1.3000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.6000e-004**	**2.6000e-004**	**0.0000**	**0.0000**	**2.7000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	2.3193	0.0175	4.3000e-004	2.8837
Unmitigated	2.3193	0.0175	4.3000e-004	2.8837

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	0.533201 / 0.326801	2.3193	0.0175	4.3000e-004	2.8837
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**2.3193**	**0.0175**	**4.3000e-004**	**2.8837**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	0.533201 / 0.326801	2.3193	0.0175	4.3000e-004	2.8837
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**2.3193**	**0.0175**	**4.3000e-004**	**2.8837**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	35.6838	2.1089	0.0000	88.4051
Unmitigated	35.6838	2.1089	0.0000	88.4051

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	173	35.1174	2.0754	0.0000	87.0020
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
General Office Building	2.79	0.5663	0.0335	0.0000	1.4031
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**35.6838**	**2.1089**	**0.0000**	**88.4051**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	173	35.1174	2.0754	0.0000	87.0020
General Light Industry	0	0.0000	0.0000	0.0000	0.0000
General Office Building	2.79	0.5663	0.0335	0.0000	1.4031
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**35.6838**	**2.1089**	**0.0000**	**88.4051**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	1	52	86	0.73	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/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
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (75 - 100 HP)	3.6700e-003	0.0120	0.0133	2.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	1.7029	1.7029	2.4000e-004	0.0000	1.7089
Total	**3.6700e-003**	**0.0120**	**0.0133**	**2.0000e-005**		**5.4000e-004**	**5.4000e-004**		**5.4000e-004**	**5.4000e-004**	**0.0000**	**1.7029**	**1.7029**	**2.4000e-004**	**0.0000**	**1.7089**

11.0 Vegetation

Coronado Municipal Golf Course Modernization Project

San Diego County APCD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	5.00	1000sqft	0.11	5,000.00	0
General Light Industry	4.00	1000sqft	0.09	4,000.00	0
Unrefrigerated Warehouse-No Rail	0.94	1000sqft	0.02	940.00	0
Other Asphalt Surfaces	1.36	Acre	1.36	59,241.60	0
General Office Building	3.00	1000sqft	0.07	3,000.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.6 **Precipitation Freq (Days)** 40

Climate Zone 13 **Operational Year** 2022

Utility Company San Diego Gas & Electric

CO2 Intensity (lb/MWhr) 448.3 **CH4 Intensity (lb/MWhr)** 0.018 **N2O Intensity (lb/MWhr)** 0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - In accordance with 2017 Power Content Label for SDG&E.

Land Use - Based on project description.

Construction Phase - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - CalEEMod defaults.

Off-road Equipment - CalEEMod defaults.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Grading - Based on project description.

Trips and VMT - Based on project description.

On-road Fugitive Dust - CalEEMod defaults.

Architectural Coating - CalEEmod defaults.

Vehicle Trips - Based on project description.

Consumer Products - CalEEMod defaults.

Area Coating - CalEEMod defaults.

Landscape Equipment - CalEEMod defaults.

Energy Use - Based on the project description.

Water And Wastewater - CalEEMod defaults for office building. The other facilities won't use water.

Solid Waste - Based on project description for SWRF.

Construction Off-road Equipment Mitigation - In accordance with SDAPCD Rule 55.

Waste Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps - A 50 kW backup genertor.

Stationary Sources - Emergency Generators and Fire Pumps EF - CalEEMod defaults.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	200.00	120.00
tblConstructionPhase	NumDays	20.00	135.00
tblConstructionPhase	NumDays	2.00	45.00
tblConstructionPhase	NumDays	2.00	90.00
tblConstructionPhase	NumDays	200.00	240.00
tblConstructionPhase	NumDays	2.00	175.00
tblConstructionPhase	NumDays	200.00	45.00
tblConstructionPhase	NumDays	2.00	180.00
tblConstructionPhase	NumDays	2.00	120.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	PhaseEndDate	5/10/2021	5/7/2021
tblConstructionPhase	PhaseEndDate	4/12/2021	11/23/2020

tblConstructionPhase	PhaseEndDate	6/26/2020	11/4/2020
tblConstructionPhase	PhaseEndDate	4/26/2021	4/23/2021
tblConstructionPhase	PhaseEndDate	6/30/2020	8/18/2020
tblEnergyUse	LightingElect	2.83	0.00
tblEnergyUse	NT24E	4.27	0.00
tblEnergyUse	NT24E	1.11	0.00
tblEnergyUse	NT24NG	7.25	0.00
tblEnergyUse	NT24NG	0.11	0.00
tblEnergyUse	T24E	1.21	584.00
tblEnergyUse	T24E	0.88	0.00
tblEnergyUse	T24NG	4.31	0.00
tblEnergyUse	T24NG	1.56	0.00
tblGrading	MaterialExported	0.00	34,000.00
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.20	0.20
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.43	0.43
tblOffRoadEquipment	LoadFactor	0.42	0.42

tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Pavers
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Pavers
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Concrete/Industrial Saws
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Pavers
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers

tblOffRoadEquipment	OffRoadEquipmentType		Pavers
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
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	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	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
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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	3.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	6.00	12.00
tblOffRoadEquipment	UsageHours	6.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	6.00	12.00
tblOffRoadEquipment	UsageHours	6.00	12.00
tblOffRoadEquipment	UsageHours	7.00	12.00
tblOffRoadEquipment	UsageHours	6.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	7.00	12.00
tblOffRoadEquipment	UsageHours	6.00	12.00
tblOffRoadEquipment	UsageHours	6.00	12.00
tblOffRoadEquipment	UsageHours	6.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.018
tblProjectCharacteristics	CO2IntensityFactor	720.49	448.3
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004
tblSolidWaste	SolidWasteGenerationRate	6.20	173.00
tblSolidWaste	SolidWasteGenerationRate	4.96	0.00
tblSolidWaste	SolidWasteGenerationRate	0.88	0.00
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	86.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	1.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	52.00

tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	4,250.00
tblTripsAndVMT	PhaseName		Recycled Water Distribution System
tblTripsAndVMT	PhaseName		Discharge Pipeline
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	13.00	14.00
tblTripsAndVMT	WorkerTripNumber	5.00	6.00
tblTripsAndVMT	WorkerTripNumber	30.00	8.00
tblTripsAndVMT	WorkerTripNumber	30.00	12.00
tblTripsAndVMT	WorkerTripNumber	13.00	14.00
tblTripsAndVMT	WorkerTripNumber	30.00	20.00
tblTripsAndVMT	WorkerTripNumber	13.00	32.00
tblTripsAndVMT	WorkerTripNumber	5.00	16.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00
tblTripsAndVMT	WorkerTripNumber	8.00	12.00
tblTripsAndVMT	WorkerTripNumber	10.00	16.00
tblTripsAndVMT	WorkerTripNumber	10.00	12.00
tblVehicleTrips	ST_TR	1.50	0.80
tblVehicleTrips	ST_TR	1.32	5.50
tblVehicleTrips	ST_TR	2.46	0.00

tblVehicleTrips	ST_TR	1.68	0.00
tblVehicleTrips	SU_TR	1.50	0.80
tblVehicleTrips	SU_TR	0.68	5.50
tblVehicleTrips	SU_TR	1.05	0.00
tblVehicleTrips	SU_TR	1.68	0.00
tblVehicleTrips	WD_TR	1.50	0.80
tblVehicleTrips	WD_TR	6.97	5.50
tblVehicleTrips	WD_TR	11.03	0.00
tblVehicleTrips	WD_TR	1.68	0.00
tblWater	IndoorWaterUseRate	1,156,250.00	0.00
tblWater	IndoorWaterUseRate	925,000.00	0.00
tblWater	IndoorWaterUseRate	217,375.00	0.00

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	11.0484	125.5515	82.3287	0.1868	12.2146	5.6264	17.8409	5.5649	5.2271	10.7919	0.0000	18,616.8426	18,616.8426	4.2183	0.0000	18,722.2994
2021	46.9706	123.8924	101.6862	0.1737	1.1125	6.8305	7.9430	0.2991	6.3414	6.6405	0.0000	16,872.2442	16,872.2442	4.3616	0.0000	16,981.2835
Maximum	**46.9706**	**125.5515**	**101.6862**	**0.1868**	**12.2146**	**6.8305**	**17.8409**	**5.5649**	**6.3414**	**10.7919**	**0.0000**	**18,616.8426**	**18,616.8426**	**4.3616**	**0.0000**	**18,722.2994**

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	11.0484	125.5515	82.3287	0.1868	6.3422	5.6264	11.9686	2.7350	5.2271	7.9621	0.0000	18,616.8426	18,616.8426	4.2183	0.0000	18,722.2994
2021	46.9706	123.8924	101.6862	0.1737	1.1125	6.8305	7.9430	0.2991	6.3414	6.6405	0.0000	16,872.2441	16,872.2441	4.3616	0.0000	16,981.2835
Maximum	**46.9706**	**125.5515**	**101.6862**	**0.1868**	**6.3422**	**6.8305**	**11.9686**	**2.7350**	**6.3414**	**7.9621**	**0.0000**	**18,616.8426**	**18,616.8426**	**4.3616**	**0.0000**	**18,722.2994**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**44.06**	**0.00**	**22.78**	**48.26**	**0.00**	**16.23**	**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	0.3915	1.0000e-005	1.4600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1300e-003	3.1300e-003	1.0000e-005		3.3400e-003
Energy	3.1600e-003	0.0287	0.0241	1.7000e-004		2.1800e-003	2.1800e-003		2.1800e-003	2.1800e-003		34.4271	34.4271	6.6000e-004	6.3000e-004	34.6317
Mobile	0.0434	0.1791	0.5169	1.8500e-003	0.1610	1.4800e-003	0.1624	0.0430	1.3800e-003	0.0444		188.1722	188.1722	9.3900e-003		188.4070
Stationary	0.1411	0.4602	0.5121	6.8000e-004		0.0208	0.0208		0.0208	0.0208		72.1982	72.1982	0.0101		72.4513
Total	**0.5792**	**0.6680**	**1.0545**	**2.7000e-003**	**0.1610**	**0.0244**	**0.1854**	**0.0430**	**0.0243**	**0.0673**		**294.8006**	**294.8006**	**0.0202**	**6.3000e-004**	**295.4933**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.3915	1.0000e-005	1.4600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1300e-003	3.1300e-003	1.0000e-005		3.3400e-003
Energy	3.1600e-003	0.0287	0.0241	1.7000e-004		2.1800e-003	2.1800e-003		2.1800e-003	2.1800e-003		34.4271	34.4271	6.6000e-004	6.3000e-004	34.6317
Mobile	0.0434	0.1791	0.5169	1.8500e-003	0.1610	1.4800e-003	0.1624	0.0430	1.3800e-003	0.0444		188.1722	188.1722	9.3900e-003		188.4070
Stationary	0.1411	0.4602	0.5121	6.8000e-004		0.0208	0.0208		0.0208	0.0208		72.1982	72.1982	0.0101		72.4513
Total	**0.5792**	**0.6680**	**1.0545**	**2.7000e-003**	**0.1610**	**0.0244**	**0.1854**	**0.0430**	**0.0243**	**0.0673**		**294.8006**	**294.8006**	**0.0202**	**6.3000e-004**	**295.4933**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Golf Course Master Planning Construction	Demolition	6/1/2020	11/4/2020	6	135	
2	Access Lane	Site Preparation	6/27/2020	8/18/2020	6	45	
3	SWRF and Turf Care Buildings	Building Construction	7/7/2020	11/23/2020	6	120	
4	Paving	Paving	4/13/2021	4/23/2021	6	10	
5	Architectural Coating	Architectural Coating	4/27/2021	5/7/2021	6	10	
6	Recycled Water Storage Ponds	Site Preparation	6/27/2020	10/9/2020	6	90	
7	Recycled Water Treatment System	Building Construction	7/31/2020	5/6/2021	6	240	
8	Wastewater Diversion Pump Station and Pipeline	Site Preparation	5/6/2021	11/25/2021	6	175	
9	Discharge Pipeline	Trenching	5/6/2021	11/25/2021	6	175	
10	SWRF Startup	Building Construction	11/1/2021	12/22/2021	6	45	
11	Recycled Water Distribution System	Trenching	1/1/2021	8/21/2021	6	200	
12	Irrigation System	Site Preparation	5/5/2021	11/30/2021	6	180	
13	Turf Establishment of New Holes	Site Preparation	5/5/2021	9/21/2021	6	120	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.36

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 19,410; Non-Residential Outdoor: 6,470; Striped Parking Area: 3,554 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Wastewater Diversion Pump Station and Pipeline	Pavers	1	12.00	130	0.42
Discharge Pipeline	Trenchers	1	12.00	78	0.50

Discharge Pipeline	Tractors/Loaders/Backhoes	1	12.00	97	0.37
Discharge Pipeline	Rubber Tired Dozers	1	12.00	247	0.40
Discharge Pipeline	Pavers	1	12.00	130	0.42
Recycled Water Distribution System	Trenchers	1	12.00	78	0.50
Recycled Water Distribution System	Tractors/Loaders/Backhoes	1	12.00	97	0.37
Recycled Water Distribution System	Rubber Tired Dozers	1	12.00	247	0.40
Recycled Water Distribution System	Pavers	1	12.00	130	0.42
Irrigation System	Trenchers	2	12.00	78	0.50
Irrigation System	Excavators	1	12.00	158	0.38
Irrigation System	Rollers	1	12.00	80	0.38
Irrigation System	Concrete/Industrial Saws	1	12.00	81	0.73
Turf Establishment of New Holes	Forklifts	1	12.00	89	0.20
Turf Establishment of New Holes	Other Construction Equipment	1	12.00	172	0.42
Architectural Coating	Air Compressors	1	12.00	78	0.48
Paving	Cement and Mortar Mixers	1	12.00	9	0.56
Golf Course Master Planning Construction	Concrete/Industrial Saws	1	12.00	81	0.73
SWRF and Turf Care Buildings	Generator Sets	0	8.00	84	0.74
SWRF and Turf Care Buildings	Cranes	1	12.00	231	0.29
SWRF and Turf Care Buildings	Forklifts	0	6.00	89	0.20
Access Lane	Graders	0	8.00	187	0.41
Paving	Pavers	1	12.00	130	0.42
Paving	Rollers	1	12.00	80	0.38
Golf Course Master Planning Construction	Rubber Tired Dozers	0	8.00	247	0.40
SWRF Startup	Cranes	0	6.00	231	0.29
SWRF and Turf Care Buildings	Tractors/Loaders/Backhoes	2	12.00	97	0.37
Golf Course Master Planning Construction	Tractors/Loaders/Backhoes	2	12.00	97	0.37

Recycled Water Treatment System	Cranes		1	12.00	231	0.29
Paving	Tractors/Loaders/Backhoes		1	12.00	97	0.37
Access Lane	Tractors/Loaders/Backhoes		1	12.00	97	0.37
SWRF Startup	Forklifts		0	6.00	89	0.20
Paving	Paving Equipment		1	12.00	132	0.36
Access Lane	Rubber Tired Dozers		1	12.00	247	0.40
SWRF and Turf Care Buildings	Welders		0	8.00	46	0.45
Recycled Water Treatment System	Forklifts		1	12.00	89	0.20
SWRF Startup	Generator Sets		0	8.00	84	0.74
Recycled Water Treatment System	Generator Sets		0	8.00	84	0.74
Irrigation System	Graders		0	8.00	187	0.41
Turf Establishment of New Holes	Graders		0	8.00	187	0.41
Recycled Water Storage Ponds	Graders		0	8.00	187	0.41
Wastewater Diversion Pump Station and Pipeline	Graders		0	8.00	187	0.41
Irrigation System	Rubber Tired Dozers		0	7.00	247	0.40
Turf Establishment of New Holes	Rubber Tired Dozers		0	7.00	247	0.40
Recycled Water Storage Ponds	Rubber Tired Dozers		0	7.00	247	0.40
Wastewater Diversion Pump Station and Pipeline	Rubber Tired Dozers		0	7.00	247	0.40
SWRF Startup	Tractors/Loaders/Backhoes		0	6.00	97	0.37
Recycled Water Treatment System	Tractors/Loaders/Backhoes		1	12.00	97	0.37
Irrigation System	Tractors/Loaders/Backhoes		0	8.00	97	0.37
Turf Establishment of New Holes	Tractors/Loaders/Backhoes		0	8.00	97	0.37
Recycled Water Storage Ponds	Tractors/Loaders/Backhoes		2	12.00	97	0.37
Wastewater Diversion Pump Station and Pipeline	Tractors/Loaders/Backhoes		1	12.00	97	0.37
SWRF Startup	Welders		0	8.00	46	0.45
Recycled Water Treatment System	Welders		0	8.00	46	0.45

Golf Course Master Planning Construction	Crawler Tractors	1	12.00	212	0.43
Golf Course Master Planning Construction	Trenchers	1	12.00	78	0.50
Recycled Water Storage Ponds	Trenchers	0	12.00	78	0.50
Recycled Water Storage Ponds	Crawler Tractors	0	12.00	212	0.43
Recycled Water Storage Ponds	Pavers	0	12.00	130	0.42
Recycled Water Storage Ponds	Scrapers	1	12.00	367	0.48
Recycled Water Treatment System	Excavators	1	12.00	158	0.38
Recycled Water Treatment System	Pumps	1	12.00	84	0.74
Wastewater Diversion Pump Station and Pipeline	Trenchers	1	12.00	78	0.50

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
Golf Course Master Planning Construction	5	14.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Access Lane	2	6.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
SWRF Startup	0	8.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
SWRF and Turf Care Buildings	3	12.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	14.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	6.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Recycled Water Treatment System	5	20.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Irrigation System	5	32.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Turf Establishment of New Holes	2	16.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Recycled Water Storage Ponds	3	10.00	2.00	4,250.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Wastewater Diversion Pump Station and Pip	3	12.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Recycled Water Distribution System	4	16.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Discharge Pipeline	4	12.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Golf Course Master Planning Construction - 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	2.7537	28.1297	20.0734	0.0355		1.5439	1.5439		1.4442	1.4442		3,422.1032	3,422.1032	0.8756		3,443.9926
Total	**2.7537**	**28.1297**	**20.0734**	**0.0355**		**1.5439**	**1.5439**		**1.4442**	**1.4442**		**3,422.1032**	**3,422.1032**	**0.8756**		**3,443.9926**

3.2 Golf Course Master Planning Construction - 2020

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	7.4700e-003	0.2255	0.0575	5.5000e-004	0.0135	1.1000e-003	0.0146	3.9000e-003	1.0600e-003	4.9500e-003		58.8080	58.8080	4.3400e-003		58.9165
Worker	0.0514	0.0346	0.3968	1.1800e-003	0.1150	8.1000e-004	0.1158	0.0305	7.4000e-004	0.0313		117.9846	117.9846	3.5200e-003		118.0727
Total	**0.0588**	**0.2601**	**0.4543**	**1.7300e-003**	**0.1286**	**1.9100e-003**	**0.1305**	**0.0344**	**1.8000e-003**	**0.0362**		**176.7926**	**176.7926**	**7.8600e-003**		**176.9891**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.7537	28.1297	20.0734	0.0355		1.5439	1.5439		1.4442	1.4442	0.0000	3,422.1032	3,422.1032	0.8756		3,443.9926
Total	**2.7537**	**28.1297**	**20.0734**	**0.0355**		**1.5439**	**1.5439**		**1.4442**	**1.4442**	**0.0000**	**3,422.1032**	**3,422.1032**	**0.8756**		**3,443.9926**

3.2 Golf Course Master Planning Construction - 2020

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	7.4700e-003	0.2255	0.0575	5.5000e-004	0.0135	1.1000e-003	0.0146	3.9000e-003	1.0600e-003	4.9500e-003		58.8080	58.8080	4.3400e-003		58.9165
Worker	0.0514	0.0346	0.3968	1.1800e-003	0.1150	8.1000e-004	0.1158	0.0305	7.4000e-004	0.0313		117.9846	117.9846	3.5200e-003		118.0727
Total	**0.0588**	**0.2601**	**0.4543**	**1.7300e-003**	**0.1286**	**1.9100e-003**	**0.1305**	**0.0344**	**1.8000e-003**	**0.0362**		**176.7926**	**176.7926**	**7.8600e-003**		**176.9891**

3.3 Access Lane - 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					9.0331	0.0000	9.0331	4.9653	0.0000	4.9653			0.0000			0.0000
Off-Road	1.9335	20.1561	9.6170	0.0175		1.0322	1.0322		0.9496	0.9496		1,692.1665	1,692.1665	0.5473		1,705.8486
Total	**1.9335**	**20.1561**	**9.6170**	**0.0175**	**9.0331**	**1.0322**	**10.0653**	**4.9653**	**0.9496**	**5.9149**		**1,692.1665**	**1,692.1665**	**0.5473**		**1,705.8486**

3.3 Access Lane - 2020

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	7.4700e-003	0.2255	0.0575	5.5000e-004	0.0135	1.1000e-003	0.0146	3.9000e-003	1.0600e-003	4.9500e-003		58.8080	58.8080	4.3400e-003		58.9165
Worker	0.0220	0.0148	0.1701	5.1000e-004	0.0493	3.5000e-004	0.0496	0.0131	3.2000e-004	0.0134		50.5648	50.5648	1.5100e-003		50.6026
Total	**0.0295**	**0.2404**	**0.2275**	**1.0600e-003**	**0.0628**	**1.4500e-003**	**0.0643**	**0.0170**	**1.3800e-003**	**0.0183**		**109.3728**	**109.3728**	**5.8500e-003**		**109.5190**

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					4.0649	0.0000	4.0649	2.2344	0.0000	2.2344			0.0000			0.0000
Off-Road	1.9335	20.1561	9.6170	0.0175		1.0322	1.0322		0.9496	0.9496	0.0000	1,692.1665	1,692.1665	0.5473		1,705.8486
Total	**1.9335**	**20.1561**	**9.6170**	**0.0175**	**4.0649**	**1.0322**	**5.0971**	**2.2344**	**0.9496**	**3.1840**	**0.0000**	**1,692.1665**	**1,692.1665**	**0.5473**		**1,705.8486**

3.3 Access Lane - 2020

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	7.4700e-003	0.2255	0.0575	5.5000e-004	0.0135	1.1000e-003	0.0146	3.9000e-003	1.0600e-003	4.9500e-003		58.8080	58.8080	4.3400e-003		58.9165
Worker	0.0220	0.0148	0.1701	5.1000e-004	0.0493	3.5000e-004	0.0496	0.0131	3.2000e-004	0.0134		50.5648	50.5648	1.5100e-003		50.6026
Total	**0.0295**	**0.2404**	**0.2275**	**1.0600e-003**	**0.0628**	**1.4500e-003**	**0.0643**	**0.0170**	**1.3800e-003**	**0.0183**		**109.3728**	**109.3728**	**5.8500e-003**		**109.5190**

3.4 SWRF and Turf Care Buildings - 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	1.3086	14.4027	10.0121	0.0180		0.7328	0.7328		0.6741	0.6741		1,740.4900	1,740.4900	0.5629		1,754.5627
Total	**1.3086**	**14.4027**	**10.0121**	**0.0180**		**0.7328**	**0.7328**		**0.6741**	**0.6741**		**1,740.4900**	**1,740.4900**	**0.5629**		**1,754.5627**

3.4 SWRF and Turf Care Buildings - 2020

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	0.0448	1.3531	0.3447	3.2900e-003	0.0812	6.6200e-003	0.0879	0.0234	6.3300e-003	0.0297		352.8481	352.8481	0.0260		353.4988
Worker	0.0440	0.0297	0.3402	1.0100e-003	0.0986	6.9000e-004	0.0993	0.0262	6.4000e-004	0.0268		101.1297	101.1297	3.0200e-003		101.2051
Total	**0.0889**	**1.3828**	**0.6849**	**4.3000e-003**	**0.1798**	**7.3100e-003**	**0.1871**	**0.0495**	**6.9700e-003**	**0.0565**		**453.9778**	**453.9778**	**0.0291**		**454.7040**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3086	14.4027	10.0121	0.0180		0.7328	0.7328		0.6741	0.6741	0.0000	1,740.4900	1,740.4900	0.5629		1,754.5627
Total	**1.3086**	**14.4027**	**10.0121**	**0.0180**		**0.7328**	**0.7328**		**0.6741**	**0.6741**	**0.0000**	**1,740.4900**	**1,740.4900**	**0.5629**		**1,754.5627**

3.4 SWRF and Turf Care Buildings - 2020

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	0.0448	1.3531	0.3447	3.2900e-003	0.0812	6.6200e-003	0.0879	0.0234	6.3300e-003	0.0297		352.8481	352.8481	0.0260		353.4988
Worker	0.0440	0.0297	0.3402	1.0100e-003	0.0986	6.9000e-004	0.0993	0.0262	6.4000e-004	0.0268		101.1297	101.1297	3.0200e-003		101.2051
Total	**0.0889**	**1.3828**	**0.6849**	**4.3000e-003**	**0.1798**	**7.3100e-003**	**0.1871**	**0.0495**	**6.9700e-003**	**0.0565**		**453.9778**	**453.9778**	**0.0291**		**454.7040**

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	1.3107	13.0853	14.8428	0.0228		0.6974	0.6974		0.6434	0.6434		2,182.5327	2,182.5327	0.6892		2,199.7636
Paving	0.3563					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6670**	**13.0853**	**14.8428**	**0.0228**		**0.6974**	**0.6974**		**0.6434**	**0.6434**		**2,182.5327**	**2,182.5327**	**0.6892**		**2,199.7636**

3.5 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0121	0.4073	0.1038	1.0800e-003	0.0271	8.6000e-004	0.0279	7.8000e-003	8.2000e-004	8.6100e-003		116.5408	116.5408	8.3300e-003		116.7490
Worker	0.0484	0.0315	0.3713	1.1400e-003	0.1150	7.9000e-004	0.1158	0.0305	7.3000e-004	0.0312		114.0217	114.0217	3.2500e-003		114.1031
Total	**0.0605**	**0.4388**	**0.4751**	**2.2200e-003**	**0.1421**	**1.6500e-003**	**0.1437**	**0.0383**	**1.5500e-003**	**0.0399**		**230.5625**	**230.5625**	**0.0116**		**230.8520**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3107	13.0853	14.8428	0.0228		0.6974	0.6974		0.6434	0.6434	0.0000	2,182.5327	2,182.5327	0.6892		2,199.7636
Paving	0.3563					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6670**	**13.0853**	**14.8428**	**0.0228**		**0.6974**	**0.6974**		**0.6434**	**0.6434**	**0.0000**	**2,182.5327**	**2,182.5327**	**0.6892**		**2,199.7636**

3.5 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0121	0.4073	0.1038	1.0800e-003	0.0271	8.6000e-004	0.0279	7.8000e-003	8.2000e-004	8.6100e-003		116.5408	116.5408	8.3300e-003		116.7490
Worker	0.0484	0.0315	0.3713	1.1400e-003	0.1150	7.9000e-004	0.1158	0.0305	7.3000e-004	0.0312		114.0217	114.0217	3.2500e-003		114.1031
Total	**0.0605**	**0.4388**	**0.4751**	**2.2200e-003**	**0.1421**	**1.6500e-003**	**0.1437**	**0.0383**	**1.5500e-003**	**0.0399**		**230.5625**	**230.5625**	**0.0116**		**230.8520**

3.6 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	34.1067					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.4378	3.0537	3.6351	5.9400e-003		0.1882	0.1882		0.1882	0.1882		562.8961	562.8961	0.0386		563.8618
Total	**34.5445**	**3.0537**	**3.6351**	**5.9400e-003**		**0.1882**	**0.1882**		**0.1882**	**0.1882**		**562.8961**	**562.8961**	**0.0386**		**563.8618**

3.6 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0208	0.0135	0.1591	4.9000e-004	0.0493	3.4000e-004	0.0496	0.0131	3.1000e-004	0.0134		48.8665	48.8665	1.3900e-003		48.9013
Total	**0.0208**	**0.0135**	**0.1591**	**4.9000e-004**	**0.0493**	**3.4000e-004**	**0.0496**	**0.0131**	**3.1000e-004**	**0.0134**		**48.8665**	**48.8665**	**1.3900e-003**		**48.9013**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	34.1067					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.4378	3.0537	3.6351	5.9400e-003		0.1882	0.1882		0.1882	0.1882	0.0000	562.8961	562.8961	0.0386		563.8618
Total	**34.5445**	**3.0537**	**3.6351**	**5.9400e-003**		**0.1882**	**0.1882**		**0.1882**	**0.1882**	**0.0000**	**562.8961**	**562.8961**	**0.0386**		**563.8618**

3.6 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0208	0.0135	0.1591	4.9000e-004	0.0493	3.4000e-004	0.0496	0.0131	3.1000e-004	0.0134		48.8665	48.8665	1.3900e-003		48.9013
Total	**0.0208**	**0.0135**	**0.1591**	**4.9000e-004**	**0.0493**	**3.4000e-004**	**0.0496**	**0.0131**	**3.1000e-004**	**0.0134**		**48.8665**	**48.8665**	**1.3900e-003**		**48.9013**

3.7 Recycled Water Storage Ponds - 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					1.6438	0.0000	1.6438	0.1798	0.0000	0.1798			0.0000			0.0000
Off-Road	2.1253	24.0317	18.0829	0.0322		1.0903	1.0903		1.0031	1.0031		3,113.8308	3,113.8308	1.0071		3,139.0077
Total	**2.1253**	**24.0317**	**18.0829**	**0.0322**	**1.6438**	**1.0903**	**2.7342**	**0.1798**	**1.0031**	**1.1829**		**3,113.8308**	**3,113.8308**	**1.0071**		**3,139.0077**

3.7 Recycled Water Storage Ponds - 2020

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	0.3733	13.1734	2.9910	0.0370	0.8252	0.0420	0.8672	0.2261	0.0402	0.2664		4,043.7648	4,043.7648	0.3562		4,052.6697
Vendor	7.4700e-003	0.2255	0.0575	5.5000e-004	0.0135	1.1000e-003	0.0146	3.9000e-003	1.0600e-003	4.9500e-003		58.8080	58.8080	4.3400e-003		58.9165
Worker	0.0367	0.0247	0.2835	8.5000e-004	0.0822	5.8000e-004	0.0827	0.0218	5.3000e-004	0.0223		84.2747	84.2747	2.5200e-003		84.3376
Total	**0.4174**	**13.4236**	**3.3319**	**0.0384**	**0.9208**	**0.0437**	**0.9645**	**0.2518**	**0.0418**	**0.2936**		**4,186.8475**	**4,186.8475**	**0.3631**		**4,195.9238**

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					0.7397	0.0000	0.7397	0.0809	0.0000	0.0809			0.0000			0.0000
Off-Road	2.1253	24.0317	18.0829	0.0322		1.0903	1.0903		1.0031	1.0031	0.0000	3,113.8308	3,113.8308	1.0071		3,139.0077
Total	**2.1253**	**24.0317**	**18.0829**	**0.0322**	**0.7397**	**1.0903**	**1.8301**	**0.0809**	**1.0031**	**1.0840**	**0.0000**	**3,113.8308**	**3,113.8308**	**1.0071**		**3,139.0077**

3.7 Recycled Water Storage Ponds - 2020

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	0.3733	13.1734	2.9910	0.0370	0.8252	0.0420	0.8672	0.2261	0.0402	0.2664		4,043.764 8	4,043.764 8	0.3562		4,052.669 7
Vendor	7.4700e-003	0.2255	0.0575	5.5000e-004	0.0135	1.1000e-003	0.0146	3.9000e-003	1.0600e-003	4.9500e-003		58.8080	58.8080	4.3400e-003		58.9165
Worker	0.0367	0.0247	0.2835	8.5000e-004	0.0822	5.8000e-004	0.0827	0.0218	5.3000e-004	0.0223		84.2747	84.2747	2.5200e-003		84.3376
Total	**0.4174**	**13.4236**	**3.3319**	**0.0384**	**0.9208**	**0.0437**	**0.9645**	**0.2518**	**0.0418**	**0.2936**		**4,186.847 5**	**4,186.847 5**	**0.3631**		**4,195.923 8**

3.8 Recycled Water Treatment System - 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	2.2144	22.1219	18.9330	0.0333		1.1651	1.1651		1.0967	1.0967		3,199.863 8	3,199.863 8	0.7886		3,219.577 8
Total	**2.2144**	**22.1219**	**18.9330**	**0.0333**		**1.1651**	**1.1651**		**1.0967**	**1.0967**		**3,199.863 8**	**3,199.863 8**	**0.7886**		**3,219.577 8**

3.8 Recycled Water Treatment System - 2020

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	0.0448	1.3531	0.3447	3.2900e-003	0.0812	6.6200e-003	0.0879	0.0234	6.3300e-003	0.0297		352.8481	352.8481	0.0260		353.4988
Worker	0.0734	0.0495	0.5669	1.6900e-003	0.1643	1.1500e-003	0.1655	0.0436	1.0600e-003	0.0446		168.5494	168.5494	5.0300e-003		168.6752
Total	**0.1182**	**1.4026**	**0.9116**	**4.9800e-003**	**0.2455**	**7.7700e-003**	**0.2533**	**0.0670**	**7.3900e-003**	**0.0744**		**521.3975**	**521.3975**	**0.0311**		**522.1741**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2144	22.1219	18.9330	0.0333		1.1651	1.1651		1.0967	1.0967	0.0000	3,199.8638	3,199.8638	0.7886		3,219.5778
Total	**2.2144**	**22.1219**	**18.9330**	**0.0333**		**1.1651**	**1.1651**		**1.0967**	**1.0967**	**0.0000**	**3,199.8638**	**3,199.8638**	**0.7886**		**3,219.5778**

3.8 Recycled Water Treatment System - 2020

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	0.0448	1.3531	0.3447	3.2900e-003	0.0812	6.6200e-003	0.0879	0.0234	6.3300e-003	0.0297		352.8481	352.8481	0.0260		353.4988
Worker	0.0734	0.0495	0.5669	1.6900e-003	0.1643	1.1500e-003	0.1655	0.0436	1.0600e-003	0.0446		168.5494	168.5494	5.0300e-003		168.6752
Total	**0.1182**	**1.4026**	**0.9116**	**4.9800e-003**	**0.2455**	**7.7700e-003**	**0.2533**	**0.0670**	**7.3900e-003**	**0.0744**		**521.3975**	**521.3975**	**0.0311**		**522.1741**

3.8 Recycled Water Treatment System - 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	2.0104	19.9477	18.6596	0.0333		1.0124	1.0124		0.9527	0.9527		3,200.0974	3,200.0974	0.7837		3,219.6899
Total	**2.0104**	**19.9477**	**18.6596**	**0.0333**		**1.0124**	**1.0124**		**0.9527**	**0.9527**		**3,200.0974**	**3,200.0974**	**0.7837**		**3,219.6899**

3.8 Recycled Water Treatment System - 2021

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	0.0363	1.2220	0.3114	3.2500e-003	0.0812	2.5700e-003	0.0838	0.0234	2.4500e-003	0.0258		349.6223	349.6223	0.0250		350.2469
Worker	0.0692	0.0449	0.5305	1.6300e-003	0.1643	1.1300e-003	0.1654	0.0436	1.0500e-003	0.0446		162.8882	162.8882	4.6500e-003		163.0044
Total	**0.1055**	**1.2669**	**0.8419**	**4.8800e-003**	**0.2455**	**3.7000e-003**	**0.2492**	**0.0670**	**3.5000e-003**	**0.0705**		**512.5105**	**512.5105**	**0.0296**		**513.2513**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0104	19.9477	18.6596	0.0333		1.0124	1.0124		0.9527	0.9527	0.0000	3,200.0974	3,200.0974	0.7837		3,219.6899
Total	**2.0104**	**19.9477**	**18.6596**	**0.0333**		**1.0124**	**1.0124**		**0.9527**	**0.9527**	**0.0000**	**3,200.0974**	**3,200.0974**	**0.7837**		**3,219.6899**

3.8 Recycled Water Treatment System - 2021

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	0.0363	1.2220	0.3114	3.2500e-003	0.0812	2.5700e-003	0.0838	0.0234	2.4500e-003	0.0258		349.6223	349.6223	0.0250		350.2469
Worker	0.0692	0.0449	0.5305	1.6300e-003	0.1643	1.1300e-003	0.1654	0.0436	1.0500e-003	0.0446		162.8882	162.8882	4.6500e-003		163.0044
Total	**0.1055**	**1.2669**	**0.8419**	**4.8800e-003**	**0.2455**	**3.7000e-003**	**0.2492**	**0.0670**	**3.5000e-003**	**0.0705**		**512.5105**	**512.5105**	**0.0296**		**513.2513**

3.9 Wastewater Diversion Pump Station and Pipeline - 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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.2228	11.9881	11.6289	0.0167		0.7382	0.7382		0.6791	0.6791		1,619.3011	1,619.3011	0.5237		1,632.3939
Total	**1.2228**	**11.9881**	**11.6289**	**0.0167**	**0.0000**	**0.7382**	**0.7382**	**0.0000**	**0.6791**	**0.6791**		**1,619.3011**	**1,619.3011**	**0.5237**		**1,632.3939**

3.9 Wastewater Diversion Pump Station and Pipeline - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0121	0.4073	0.1038	1.0800e-003	0.0271	8.6000e-004	0.0279	7.8000e-003	8.2000e-004	8.6100e-003		116.5408	116.5408	8.3300e-003		116.7490
Worker	0.0415	0.0270	0.3183	9.8000e-004	0.0986	6.8000e-004	0.0993	0.0262	6.3000e-004	0.0268		97.7329	97.7329	2.7900e-003		97.8026
Total	**0.0536**	**0.4343**	**0.4221**	**2.0600e-003**	**0.1257**	**1.5400e-003**	**0.1272**	**0.0340**	**1.4500e-003**	**0.0354**		**214.2737**	**214.2737**	**0.0111**		**214.5516**

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	1.2228	11.9881	11.6289	0.0167		0.7382	0.7382		0.6791	0.6791	0.0000	1,619.3011	1,619.3011	0.5237		1,632.3939
Total	**1.2228**	**11.9881**	**11.6289**	**0.0167**	**0.0000**	**0.7382**	**0.7382**	**0.0000**	**0.6791**	**0.6791**	**0.0000**	**1,619.3011**	**1,619.3011**	**0.5237**		**1,632.3939**

3.9 Wastewater Diversion Pump Station and Pipeline - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0121	0.4073	0.1038	1.0800e-003	0.0271	8.6000e-004	0.0279	7.8000e-003	8.2000e-004	8.6100e-003		116.5408	116.5408	8.3300e-003		116.7490
Worker	0.0415	0.0270	0.3183	9.8000e-004	0.0986	6.8000e-004	0.0993	0.0262	6.3000e-004	0.0268		97.7329	97.7329	2.7900e-003		97.8026
Total	**0.0536**	**0.4343**	**0.4221**	**2.0600e-003**	**0.1257**	**1.5400e-003**	**0.1272**	**0.0340**	**1.4500e-003**	**0.0354**		**214.2737**	**214.2737**	**0.0111**		**214.5516**

3.10 Discharge Pipeline - 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	2.7728	28.2401	17.6006	0.0293		1.5268	1.5268		1.4046	1.4046		2,843.9175	2,843.9175	0.9198		2,866.9120
Total	**2.7728**	**28.2401**	**17.6006**	**0.0293**		**1.5268**	**1.5268**		**1.4046**	**1.4046**		**2,843.9175**	**2,843.9175**	**0.9198**		**2,866.9120**

3.10 Discharge Pipeline - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0121	0.4073	0.1038	1.0800e-003	0.0271	8.6000e-004	0.0279	7.8000e-003	8.2000e-004	8.6100e-003		116.5408	116.5408	8.3300e-003		116.7490
Worker	0.0415	0.0270	0.3183	9.8000e-004	0.0986	6.8000e-004	0.0993	0.0262	6.3000e-004	0.0268		97.7329	97.7329	2.7900e-003		97.8026
Total	**0.0536**	**0.4343**	**0.4221**	**2.0600e-003**	**0.1257**	**1.5400e-003**	**0.1272**	**0.0340**	**1.4500e-003**	**0.0354**		**214.2737**	**214.2737**	**0.0111**		**214.5516**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.7728	28.2401	17.6006	0.0293		1.5268	1.5268		1.4046	1.4046	0.0000	2,843.9175	2,843.9175	0.9198		2,866.9120
Total	**2.7728**	**28.2401**	**17.6006**	**0.0293**		**1.5268**	**1.5268**		**1.4046**	**1.4046**	**0.0000**	**2,843.9175**	**2,843.9175**	**0.9198**		**2,866.9120**

3.10 Discharge Pipeline - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0121	0.4073	0.1038	1.0800e-003	0.0271	8.6000e-004	0.0279	7.8000e-003	8.2000e-004	8.6100e-003		116.5408	116.5408	8.3300e-003		116.7490
Worker	0.0415	0.0270	0.3183	9.8000e-004	0.0986	6.8000e-004	0.0993	0.0262	6.3000e-004	0.0268		97.7329	97.7329	2.7900e-003		97.8026
Total	**0.0536**	**0.4343**	**0.4221**	**2.0600e-003**	**0.1257**	**1.5400e-003**	**0.1272**	**0.0340**	**1.4500e-003**	**0.0354**		**214.2737**	**214.2737**	**0.0111**		**214.5516**

3.11 SWRF Startup - 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	0.0000	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**

3.11 SWRF Startup - 2021

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	0.0363	1.2220	0.3114	3.2500e-003	0.0812	2.5700e-003	0.0838	0.0234	2.4500e-003	0.0258		349.6223	349.6223	0.0250		350.2469
Worker	0.0277	0.0180	0.2122	6.5000e-004	0.0657	4.5000e-004	0.0662	0.0174	4.2000e-004	0.0179		65.1553	65.1553	1.8600e-003		65.2018
Total	**0.0640**	**1.2399**	**0.5236**	**3.9000e-003**	**0.1470**	**3.0200e-003**	**0.1500**	**0.0408**	**2.8700e-003**	**0.0437**		**414.7776**	**414.7776**	**0.0268**		**415.4486**

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	0.0000	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**

3.11 SWRF Startup - 2021

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	0.0363	1.2220	0.3114	3.2500e-003	0.0812	2.5700e-003	0.0838	0.0234	2.4500e-003	0.0258		349.6223	349.6223	0.0250		350.2469
Worker	0.0277	0.0180	0.2122	6.5000e-004	0.0657	4.5000e-004	0.0662	0.0174	4.2000e-004	0.0179		65.1553	65.1553	1.8600e-003		65.2018
Total	**0.0640**	**1.2399**	**0.5236**	**3.9000e-003**	**0.1470**	**3.0200e-003**	**0.1500**	**0.0408**	**2.8700e-003**	**0.0437**		**414.7776**	**414.7776**	**0.0268**		**415.4486**

3.12 Recycled Water Distribution System - 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	2.7728	28.2401	17.6006	0.0293		1.5268	1.5268		1.4046	1.4046		2,843.9175	2,843.9175	0.9198		2,866.9120
Total	**2.7728**	**28.2401**	**17.6006**	**0.0293**		**1.5268**	**1.5268**		**1.4046**	**1.4046**		**2,843.9175**	**2,843.9175**	**0.9198**		**2,866.9120**

3.12 Recycled Water Distribution System - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0121	0.4073	0.1038	1.0800e-003	0.0271	8.6000e-004	0.0279	7.8000e-003	8.2000e-004	8.6100e-003		116.5408	116.5408	8.3300e-003		116.7490
Worker	0.0553	0.0360	0.4244	1.3100e-003	0.1314	9.1000e-004	0.1323	0.0349	8.4000e-004	0.0357		130.3105	130.3105	3.7200e-003		130.4035
Total	**0.0674**	**0.4433**	**0.5282**	**2.3900e-003**	**0.1585**	**1.7700e-003**	**0.1603**	**0.0427**	**1.6600e-003**	**0.0443**		**246.8513**	**246.8513**	**0.0121**		**247.1525**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.7728	28.2401	17.6006	0.0293		1.5268	1.5268		1.4046	1.4046	0.0000	2,843.9175	2,843.9175	0.9198		2,866.9120
Total	**2.7728**	**28.2401**	**17.6006**	**0.0293**		**1.5268**	**1.5268**		**1.4046**	**1.4046**	**0.0000**	**2,843.9175**	**2,843.9175**	**0.9198**		**2,866.9120**

3.12 Recycled Water Distribution System - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0121	0.4073	0.1038	1.0800e-003	0.0271	8.6000e-004	0.0279	7.8000e-003	8.2000e-004	8.6100e-003		116.5408	116.5408	8.3300e-003		116.7490
Worker	0.0553	0.0360	0.4244	1.3100e-003	0.1314	9.1000e-004	0.1323	0.0349	8.4000e-004	0.0357		130.3105	130.3105	3.7200e-003		130.4035
Total	**0.0674**	**0.4433**	**0.5282**	**2.3900e-003**	**0.1585**	**1.7700e-003**	**0.1603**	**0.0427**	**1.6600e-003**	**0.0443**		**246.8513**	**246.8513**	**0.0121**		**247.1525**

3.13 Irrigation System - 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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	2.3565	21.2419	21.0864	0.0312		1.3602	1.3602		1.2722	1.2722		3,005.0267	3,005.0267	0.7360		3,023.4265
Total	**2.3565**	**21.2419**	**21.0864**	**0.0312**	**0.0000**	**1.3602**	**1.3602**	**0.0000**	**1.2722**	**1.2722**		**3,005.0267**	**3,005.0267**	**0.7360**		**3,023.4265**

3.13 Irrigation System - 2021

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	6.0500e-003	0.2037	0.0519	5.4000e-004	0.0135	4.3000e-004	0.0140	3.9000e-003	4.1000e-004	4.3100e-003		58.2704	58.2704	4.1600e-003		58.3745
Worker	0.1107	0.0719	0.8488	2.6200e-003	0.2629	1.8200e-003	0.2647	0.0697	1.6700e-003	0.0714		260.6211	260.6211	7.4400e-003		260.8070
Total	**0.1167**	**0.2756**	**0.9007**	**3.1600e-003**	**0.2764**	**2.2500e-003**	**0.2787**	**0.0736**	**2.0800e-003**	**0.0757**		**318.8915**	**318.8915**	**0.0116**		**319.1815**

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	2.3565	21.2419	21.0864	0.0312		1.3602	1.3602		1.2722	1.2722	0.0000	3,005.0267	3,005.0267	0.7360		3,023.4265
Total	**2.3565**	**21.2419**	**21.0864**	**0.0312**	**0.0000**	**1.3602**	**1.3602**	**0.0000**	**1.2722**	**1.2722**	**0.0000**	**3,005.0267**	**3,005.0267**	**0.7360**		**3,023.4265**

3.13 Irrigation System - 2021

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	6.0500e-003	0.2037	0.0519	5.4000e-004	0.0135	4.3000e-004	0.0140	3.9000e-003	4.1000e-004	4.3100e-003		58.2704	58.2704	4.1600e-003		58.3745
Worker	0.1107	0.0719	0.8488	2.6200e-003	0.2629	1.8200e-003	0.2647	0.0697	1.6700e-003	0.0714		260.6211	260.6211	7.4400e-003		260.8070
Total	**0.1167**	**0.2756**	**0.9007**	**3.1600e-003**	**0.2764**	**2.2500e-003**	**0.2787**	**0.0736**	**2.0800e-003**	**0.0757**		**318.8915**	**318.8915**	**0.0116**		**319.1815**

3.14 Turf Establishment of New Holes - 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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.8179	8.2770	7.7766	0.0115		0.4661	0.4661		0.4288	0.4288		1,111.1103	1,111.1103	0.3594		1,120.0941
Total	**0.8179**	**8.2770**	**7.7766**	**0.0115**	**0.0000**	**0.4661**	**0.4661**	**0.0000**	**0.4288**	**0.4288**		**1,111.1103**	**1,111.1103**	**0.3594**		**1,120.0941**

3.14 Turf Establishment of New Holes - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0553	0.0360	0.4244	1.3100e-003	0.1314	9.1000e-004	0.1323	0.0349	8.4000e-004	0.0357		130.3105	130.3105	3.7200e-003		130.4035
Total	**0.0553**	**0.0360**	**0.4244**	**1.3100e-003**	**0.1314**	**9.1000e-004**	**0.1323**	**0.0349**	**8.4000e-004**	**0.0357**		**130.3105**	**130.3105**	**3.7200e-003**		**130.4035**

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	0.8179	8.2770	7.7766	0.0115		0.4661	0.4661		0.4288	0.4288	0.0000	1,111.1103	1,111.1103	0.3594		1,120.0941
Total	**0.8179**	**8.2770**	**7.7766**	**0.0115**	**0.0000**	**0.4661**	**0.4661**	**0.0000**	**0.4288**	**0.4288**	**0.0000**	**1,111.1103**	**1,111.1103**	**0.3594**		**1,120.0941**

3.14 Turf Establishment of New Holes - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0553	0.0360	0.4244	1.3100e-003	0.1314	9.1000e-004	0.1323	0.0349	8.4000e-004	0.0357		130.3105	130.3105	3.7200e-003		130.4035
Total	**0.0553**	**0.0360**	**0.4244**	**1.3100e-003**	**0.1314**	**9.1000e-004**	**0.1323**	**0.0349**	**8.4000e-004**	**0.0357**		**130.3105**	**130.3105**	**3.7200e-003**		**130.4035**

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	0.0434	0.1791	0.5169	1.8500e-003	0.1610	1.4800e-003	0.1624	0.0430	1.3800e-003	0.0444		188.1722	188.1722	9.3900e-003		188.4070
Unmitigated	0.0434	0.1791	0.5169	1.8500e-003	0.1610	1.4800e-003	0.1624	0.0430	1.3800e-003	0.0444		188.1722	188.1722	9.3900e-003		188.4070

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	4.00	4.00	4.00	11,678	11,678
General Light Industry	22.00	22.00	22.00	64,229	64,229
General Office Building	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	0.00	0.00	0.00		
Total	26.00	26.00	26.00	75,907	75,907

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Heavy Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Heavy Industry	0.598645	0.040929	0.181073	0.106149	0.015683	0.005479	0.016317	0.023976	0.001926	0.001932	0.006016	0.000753	0.001122
General Light Industry	0.598645	0.040929	0.181073	0.106149	0.015683	0.005479	0.016317	0.023976	0.001926	0.001932	0.006016	0.000753	0.001122
General Office Building	0.598645	0.040929	0.181073	0.106149	0.015683	0.005479	0.016317	0.023976	0.001926	0.001932	0.006016	0.000753	0.001122
Other Asphalt Surfaces	0.598645	0.040929	0.181073	0.106149	0.015683	0.005479	0.016317	0.023976	0.001926	0.001932	0.006016	0.000753	0.001122
Unrefrigerated Warehouse-No Rail	0.598645	0.040929	0.181073	0.106149	0.015683	0.005479	0.016317	0.023976	0.001926	0.001932	0.006016	0.000753	0.001122

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	3.1600e-003	0.0287	0.0241	1.7000e-004		2.1800e-003	2.1800e-003		2.1800e-003	2.1800e-003		34.4271	34.4271	6.6000e-004	6.3000e-004	34.6317
NaturalGas Unmitigated	3.1600e-003	0.0287	0.0241	1.7000e-004		2.1800e-003	2.1800e-003		2.1800e-003	2.1800e-003		34.4271	34.4271	6.6000e-004	6.3000e-004	34.6317

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					
General Heavy Industry	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
General Light Industry	126.685	1.3700e-003	0.0124	0.0104	7.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004		14.9041	14.9041	2.9000e-004	2.7000e-004	14.9927
General Office Building	165.945	1.7900e-003	0.0163	0.0137	1.0000e-004		1.2400e-003	1.2400e-003		1.2400e-003	1.2400e-003		19.5230	19.5230	3.7000e-004	3.6000e-004	19.6390
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
Unrefrigerated Warehouse-No Rail	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		**3.1600e-003**	**0.0287**	**0.0241**	**1.7000e-004**		**2.1800e-003**	**2.1800e-003**		**2.1800e-003**	**2.1800e-003**		**34.4271**	**34.4271**	**6.6000e-004**	**6.3000e-004**	**34.6317**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Heavy Industry	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
General Light Industry	0.126685	1.3700e-003	0.0124	0.0104	7.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004		14.9041	14.9041	2.9000e-004	2.7000e-004	14.9927
General Office Building	0.165945	1.7900e-003	0.0163	0.0137	1.0000e-004		1.2400e-003	1.2400e-003		1.2400e-003	1.2400e-003		19.5230	19.5230	3.7000e-004	3.6000e-004	19.6390
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
Unrefrigerated Warehouse-No Rail	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		**3.1600e-003**	**0.0287**	**0.0241**	**1.7000e-004**		**2.1800e-003**	**2.1800e-003**		**2.1800e-003**	**2.1800e-003**		**34.4271**	**34.4271**	**6.6000e-004**	**6.3000e-004**	**34.6317**

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	0.3915	1.0000e-005	1.4600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1300e-003	3.1300e-003	1.0000e-005		3.3400e-003
Unmitigated	0.3915	1.0000e-005	1.4600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1300e-003	3.1300e-003	1.0000e-005		3.3400e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0934					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2979					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.4000e-004	1.0000e-005	1.4600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1300e-003	3.1300e-003	1.0000e-005		3.3400e-003
Total	**0.3915**	**1.0000e-005**	**1.4600e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**3.1300e-003**	**3.1300e-003**	**1.0000e-005**		**3.3400e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0934					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2979					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.4000e-004	1.0000e-005	1.4600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1300e-003	3.1300e-003	1.0000e-005		3.3400e-003
Total	**0.3915**	**1.0000e-005**	**1.4600e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**3.1300e-003**	**3.1300e-003**	**1.0000e-005**		**3.3400e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	1	52	86	0.73	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/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
Equipment Type	lb/day										lb/day					
Emergency Generator - Diesel (75 - 100 HP)	0.1411	0.4602	0.5121	6.8000e-004		0.0208	0.0208		0.0208	0.0208		72.1982	72.1982	0.0101		72.4513
Total	**0.1411**	**0.4602**	**0.5121**	**6.8000e-004**		**0.0208**	**0.0208**		**0.0208**	**0.0208**		**72.1982**	**72.1982**	**0.0101**		**72.4513**

11.0 Vegetation

Coronado Municipal Golf Course Modernization Project

San Diego County APCD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	5.00	1000sqft	0.11	5,000.00	0
General Light Industry	4.00	1000sqft	0.09	4,000.00	0
Unrefrigerated Warehouse-No Rail	0.94	1000sqft	0.02	940.00	0
Other Asphalt Surfaces	1.36	Acre	1.36	59,241.60	0
General Office Building	3.00	1000sqft	0.07	3,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2022
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	448.3	**CH4 Intensity (lb/MWhr)**	0.018	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - In accordance with 2017 Power Content Label for SDG&E.

Land Use - Based on project description.

Construction Phase - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - CalEEMod defaults.

Off-road Equipment - CalEEMod defaults.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Off-road Equipment - Based on project description.

Grading - Based on project description.

Trips and VMT - Based on project description.

On-road Fugitive Dust - CalEEMod defaults.

Architectural Coating - CalEEmod defaults.

Vehicle Trips - Based on project description.

Consumer Products - CalEEMod defaults.

Area Coating - CalEEMod defaults.

Landscape Equipment - CalEEMod defaults.

Energy Use - Based on the project description.

Water And Wastewater - CalEEMod defaults for office building. The other facilities won't use water.

Solid Waste - Based on project description for SWRF.

Construction Off-road Equipment Mitigation - In accordance with SDAPCD Rule 55.

Waste Mitigation -

Stationary Sources - Emergency Generators and Fire Pumps - A 50 kW backup genertor.

Stationary Sources - Emergency Generators and Fire Pumps EF - CalEEMod defaults.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	200.00	120.00
tblConstructionPhase	NumDays	20.00	135.00
tblConstructionPhase	NumDays	2.00	45.00
tblConstructionPhase	NumDays	2.00	90.00
tblConstructionPhase	NumDays	200.00	240.00
tblConstructionPhase	NumDays	2.00	175.00
tblConstructionPhase	NumDays	200.00	45.00
tblConstructionPhase	NumDays	2.00	180.00
tblConstructionPhase	NumDays	2.00	120.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
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tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	PhaseEndDate	5/10/2021	5/7/2021
tblConstructionPhase	PhaseEndDate	4/12/2021	11/23/2020

tblConstructionPhase	PhaseEndDate	6/26/2020	11/4/2020
tblConstructionPhase	PhaseEndDate	4/26/2021	4/23/2021
tblConstructionPhase	PhaseEndDate	6/30/2020	8/18/2020
tblEnergyUse	LightingElect	2.83	0.00
tblEnergyUse	NT24E	4.27	0.00
tblEnergyUse	NT24E	1.11	0.00
tblEnergyUse	NT24NG	7.25	0.00
tblEnergyUse	NT24NG	0.11	0.00
tblEnergyUse	T24E	1.21	584.00
tblEnergyUse	T24E	0.88	0.00
tblEnergyUse	T24NG	4.31	0.00
tblEnergyUse	T24NG	1.56	0.00
tblGrading	MaterialExported	0.00	34,000.00
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.38
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tblOffRoadEquipment	LoadFactor	0.43	0.43
tblOffRoadEquipment	LoadFactor	0.42	0.42

tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.37	0.37
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tblOffRoadEquipment	OffRoadEquipmentType		Pavers
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tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Pavers
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Concrete/Industrial Saws
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Crawler Tractors
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tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers

tblOffRoadEquipment	OffRoadEquipmentType		Pavers
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
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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	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	3.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	6.00	12.00
tblOffRoadEquipment	UsageHours	6.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
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tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	7.00	12.00
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tblOffRoadEquipment	UsageHours	6.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblOffRoadEquipment	UsageHours	8.00	12.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.018
tblProjectCharacteristics	CO2IntensityFactor	720.49	448.3
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004
tblSolidWaste	SolidWasteGenerationRate	6.20	173.00
tblSolidWaste	SolidWasteGenerationRate	4.96	0.00
tblSolidWaste	SolidWasteGenerationRate	0.88	0.00
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	86.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	1.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	52.00

tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	4,250.00
tblTripsAndVMT	PhaseName		Recycled Water Distribution System
tblTripsAndVMT	PhaseName		Discharge Pipeline
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
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tblTripsAndVMT	VendorTripNumber	0.00	2.00
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tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	13.00	14.00
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tblTripsAndVMT	WorkerTripNumber	30.00	8.00
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tblTripsAndVMT	WorkerTripNumber	13.00	14.00
tblTripsAndVMT	WorkerTripNumber	30.00	20.00
tblTripsAndVMT	WorkerTripNumber	13.00	32.00
tblTripsAndVMT	WorkerTripNumber	5.00	16.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00
tblTripsAndVMT	WorkerTripNumber	8.00	12.00
tblTripsAndVMT	WorkerTripNumber	10.00	16.00
tblTripsAndVMT	WorkerTripNumber	10.00	12.00
tblVehicleTrips	ST_TR	1.50	0.80
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tblVehicleTrips	ST_TR	2.46	0.00

tblVehicleTrips	ST_TR	1.68	0.00
tblVehicleTrips	SU_TR	1.50	0.80
tblVehicleTrips	SU_TR	0.68	5.50
tblVehicleTrips	SU_TR	1.05	0.00
tblVehicleTrips	SU_TR	1.68	0.00
tblVehicleTrips	WD_TR	1.50	0.80
tblVehicleTrips	WD_TR	6.97	5.50
tblVehicleTrips	WD_TR	11.03	0.00
tblVehicleTrips	WD_TR	1.68	0.00
tblWater	IndoorWaterUseRate	1,156,250.00	0.00
tblWater	IndoorWaterUseRate	925,000.00	0.00
tblWater	IndoorWaterUseRate	217,375.00	0.00

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	11.0942	125.6943	82.5204	0.1856	12.2146	5.6276	17.8421	5.5649	5.2282	10.7930	0.0000	18,492.7323	18,492.7323	4.2337	0.0000	18,598.5753
2021	47.0276	123.9167	101.5813	0.1729	1.1125	6.8308	7.9432	0.2991	6.3417	6.6407	0.0000	16,795.7809	16,795.7809	4.3635	0.0000	16,904.8678
Maximum	**47.0276**	**125.6943**	**101.5813**	**0.1856**	**12.2146**	**6.8308**	**17.8421**	**5.5649**	**6.3417**	**10.7930**	**0.0000**	**18,492.7323**	**18,492.7323**	**4.3635**	**0.0000**	**18,598.5753**

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	11.0942	125.6943	82.5204	0.1856	6.3422	5.6276	11.9698	2.7350	5.2282	7.9632	0.0000	18,492.7323	18,492.7323	4.2337	0.0000	18,598.5753
2021	47.0276	123.9167	101.5813	0.1729	1.1125	6.8308	7.9432	0.2991	6.3417	6.6407	0.0000	16,795.7809	16,795.7809	4.3635	0.0000	16,904.8678
Maximum	**47.0276**	**125.6943**	**101.5813**	**0.1856**	**6.3422**	**6.8308**	**11.9698**	**2.7350**	**6.3417**	**7.9632**	**0.0000**	**18,492.7323**	**18,492.7323**	**4.3635**	**0.0000**	**18,598.5753**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**44.06**	**0.00**	**22.77**	**48.26**	**0.00**	**16.23**	**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	0.3915	1.0000e-005	1.4600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1300e-003	3.1300e-003	1.0000e-005		3.3400e-003
Energy	3.1600e-003	0.0287	0.0241	1.7000e-004		2.1800e-003	2.1800e-003		2.1800e-003	2.1800e-003		34.4271	34.4271	6.6000e-004	6.3000e-004	34.6317
Mobile	0.0421	0.1841	0.5056	1.7600e-003	0.1610	1.4900e-003	0.1624	0.0430	1.3900e-003	0.0444		178.5230	178.5230	9.4200e-003		178.7585
Stationary	0.1411	0.4602	0.5121	6.8000e-004		0.0208	0.0208		0.0208	0.0208		72.1982	72.1982	0.0101		72.4513
Total	**0.5779**	**0.6730**	**1.0433**	**2.6100e-003**	**0.1610**	**0.0244**	**0.1854**	**0.0430**	**0.0243**	**0.0674**		**285.1515**	**285.1515**	**0.0202**	**6.3000e-004**	**285.8448**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.3915	1.0000e-005	1.4600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1300e-003	3.1300e-003	1.0000e-005		3.3400e-003
Energy	3.1600e-003	0.0287	0.0241	1.7000e-004		2.1800e-003	2.1800e-003		2.1800e-003	2.1800e-003		34.4271	34.4271	6.6000e-004	6.3000e-004	34.6317
Mobile	0.0421	0.1841	0.5056	1.7600e-003	0.1610	1.4900e-003	0.1624	0.0430	1.3900e-003	0.0444		178.5230	178.5230	9.4200e-003		178.7585
Stationary	0.1411	0.4602	0.5121	6.8000e-004		0.0208	0.0208		0.0208	0.0208		72.1982	72.1982	0.0101		72.4513
Total	**0.5779**	**0.6730**	**1.0433**	**2.6100e-003**	**0.1610**	**0.0244**	**0.1854**	**0.0430**	**0.0243**	**0.0674**		**285.1515**	**285.1515**	**0.0202**	**6.3000e-004**	**285.8448**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Golf Course Master Planning Construction	Demolition	6/1/2020	11/4/2020	6	135	
2	Access Lane	Site Preparation	6/27/2020	8/18/2020	6	45	
3	SWRF and Turf Care Buildings	Building Construction	7/7/2020	11/23/2020	6	120	
4	Paving	Paving	4/13/2021	4/23/2021	6	10	
5	Architectural Coating	Architectural Coating	4/27/2021	5/7/2021	6	10	
6	Recycled Water Storage Ponds	Site Preparation	6/27/2020	10/9/2020	6	90	
7	Recycled Water Treatment System	Building Construction	7/31/2020	5/6/2021	6	240	
8	Wastewater Diversion Pump Station and Pipeline	Site Preparation	5/6/2021	11/25/2021	6	175	
9	Discharge Pipeline	Trenching	5/6/2021	11/25/2021	6	175	
10	SWRF Startup	Building Construction	11/1/2021	12/22/2021	6	45	
11	Recycled Water Distribution System	Trenching	1/1/2021	8/21/2021	6	200	
12	Irrigation System	Site Preparation	5/5/2021	11/30/2021	6	180	
13	Turf Establishment of New Holes	Site Preparation	5/5/2021	9/21/2021	6	120	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.36

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 19,410; Non-Residential Outdoor: 6,470; Striped Parking Area: 3,554 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Wastewater Diversion Pump Station and Pipeline	Pavers	1	12.00	130	0.42
Discharge Pipeline	Trenchers	1	12.00	78	0.50

Discharge Pipeline	Tractors/Loaders/Backhoes	1	12.00	97	0.37
Discharge Pipeline	Rubber Tired Dozers	1	12.00	247	0.40
Discharge Pipeline	Pavers	1	12.00	130	0.42
Recycled Water Distribution System	Trenchers	1	12.00	78	0.50
Recycled Water Distribution System	Tractors/Loaders/Backhoes	1	12.00	97	0.37
Recycled Water Distribution System	Rubber Tired Dozers	1	12.00	247	0.40
Recycled Water Distribution System	Pavers	1	12.00	130	0.42
Irrigation System	Trenchers	2	12.00	78	0.50
Irrigation System	Excavators	1	12.00	158	0.38
Irrigation System	Rollers	1	12.00	80	0.38
Irrigation System	Concrete/Industrial Saws	1	12.00	81	0.73
Turf Establishment of New Holes	Forklifts	1	12.00	89	0.20
Turf Establishment of New Holes	Other Construction Equipment	1	12.00	172	0.42
Architectural Coating	Air Compressors	1	12.00	78	0.48
Paving	Cement and Mortar Mixers	1	12.00	9	0.56
Golf Course Master Planning Construction	Concrete/Industrial Saws	1	12.00	81	0.73
SWRF and Turf Care Buildings	Generator Sets	0	8.00	84	0.74
SWRF and Turf Care Buildings	Cranes	1	12.00	231	0.29
SWRF and Turf Care Buildings	Forklifts	0	6.00	89	0.20
Access Lane	Graders	0	8.00	187	0.41
Paving	Pavers	1	12.00	130	0.42
Paving	Rollers	1	12.00	80	0.38
Golf Course Master Planning Construction	Rubber Tired Dozers	0	8.00	247	0.40
SWRF Startup	Cranes	0	6.00	231	0.29
SWRF and Turf Care Buildings	Tractors/Loaders/Backhoes	2	12.00	97	0.37
Golf Course Master Planning Construction	Tractors/Loaders/Backhoes	2	12.00	97	0.37

Recycled Water Treatment System	Cranes	1	12.00	231	0.29
Paving	Tractors/Loaders/Backhoes	1	12.00	97	0.37
Access Lane	Tractors/Loaders/Backhoes	1	12.00	97	0.37
SWRF Startup	Forklifts	0	6.00	89	0.20
Paving	Paving Equipment	1	12.00	132	0.36
Access Lane	Rubber Tired Dozers	1	12.00	247	0.40
SWRF and Turf Care Buildings	Welders	0	8.00	46	0.45
Recycled Water Treatment System	Forklifts	1	12.00	89	0.20
SWRF Startup	Generator Sets	0	8.00	84	0.74
Recycled Water Treatment System	Generator Sets	0	8.00	84	0.74
Irrigation System	Graders	0	8.00	187	0.41
Turf Establishment of New Holes	Graders	0	8.00	187	0.41
Recycled Water Storage Ponds	Graders	0	8.00	187	0.41
Wastewater Diversion Pump Station and Pipeline	Graders	0	8.00	187	0.41
Irrigation System	Rubber Tired Dozers	0	7.00	247	0.40
Turf Establishment of New Holes	Rubber Tired Dozers	0	7.00	247	0.40
Recycled Water Storage Ponds	Rubber Tired Dozers	0	7.00	247	0.40
Wastewater Diversion Pump Station and Pipeline	Rubber Tired Dozers	0	7.00	247	0.40
SWRF Startup	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Recycled Water Treatment System	Tractors/Loaders/Backhoes	1	12.00	97	0.37
Irrigation System	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Turf Establishment of New Holes	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Recycled Water Storage Ponds	Tractors/Loaders/Backhoes	2	12.00	97	0.37
Wastewater Diversion Pump Station and Pipeline	Tractors/Loaders/Backhoes	1	12.00	97	0.37
SWRF Startup	Welders	0	8.00	46	0.45
Recycled Water Treatment System	Welders	0	8.00	46	0.45

Golf Course Master Planning Construction	Crawler Tractors	1	12.00	212	0.43
Golf Course Master Planning Construction	Trenchers	1	12.00	78	0.50
Recycled Water Storage Ponds	Trenchers	0	12.00	78	0.50
Recycled Water Storage Ponds	Crawler Tractors	0	12.00	212	0.43
Recycled Water Storage Ponds	Pavers	0	12.00	130	0.42
Recycled Water Storage Ponds	Scrapers	1	12.00	367	0.48
Recycled Water Treatment System	Excavators	1	12.00	158	0.38
Recycled Water Treatment System	Pumps	1	12.00	84	0.74
Wastewater Diversion Pump Station and Pipeline	Trenchers	1	12.00	78	0.50

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
Golf Course Master Planning Construction	5	14.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Access Lane	2	6.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
SWRF Startup	0	8.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
SWRF and Turf Care Buildings	3	12.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	14.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	6.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Recycled Water Treatment System	5	20.00	12.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Irrigation System	5	32.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Turf Establishment of New Holes	2	16.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Recycled Water Storage Ponds	3	10.00	2.00	4,250.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Wastewater Diversion Pump Station and Pip	3	12.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Recycled Water Distribution System	4	16.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Discharge Pipeline	4	12.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Golf Course Master Planning Construction - 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	2.7537	28.1297	20.0734	0.0355		1.5439	1.5439		1.4442	1.4442		3,422.1032	3,422.1032	0.8756		3,443.9926
Total	**2.7537**	**28.1297**	**20.0734**	**0.0355**		**1.5439**	**1.5439**		**1.4442**	**1.4442**		**3,422.1032**	**3,422.1032**	**0.8756**		**3,443.9926**

3.2 Golf Course Master Planning Construction - 2020

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	7.8300e-003	0.2253	0.0638	5.3000e-004	0.0135	1.1200e-003	0.0147	3.9000e-003	1.0800e-003	4.9700e-003		57.2924	57.2924	4.6100e-003		57.4077
Worker	0.0582	0.0389	0.3742	1.1100e-003	0.1150	8.1000e-004	0.1158	0.0305	7.4000e-004	0.0313		110.7585	110.7585	3.3300e-003		110.8418
Total	**0.0660**	**0.2642**	**0.4379**	**1.6400e-003**	**0.1286**	**1.9300e-003**	**0.1305**	**0.0344**	**1.8200e-003**	**0.0362**		**168.0509**	**168.0509**	**7.9400e-003**		**168.2495**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.7537	28.1297	20.0734	0.0355		1.5439	1.5439		1.4442	1.4442	0.0000	3,422.1032	3,422.1032	0.8756		3,443.9926
Total	**2.7537**	**28.1297**	**20.0734**	**0.0355**		**1.5439**	**1.5439**		**1.4442**	**1.4442**	**0.0000**	**3,422.1032**	**3,422.1032**	**0.8756**		**3,443.9926**

3.2 Golf Course Master Planning Construction - 2020

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	7.8300e-003	0.2253	0.0638	5.3000e-004	0.0135	1.1200e-003	0.0147	3.9000e-003	1.0800e-003	4.9700e-003		57.2924	57.2924	4.6100e-003		57.4077
Worker	0.0582	0.0389	0.3742	1.1100e-003	0.1150	8.1000e-004	0.1158	0.0305	7.4000e-004	0.0313		110.7585	110.7585	3.3300e-003		110.8418
Total	**0.0660**	**0.2642**	**0.4379**	**1.6400e-003**	**0.1286**	**1.9300e-003**	**0.1305**	**0.0344**	**1.8200e-003**	**0.0362**		**168.0509**	**168.0509**	**7.9400e-003**		**168.2495**

3.3 Access Lane - 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					9.0331	0.0000	9.0331	4.9653	0.0000	4.9653			0.0000			0.0000
Off-Road	1.9335	20.1561	9.6170	0.0175		1.0322	1.0322		0.9496	0.9496		1,692.1665	1,692.1665	0.5473		1,705.8486
Total	**1.9335**	**20.1561**	**9.6170**	**0.0175**	**9.0331**	**1.0322**	**10.0653**	**4.9653**	**0.9496**	**5.9149**		**1,692.1665**	**1,692.1665**	**0.5473**		**1,705.8486**

3.3 Access Lane - 2020

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	7.8300e-003	0.2253	0.0638	5.3000e-004	0.0135	1.1200e-003	0.0147	3.9000e-003	1.0800e-003	4.9700e-003		57.2924	57.2924	4.6100e-003		57.4077
Worker	0.0249	0.0167	0.1604	4.8000e-004	0.0493	3.5000e-004	0.0496	0.0131	3.2000e-004	0.0134		47.4679	47.4679	1.4300e-003		47.5037
Total	**0.0328**	**0.2420**	**0.2241**	**1.0100e-003**	**0.0628**	**1.4700e-003**	**0.0643**	**0.0170**	**1.4000e-003**	**0.0184**		**104.7604**	**104.7604**	**6.0400e-003**		**104.9114**

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					4.0649	0.0000	4.0649	2.2344	0.0000	2.2344			0.0000			0.0000
Off-Road	1.9335	20.1561	9.6170	0.0175		1.0322	1.0322		0.9496	0.9496	0.0000	1,692.1665	1,692.1665	0.5473		1,705.8486
Total	**1.9335**	**20.1561**	**9.6170**	**0.0175**	**4.0649**	**1.0322**	**5.0971**	**2.2344**	**0.9496**	**3.1840**	**0.0000**	**1,692.1665**	**1,692.1665**	**0.5473**		**1,705.8486**

3.3 Access Lane - 2020

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	7.8300e-003	0.2253	0.0638	5.3000e-004	0.0135	1.1200e-003	0.0147	3.9000e-003	1.0800e-003	4.9700e-003		57.2924	57.2924	4.6100e-003		57.4077
Worker	0.0249	0.0167	0.1604	4.8000e-004	0.0493	3.5000e-004	0.0496	0.0131	3.2000e-004	0.0134		47.4679	47.4679	1.4300e-003		47.5037
Total	**0.0328**	**0.2420**	**0.2241**	**1.0100e-003**	**0.0628**	**1.4700e-003**	**0.0643**	**0.0170**	**1.4000e-003**	**0.0184**		**104.7604**	**104.7604**	**6.0400e-003**		**104.9114**

3.4 SWRF and Turf Care Buildings - 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	1.3086	14.4027	10.0121	0.0180		0.7328	0.7328		0.6741	0.6741		1,740.4900	1,740.4900	0.5629		1,754.5627
Total	**1.3086**	**14.4027**	**10.0121**	**0.0180**		**0.7328**	**0.7328**		**0.6741**	**0.6741**		**1,740.4900**	**1,740.4900**	**0.5629**		**1,754.5627**

3.4 SWRF and Turf Care Buildings - 2020

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	0.0470	1.3520	0.3826	3.2000e-003	0.0812	6.7500e-003	0.0880	0.0234	6.4500e-003	0.0298		343.7547	343.7547	0.0277		344.4462
Worker	0.0499	0.0333	0.3207	9.5000e-004	0.0986	6.9000e-004	0.0993	0.0262	6.4000e-004	0.0268		94.9358	94.9358	2.8600e-003		95.0073
Total	**0.0968**	**1.3853**	**0.7033**	**4.1500e-003**	**0.1798**	**7.4400e-003**	**0.1873**	**0.0495**	**7.0900e-003**	**0.0566**		**438.6905**	**438.6905**	**0.0305**		**439.4535**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3086	14.4027	10.0121	0.0180		0.7328	0.7328		0.6741	0.6741	0.0000	1,740.4900	1,740.4900	0.5629		1,754.5627
Total	**1.3086**	**14.4027**	**10.0121**	**0.0180**		**0.7328**	**0.7328**		**0.6741**	**0.6741**	**0.0000**	**1,740.4900**	**1,740.4900**	**0.5629**		**1,754.5627**

3.4 SWRF and Turf Care Buildings - 2020

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	0.0470	1.3520	0.3826	3.2000e-003	0.0812	6.7500e-003	0.0880	0.0234	6.4500e-003	0.0298		343.7547	343.7547	0.0277		344.4462
Worker	0.0499	0.0333	0.3207	9.5000e-004	0.0986	6.9000e-004	0.0993	0.0262	6.4000e-004	0.0268		94.9358	94.9358	2.8600e-003		95.0073
Total	**0.0968**	**1.3853**	**0.7033**	**4.1500e-003**	**0.1798**	**7.4400e-003**	**0.1873**	**0.0495**	**7.0900e-003**	**0.0566**		**438.6905**	**438.6905**	**0.0305**		**439.4535**

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	1.3107	13.0853	14.8428	0.0228		0.6974	0.6974		0.6434	0.6434		2,182.532 7	2,182.532 7	0.6892		2,199.763 6
Paving	0.3563					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6670**	**13.0853**	**14.8428**	**0.0228**		**0.6974**	**0.6974**		**0.6434**	**0.6434**		**2,182.532 7**	**2,182.532 7**	**0.6892**		**2,199.763 6**

3.5 Paving - 2021

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	0.0128	0.4062	0.1156	1.0600e-003	0.0271	8.9000e-004	0.0280	7.8000e-003	8.5000e-004	8.6500e-003		113.5277	113.5277	8.8400e-003		113.7488
Worker	0.0549	0.0353	0.3491	1.0700e-003	0.1150	7.9000e-004	0.1158	0.0305	7.3000e-004	0.0312		107.0367	107.0367	3.0800e-003		107.1135
Total	**0.0677**	**0.4415**	**0.4646**	**2.1300e-003**	**0.1421**	**1.6800e-003**	**0.1438**	**0.0383**	**1.5800e-003**	**0.0399**		**220.5644**	**220.5644**	**0.0119**		**220.8624**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3107	13.0853	14.8428	0.0228		0.6974	0.6974		0.6434	0.6434	0.0000	2,182.5327	2,182.5327	0.6892		2,199.7636
Paving	0.3563					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6670**	**13.0853**	**14.8428**	**0.0228**		**0.6974**	**0.6974**		**0.6434**	**0.6434**	**0.0000**	**2,182.5327**	**2,182.5327**	**0.6892**		**2,199.7636**

3.5 Paving - 2021

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	0.0128	0.4062	0.1156	1.0600e-003	0.0271	8.9000e-004	0.0280	7.8000e-003	8.5000e-004	8.6500e-003		113.5277	113.5277	8.8400e-003		113.7488
Worker	0.0549	0.0353	0.3491	1.0700e-003	0.1150	7.9000e-004	0.1158	0.0305	7.3000e-004	0.0312		107.0367	107.0367	3.0800e-003		107.1135
Total	**0.0677**	**0.4415**	**0.4646**	**2.1300e-003**	**0.1421**	**1.6800e-003**	**0.1438**	**0.0383**	**1.5800e-003**	**0.0399**		**220.5644**	**220.5644**	**0.0119**		**220.8624**

3.6 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	34.1067					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.4378	3.0537	3.6351	5.9400e-003		0.1882	0.1882		0.1882	0.1882		562.8961	562.8961	0.0386		563.8618
Total	**34.5445**	**3.0537**	**3.6351**	**5.9400e-003**		**0.1882**	**0.1882**		**0.1882**	**0.1882**		**562.8961**	**562.8961**	**0.0386**		**563.8618**

3.6 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0235	0.0151	0.1496	4.6000e-004	0.0493	3.4000e-004	0.0496	0.0131	3.1000e-004	0.0134		45.8729	45.8729	1.3200e-003		45.9058
Total	**0.0235**	**0.0151**	**0.1496**	**4.6000e-004**	**0.0493**	**3.4000e-004**	**0.0496**	**0.0131**	**3.1000e-004**	**0.0134**		**45.8729**	**45.8729**	**1.3200e-003**		**45.9058**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	34.1067					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.4378	3.0537	3.6351	5.9400e-003		0.1882	0.1882		0.1882	0.1882	0.0000	562.8961	562.8961	0.0386		563.8618
Total	**34.5445**	**3.0537**	**3.6351**	**5.9400e-003**		**0.1882**	**0.1882**		**0.1882**	**0.1882**	**0.0000**	**562.8961**	**562.8961**	**0.0386**		**563.8618**

3.6 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0235	0.0151	0.1496	4.6000e-004	0.0493	3.4000e-004	0.0496	0.0131	3.1000e-004	0.0134		45.8729	45.8729	1.3200e-003		45.9058
Total	**0.0235**	**0.0151**	**0.1496**	**4.6000e-004**	**0.0493**	**3.4000e-004**	**0.0496**	**0.0131**	**3.1000e-004**	**0.0134**		**45.8729**	**45.8729**	**1.3200e-003**		**45.9058**

3.7 Recycled Water Storage Ponds - 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					1.6438	0.0000	1.6438	0.1798	0.0000	0.1798			0.0000			0.0000
Off-Road	2.1253	24.0317	18.0829	0.0322		1.0903	1.0903		1.0031	1.0031		3,113.8308	3,113.8308	1.0071		3,139.0077
Total	**2.1253**	**24.0317**	**18.0829**	**0.0322**	**1.6438**	**1.0903**	**2.7342**	**0.1798**	**1.0031**	**1.1829**		**3,113.8308**	**3,113.8308**	**1.0071**		**3,139.0077**

3.7 Recycled Water Storage Ponds - 2020

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	0.3836	13.3000	3.1886	0.0363	0.8252	0.0429	0.8681	0.2261	0.0411	0.2672		3,974.3895	3,974.3895	0.3684		3,983.5994
Vendor	7.8300e-003	0.2253	0.0638	5.3000e-004	0.0135	1.1200e-003	0.0147	3.9000e-003	1.0800e-003	4.9700e-003		57.2924	57.2924	4.6100e-003		57.4077
Worker	0.0416	0.0278	0.2673	7.9000e-004	0.0822	5.8000e-004	0.0827	0.0218	5.3000e-004	0.0223		79.1132	79.1132	2.3800e-003		79.1727
Total	**0.4330**	**13.5531**	**3.5196**	**0.0377**	**0.9208**	**0.0446**	**0.9654**	**0.2518**	**0.0427**	**0.2945**		**4,110.7952**	**4,110.7952**	**0.3754**		**4,120.1799**

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					0.7397	0.0000	0.7397	0.0809	0.0000	0.0809			0.0000			0.0000
Off-Road	2.1253	24.0317	18.0829	0.0322		1.0903	1.0903		1.0031	1.0031	0.0000	3,113.8308	3,113.8308	1.0071		3,139.0077
Total	**2.1253**	**24.0317**	**18.0829**	**0.0322**	**0.7397**	**1.0903**	**1.8301**	**0.0809**	**1.0031**	**1.0840**	**0.0000**	**3,113.8308**	**3,113.8308**	**1.0071**		**3,139.0077**

3.7 Recycled Water Storage Ponds - 2020

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	0.3836	13.3000	3.1886	0.0363	0.8252	0.0429	0.8681	0.2261	0.0411	0.2672		3,974.3895	3,974.3895	0.3684		3,983.5994
Vendor	7.8300e-003	0.2253	0.0638	5.3000e-004	0.0135	1.1200e-003	0.0147	3.9000e-003	1.0800e-003	4.9700e-003		57.2924	57.2924	4.6100e-003		57.4077
Worker	0.0416	0.0278	0.2673	7.9000e-004	0.0822	5.8000e-004	0.0827	0.0218	5.3000e-004	0.0223		79.1132	79.1132	2.3800e-003		79.1727
Total	**0.4330**	**13.5531**	**3.5196**	**0.0377**	**0.9208**	**0.0446**	**0.9654**	**0.2518**	**0.0427**	**0.2945**		**4,110.7952**	**4,110.7952**	**0.3754**		**4,120.1799**

3.8 Recycled Water Treatment System - 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	2.2144	22.1219	18.9330	0.0333		1.1651	1.1651		1.0967	1.0967		3,199.8638	3,199.8638	0.7886		3,219.5778
Total	**2.2144**	**22.1219**	**18.9330**	**0.0333**		**1.1651**	**1.1651**		**1.0967**	**1.0967**		**3,199.8638**	**3,199.8638**	**0.7886**		**3,219.5778**

3.8 Recycled Water Treatment System - 2020

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	0.0470	1.3520	0.3826	3.2000e-003	0.0812	6.7500e-003	0.0880	0.0234	6.4500e-003	0.0298		343.7547	343.7547	0.0277		344.4462
Worker	0.0831	0.0555	0.5345	1.5900e-003	0.1643	1.1500e-003	0.1655	0.0436	1.0600e-003	0.0446		158.2264	158.2264	4.7600e-003		158.3455
Total	**0.1301**	**1.4075**	**0.9171**	**4.7900e-003**	**0.2455**	**7.9000e-003**	**0.2534**	**0.0670**	**7.5100e-003**	**0.0745**		**501.9811**	**501.9811**	**0.0324**		**502.7917**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2144	22.1219	18.9330	0.0333		1.1651	1.1651		1.0967	1.0967	0.0000	3,199.8638	3,199.8638	0.7886		3,219.5778
Total	**2.2144**	**22.1219**	**18.9330**	**0.0333**		**1.1651**	**1.1651**		**1.0967**	**1.0967**	**0.0000**	**3,199.8638**	**3,199.8638**	**0.7886**		**3,219.5778**

3.8 Recycled Water Treatment System - 2020

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	0.0470	1.3520	0.3826	3.2000e-003	0.0812	6.7500e-003	0.0880	0.0234	6.4500e-003	0.0298		343.7547	343.7547	0.0277		344.4462
Worker	0.0831	0.0555	0.5345	1.5900e-003	0.1643	1.1500e-003	0.1655	0.0436	1.0600e-003	0.0446		158.2264	158.2264	4.7600e-003		158.3455
Total	**0.1301**	**1.4075**	**0.9171**	**4.7900e-003**	**0.2455**	**7.9000e-003**	**0.2534**	**0.0670**	**7.5100e-003**	**0.0745**		**501.9811**	**501.9811**	**0.0324**		**502.7917**

3.8 Recycled Water Treatment System - 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	2.0104	19.9477	18.6596	0.0333		1.0124	1.0124		0.9527	0.9527		3,200.0974	3,200.0974	0.7837		3,219.6899
Total	**2.0104**	**19.9477**	**18.6596**	**0.0333**		**1.0124**	**1.0124**		**0.9527**	**0.9527**		**3,200.0974**	**3,200.0974**	**0.7837**		**3,219.6899**

3.8 Recycled Water Treatment System - 2021

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	1.2187	0.3467	3.1700e-003	0.0812	2.6700e-003	0.0839	0.0234	2.5500e-003	0.0259		340.5832	340.5832	0.0265		341.2465
Worker	0.0785	0.0505	0.4987	1.5300e-003	0.1643	1.1300e-003	0.1654	0.0436	1.0500e-003	0.0446		152.9095	152.9095	4.3900e-003		153.0193
Total	**0.1167**	**1.2692**	**0.8454**	**4.7000e-003**	**0.2455**	**3.8000e-003**	**0.2493**	**0.0670**	**3.6000e-003**	**0.0706**		**493.4927**	**493.4927**	**0.0309**		**494.2658**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0104	19.9477	18.6596	0.0333		1.0124	1.0124		0.9527	0.9527	0.0000	3,200.0974	3,200.0974	0.7837		3,219.6899
Total	**2.0104**	**19.9477**	**18.6596**	**0.0333**		**1.0124**	**1.0124**		**0.9527**	**0.9527**	**0.0000**	**3,200.0974**	**3,200.0974**	**0.7837**		**3,219.6899**

3.8 Recycled Water Treatment System - 2021

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	1.2187	0.3467	3.1700e-003	0.0812	2.6700e-003	0.0839	0.0234	2.5500e-003	0.0259		340.5832	340.5832	0.0265		341.2465
Worker	0.0785	0.0505	0.4987	1.5300e-003	0.1643	1.1300e-003	0.1654	0.0436	1.0500e-003	0.0446		152.9095	152.9095	4.3900e-003		153.0193
Total	**0.1167**	**1.2692**	**0.8454**	**4.7000e-003**	**0.2455**	**3.8000e-003**	**0.2493**	**0.0670**	**3.6000e-003**	**0.0706**		**493.4927**	**493.4927**	**0.0309**		**494.2658**

3.9 Wastewater Diversion Pump Station and Pipeline - 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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.2228	11.9881	11.6289	0.0167		0.7382	0.7382		0.6791	0.6791		1,619.3011	1,619.3011	0.5237		1,632.3939
Total	**1.2228**	**11.9881**	**11.6289**	**0.0167**	**0.0000**	**0.7382**	**0.7382**	**0.0000**	**0.6791**	**0.6791**		**1,619.3011**	**1,619.3011**	**0.5237**		**1,632.3939**

3.9 Wastewater Diversion Pump Station and Pipeline - 2021

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	0.0128	0.4062	0.1156	1.0600e-003	0.0271	8.9000e-004	0.0280	7.8000e-003	8.5000e-004	8.6500e-003		113.5277	113.5277	8.8400e-003		113.7488
Worker	0.0471	0.0303	0.2992	9.2000e-004	0.0986	6.8000e-004	0.0993	0.0262	6.3000e-004	0.0268		91.7457	91.7457	2.6400e-003		91.8116
Total	**0.0598**	**0.4365**	**0.4148**	**1.9800e-003**	**0.1257**	**1.5700e-003**	**0.1272**	**0.0340**	**1.4800e-003**	**0.0354**		**205.2734**	**205.2734**	**0.0115**		**205.5604**

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	1.2228	11.9881	11.6289	0.0167		0.7382	0.7382		0.6791	0.6791	0.0000	1,619.3011	1,619.3011	0.5237		1,632.3939
Total	**1.2228**	**11.9881**	**11.6289**	**0.0167**	**0.0000**	**0.7382**	**0.7382**	**0.0000**	**0.6791**	**0.6791**	**0.0000**	**1,619.3011**	**1,619.3011**	**0.5237**		**1,632.3939**

3.9 Wastewater Diversion Pump Station and Pipeline - 2021

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	0.0128	0.4062	0.1156	1.0600e-003	0.0271	8.9000e-004	0.0280	7.8000e-003	8.5000e-004	8.6500e-003		113.5277	113.5277	8.8400e-003		113.7488
Worker	0.0471	0.0303	0.2992	9.2000e-004	0.0986	6.8000e-004	0.0993	0.0262	6.3000e-004	0.0268		91.7457	91.7457	2.6400e-003		91.8116
Total	**0.0598**	**0.4365**	**0.4148**	**1.9800e-003**	**0.1257**	**1.5700e-003**	**0.1272**	**0.0340**	**1.4800e-003**	**0.0354**		**205.2734**	**205.2734**	**0.0115**		**205.5604**

3.10 Discharge Pipeline - 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	2.7728	28.2401	17.6006	0.0293		1.5268	1.5268		1.4046	1.4046		2,843.9175	2,843.9175	0.9198		2,866.9120
Total	**2.7728**	**28.2401**	**17.6006**	**0.0293**		**1.5268**	**1.5268**		**1.4046**	**1.4046**		**2,843.9175**	**2,843.9175**	**0.9198**		**2,866.9120**

3.10 Discharge Pipeline - 2021

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	0.0128	0.4062	0.1156	1.0600e-003	0.0271	8.9000e-004	0.0280	7.8000e-003	8.5000e-004	8.6500e-003		113.5277	113.5277	8.8400e-003		113.7488
Worker	0.0471	0.0303	0.2992	9.2000e-004	0.0986	6.8000e-004	0.0993	0.0262	6.3000e-004	0.0268		91.7457	91.7457	2.6400e-003		91.8116
Total	**0.0598**	**0.4365**	**0.4148**	**1.9800e-003**	**0.1257**	**1.5700e-003**	**0.1272**	**0.0340**	**1.4800e-003**	**0.0354**		**205.2734**	**205.2734**	**0.0115**		**205.5604**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.7728	28.2401	17.6006	0.0293		1.5268	1.5268		1.4046	1.4046	0.0000	2,843.917 5	2,843.917 5	0.9198		2,866.912 0
Total	**2.7728**	**28.2401**	**17.6006**	**0.0293**		**1.5268**	**1.5268**		**1.4046**	**1.4046**	**0.0000**	**2,843.917 5**	**2,843.917 5**	**0.9198**		**2,866.912 0**

3.10 Discharge Pipeline - 2021

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	0.0128	0.4062	0.1156	1.0600e-003	0.0271	8.9000e-004	0.0280	7.8000e-003	8.5000e-004	8.6500e-003		113.5277	113.5277	8.8400e-003		113.7488
Worker	0.0471	0.0303	0.2992	9.2000e-004	0.0986	6.8000e-004	0.0993	0.0262	6.3000e-004	0.0268		91.7457	91.7457	2.6400e-003		91.8116
Total	**0.0598**	**0.4365**	**0.4148**	**1.9800e-003**	**0.1257**	**1.5700e-003**	**0.1272**	**0.0340**	**1.4800e-003**	**0.0354**		**205.2734**	**205.2734**	**0.0115**		**205.5604**

3.11 SWRF Startup - 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	0.0000	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**

3.11 SWRF Startup - 2021

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	1.2187	0.3467	3.1700e-003	0.0812	2.6700e-003	0.0839	0.0234	2.5500e-003	0.0259		340.5832	340.5832	0.0265		341.2465
Worker	0.0314	0.0202	0.1995	6.1000e-004	0.0657	4.5000e-004	0.0662	0.0174	4.2000e-004	0.0179		61.1638	61.1638	1.7600e-003		61.2077
Total	**0.0696**	**1.2389**	**0.5462**	**3.7800e-003**	**0.1470**	**3.1200e-003**	**0.1501**	**0.0408**	**2.9700e-003**	**0.0438**		**401.7470**	**401.7470**	**0.0283**		**402.4542**

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	0.0000	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**

3.11 SWRF Startup - 2021

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	1.2187	0.3467	3.1700e-003	0.0812	2.6700e-003	0.0839	0.0234	2.5500e-003	0.0259		340.5832	340.5832	0.0265		341.2465
Worker	0.0314	0.0202	0.1995	6.1000e-004	0.0657	4.5000e-004	0.0662	0.0174	4.2000e-004	0.0179		61.1638	61.1638	1.7600e-003		61.2077
Total	**0.0696**	**1.2389**	**0.5462**	**3.7800e-003**	**0.1470**	**3.1200e-003**	**0.1501**	**0.0408**	**2.9700e-003**	**0.0438**		**401.7470**	**401.7470**	**0.0283**		**402.4542**

3.12 Recycled Water Distribution System - 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	2.7728	28.2401	17.6006	0.0293		1.5268	1.5268		1.4046	1.4046		2,843.917 5	2,843.917 5	0.9198		2,866.912 0
Total	**2.7728**	**28.2401**	**17.6006**	**0.0293**		**1.5268**	**1.5268**		**1.4046**	**1.4046**		**2,843.917 5**	**2,843.917 5**	**0.9198**		**2,866.912 0**

3.12 Recycled Water Distribution System - 2021

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	0.0128	0.4062	0.1156	1.0600e-003	0.0271	8.9000e-004	0.0280	7.8000e-003	8.5000e-004	8.6500e-003		113.5277	113.5277	8.8400e-003		113.7488
Worker	0.0628	0.0404	0.3989	1.2300e-003	0.1314	9.1000e-004	0.1323	0.0349	8.4000e-004	0.0357		122.3276	122.3276	3.5100e-003		122.4155
Total	**0.0755**	**0.4466**	**0.5145**	**2.2900e-003**	**0.1585**	**1.8000e-003**	**0.1603**	**0.0427**	**1.6900e-003**	**0.0444**		**235.8553**	**235.8553**	**0.0124**		**236.1643**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.7728	28.2401	17.6006	0.0293		1.5268	1.5268		1.4046	1.4046	0.0000	2,843.9175	2,843.9175	0.9198		2,866.9120
Total	**2.7728**	**28.2401**	**17.6006**	**0.0293**		**1.5268**	**1.5268**		**1.4046**	**1.4046**	**0.0000**	**2,843.9175**	**2,843.9175**	**0.9198**		**2,866.9120**

3.12 Recycled Water Distribution System - 2021

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	0.0128	0.4062	0.1156	1.0600e-003	0.0271	8.9000e-004	0.0280	7.8000e-003	8.5000e-004	8.6500e-003		113.5277	113.5277	8.8400e-003		113.7488
Worker	0.0628	0.0404	0.3989	1.2300e-003	0.1314	9.1000e-004	0.1323	0.0349	8.4000e-004	0.0357		122.3276	122.3276	3.5100e-003		122.4155
Total	**0.0755**	**0.4466**	**0.5145**	**2.2900e-003**	**0.1585**	**1.8000e-003**	**0.1603**	**0.0427**	**1.6900e-003**	**0.0444**		**235.8553**	**235.8553**	**0.0124**		**236.1643**

3.13 Irrigation System - 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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	2.3565	21.2419	21.0864	0.0312		1.3602	1.3602		1.2722	1.2722		3,005.0267	3,005.0267	0.7360		3,023.4265
Total	**2.3565**	**21.2419**	**21.0864**	**0.0312**	**0.0000**	**1.3602**	**1.3602**	**0.0000**	**1.2722**	**1.2722**		**3,005.0267**	**3,005.0267**	**0.7360**		**3,023.4265**

3.13 Irrigation System - 2021

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	6.3700e-003	0.2031	0.0578	5.3000e-004	0.0135	4.5000e-004	0.0140	3.9000e-003	4.3000e-004	4.3200e-003		56.7639	56.7639	4.4200e-003		56.8744
Worker	0.1255	0.0807	0.7978	2.4500e-003	0.2629	1.8200e-003	0.2647	0.0697	1.6700e-003	0.0714		244.6552	244.6552	7.0300e-003		244.8310
Total	**0.1319**	**0.2838**	**0.8556**	**2.9800e-003**	**0.2764**	**2.2700e-003**	**0.2787**	**0.0736**	**2.1000e-003**	**0.0757**		**301.4191**	**301.4191**	**0.0115**		**301.7054**

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	2.3565	21.2419	21.0864	0.0312		1.3602	1.3602		1.2722	1.2722	0.0000	3,005.0267	3,005.0267	0.7360		3,023.4265
Total	**2.3565**	**21.2419**	**21.0864**	**0.0312**	**0.0000**	**1.3602**	**1.3602**	**0.0000**	**1.2722**	**1.2722**	**0.0000**	**3,005.0267**	**3,005.0267**	**0.7360**		**3,023.4265**

3.13 Irrigation System - 2021

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	6.3700e-003	0.2031	0.0578	5.3000e-004	0.0135	4.5000e-004	0.0140	3.9000e-003	4.3000e-004	4.3200e-003		56.7639	56.7639	4.4200e-003		56.8744
Worker	0.1255	0.0807	0.7978	2.4500e-003	0.2629	1.8200e-003	0.2647	0.0697	1.6700e-003	0.0714		244.6552	244.6552	7.0300e-003		244.8310
Total	**0.1319**	**0.2838**	**0.8556**	**2.9800e-003**	**0.2764**	**2.2700e-003**	**0.2787**	**0.0736**	**2.1000e-003**	**0.0757**		**301.4191**	**301.4191**	**0.0115**		**301.7054**

3.14 Turf Establishment of New Holes - 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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.8179	8.2770	7.7766	0.0115		0.4661	0.4661		0.4288	0.4288		1,111.1103	1,111.1103	0.3594		1,120.0941
Total	**0.8179**	**8.2770**	**7.7766**	**0.0115**	**0.0000**	**0.4661**	**0.4661**	**0.0000**	**0.4288**	**0.4288**		**1,111.1103**	**1,111.1103**	**0.3594**		**1,120.0941**

3.14 Turf Establishment of New Holes - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0628	0.0404	0.3989	1.2300e-003	0.1314	9.1000e-004	0.1323	0.0349	8.4000e-004	0.0357		122.3276	122.3276	3.5100e-003		122.4155
Total	**0.0628**	**0.0404**	**0.3989**	**1.2300e-003**	**0.1314**	**9.1000e-004**	**0.1323**	**0.0349**	**8.4000e-004**	**0.0357**		**122.3276**	**122.3276**	**3.5100e-003**		**122.4155**

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	0.8179	8.2770	7.7766	0.0115		0.4661	0.4661		0.4288	0.4288	0.0000	1,111.1103	1,111.1103	0.3594		1,120.0941
Total	**0.8179**	**8.2770**	**7.7766**	**0.0115**	**0.0000**	**0.4661**	**0.4661**	**0.0000**	**0.4288**	**0.4288**	**0.0000**	**1,111.1103**	**1,111.1103**	**0.3594**		**1,120.0941**

3.14 Turf Establishment of New Holes - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0628	0.0404	0.3989	1.2300e-003	0.1314	9.1000e-004	0.1323	0.0349	8.4000e-004	0.0357		122.3276	122.3276	3.5100e-003		122.4155
Total	**0.0628**	**0.0404**	**0.3989**	**1.2300e-003**	**0.1314**	**9.1000e-004**	**0.1323**	**0.0349**	**8.4000e-004**	**0.0357**		**122.3276**	**122.3276**	**3.5100e-003**		**122.4155**

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	0.0421	0.1841	0.5056	1.7600e-003	0.1610	1.4900e-003	0.1624	0.0430	1.3900e-003	0.0444		178.5230	178.5230	9.4200e-003		178.7585
Unmitigated	0.0421	0.1841	0.5056	1.7600e-003	0.1610	1.4900e-003	0.1624	0.0430	1.3900e-003	0.0444		178.5230	178.5230	9.4200e-003		178.7585

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	4.00	4.00	4.00	11,678	11,678
General Light Industry	22.00	22.00	22.00	64,229	64,229
General Office Building	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	0.00	0.00	0.00		
Total	26.00	26.00	26.00	75,907	75,907

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Heavy Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Heavy Industry	0.598645	0.040929	0.181073	0.106149	0.015683	0.005479	0.016317	0.023976	0.001926	0.001932	0.006016	0.000753	0.001122
General Light Industry	0.598645	0.040929	0.181073	0.106149	0.015683	0.005479	0.016317	0.023976	0.001926	0.001932	0.006016	0.000753	0.001122
General Office Building	0.598645	0.040929	0.181073	0.106149	0.015683	0.005479	0.016317	0.023976	0.001926	0.001932	0.006016	0.000753	0.001122
Other Asphalt Surfaces	0.598645	0.040929	0.181073	0.106149	0.015683	0.005479	0.016317	0.023976	0.001926	0.001932	0.006016	0.000753	0.001122
Unrefrigerated Warehouse-No Rail	0.598645	0.040929	0.181073	0.106149	0.015683	0.005479	0.016317	0.023976	0.001926	0.001932	0.006016	0.000753	0.001122

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	3.1600e-003	0.0287	0.0241	1.7000e-004		2.1800e-003	2.1800e-003		2.1800e-003	2.1800e-003		34.4271	34.4271	6.6000e-004	6.3000e-004	34.6317
NaturalGas Unmitigated	3.1600e-003	0.0287	0.0241	1.7000e-004		2.1800e-003	2.1800e-003		2.1800e-003	2.1800e-003		34.4271	34.4271	6.6000e-004	6.3000e-004	34.6317

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					
General Heavy Industry	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
General Light Industry	126.685	1.3700e-003	0.0124	0.0104	7.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004		14.9041	14.9041	2.9000e-004	2.7000e-004	14.9927
General Office Building	165.945	1.7900e-003	0.0163	0.0137	1.0000e-004		1.2400e-003	1.2400e-003		1.2400e-003	1.2400e-003		19.5230	19.5230	3.7000e-004	3.6000e-004	19.6390
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
Unrefrigerated Warehouse-No Rail	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		**3.1600e-003**	**0.0287**	**0.0241**	**1.7000e-004**		**2.1800e-003**	**2.1800e-003**		**2.1800e-003**	**2.1800e-003**		**34.4271**	**34.4271**	**6.6000e-004**	**6.3000e-004**	**34.6317**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Heavy Industry	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
General Light Industry	0.126685	1.3700e-003	0.0124	0.0104	7.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004		14.9041	14.9041	2.9000e-004	2.7000e-004	14.9927
General Office Building	0.165945	1.7900e-003	0.0163	0.0137	1.0000e-004		1.2400e-003	1.2400e-003		1.2400e-003	1.2400e-003		19.5230	19.5230	3.7000e-004	3.6000e-004	19.6390
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
Unrefrigerated Warehouse-No Rail	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		**3.1600e-003**	**0.0287**	**0.0241**	**1.7000e-004**		**2.1800e-003**	**2.1800e-003**		**2.1800e-003**	**2.1800e-003**		**34.4271**	**34.4271**	**6.6000e-004**	**6.3000e-004**	**34.6317**

6.0 Area Detail

6.1 Mitigation Measures Area

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Mitigated	0.3915	1.0000e-005	1.4600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1300e-003	3.1300e-003	1.0000e-005		3.3400e-003
Unmitigated	0.3915	1.0000e-005	1.4600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1300e-003	3.1300e-003	1.0000e-005		3.3400e-003

6.2 Area by SubCategory

Unmitigated

SubCategory	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Architectural Coating	0.0934					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2979					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.4000e-004	1.0000e-005	1.4600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1300e-003	3.1300e-003	1.0000e-005		3.3400e-003
Total	**0.3915**	**1.0000e-005**	**1.4600e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**3.1300e-003**	**3.1300e-003**	**1.0000e-005**		**3.3400e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0934					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2979					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.4000e-004	1.0000e-005	1.4600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1300e-003	3.1300e-003	1.0000e-005		3.3400e-003
Total	**0.3915**	**1.0000e-005**	**1.4600e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**3.1300e-003**	**3.1300e-003**	**1.0000e-005**		**3.3400e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	1	52	86	0.73	Diesel

Boilers

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

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/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
Equipment Type	lb/day										lb/day					
Emergency Generator - Diesel (75 - 100 HP)	0.1411	0.4602	0.5121	6.8000e-004		0.0208	0.0208		0.0208	0.0208		72.1982	72.1982	0.0101		72.4513
Total	**0.1411**	**0.4602**	**0.5121**	**6.8000e-004**		**0.0208**	**0.0208**		**0.0208**	**0.0208**		**72.1982**	**72.1982**	**0.0101**		**72.4513**

11.0 Vegetation

Appendix B

Cultural Resources Inventory Report

POSITIVE CULTURAL RESOURCES INVENTORY REPORT FOR THE CORONADO MUNICIPAL GOLF COURSE MODERNIZATION PROJECT, CITY OF CORONADO, SAN DIEGO COUNTY, CALIFORNIA

Prepared for:

City of Coronado
1825 Strand Way
Coronado, California 92118
Contact: Tricia Olsen, AICP, Historic Preservation Planner

Prepared by:

Jessica Colston, BA
Angela Pham, MA, RPA

DUDEK
605 Third Street
Encinitas, California 92024

MARCH 2020

Printed on 30% post-consumer recycled material.

Positive Cultural Resources Inventory Report for the Coronado Municipal Golf Course Modernization Project, City of Coronado, San Diego County, California

NATIONAL ARCHAEOLOGICAL DATABASE (NADB) INFORMATION

Authors:	Jessica Colston, B.A., Angela Pham, M.A., RPA,
Firm:	Dudek
Project Proponent:	City of Coronado 1825 Strand Way Coronado, California 92118
Report Date:	2020
Report Title:	Positive Cultural Resources Inventory Report for the Coronado Municipal Golf Course Project, City of Coronado, San Diego County, California
Type of Study:	Cultural Resource Monitoring
New Resources:	N/A
Updated Sites:	N/A
USGS Quads:	Point Loma, CA 1:24,000 (1996)
Acreage:	43.26 acres
Permit Numbers:	State Clearinghouse No. TBD
Keywords:	Positive Cultural Resources Monitoring, Disturbed, CEQA, Coronado, Water System, Municipal Water, Pump Station, Wells, Sewer, CA-SDI-9539, CA-SDI-13073, P-37-03697, Coronado Municipal Golf Course, Coronado Railway, Recycled Water

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APPENDICES

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Acronym/Abbreviation	Definition
AB	Assembly Bill
APE	area of potential effects
CEQA	California Environmental Quality Act
City	City of Coronado
CRHR	California Register of Historical Resources
DPR	Department of Parks and Recreation
NAHC	Native American Heritage Commission
NRHP	National Register of Historic Places
PRC	Public Resources Code
Project	Satellite Water Recycling Facility and Turf Maintenance Facility
SCIC	South Coast Information Center
SWRF	Satellite Water Recycling Facility

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EXECUTIVE SUMMARY

City of Coronado (City) proposes construction of a Satellite Water Recycling Facility (SWRF) and Turf Maintenance Facility (Project), collectively referred to as the SWRF and Turf Complex, at the existing municipal golf course in the southeastern portion of the City. The Project is located in the unsectioned western portion of the Point Loma, CA 7.5-minute series United States Geological Survey quadrangle. The Project would also construct and operate pipelines and pump stations necessary to connect the SWRF to the existing municipal wastewater transmission system and to distribute recycled water to public parks and road medians. The Project also includes the upgrading of several miles of recycled water pipeline owned and operated by the California American Water Company, which are located within existing City streets.

A records search at the South Coast Information Center The record search indicated that nine cultural resources have been previously identified within the Project area of potential effects (APE). Three cultural resources consist of archaeological sites (two historic and one prehistoric), and the remaining six are historic addresses (see Table 2). The record search included a 0.5-mile buffer. The buffer contains a total of 22 registered resources, consisting of 17 historic structures, three prehistoric sparse shell and lithic scatters, one historic trash scatter and one historic shipwreck site. A search of the Historic Resources Inventory resulted in 787 historic addresses identified within the 0.5-mile buffer (Confidential Appendix A).

A sacred lands file search with the Native American Heritage Commission (NAHC) was conducted yielding positive results. Outreach letters to the tribes on the NAHC contact list were sent out and have yet to yield any responses. As government to government correspondence, Assembly Bill 52 consultation is the responsibility of the City. Field survey of the Project APE yielded no new cultural resources.

Of the nine resources located within the Project APE, the six locally significant addresses will be avoided by project design, as the impact area is in the street in front of the structures. The remaining three sites consist of one previously determined not eligible, and two sites no longer extant in the APE. Therefore no significant resources will be impacted by the Project.

The proposed work would involve a significant amount of ground disturbance in areas that have been developed between the 1880s and 1960s, prior to cultural resources management legislature. Monitoring is recommended for all initial ground disturbing activities with the exception of the superficial irrigation/sprinkler installation at Speckles Park, Tidelands Park and the Coronado Municipal Golf Course, as the disturbance will be in recently disturbed contexts due to continuous landscaping efforts. The monitoring archaeologist may reduce the monitoring schedule if the path of impact is clearly in disturbed contexts.

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Positive Cultural Resources Inventory Report for the Coronado Municipal Golf Course Modernization Project, City of Coronado, San Diego County, California

1 PROJECT DESCRIPTION AND LOCATION

City of Coronado (City) plans construction of a Satellite Water Recycling Facility (SWRF) and Turf Maintenance Facility (Project), collectively referred to as the SWRF and Turf Complex, at the existing municipal golf course in the southeastern portion of the city. Besides the facilities on the golf course, the Project would also include the construction and operation of pipelines and pump stations necessary to connect the SWRF to the existing municipal wastewater transmission system and to distribute recycled water to public parks and road medians. The Project also includes the upgrading of several miles of recycled water pipeline owned and operated by the California American Water Company, which are located within existing City streets. Sprinkler/ irrigation lines will be installed at Speckles Park, Tidelands Park, and the Coronado Municipal Golf Course. These lines will be installed approximately one foot below the surface in existing manicured vegetation areas. The City contracted Dudek to initiate the processing of a Mitigated Negative Declaration in preparation for the proposed Project. As a requirement of the Mitigated Negative Declaration, this cultural resources inventory was conducted for the proposed Project. This inventory has been prepared in accordance with the California Environmental Quality Act (CEQA) and City regulations.

The Coronado Municipal Golf Course Modernization Project (Project) is located in the City of Coronado, California. The Project is located in the unsectioned western portion of the Point Loma, CA 7.5-minute series United States Geological Survey quadrangle (Figure 1, Location Map). The Project is situated on the western portion of the Coronado peninsula in public streets (Figure 2, Project APE). The project primarily consists of linear trenches for the installation of new recycled water pipelines in existing city streets on the southern and eastern portions of the civilian component of the City. The Project does not extend onto the Coronado Naval Base. The project will traverse the full length of Orange Ave with a portion of Silver Strand Blvd. The Coronado Municipal Golf Course constitutes the eastern extent of the Project, with Ocean Blvd as the southern extent, terminating at the Coronado Naval Base. Palm Park, along Palm Avenue is the northwestern most point of the Project.

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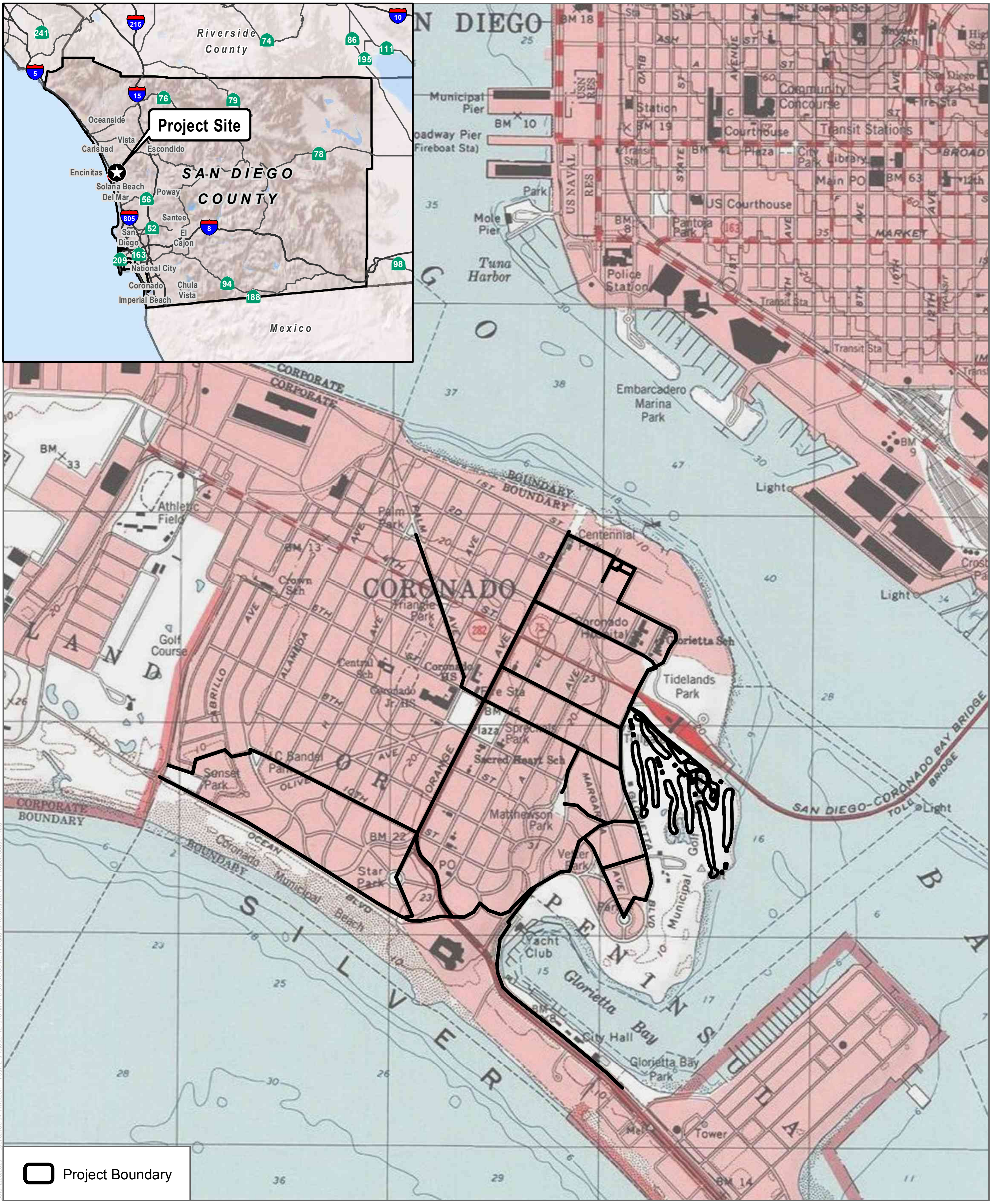

SOURCE: USGS 7.5-Minute Series Point Loma Quadrangle
Township 17S; Range 3W; Sections 10,14,15,16,21,22,23,24,26

DUDEK

0 1,000 2,000 Feet
0 250 500 Meters

FIGURE 1

Project Location

Coronado Municipal Golf Course Project

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SOURCE: City of Coronado 2018, USDA 2016, SANDAG 2017

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FIGURE 2

Project APE

Coronado Golf Course Modernization Project

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1.1 Regulatory Context

1.1.1 State Regulations

CEQA requires that all private and public activities not specifically exempted be evaluated for the potential to impact the environment, including effects to historical resources. Historical resources are recognized as part of the environment under CEQA. It defines historical resources as "any object, building, structure, site, area, or place, which is historically significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California" (Division I, Public Resources Code [PRC] Section 5021.1[b]).

Lead agencies have a responsibility to evaluate historical resources against the California Register criteria prior to making a finding as to a proposed Project's impacts to historical resources. Mitigation of adverse impacts is required if the proposed Project will cause substantial adverse change. Substantial adverse change includes demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired. The CEQA Guidelines provide that a Project that demolishes or alters those physical characteristics of an historical resource that convey its historical significance (i.e., its character-defining features) can be considered to materially impair the resource's significance.

The California Register is used in the consideration of historic resources relative to significance for purposes of CEQA. The California Register includes resources listed in, or formally determined eligible for some California State Landmarks and Points of Historical Interest. Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts), or that have been identified in a local historical resources inventory may be eligible for listing in the California Register and are presumed to be significant resources for purposes of CEQA unless a preponderance of evidence indicates otherwise.

Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (PRC SS5024.1, Title 14 CCR, Section 4852) consisting of the following:

1. It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States; or
2. It is associated with the lives of persons important to local, California, or national history; or
3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values; or

4. It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

CEQA was amended in 2014 through Assembly Bill (AB) 52, which created a new category of "tribal culture resources" that must be considered under CEQA, and applies to all projects that file a Notice of Preparation or notice of negative declaration or mitigated negative declaration on or after July 1, 2015. AB 52 requires lead agencies to provide notice to and begin consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of a Project if that tribe has requested, in writing, to be kept informed of Projects by the lead agency prior to the determination whether a negative declaration, mitigated negative declaration, or environmental impact report will be prepared. If a tribe requests consultation within 30 days upon receipt of the notice, the lead agency must consult with the tribe. The bill also specifies mitigation measures that may be considered to avoid or minimize impacts on tribal cultural resources. Specifically, California PRC Section 21074 provides the following guidance:

(a) Tribal Cultural Resources are either of the following:

  (1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:

    (A) Included or determined to be eligible for inclusion in the California Register of Cultural Resources.

    (B) Included in a local register of cultural resources as defined in subdivision (k) of §5020.1.

  (2) 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 §5024.1. In applying the criteria set forth in subdivision (c) of §5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

(b) A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.

(c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

In the event that Native American human remains or related cultural material are encountered, Section 15064.5(e) of the state CEQA Guidelines (as incorporated from PRC Section 5097.98) and 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 Native American Heritage Commission (NAHC) within 24 hours. The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work, for means of treating, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98 (California Code of Regulations, Title 14; Chapter 3; Article 5; Section 15064.5[e]).

1.1.2 Local Regulations

City of Coronado Historic Resource Code (Chapter 84.10)

4.10.010 Purpose and Intent

The City Council finds as a matter of public policy that the identification, designation, recognition, preservation, enhancement, perpetuation and use of improvements, buildings, structures, objects, monuments, sites, places and natural features within the City that reflect special elements of the City’s architectural, artistic, cultural, educational, economic, social, political, engineering, military history, or other heritage are required in the interest of the health, economic prosperity, cultural enrichment and general welfare of the people. The purpose of this chapter is the following (Ord. 2088 Section 2 [Exh. A], 2018; Ord. 2029 Section 1, 2011; Ord. 2018 Section 4 [Att. C], 2010):

A. Safeguard the heritage of the City and enhance its visual character by providing for the preservation of historic resources representing significant elements of its history;

B. Encourage public knowledge, understanding and appreciation of the City’s past as reflected in such historic resources;

C. Foster civic and neighborhood pride in the beauty and noble accomplishments of its past;

D. Preserve and enhance the City’s historical attractions to residents, tourists, and visitors and serve as a support and stimulus to business and industry;

E. Preserve diverse and harmonious architectural styles and design preferences reflecting phases of the City’s history;

F. Enhance property values and increase economic and financial benefits to the City and its residents and property owners through an active historic recognition and benefits program;

G. Identify as early as possible and resolve conflicts between the preservation of cultural resources and alternative land uses; and

H. Enable owners and lessees of such resources to apply for all financing, tax, land use, and code application benefits permitted by law for such designated historic resources.

84.10.030 Historic Resource and Historic District Designation Criteria

For the purposes of this chapter, a resource may be designated a historic resource by the Historic Resource Commission, and any area within the City may be designated a Historic District by the Historic Resource Commission, if it meets two or more of the criteria set forth in this section and, additionally, must be at least 75 years old or have achieved historic significance within the past 75 years (Ord. 2088 Section 2 [Exh. A], 2018; Ord. 2029 Section 1, 2011; Ord. 2018 Section 4 [Att. C], 2010):

A. It exemplifies or reflects special elements of the City's military, cultural, social, economic, political, aesthetic, or engineering history;

B. It is identified with a person(s) or an event(s) significant in local, State or national history;

C. It possesses distinctive characteristics of an architectural style, and has not been substantially altered;

D. It is representative of the notable work of a builder, designer, architect, artisan or landscape professional;

E. It has been listed on or formally determined eligible for the California Register, as set forth in Section 5024.1 of the California Public Resources Code (as amended from time to time);

F. In the case of Historic Districts, at least 75 percent of the buildings within the proposed district (excluding accessory buildings) shall be contributing resources.

84.10.040 Historic Resource and Historic District Determination of Historic Significance Procedures

A determination of historic significance application shall be filed with the Community Development Department in association with the nomination of a property as a historic resource; or in association with any Project that includes demolition of original features visible from the street right-of-way of any structure that is 75 or more years old (Ord. 2088 Section 2 [Exh. A], 2018; Ord. 2029 Section 1, 2011; Ord. 2025 Section 20, 2011; Ord. 2018 Section 4 [Att. C], 2010).

A Application.

1. A determination of historic significance application involving private property must include the consent of the property owner.
2. A determination of historic significance application for designation of a Historic District must include the consent of 75 percent of the owners of contributing resources within the boundaries of the district.
3. A determination of historic significance application shall be submitted to the Community Development Department on forms provided by the City of Coronado Community Development Department.
4. A determination of historic significance application fee shall be paid at the time of application submittal in accordance with the Community Development Department Fee Schedule.
5. Upon the determination that a determination of historic significance application is complete, the Community Development Department shall forward the application to an unbiased third-party historic consultant for preparation of a historic research report to be considered by the Historic Resource Commission at a noticed public hearing.
6. Upon receipt of the historic research report from the historic research consultant, the Community Development Department shall set the application for public hearing at the next available Historic Resource Commission meeting.

B Historic Resource Commission Hearing.

1. The Community Development Department shall provide notice of the date, place, time and purpose of the hearing at least 10 days prior to the date of the public hearing by posting at City Hall, publication once in a newspaper of general, local circulation, and mailing notice through first class mail to the applicant and private owners of the subject property and all property owners within 300 feet of the subject property.

2. The applicant/property owner(s) or applicant/property owner(s) representative shall attend the public hearing.
3. The Historic Resource Commission shall review the application in reference to the definitions and designation criteria set forth in this chapter.
4. Not later than 21 days following the close of a public hearing on any determination of historic significance application, the Historic Resource Commission shall, by resolution, make a determination on historic significance of the property. The resolution shall also recite the reasons and facts for said determination.
5. The decision of the Commission shall become final 10 calendar days after the adoption of the resolution unless a notice of appeal to the City Council is filed with the City Clerk in accordance with Chapter 1.12 CMC.
6. If the property is designated as a historic resource by the Historic Resource Commission or by the City Council upon appeal, the City Clerk shall cause a notice of designation to be recorded in the Office of the County Recorder.

1.2 Project Personnel

Dudek Archaeologist Angela Pham, M.A., RPA, acted as Principal Investigator for the Project, directed all archaeological survey, and co-authored the report. Archaeologists Jessica Colston co-authored the report. Archaeologist Patrick Hadel and Native American Monitor, Shuluuk Linton, conducted the field survey. All archaeological personnel meet the Secretary of the Interior's Professional Qualifications Standards (PQS, 36 CFR Part 61) for archaeology.

1.3 Report Organization

Following this Project introduction, description, and definition of the Project's area of potential effects (APE), Section 2, Setting, describes the Project's physical setting and provides the relevant cultural/historic context. Section 3, Guidelines for Determining Significance, describes the guidelines for the determination of significance for cultural resources. Section 4 contains the analysis of the Project effects, including the investigatory field methods and tribal correspondence. Section 5 provides the survey results and descriptions of resources. Section 6, Management Considerations, discusses the interpretation of the resources importance and the identification of impacts for management concerns. Finally, Section 7 provides a list of all references cited in this report. Several appendices accompany the report: Confidential Appendix A contains the Confidential SCIC Record Search Results, Appendix B with Tribal Outreach Correspondence, and Appendix C with Project Personnel Resumes.

2 SETTING

2.1 Natural Environment

The Project area is located in a fully developed urban neighborhood in the City of San Diego. All existing vegetation consists of ornamental trees and shrubs and non-native grasses. No native plants appear to be present in the area.

Common animals within this area may include coyote (*Canis latrans*), California ground squirrel (*Spermophilus beecheyi*), striped skunk (*Mephitis mephitis*), Virginia opossum (*Didelphis virginica*), cottontail *(Sylvilagus audubonit)*, black-tailed jackrabbit (*Lepus californicus bennettii*), deer mouse (*Peromyscus maniculatus*) sparrow (*Melospiza melodia*), lesser goldfinch (*Cardeulis psaltria*),common yellowthroat (*Geothlypis trichas*), as well as a number of other species of birds, mammals, reptiles and amphibians.

2.2 Cultural Context

2.2.1 Prehistoric and Ethnohistoric Periods

Evidence for continuous human occupation in the San Diego 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).

Paleoindian (pre-5500 BC)

Evidence for Paleoindian occupation in coastal Southern California is tenuous, especially considering the fact that the oldest dated archaeological assemblages look nothing like the Paleoindian artifacts from the Great Basin. One of the earliest dated archaeological assemblages in coastal Southern California (excluding the Channel Islands) derives from SDI-4669/W-12, in La Jolla. A human burial from SDI-4669 was radiocarbon dated to 9,590–9,920 years before present (95.4% probability) (Hector 2007). 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.

Turning back to coastal Southern California, the fact that some of the earliest dated assemblages are dominated by processing tools runs counter to traditional notions of mobile hunter–gatherers traversing the landscape for highly valued prey. Evidence for the latter—that is, typical Paleoindian assemblages—may have been located along the coastal margin at one time, prior to glacial desiccation and a rapid rise in sea level during the early Holocene (pre-7500 BP) that submerged as much as 1.8 kilometers of the San Diego coastline. If this were true, however, it would also be expected that such sites would be located on older landforms near the current coastline. Some sites, such as SDI-210 along Agua Hedionda Lagoon, contained stemmed points similar in form to Silver Lake and Lake Mojave projectile points (pre-8000 BP) that are commonly found at sites in California's high desert (Basgall and Hall 1990). SDI-210 yielded one corrected radiocarbon date of 8520–9520 BP (Warren et al. 2004). However, sites of this nature are extremely rare and cannot be separated from large numbers of milling tools that intermingle with old projectile point forms.

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 San Diego region that possibly dates between 10,365 and 8200 BC (Warren et al. 2004: 26). Termed San Dieguito (Rogers 1945), assemblages at the Harris site are qualitatively distinct from most others in the San Diego 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 hotly 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 San Diego 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 economically successful as the Archaic strategy. Such a conclusion would fit with other trends in southern California deserts, wherein hunting-related tools are replaced by processing tools during the early Holocene (Hall and Basgall 1993).

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 San Diego region. If San Dieguito is the only recognized Paleoindian component in the San Diego 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 San Diego 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 San Diego 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.

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. In northern San Diego County, the post-AD 1450 period is called the San Luis Rey Complex (Meighan and True 1977), while the same period in southern San Diego County is called the Cuyamaca Complex and is thought to extend from AD 500 until Ethnohistoric times (Meighan 1959). 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 bedrock mortars. Vagaries in the appearance of the bow and arrow and ceramics make the temporal resolution of the San Luis Rey and Cuyamaca complexes difficult. For this reason, the term Late Prehistoric is well-suited to describe the last 1,500 years of prehistory in the San Diego 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. The appearance of mortars and pestles is difficult to place in time because most mortars are on bedrock surfaces; bowl mortars are actually rare in the San Diego region. 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 northern San Diego region did not occur until the San Luis Rey pattern emerged after approximately AD 1450. For southern San Diego County, the picture is less clear. The Cuyamaca Complex is the southern counterpart to the San Luis Rey pattern, however, and is most recognizable after AD 1450 (Hector 1984). Similar to True (1980), Hale (2009) argued that an acorn economy did not appear in the southern San Diego region until just prior to Ethnohistoric times, and that when it did occur, a major shift in social organization followed.

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 San Diego 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 San Diego 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 (Boscana 1846; Fages 1937; Geiger and Meighan 1976; Harrington 1934; Laylander 2000). 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: 32) by recording languages and oral histories within the San Diego region. Kroeber’s 1925 assessment of the impacts of Spanish missionization on local Native American populations supported Kumeyaay traditional cultural continuity (Kroeber 1925: 711):

> San Diego was the first mission founded in upper California; but the geographical limits of its influence were the narrowest of any, and its effects on the natives comparatively light. There seem to be two reasons for this: first, the stubbornly resisting temper of the natives; and second, a failure of the rigorous concentration policy enforced elsewhere.

In some ways this interpretation led to the belief that many California Native American groups simply escaped the harmful effects of contact and colonization all together. This, of course, is untrue. 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. These accounts supported, and were supported by, previous governmental decisions which made San Diego County the location of more federally recognized tribes than anywhere else in the United States: 18 tribes on 18 reservations that cover more than 116,000 acres (CSP 2009).

The traditional cultural boundaries between the Luiseño and Kumeyaay Native American tribal groups have been well defined by anthropologist Florence C. Shipek (1993; summarized by the San Diego County Board of Supervisors 2007:6]:

> In 1769, the Kumeyaay national territory started at the coast about 100 miles south of the Mexican border (below Santo Tomas), thence north to the coast at the drainage divide south of the San Luis Rey River including its tributaries. Using the U.S. Geological Survey topographic maps, the boundary with the Luiseño then follows that divide inland. The boundary continues on the divide separating Valley Center from

> Escondido and then up along Bear Ridge to the 2240 contour line and then north across the divide between Valley Center and Woods Valley up to the 1880-foot peak, then curving around east along the divide above Woods Valley.

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: 34). The distribution of recorded Native American languages has been dispersed as a geographic mosaic across California through six primary language families (Golla 2007: 71). Based on the Project location, the Native American inhabitants of the region would have likely spoken both the Ipai or Tipai language subgroup of the Yuman language group. Ipai and Tipai, spoken respectively by the northern and southern Kumeyaay communities, are mutually intelligible. For this reason, these two are often treated as dialects of a larger Kumeyaay tribal group rather than as distinctive languages, though this has been debated (Laylander 2010; Luomala 1978).

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: 80) A large amount of variation within the language of a group represents a greater time depth then 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: 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.

Golla suggested that there are two language families associated with Native American groups who traditionally lived throughout the San Diego County region. The northern San Diego tribes have traditionally spoken Takic languages that may be assigned to the larger Uto–Aztecan family (Golla 2007: 74). These groups include the Luiseño, Cupeño, and Cahuilla. 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 San Diego tribes, occurring approximately 1500 BC–AD 1000 (Laylander 2010). The majority of Native American tribal groups in southern San Diego region have traditionally spoken Yuman languages, a subgroup of the Hokan Phylum. Golla has suggested that the time depth of Hokan is approximately 8,000 years (Golla 2007: 74). The Kumeyaay tribal communities share a common language group with the Cocopa, Quechan, Maricopa, Mojave, and others to east, and the Kiliwa to the south. The time depth for both the Ipai (north of the San Diego River, from Escondido to Lake Henshaw) and the Tipai (south of the San Diego River, the Laguna Mountains through Ensenada) is approximated to be 2,000 years at the most. Laylander has contended that previous research indicates a divergence between Ipai and Tipai to have occurred approximately AD 600–1200 (Laylander 1985). Despite the distinct linguistic differences between the Takic-speaking tribes to the north, the Ipai-speaking communities in central San Diego, and the Tipai southern Kumeyaay, attempts to illustrate the distinctions between these groups based solely on cultural material alone have had only limited success (Pigniolo 2004; True 1966).

The Kumeyaay generally lived in smaller family subgroups that would inhabit two or more locations over the course of the year. While less common, there is sufficient evidence that there were also permanently occupied villages, and that some members may have remained at these locations throughout the year (Owen 1965; Shipek 1982, 1985; Spier 1923). Each autonomous triblet was internally socially stratified, commonly including higher status individuals such as a tribal head (Kwaaypay), shaman (Kuseyaay), and general members with various responsibilities and skills (Shipek 1982). Higher-status individuals tended to have greater rights to land resources, and owned more goods, such as shell money and beads, decorative items, and clothing. To some degree, titles were passed along family lines; however, tangible goods were generally ceremonially burned or destroyed following the deaths of their owners (Luomala 1978). Remains were cremated over a pyre and then relocated to a cremation ceramic vessel that was placed in a removed or hidden location. A broken metate was commonly placed at the location of the cremated remains, with the intent of providing aid and further use after death. At maturity, tribal members often left to other bands in order to find a partner. The families formed networks of communication and exchange around such partnerships.

Areas or regions, identified by known physical landmarks, could be recognized as band-specific territories that might be violently defended against use by other members of the Kumeyaay. 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 amongst all the Kumeyaay (Loumala 1978). The coastal Kumeyaay 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*, *Mytolis* 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).

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 (Preston 2002). It is possible, but as yet 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. 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 in western San Diego County. 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.

Historical Overview of City of Coronado

In 1602, the Spanish explorer Sebastian Vizcaíno passed the offshore islands and isthmus comprising modern-day Coronado on November 8, a holy day for commemorating four Christian soldiers known as “the Crowned Ones.” A priest on board the Spanish ship named the islands Las Islas de los Coronados in their honor. The land remained relatively untouched for the next 200 years, until May 15, 1846, when Coronado and its sister island, North Island, became the property of Don Pedro Carrillo. The Mexican Governor Pio Pico granted the land to Carrillo on the advent of his marriage to the daughter of Don Juan Bandini, the beloved San Diego patriarch, as a wedding gift. Carrillo used the 4,185-acre land grant, spanning from the border with Rancho de la Nación on the south to the northern edge of North Island, for the next year to graze his cattle. In 1847, the land was sold for $1,000 to Bezar Simmons, an early American settler in Southern California, who utilized the islands for cattle grazing for the next 25 years (Crawford 2010; Peterson 1959; San Diego Union 1938).

Ownership of the peninsula changed several times between the 1850s and 1885, until November 1885 when Elisha Babcock, Hampton Story, and Jacob Gruendike, along with two other minority partners, purchased the peninsula for $110,000. On April 7, 1886, the five business partners filed articles of incorporation for the Coronado Beach Company putting up $100,000 in capitol. The business partners choose the name Coronado, which was derived from the Spanish name for the islands and isthmus. Under the umbrella of the Coronado Beach Company subsidiary companies, such as the Coronado Beach Water, Ferry, Railroad, Brick, and Transfer Companies, were formed to service the island. The entrepreneurs began subdividing the land and selling off lots in order to recoup their money from the purchase of the island (CHS 2019; Crawford 2010; Peterson 1959; San Diego Union 1938).

Elisha Babcock and Hampton Story realized early on the appeal that the island had in both its climate and landscape to attract tourists. The sale of residential lots in 1886 helped fund the building of the Hotel Del Coronado, which was finished in 1888, only 11 months after its groundbreaking. The 1888 Sanborn Map shows very little residential structures on the island, which were primarily concentrated in the northeast portion of the city, close to the ferry house (Sanborn 1888). The Coronado Water Company began to run pipes 3,000 feet under the San Diego

Bay in order to ensure that fresh water would reach the island. A new street railway system and steam-powered ferry were in development at the same time to service both locals and tourists. Only one year after the Hotel Del Coronado opened, John D. Spreckels purchased the Coronado Beach Company for $500,000, which included all of Coronado, North Island, the hotel, ferry, trolley, and water system, aside from already privately owned lots. On December 9, 1890, Coronado residents voted to incorporate, which switched to governance by a local Board of Trustees (CHS 2019; Crawford 2010).

Coronado continued to grow under the ownership of Spreckels and soon became a playground for the American upper class. The 1906 Sanborn Map shows an increase in residential development in the southeast section of the peninsula, running from the ferry dock at the northern end to the Hotel Del Coronado on the southern end (Sanborn 1906). The construction of the Hotel Del encouraged people to build summer homes on the southern end of the city, closer to the beach. From 1900 until 1938, an upscale campground just south of the Hotel Del Coronado named Tent City, which was composed of several hundred tents and thatched roof cottages, became a popular attraction for both locals and visitors. Many families that spent their winters on the island during the early 1900s eventually moved permanently into homes on Coronado (CHS 2019; Crawford 2010). By 1920 development had continued to increase and spread to the western side of the City, including the construction of the Coronado County Club. Subdivided plots of land began to have primarily single-family homes constructed on them, although there was still large amounts of open land available. The City's Board of Trustees governed until 1926 when a city council was formed and a mayor was appointed (CHS 2019; Sanborn 1921).

The City did not suffer as much as the rest of the country during the Great Depression from 1929 to 1939. By the 1930s, Coronado had a population of 5,424 including service members and their families on North Island. Due to Governmental municipal work programs, the presence of the military dollar, and recreational activities that drew people to the city, Coronado continued to grow despite a poor national economy. The growth of single-family homes continued through the 1940s as development stretched further west from the city's center (CHS 2019; Crawford 2010).

North Island, used by guests of the Hotel to hunt for jackrabbits, remained relatively uninhabited until 1911 when famed aviator Glenn Curtiss leased the land for three years from John Spreckels. During that time, Curtiss experimented with his newly developed seaplane; finding the island to be an ideal place for aviation, he opened a flight school that trained pilots. Also during this three-year period, Curtiss convinced the United States Navy to establish their first aircraft squadron on North Island, resulting in it becoming the "Birthplace of Naval Aviation" (Crawford 2010). The Island became a joint Army and Navy base in 1917 after Congresses passed a Condemnation Act to acquire the 1,232-acres for $5 million from John Spreckels. The Army's Rockwell Field occupied one-half of North Island with the naval air station occupying the other half, sometimes creating conflict between the two branches. The City experienced rapid growth beginning in the early 1920s, which only increased with the establishment of the Army and Navy bases on North Island. Military families began to move to the peninsula permanently, becoming a large part of the total population and changing the overall city demographics. In 1935, President Franklin D. Roosevelt visited North Island and made the decision that the Army was to relocate. In the early 1940s, the decision was made to dredge a portion of San Diego Bay, known as the Spanish Bight, to create more acreage for the Navy. This reclaimed land was the eventual location of the Naval Amphibious Base, the only base of this type on the West Coast (CHS 2019; Crawford 2010; Dellinger 2009).

The City's population before World War I was 6,932, but by 1945 the population has risen to 25,382. A 1941 aerial photograph displays a large increase in development from the 1921 Sanborn Map, the landscape specifically to the west and east of Orange Avenue is dominated by residential development the majority of which is set back from the street and small in scale (UCSB 2019). The filling in of the Spanish Bight, in addition to creating more room for the Amphibious Base, also allowed for the construction of more buildings to ease the congestion on the peninsula's limited amount of space (CHS 2019; Crawford 2010)

A long-term goal of the City was to construct a bridge between Coronado and downtown San Diego, which at the time was accessed only by ferry. To accomplish this the San Diego Bay needed to be dredged to build the bridge supports deep enough into the ground for stability. Governor Ronald Reagan dedicated the new bridge on August 2, 1969; it measured a full 2 miles long and 200 feet tall in order to allow Navy ships to pass underneath it (CHS 2019; Crawford 2010). Between 1953 and 1964, historic aerials show the development of the four and a half blocks west of Alameda Boulevard, which up until this point was the last block with residential development before entering open land or land owned by Naval Air Station North Island. These streets running north to south, including Coronado, Balboa, Cabrillo, and Country Club Avenues, are dominated by residential development (NETR 2019).

The opening of the San Diego-Coronado Bridge represented the next step in the island's history. The easy access the bridge granted to both tourists and San Diego locals created a need for higher-density housing than that provided by the existing single-family homes. In 1971, the first towers on Coronado, the Coronado Shores Towers, were completed at 17 stories tall and built on 35 acres of beachfront land once owned by the Hotel Del Coronado. The ten Coronado Shores Towers buildings comprised one of the largest complexes constructed in California and led to Coronado residents voting in 1972 to set a 40-foot height limit within the city, from which the Coronado Shores Towers was exempt (Zuniga 2008). Coronado residents were given the power to officially elect their own mayor in 1972. Despite the continued popularity of Coronado, the population has stayed relatively the same since the 1940s. Consistent with an urbanized community, Coronado has experienced relatively little housing growth since 1990. This is due to the limited amount of space on the island and the lack of vacant land available for new housing construction. The 2010 census recorded a population of 24,697, compared to 25,382 in 1945. The Hotel Del Coronado still plays a prominent role in the City's identity, hosting more than 2 million visitors a year. Tourism continues to be the heart of Coronado's economy and, along with the still-large presence of the Navy, has created a thriving city (CHS 2019; Crawford 2010).

3 GUIDELINES FOR DETERMINING SIGNIFICANCE

According to CEQA (Section 15064.5b), a Project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. CEQA defines a substantial adverse change:

Substantial adverse change in the significance of an historical resource 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.

The significance of an historical resource is materially impaired when a project:

- 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 of Historical Resources (CRHR); or
- 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 Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the 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
- demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its eligibility for inclusion in the CRHR as determined by a lead agency for purposes of CEQA.

Section 15064.5(c) of CEQA applies to effects on archaeological sites and contains the following additional provisions regarding archaeological sites:

- When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource, as defined in subsection (a).
- If a lead agency determines that the archaeological site is an historical resource, it shall refer to the provisions of Section 21084.1 of the Public Resources Code, and this section, Section 15126.4 of the Guidelines, and the limits contained in Section 21083.2 of the Public Resources Code do not apply.
- If an archaeological site does not meet the criteria defined in subsection (a), but does meet the definition of a unique archaeological resource in Section 21083.2 of the Public Resources Code, the site shall be treated in accordance with the provisions of Section

> 21083.2. The time and cost limitations described in Public Resources Code Section 21083.2 (c–f) do not apply to surveys and site evaluation activities intended to determine whether the project location contains unique archaeological resources. If an archaeological resource is neither a unique archaeological nor an historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment. It shall be sufficient that both the resource and the effect on it are noted in the Initial Study or EIR, if one is prepared to address impacts on other resources, but they need not be considered further in the CEQA process.

Section 15064.5 (d) and (e) contain additional provisions regarding human remains. Regarding Native American human remains, paragraph (d) provides:

> When an initial study identifies the existence of, or the probable likelihood, of Native American human remains within the project, a lead agency shall work with the appropriate Native Americans as identified by the Native American Heritage Commission as provided in Public Resources Code SS5097.98. The applicant may develop an agreement for treating or disposing of, with appropriate dignity, the human remains and any items associated with Native American burials with the appropriate Native Americans as identified by the Native American Heritage Commission. Action implementing such an agreement is exempt from: the general prohibition on disinterring, disturbing, or removing human remains from any location other than a dedicated cemetery (Health and Safety Code Section 7050.5); and the requirement of CEQA and the Coastal Act.

4 ANALYSIS OF PROJECT EFFECTS

4.1 Methods

4.1.1 Archival Methods

Dudek conducted a California Historical Resources Information System records search at the South Coast Information Center (SCIC) on January 22, 2020, for the Project and a half-mile radius surrounding the Project. 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 Office of Historic Preservation Archaeological Determinations of Eligibility, California Points of Historical Interest, California Historical Landmarks, and Caltrans Bridge Survey information. Confidential Appendix A provides the confidential results of the records search and a bibliography of prior cultural resources studies.

4.1.2 Field Methods

Dudek Archaeologist Patrick Hadel conducted an intensive pedestrian cultural survey of the proposed Project area on February 14, 2020. Shuluuk Linton, Native American monitor with RedTail Environmental Consulting, was present during survey of Project APE. Areas throughout the Project area were inspected at 10- and 15-meter transects. Archaeological survey exceeded the applicable Secretary of Interior Professional Qualifications Standards for archaeological survey and evaluation. The Project APE was subject to a 70% survey with transects spaced no more than 15 meters apart wherever possible and oriented in cardinal directions. Survey crew was equipped with a GPS receiver. Location-specific photographs were taken using an Apple 3rd Generation IPAD equipped with 8 MP resolution and georeferenced PDF maps of the Project area. Accuracy of this device ranged between 3 meters and 10 meters. Evidence for buried cultural deposits was sought through inspection of natural or artificial erosion exposures and the spoils from rodent burrows.

Documentation of cultural resources complied with the Office of Historic Preservation and Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716-44740) and the California Office of Historic Preservation Planning Bulletin Number 4(a). All sites identified during this inventory were recorded on California Department of Parks and Recreation Form DPR 523 (Series 1/95), using the Instructions for Recording Historical Resources (Office of Historic Preservation 1995).

4.1.3 Native American Participation/Consultation

As part of the process of identifying cultural resources within or near the Project, Dudek contacted the NAHC to request a review of the Sacred Lands Filed. Included in this report are the results of the request for the on-site impacts, the results of which are negative.

A NAHC search of the Sacred Lands File on January 27, 2020 resulted in a positive finding for Traditional Cultural Properties (TCPs) or Sacred Sites that have been identified to be within the Project area, or a surrounding 0.5-mile radius (Confidential Appendix A). Tribal outreach letters were sent to those representatives provided on the NAHC Contact List (Appendix B). One response from Ray Teran of the Viejas Band of Kumeyaay Indians on February 27, 2020, indicating that the Project area has cultural significance to Viejas and requests that a Kumeyaay Cultural Monitor be present for ground disturbing activities. Notification of any changes or developments (inadvertent finds) is also requested. A copy of the letter is enclosed in Appendix B. If any more responses are forthcoming, they will be forwarded to the City.

The proposed Project is also subject to compliance with AB 52 (PRC 21074) which requires consideration of impacts to “tribal cultural resources” as part of the CEQA process. AB 52 requires the City of Coronado, lead agency responsible for CEQA compliance for the proposed Project, 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. 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 the City of Coronado.

Shuluuk Linton, a Native American monitor with RedTail Environmental Consulting, visited all identified cultural sites and assisted in the pedestrian field inventory of the Project site. Mr. Linton did not express any specific concerns relating to the Project.

5 RESULTS

5.1 Archival Review

An SCIC records search conducted on January 17, 2020, resulted in 18 reports that intersect with the project area (Table 1), with 32 in the 0.5-mile buffer (Confidential Appendix A). Two reports provide directly relevant and recent information for this Project: SD-16866 and SD-17232.

Report SD-16866 was produced in 2016 by BCR Consulting and authored by David Brunzell. The report consists of a cultural assessment of the Coronado Municipal Golf Course. This report evaluates the golf course for NRHP status, and concludes that the property does not retain any significance conveying features, and therefore is non-significant under the Section 106 guidelines.

Report SD-17232 is a cultural resources inventory for a project involving underground utility installation and was done in 2017 by BCR Consulting. This report consisted of a record search and pedestrian survey of the proposed project areas. The scope of this report is most similar to the current project, with sections of currently developed streets as the proposed APE. This report found no new cultural resources and recommended monitoring for all ground disturbance on the Coronado Peninsula.

Table 1. Reports Within the Project APE

Report #	Year	Title	Publisher
SD-02528	1991	Negative Archaeological Survey State Route 75, Coronado	Caltrans
SD-02783	1981	Cultural Resource Inventory For The Lamps Mk 111 Naval Air Station, North Island, San Diego County, California	Westec Services
SD-02779	1977	Draft Environmental Impact Report For The Oxford Building, San Diego, California	RECON Environmental
SD-04555	1998	Cultural And Paleontological Review Of The Glorietta Bay Master Plan	Larry Pierson
SD-00497	1978	An Archaeological Survey Report for the Proposed San Diego Bay Route Bikeway (Harbor Drive to Coronado) 112-12-185301.	Caltrans
SD-04424	1994	Historic & Archaeological Resources Protection Plan For Naval Amphibious Base Coronado, California	William Manley Consulting
SD-05841	1991	Negative Archaeological Survey Report Second Addendum-Realignment Of The Curve Of State Route 75 Between Glorietta Place	Martin Rosen
SD-09727	2004	Results of Archaeological Monitoring at the Glorietta Bay Master Plan	Brian F. Smith & Associates
SD-09739	2005	Archaeological Survey Report Coronado Underground Tunnel Report	Tierra Environmental Services
SD-10870		Misc. Papers On Coronado	
SD-11028		Naval Air Station North Island, San Diego, California 92135	

Table 1. Reports Within the Project APE

Report #	Year	Title	Publisher
SD-11210	2007	Archaeological Monitoring For The City Of Coronado Transbay Sanitary Sewer Force Main Project	Tierra Environmental Services
SD-11323	1990	National Register Of Historic Places Registration Form For The U.S. Army Rockwell Field Historic District, Naval Air Station, North Island, San Diego, California 92135	Natural Resources Office
SD-13294	2011	AT&T Site Ss0115 Lte Optimal Coronado 8th Street Rite Aid 836 Orange Avenue Coronado, San Diego County, California 92118	ACE Environmental, LLC
SD-16886	2016	Cultural Resources Assessment Of The Coronado Golf Project, Coronado, San Diego County, California (BCR Consulting Project No. TRF1551)	BCR Consulting LLC
SD-17047	2017	Historic Research Report For The Sacred Heart Catholic Church, City Of Coronado APNs 536-470-26 AND -27	Brian F. Smith and Associates, Inc.
SD-17232	2017	San Diego 55 Fiber Project, San Diego County, California (BCR Consulting Project No. SYN1628)	BCR Consulting LLC
SD-17499	2017	Letter Report: ETS 34695 - Cultural Resources Monitoring For Pole P1926671603 Replacement, 5th Street, Coronado, California - IO 7011102	ICF

The record search indicated that nine cultural resources have been previously identified within the Project APE. Three cultural resources consist of archaeological sites (two historic and one prehistoric), and the remaining six are historic addresses (Table 2). The record search included a 0.5-mile buffer. The buffer contains a total of 22 registered resources, consisting of 17 historic structures, three prehistoric sparse shell and lithic scatters, one historic trash scatter and one historic shipwreck site. A search of the Historic Resources Inventory resulted in 787 historic addresses identified within the 0.5-mile buffer (Confidential Appendix A).

Table 2. Resources Within Project Research Area

Primary	Trinomial	Period	Description	CRHP Eligibility	Intersect?
P-37-009539	SDI-009539	Prehistoric	Lithic and artifact scatter	Potentially Eligible	YES
P-37-013073	SDI-013073	Historic	Coronado Railroad	Potentially Eligible	YES
P-37-036797		Historic	Coronado Municipal Golf Course	Not Eligible	YES
		Historic	Address-526 GLORIETTA BLVD	Locally Listed	YES
		Historic	Address-667 OCEAN BLVD	Locally Listed	YES
		Historic	Address-816 SAN LUIS REY AV	Locally Listed	YES
		Historic	Address-1000 G AV	Locally Listed	YES
		Historic	Address-1014 FLORA AV	Locally Listed	YES
		Historic	Address-1020 ISABELLA AV	Locally Listed	YES
P-37-000065	SDI-000065	Prehistoric	Scattered shell heap without integrity.	Potentially Eligible	NO

Table 2. Resources Within Project Research Area

Primary	Trinomial	Period	Description	CRHP Eligibility	Intersect?
P-37-000066	SDI-000066	Prehistoric	Small shell and charcoal scatter near an oil tank.	Potentially Eligible	NO
P-37-009180	SDI-009180	Prehistoric	Shell and lithic scatter	Potentially Eligible	NO
P-37-011069	SDI-011069	Historic	Shipwreck site of Monte Carlo in 1936	Potentially Eligible	NO
P-37-016282		Historic	San Diego-Coronado Bay Bridge	CR Listed	NO
P-37-016683		Historic	Commercial building at 836 Orange Ave	Potentially Eligible	NO
P-37-018263		Historic	Commercial building at 371 Eighth Ave	CR Listed	NO
P-37-020191		Historic	Residential building at 98 Kingston Ct	Potentially Eligible	NO
P-37-020227		Historic	Commercial building at 935 B Avenue	Potentially Eligible	NO
P-37-020255		Historic	Residential building at 370 B Avenue	Potentially Eligible	NO
P-37-020287		Historic	Residential building at 366 D Avenue	Potentially Eligible	NO
P-37-020529		Historic	Residential building at 348 A Avenue	Potentially Eligible	NO
P-37-020530		Historic	Residential building at 352 A Avenue	Potentially Eligible	NO
P-37-020552		Historic	Residential building at 300 B Avenue	Potentially Eligible	NO
P-37-020558		Historic	Residential building at 376 B Avenue	Potentially Eligible	NO
P-37-020559		Historic	Residential building at 376 B Avenue	Potentially Eligible	NO
P-37-020646		Historic	Residential building at 400 B Avenue	Potentially Eligible	NO
P-37-021116		Historic	Residential building at 353-367 Orange Avenue	Potentially Eligible	NO
P-37-021159		Historic	Residential building at 320 Pomona Avenue	Potentially Eligible	NO
P-37-028475		Historic	Industrial building at 330 8th Avenue	Potentially Eligible	NO
P-37-028978	SDI-018583	Historic	Trash scatter with cement walkway and wooden piers	Potentially Eligible	NO
P-37-032595		Historic	Hotel Del Coronado	CR Listed	NO

P-37-009539 (CA-SDI-9539)

Resource is a prehistoric artifact scatter found in the median in front of Hotel Del Coronado. The site is located in the center divider of the roadway, between Strand Way and Pomona Avenue. The site was recorded as consisting of lithic debitage and some simple flake tools. This resources was recorded in 1982 by Marc Stein as measuring 4 meters by 100 meters long. This site has been largely disturbed (an estimated 80%) and could potentially represent a secondary deposit (Stein 1982). This resource was not evaluated for NRHP/CRHP significance.

P-37-013073 (CA-SDI-13073)

This resource is a segment of the Coronado Railroad, no longer in service, consisting of segments of intact rail with intermittent tracks and is in overall disrepair. The resource was originally recorded by Don Laylander in March of 1993. The total of Coronado railroad was built in the late 1880s. The route has also been called the Coronado Belt Line, Coronado Railroad, San Diego Southern, San Diego & Southeastern, San Diego & Arizona-Southern Pacific Lines, A.T.&S.F. – San Diego and Arizona Eastern. Sections of this resource were updated in 2000 by Andrew Pigniolo, with small sections of tracks still present but in poor repair along the Otay river, and Bayshore Bikeway on the mainland. This resource has not been previously evaluated for NRHP/CRHP significance.

P-37-036797 Coronado Municipal Golf Course

This resources is the municipal golf course which was built originally in 1959 with continuous updates and upgrades every decade up to 2004, where the entire course was redesigned. The golf course was recorded as a historic property by Kara Brunzell in 2016. Due to the lack of integrity the resources was recommended as not eligible for the NRHP.

5.2 Aerial Imagery Analysis

A review of historic aerial imagery for Coronado Peninsula extends back to 1953 (NETR 2019) with photos present from 1953, 164, 1966, 1972, 1980, 1989, 1994, 1996, 2002, 2003, 2005, 2009, 2010, 2012, 2014, and 2016. Historic topographic maps consulted were from 1904, 19908, 1911, 1915, 1920, 1928, 1932, 1941, 1942, 1955, 1960, 1967, 1970, 1978, 1986, 1994, 2001, 2012, 2015, and 2018. The aerial imagery showed that for the vast majority of the Project area, the current street alignment and construction was in place by the earliest aerial image in 1953. The earlier historical topographic maps detail the process of expansion of the beach areas on the eastern side of the peninsula starting as early as 1941 and completed by 1967.

5.3 Survey Results

The intensive pedestrian survey conducted February 14, 2020, identified no new cultural resources within the current APE limits. Visibility was partially obscured by vegetation and landscaping, allowing for less than one-third of the ground surface to be viewed in many areas.

Site relocation efforts for P-37-009359 (CA-SDI-9539) and the P-37-013073 (CA-SDI-13073) were part of the intensive pedestrian survey. Both sites have been completely disturbed from surface impacts. In the case of the prehistoric site, P-37-009359 (CA-SDI-9539), the area was recorded as being located in a road median, and has since been continually manicured and maintained. The survey found no surface expression of this site and over 90% of the recorded polygon has been paved. A review of the historic topographic maps shows that the site would have been located between the Coronado Railway alignment on its eastern border, and Glorietta Blvd on its western side at least as early as 1904. Pomona Avenue was added along the railway alignment through the western portion of the site between 1941 and 1942. Buildings on the west end of the site are erected between 1964 and 1966. Between 1966 and1972 the surrounding area has been fully developed into the contemporary arrangement seen today. As part of the development push seen by 1972, a small concrete walking path is placed on the western end of the site, further reducing the remaining eastern exposure. The eastern exposure is seen to be in continual vegetation change from 1972 through 2016.

The Coronado Railway alignment, P-37-013073 (CA-SDI-13073), was not relocated during the current survey effort. The resources boundary has been completely paved over within the Project APE. A review of the aerial imagery shows the railway alignment present on historic topographic maps at least as early as 1904. The railway becomes shortened between the 1942 and 1955 maps, no longer extending from the southeast corner of the peninsula to the northern end, but halting at the intersection of 10th Street and Glorietta Blvd. Between 1986 and 1994 the alignment is removed entirely from the topographic maps of the Coronado Peninsula.

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6 MANAGEMENT CONSIDERATIONS

6.1 Resource Importance

This inventory identified nine cultural resources within the Project APE. Based on the current Project design, the six historic addresses identified within the Project APE will be avoided by Project activities, therefore will not be discussed in this section. P-37-037073, the Coronado Municipal Golf Course, was evaluated under Section 106 due to its construction date in 1957 and designed by Jack Doray, an influential golfer of the 1920s and 1930s. The report by BCR Consulting in 2017, outlines the multiple changes to the landscaping, course alignment and clubhouse alterations undergone between its construction and 2017. This analysis determined that the golf course lacked the integrity of its original design and was not eligible for listing on the NRHP or CRHR.

Site P-37-009539 was revisited as part of the intensive pedestrian survey. The resource appeared to be completely paved over with only a couple manicured patched of vegetation extant. No evidence of cultural materials were identified within or adjacent to the recorded boundary of P-37-009539. It appears that the site was destroyed primarily during the early 1880’s during the construction of the Coronado Railway, and further disturbed through the development of the 1960s.

The portion of P-37-013073 that is intersected by the Project was revisited during the survey. No evidence of the railroad alignment or other associated features were identified within the Project research area, and was likely destroyed between 1986 and 1994 per the topographic maps.

6.2 Impact Analysis

This inventory identified nine cultural resources within Project APE. Six of these resources are historic addresses located along the underground water pipe alignment. Though these addresses are within the Project APE, they are outside the disturbance limits and will be avoided by Project impacts.

The prehistoric site P-37-009539 (CA-SDI-9539) is located in the direct path of one of the proposed recycled water supply pipelines. The Project alignment runs under Pomona Avenue with the installation of new water pipes at least 6-ft below the road surface, with a trench width of no more than 6-ft. This alignment will cut through the eastern portion of the mapped site boundary. At the time the site was recorded in 1982, major impacts for both Pomona Ave and Glorietta had already taken place and noted that the majority of the site was likely destroyed to the point of possibly being entirely a secondary deposit. Since that time multiple landscaping shifts and maintenance efforts have reshaped the remaining surface of the site. These impacts reduce the possibility of intact subsurface deposits.

The segment of the Coronado Railway P-37-013073 (CA-SDI-13073) which intersects the Project recycled water pipeline alignment under Pomona Ave has been destroyed with the construction of Pomona Ave and Silver Strand Rd. The Project does not intersect any of the significance carrying elements of this resource, which are located outside of the Project area, therefore the Project will have no impact on P-37-013073 (CA-SDI-13073).

The Coronado Municipal Golf Course (P-37-036797) located is within the Project's disturbance limits. This resource was previously evaluated and was given the NRHP status code of 6Z, not eligible for the NRHP/CRHP. Therefore any changes to the golf course would result in a finding of no effect under CEQA.

6.3 Recommendations

Based on the current Project design, no known significant cultural resources will be impacted as a result of the proposed Project's ground disturbing activities. This cultural resources inventory identified eight historical/built environment resources and one prehistoric archaeological resource within the Project APE. The eight historical resources will either be avoided by Project impacts, are no longer extant within the Project APE, or have been previously determined not eligible. The Prehistoric resource, P-37-009539 (CA-SDI-9539), was found to be completely developed and was previously postulated to be a secondary deposit. It is unlikely that intact archaeological deposits are present.

The potential for unknown significant prehistoric and historic archaeological resources to exist within the Project site is low. However, there is an increased possibility of encountering secondary archaeological deposits within or adjacent to P-37-009539 (CA-SDI-9539) during the proposed Project's ground disturbing activities. A significant portion of the work will be conducted under Orange Ave, a historically significant route for the trolley system which supported commerce on the peninsula. The positive finding by the NAHC Sacred Lands File increases the potential for archaeological resources. Therefore, in order to mitigate potential impacts to unidentified archaeological resources, Dudek recommends archaeological and Native American monitoring for all initial Project ground disturbance. Superficial trenching for sprinkler lines in the municipal parks and the golf course will not require monitoring, as these are shallow and within contemporary disturbance areas. The construction on the Coronado Municipal Golf Course will also not require monitoring, as the entire golf course was built on imported fill in the 1960s.

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APPENDIX A
(CONFIDENTIAL)

SCIC Record Search Results

APPENDIX B

NAHC Results and Tribal Correspondence

Jessica Colston

From: Jessica Colston
Sent: Monday, January 27, 2020 1:53 PM
To: nahc@nahc.ca.gov; Matthew DeCarlo
Subject: NAHC Sacred Lands File Search Request for Coronado Municipal Golf Course Dudek PN#12461
Attachments: Record_Search Map.pdf; Sacred Lands File Contact Form-Coronado Municipal Golf Course Modernization.pdf

Dear NAHC Staff,

Please see the attached request form and map for a Sacred Lands Record search.

Thank you, and have a great day!

Jessica F. Colston
Archaeologist

DUDEK
859 Second St.
Encinitas, CA 92024
C: 760.815.6642

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95501
(916) 373-3710
(916) 373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: Coronado Municipal Golf Course Modernization Project - Dudek No. 12461

County: San Diego

USGS Quadrangle

Name: Point Loma, CA

Township: 17S Range: 3W Section(s): 10, 14,15, 16, 21, 22, 23, 24, 26

Company/Firm/Agency:

Dudek

Contact Person: Jessica Colston

Street Address: 605 Third Street

City: Encinitas, CA Zip: 92024

Phone: (760) 815-6642 Extension:

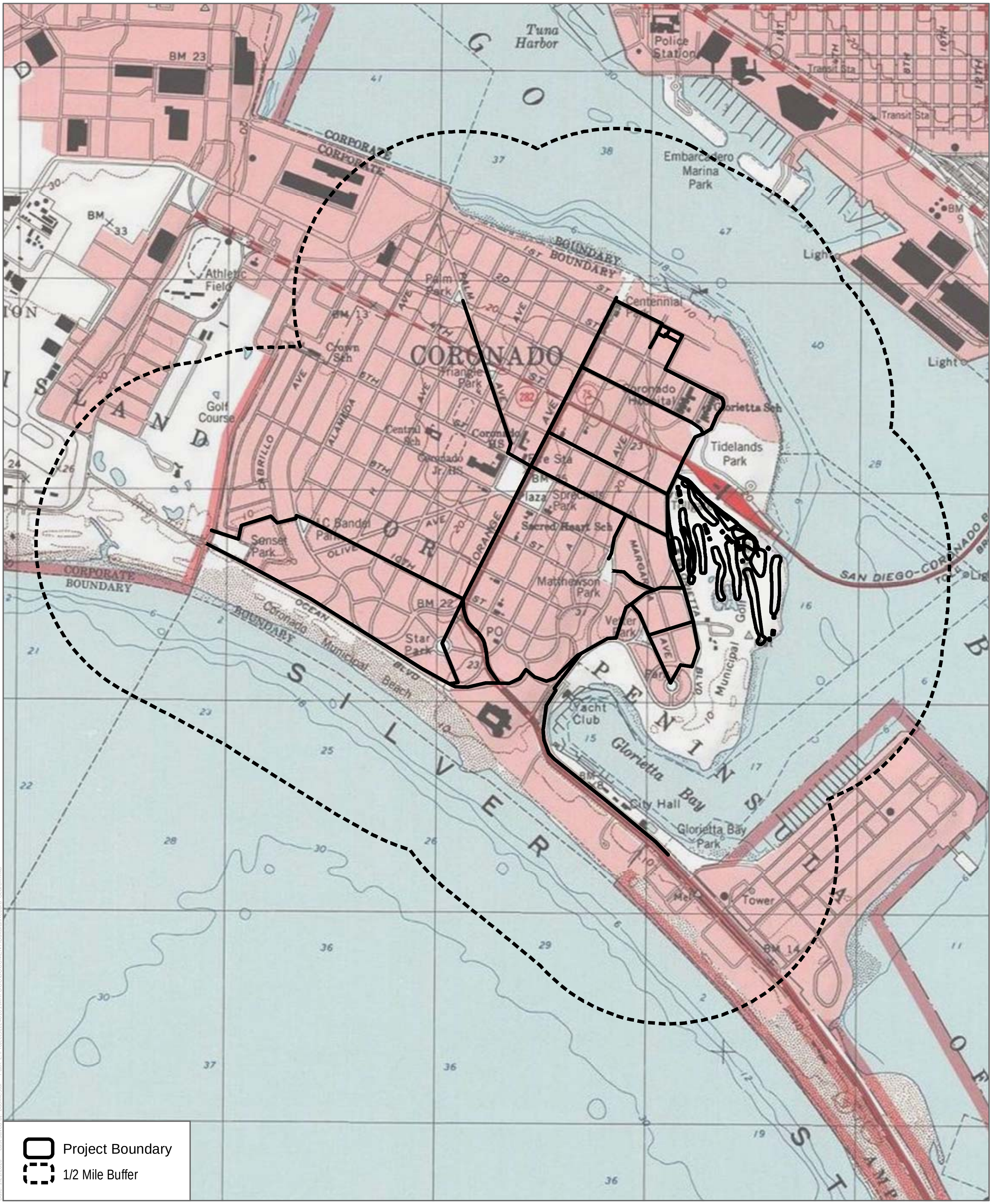
Fax:

Email: jcolston@dudek.com

Project Description:

The project entails construction of a Satellite Water Recycling Facility (SWRF) and Turf Maintenance Facility (TMF), collectively referred to as the SWRF and Turf Complex, at the existing municipal golf course in the southeastern portion of the city. The project would also construct and operate pipelines and pump stations necessary to connect the SWRF to the existing municipal wastewater transmission system and to distribute recycled water to public parks and road medians. The project also includes the upgrading of several miles of recycled water pipeline owned and operated by the California American Water Company, which are located within existing City streets.

☑ Project Location Map is attached



SOURCE: USGS 7.5-Minute Series Point Loma Quadrangle
Township 17S; Range 3W; Sections 10,14,15,16,21,22,23,24,26

0 1,000 2,000 Feet
0 250 500 Meters

Records Search

Coronado Municipal Golf Course Project

Jessica Colston

From: Quinn, Steven@NAHC <Steven.Quinn@nahc.ca.gov>
Sent: Tuesday, February 11, 2020 7:41 AM
To: Jessica Colston
Subject: Coronado Municipal Golf Course Modernization Project
Attachments: SLFYesCoronadoMuni 2.11.2020.pdf; CoronadoMuni 2.11.2020.pdf

Good Morning,

Attached is the response to the project referenced above. If you have any additional questions, please feel free to contact our office email at nahc@nahc.ca.gov.

Regards,

Steven Quinn
Native American Heritage Commission
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Steven.Quinn@nahc.ca.gov
Direct Line: (916) 573-1033
Office: (916) 373-3710

NATIVE AMERICAN HERITAGE COMMISSION

February 11, 2020

Jessica Colston
Dudek

Via Email to: jcolston@dudek.com

Re: Coronado Municipal Golf Course Modernization Project, San Diego County

Dear Ms. Colston:

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 Kumeyaay Cultural Repatriation Committee via phone at (760) 803-5694. 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

Steven Quinn
Associate Governmental Program Analyst

Attachment

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

Native American Heritage Commission
Native American Contact List
San Diego County
2/11/2020

Barona Group of the Capitan Grande
Edwin Romero, Chairperson
1095 Barona Road — Diegueno
Lakeside, CA, 92040
Phone: (619) 443 - 6612
Fax: (619) 443-0681
cloyd@barona-nsn.gov

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

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

Ewiiaapaayp Band of Kumeyaay Indians
Robert Pinto, Chairperson
4054 Willows Road — Diegueno
Alpine, CA, 91901
Phone: (619) 445 - 6315
Fax: (619) 445-9126
wmicklin@leaningrock.net

Iipay Nation of Santa Ysabel
Clint Linton, Director of Cultural Resources
P.O. Box 507 — Diegueno
Santa Ysabel, CA, 92070
Phone: (760) 803 - 5694
cjlinton73@aol.com

Iipay Nation of Santa Ysabel
Virgil Perez, Chairperson
P.O. Box 130 — Diegueno
Santa Ysabel, CA, 92070
Phone: (760) 765 - 0845
Fax: (760) 765-0320

Inaja-Cosmit Band of Indians
Rebecca Osuna, Chairperson
2005 S. Escondido Blvd. — Diegueno
Escondido, CA, 92025
Phone: (760) 737 - 7628
Fax: (760) 747-8568

Jamul Indian Village
Erica Pinto, Chairperson
P.O. Box 612 — Diegueno
Jamul, CA, 91935
Phone: (619) 669 - 4785
Fax: (619) 669-4817
epinto@jiv-nsn.gov

Kwaaymii Laguna Band of Mission Indians
Carmen Lucas,
P.O. Box 775 — Kwaaymii
Pine Valley, CA, 91962 — Diegueno
Phone: (619) 709 - 4207

La Posta Band of Diegueno Mission Indians
Javaughn Miller, Tribal Administrator
8 Crestwood Road — Diegueno
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
jmiller@LPtribe.net

La Posta Band of Diegueno Mission Indians
Gwendolyn Parada, Chairperson
8 Crestwood Road — Diegueno
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
LP13boots@aol.com

Manzanita Band of Kumeyaay Nation
Angela Elliott Santos, Chairperson
P.O. Box 1302 — Diegueno
Boulevard, CA, 91905
Phone: (619) 766 - 4930
Fax: (619) 766-4957

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 Coronado Municipal Golf Course Modernization Project, San Diego County.

Native American Heritage Commission
Native American Contact List
San Diego County
2/11/2020

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

San Pasqual Band of Diegueno Mission Indians
John Flores, Environmental Coordinator
P. O. Box 365 — Diegueno
Valley Center, CA, 92082
Phone: (760) 749 - 3200
Fax: (760) 749-3876
johnf@sanpasqualtribe.org

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

Sycuan Band of the Kumeyaay Nation
Kristie Orosco, Kumeyaay Resource Specialist
1 Kwaaypaay Court — Kumeyaay
El Cajon, CA, 92019
Phone: (619) 445 - 6917

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

Viejas Band of Kumeyaay Indians
John Christman, Chairperson
1 Viejas Grade Road — Diegueno
Alpine, CA, 91901
Phone: (619) 445 - 3810
Fax: (619) 445-5337

Viejas Band of Kumeyaay Indians
Ernest Pingleton, Tribal Historic Officer, Resource Management
1 Viejas Grade Road — Diegueno
Alpine, CA, 91901
Phone: (619) 659 - 2314
epingleton@viejas-nsn.gov

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

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DUDEK

MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

February 12, 2020

Mr. John Christman, Chairperson
Viejas Band of Kumeyaay Indians
1 Viejas Grade Rd.
Alpine, CA 91901

Subject: Information Request for the Coronado Municipal Golf Course Modernization Project, Escondido, California

Dear Mr. Christman,

Dudek has been contracted to perform a Cultural resources inventory for City of Coronado (City), who proposes construction of a Satellite Water Recycling Facility (SWRF) and Turf Maintenance Facility (TMF), collectively referred to as the SWRF and Turf Complex, at the existing municipal golf course in the southeastern portion of the city. The project would also construct and operate pipelines and pump stations necessary to connect the SWRF to the existing municipal wastewater transmission system and to distribute recycled water to public parks and road medians. The project also includes the upgrading of several miles of recycled water pipeline owned and operated by the California American Water Company, which are located within existing City streets.

The Native American Heritage Commission conducted a Sacred Lands file search. No Native American cultural resources were identified within a one-half mile distance of the proposed project area. I am writing as part of the consultation 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.

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

Respectfully,

Jessica Colston

Jessica Colston, B.A.
Archaeologist
Phone: (760) 815-6642
Email: jcolston@dudek.com

Attachments:
Figure 1. Project location map.

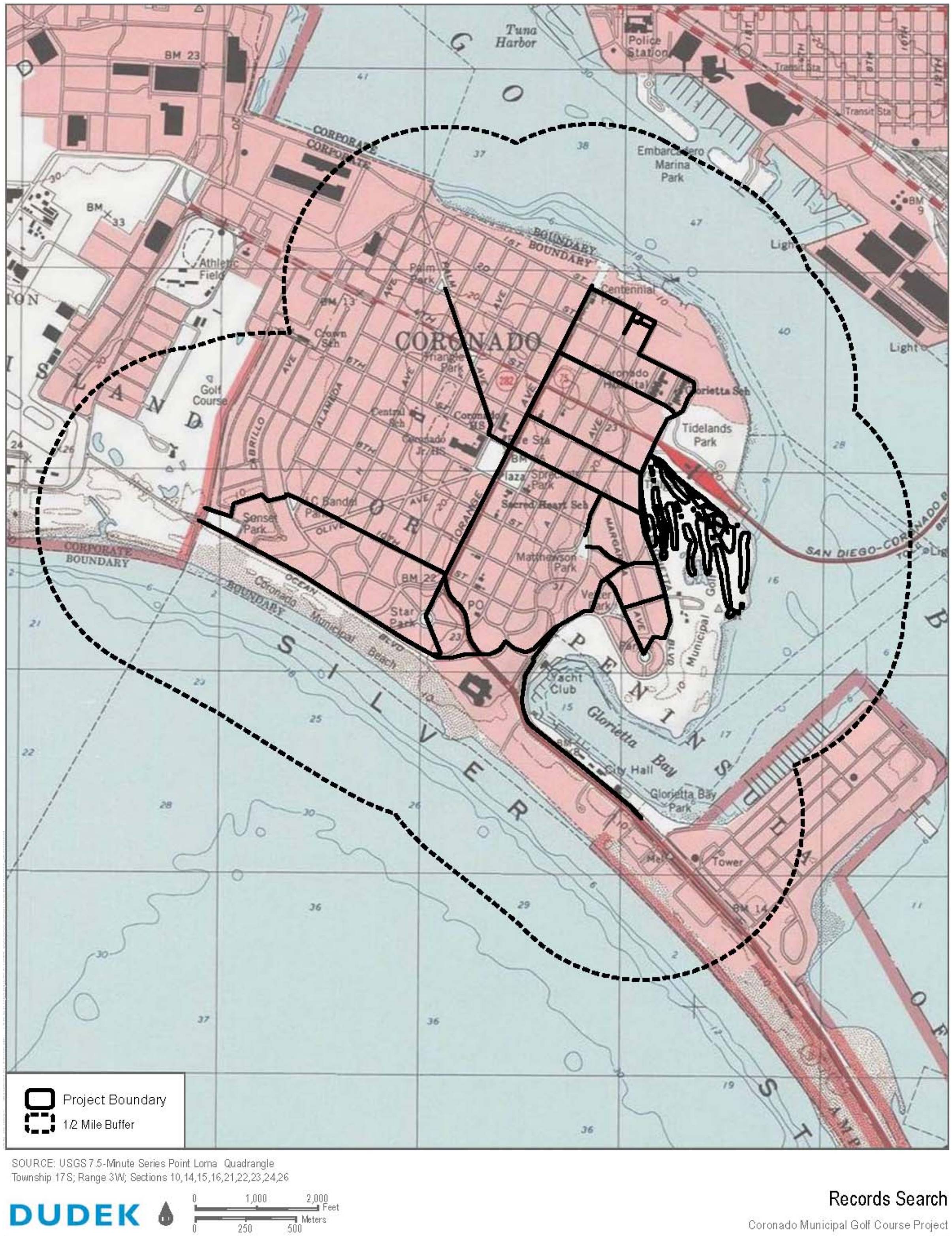

Figure 1. Regional map of project location

DUDEK

MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

February 12, 2020

Mr. John Flores, Environmental Coordinator
San Pasqual Band of Diegueno Mission Indians
P.O. Box 365
Valley Center, CA 92082

Subject: Information Request for the Coronado Municipal Golf Course Modernization Project, Escondido, California

Dear Mr. Flores,

Dudek has been contracted to perform a Cultural resources inventory for City of Coronado (City), who proposes construction of a Satellite Water Recycling Facility (SWRF) and Turf Maintenance Facility (TMF), collectively referred to as the SWRF and Turf Complex, at the existing municipal golf course in the southeastern portion of the city. The project would also construct and operate pipelines and pump stations necessary to connect the SWRF to the existing municipal wastewater transmission system and to distribute recycled water to public parks and road medians. The project also includes the upgrading of several miles of recycled water pipeline owned and operated by the California American Water Company, which are located within existing City streets.

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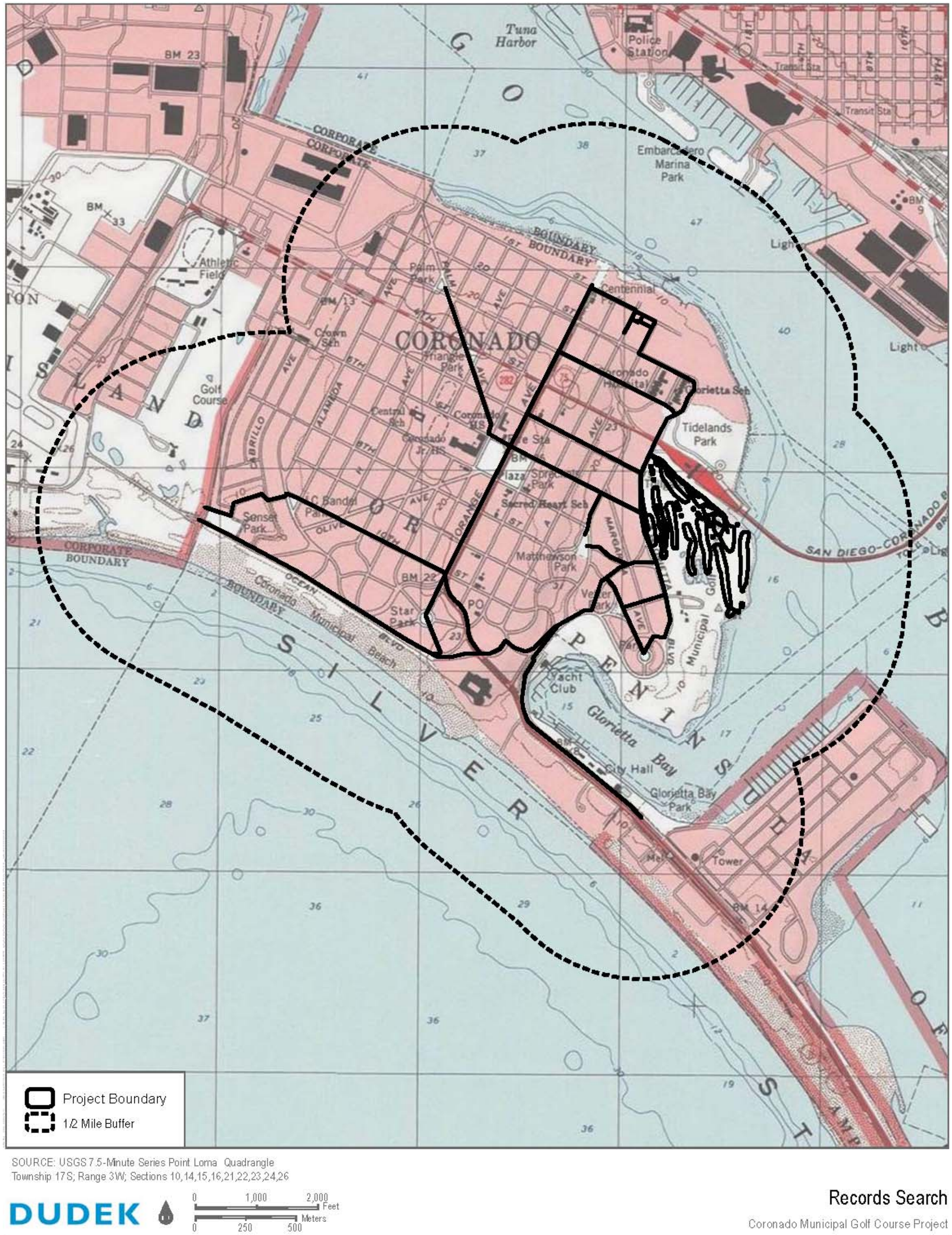

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February 12, 2020

Mr. Michael Garcia, Vice Chairperson
Ewiiaapaayp Tribe
4054 Willows Road
Alpine, CA 91901

Subject: Information Request for the Coronado Municipal Golf Course Modernization Project, Escondido, California

Dear Mr. Garcia,

Dudek has been contracted to perform a Cultural resources inventory for City of Coronado (City), who proposes construction of a Satellite Water Recycling Facility (SWRF) and Turf Maintenance Facility (TMF), collectively referred to as the SWRF and Turf Complex, at the existing municipal golf course in the southeastern portion of the city. The project would also construct and operate pipelines and pump stations necessary to connect the SWRF to the existing municipal wastewater transmission system and to distribute recycled water to public parks and road medians. The project also includes the upgrading of several miles of recycled water pipeline owned and operated by the California American Water Company, which are located within existing City streets.

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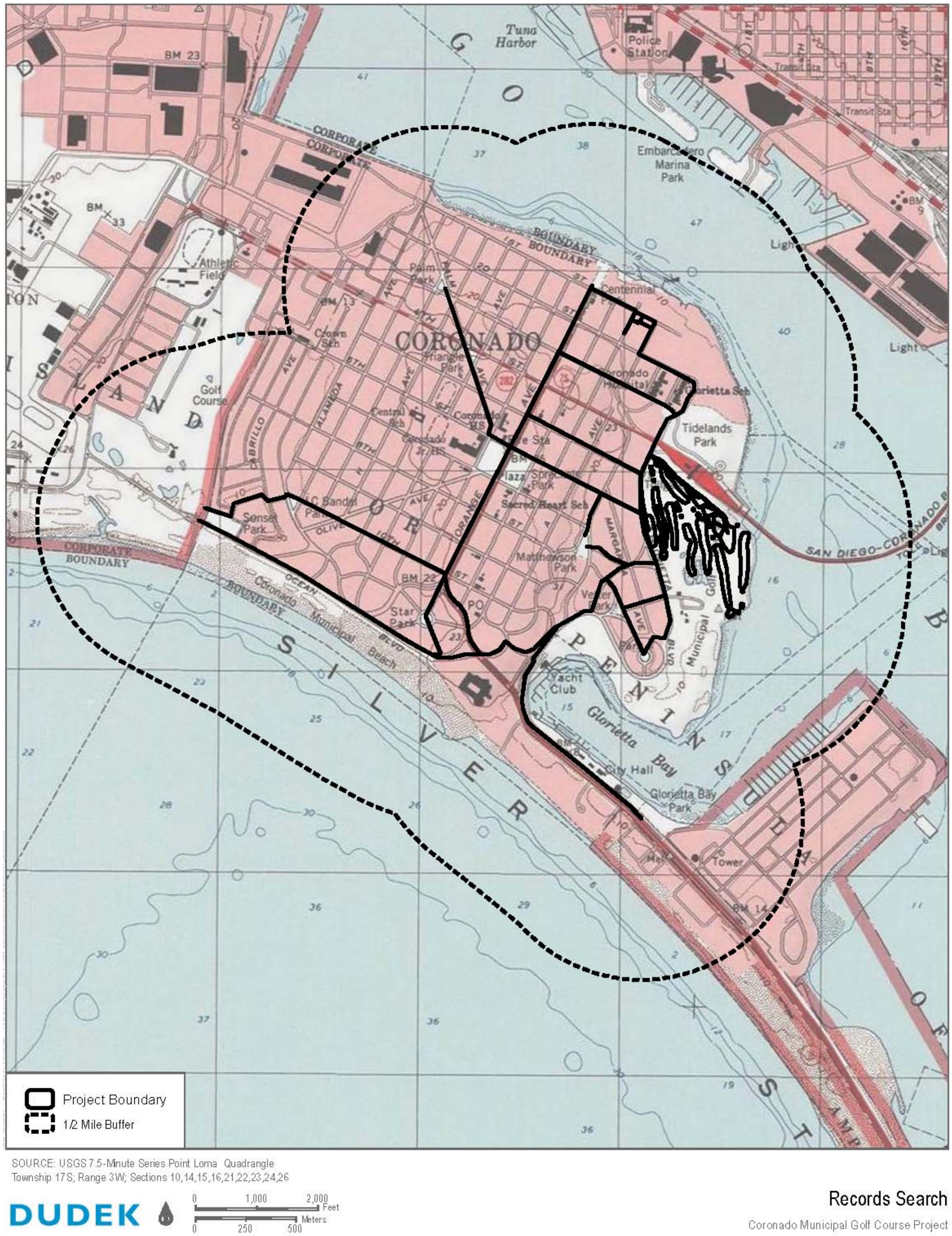

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February 12, 2020

Mr. Ralph Goff, Chairperson
Campo Band of Diegueno Mission Indians
36190 Church Road, Suite 1
Campo, CA 91906

Subject: Information Request for the Coronado Municipal Golf Course Modernization Project, Escondido, California

Dear Mr. Goff,

Dudek has been contracted to perform a Cultural resources inventory for City of Coronado (City), who proposes construction of a Satellite Water Recycling Facility (SWRF) and Turf Maintenance Facility (TMF), collectively referred to as the SWRF and Turf Complex, at the existing municipal golf course in the southeastern portion of the city. The project would also construct and operate pipelines and pump stations necessary to connect the SWRF to the existing municipal wastewater transmission system and to distribute recycled water to public parks and road medians. The project also includes the upgrading of several miles of recycled water pipeline owned and operated by the California American Water Company, which are located within existing City streets.

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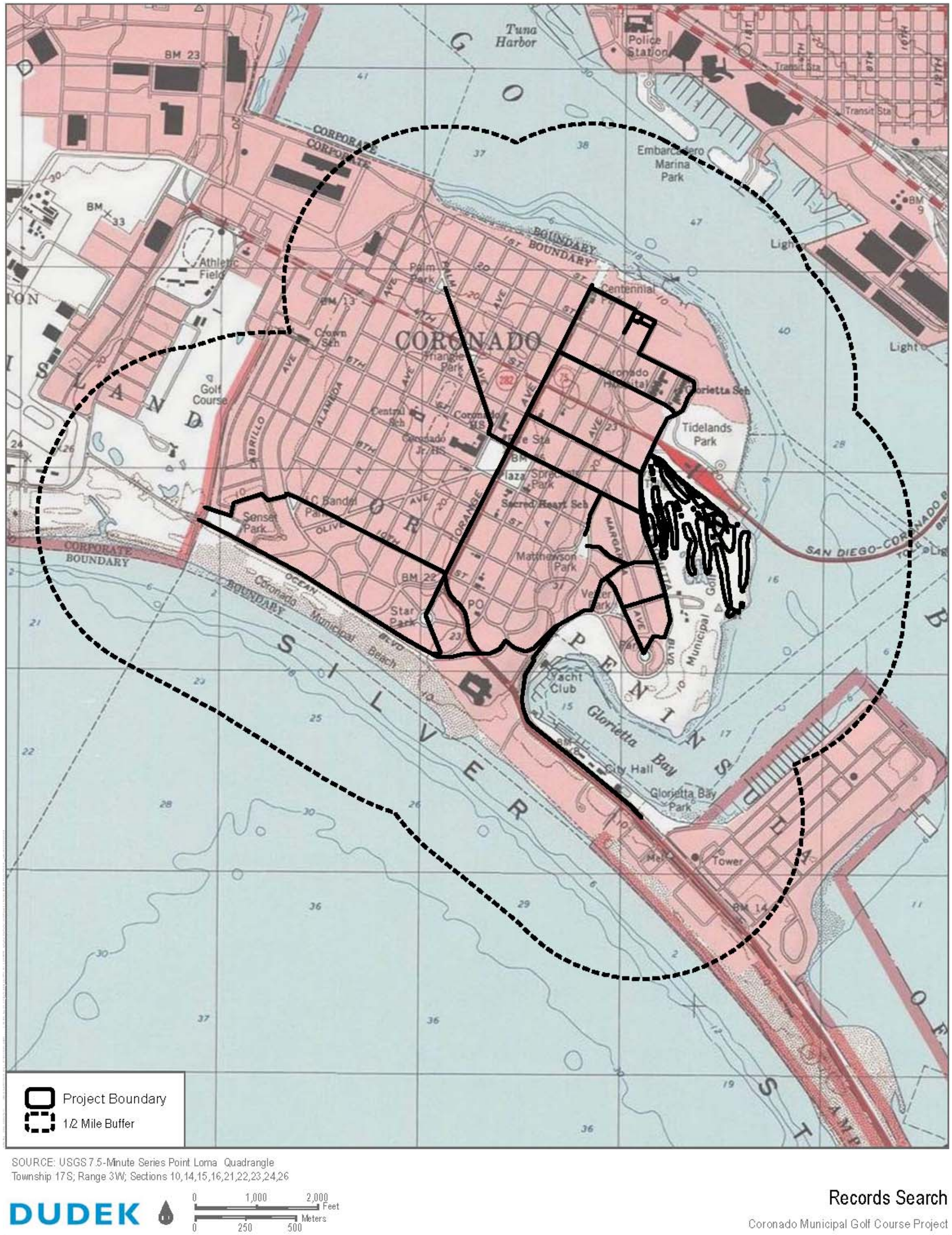

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February 12, 2020

Mr. Allen E. Lawson, Chairperson
San Pasqual Band of Dieguenо Mission Indians
P.O. Box 365
Valley Center, CA 92082

Subject: Information Request for the Coronado Municipal Golf Course Modernization Project, Escondido, California

Dear Mr. Lawson,

Dudek has been contracted to perform a Cultural resources inventory for City of Coronado (City), who proposes construction of a Satellite Water Recycling Facility (SWRF) and Turf Maintenance Facility (TMF), collectively referred to as the SWRF and Turf Complex, at the existing municipal golf course in the southeastern portion of the city. The project would also construct and operate pipelines and pump stations necessary to connect the SWRF to the existing municipal wastewater transmission system and to distribute recycled water to public parks and road medians. The project also includes the upgrading of several miles of recycled water pipeline owned and operated by the California American Water Company, which are located within existing City streets.

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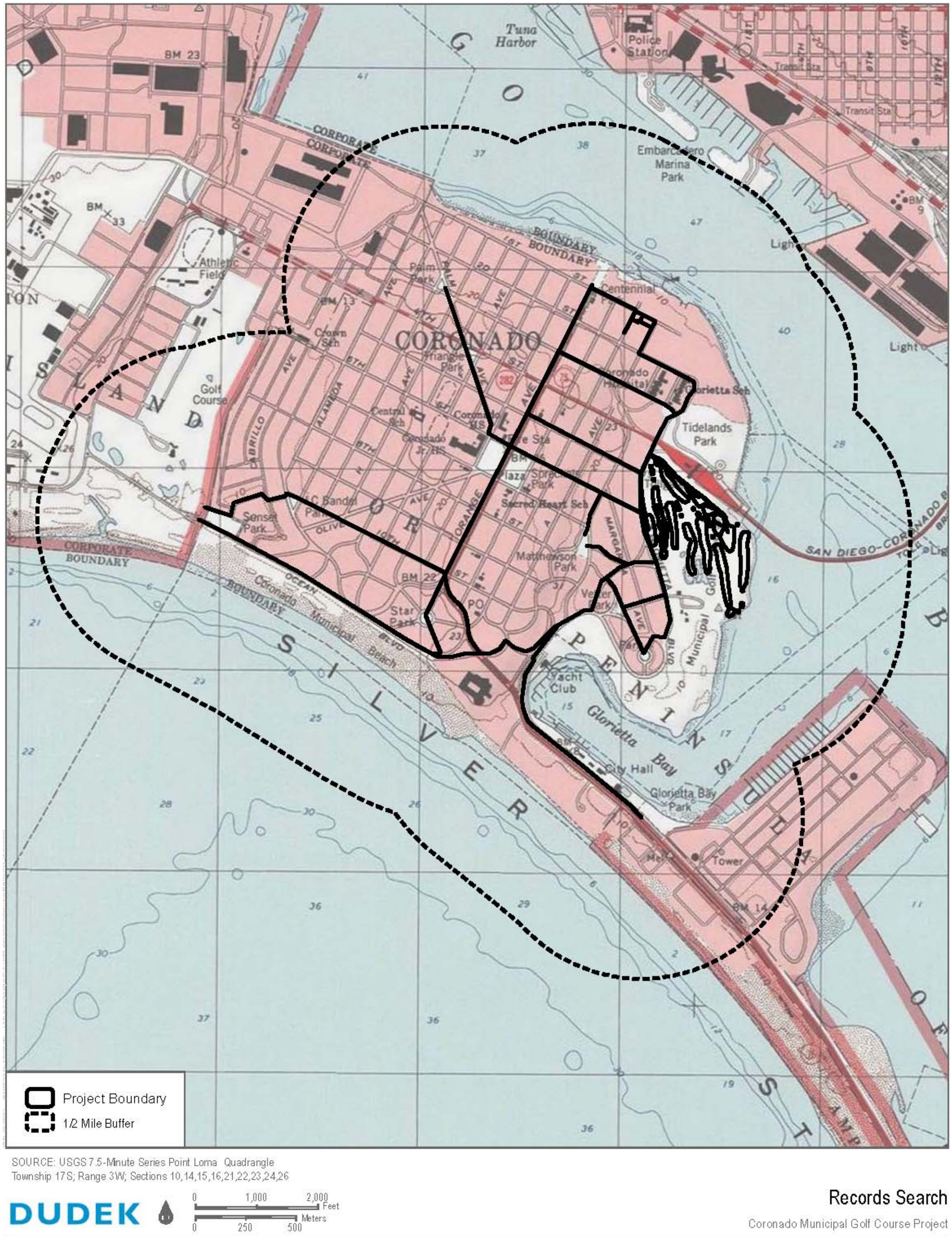

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MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

February 12, 2020

Mr. Clint Linton, Director of Cultural Resources
Ipay Nation of Santa Ysabel
P.O. Box 507
Santa Ysabel, CA 92070

Subject: Information Request for the Coronado Municipal Golf Course Modernization Project, Escondido, California

Dear Mr. Linton,

Dudek has been contracted to perform a Cultural resources inventory for City of Coronado (City), who proposes construction of a Satellite Water Recycling Facility (SWRF) and Turf Maintenance Facility (TMF), collectively referred to as the SWRF and Turf Complex, at the existing municipal golf course in the southeastern portion of the city. The project would also construct and operate pipelines and pump stations necessary to connect the SWRF to the existing municipal wastewater transmission system and to distribute recycled water to public parks and road medians. The project also includes the upgrading of several miles of recycled water pipeline owned and operated by the California American Water Company, which are located within existing City streets.

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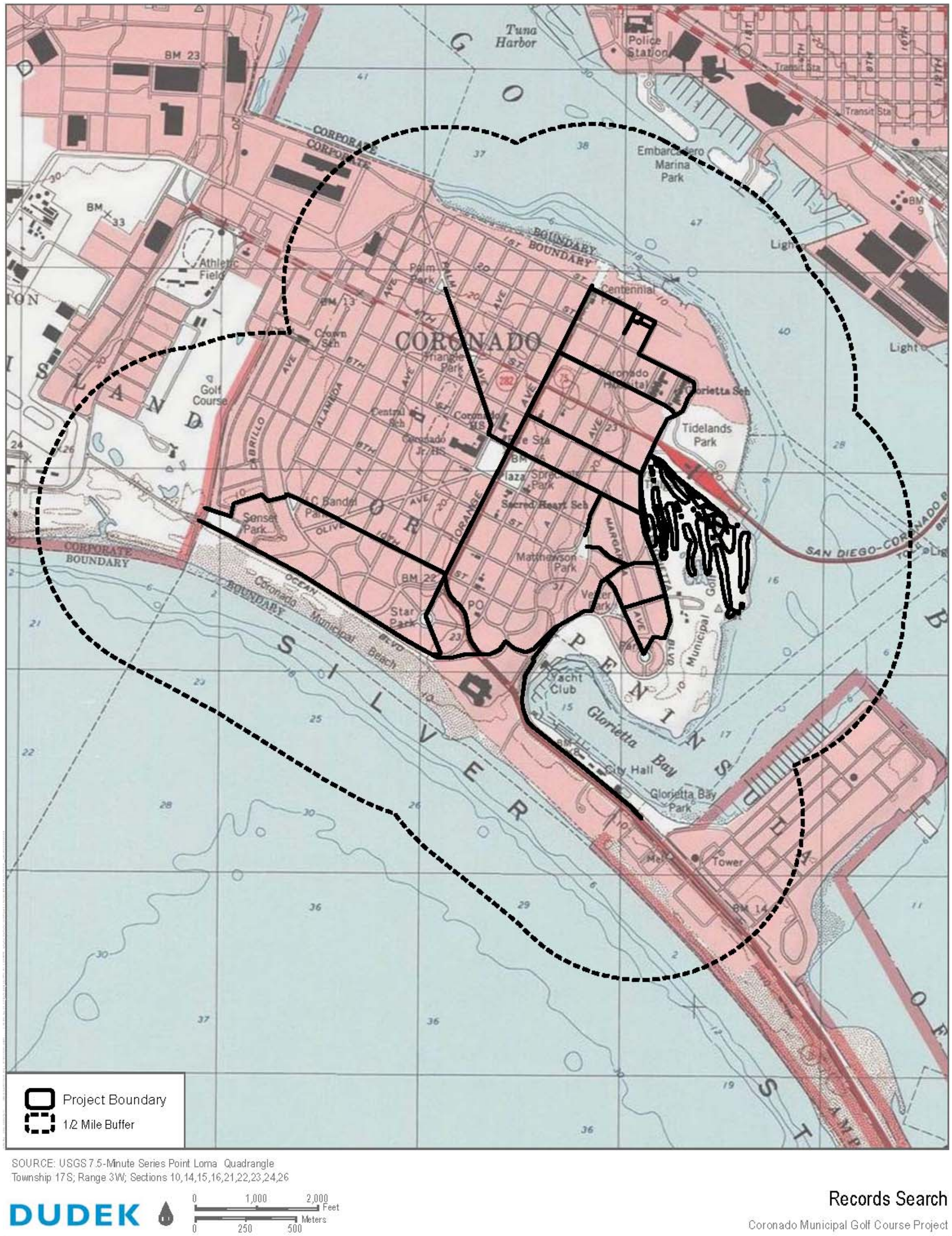

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MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

February 12, 2020

Mr. Michael Linton, Chairperson
Mesa Grande Band of Dieguneo Mission Indians
P.O. Box 270
Santa Ysabel, CA 92070

Subject: Information Request for the Coronado Municipal Golf Course Modernization Project, Escondido, California

Dear Mr. Linton,

Dudek has been contracted to perform a Cultural resources inventory for City of Coronado (City), who proposes construction of a Satellite Water Recycling Facility (SWRF) and Turf Maintenance Facility (TMF), collectively referred to as the SWRF and Turf Complex, at the existing municipal golf course in the southeastern portion of the city. The project would also construct and operate pipelines and pump stations necessary to connect the SWRF to the existing municipal wastewater transmission system and to distribute recycled water to public parks and road medians. The project also includes the upgrading of several miles of recycled water pipeline owned and operated by the California American Water Company, which are located within existing City streets.

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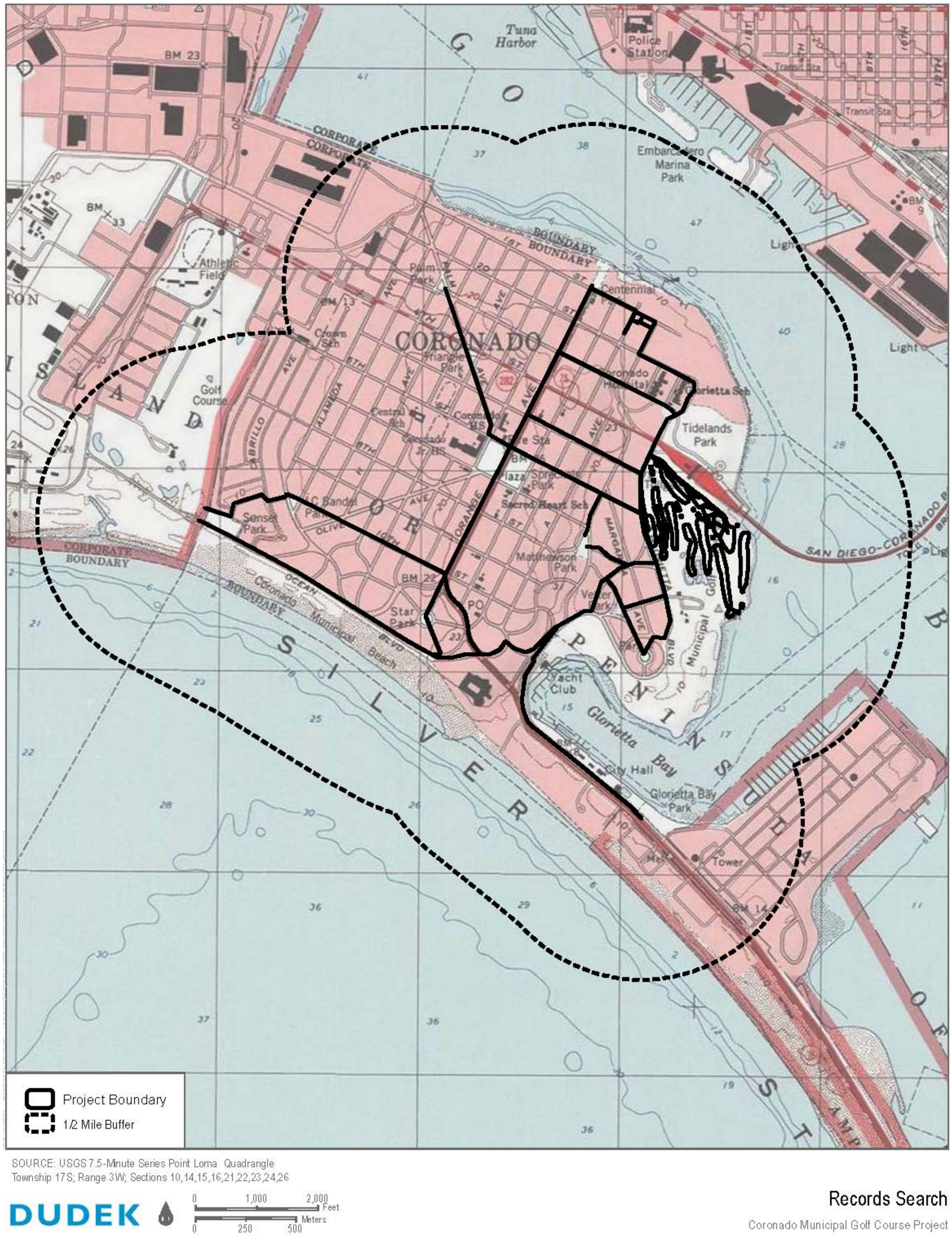

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DUDEK

MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

February 12, 2020

Ms. Carmen Lucas,
Kwaaymii Laguna Band of Mission Indians
P.O. Box 775
Pine Valley, CA 91962

Subject: Information Request for the Coronado Municipal Golf Course Modernization Project, Escondido, California

Dear Ms. Lucas,

Dudek has been contracted to perform a Cultural resources inventory for City of Coronado (City), who proposes construction of a Satellite Water Recycling Facility (SWRF) and Turf Maintenance Facility (TMF), collectively referred to as the SWRF and Turf Complex, at the existing municipal golf course in the southeastern portion of the city. The project would also construct and operate pipelines and pump stations necessary to connect the SWRF to the existing municipal wastewater transmission system and to distribute recycled water to public parks and road medians. The project also includes the upgrading of several miles of recycled water pipeline owned and operated by the California American Water Company, which are located within existing City streets.

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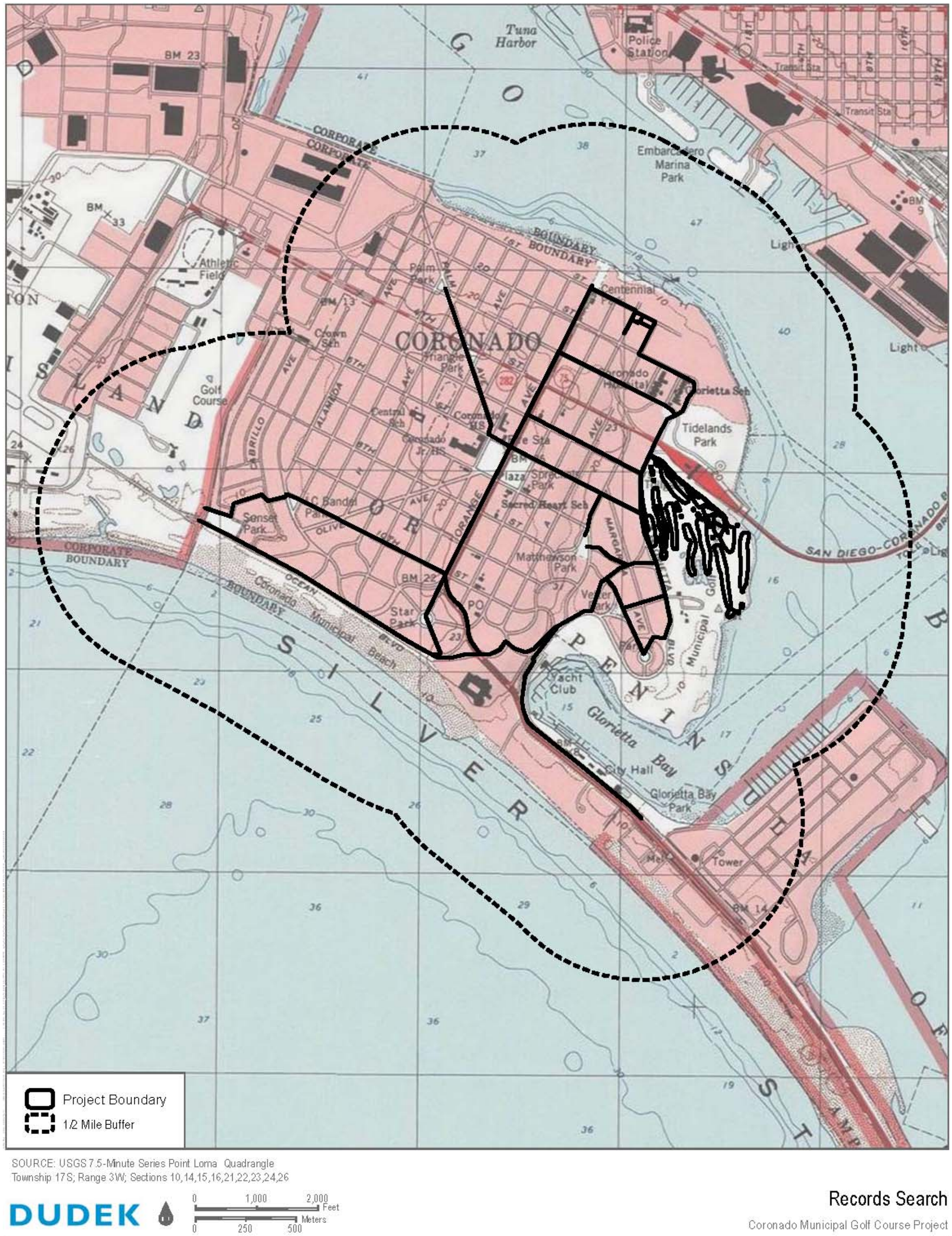

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DUDEK

MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

February 12, 2020

Mr. Cody Martinez, Chairperson
Sycuan Band of the Kumeyaay Nation
1 Kwaaypaay Court
El Cajon, CA 92019

Subject: Information Request for the Coronado Municipal Golf Course Modernization Project, Escondido, California

Dear Mr. Martinez,

Dudek has been contracted to perform a Cultural resources inventory for City of Coronado (City), who proposes construction of a Satellite Water Recycling Facility (SWRF) and Turf Maintenance Facility (TMF), collectively referred to as the SWRF and Turf Complex, at the existing municipal golf course in the southeastern portion of the city. The project would also construct and operate pipelines and pump stations necessary to connect the SWRF to the existing municipal wastewater transmission system and to distribute recycled water to public parks and road medians. The project also includes the upgrading of several miles of recycled water pipeline owned and operated by the California American Water Company, which are located within existing City streets.

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Jessica Colston

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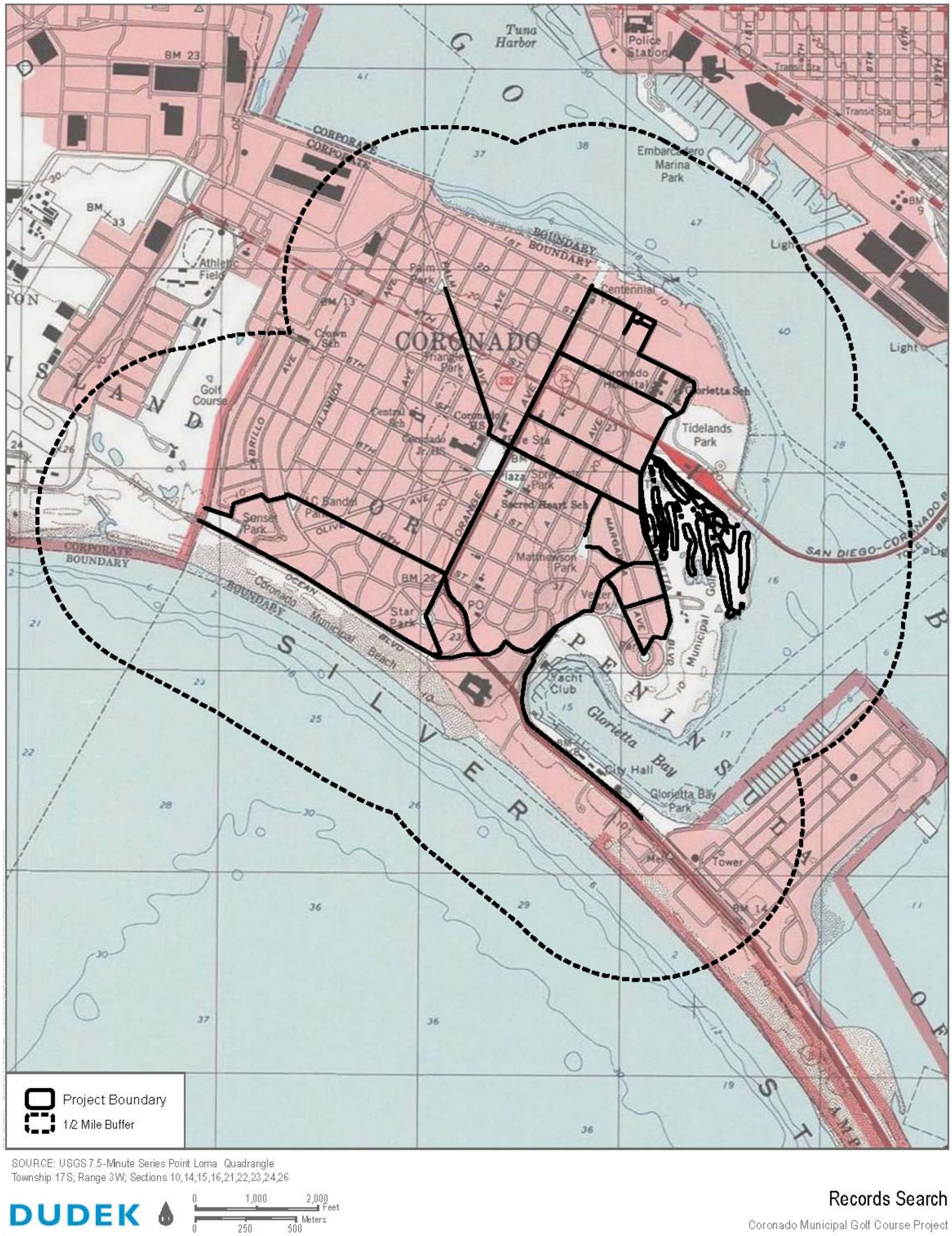

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February 12, 2020

Ms. Javaughn Miller, Tribal Administrator
La Posta Band of Diegueno Mission Indians
8 Crestwood Rd.
Boulevard, CA 91905

Subject: Information Request for the Coronado Municipal Golf Course Modernization Project, Escondido, California

Dear Ms. Miller,

Dudek has been contracted to perform a Cultural resources inventory for City of Coronado (City), who proposes construction of a Satellite Water Recycling Facility (SWRF) and Turf Maintenance Facility (TMF), collectively referred to as the SWRF and Turf Complex, at the existing municipal golf course in the southeastern portion of the city. The project would also construct and operate pipelines and pump stations necessary to connect the SWRF to the existing municipal wastewater transmission system and to distribute recycled water to public parks and road medians. The project also includes the upgrading of several miles of recycled water pipeline owned and operated by the California American Water Company, which are located within existing City streets.

The Native American Heritage Commission conducted a Sacred Lands file search. No Native American cultural resources were identified within a one-half mile distance of the proposed project area. I am writing as part of the consultation 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.

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

Respectfully,

Jessica Colston

Jessica Colston, B.A.
Archaeologist
Phone: (760) 815-6642
Email: jcolston@dudek.com

Attachments:
Figure 1. Project location map.

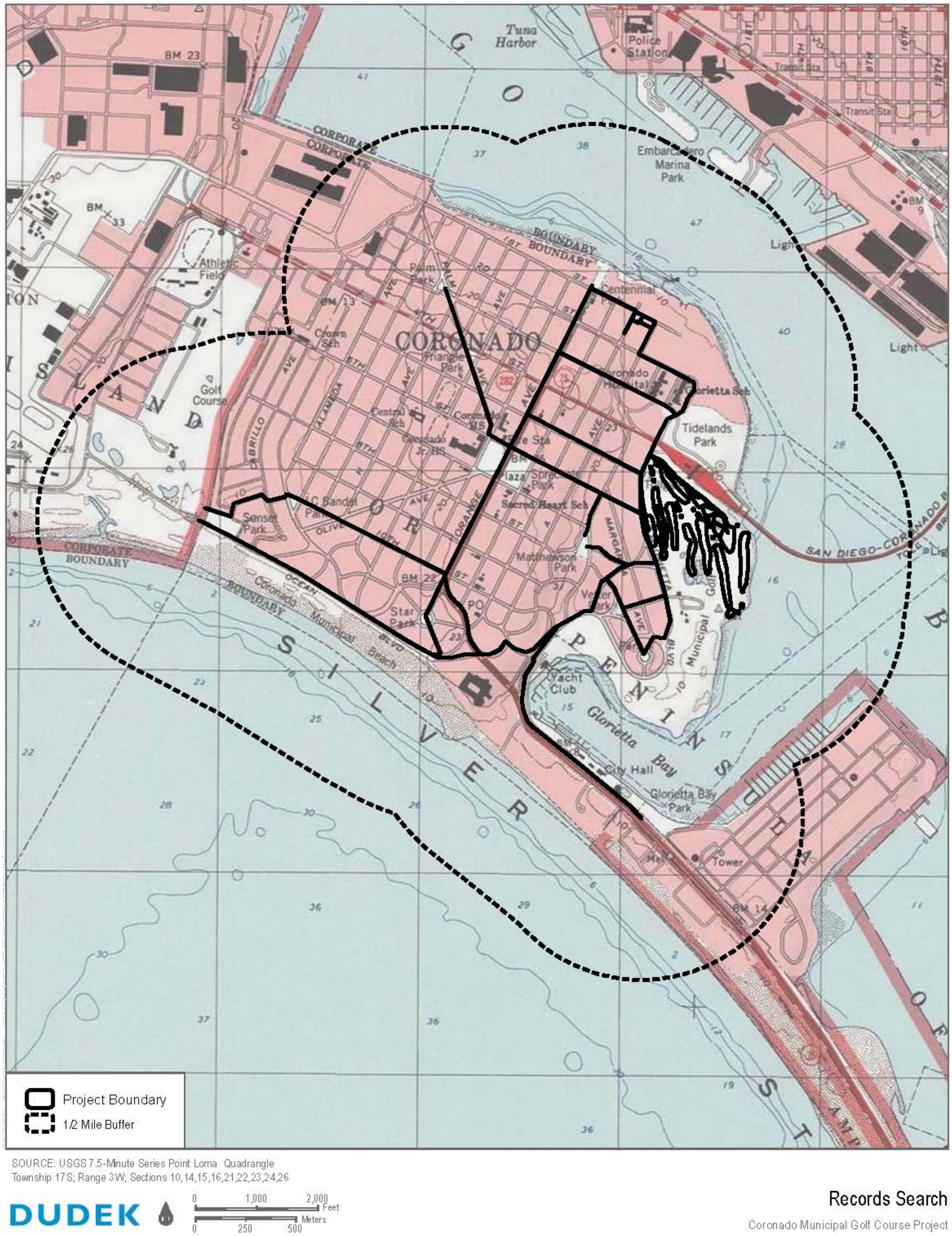

Figure 1. Regional map of project location

MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

February 12, 2020

Ms. Kristie Orosco, Resource Specialist
Sycuan Band of the Kumeyaay Nation
1 Kwaaypaay Court
El Cajon, CA 92019

Subject: Information Request for the Coronado Municipal Golf Course Modernization Project, Escondido, California

Dear Ms. Orosco,

Dudek has been contracted to perform a Cultural resources inventory for City of Coronado (City), who proposes construction of a Satellite Water Recycling Facility (SWRF) and Turf Maintenance Facility (TMF), collectively referred to as the SWRF and Turf Complex, at the existing municipal golf course in the southeastern portion of the city. The project would also construct and operate pipelines and pump stations necessary to connect the SWRF to the existing municipal wastewater transmission system and to distribute recycled water to public parks and road medians. The project also includes the upgrading of several miles of recycled water pipeline owned and operated by the California American Water Company, which are located within existing City streets.

The Native American Heritage Commission conducted a Sacred Lands file search. No Native American cultural resources were identified within a one-half mile distance of the proposed project area. I am writing as part of the consultation 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.

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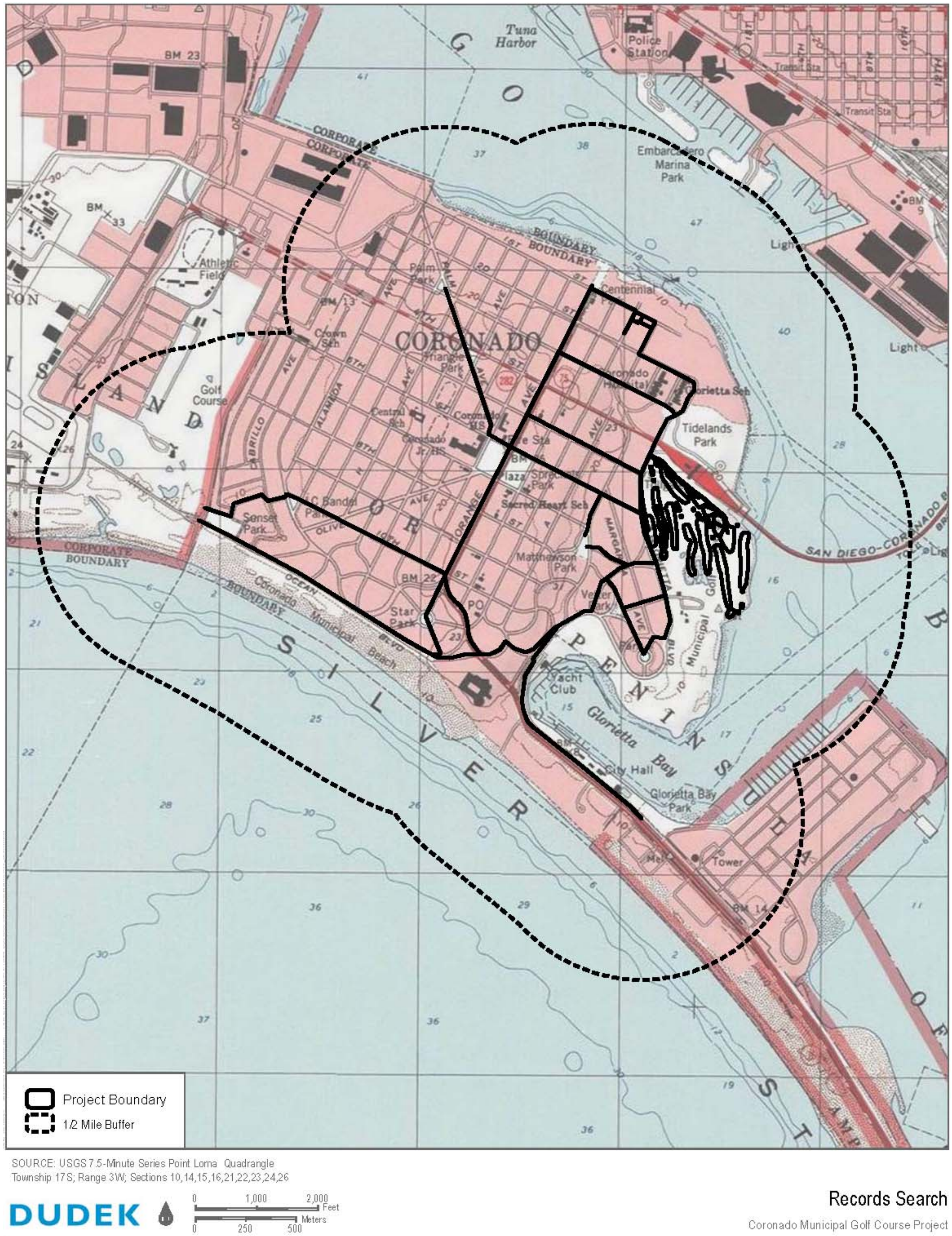

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February 12, 2020

Ms. Rebecca Osuna, Chairperson
Inaja-Cosmit Band of Indians
2005 S. Escondido Blvd.
Escondido, CA 92025

Subject: Information Request for the Coronado Municipal Golf Course Modernization Project, Escondido, California

Dear Ms. Osuna,

Dudek has been contracted to perform a Cultural resources inventory for City of Coronado (City), who proposes construction of a Satellite Water Recycling Facility (SWRF) and Turf Maintenance Facility (TMF), collectively referred to as the SWRF and Turf Complex, at the existing municipal golf course in the southeastern portion of the city. The project would also construct and operate pipelines and pump stations necessary to connect the SWRF to the existing municipal wastewater transmission system and to distribute recycled water to public parks and road medians. The project also includes the upgrading of several miles of recycled water pipeline owned and operated by the California American Water Company, which are located within existing City streets.

The Native American Heritage Commission conducted a Sacred Lands file search. No Native American cultural resources were identified within a one-half mile distance of the proposed project area. I am writing as part of the consultation 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.

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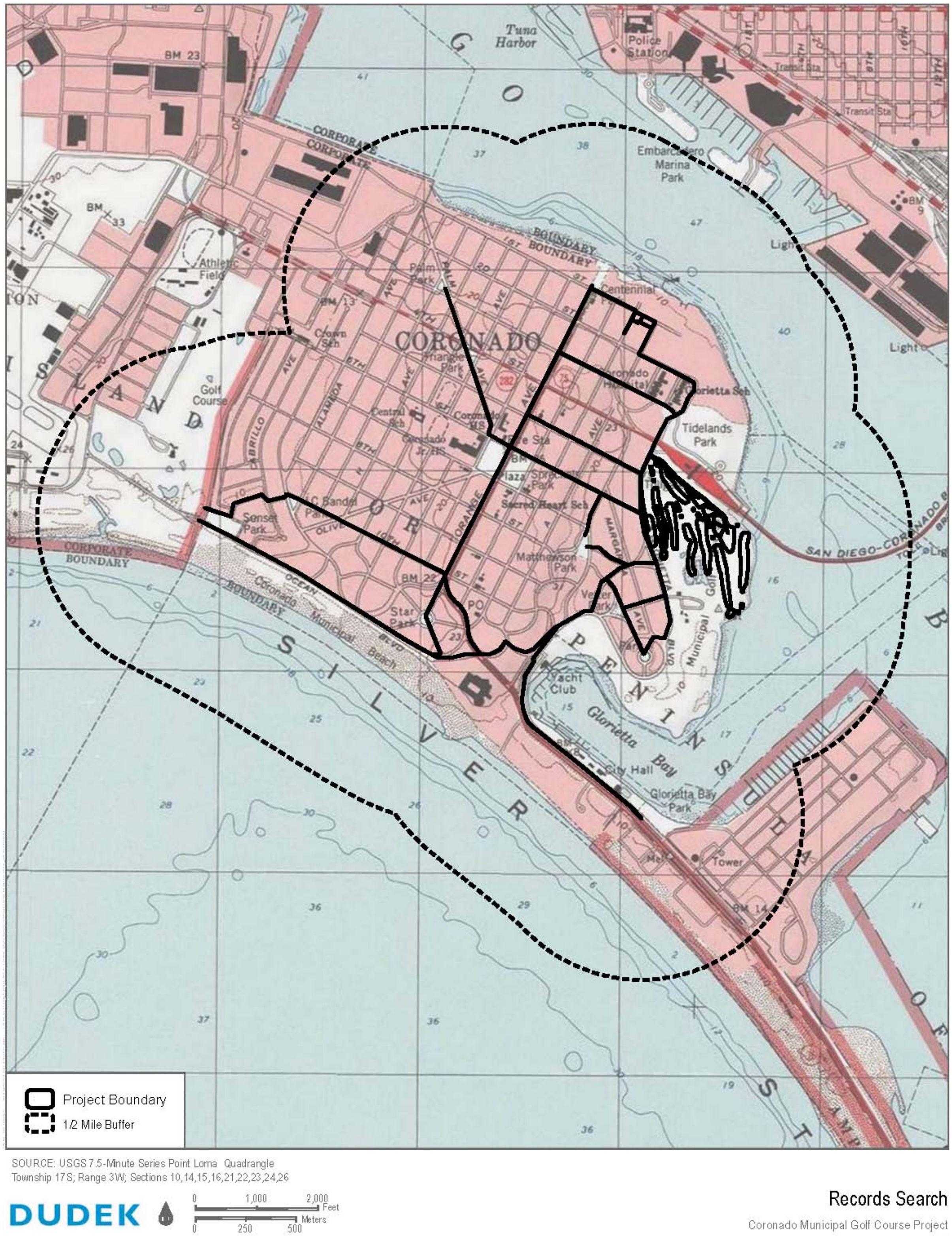

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February 12, 2020

Ms. Gwendolyn Parada, Chairperson
La Posta Band of Diegueno Mission Indians
8 Crestwood Rd.
Boulevard, CA 91905

Subject: Information Request for the Coronado Municipal Golf Course Modernization Project, Escondido, California

Dear Ms. Parada,

Dudek has been contracted to perform a Cultural resources inventory for City of Coronado (City), who proposes construction of a Satellite Water Recycling Facility (SWRF) and Turf Maintenance Facility (TMF), collectively referred to as the SWRF and Turf Complex, at the existing municipal golf course in the southeastern portion of the city. The project would also construct and operate pipelines and pump stations necessary to connect the SWRF to the existing municipal wastewater transmission system and to distribute recycled water to public parks and road medians. The project also includes the upgrading of several miles of recycled water pipeline owned and operated by the California American Water Company, which are located within existing City streets.

The Native American Heritage Commission conducted a Sacred Lands file search. No Native American cultural resources were identified within a one-half mile distance of the proposed project area. I am writing as part of the consultation 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.

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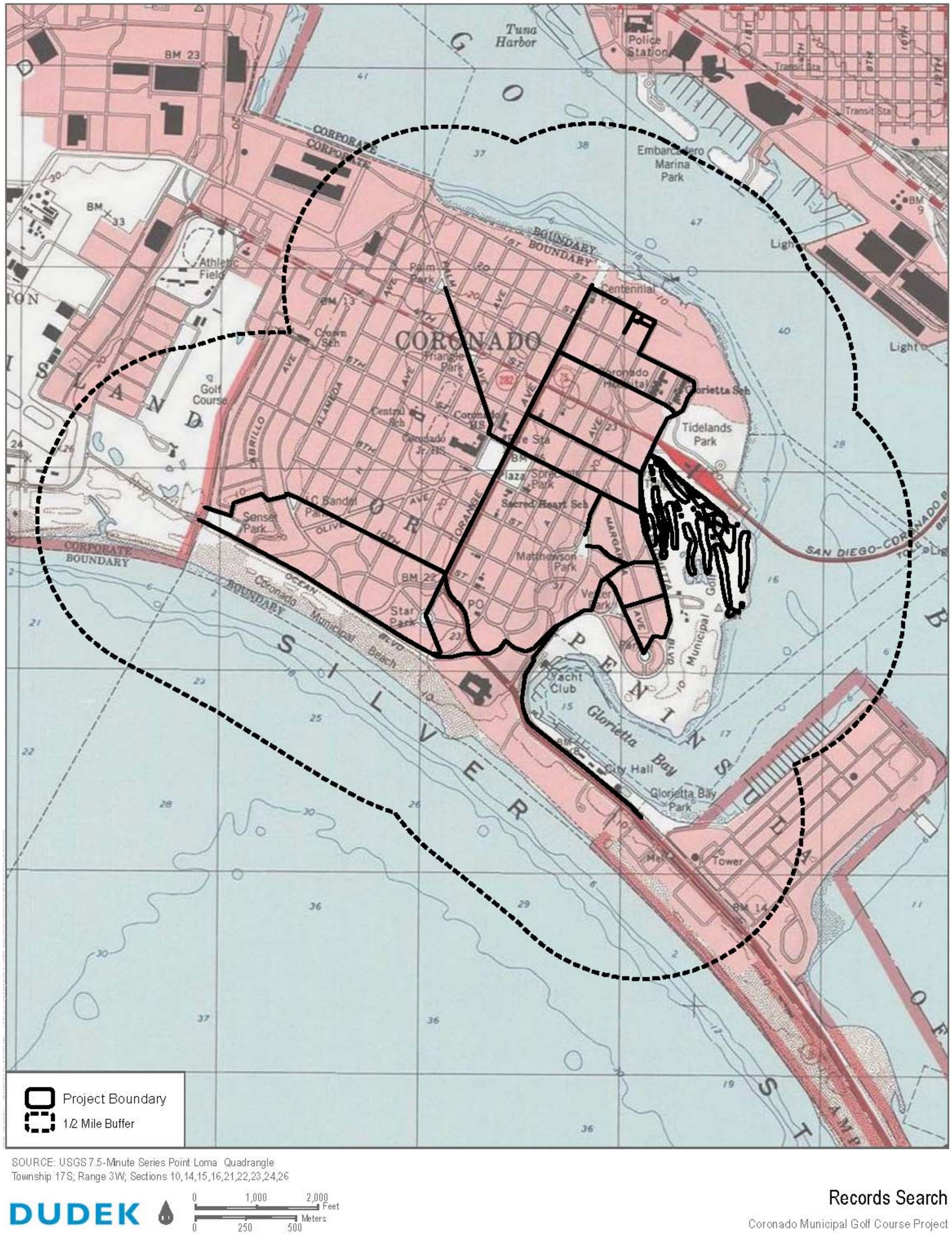

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February 12, 2020

Mr. Virgil Perez, Chairperson
Iipay Nation of Santa Ysabel
P.O. Box 130
Santa Ysabel, CA 92070

Subject: Information Request for the Coronado Municipal Golf Course Modernization Project, Escondido, California

Dear Mr. Perez,

Dudek has been contracted to perform a Cultural resources inventory for City of Coronado (City), who proposes construction of a Satellite Water Recycling Facility (SWRF) and Turf Maintenance Facility (TMF), collectively referred to as the SWRF and Turf Complex, at the existing municipal golf course in the southeastern portion of the city. The project would also construct and operate pipelines and pump stations necessary to connect the SWRF to the existing municipal wastewater transmission system and to distribute recycled water to public parks and road medians. The project also includes the upgrading of several miles of recycled water pipeline owned and operated by the California American Water Company, which are located within existing City streets.

The Native American Heritage Commission conducted a Sacred Lands file search. No Native American cultural resources were identified within a one-half mile distance of the proposed project area. I am writing as part of the consultation 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.

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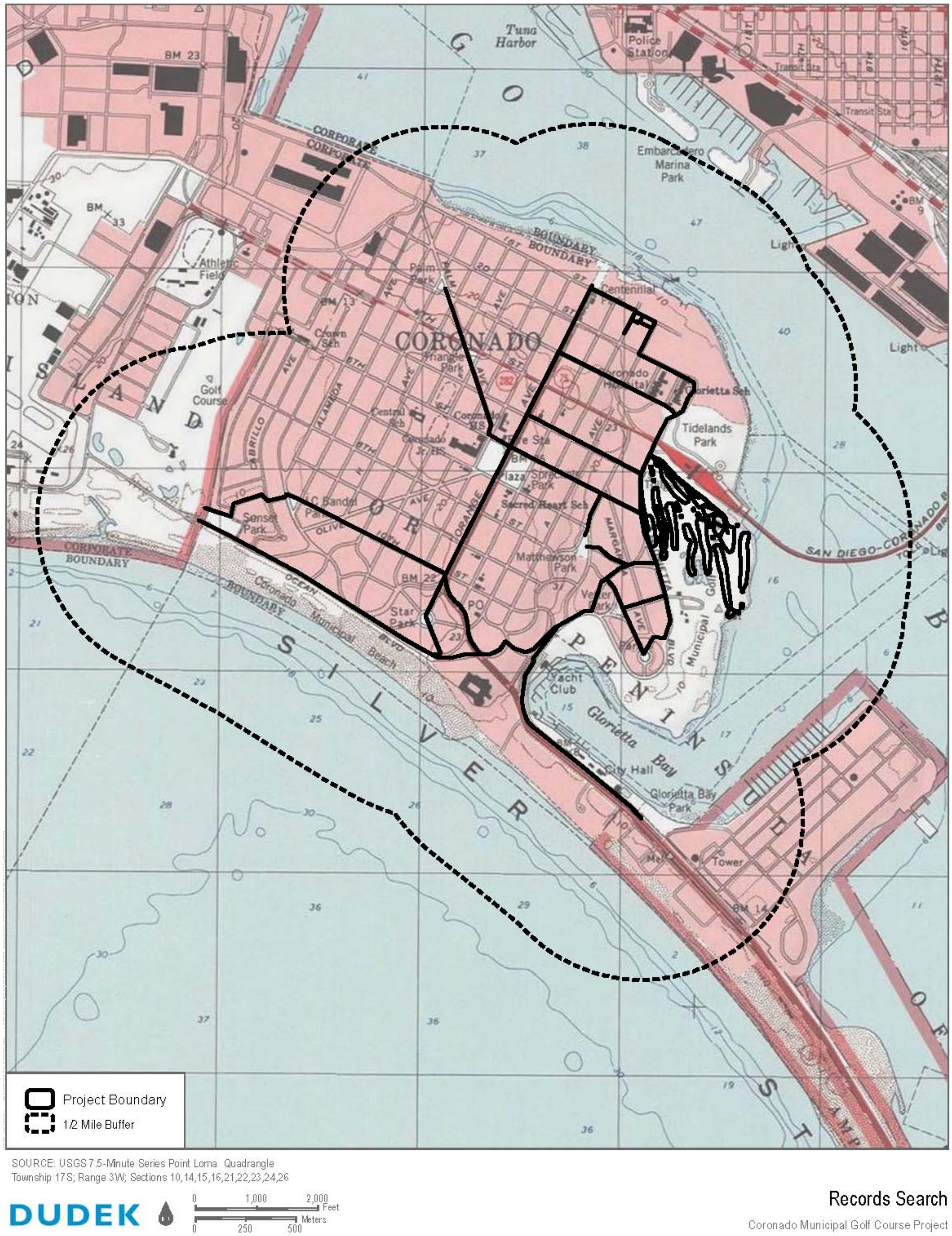

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February 12, 2020

Mr. Ernest Pingleton, Tribal Historic Officer
Viejas Band of Kumeyaay Indians
1 Viejas Grade Rd.
Alpine, CA 91901

Subject: Information Request for the Coronado Municipal Golf Course Modernization Project, Escondido, California

Dear Mr. Pingleton,

Dudek has been contracted to perform a Cultural resources inventory for City of Coronado (City), who proposes construction of a Satellite Water Recycling Facility (SWRF) and Turf Maintenance Facility (TMF), collectively referred to as the SWRF and Turf Complex, at the existing municipal golf course in the southeastern portion of the city. The project would also construct and operate pipelines and pump stations necessary to connect the SWRF to the existing municipal wastewater transmission system and to distribute recycled water to public parks and road medians. The project also includes the upgrading of several miles of recycled water pipeline owned and operated by the California American Water Company, which are located within existing City streets.

The Native American Heritage Commission conducted a Sacred Lands file search. No Native American cultural resources were identified within a one-half mile distance of the proposed project area. I am writing as part of the consultation 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.

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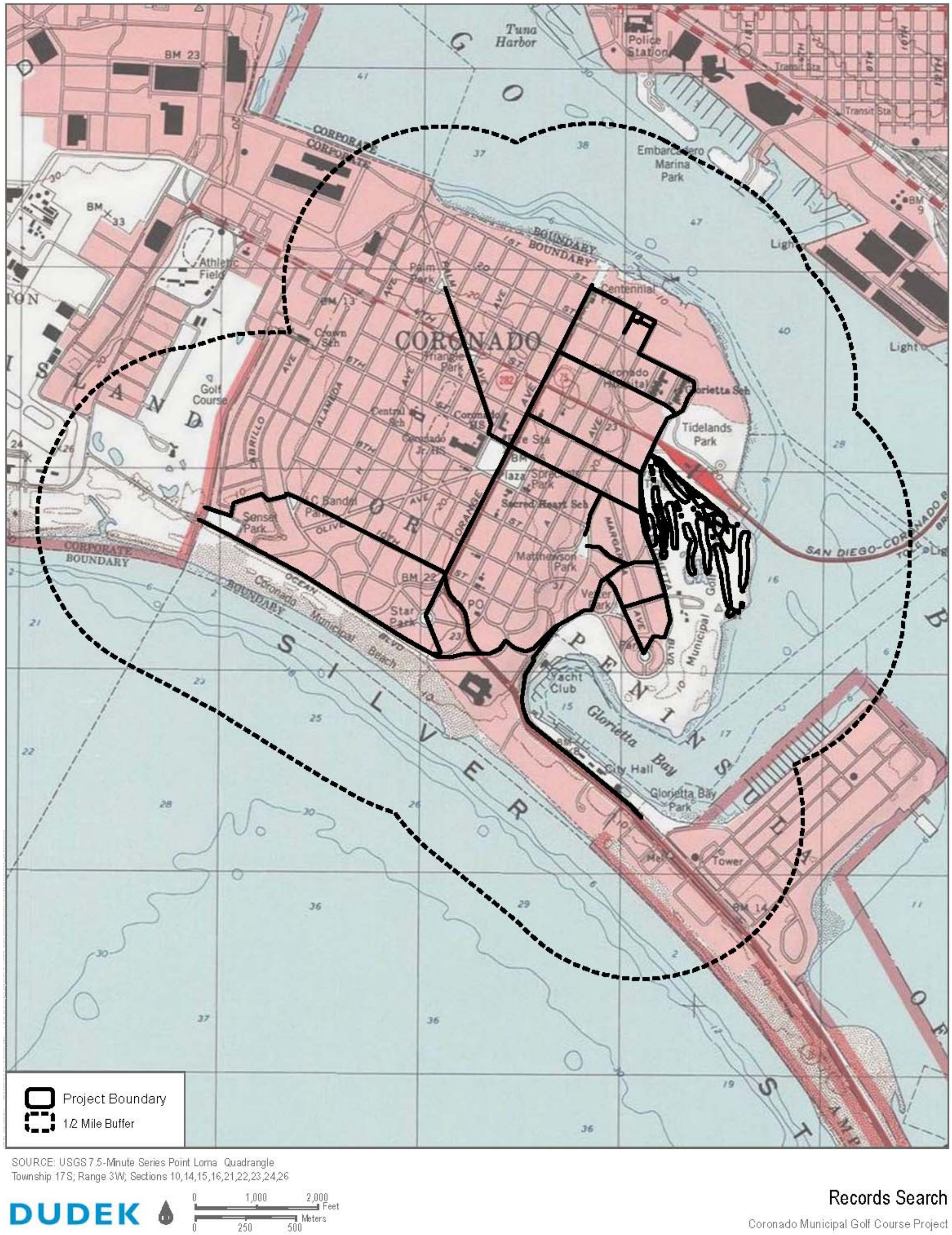

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February 12, 2020

Ms. Erica Pinto, Chairperson
Jamul Indian Village
P.O. Box 612
Jamul, CA 91935

Subject: Information Request for the Coronado Municipal Golf Course Modernization Project, Escondido, California

Dear Ms. Pinto,

Dudek has been contracted to perform a Cultural resources inventory for City of Coronado (City), who proposes construction of a Satellite Water Recycling Facility (SWRF) and Turf Maintenance Facility (TMF), collectively referred to as the SWRF and Turf Complex, at the existing municipal golf course in the southeastern portion of the city. The project would also construct and operate pipelines and pump stations necessary to connect the SWRF to the existing municipal wastewater transmission system and to distribute recycled water to public parks and road medians. The project also includes the upgrading of several miles of recycled water pipeline owned and operated by the California American Water Company, which are located within existing City streets.

The Native American Heritage Commission conducted a Sacred Lands file search. No Native American cultural resources were identified within a one-half mile distance of the proposed project area. I am writing as part of the consultation 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.

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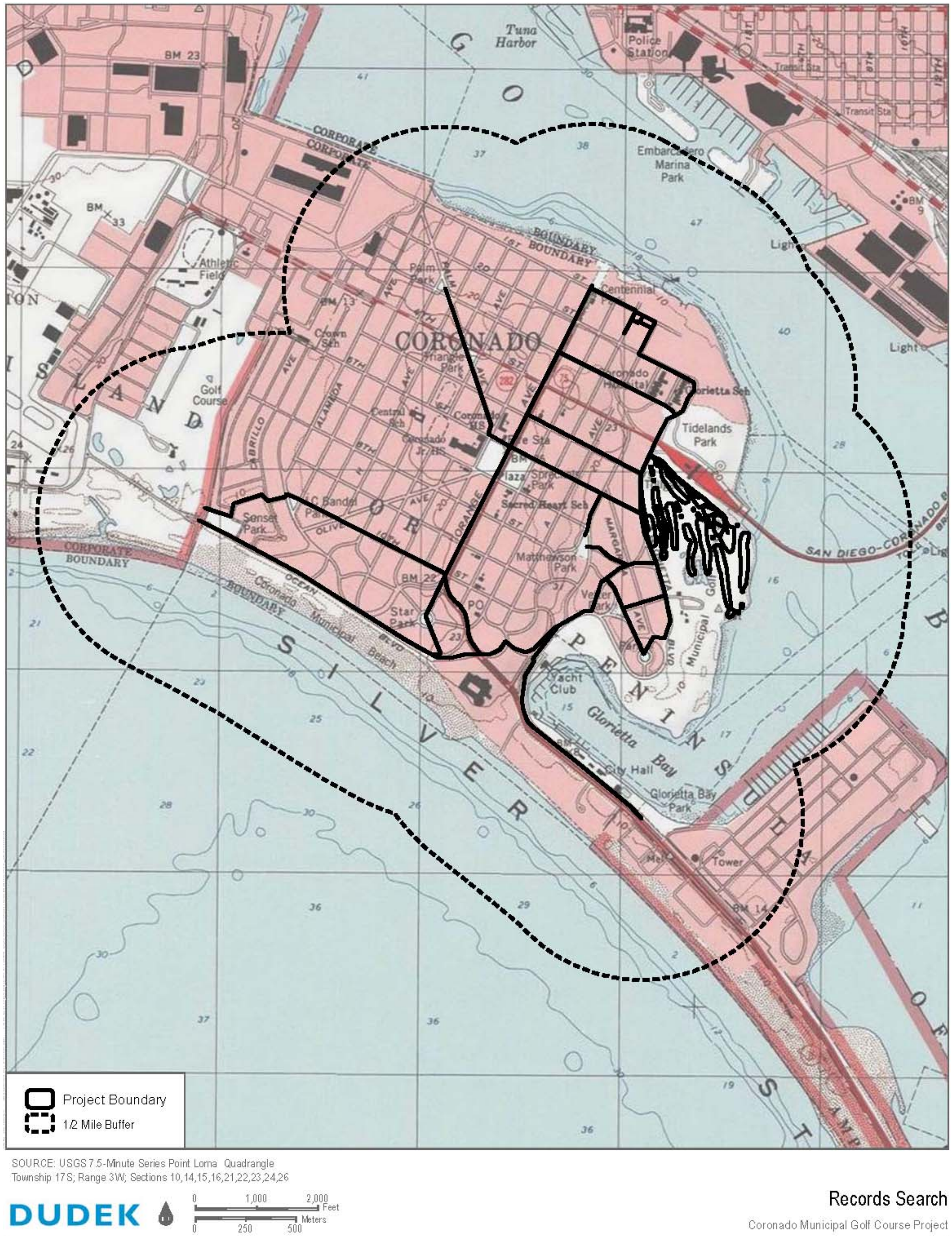

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February 12, 2020

Mr. Robert Pinto, Chairperson
Ewiaapaayp Tribe
4054 Willow Rd.
Alpine, CA 91901

Subject: Information Request for the Coronado Municipal Golf Course Modernization Project, Escondido, California

Dear Mr. Pinto,

Dudek has been contracted to perform a Cultural resources inventory for City of Coronado (City), who proposes construction of a Satellite Water Recycling Facility (SWRF) and Turf Maintenance Facility (TMF), collectively referred to as the SWRF and Turf Complex, at the existing municipal golf course in the southeastern portion of the city. The project would also construct and operate pipelines and pump stations necessary to connect the SWRF to the existing municipal wastewater transmission system and to distribute recycled water to public parks and road medians. The project also includes the upgrading of several miles of recycled water pipeline owned and operated by the California American Water Company, which are located within existing City streets.

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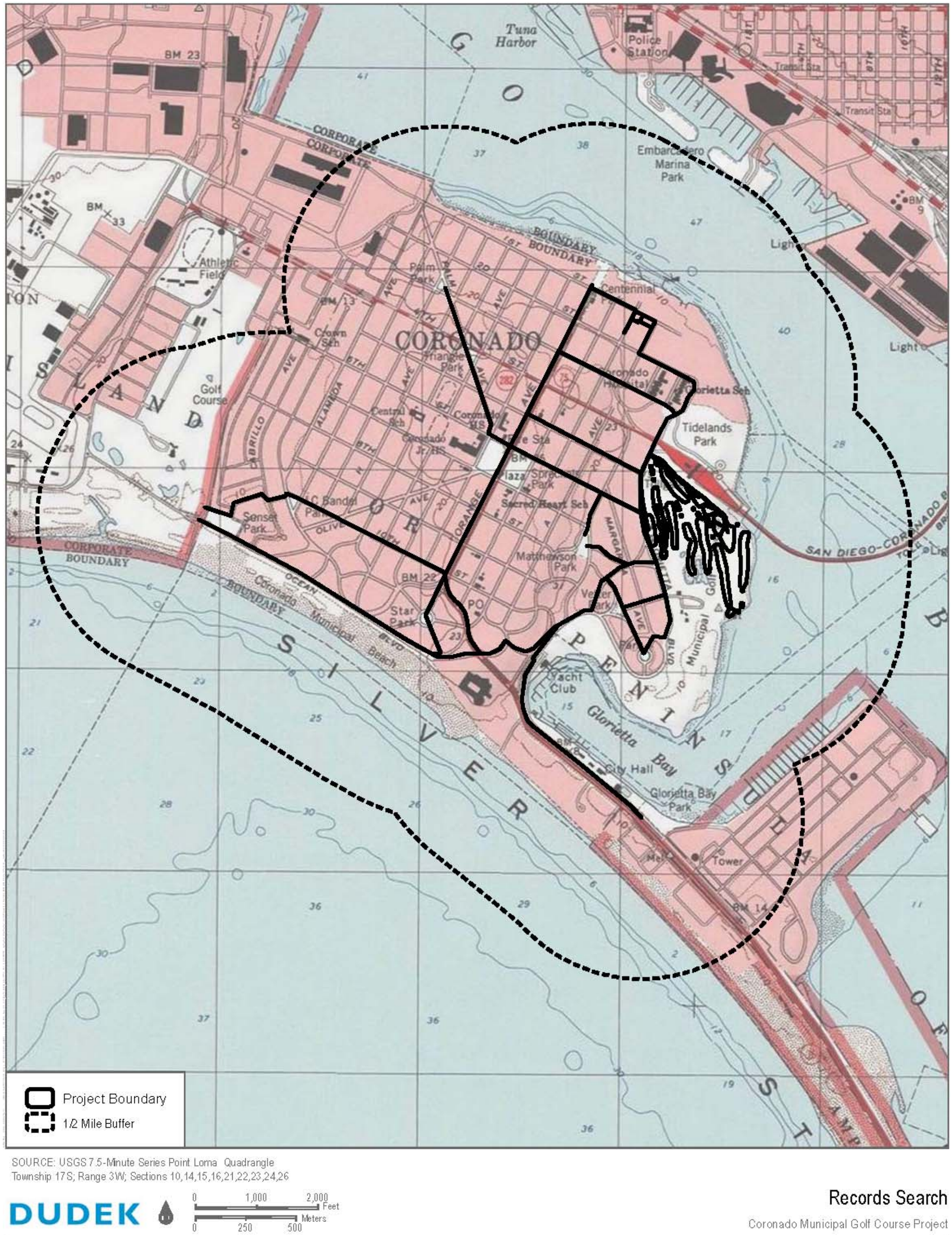

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February 12, 2020

Mr. Edwin (Thorpe) Romero, Chairperson
Barona Group of the Capitan Grande
1095 Barona Road
Lakeside, CA 92040

Subject: Information Request for the Coronado Municipal Golf Course Modernization Project, Escondido, California

Dear Mr. Romero,

Dudek has been contracted to perform a Cultural resources inventory for City of Coronado (City), who proposes construction of a Satellite Water Recycling Facility (SWRF) and Turf Maintenance Facility (TMF), collectively referred to as the SWRF and Turf Complex, at the existing municipal golf course in the southeastern portion of the city. The project would also construct and operate pipelines and pump stations necessary to connect the SWRF to the existing municipal wastewater transmission system and to distribute recycled water to public parks and road medians. The project also includes the upgrading of several miles of recycled water pipeline owned and operated by the California American Water Company, which are located within existing City streets.

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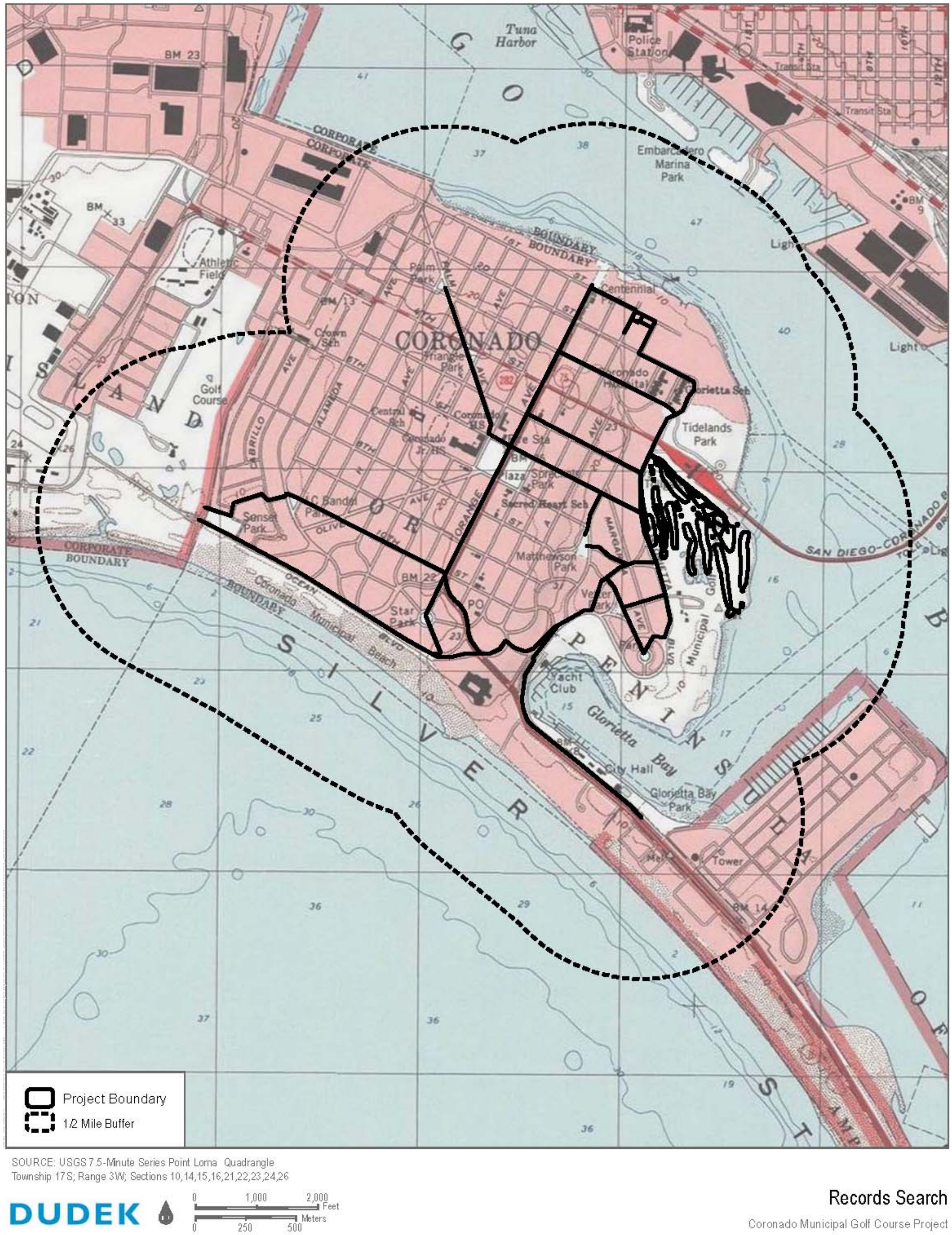

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MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

February 12, 2020

Ms. Angela Elliott Santos, Chairperson
Manzanita Band of Kumeyaay Nation
P.O. Box 1302
Boulevard, CA 91905

Subject: Information Request for the Coronado Municipal Golf Course Modernization Project, Escondido, California

Dear Ms. Santos,

Dudek has been contracted to perform a Cultural resources inventory for City of Coronado (City), who proposes construction of a Satellite Water Recycling Facility (SWRF) and Turf Maintenance Facility (TMF), collectively referred to as the SWRF and Turf Complex, at the existing municipal golf course in the southeastern portion of the city. The project would also construct and operate pipelines and pump stations necessary to connect the SWRF to the existing municipal wastewater transmission system and to distribute recycled water to public parks and road medians. The project also includes the upgrading of several miles of recycled water pipeline owned and operated by the California American Water Company, which are located within existing City streets.

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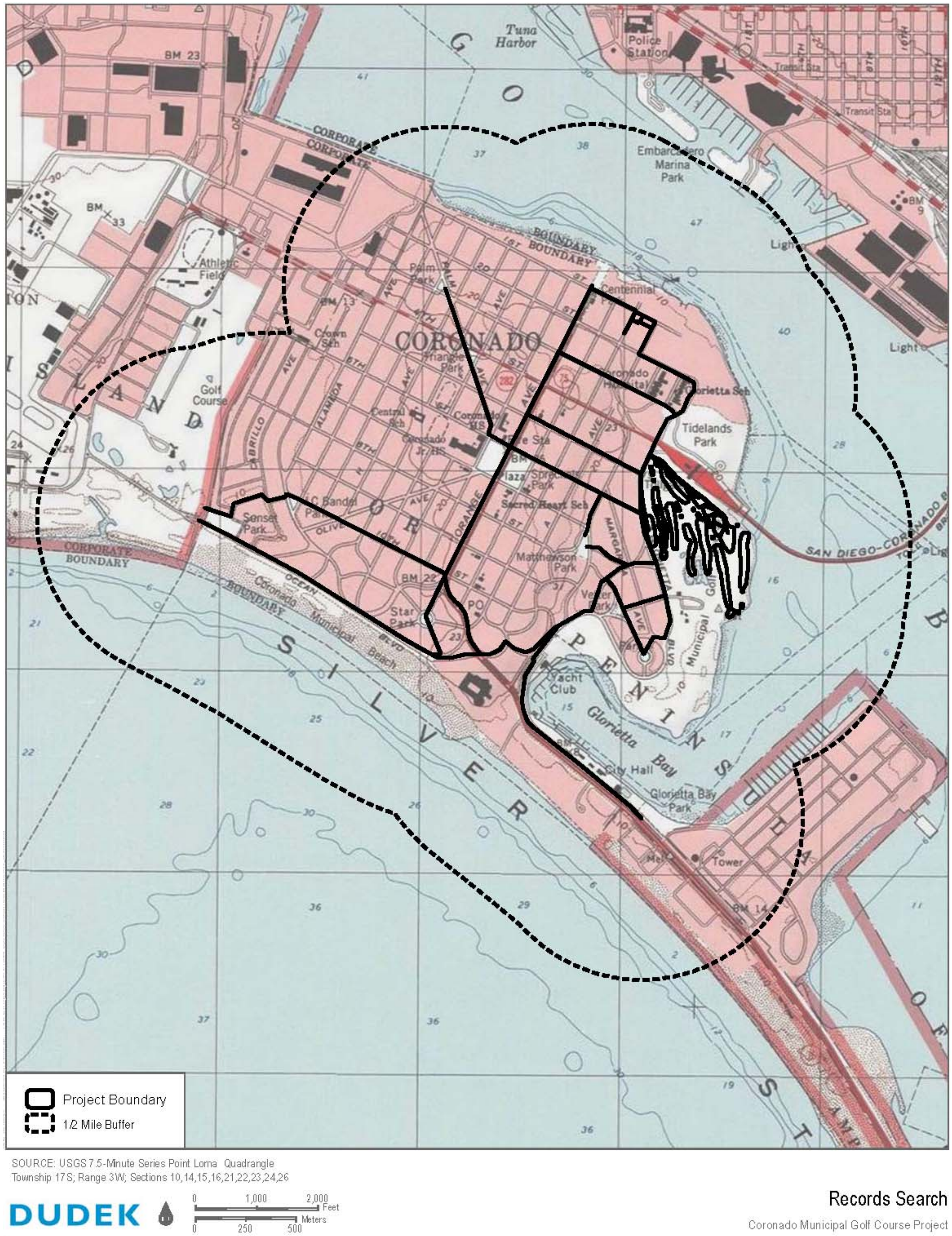

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T 760.942.5147 T 800.450.1818 F 760.632.0164

Jessica Colston

From: Ray Teran <rteran@viejas-nsn.gov>
Sent: Thursday, February 27, 2020 1:54 PM
To: Jessica Colston
Cc: Ernest Pingleton
Subject: Coronado Municipal Golf Course Modernization Project

The Viejas Band of Kumeyaay Indians ("Viejas") has reviewed the proposed project and at this time we have determined that the project site has cultural significance or ties to Viejas.

Viejas Band request that a Kumeyaay Cultural Monitor be on site for ground disturbing activities and to inform us of any new developments such as inadvertent discovery of cultural artifacts, cremation sites, or human remains.

If you wish to utilize Viejas cultural monitors, please call Ernest Pingleton at 619-659-2314 or email, epingleton@viejas-nsn.gov, for contracting and scheduling. Thank you.

Ray Teran
Viejas Tribal Government
Grant Writer / Administrator
619-659-2312
rteran@viejas-nsn.gov

APPENDIX C

Personnel Resumes

Angela Ngoctien Pham, RPA

Archaeologist

Angela Pham has over 10 years' experience as an archaeologist and archaeological lab director, with a variety of technical skills, including surveying, excavation techniques, testing, data recovery, monitoring, artifact identification, cataloging, and preservation and curation. She is highly knowledgeable about the California Environmental Quality Act and National Historic Preservation Act Section 106 and Section 110. She works closely with Native American tribal members and manages and supervises field crews and lab technicians, and directs, plans, and organizes field projects. Ms. Pham authors site inventory reports, cultural technical reports, and Department of Parks and Recreation (DPR) site records. She conducts record searches and research using the National Archaeological Database and the California Historic Resources Information System at the South Coastal Information Center.

EDUCATION

San Diego State University, California
MA, Applied Anthropology, 2011

San Diego State University, California
BA, Anthropology, 2008

CERTIFICATIONS

Registered Professional Archaeologist

PROFESSIONAL AFFILIATIONS

Society for American Archaeology,
San Diego Archaeological Society

Society for California Archaeology

Project Experience

Development

City of San Diego Underground Utilities On Call, City of San Diego, California. As Principal investigator, supervised the cultural resources mitigation program during construction. Coordinated cultural field monitoring, authored technical reports, prepared DPR forms and conducted site evaluations when applicable.

Patton State Hospital Project, California Department of General Services, County of San Bernardino, California. As project manager, supervised the cultural resources mitigation program during construction improvements to the facility in accordance with the mitigation measures and treatment plan for the project.

Proctor Valley Village 14 and Preserve Project, County of San Diego, California. Conducted field survey and site evaluation, prepared cultural resources report, and an archaeological data recovery plan for a component of the Otay Ranch master-planned community.

Archaeological Survey for the Torrey Highlands Office Project, The Preserve at Torrey Highlands LLC, San Diego County, California. As field director, conducted intensive pedestrian survey for proposed project area. Identified all potential impacts to existing and newly recorded cultural resources. The project involves development of a 450,000-square-foot office project in the Torrey Highlands community of San Diego, located south of State Route 56 along the future extension of Camino del Sur. The area of potential effects, consisting of the 11.1-acre project site, is bounded on three sides by undeveloped land within the City's Multi-Habitat Preservation Area.

Yokohl Ranch Cultural Resources, The Yokohl Ranch Company LLC, Tulare, California. As crew, Ms. Conducted archaeological data recovery in Yokohl Valley.

Archaeological Survey for the Canyon Spring Healthcare Center, City of Riverside Community and Economic Development Department, Riverside, California. As field director, conducted intensive pedestrian survey for proposed project area. Identified all potential impacts to existing and newly recorded cultural resources.

Archaeological Survey for Lake Mission Viejo Project, Lake Mission Viejo Association, Orange County, California. As field director, conducted intensive pedestrian survey for proposed project area. Identified all potential impacts to existing and newly recorded cultural resources.

Archaeological Testing and Monitoring for the Hamilton Hospital Project, Marin County, California. As field director, conducted extended Phase I testing and monitored auguring activities for the future construction and improvement of the Hamilton Hospital. Dug shovel test units, used Global Positioning System (GPS), and documented excavation.

Archaeological Survey and Testing for the Proctor Valley Village 14 & Preserve Project, Jackson Pendo Development, San Diego County, California. As archaeologist, conducted intensive pedestrian survey and field testing for proposed project area. Identified all potential impacts to existing and newly recorded cultural resources.

Archaeological Site Visit for the 888 North Sepulveda Boulevard Hotel Project, OTO Development, Los Angeles County, California. As archaeologist, conducted a pre-construction archaeological site visit with clients and construction foreman. Discussed standard archaeological field protocols.

Archaeological Monitoring for the Corona Brine Line Project, Santa Ana Watershed Project Authority, Riverside County, California. As archaeologist, coordinated with Charles King Company (construction company) project managers and construction foreman, conducted archaeological monitoring for the installment of the brine line.

Education

Archaeological Testing for the Mission Beach Elementary School Project, San Diego County, California. As field director, conducted Phase II of testing for future construction at the Mission Beach Elementary School. Dug shovel test units, used GPS, and documented excavation.

Parking Structure Project, Academy of Our Lady of Peace, San Diego, California. Conducted cultural monitoring, site evaluation, and report preparation.

San Marcos High School Monitoring Project, San Marcos Unified School District, San Diego County, California. As I archaeological monitor, conducted field monitoring during rough grading and trenching phases of construction at San Marcos High School.

Energy

Drew Solar Project, Drew Solar LLC, Imperial County, California. As principal investigator, Ms. Pham coordinated a SCIC records search, NAHC and Native American consultation, archaeological survey, and preparation of a negative technical letter report for this solar development. The mitigation strategy did not require additional archaeological monitoring or other work based on the lack of archaeological sites, and the low potential for encountering unrecorded subsurface cultural resources. Recommendations were submitted to Imperial County.

Jacumba Solar Extended Phase 1, NextEra, Jacumba, San Diego County, California. As field crew, conducted site examinations and limited shovel test pit excavation; co-authered letter report of findings.

Third Party Compliance Monitoring for the Tule Wind Project, San Diego County, California. Archeological compliance monitor, oversaw and implemented compliance assistance to the Bureau of Land Management to ensure adherence to mitigation measures and proper treatment of cultural resources. (2012-2013)

Inyo-Barren Ridge North American Electric Reliability Corporation (NERC) Compliance, Los Angeles Department of Water and Power, Kern, Inyo, and Mono Counties, California. As archaeologists co-authored the monitoring project report.

Blythe Solar Power Project, NextEra, Riverside County, California. As lead archaeologist, conducted compliance monitoring on Bureau of Land Management (BLM) land. Responsible for on-site implementation of the archaeological monitoring program, including daily safety briefings. Oversaw field monitors. Coordinated the work of sub-consultants or other contractors participating in archaeological field investigations. Assisted with report preparation.

McCoy Solar Energy Project, Riverside County, NextEra, California. As lead archaeological monitor, conducted and coordinated archaeological compliance monitoring, archaeological surveys, and Section 106 testing on BLM land for construction of access roads, substation, restoration activities, and a 230-kilovolt generation tie-line for the McCoy Solar Project. Responsible for on-site implementation of the archaeological monitoring program, including daily safety briefings. Oversaw field monitors. Coordinated the work of sub-consultants or other contractors participating in archaeological field investigations. Assisted with report preparation.

Cultural Resources for the Devers-Palo Verde 500-kilovolt (kV) Transmission Line, Southern California Edison (SCE), Riverside County, California. Served as archaeology monitor responsible for available data review, field survey, field monitoring, and cultural resource compliance maintenance among contractors.

Archaeological Monitoring for the Block 4N North Encanto Underground Utility Project, City of San Diego, San Diego County, California. As archaeologist, coordinated with San Diego Gas & Electric Company (SDG&E) project managers and construction foreman, and conducted archaeological monitoring for underground utilities trenching.

Cultural Resources On-Call Contract, SDG&E, San Diego, Riverside, Imperial, and Orange Counties, California. As field director, organized and led archaeological surveys of project areas on an as-needed basis. Identified, recorded, and mapped sites within the project areas. Provided management recommendations, pole placement recommendations, and cultural resources monitoring. Wrote DPR forms and technical reports regarding project findings.

Tule Wind Geotechnical Monitoring and NRHP Nomination Project, Iberdrola Renewables, San Diego County, California. As lead project monitor, coordinated and conducted monitoring for geotechnical work during the field operations of the Tule Wind Project**.**

Transportation

California High-Speed Rail Project Construction Package 2-3, Fresno to Bakersfield, Dragados/Flatiron Joint Venture, Fresno to Bakersfield, California. Conducted pedestrian surveys on the Fresno to Bakersfield Section of the project. Conducted daily compliance reporting.

Archaeological Monitoring for the City of San Juan Capistrano Highway 74 Project, Caltrans, Orange County, California. As archaeologist, coordinated with project managers and construction foreman, and conducted archaeological monitoring for Highway 74 improvements.

Water/Wastewater

Archaeological Testing for the Hidden Ridge Recycled Water Pipeline Project, Santa Margarita Water District, Orange County, California. As archaeologist, conducted extended phase I testing for the installment of a recycled water line to serve the Hidden Ridge community within the Santa Margarita Water District service area.

Archaeological Monitoring for the Line B, Project, Riverside County Flood Control and Water Conservation District, Riverside County, California. As archaeologist, coordinated with WINCO project managers and construction foreman, conducted archaeological and paleontological monitoring for all trenching activities for the pipeline.

Archaeological Survey for Lake Morena Dam and Outlet Project, San Diego County, California. As field director, directed field crew and conducted intensive pedestrian survey for proposed project area. Identified all potential impacts to existing and newly recorded cultural resources.

Archaeological Survey for Lake Morena Reservoir Project, City of San Diego Public Utilities Department, San Diego County, California. As field director, conducted intensive pedestrian survey for proposed project area. Identified all potential impacts to existing and newly recorded cultural resources.

Little Lake Line B Town Drain System Construction Project, Riverside County Flood Control and Water Conservation District, Riverside County, California. Served as cultural and paleontological monitor.

Relevant Previous Experience

San Diego Mission de Alcala Collections Management Project, San Diego County, California. As associate archaeologist, participated in the long-term management of the San Diego Mission artifact collections. Upgraded the archaeological collections to current archival and curation standards.

County of San Diego Fuel Reduction Parcel Preparation Program in Julian, Whispering Pines, and Along State Route 78/79, Environmental Resource Solutions Inc., San Diego County, California, 2013. As associate archaeologist, performed a cultural resources survey of the project area. Created avoidance measures in consultation with ERS and the County of San Diego and prepared a technical report.

Cultural and Historical Resources Report and Impact Analysis for the Elvira to Morena Double Track Project, HDR Engineering Inc., San Diego, California 2013. As associate archeologist, performed a cultural resources survey of the double track project area, including a visual impact of buildings within the indirect area of potential effect, and an evaluation of the railroad and associated railroad bridges and features.

Archaeological Testing for the Sorrento to Miramar Double Track Project, BRG Consulting for San Diego Association of Governments (SANDAG), San Diego County, California, 2013. As field director, conducted on-site water screening and lab processing with archaeological crew.

Archaeological Survey for the Padre Trail Inn Project, Helix Environmental Planning, San Diego County, California, 2013. As field director, conducted intensive pedestrian survey for project area. Identified all potential impacts to existing and newly recorded cultural resources.

Stabilization and Rehabilitation of the San Diego Mission de Alcala Archaeological Collections, Mission Basilica San Diego, San Diego County, California, 2013. As laboratory director, conducted the stabilization and rehabilitation of archaeological collections that are currently residing at the San Diego mission. Brought the collections up to present federal curation standards. Recommended options for proper long-term curation of collections.

Archaeological Survey for the Greater Julian Tree Removal Project, Julian, County of San Diego, California, 2013. As field director, conducted intensive pedestrian surveys for all areas that are part of the San Diego County fuels reduction program. Identified all potential impacts to existing and newly recorded cultural resources.

Archaeological Survey for the Gateway Road Project, Helix Environmental Planning, Calexico, Imperial County, California, 2013. As field director, conducted intensive pedestrian survey for 0.5-acre property. Recorded potential impacts to cultural resources.

Archaeological Monitoring for the Tule Wind Project, Iberdrola Renewables Inc., San Diego County, California, 2013. As supervisor archaeologist, conducted monitoring for geotechnical work in compliance with BLM requirements for Section 106 of the National Historic Preservation Act (NHPA). Surveyed and recorded existing and new sites located near geotechnical testing locations.

Archaeological Monitoring for the Black Mountain MET Tower Project, BLM, Imperial County, California, 2013. As supervisor archaeologist, conducted pedestrian survey prior to construction and created an access route to MET Towers. Monitored all construction activity.

Archaeological Survey for the Rosemary's Mountain Quarry Expansion Project, Granite Construction, San Diego County, California, 2013. As archaeologist, conducted an intensive pedestrian survey in order to determine if any previous or new cultural resources could be encountered during construction expansion. **Archaeological Survey for the Otay Mesa Cactus Road Project, U.S. Army Corps of Engineers, San Diego County, California, 2013.** As field director, conducted an intensive pedestrian survey in compliance with both NHPA and CEQA guidelines. Determined the presence and absence of any additional cultural resources within the project area.

Archaeological Testing and Monitoring for the 10th Avenue and Urbana Apartments Project, H.G. Fenton Company, San Diego County, California, 2012–2013. As supervisor archaeologist, conducted testing and trench excavation prior to construction of project area. Monitored all ground disturbance activities. Collected and recorded any cultural resources.

Archaeological Testing and Monitoring for the 15th and Market Apartments Project, 15th and Market Investors LLC, San Diego County, California, 2012–2013. As field director, conducted pre-construction subsoil testing and construction grading and demolition monitoring. Determined if any significant cultural resources were either present or absent. Recorded and documented any significant structures or features during construction.

Archaeological Testing for the Sorrento to Miramar Double Track Project, SANDAG, San Diego County, California, 2012. As field director, conducted on-site water screening and lab processing with archaeological crew.

Archaeological Survey for the Woodward Project, Helix Environmental Planning, San Diego County, California, 2012. As field director, conducted Phase I cultural resources survey for future development.

Archaeological Testing and Monitoring for the North Country Transit District, Sorrento to Miramar Project, ABC Construction, San Diego County, California, 2012. As field director, conducted test excavation in order to determine if cultural resources were located in construction area. Also conducted construction monitoring.

Archaeological Testing for the Padre Dam Eastern Service Area Secondary Connection-Alternative Site Location Project, Helix Environmental Planning, San Diego, California, 2012. As field director, conducted Phase II testing for future installment of reservoir, tanks, and water pumps. Dug shovel test units, used GPS, documented excavation, and supervised field crew.

Archaeological Evaluation for the Marine Corps Base Camp Pendleton Conjunctive Use Project, MCB Camp Pendleton, San Diego County, California, 2012. As associate archaeologist, conducted pedestrian survey in order to identify any cultural resources located on Camp Pendleton and Fallbrook boundaries of the area of potential effect.

Archaeological Monitoring for the Lusardi Creek Restoration Project, Dudek, San Diego County, California, 2012. As field director, conducted monitoring for the removal of invasive species adjacent to Lusardi Creek. Identified any cultural resources that were uncovered during the removal of invasive plants.

Archaeological Data Recovery and Monitoring for the Palomar College Mitigation Project, Palomar College District, San Diego County, California, 2012. As associate archaeologist, conducted controlled excavation units, water screened excavated soil, and lab processed all cultural material found on site.

Archaeological Data Recovery for the North Country Transit District, Sorrento to Miramar Project, ABC Construction, San Diego County, California, 2012. As associate archaeologist, conducted controlled unit excavations, water screened soil, and conducted lab processing both in the field and the lab. Client Reference: ABC Construction Co., Inc., 619.239.3428.

Archaeological Survey and Monitoring for California Department of Transportation (Caltrans) State Route 76 project, Caltrans District 11, San Diego County, California, 2011. As field director, conducted survey and monitored trenching for proposed State Route 76 road expansion.

Broadstone Little Italy Archaeological Testing and Monitoring, San Diego Natural History Museum, San Diego County, California. As lead project archaeologist, conducted both the testing and monitoring during field operations and prepared the initial report for the project.

Archaeological Survey for the De Luz Pole Replacement Project, SDG&E, San Diego County, California, 2011. As field director, supervised and conducted cultural surveys for future power pole replacements.

Archaeological Survey for the LNL UG Gateway, SDG&E, Laguna Nigel, Orange County, California, 2011. As field director, supervised and conducted surveys for future power pole replacements.

Archaeological Survey of SDG&E Power Poles, SDG&E, Palomar Mountain, San Diego County, California, 2011. As field director, conducted preconstruction survey of 19 power poles on Palomar Mountain.

Archaeological Survey and Monitoring for the Devers Palo Verde 2 Project, Southern California Edison, Riverside County, California, 2011. As field director, supervised and conducted survey and monitoring for proposed substation location. Coordinated work with Southern California Edison. Marked off areas of culturally sensitive materials.

Wood-to-Steel Preconstruction Archaeological Surveys for Tie Line Alternative Pole Replacements, SDG&E, San Diego County, California, 2011. As archaeological field technician, conducted preconstruction survey for future power pole replacements.

Archaeological Survey and Testing for the East County (ECO) Substation Project. SDG&E

Publications

Pham, A. 2011. "Historical and Archaeological Patterns of Water Use in San Diego County: A Case Study of the Whaley House Cistern/Well." Master's thesis; San Diego State University.

Jessica Colston

Associate Archaeologist, Paleontological Technician

Jessica Colston is an archaeological and paleontological field monitor and technician with 13 years' experience. Ms. Colston has extensive field experience including identification and comparative analysis of faunal assemblages, both past and present. Ms. Colston's research interests include zooarchaeology of Pacific coast hunter-gatherers, including examination of trauma and pathology, bone tool production, utilization of faunal materials beyond subsistence, morphometric analysis, taphonomic processes in coastal environments, and human impacts on local fauna.

Education

California State University, Los Angeles
MA, Anthropology (Archaeology emphasis), 2020 (expected)
University of California, Santa Cruz
BA, Anthropology (Archaeology emphasis), 2009

Certifications

CPR/First Aid
24-Hour HAZWOPER
Archeological Technician Certificate
Technician-Level Amateur Radio License, Call Sign K16NTC
Driver's License, Class M1

Professional Affiliations

Lambda Alpha National Honors Society
Society for American Archaeology
Society for Biological Anthropology
Society for California Archaeology

Project Experience

Development

Lone Oak Monitoring, CWC Lone Oak 24 LLC, San Diego, California. Coordinated daily archaeological and Native American monitoring for a residential development in an archaeologically sensitive area adjacent to jurisdictional waterways. Authored the Negative Monitoring report at the conclusion of the mass grading component of the project.

Hotel del Coronado North Parking Garage, Hdc South Beach Development LLC, Coronado, California. Responsible for monitoring into paleontological sensitive soils, and responsible for the recovery of any fossiliferous materials.

Costco Project, La Mesa, California. Drafted the Negative Survey Letter for the development of an adjacent commercial lot for Costco Gas station installation.

Sanborn Archaeological Significant Evaluation, Terra-Gen Development Company LLC, San Diego, California. Served as archaeological technician and report writer for evaluation excavations on previously recorded sites within the project's APE. Responsibilities included identification and documentation of archaeological features, artifacts and cultural soils. Report writing included the interpretation of the excavation results, both in terms of the artefactual assemblage and the sediments observed throughout the project area.

16970 Sunset Boulevard Cultural, Crest Real Estate, Los Angeles, California. Identified and documented archaeological and historical features on historic property.

235 North La Luna, Thomas and Kelly Adams, Ojai, California. Serving as archaeological technician. Responsible for excavation, documentation and collection of archaeological materials during phase II shovel testing.

Newland Sierra Project, Newland Sierra LLC, San Diego, California. Catalogued and performed data entry for collection previously housed with Palomar College.

Del Mar Beach Resort, Del Mar Beach Resort Investors LLC, San Diego County, California. Excavated, identified, and recorded archaeological materials recovered during phase II testing on site. Vertebrate and invertebrate analysis was performed in lab.

Highland Mesa Development II, Highland Mesa Development II Corp., Escondido, California. Served as archaeological technician. Monitored cultural resources during construction development for residential use.

The Yokohl Ranch Company Environmental Impact Report, Tulare County, California. Catalogued and sorted records of artifacts and features collected by project for analysis.

Villa Storia Affordable Housing Project, Villa Storia CIC LP, City of Oceanside, California. Served as archaeological technician. Identified and recorded cultural resources in the project area, which included on-site coordination with Native American monitors and subconsultants.

Twin Oaks Valley Road Residential Project, Pacific Real Estate Services, City of San Marcos, California. Wrote Negative Monitoring Report.

Villa Storia Monitoring, Beazer Homes Holding Corporation, City of Oceanside, California. Served as archaeological technician. Monitored ground disturbance in native soils adjacent to the Mission San Luis Rey during construction activities. This involved identification of ceramics, faunal bone, and historic ranching artifacts and impacts. Coordination with multiple subconsultants and Native American Monitors was also required.

Discovery Village South, City of San Marcos, California. Served as archaeological technician. Responsible for identification of historic and prehistoric cultural resources during survey of undeveloped project area.

973 K Street, SimonCRE Alpha III LLC, City of **San Miguel, California.** Served as archaeological technician. Responsible for pre-construction survey of lot purposed for commercial development. Responsible for coordination with the Native American monitors and evaluation of surface deposits of cultural materials. Proximity to the San Miguel Mission indicated likely subsurface deposits. Responsible for the preparation of Negative Findings Letter.

Energy

Edwards Additional 2019 Botanical Surveys, Terra-Gen Development Company LLC, San Diego, California. Responsible for co-authorship of the work plan and impact assessment plan for the Edwards AFB Solar Project. Preparation of these documents included the supplemental creation of an archaeological district, under SHPO guidelines. Faunal osteological identification/assessments contributed the work plan by proactively 'clearing' archaeological sites where any osteological material was previously recorded that was not clearly identified as non-human.

Task Order 23 EAFB 2019 Botanical, Terra-Gen Development Company LLC, San Diego, California. Co-authored work plan and impact assessment plan for the Edwards AFB Solar Project. Preparation of these documents included the supplemental creation of an archaeological district, under SHPO guidelines. Faunal osteological identification/assessments contributed the work plan by proactively 'clearing' archaeological sites where any osteological material was previously recorded that was not clearly identified as non-human.

Task Order 24 Cultural HPTP and MOA, Terra-Gen Development Company LLC, San Diego, California. Co-authored work plan and impact assessment plan for the Edwards AFB Solar Project. Preparation of these documents included the supplemental creation of an archaeological district, under SHPO guidelines. Faunal osteological identification/assessments contributed the work plan by proactively 'clearing' archaeological sites where any osteological material was previously recorded that was not clearly identified as non-human.

Centennial Flats Solar Project, Eolus North America Inc., Tonopah, Arizona. Responsible for leading an 11-person crew on a 5,000-acre Phase I survey in 10 survey days. Project area was previously un-surveyed and contained over 100 isolates and 10 newly recorded sites, including both prehistoric and historic habitations and infrastructure. Due to the time constraints of the survey, live coordination between two survey teams, project management, GIS and report writing was required. This was a methodological pilot project that yielded time saving innovations that will be implemented in other projects.

LNTP PreCon Activities, Tule Wind LLC, San Diego County, California. Co-lead on-site archaeologist. Responsible for coordination of monitors for full and appropriate coverage of ground-disturbing activities. Also responsible for identification, documentation, and collection of at-risk cultural resources present within the limits of the LNTP provided for the fence line.

California Flats Fairy Shrimp Project, First Solar Electric (CA) Inc., San Luis Obispo County, California. Responsible for mapping perimeter of vernal pool habitat for fairy shrimp. Occasional on-site inspection to reaffirm perimeter is in good condition.

Infrastructure Mapping on San Bernardino National Forest, Los Angeles Department of Water and Power, California. Performed LADWP field survey as an archaeological technician. Responsible for identification and documentation of cultural resources, both archaeological and historical.

Drew Solar Project, Drew Solar LLC, Imperial County, California. Performed phase I survey of proposed area for solar development. Documented and recorded historic canals and associated resources.

PP1&2 Transmission Line Conversion, Los Angeles Department of Water and Power, California. Responsible for field survey and record search associated with new transmission line work.

Tule Wind Compliance Monitoring, U.S. Bureau of Land Management (BLM), San Diego County, California. Responsible for monitoring and verifying the implementation of permit conditions in relation to cultural resources. This included detail oriented mapping, communication with on-site archaeological and cultural monitors, and documentation of incidents qualifying as violations of the established permit conditions or written agreements.

Blythe Unite 4, NextEra Energy Resources, Riverside County, California. Responsible for ensuring multiple on-site ground-disturbing activities had appropriate archaeological and paleontological monitoring coverage, as well as scheduling and recording of archaeological and paleontological materials discovered in the course of monitoring. This also involved the orchestration and coordination with multiple subconsultants, Native American monitors, archaeological field techs, and paleo monitors. Responsible for final identification and assessment of archaeological resources.

Jacumba Solar Archeological Project, BayWa Renewable Energy, San Diego County, California. As an archaeological monitor, responsibilities included identification, documentation, and collection of culturally significant artifacts and features. Monitoring was conducted in summer weather and required consistent movement to provide coverage for the ground disturbing activities.

McCoy Solar LLC Environmental Services, City of Blythe, California. Responsible for ensuring multiple on-site ground disturbing activities had appropriate archaeological and paleontological monitoring coverage as well as scheduling and recording of archaeological and paleontological materials discovered in the course of monitoring. This also involved the orchestration and coordination with multiple subconsultants, Native American monitors, archaeological field techs and paleo monitors. Responsible for final identification and assessment of archaeological as well as paleontological resources.

California Flats Project, First Solar Electric (CA) Inc., San Luis Obispo County, California. Responsible for ensuring multiple on-site ground-disturbing activities had appropriate archaeological and paleontological monitoring coverage, as well as scheduling and recording of archaeological and paleontological materials discovered in the course of monitoring. This also involved the orchestration and coordination with multiple subconsultants, Native American monitors, archaeological field techs, and paleo monitors. Responsible for final identification and assessment of archaeological and paleontological resources.

Jacumba Solar, Swinerton Builders, San Diego County, California. Served as archaeological monitor and was responsible for ensuring multiple on-site ground disturbing activities had appropriate archaeological monitoring coverage. Also responsible for the scheduling and recording of archaeological materials discovered in the course of monitoring.

McCoy Solar Energy Project, City of Blythe, California. Served as archaeological lead monitor and was responsible for ensuring multiple on-site ground disturbing activities had appropriate archaeological monitoring coverage as well as scheduling and recording of archaeological materials discovered in the course of monitoring. This also involved the orchestration and coordination with multiple subconsultants, Native American monitors, archaeological field technicians and paleontological monitors.

BLM Monitoring, Tule Wind LLC, San Diego County, California. Served as third-party archaeological monitor. Responsible for verifying compliance of construction with BLM and County permits and Conditions of Approval.

Military

Camp Wilson Infrastructure Upgrades, RQ Berg JV, City of Twentynine Palms, California. Responsible for coordinating archaeological monitoring with multiple subconsultants on an active military base. Unexploded ordnance training was a key element, as well as historic artifact identification.

Municipal

As-Needed Environmental Services, City of San Diego, California. Served as archaeological technician for historic site visits to nine of the dams within the San Diego Municipal water district's purview. Site visits included the recording of original and altered features of the historical structures and associated buildings. Responsible for the resultant resource descriptions for the present state of the historical resources. Dams visited included: San Vicente, El Capitan, Hodges, Miramar, Murray, Barrett, Upper Otay, Lower Otay and Sutherland.

City of Yucaipa On-Call Contract, California. Responsible for field survey of proposed impact areas for watershed projects. Recorded newly discovered cultural resources and the updating of existing records.

DS 86 BESS, Los Angeles Department of Water and Power, California. Record search at the South Central Coastal Information Center.

As-Needed Watershed and Resource Protection, City of San Diego, California. Wrote Barrett Lake reports.

San Diego Association of Governments Continuing Services Agreement, AECOM Technical Services Inc., San Diego County, California. Monitoring excavations in beach environment requiring railway safety training. Monitoring for this project required both paleontological and archaeological expertise. Responsibilities included identification, documentation and collection of prehistoric, historic and fossiliferous resources.

Resource Management

Double D Mine Project, Mitchell Chadwick, Blythe, California. Performed phase I Field survey around talc mine. Identification of historic and prehistoric resources was required, as well as recording and notifications.

Transportation

High Speed Rail Geotechnical, Dragados-Flatiron Joint Venture, Fresno, California. Performed excavation and identification of human osteological remains. Responsible for appropriate treatment and recording practices with sensitive remains.

Mid-Coast Corridor Projects, PGH Wong Engineering Inc., San Diego County, California. Approved as both an archaeological and paleontological monitor. Responsibilities focused on the identification, collection, and documentation of multiple ground disturbing activities during the course of the day. Railway training and strict adherence to safety protocols was vital. Prioritization of activities was required to provide appropriate coverage to various activities. Detailed documentation for both disciplines was required. Communication with multiple companies was required not only for technical documentation but also efficient use of time in the work day. Finds covered the spectrum from historic features and isolates to paleontological features.

Orange County Transportation Authority Additional Parking at Golden West Transportation Center, City of **Huntington Beach, California.** As archaeological technician, monitored construction and earth-moving operations for disturbances to archaeological/paleontological resources. Recorded any disturbed materials found. Workdays included working closely and safely around large construction equipment, which required good visual and verbal communication skills with construction personnel.

Water/Wastewater

Emergency Technical Support, Montecito Water District, Santa Barbara County, California. Responsible for field survey for assessment of impacts to archaeological resources during emergency efforts following the Montecito mudslides for FEMA compliance. Coordinated with emergency services for appropriate access and safety.

Hanson El Monte Pond Cultural Monitoring, Sierra Pacific West Inc., San Diego County, California. Responsible for preparation of the negative monitoring letter.

Inland Empire Brineline Reach V Rehabilitation, Santa Ana Watershed Project Authority, City of **San Bernardino, California.** Served as archaeological technician. Responsible for the monitoring of ground disturbing activities for archaeological resources.

North Broadway Pipeline Cultural Monitoring, Rincon del Diablo Municipal Water District, San Diego County, California. Responsible for the writing/preparation of the Negative Monitoring Report.

Relevant Previous Experience

Development

Bilstein Southwest Rally Cup Series, City of Yuma, Arizona. As an archaeological liaison, advised on proposals for the expansion of current rally series routes through state, federal and privately owned lands in California and Arizona. Conducted research and performed permitting for the rally series via the appropriate owners in compliance with Section 106. (2010–Present)

Catalina Island Metropole Project, Catalina Island, California. Screened back dirt from previous excavations with emphasis on identification of grave goods and the distinction between human and faunal remains. Participated in data analysis and entry into the Microsoft Access database. This data entry involved preliminary identification quality checks as well as metadata quality assurance within the database.

Sunshine Canyon Landfill Project, City of Simi Valley, California. Served as paleontological/archaeological monitor and primarily monitored for paleontological resources in canyon excavation. Daily field identification, recording, and preparation of fossiliferous or archaeological materials were required.

Various Monitoring Projects, Riverside and San Bernardino Counties, California. Served as paleontological/archaeological monitor on multiple projects in Riverside and San Bernardino counties during excavation activities such as grading and trenching, for items of any historical, archaeological, or paleontological significance. Identified and prepared paleontological samples in plaster in the field for transit to lab facilities.

Education

California State University, Los Angeles (CSULA) Coastal California Archaeological Lab Comparative Faunal Collection, City of Los Angeles, California. As founder and manager, established maceration lab compliant with Occupational Safety and Health Administration (OSHA) regulations. The lab specializes in providing students and professionals with an osteological comparative collection for species endemic and introduced along the California coast. This lab is also designed as a teaching lab where students can gain experience in maceration techniques and comparative anatomy.

ANTH 424 Archaeological Research Techniques, CSULA, Point Mugu Field School, Ventura County, California. As graduate assistant/field co-coordinator, taught field school survey, mapping, and excavation techniques as well as monitored the excavation of test units.

ANTH 310 Evolutionary Perspectives on Sex and Gender, CSULA, City of Los Angeles, California. As graduate assistant, assisted the course professor in the form of data entry, grading of papers, proctoring of exams, and chaperoned on the class field trip to the Los Angeles Zoo for primate observations.

Field School, CSULA, Point Mugu State Park, California. As field school crew leader/compass skills instructor, taught undergraduates mapping and orienteering techniques using topographic maps, compass, pace measurement and GPS skills. As a crew leader Ms. Colston facilitated the excavation of a test unit and the accompanying analysis of excavated materials.

ANTH 300 Evolutionary Perspectives on Emotion, CSULA, City of Los Angeles, California. Served as graduate assistant and aided the course professor in the form of data entry, grading papers, and the proctoring of exams.

Anthropology Department Assistant, University of California, City of Santa Cruz, California. As anthropology laboratories assistant, processed modern faunal specimens for maceration to museum/archival level quality. Preformed/supervised and taught the speciation of common osteological animal remains. Received extensive experience in the curation and cataloguing of incoming material from varying locations, contexts and categories. Made catalogues in both hard copy as well as digitally, with specific experience in FileMaker software. Skills in the use of scalpel blade maceration as well as dermestid beetles were extensively utilized. This position promoted a strong understanding of preservation techniques for different materials if they are to be used as an academic comparative.

Field School Cataloguing System, Cabrillo Community College, City of Aptos, California. Served as student collections analyst. During this final month of the field school learned how to utilize a cataloguing system whose input method was DOS, but also to create new cataloguing systems that were appropriate and commensurate with the scale of the project at hand. Also introduced to basic skills of field identification for historic items, appropriate references, and methods of classifying bone, stone and shell artifacts.

Presidio Field School, Cabrillo Community College, City of San Francisco, California. Served as student excavator. During this portion of the field school, Ms. Colston lived at the San Francisco Presidio and participated in the ongoing field project of excavating the area adjacent to the Officers' mess hall, but was historically the chapel. Methods learned here included using breaking bars and picks to dig through the melted adobe, as well as trowels, shovels, etc., to create pedestals and draw profiles.

Archaeological Technician Certification Course, Cabrillo Community College, Fort Hunter Ligget, Jolon, California. This was the first month of the three month course for earning the Archaeological Technician Certification. As student field surveyor, Ms. Colston was taught to use both basic and advanced methods of orienteering with topographic maps, compass, and GPS. Skills learned included utilization of latitude/longitude coordinates and Universal Transverse Mercators, township and range, and ethnographic narrative. For practical experience the team camped at Fort Hunter Ligget and performed transect surveys and shovel test pits.

Energy

NRG Power Plant Project, City of El Segundo, California. Served as paleontological/archaeological monitor and monitored for archaeological and paleontological materials in a coastal environment with excavations exceeding 20 feet below sea level. OSHA compliance and other environmental compliance regulations were emphasized.

Federal

U.S. Forest Service Field Survey, Modoc National Forest, California. Served as an archaeological technician. The majority of the job was field survey, recording new sites, monitoring known sites, and completing a federal monitoring form when visiting sites that had not been updating in 10 years or more. Responsible for detailed and accurate completion of federal site forms, positive artifact identification, material identification of artifacts (mostly lithics), ability to hike a minimum of 5 miles in extremely rocky terrain while carrying a 40 pound field pack.

U.S. Forest Service Crew Chief, Modoc National Forest, California. As crew chief, supervised and trained a crew of 3–4 people while conducting Section 110 compliance site recordation of both prehistoric and historic sites. Crew included 2–3 unpaid volunteers and at least one GS-03. This position required the independent completion of federal Environmental Impact Report forms. Detailed proofreading of technical reports for government use was required. The team used GPS navigation, topographic maps in latitude/longitude and Universal Transverse Mercators coordinates, in addition to compass navigation for archaeological site recognition and mapping. This position also included helping train, lead and supervise a Passport in Time (PIT) project, which introduced over 20 volunteers to the archaeological resources of Modoc National Forest. The PIT project had two sessions, which were each one week in duration.

Military

CA-SNI-40 Excavation Project, San Nicolas Island Naval Base, California. As archaeological field and lab assistant, assisted with excavation of CA-SNI-40, a coastal indigenous archaeological site on San Nicolas Island, off the southern coast of California. Analysis of excavated cultural material including bone from sea mammals and birds, shell, and lithics.

Phase 2 Survey Project, Center for Environmental Management of Military Lands, Fort Greely, Alaska. Served as archaeological technician. The team was completing Phase 2 surveys of probable sites while using shovel test pitting techniques to investigate subsurface deposits. Experience in using many tools for excavation depending on soil solidity, including: mattock, pickaxe, shovel, trowel, and ice pick, etc. Due to remote location of survey area, as well as working on military lands, multiple training certifications were received, including bear training, unexploded ordinance training, ARGO amphibious vehicle driving, and excavation through glacial till.

Resource Management

Sunshine Canyon Landfill Monitoring, City of Granada Hills, California. Served as air quality monitor and patrolled a neighborhood downwind of the landfill for offensive odors and recorded the findings. This job required that monitors also be on the lookout for anything unusual in the neighborhood, thus patrollers would act as unofficial members of the neighborhood watch.

Transportation

San Gabriel Mission Alameda Corridor–East Project, City of San Gabriel, California. Screened and excavated area immediately adjacent to Mission San Gabriel. The identification of human and faunal remains was invaluable.

Specialized Training

- Flint Knapping, 2012
- Society for California Archaeology (SCA) Zooarchaeology Workshop, 2011
- SCA Workshop Archaeochemistry Workshop, 2010
- Biohazard/Lab Safety, 2009
- Wilderness Bear Training, 2008
- Unexploded Ordinance Training, 2008

Conference Presentations

"A Spatial Analysis of the Distribution of Bone Tools at CA-SNI-25." 2014. Poster presented at the Society for American Archaeology 79th Annual Meeting. Austin, Texas.

"California Spiny Lobster (*Panulirus interruptus*) in the Archaeological Record." 2014. Presented at Society for California Archaeology 48th Annual Meeting. Visalia, California.

"Small Island, Big Connections: An Investigation into the Cultural Network Implications of the Redwood Box Cache." 2013. Presented at Society for California Archaeology 47th Annual Meeting. Berkeley, California.

"Quilted Subsistence Patterns: A Middle Holocene Food Tradition on San Nicolas Island, California." 2013. Presented at Society for California Archaeology 47th Annual Meeting. Berkeley, California.

"Preliminary Analysis of a Mainland Shell Midden: CA-VEN-395." 2013. Presented at Society for California Archaeology 47th Annual Meeting. Berkeley, California.

"Analyzing the Hafted and Unhafted Bifaces from the Redwood Box Cache Feature, San Nicolas Island, California." 2013. Presented at Society for California Archaeology 47th Annual Meeting. Berkeley, California.

"Historic Artifacts Recovered from the Redwood Box Cache on San Nicolas Island, California." 2013. Program of the 8th California Island Symposium. Ventura, California.

"Using Cranial Morphometrics to Investigate the Domestication of Foxes on San Nicolas Island." 2012. Program of the 46th Annual Meeting of the Society for California Archaeology. San Diego, California.

"Using Cranial Morphometrics to Investigate the Domestication of Foxes on San Nicolas Island." 2012. Presented at Student Research Conference, California State University, Los Angeles. Los Angeles, California.

Awards

Above and Beyond Volunteerism Award, Bilstein Southwest Rally Cup, 2013

California State University, Los Angeles (CSULA) Emeriti Fellowship, 2012

Fund to Support Graduate Students in Research, Scholarship, and Creative Activities, 2012

CSULA Travel Support Scholarship, 2012

Ladies Auxiliary Continuing Education Scholarship, Veterans of Foreign Wars Post No. 2075, Hawthorne, California, 2010

Academic Jacket Award, Los Angeles Unified School District, California, 2005

Advanced Placement Scholar Award, 2004

Patrick Hadel

Associate Archaeologist and Paleontological Field Technician

Patrick Hadel is an archaeologist with over 13 years' experience in cultural resource interpretation and preservation, as well as archaeological field methodology. Mr. Hadel has extensive experience in all phases of archaeology, including survey, evaluation, data recovery, and monitoring as field crew and field director. He is also well versed in organizing and managing of small and large teams to complete physically demanding research projects in remote and harsh environments safely and effectively.

EDUCATION

San Diego City College

AA, Anthropology (Awaiting Petition approval)

CERTIFICATIONS

Anza Borrego Desert Paleontology Society Certification (2019 - In Progress)

California Archaeological Fieldwork, San Diego City College

Cultural Resource Management Workshop, Archer Institute

PROFESSIONAL AFFILIATIONS

Society for California Archaeology

California Archaeological Site Stewardship Program

American Center for Mongolian Studies

Society for American Archaeology

Project Experience

Development

Palm Avenue Distribution Center, City of San Bernardino, California. Served as archaeological and paleontological technician monitoring excavation for this warehouse/distribution center construction.

235 North La Luna, Phase II Evaluation, City of Ojai, California. Served as archaeological technician for the evaluation of a property located near a well-known prehistoric village site slated for residential development.

Yucaipa Wilson Basin III, Phase II Evaluation, City of Yucaipa, California. Served as archaeological technician for the testing of archaeological sites identified in a residential expansion.

Proctor Valley Village 14, Jackson-Pendo Development Co., San Diego County, California. Served as archaeological technician. Participated in the evaluation excavation of 53 prehistoric and historic sites for a 1,300 acre residential development. Acted a laboratory technician processing artifact collection; assisted with lithic analysis.

Yokohl Ranch Development, Yokohl Ranch Company, Tulare County, California. Served as archaeological technician. Participated in survey of 1,900 acres and excavation of 110 prehistoric and historic archaeological sites in locations for a residential development project; acted as laboratory technician sorting and cataloging artifacts; assisted with preparation of DPR forms.

Archaeological Test Excavation, Monitoring, and Mitigation Project for the Casa de Bandini/Cosmopolitan Hotel in Old Town San Diego State Historic Park, California State Parks, San Diego, California. Served as field technician. Excavated conducted monitoring, testing, and mitigation for the remodeling and restoration of the ca. 1870's Cosmopolitan Hotel. Included test excavations in the interior of the Bandini adobe as well as exterior courtyard and porch.

Energy

Jacumba Solar Project, Baywa/Swinerton/NextEra, Jacumba, San Diego County, California. Served as field director for Phase I pedestrian survey of 200 acre opens space preserve. Acted as field technician for Phase II distributional testing of 100 acre solar facility; acted as field director lead archaeological monitor during project construction. Daily tasks for monitoring phase involved interaction with the construction contractors, facilities management, biologists, archaeologists, and Native American monitors to facilitate construction in compliance with all local, state and federal regulations in a culturally sensitive area; identified and excavated numerous thermal features, artifact scatters, and human remains during construction.

Cal Flats Solar Project, McCarthy Construction and First Solar Inc.,: Shandon, Monterrey and San Luis Obispo Counties, California. Served as archaeological monitor and crew chief during construction of a 1,700 acre solar facility. Worked closely with construction contractors and Native American monitors to conduct field operations in compliance with all state and federal regulations.

Tule Wind, Bureau of Land Management and Avengrid Renewables Inc., McCain Valley, San Diego County, California. Served as third-party archaeological monitor for the BLM ensuring the project maintained compliance with project mitigation measures and federal regulations.

Blythe Solar Power Project, NextEra, Blythe, California. Served as archaeological monitor for a 6.4 square mile solar field. Ensured construction contractors were in full compliance with project mitigation measures and federal regulations.

California Valley Solar Project, NRG/Sunpower, California Valley, San Luis Obispo County, California. Served as lead archaeological monitor and field director for construction of a 1,900 acre solar project. Managed a crew of 5–10 archaeologists and Native American Consultants. . Duties included: monitoring all soil disturbance for cultural resources, building and maintaining Environmentally Sensitive Area barriers and signage to protect cultural resources from construction impacts, and providing consultation to contractors to facilitate their compliance with all mitigation measures, state and federal cultural regulations, and to maintain an open and healthy cultural dialogue with the local Native American community.

Ocotillo Wind, Pattern Energy, Ocotillo, Imperial County, California. Served as archaeological monitor during construction of a 112 turbine wind farm situated in a very culturally and archaeologically sensitive location. Daily tasks included working closely with Native American monitors and construction personnel to ensure compliance with all mitigation measures and federal regulations.

Tule Wind Project, HDR Inc., San Diego County, California. Served as archaeological technician. Performed Class I and Class II pedestrian survey for 4,900 acre wind energy project; documented over 100 archaeological sites.

Sunrise Powerlink Project, San Diego Gas and Electric, San Diego and Imperial Counties, California. Served as lead archaeological monitor during construction of a 221-mile long high voltage electrical transmission line project. Acted as archaeological technician during the Phase I survey; recorded over 100 prehistoric and historic archaeological sites also acted as a Technician the Phase II evaluation and excavation of sites discovered during the survey portion.

City of San Diego As-Needed Contract, San Diego, California. Served as archaeological monitor for the installation of underground utilities on 10 separate projects throughout the City of San Diego. Acted as archaeological technician wet screening excavated sediments to recover human remains.

Federal

Dry Canyon Munitions Remediation, Army Corps of Engineers / Dawson Technical, Los Padres National Forest, Ventura, County, California. Served as archaeological monitor, accompanied an

Unexploded Ordinance team surveying for munitions during reconnaissance cleanup evaluation in a WWII-era artillery range. Performed a pedestrian survey of munitions sampling areas prior to activities. Documented nine new archaeological sites and updates eight previously recorded site; directed crews to avoid archaeological sites.

Military

Camp Wilson Facilities Upgrade, NAVFAC Southwest, Marine Corps Air Ground Combat Center (MCAGCC) Twentynine Palms, San Bernardino County, California. Served as archaeological monitor during the installation of upgrades to the Camp Wilson training facility on MCAGCC. Documented multiple isolates and directed crews to avoid significant sites in the vicinity of the project.

Delivery Order 30 Survey, NAVFAC Southwest, MCAGCC Twentynine Palms, San Bernardino County, California. Served as archaeological technician, participated in surveying numerous proposed landing zones throughout MCAGCC working closely with BEARMAT range safety and base personnel. Recorded more than a dozen new prehistoric archaeological sites.

Transportation

San Elijo Lagoon Double Track Project, AECOM, Encinitas and Solana Beach, California. Served as archaeological and paleontological monitor during construction of a second mainline railroad track. Coordinated closely with project biologist, Native American monitor, and construction contractors to ensure the project was completed in compliance with all project mitigation measures and state and federal regulations.

Mid Coast Rail Project, PGH Wong Engineering, San Diego, California. Served as archaeological monitor during construction of a second mainline railroad track and the installation of a double-track expansion of the Blue Line Trolley. Daily activities included working closely with biologists, Native American monitors, and construction personnel to complete the project in compliance with all mitigation measures and state and federal regulations.

Water/Wastewater

Barrett Lake Survey, City of San Diego, City of San Diego, California. Served as archaeological technician. Participated in the pedestrian survey of the lake shore area while the lake was at a historic low to identify potential impacts to archaeological sites during water level drawdowns; recorded 35 sites and seven isolates; prepared DPR forms and site descriptions for the survey report.

Otay River Estuary Restoration Project, Poseidon Resources, Imperial Beach, California. Served as archaeological technician. Participated in the evaluation excavation of four prehistoric sites, including an ethnohistoric village site; as laboratory technician, sorted and cataloged recovered materials.

Relevant Previous Experience

Ikh Nart Reserve, Dornogobi Province, Mongolia. Served as staff archaeologist. The Anza-Borrego Foundation, in partnership with Denver Zoo, Earthwatch, and the Mongolian Academy of Sciences, has a cultural resource identification and preservation program at the Ikh Nartiin Chuluu biological reserve in the Northern Gobi region of Mongolia. As a staff archaeologist, led field crews during field survey, excavation, ethnographic research; with the help of local families and herders, local archaeologists, and US-based archaeologists, created a public heritage preservation outreach program for cultural resource conservation; implemented programs to raise international awareness for the preservation of cultural resources.

Gaitaud Development and Design, San Diego, California. Served as construction foreman assistant in high-profile residential construction projects throughout San Diego County. Managed operations of laborers and skilled labor technicians during the process of residential development. Maintained safety standards and environmental compliance for various residential and commercial construction projects throughout San Diego County.

Specialized Training

- Field Data Collection: All Trimble products, ArcGIS, Pathfinder, CalTOPO, Total Station, GPR, Collector Apps, and Digital Theodolite.
- Extensive Construction and Development Knowledge: Operational knowledge of construction methods and terminology, experience working closely with skilled labor and construction management, lifelong experience with the world of construction, development and its various concerns.

Conference Presentations

"Working Towards an Exportable Indigenous Heritage Management and Cultural Ranger Program in the Ikh Nart Nature Reserve, Mongolia." Co-Authored with Terendagva Yadmaa, Ph.D., Joan Schnieder Ph.D., and Jennifer Farquhar, M.A. 2015. Presented at the Society for American Archaeology Annual Conference, San Francisco, California.

"Investigations at Burgas Ni Am Buddhist Monastery in the Northern Gobi, Mongolia." Co-Authored with Tserendagva Yadmaa, Ph.D. and Dalantai Sereuya. 2014. Presented at the Society for American Archaeology Annual Conference, Austin, Texas.

"A Mongolian Quarry Landscape in the Northern Gobi." Co-Authored with Joan Schneider Ph.D. and Tserendagva Yadmaa, Ph.D. 2014. Presented at the Society for American Archaeology Annual Conference, Austin, Texas.

"Toward a Cultural Heritage Management Program for Ikh Nart Nature Reserve, East Gobi Province, Mongolia: A Pioneer International Effort Based on the California State Parks Cultural Resources Preservation Model in the Eastern Gobi Desert of Mongolia." 2013. Poster presented at the Society for American Archaeology Annual Conference, Honolulu, Hawaii.

Appendix C

Geotechnical Investigation

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DRAFT REPORT OF PRELIMINARY GEOTECHNICAL INVESTIGATION CORONADO GOLF COURSE MODERNIZATION PROJECT CITY OF CORONADO

Submitted to:

CITY OF CORONADO
Public Services and Engineering
1825 Strand Way
Coronado, CA 92118

Prepared By:

ALLIED GEOTECHNICAL ENGINEERS, INC.
9500 Cuyamaca Street, Suite 102
Santee, California 92071-2685

AGE Project No. 65C4

December 18, 2019

DRAFT ONLY NOT FOR PUBLIC RELEASE

December 18, 2019

Mr. James Newton, P.E.
Principal Engineer
City of Coronado
Public Services and Engineering
1825 Strand Way
Coronado, CA 92118

Subject: DRAFT REPORT OF PRELIMINARY GEOTECHNICAL INVESTIGATION CORONADO GOLF COURSE MODERNIZATION PROJECT CITY OF CORONADO AGE Project No. 65C4

Dear Mr. Newton,

Allied Geotechnical Engineers, Inc. is pleased to submit the accompanying report to present the findings, opinions, and recommendations of a geotechnical exploration and laboratory testing program that was performed to assist the City of Coronado with the conceptual design of the subject project. It is our understanding that the results of our investigation will be included as part of a California Environmental Quality Act (CEQA) submittal for the subject project.

We appreciate the opportunity to be of service on this project. If you have any questions regarding the contents of this report or need further assistance, please feel free to contact our office.

Sincerely,

ALLIED GEOTECHNICAL ENGINEERS, INC.

Nicholas E. Barnes, P.G., C.E.G.
Senior Geologist

PROFESSIONAL GEOLOGIST No. 5303
Nicholas E. Barnes
No. 1893
CERTIFIED ENGINEERING GEOLOGIST
Exp 05/31/2020
STATE OF CALIFORNIA

Sani Sutanto, P.E.
Senior Project Manager

REGISTERED PROFESSIONAL ENGINEER
SANI SUTANTO
No. 51873
Exp 06/30/2020
CIVIL
STATE OF CALIFORNIA

NEB/SS/TJL:cal
Distr. (1 electronic) Addressee

9500 Cuyamaca Street, Suite 102 ■ Santee, California 92071-2685 Phone 619.449.5900 Fax 619.449.5902

REPORT OF PRELIMINARY GEOTECHNICAL INVESTIGATION
CORONADO GOLF COURSE MODERNIZATION PROJECT
CITY OF CORONADO

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1.0 INTRODUCTION

Allied Geotechnical Engineers, Inc. (AGE) is pleased to submit this report to present the findings, opinions, and recommendations of a geotechnical investigation conducted to assist the City of Coronado (City) with the conceptual design of a new Satellite Water Reclamation Facility (SWRF) for the Coronado Golf Course Modernization Project (GCMP). It is our understanding that the City plans to construct the proposed project using a Design-Build procurement process.

The geotechnical investigation was performed only to identify potential geologic and geotechnical hazards in the general area for the proposed SWRF, and provide assumed parameters for preliminary evaluation of the proposed project. The geotechnical investigation was not intended to provide parameters for final design of the proposed project. The assumed parameters presented in this report are for informational purpose only. The selected Design-Build Contractor shall perform their own design-specific geotechnical investigation. This report has been prepared for the exclusive use of the City and its team in the preparation of the conceptual design for the subject project as described herein. The information presented in this report is not sufficient for any other uses or the purposes of other parties.

2.0 SITE AND PROJECT DESCRIPTION

The Coronado Golf Course is located south of the San Diego - Coronado Bridge in the east portion of the City of Coronado, California (See Location Map, Figure 1). The golf course opened in 1957, on a site that was largely created by hydraulic infilling using soil materials generated from dredging of San Diego Bay. The golf course includes 18 holes as well as a driving range and practice facility. Access to the administration offices, pro shop, restaurant, meeting rooms and parking lot is from Visalia Row. Other course appurtenances include a maintenance facility, restroom buildings, paved cart paths, and several man-made ponds. The golf course is level to gently sloping, at elevations varying from approximately +9.5 feet to +15.5 feet above the mean sea level (msl). Nearby improvements include residential developments, various dockside facilities in Glorietta Bay, the U.S. Naval Amphibious Base, public beaches and public parks.

Based on a review of the Coronado Golf Course Modernization Project 2018 Final Feasibility Study Report prepared by Brezack & Associates Planning for the City of Coronado (Brezack & Associates Planning, 2018), it is our understanding that the scope of the proposed project is anticipated to consist of the design and construction of a new SWRF on the golf course. Additional facilities in the vicinity of the SWRF will include a turf care facility and a chemical storage building. The project will also include the construction of a new pond, and may require the redesign and realignment of three existing holes on the golf course. Furthermore, a new access road may also be constructed along the northern boundary of the golf course.

Three location options for the SWRF, turf care facility and chemical storage building were identified in the Final Feasibility Study Report (Brezack & Associates Planning, 2018). These locations were identified as Roadside Option, Trailside Option and Bayside Option. The geotechnical investigation was performed in the general area of the proposed Bayside Option which is anticipated to be underlain by thick sequences of fill and marine deposits. The study area which is located at latitude 32.688328° and longitude -117.165994° is identified as SWRF Study Area. The approximate limits of the SWRF Study Area are shown on the Site Plan (Figure 2).

The source of water for the SWRF will be the existing City of Coronado's sewerage system. New interception and diversion pipelines, interception points, and a Diversion Pump Station is proposed to be constructed off-site near the existing City of Coronado Public Services Building on B Avenue. New raw waste water and sludge pipelines will be installed along public right-of-ways between the Diversion Area and SWRF facility. In addition, new recycled water pipelines will extend from the SWRF facility, servicing both the golf course and other landscape areas in the City. The scope of the geotechnical investigation performed herein does not include these segments of the proposed project.

3.0 OBJECTIVE AND SCOPE OF INVESTIGATION

The objectives of this investigation were to characterize the subsurface conditions underneath the SWRF Study Area, and to evaluate geologic hazards and develop preliminary assumed geotechnical recommendations for use in the conceptual design of the proposed project. Our scope of services did not include geotechnical evaluation of the proposed pipeline alignments and other off-site facilities. The scope of our investigation included several tasks which are described in more detail in the following sections.

3.1 Information Review

This task involved a review of readily available information pertaining to the SWRF Study Area. The information that was reviewed included the background information that was provided to us, published geologic literature and maps, as-built utility maps, topographic maps, and AGE's in-house references. A listing of the references that were reviewed or cited in this report is presented in Section 8.0.

3.2 Permitting and Utility Clearance

This task involved the performance of several subtasks in preparation of the geotechnical field exploration program, and included:

- A site visit with representatives from the Coronado Golf Course to review the existing site conditions and to select suitable locations for the exploratory soil borings;

- Utility clearance of the proposed boring locations through Underground Service Alert (USA), and coordination with the Coronado Golf Course who assisted in locating the various irrigation pipes near the boring locations;

- Obtain well construction permit from the County of San Diego Department of Environmental Health (County DEH); and

- Scheduling and coordination of the field exploration activities with representatives from the Coronado Golf Course.

With the exception of golf course irrigation pipes and control system wiring, the utility clearance effort revealed no buried utilities within the SWRF Study Area.

3.3 Geotechnical Field Exploration

The field exploration program for this project was performed on October 21and 22, 2019. A total of two (2) soil borings were performed at the approximate locations shown on Figure 2. The soil borings were advanced to depths of 41.5 feet below the existing ground surface (bgs). Based on Google Earth (2019), ground surface elevation at the boring locations is estimated to be on the order of 10.5 feet and 9.5 feet msl for borings B-1 and B-2, respectively.

Following completion of the drilling operations, the borings were converted into groundwater monitoring wells. Solinst Levelogger and Barologger devices were installed inside the wells. AGE's scope of work for this project includes monthly collection of the groundwater data for a period of four months. The first data collection was performed on November 22, 2019, and the data from the readings is presented herein. The data from subsequent data collections will be presented in letter reports. A more detailed description of the excavation and sampling activities, and logs of the soil borings are presented in Appendix A.

3.4 Laboratory Testing

Selected soil samples obtained from the soil borings were tested in the laboratory to verify field classifications and evaluate certain engineering characteristics. The geotechnical laboratory tests were performed in general conformance with the American Society for Testing and Materials (ASTM) or other generally accepted testing procedures.

The laboratory tests included: in-place density and moisture content, maximum density and optimum moisture content, sieve (wash) analysis, consolidation, Atterberg limits; and shear strength. In addition, representative samples of the onsite soil materials were collected and delivered to Clarkson Laboratories and Supply, Inc. for chemical (analytical) testing to determine soil pH and resistivity, soluble sulfate and chloride concentrations, and bicarbonate content. A brief description of the tests that were performed and the final test results are presented in Appendix B.

4.0 GEOLOGIC CONDITIONS

4.1 Geologic Setting and Site Physiography

The SWRF Study Area is located at the western margin of the San Diego Embayment, a deep, sedimentary-filled basin which contains a thick sequence of Cretaceous to Holocene age sedimentary formations deposited over an old eroded surface of the basement rock complex. The basement rocks are part of the Peninsular Ranges geomorphic province, a north-south oriented mountain range which extends from the southern edge of the Los Angeles Basin into Baja California, Mexico. The basement rock complex consists of Cretaceous crystalline rocks of the Southern California Batholith and Jurassic metasedimentary and metavolcanic rocks of the Santiago Peak Volcanics.

The SWRF Study Area is located in the east portion of Coronado adjacent to San Diego Bay. Coronado is a land-tied island underlain by marine sediments which range from Pleistocene to Holocene in age. The golf course facility is located in an area created using hydraulic fill dredged from San Diego Bay. Glorietta Boulevard, which abuts the west side of the golf course, represents the approximate pre-existing shoreline. Review of a historic Nautical Chart of San Diego Bay dated 1947 (www.historicalcharts.noaa.gov) indicates that water depths in the area of present-day Coronado Golf Course were up to 7 feet below the mean lower low water (MLLW) elevation (-3.95 feet msl). A copy of the 1947 historical nautical map of San Diego Bay with the SWRF Study Area shown is presented on Figure 3.

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Review of historic aerial photos indicates that hydraulic filling operations performed to create the land area for Coronado Golf Course occurred after 1953. A photo dated 1966 indicates that the golf course originally extended further north, into present-day Coronado Tidelands Park. The course was re-configured to its current layout in the late1960s, apparently in conjunction with construction of the San Diego - Coronado Bridge which opened in 1969. Reconfiguration of the golf course required some additional hydraulic filling, with the fill creating new land area that was subsequently developed into present-day Holes No. 2 and 3 on the golf course. This area is located to the east of the SWRF Study Area.

4.2 Tectonic Setting

The SWRF Study Area lies along the western margin of a postulated structural depression (graben) that formed as a result of extension caused by movement through a bend along the Rose Canyon fault (Marshall, 1989). Localized extension and compression within the graben subsequently resulted in the development of numerous faults exhibiting a strike-slip and oblique-slip sense of separation. The Point Loma and the La Nacion fault zones, which are considered to be primarily normal faults, form the western and eastern margins of the graben, respectively. The graben is centered near the southern end of San Diego Bay, and is postulated to extend from downtown San Diego to several miles south of the U.S. International Border.

Tectonically, the San Diego region is situated in a broad zone of northwest-trending, predominantly right-slip faults that span the width of the Peninsular Ranges and extend offshore into the California Continental Borderland Province west of California and northern Baja California. At the latitude of San Diego, this zone extends from the San Clemente fault zone, located approximately 60 miles to the west, and the San Andreas fault located about 95 miles to the east.

Major active regional faults of tectonic significance include the Coronado Bank, San Diego Trough, San Clemente, and Newport Inglewood/Rose Canyon fault zones which are located offshore; the faults in Baja California, including the San Miguel-Vallecitos and Agua Blanca fault zones; and the faults located further to the east in Imperial Valley which include the Elsinore, San Jacinto and San Andreas fault zones.

4.3 Geologic Units

Based on their origin and compositional characteristics, the soil types encountered in the soil borings can be categorized into three geologic units which include (in order of increasing age) fill materials; undivided marine deposits; and old paralic deposits. A brief description of each unit is presented below. A generalized geologic cross-sections between the two borings is presented in Figure 4, and the cross section orientation is shown on Figure 2.

4.3.1 Fill Materials (Qaf)

Fill materials were encountered in both exploratory borings, extending to approximate depths of 20 feet bgs (-9.5 feet to -10.5 feet msl). In boring B-2 the upper 1-foot of fill consists of yellow brown silty sand containing organic material that appears to be an imported soil to support the golf course fairway grass. The remainder of fill material encountered in the soil borings generally consists of hydraulically-placed fine to medium grained silty sand and poorly graded sand with silt. Locally abundant shell fragments were also encountered in the hydraulic fill materials. Based on blow counts required to drive the soil sampler during the drilling operations, the hydraulic fill materials are in a loose to medium dense condition. The deposits are damp to wet.

We reviewed logs of soil borings performed in 1996 for an Earthquake Retrofit of the San Diego - Coronado Bay Bridge (Caltrans, 1996). Four of the soil borings for the retrofit project were performed in the proximity of State Route 75 in Coronado, located generally between the toll plaza and extending southeast to the bridge approach. These four borings were located approximately 450 feet to 1,200 feet from our study area. The logs describe the fill materials as generally consisting of sand, silty sand, sandy silt and sandy clay with locally abundant shell fragments. The fill materials are further described as "very loose/soft, and slightly compact to compact" in all four Caltrans' borings. The fill materials extend to approximate depths of 14 to 48 feet bgs (elevations of +5 feet to -10 feet msl). The fill materials encountered in AGE's borings were of similar consistency as those encountered in the Caltrans' borings.

4.3.2 Undivided Marine Deposits (Qmo)

Late Holocene age undivided marine deposits in the offshore region (Kennedy and Tan, 2008) were encountered below fill materials at each of the boring locations, extending to approximate depths of 32 feet bgs (elevations of -21.5 feet to -22.5 feet msl). These deposits are generally described as unconsolidated, often ponded marine sediments composed mostly of very fine- to medium-grained sand and silts.

Marine deposits encountered in our borings generally consist of fine-grained silty sand, poorly graded sand with silt and sandy silt. Scattered to locally abundant seashell fragments were encountered in the marine deposits. The soil materials were generally unconsolidated, wet, and in a very soft to medium dense/dense condition.

Three of the nearby Caltrans borings describe “recent native material”, “recent bay deposits”, and “native marine materials” encountered below the fill materials, extending to depths of 29 feet to 58 feet bgs (elevations of -15 feet to -20 feet msl). The deposits are generally described by Caltrans as fine silty sand, sandy silt, and clayey sands containing shell fragments, with the consistency of the deposits described as, “soft to very soft, loose to very loose, and slightly compact to compact”. Based on the Caltrans descriptions, these units appear to correlate with the undivided marine deposits encountered in our borings.

4.3.3 Old Paralic Deposits (Qop)

Late to mid-Pleistocene age old paralic deposits (Kennedy and Tan, 2008) were encountered below marine deposits at each of the boring locations, extending to the maximum depths of excavation. These deposits were formerly referred to as the Bay Point Formation. The deposits are generally described as poorly sorted, moderately permeable, reddish brown interfingered strandline, beach, estuarine and colluvial deposits composed of siltstone, sandstone and conglomerate resting on a now emergent wave-cut platform preserved by regional uplift (Kennedy and Tan, 2008).

The old paralic deposits encountered in our test borings generally consist of fine-grained silty sand and poorly graded sand with silt, with scattered to locally abundant seashell fragments present. The soil materials are indicative of a beach depositional environment. The soil deposits were generally uncemented, wet, and in a dense to very dense condition.

The nearby Caltrans (1996) borings generally describe the Bay Point Formation encountered in their borings as a fine silty sand, sandy silt, clayey sand and sandy clay and clay. Caltrans describe the consistency of these deposits as varying from dense to very dense and stiff to hard. The Bay Point Formation described in the Caltrans borings appears to correlate with the old paralic deposits of our borings. Caltrans extended their borings to approximate depths of 130 feet to 500 feet bgs (elevations of -110 feet to -490 feet msl).

4.4 Groundwater

During our field investigation, groundwater was measured in borings B-1 and B-2 at approximate respective depths of 10 feet and 9 feet bgs (approximate elevation 0.5 foot msl). The fill and formational materials encountered in the soil borings are generally considered to possess high permeability characteristics. As such, it is our opinion that the groundwater levels measured during the field exploration activities provide a reliable measure of the local groundwater table which may be encountered during construction.

The database available at the Geotracker website (www.Geotracker.com) includes a Groundwater Monitoring Report for the maintenance building at Coronado Golf Course prepared by EnvirOmega Consultants, Inc. (2007). The maintenance facility is located adjacent to Glorietta Boulevard, approximately 900 feet west of the project study area. EnvirOmega monitored a total of five wells in September of 2007, and reported that groundwater elevations beneath the maintenance site ranged from 5.35 to 5.45 feet msl, and that the direction of groundwater flow was to the northeast at 0.0016 feet per foot.

The SWRF Study Area is situated within the Coronado Hydrologic Area of the Otay Hydrologic Unit of the San Diego Basin Plan. Flow rate is anticipated to be low due to the flat topography. Groundwater flow is east to northeast toward the San Diego Bay.

Based on the results of our study, shallow groundwater and highly permeable soil materials are present beneath the SWRF Study Area. Given these site conditions, significant groundwater inflows can be expected in deep excavations for the construction project unless adequate engineering measures are taken to mitigate the groundwater inflow. It must be noted that variations in the elevation of the groundwater table should be expected in response to seasonal and tidal fluctuations in San Diego Bay.

4.5 Surface Water

The largest body of surface water in the vicinity of the SWRF Study Area consists of San Diego Bay to the east. Drainage in the area generally flows in an easterly and southeasterly directions towards the San Diego Bay. Existing drainage facilities at the golf course includes drain inlets and several man-made ponds.

5.0 DISCUSSIONS, OPINIONS AND RECOMMENDATIONS

The Designer of the Project is responsible for conducting a geotechnical investigation to develop design criteria. The findings of this preliminary investigation are to support the conceptual development phase only.

5.1 Potential Geologic Hazards

The primary geologic and seismic hazards potentially impacting the SWRF Study Area include fault rupture, strong ground shaking, and soil liquefaction. The SWRF Study Area is level to gently sloping, underlain by hydraulic fills associated with development of the Coronado Golf Course. Similar hydraulic fills are classified in the City of San Diego Seismic Safety Study (2008), as Hazard Category 31 - Liquefaction, defined as, "High potential- Shallow groundwater, major drainages, hydraulic fills." Furthermore, the SWRF Study Area is underlain by shallow groundwater.

5.1.1 Faulting

A concealed strand of the Silver Strand fault is mapped approximately 400 feet east of the SWRF Study Area (Kennedy and Tan, 2008; USGS, 2018). The Silver Strand fault is classified as active (USGS, 2018), with most recent activity in the latest Quaternary (less than 15,000 years). The project study area is also located within an Alquist-Priolo Earthquake Study Zone (California Geological Survey, online map). A map showing the approximate limits of the zone in relation to the SWRF Study area is shown on Figure 5.

For the purpose of this project we consider the Rose Canyon fault zone (RCFZ) to represent the most significant seismic hazard. The RCFZ is a complex set of anastomosing and en-echelon, predominantly strike slip faults that extend from off the coast near Carlsbad to offshore south of downtown San Diego (Treiman, 1993). Previous geologic investigations on the RCFZ in the Rose Creek area (Rockwell et. al., 1991) and in downtown San Diego (Patterson et. al., 1986) found evidence of multiple Holocene earthquakes. Based on these studies, several fault strands within the

RCFZ have been classified as active faults, and are included in Alquist-Priolo Special Studies Zones. In San Diego Bay, this fault zone is believed to splay into multiple, subparallel strands; the most pronounced of which are the Silver Strand, Spanish Bight and Coronado Bank faults. The Silver Strand fault, Coronado fault, Spanish Bight fault and Downtown Graben fault has been mapped within San Diego Bay with the first three faults crossing Coronado Island. Local faults in San Diego Bay and the vicinity of the SWRF Study Area are depicted in Figure 6.

A study by Kleinfelder (2017) at the San Diego International Airport identified two zones of active faulting. One of these faults was named the East Bay fault and the second fault was determined to be a northward extension of the Spanish Bight fault. A study performed by Ninyo & Moore at Seaport Village (2018) found evidence of recent movement along a fault that was determined to be a northward extension of the active Coronado fault.

Although the results of the geotechnical investigation at the SWRF Study Area and previous studies in the general vicinity of the SWRF Study Area do not indicate that fault surface rupture is a significant geologic hazard at the SWRF Study Area, the presence of previously unmapped faults crossing the SWRF Study Area cannot be precluded at the present time. The location of the SWRF Study Area in relation to the active faults in the region is shown on the Regional Fault Map (Figure 7). California Department of Transportation ARS Online (V2.3.09) was used to approximate the distance of the closest ten (10) known faults to the SWRF Study Area. A summary of seismic source characteristics for faults that present the most significant seismic hazard potential to the SWRF Study Area is presented in Table 1 on the next page.

Table 1

Summary of Seismic Source Characteristics

Fault	Maximum Magnitude (MMax)	Deterministic Peak Site Acceleration (g)	Closest Distance to Site (mile)
Rose Canyon fault zone (Silver Strand section-Silver Strand fault)	6.8	0.501	0.11
Rose Canyon fault zone (Silver Strand section-Coronado fault)	6.8	0.492	0.31
Rose Canyon fault zone (Silver Strand section-Downtown Graben fault)	6.8	0.462	1.01
Rose Canyon fault zone (Silver Strand section-Spanish Bight fault)	6.8	0.431	1.72
Rose Canyon fault zone (San Diego section)	6.8	0.405	2.32
Point Loma fault zone	6.3	0.438	0[1]
Coronado Bank (alt2)	7.4	0.225	10.90
Rose Canyon fault zone (Del Mar section)	6.8	0.163	12.99
San Diego Trough north alt1	7.3	0.128	22.30
Elsinore (Julian)	7.7	0.091	43.38

NOTE:

(1) Measured from Joyner-Boore distance which is the shortest horizontal distance to the surface projection of the rupture area. RJB is zero if the site is located within that area.

5.1.2 Seismicity

The SWRF Study Area is located in a seismically active area, typical of southern California. The SWRF Study Area is likely to experience moderate to strong ground shaking in response to earthquakes on either nearby or more distant faults. The seismic exposure at the site is dominated by the RCFZ and to a lesser extent by distant faults such as the offshore Coronado Bank and the onshore Elsinore fault zones. Assumed parameters for preliminary design earthquake ground motions are provided in Section 5.2.

5.1.3 Soil Liquefaction

Seismically-induced soil liquefaction is a phenomenon in which loose to medium dense, saturated granular materials undergo matrix rearrangement, develop high pore water pressure, and lose shear strength due to cyclic ground vibrations induced by earthquakes. Manifestations of soil liquefaction can include loss of bearing capacity below foundations, surface settlements and tilting in level ground, and instabilities in sloping ground. Soil liquefaction can also result in an increase in lateral and uplift pressures on buried structures.

An evaluation of liquefaction potential at the SWRF Study Area was conducted on the basis of the results of the SPT blow counts (N-values) and the simplified procedures outlined by Seed, et al. (1983). The procedure empirically correlates in-situ soil resistance with intensity of ground shaking to evaluate whether a soil is susceptible to liquefaction or not. The correlation is based on data collected from sites where soils have or have not liquefied during a documented earthquake event.

Equivalent SPT blow counts (N-values) are used in the in-situ evaluation of soil resistance. For analysis of liquefaction potential at the SWRF Study Area, a ground acceleration of 0.562g (2/3 of PGA_M - refer to section 5.5 of the report) was selected as a reasonable representative of repeatable level of ground acceleration associated with a MCE of 7 earthquake on the RCFZ.

The results of the liquefaction analyses performed using the SPT blow counts (N-values) indicate that the undifferentiated fill materials and the majority of the undivided marine deposits at the SWRF Study Area have a moderate to high potential for liquefaction to a depth of 35 feet bgs (approximate elevation of -25 feet NAVD88). The results of the analyses indicate that the old paralic deposits below a depth of 35 feet bgs have low to very low potential for liquefaction. Liquefaction at the SWRF Study Area most likely would manifest itself as local ground subsidence and settlement. Due to the relatively level ground surface elevation, lateral flow is not likely to occur.

Liquefaction settlement analyses based on the SPT results indicate that ground surface settlement on the order of 8 inches to 10 inches may be reasonably assumed during a seismic-induced soil liquefaction event at the SWRF Study Area. The liquefaction analyses is shown in Tables 2 and 3 on the next page. Subterranean structures and pipelines may also be subject to uplift pressures during a seismic event. Ground surface elevations are assumed at elevation 10.5 feet and 9.5 feet msl for borings B-1 and B-2, respectively. Unsaturated soil unit weight and saturated soil unit weight are assumed to be 100 pounds per cubic feet (pcf) and 110 pcf, respectively. Groundwater elevation is assumed at 0.5 foot NAVD88.

Table 2

Summary of Liquefaction Analysis for Boring B-1

Elev. (ft. navd88)	*N(60) (bpf)*	*Total Stress (tsf)*	*Eff. Stress (tsf)*	*Overburden Corr. Factor*	*N1(60) (bpf)*	*Stress Reduction Factor*	*Stress Ratio*	*CSR for 0.562g*	*N1 (60) For Liq. to Occur (bpf)*	*Liq. Safety Factor*	*Vol. Strain Due to Liq. (%)*	*Settlement (inch)*
10.5		0	0	0		0	0	0	0	0	0	0
5.5	9	0.25	0.25	2.00	18.0	0.990	1.000	0.362	27.8	0.65	0	0
0.5	24	0.50	0.50	1.41	33.9	0.980	1.000	0.358	27.7	1.22	0	0
-4.5	9	0.78	0.62	1.27	11.4	0.970	1.252	0.444	29.4	0.39	1.71	1.03
-9.5	4	1.05	0.74	1.16	4.7	0.960	1.423	0.499	30.0	0.16	3.28	2.99
-14.5	0	1.33	0.86	1.08	0	0.950	1.546	0.537	30.0	0.04	9.46	8.67
-19.5	7	1.60	0.98	1.01	7.1	0.940	1.639	0.563	30.0	0.24	2.42	10.12
-24.5	39	1.88	1.10	0.96	37.3	0.895	1.712	0.560	30.0	1.24	0	10.12
-29.5	100	2.15	1.21	0.91	90.8	0.850	1.771	0.550	30.0	3.03	0	10.12

Table 3

Summary of Liquefaction Analysis for Boring B-2

Elev. (ft. navd88)	*N(60) (bpf)*	*Total Stress (tsf)*	*Eff. Stress (tsf)*	*Overburden Corr. Factor*	*N1(60) (bpf)*	*Stress Reduction Factor*	*Stress Ratio*	*CSR for 0.562g*	*N1 (60) For Liq. to Occur (bpf)*	*Liq. Safety Factor*	*Vol. Strain Due to Liq. (%)*	*Settlement (inch)*
9.5		0	0	0		0	0	0	0	0	0	0
4.5	12	0.25	0.25	2.00	24.0	0.990	1.000	0.362	27.8	0.86	0	0
-0.5	8	0.45	0.45	1.49	11.9	0.980	1.000	0.358	27.7	0.43	1.66	0.99
-5.5	5	0.73	0.57	1.33	6.6	0.970	1.274	0.451	29.5	0.22	2.54	2.52
-10.5	0	1.00	0.69	1.21	0	0.960	1.453	0.510	30.0	0.04	8.73	7.76
-15.5	48	1.28	0.81	1.11	53.4	0.950	1.580	0.548	30.0	1.78	0	7.76
-20.5	16	1.55	0.93	1.04	16.6	0.940	1.674	0.575	30.0	0.55	1.30	8.54
-25.5	100	1.83	1.05	0.98	97.8	0.895	1.746	0.571	30.0	3.26	0	8.54
-30.5	100	2.10	1.16	0.93	92.7	0.850	1.804	0.560	30.0	3.09	0	8.54

Liquefaction-induced settlement could cause extensive damage and potentially catastrophic failure of structures supported on foundations located above and in the liquefiable layers. The design and construction of proposed structures at the SWRF Study Area will require mitigation measures to address the potential for differential movement due to liquefaction-induced settlement and/or related effects such as dynamic settlement and lateral spreading. These measures are anticipated to include ground modifications and/or the use of deep foundations. The Design-Build Contractor shall perform a site specific geotechnical investigation for the selection and design of the appropriate mitigation measures based on the actual design of the proposed project.

5.1.4 Landslides

A review of the published geologic maps indicates that the SWRF Study Area is not located on or near any known (mapped) ancient landslides. A review of the State of California Seismic Hazard Zones (2009) indicates that the site is not located in an area that is susceptible to landslide hazards. Based on review of the aforementioned information and the relatively level topography of the SWRF Study Area, it is our opinion that the potential for landslides at the SWRF Study Area may be reasonably assumed to be very low.

5.1.5 Lateral Spread Displacement

Lateral spreading occurs when underlying soil layer liquefies, and blocks of overlying surficial soil displace downslope or towards a sloping surface or unsupported "free face" such as riverbank. The lateral displacement typically ranges from a few inches to several feet and can cause significant damage to structures. The edge of San Diego Bay is located approximately 625 feet east of the SWRF Study Area. The slope at the edge of the bay consists of rip rap cover with an approximate height of 10 feet above the water line and total height of 22 feet to 25 feet including the submerged portion. Considering the level topography between the SWRF Study Area and the bay, and the distance from the underwater toe of slope, the risk of lateral spreading impacting the SWRF Study Area may be reasonably assumed to be very low.

5.1.6 Secondary Hazards

The SWRF Study Area is mapped as Zone X, "areas determined to be outside the 500-year floodplain" on Panel 1880G of Fema's Flood Insurance Rate Map (FIRM) for San Diego County, California and Incorporated Areas. A copy of the map is shown on Figure 8. The potential for flooding damage at the SWRF Study Area may be reasonably assumed to be low.

Seismic-induced tsunamis are potential flood hazard. However, the highest recorded tsunami in San Diego Bay was approximately 5 feet from peak to trough which would not affect the SWRF Study Area. A review of the California Geological Survey (CGS) Tsunami Inundation Map for Emergency Planning Point Loma Quadarangle (2009) indicates that the SWRF Study Area is not located within the tsunami inundation area. A copy of the map is shown on Figure 11. Evaluation performed with American Society of Civil Engineers (ASCE) Tsunami Hazard Tool using ASCE Tsunami Design Geodatabase Version 2016-1.0 (2016) indicate that the SWRF Study Area is not located within the Tsunami inundation design zone. The potential for tsunami-induced damage at the SWRF Study Area may be reasonably assumed to be low.

Seiches are standing waves in an enclosed or partially enclosed body of water. There is no known history of a seiche having occurred in San Diego Bay. Therefore, the potential for seiche-induced damage at the SWRF Study Area from San Diego Bay may be assumed to be low. It may also be reasonably assumed that there is a low potential of property damage from seismic-induced seiches occurring in the various man-made ponds on the golf course.

5.2 Soil Corrosivity

Soil is generally considered aggressive to concrete if its chloride concentration is greater than 300 parts per million (ppm) or sulfate concentration is greater than 1,000 ppm, or if the pH is 5.5 or less. Analytical testing was performed on representative sample of the onsite soil materials to determine pH, resistivity, soluble sulfate, chlorides and bicarbonates content. The tests were performed in accordance with California Test Method Nos. 643, 417 and 422. A summary of the test results is presented in Table 4 below. Copies of the analytical laboratory test data reports are included in Appendix B.

Table 4

Summary of Corrosivity Test Results

	pH	Resistivity (ohm-cm)	Sulfate Conc. (ppm)	Chloride Conc. (ppm)	Bicarbonates Conc. (ppm)
B-1 Sample No. 8 @32'-34'	8.4	750	690	340	38
B-2 Sample No. 1 @1'-2'	7.9	6,000	60	43	30

The test results indicate that the soil materials at the SWRF Study Area may be reasonably assumed to be moderately aggressive to concrete. Therefore, Type IV and Type V Portland Cement Concrete should be considered for design of proposed facilities at the SWRF Study Area. It should be noted here that the most effective way to prevent sulfate attack is to keep the sulfate ions from entering the concrete in the first place. This can be done by using mix designs that give a low permeability (mainly by keeping the water/cement ratio low) and, if practical, by placing moisture barriers between the concrete and the soil. Given the proximity to tidal water, concrete elements are also subject to minimum concrete cover and cement type.

AGE does not practice in the field of corrosion engineering. In the event that corrosion sensitive facilities are planned, we recommend that a corrosion engineer be retained to perform the necessary corrosion protection evaluation and design.

5.3 Expansive Soil

Based on visual observations and soil classifications, the soil materials encountered in the soil borings may be reasonably assumed to be non-expansive.

5.4 Historical Seismicity

EQSEARCH is a program that performs automated searches of a catalog of historical Southern California earthquakes. As the program searches the catalog, it computes and prints the epicentral distance from a selected site to each of the earthquakes within a specified radius (100 kilometers). From the computed distance, the program also estimates (using an appropriate attenuation relation) the peak horizontal ground acceleration that may have occurred at the site due to each earthquake.

The shear wave velocity for the upper 100 feet (V_{S100}) at the SWRF Study Area was estimated based on the corrected blow counts in AGE's boring, and using the correlation method developed by Ohta and Gotto (1978) for cohesive soil and David Boore (2004) extrapolation equation. The worksheet calculation is shown in Appendix C. A summary of the shear wave velocities at the SWRF Study Area is presented in Table 5 on the next page.

$$Vs = 86.9\,(N_{60})^{0.333} \qquad \text{(Ohta \& Goto, 1978)}$$

$$V_{S30} = [1.45 - (0.015 \text{ x } d)] \text{ x } V_{s(d)} \qquad \text{(David Boore, 2004).}$$

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Table 5

Summary of Shear Wave Velocities for the Upper 100 feet (V_{S100})

Boring ID	Shear Wave Velocities (V_{S100}) (ft/sec)
B-1	1,241
B-2	1,293

Based on the estimated shear wave velocities a shear wave velocity of 1,200 ft/sec (site Class D attenuation) was used for our analysis. We used a combined earthquake catalog for magnitude 5.0 or larger events which occur within 100 kilometers from the site between 1800 and December 1999. The earthquake catalog for events prior to about 1933 is limited to the higher magnitude events.

The search results indicate that the nearest earthquake of magnitude 5.0 occurred on May 27, 1862 on a strand of the Rose Canyon fault zone (Silver Strand section-Spanish Bight fault), which is located about one mile northwest from the SWRF Study Area. This earthquake resulted in a calculated ground acceleration of 0.465 g. The largest magnitude earthquake reported was a magnitude 7.0 event December 16, 1858, located 89 miles from the SWRF Study Area on the San Jacinto fault which resulted in a calculated ground acceleration of 0.036 g. The largest calculated seismic ground acceleration from this search is 0.465 g.

It is our opinion that the major seismic hazard affecting the SWRF Study Area would be seismic-induced ground shaking. The SWRF Study Area will likely be subject to moderate to severe ground shaking in response to a local or more distant large magnitude earthquake occurring during the life of the proposed facilities. For project design purposes, it is reasonable to assume that the RCFZ be considered as the dominant seismic source.

5.5 Seismic Design Parameters (ASCE 7-16)

AGE performed a site response characterization and evaluation of seismic design parameters for the proposed project based on American Society of Civil Engineers Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE 7-16) methods which will become effective on January 1, 2020 with the implementation of California Building Code (CBC) 2020 edition. The SWRF Study Area is underlain by potentially liquefiable soil and therefore is classified as Site Class F in accordance with Table 20.3-1 of ASCE 7-16. Section 20.3-1 of ASCE 7-16 requires that a site response analysis in accordance with Section 21.1 shall be performed for Site Class F with the following exception.

> "*For structures that have fundamental periods of vibration equal to or less than 0.5 s, site response analysis is not required to determine spectral accelerations for liquefiable soils. Rather, a site class is permitted to be determined in accordance with Section 20.3 and the corresponding values of Fa and Fv determined from Tables 11.4-1 and 11.4-2.*"

Therefore, design and construction of structures with fundamental period of less than 0.5 second at the SWRF Study Area does not require the performance of a site-specific site response analysis in accordance with Section 21.1 of ASCE 7-16. Design and construction of structures with fundamental period in excess of 0.5 second will require the performance of a site-specific site response analysis in accordance with Section 21.1 of ASCE 7-16.

For structural design in accordance with the ASCE 7-16, a computer program developed by the United States Geological Survey (USGS, 2019) was utilized to provide ground motion parameters for the subject site. The program includes hazard curves, uniform hazard response spectra and design parameters for sites in the 50 United States, Puerto Rico and the United States Virgin Islands. Based on the latitude and longitude and site classification, seismic design parameters and spectral response for both short period and 1-second period are calculated including the Mapped Spectral Response Acceleration Parameter and Site Coefficient.

The Risk-Targeted Maximum Considered Earthquake (MCE_R) ground motion response acceleration is calculated based on the most severe earthquake effects considered by ASCE 7-16 determined for the orientation that resulted in the largest maximum response to the horizontal ground motions and with adjustment to the targeted risk. The Maximum Considered Earthquake Geometric Mean (MCE_G) is determined for the geometric peak ground acceleration and without adjustment for the targeted risk. The MCE_G Peak Ground Acceleration (PGA) adjusted for site effects (PGA_M) should be used for design and evaluation of liquefaction, lateral spreading, seismic settlements, and other soil related issues. Based on the calculated shear wave velocities (see Table 6), the SWRF Study Area is classified as Site Class D.

Seismic design parameters presented in Table 6 on the next page be reasonably assumed for preliminary seismic analysis using ASCE 7-16 method. These criteria are based on the soil profile type as determined by existing subsurface geologic conditions, on the proximity of the site to a nearby fault and on the maximum moment magnitude and slip rate of the nearby fault.

Table 6

Summary of Assumed ASCE 7-16 Seismic Design Parameters

REFERENCE	ASSUMED PARAMETER
Risk Category	III
Site Classification	Site Class = D
MCER ground motion. (for 0.2 second period)	Ss = 1.546g
Site amplification factor at 0.2 second	Fa = 1.2
MCER ground motion. (for 1.0s period)	S_1 = 0.516 g
Site amplification factor at 1.0 second	Fv = 1.784g(1)
Site-modified spectral acceleration value	S_{MS} = 1.855g
Site-modified spectral acceleration value	S_{M1} = 0.921g(1)
Numeric seismic design value at 0.2 second SA	S_{DS} = 1.236g
Numeric seismic design value at 1.0 second SA	S_{D1} = 0.614g(1)
MCEG peak ground acceleration	PGA = 0.703g
Site amplification factor at PGA	F_{PGA}=1.2
Site modified peak ground acceleration	PGA_M = 0.843g
Factored deterministic acceleration value	PGA_D = 0.937g

Remark:

(1) The SWRF Study Area is located on Site Class D with S_1 greater than 0.2. The calculated value of S_{D1}/S_{DS} of 0.497. Since the fundamental period of the structures is less than 1.5 times of the value of S_{D1}/S_{DS} which is equal to 0.745, a site response analysis is not required for the proposed project.

5.6 Minimum General Earthwork Recommendations

5.6.1 General Requirements

Earthwork operations within the SWRF Study Area should be performed in accordance with the approved plans and specifications for the project, the applicable provisions of the City of Coronado Municipal Code, and Section 300 of the latest edition of Standard Specifications for Public Works Construction (SSPWC, known as the "Green Book").

5.6.2 Soil Excavation Characteristics

Based on our experience with similar geologic units, we anticipate that excavations of the on-site soil materials can be accomplished using conventional heavy-duty excavation equipment.

5.6.3 Fill Materials

The soil materials generated from excavations at the SWRF Study Area may be reasonably assumed to be suitable for use and placement as structural fill in the proposed building areas. Soil materials generated from excavations which extend below the ground water elevation may be reasonably assumed to require drying and mixing prior to use as structural backfill materials. At a minimum, fill materials should be free of biodegradable materials, hazardous substance contamination, or other deleterious debris. If the fill materials contain rocks or hard lumps, at least 70 percent (by weight) of its particles shall pass a U.S. Standard $^{3}/_{4}$-inch sieve. Fill materials should consist of predominantly granular soil (less than 40 percent passing the U.S. Standard #200 sieve) with Expansion Index of less than 30.

5.6.4 Fill Placement and Compaction

Prior to placement of fill materials, at a minimum, the firm competent ground which is determined to be satisfactory for the support of filled ground shall be plowed or scarified to a depth of at least 6 inches until the surface is free from ruts, hummocks, or other uneven features which would tend to prevent uniform compaction by the equipment to be used.

The fill materials, at a minimum, should then be moisture-conditioned, placed and uniformly compacted in layers until final elevations are reached. Each layer should be no thicker than will allow for adequate bonding and compaction, but shall not exceed 8 inches in loose (uncompacted) thickness. Unless otherwise specified, all fills shall be, at a minimum, compacted to at least 90 percent of maximum dry density as determined in the laboratory by the ASTM D1557 test method. Field density testing may be performed in accordance with either the Sand Cone Method (ASTM D1556) or the Nuclear Gauge Method (ASTM D2922 and D3017).

5.7 Foundations

Foundations for proposed structures at the SWRF Study Area should be designed to mitigate the impact of reasonably assumed seismic-induced liquefaction settlement on the order of 6 to 9 inches. Design of foundation for structures that have fundamental periods of vibration in excess of 0.5 s at a minimum will required the performance of a site-specific seismic response analysis.

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5.8 Concrete Slabs-on-Grade

Concrete slabs-on-grade for proposed structures at the SWRF Study Area, at a minimum, should be designed to mitigate the impact of reasonably assumed seismic-induced liquefaction settlement on the order of 6 to 9 inches. To reduce the potential for seismic-induced liquefaction settlement, vibrating, rotating, reciprocating and impacting equipment which create machine-induced vibration and/or shock may require the use of base isolation system to reduce the amount of vibration transmitted to the support slabs.

5.9 Drainage Control

Proper control and maintenance of site drainage is critical to the future performance of the project. Infiltration of irrigation and/or storm water into the subsurface soils could adversely affect the performance of the soils.

At minimum, positive drainage should be provided around the perimeter of all proposed buildings. Positive drainage is generally defined as a minimum 2 percent slope over a horizontal distance of at least 5 feet away from the perimeter foundations of a structure. No surface water should be allowed to collect or pond anywhere in the building areas, especially adjacent to or near foundations and slabs. Roof runoff should be controlled by using eave gutters and downdrains, and the discharge from the downdrains should be collected in a system of subdrain pipes which carry the water directly into a suitable on-site drainage facility.

5.10 Yard Piping Within SWRF Study Area

It is anticipated that construction of underground utilities within the SWRF Study Area will be performed using conventional open cut excavation methods. Assuming that no changes are planned to the existing ground surface within the SWRF Study Area, the net stress change in the underlying soils is considered negligible.

Based on the subsurface conditions encountered in the borings, the fill materials within the SWRF Study Area are expected to provide a stable trench bottom under static conditions. In the event that loose or disturbed soils are encountered at the trench bottom, it is recommended that they be over-excavated and replaced with pipe bedding or other approved materials. The actual limits/extent of over-excavation of loose or soft materials at the bottom of the trench excavations should be evaluated by the Design-Build Contractor.

5.10.1 Seismic-Induced Settlement

Underground utilities within the SWRF Study Area are located in an area that is underlain by soil materials which possess moderate to high susceptibility to seismic-induced liquefaction. The results of our analysis indicate that, depending on depth, a maximum differential settlement on the order of 9 inches over a distance of 20 feet can be expected to occur within the SWRF Study Area. Such differential settlement may cause damage to the pipe joints and/or alter the gradient of gravity pipeline alignments. Possible mitigation measures include the design and implementation of ground improvement measures such as jet or compaction grouting, or supporting the pipes on a system of deep foundations.

5.10.2 Soil and Excavation Characteristics

In our opinion, the soil materials encountered during the subsurface field investigation may be reasonably assumed can be excavated with conventional heavy-duty construction equipment. Our field investigation indicates that the majority of the fill materials that are located above the groundwater elevation may be reasonably assumed to be suitable for use as compacted trench backfill materials provided that, at a minimum, they are free of biodegradable materials, rocks or hard lumps greater than 4 inches in maximum dimension, hazardous substance contamination, or other deleterious debris. If the fill materials contain rocks or hard lumps, at least 70 percent (by weight) of its particles shall pass a U.S. Standard 3/4-inch sieve. The soil materials encountered below the ground water elevation will require drying and mixing prior to use as structural backfill materials.

5.10.3 Pipe Loads and Settlement

Pipes should be designed for all loads applied by surrounding soils including dead load from soils, loads applied at the ground surface, uplift loads, and earthquake loads. Soil loading above the groundwater level may be reasonably estimated assuming a density of 130 pcf for the backfill materials. The buoyant unit weight should be used below the water table.

Pipes located below the groundwater table may be subject to buoyant uplift forces. We have assumed that the trench excavations will be backfilled with compacted non-liquefiable soil materials with depth of soil cover greater than two times the pipe diameter. In this case, it may be reasonably assumed that the weight of the overburden backfill materials should be sufficient to resist the uplift forces. If the buoyant uplift forces exceed the effective dead weight of the soil over the pipe, provisions should be provided to anchor the pipe.

Where a pipe changes direction abruptly, resistance to thrust forces can be provided by means of thrust blocks. For design purposes, the passive resistance against thrust blocks embedded in fill and deposits may be reasonably estimated using an equivalent fluid density of 75 and 150 pcf for below and above the groundwater surface, respectively. At a minimum, thrust blocks should be embedded 3 feet beneath the ground surface.

As an alternate method, restrained joints may be used to provide resistance to thrust forces. Our analysis is based on the assumption that the pipe backfill materials are considered cohesionless. A restrained joint system is subjected to the same thrust forces as in a thrust block system, however the forces are distributed over the restrained pipe length. A friction angle between the pipe and soil (∂) of 20^o, Coefficient of Friction against sides of trench (μ) of 0.3 and Rankine's Ratio (K) of 0.37 may be reasonably assumed for preliminary design and evaluation of the necessary length of the restrained pipe.

Simplified (non finite element analysis) analysis methods for estimation of the additional soil pressure that will act on pipes during earthquake loading are not available. In general, unless the pipeline is located in a zone with potential for high differential movement such as a fault zone crossing, liquefiable zone, shear plane, or transition zone where the pipe enters a structure, flexible pipelines will conform to the ground movement during a seismic event without failure. To further reduce the risk of pipe damage that could occur as a result of earthquake loading, design vertical and horizontal loads on pipes that result from soil dead loads may be reasonably increased by 50 percent.

Buried flexible pipes are generally designed to limit deflections caused by applied loads. The deflections can be estimated using the Modified Spangler equation. A modulus of soil reaction, E', equal to 1,000 and 2,000 psi may be reasonably assumed to represent a minimum of 12 inches of compacted pipe bedding materials of low plasticity (LL < 50) with less than 12 percent fines passing the #200 standard sieve and crushed rock materials, respectively.

5.10.4 Trench Backfill

It is recommended that, at the minimum, the installation of sewer and water pipelines be performed in accordance with Drawing No. S-4 and W-21, respectively, of the San Diego Regional Standard Drawings.

5.10.5 Placement and Compaction of Backfill

Prior to placement, at a minimum, all backfill materials should be moisture- conditioned, spread and placed in lifts (layers) not-to-exceed 6 inches in loose (uncompacted) thickness, and uniformly compacted to at least 90 percent relative compaction. During backfilling, the soil moisture content should be maintained at or within 2 percent above the optimum moisture content of the backfill materials. At a minimum, it is recommended that the upper 36 inches directly beneath proposed paved areas be compacted to at least 95 percent relative compaction. The maximum dry density and optimum moisture content of the backfill materials should be determined in the laboratory in accordance with the ASTM D1557 testing procedures.

Small hand-operated compacting equipment should be used for compaction of the backfill materials to an elevation of at least 3 feet above the top (crown) of the pipes. Flooding or jetting should not be used to densify the backfill.

5.11 Trenchless Pipeline Construction

Trenchless pipeline construction within the SWRF Study Area should be designed based on the pipeline diameters, alignments and depths. It is anticipated that trenchless construction at the SWRF Study Area will encounter loose/collapsible soil, flowing sand and shallow groundwater, and will likely require the use of oversized steel casing to minimize ground surface settlement.

5.12 Subterranean Structures and Retaining Walls

It is recommended that, at a minimum, all proposed subterranean structures be founded on uniformly compacted fill materials. In areas where loose or soft soils are encountered at the bottom of the excavations, it is recommended that the loose/soft materials be removed to a minimum depth of 36 inches below the bottom of the excavation and replaced with 3/4-inch to 3-inch crushed rock materials wrapped in geotextile fabric. The actual extent of over-excavation of any loose/soft soil materials should be evaluated by the Design-Build Contractor. It must be noted that the crushed rock base is only intended to reduce the potential and magnitude of the seismic-induced differential settlement. Complete mitigation of the potential for differential settlement will require supporting subterranean structures on deep foundations and/or the performance of ground modifications such as compaction grouting or jet grouting in the area of the proposed structure.

Subterranean structures which extend below the groundwater level may be subject to seismic-induced liquefaction settlement. Pipeline connections to subterranean structures should be designed to accommodate reasonably assumed differential settlement of at least 9 inches.

Based on the subsurface conditions encountered in the borings, it is anticipated that retaining walls located within the SWRF Study Area will be supported on undocumented fill materials. To reduce the potential for differential settlement, at a minimum, we recommend that the footings for the proposed walls be embedded in uniformly filled ground compacted to a relative compaction of 95%. The compacted filled ground should extend a minimum depth of 36 inches below the elevation of the bottom of the key for the footings, and should extend minimum lateral distances of 6 foot in front of the wall and 6 feet behind the face of the footings. The on-site sandy soils may be reasonably considered to be suitable for use as backfill underneath and around the footings.

An allowable soil bearing capacity of 2,000 psf may be reasonably assumed for preliminary design of subterranean structures and retaining walls supported as described in this section of the report. This allowable soil bearing value is for total dead and live loads, and may be increased by one third when considering seismic loads.

Under static conditions, total settlement of foundations supported as described herein may be reasonably estimated to be less than 1 inch. Differential settlement between center and edge of foundation may be reasonably assumed to be less than 1 inch. No permanent deformation and/or post-construction settlement is anticipated, provided the backfill around structures and behind walls is properly compacted. For seismic-induced settlement refer to Section 5.1.3 - Soil Liquefaction.

At a minimum, all subterranean and retaining walls should be backfilled with soil materials which have less than 40 percent passing the standard #200 sieve and not less than 70 percent passing the U.S. standard 3/4-inch sieve, expansion index of less than 30 and minimum internal friction angle of 35°. In addition, the backfill materials should not contain any organic debris, rocks or hard lumps greater than 6 inches, or other deleterious materials. All backfill soils should be compacted to at least 90 percent of maximum dry density as determined in the laboratory by the ASTM D1557 testing procedure. In lieu of soil materials, walls may also be backfilled with Controlled Low Strength Material (CLSM).

For design of properly backfilled subterranean and retaining walls, an active soil pressure equivalent to that generated by a fluid weighing 35 and 61 pounds per cubic foot, for level and 2:1 (horizontal: vertical) sloped backfill, respectively, may be reasonably assumed for preliminary design of the walls assuming that they are free to rotate at the top at least 0.001H (where H is the height of the wall). An at-rest soil pressure equivalent to that generated by a fluid weighing 60 pounds per cubic foot may be reasonably assumed for design of walls restrained at the top. Traffic surcharge occurring within a horizontal distance equal to the wall height should be added as lateral pressure equal to an assumed uniformly distributed load of 75 psf along the entire face of the wall. Surcharge and foundation loads occurring within a horizontal distance equal to the wall height should be added to the lateral pressures.

Calculation for the assumed Seismic Active Earth Pressure was performed in accordance with the procedure outlined in Section 11.6.5.3 of the AASHTO LRFD Bridge Design Specifications 6th Edition (2012) using the Mononobe-Okabe (M-O) Method. The Horizontal Acceleration Coefficient (K_h) is estimated to be 1/2 of PGA_M and equal to 0.422g, Vertical Acceleration Coefficient (K_v) is assumed to be zero. The backfill material is assumed to have a unit weight of 130 pcf, friction angle of 35° and cohesion value of 600 psf. The calculated Seismic Active Earth Pressure Coefficient (K_{AE}) is equal to 0.12 for retaining structures up to 12 feet in retaining height.

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Based on the conditions described above, a triangular pressure distribution of 16 pcf (equivalent fluid pressure) may be reasonably assumed for the Seismic Active Earth Pressure. This seismic earth pressures may be assumed to act at 0.4H from the bottom of the wall and are applicable for both cantilever and braced conditions.

An active soil pressure equivalent to that generated by a fluid weighing 20 pounds per cubic foot may be reasonably assumed for walls backfilled with CLSM, assuming that they are free to rotate at the top at least 0.001H (where H is the height of the wall). An at-rest soil pressure equivalent to that generated by a fluid weighing 40 pounds per cubic foot may be reasonably assumed for the design of walls backfilled with CLSM.

At a minimum, subterranean and retaining walls should be designed to resist the assumed lateral earth pressures presented in Table 7 on the next page provided that the wall backfill materials are properly placed and compacted in conformance with the recommendations presented in this report. Surcharge and foundation loads occurring within a horizontal distance equal to the wall height should be added to the lateral pressures.

Table 7

Summary of Assumed Lateral Earth Pressures

Condition	Equivalent Fluid Weight (pcf)	
	Properly Compacted Fill	CLSM
Active Pressure - Level Backfill	35	CLSM unit weight during placement and 45 once the CLSM is set.
Active Pressure - 2 : 1 (H : V)	61	CLSM unit weight during placement and 45 once the CLSM is set.
Active Pressure Below GW Level	82	CLSM unit weight during placement and 45 once the CLSM is set.
At-Rest Pressure	60	CLSM unit weight during placement and 75 once the CLSM is set.
At-Rest Pressure Below GW Level	95	CLSM unit weight during placement and 75 once the CLSM is set.
Seismic Active Lateral Earth Pressures (same for Cantilever and Restrained conditions)	16	0

Lateral loads may be resisted by a reasonably assumed passive pressure equivalent to that generated by a fluid weighing 200 pounds per cubic foot, and maximum passive resistance is limited to 2,000 pounds per square foot. The upper 12 inches below the adjacent finish grade elevation should not be included in the passive resistance calculation. We recommend that a reasonably assumed friction coefficient of 0.35 be utilized for preliminary calculation of friction resistance between concrete and soil for retaining walls supported on compacted fill. Passive pressure and friction may be reasonably used in combination, without reduction, in determining the total resistance to lateral loads.

All subterranean and retaining walls should be properly waterproofed. Subterranean and retaining walls designed as fully-drained should be provided with a gravel and perforated pipe drain system to reduce the potential for hydrostatic pressure build-up behind the walls. The discharge from the wall subdrain should be directed to flow into a nearby located on-site drainage facility. As an alternative to a pipe and gravel drain system, a pre-manufactured drainage product such as "Mirafi G100N" or equivalent, may be used.

Where applicable, it is recommended that a foundation setback of at least 6 feet be observed for subterranean and retaining wall foundations from the top of any slope. Where walls are closer than 10 feet from the top of a slope, it is recommended that the foundations in those areas be deepened such that the exterior face of the footing at its bottom level is at least 10 feet away from the face/surface of the slope at the same level. No reduction in friction and passive pressure is required for walls designed as above.

Subterranean structures located below the groundwater table will be subject to buoyant uplift forces. Assumed geotechnical parameters for use in calculating preliminary uplift resistance of the surrounding backfill soil materials is presented in Figures 10 and 11.

5.13 Stormwater Infiltration

AGE did not perform a percolation testing program at the SWRF Study Area. However, based on our experience with other projects in the general area and similar soil types, it may be reasonably assumed that an average infiltration rate of 1 inch per hour may be used for design of Best Management Practice (BMP) storm water facilities at the SWRF Study Area.

It may be reasonably assumed that infiltrated water will flow in an easterly direction toward San Diego Bay, which is located approximately 625 feet from the SWRF Study Area. The Design-Build Contractor should consider the impacts of deep trenches in close proximity to any proposed BMP storm water facilities which may intercept the flow of the infiltrated water from BMP facilities.

Storm water infiltration is not anticipated to adversely impact the groundwater quality in the general area of the SWRF Study Area**.** Vertical distance to the regional groundwater table is anticipated to be less than 10 feet. A search of the Geotracker data base does not reveal the presence of any water supply wells within 100 feet of the SWRF Study Area.

5.14 Groundwater Measurement

In accordance with our scope of work, we have prepared a summary of the results of our groundwater level monitoring site visit on November 22, 2019. The readings from the Leveloggers installed in the wells which were retrieved during the site visit cover the period from October 22 through November 22, 2019 are included herein in excel format (Coronado Golf Course Groundwater Measurement in msl.xlsx). The water level readings obtained from the Levelloggers have been corrected with the barometric pressure readings from the Barrologgers. In addition, the elevations of the water in the San Diego Bay for the corresponding times are also presented in the spreadsheet. The readings were obtained from the National Oceanic and Atmospheric Administration Station 9410170 in San Diego Bay.

6.0 CONSTRUCTION-RELATED CONSIDERATIONS

6.1 Construction Dewatering

Based on the subsurface conditions encountered in the borings, the depth of the local groundwater table is anticipated to be on the order of 10 feet bgs or less. Excavations which extend below the groundwater level generally require lowering the groundwater to an elevation of 10 feet below the bottom of the excavations. Based on the subsurface conditions encountered in our borings, lowering the groundwater level at the SWRF Study Area may result in unintended consequences, such as detrimental settlements of adjacent areas of the golf course. Therefore, it is reasonable to assume that water tight shoring systems extended to elevation of at least 15 feet below the bottom of the proposed excavations may be a better option than lowering the groundwater level. Shoring systems which consist of soldier piles and/or laggings and interlocking steel sheet pile are reasonably assumed to be suitable for use at the SWRF Study Area. A sump pump system may then be used to intercept the water that entered the excavations.

6.2 Temporary Shoring

For all excavations which extend more than 4 feet below the ground surface and below the groundwater level, prevailing Federal and Cal OSHA safety regulations require that the trenched excavation be either sloped (if sufficient construction space or easement is available), shored, braced, or protected with approved sliding trench shield and/or shoring. Limited construction space, shallow groundwater, the potential of encountering running sand, the presence of shallow groundwater, the presence of other buried utilities, adjacent golf course facilities, and the need to avoid excessive community disruption dictate that a shored excavation may be needed for proposed project excavations. Design and construction of temporary shoring should be the sole responsibility of the contractor.

Settlement

Settlement of existing street improvements and/or utilties adjacent to the shoring may occur in proportion to both the distance between shoring system and adjacent structures or utilities and the amount of horizontal deflection of the shoring system. Vertical settlement will be maximum directly adjacent to the shoring system, and decreases as the distance from the shoring increases. At a distance equal to the height of the shoring, settlement is expected to be negligible. Maximum vertical settlement is estimated to be on the order of 75 percent of the horizontal deflection of the shoring system. Shoring should be designed to limit the maximum horizontal deflection to 1-inch or less where structures or utilities are to be supported.

Pre- and post-construction surveys should be conducted to document existing site conditions. Documentation should include photographic and video surveys of the existing facilities and site improvements, as well as field surveys of building floors and pavement structures. At a minimum, a weekly survey of existing utilities should be performed during the construction phase.

Lateral Earth Pressures

Temporary shoring should be designed to resist the pressure exerted by the retained soils and any additional lateral forces due to loads placed near the top of the excavation. For design of braced shorings supporting fill materials and marine deposits above an approximate elevation of -24.5 feet msl, lateral earth pressure of 35H psf may be reasonably assumed, where H is equal to the height of the retained earth in feet. For braced shoring supporting old paralic deposits below elevation of -24.5 feet msl, the lateral earth pressures may be reasonably reduced to 20H psf.

For surcharge load, a uniform lateral pressure of 0.3q may be reasonably assumed, where "q" equals the uniform surcharge pressure. The surcharge pressure should be applied starting at a depth equal to the distance of the surcharge load from the top of the excavation. In the event that the bottom of the excavation is located below the groundwater level, hydrostatic pressure should be added to the lateral loads.

The assumed lateral earth pressures have been prepared based on the assumptions that the shored earth is level at the surface and that the shoring system is temporary in nature.

Soil Resistance

The following soil resistance values may be reasonably assumed in the preliminary design of sheet piles and soldier piles for temporary shoring systems.

Passive earth pressure =	200 pcf and 400 pcf for each foot of embedment above elevation of -25 feet NAVD88 and below -25 feet NAVD88, respectively.
Maximum passive earth pressure =	2,000 psf and 4,000 psf for embedment above elevation of -23 feet NAVD88 and below -23 feet NAVD88, respectively.
Overburden depth at subgrade =	Not applicable

Allowable tip end bearing =	2,000 psf and 4,000 psf (for minimum 18-inch diameter soldier piles) for embedment above elevation of -25 feet NAVD88 and below -25 feet NAVD88, respectively.
Allowable skin friction =	150 psf and 600 psf for embedment above elevation of -25 feet NAVD88 and below -25 feet NAVD88, respectively
Minimum embedment =	Below the bottom of any adjacent excavations located within a 1 : 1 (vertical : horizontal) zone of influence projected from the tip of the pile.

The assumed soil resistance values presented herein have been prepared based on the assumptions that the shoring system is temporary in nature.

6.3 Temporary Shoring Construction Considerations

It is assumed that a crane-mounted standard continuous flight rotary augers or pile driving hammers will be used for construction of the proposed shoring systems. It is assumed that drilling fluids and or slurry displacement method will be required for the installation of soldier piles. It is further assumed that vibratory piling drivers are suitable for installation of sheet piles at the SWRF Study Area. However, the shoring contractor should make his own determination on the proposed pile installation method.

Zones with abundant gravels and cobbles were not encountered during drilling. The contractor should be prepared to use drilling buckets in the event that the augers are unable to extract the cuttings from the drilled shafts. No boulders and/or hard rocks were encountered during the subsurface investigation. Therefore, the need for rock coring is not anticipated on this project. The use of temporary steel casings for portions of the drilled shafts which are located in fill and/or zones with abundant gravels and cobbles is not anticipated. In the event that steel casings are required, the casings may be extracted from the shafts as the concrete is placed.

It is recommended that continuous inspection by a qualified geologist be performed during shoring installation to confirm and verify the soil type at the bottom of the shafts. Furthermore, prior to placement of concrete, it is recommended that the shafts be cleaned of all loose materials with a cleanout bucket. Concrete should be placed by using a tremie or pump pipe which can be adjusted to permit free discharge of concrete and lowered rapidly, if needed, without excessive contact with the sides of the shaft.

6.4 Environmental Considerations

The scope of AGE's investigation did not include the performance of a Phase I Environmental Site Assessment (Phase I ESA) to evaluate the possible presence of soil and/or groundwater contamination beneath the SWRF Study Area. During our subsurface investigation soil samples were field screened for the presence of volatile organics using a RAE Systems MiniRAE 3000 organic vapor meter (OVM). The field screening did not reveal elevated levels of volatile organics in the samples.

In the event that hazardous or toxic materials are encountered during the construction phase, the contractor should immediately notify the City and be prepared to handle and dispose of such materials in accordance with current industry practices and applicable Local, State and Federal regulations.

7.0 GENERAL CONDITIONS

7.1 Post-Investigation Services

Post-investigation geotechnical services are an important continuation of this investigation, and we recommend that the City's Construction Inspection Division monitor the Design-Build Contractor performance of the necessary geotechnical observation and testing services during construction. In the event that the City is unable to monitor said services, it is recommended that our firm be retained to provide the services.

Sufficient and timely observation and testing should be performed during excavation, pipeline installation, backfilling and other related earthwork operations. The purpose of the geotechnical observation and testing is to correlate findings of the Design-Build Contractor investigation with the actual subsurface conditions encountered during construction and to provide supplemental recommendations, if necessary.

7.2 Uncertainties and Limitations

The information presented in this report is intended for the sole use of the City and other members of the project development team for conceptual project definition purposed only. The Design-Build Contractor is required to perform an independent evaluation of the subsurface conditions for the design and the SWRF and other project facilities.

AGE has observed and investigated the subsurface conditions only at selected locations at the SWRF Study Area. The findings and recommendations presented in this report are based on the assumption that the subsurface conditions beneath the SWRF Study Area do not deviate substantially from those encountered in the exploratory soil borings. Consequently, modifications or changes to the recommendations presented herein may be necessary based on the actual subsurface conditions encountered during the Design-Build Contractor's geotechnical investigation and during construction.

California, including San Diego County, is in an area of high seismic risk. It is generally considered economically unfeasible to build a totally earthquake-resistant project and it is, therefore, possible that a nearby large magnitude earthquake could cause damage at the SWRF Study Area.

Geotechnical engineering and geologic sciences are characterized by uncertainty. Professional judgments and opinions presented in this report are based partly on our evaluation and analysis of the technical data gathered during our present study, partly on our understanding of the scope of the proposed project, and partly on our general experience in geotechnical engineering.

In the performance of our professional services, we have complied with that level of care and skill ordinarily exercised by other members of the geotechnical engineering profession currently practicing under similar circumstances in southern California. Our services consist of professional consultation only, and no warranty of any kind whatsoever, expressed or implied, is made or intended in connection with the work performed. Furthermore, our firm does not guarantee the performance of the project in any respect.

AGE does not practice or consult in the field of safety engineering. The contractor will be responsible for the health and safety of his/her personnel and all subcontractors at the construction site. The contractor should notify the City if he or she considers any of the recommendations presented in this report to be unsafe.

8.0 REFERENCES

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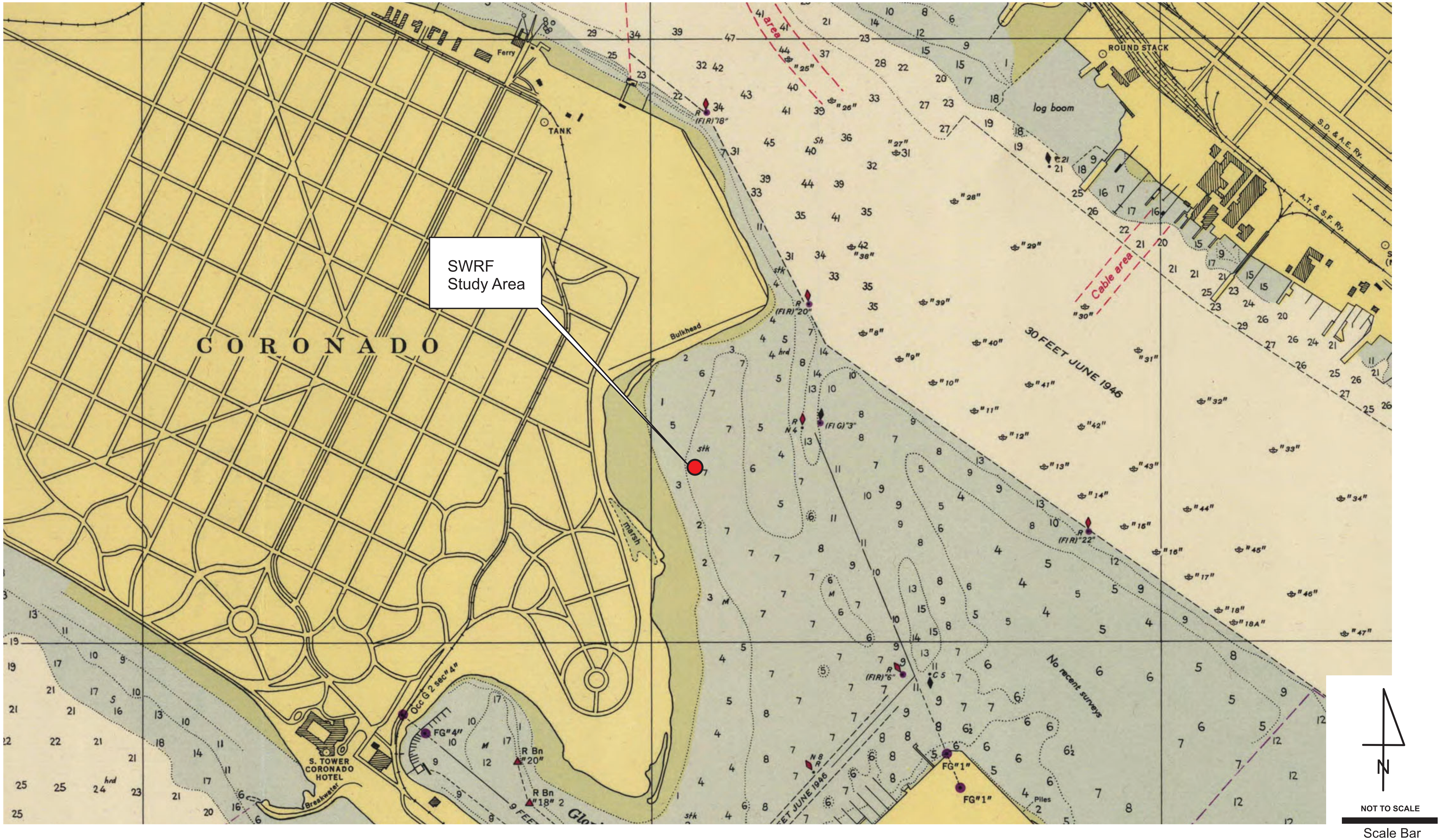
U.S. Department of Agriculture black and white aerial photograph Nos. AXN-3M- 197 and 198 (dated 1953).

FIGURES

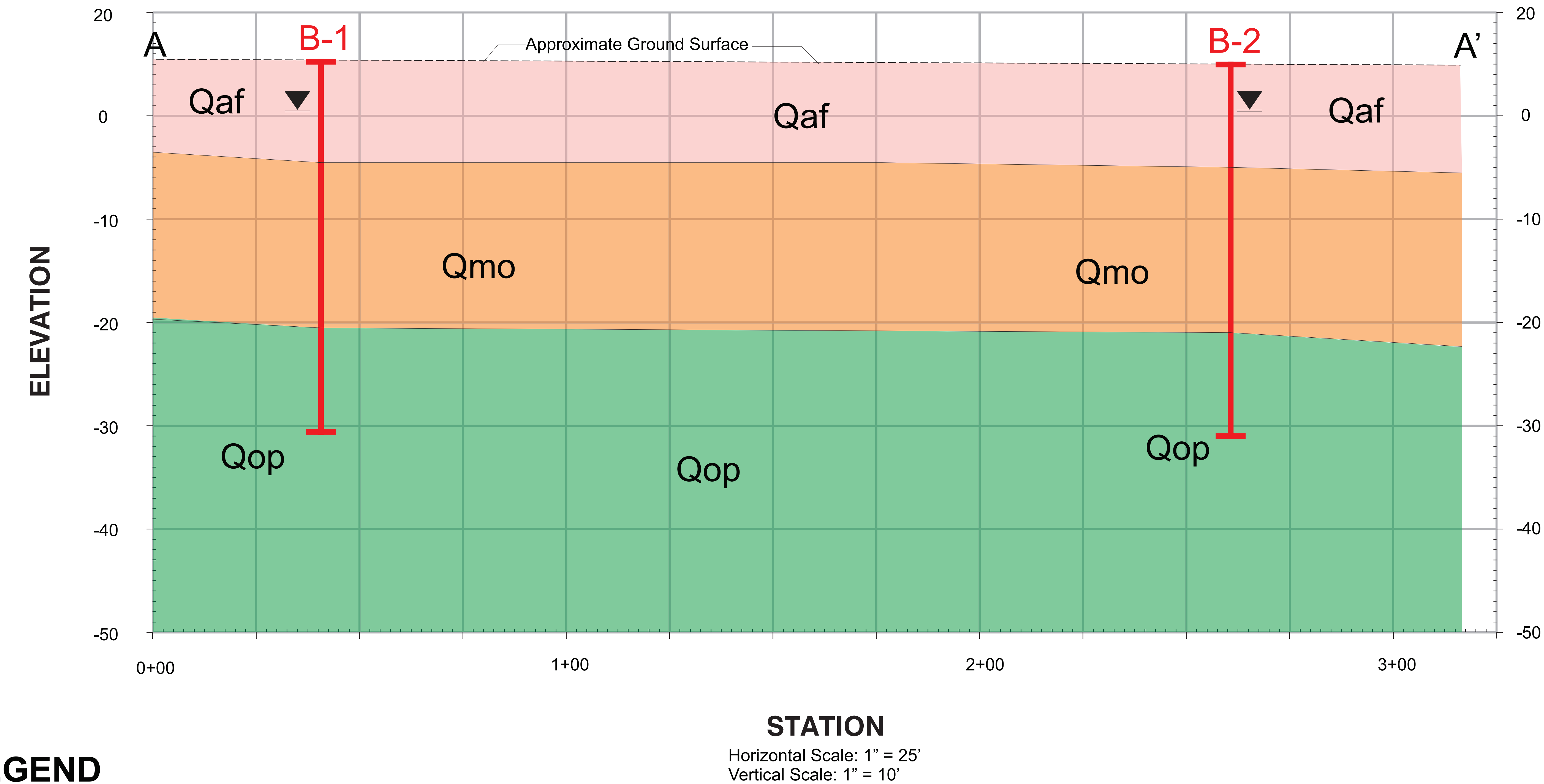
CORONADO GOLF COURSE MODERNIZATION PROJECT	SWRF STUDY AREA LOCATION MAP	
PROJECT NO. 65C4	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE 1

CORONADO GOLF COURSE MODERNIZATION PROJECT		SWRF STUDY AREA SITE PLAN
PROJECT NO. 65C4	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE 2



CORONADO GOLF COURSE MODERNIZATION PROJECT	SAN DIEGO BAY NAUTICAL CHART 1947

PROJECT NO. 65C4	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE 3



LEGEND

Qaf	Fill Materials
Qmo	Undivided Marine Deposits
Qop	Old Paralic Deposits

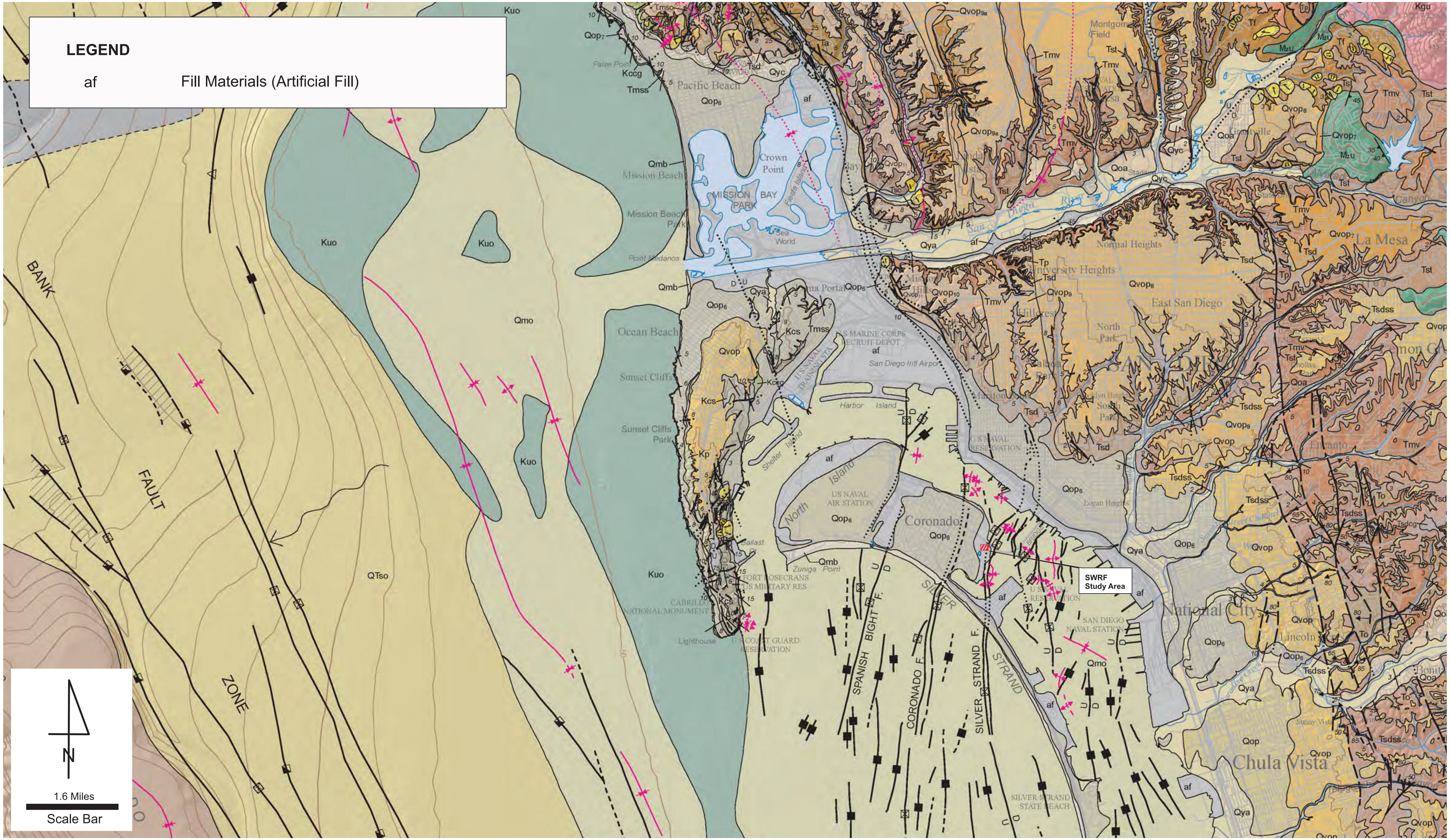
CORONADO GOLF COURSE MODERNIZATION PROJECT	GENERALIZED GEOLOGIC CROSS-SECTION (A-A')	
PROJECT NO. 65C4	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE 4

LEGEND

● SWRF Study Area

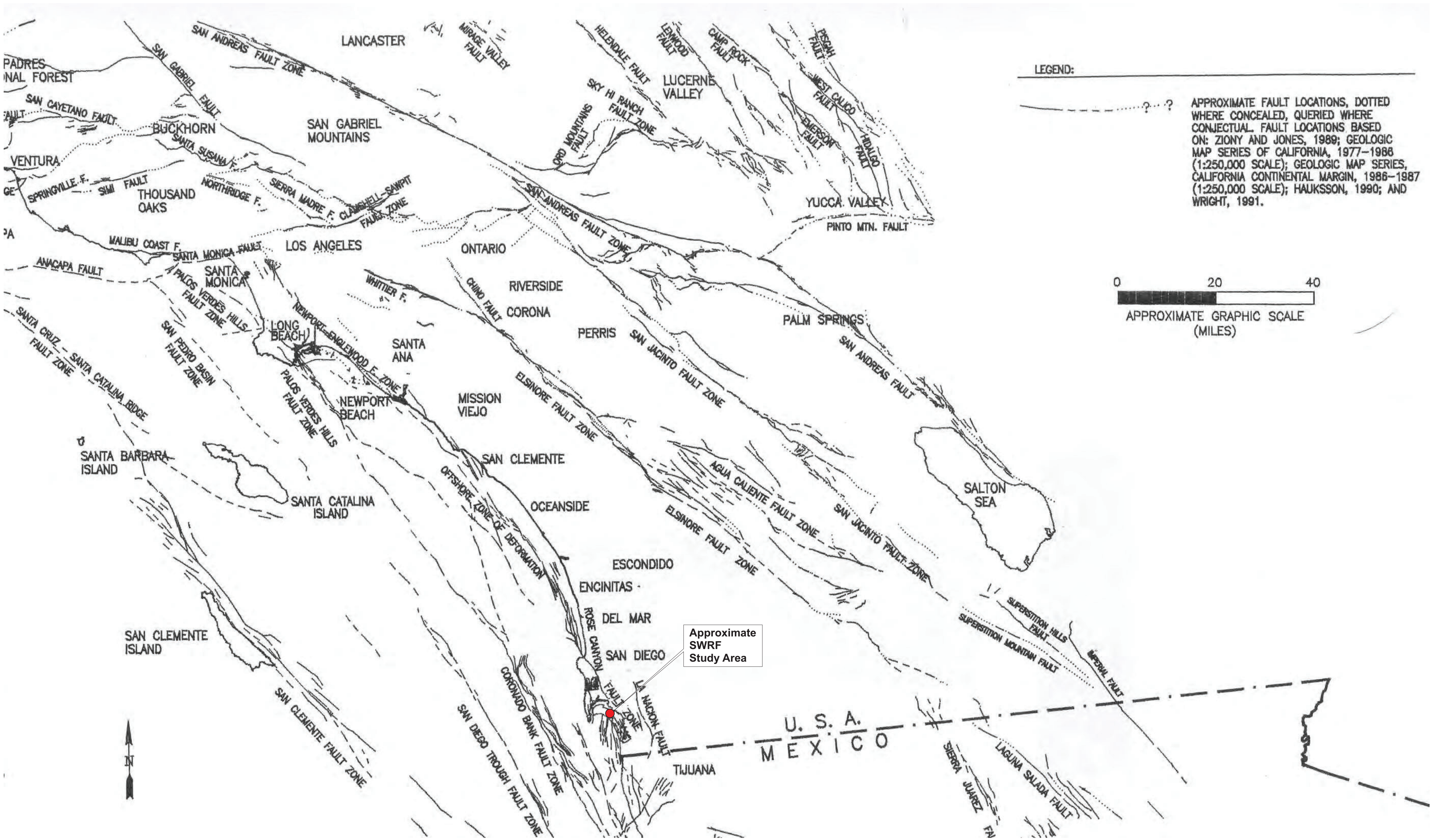
Alquist-Priolo Earthquake Study Zone

CORONADO GOLF COURSE MODERNIZATION PROJECT	ALQUIST-PRIOLO EARTHQUAKE STUDY ZONE
PROJECT NO. 65C4 — ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE 5



SOURCE: USGS, "Geologic Map of the San Diego 30' x 60' Quadrangle, California", by Michael P. Kennedy and Siang S. Tan, 2008.

CORONADO GOLF COURSE MODERNIZATION PROJECT	GENERALIZED LOCAL GEOLOGY MAP	
PROJECT NO. 65C4	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE 6



CORONADO GOLF COURSE MODERNIZATION PROJECT		REGIONAL FAULT MAP
PROJECT NO. 65C4	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE 7

National Flood Hazard Layer FIRMette

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS	NO SCREEN	Area of Minimal Flood Hazard Zone X
		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES	20.2 / 17.5	Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
	513	Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/20/2019 at 4:27:13 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

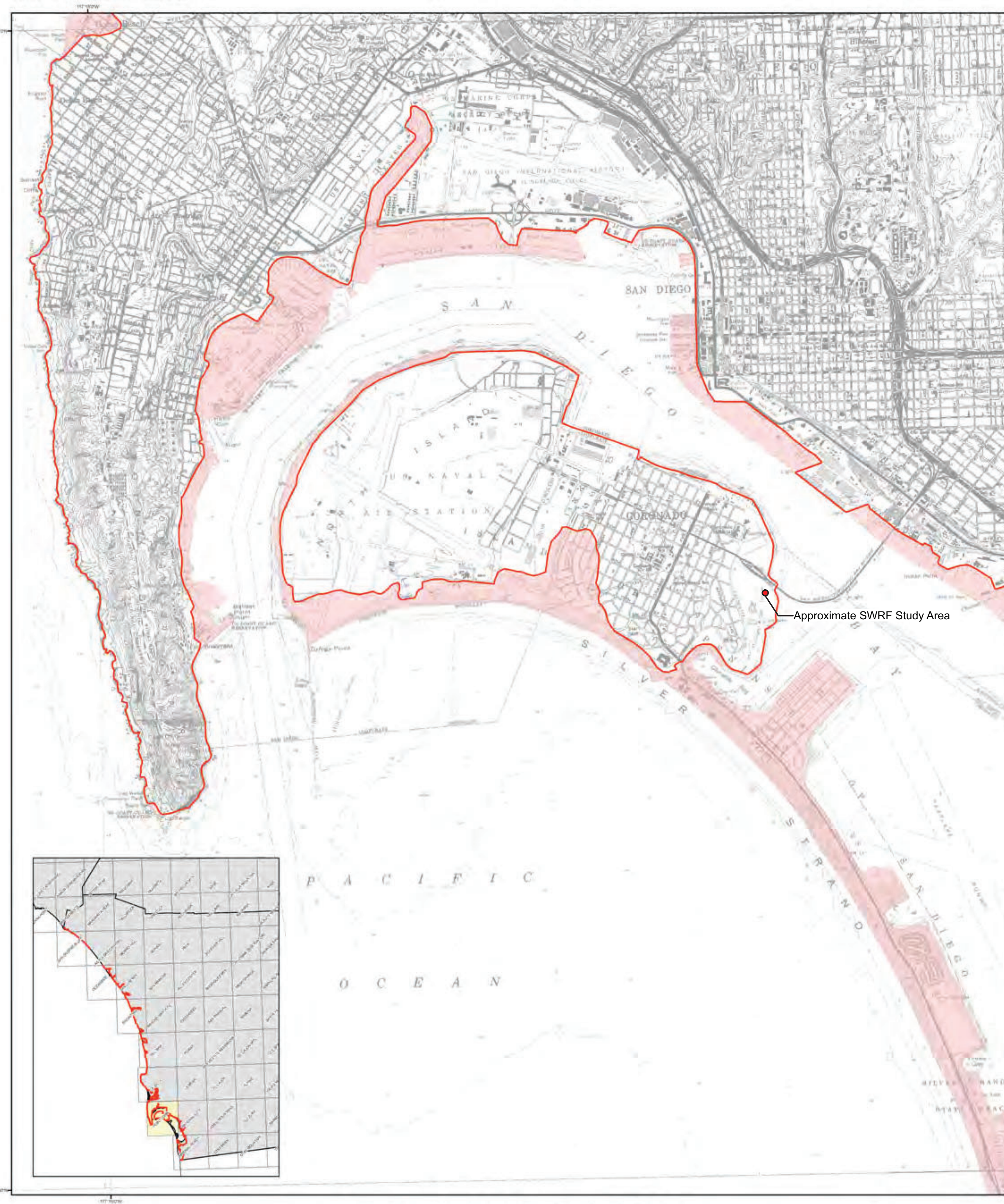
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

CORONADO GOLF COURSE MODERNIZATION PROJECT		FEMA FLOOD MAP
PROJECT NO. 65C4	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE 8

California Emergency Management Agency
California Geological Survey
University of Southern California

Tsunami Inundation Map for Emergency Planning
Point Loma Quadrangle

State of California
County of San Diego



METHOD OF PREPARATION

Initial tsunami modeling was performed by the University of Southern California (USC) Tsunami Research Center funded through the California Emergency Management Agency (CalEMA) by the National Tsunami Hazard Mitigation Program. The tsunami modeling process utilized the MOST (Method of Splitting Tsunamis) computational program (Version 0), which allows for wave evolution over a variable bathymetry and topography used for the inundation mapping (Titov and Gonzalez, 1997; Titov and Synolakis, 1998).

The bathymetric/topographic data that were used in the tsunami models consist of a series of nested grids. Near-shore grids with a 3 arc-second (75- to 90-meters) resolution or higher, were adjusted to "Mean High Water" sea-level conditions, representing a conservative sea level for the intended use of the tsunami modeling and mapping.

A suite of tsunami source events was selected for modeling, representing realistic local and distant earthquakes and hypothetical extreme undersea, near-shore landslides (Table 1). Local tsunami sources that were considered include offshore reverse-thrust faults, restraining bends on strike-slip fault zones and large submarine landslides capable of significant seafloor displacement and tsunami generation. Distant tsunami sources that were considered include great subduction zone events that are known to have occurred historically (1960 Chile and 1964 Alaska earthquakes) and others which can occur around the Pacific Ocean "Ring of Fire."

In order to enhance the result from the 75- to 90-meter inundation grid data, a method was developed utilizing higher-resolution digital topographic data (3- to 10-meters resolution) that better defines the location of the maximum inundation line (U.S. Geological Survey, 1993; Intermap, 2003; NOAA, 2004). The location of the enhanced inundation line was determined by using digital imagery and terrain data on a GIS platform with consideration given to historic inundation information (Lander, et al., 1993). This information was verified, where possible, by field work coordinated with local county personnel.

The accuracy of the inundation line shown on these maps is subject to limitations in the accuracy and completeness of available terrain and tsunami source information, and the current understanding of tsunami generation and propagation phenomena as expressed in the models. Thus, although an attempt has been made to identify a credible upper bound to inundation at any location along the coastline, it remains possible that actual inundation could be greater in a major tsunami event.

This map does not represent inundation from a single scenario event. It was created by combining inundation results for an ensemble of source events affecting a given region (Table 1). For this reason, all of the inundation region in a particular area will not likely be inundated during a single tsunami event.

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TSUNAMI INUNDATION MAP FOR EMERGENCY PLANNING

State of California ~ County of San Diego

POINT LOMA QUADRANGLE

June 1, 2009

SCALE 1:24,000

Table 1: Tsunami sources modeled for the San Diego County coastline.

Sources (M = moment magnitude used in modeled event)		Areas of Inundation Map Coverage and Sources Used		
		Dana Point	Oceanside	San Diego
Local Sources	Carlsbad Thrust Fault		X	X
	Catalina Fault	X	X	X
	Coronado Bank Fault			X
	Lasuen Knoll Fault	X		X
	San Clemente Fault Bend Region			X
	San Clemente Island Fault			X
	San Mateo Thrust Fault	X	X	
	Coronado Canyon Landslide #1			X
Distant Sources	Cascadia Subduction Zone #3 (M9.2)	X		X
	Central Aleutians Subduction Zone#1(M8.9)	X	X	X
	Central Aleutians Subduction Zone#2(M8.9)	X		X
	Central Aleutians Subduction Zone#3(M9.2)	X	X	X
	Chile North Subduction Zone (M9.4)	X		X
	1960 Chile Earthquake (M9.3)	X		X
	1952 Kamchatka Earthquake (M9.0)	X		
	1964 Alaska Earthquake (M9.2)	X	X	X
	Japan Subduction Zone #2 (M8.8)	X		X
	Kuril Islands Subduction Zone #2 (M8.8)	X		X
	Kuril Islands Subduction Zone #3 (M8.8)	X		X
	Kuril Islands Subduction Zone #4 (M8.8)	X		X

Cal EMA

CGS

USC UNIVERSITY OF SOUTHERN CALIFORNIA

MAP EXPLANATION

Tsunami Inundation Line

Tsunami Inundation Area

PURPOSE OF THIS MAP

This tsunami inundation map was prepared to assist cities and counties in identifying their tsunami hazard. It is intended for local jurisdictional, coastal evacuation planning uses only. This map, and the information presented herein, is not a legal document and does not meet disclosure requirements for real estate transactions nor for any other regulatory purpose.

The inundation map has been compiled with best currently available scientific information. The inundation line represents the maximum considered tsunami runup from a number of extreme, yet realistic, tsunami sources. Tsunamis are rare events; due to a lack of known occurrences in the historical record, this map includes no information about the probability of any tsunami affecting any area within a specific period of time.

Please refer to the following websites for additional information on the construction and/or intended use of the tsunami inundation map:

State of California Emergency Management Agency, Earthquake and Tsunami Program: http://www.oes.ca.gov/WebPage/oeswebsite.nsf/Content/B1EC51BA215931768825741F005E8D80?OpenDocument

University of Southern California – Tsunami Research Center: http://www.usc.edu/dept/tsunamis/2005/index.php

State of California Geological Survey Tsunami Information: http://www.conservation.ca.gov/cgs/geologic_hazards/Tsunami/index.htm

National Oceanic and Atmospheric Agency Center for Tsunami Research (MOST model): http://nctr.pmel.noaa.gov/time/background/models.html

MAP BASE

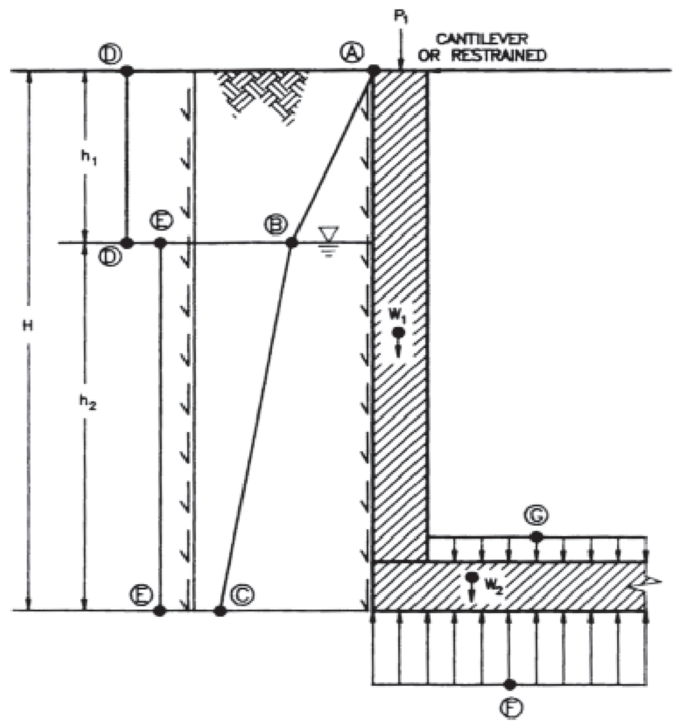
Topographic base maps prepared by U.S. Geological Survey as part of the 7.5-minute Quadrangle Map Series (originally 1:24,000 scale). Tsunami inundation line boundaries may reflect updated digital orthophotographic and topographic data that can differ significantly from contours shown on the base map.

DISCLAIMER

The California Emergency Management Agency (CalEMA), the University of Southern California (USC), and the California Geological Survey (CGS) make no representation or warranties regarding the accuracy of this inundation map nor the data from which the map was derived. Neither the State of California nor USC shall be liable under any circumstances for any direct, indirect, special, incidental or consequential damages with respect to any claim by any user or any third party on account of or arising from the use of this map.

TSUNAMI INUNDATION MAP
CORONADO GOLF COURSE MODERNIZATION PROJECT

PROJECT NO. 65C4	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE 9



PROPERLY COMPACTED
BACKFILL

Soil Friction, psf

A = 0
B = $22h_1$
C = $22h_1 + 11\ h_2$
D = 7H*
E = 4H*

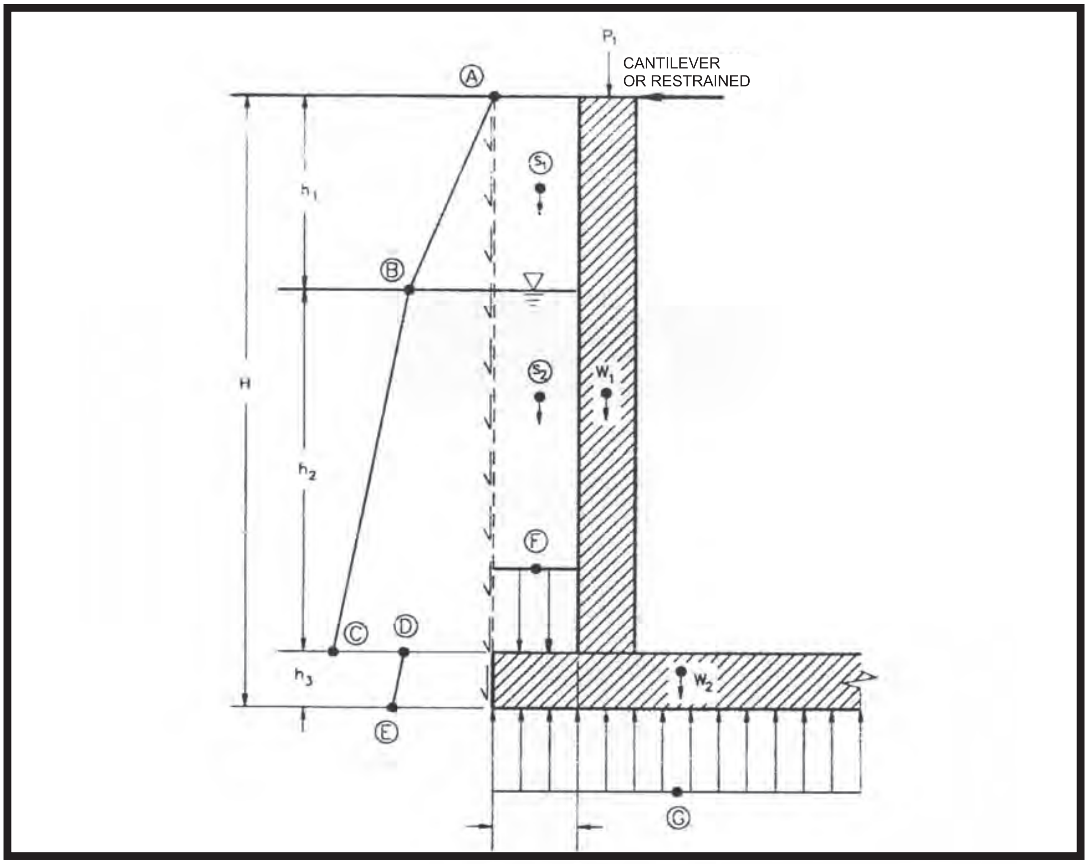
Hydrostatic Pressure, psf

F = $62.4\ h_2$

NOTE: * D and E are only applicable for restrained walls and should be ignored if walls are to be designed as simple cantilever

ASSUMED UPLIFT RESISTANCE FOR WALLS WITHOUT EXTENSION
CORONADO GOLF COURSE MODERNIZATION PROJECT

PROJECT NO. 65C4	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE 10



PROPERLY COMPACTED BACKFILL

Soil Friction, psf

A = 0
B = $40h_1$
C = $40h_1 + 20\ h_2$
D = $24h_1 + 12\ h_2$
E = $24h_1 + 12\ h_2 + 12\ h_3$

Soil Weights - Within Vertical Prism, pcf

S_1 = 130 (above groundwater)
S_2 = 62 (below groundwater)

Hydrostatic Pressure, psf

F = $62.4\ h_2$
G = $62.4\ (h_2 + h_3)$

ASSUMED UPLIFT RESISTANCE FOR WALLS WITH EXTENSION
CORONADO GOLF COURSE MODERNIZATION PROJECT

PROJECT NO. 65C4	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE 11

APPENDIX A

FIELD EXPLORATION PROGRAM

APPENDIX A

FIELD EXPLORATION PROGRAM

The field exploration program for this project was performed on October 21 and 22, 2019. A total of two (2) hollow-stem auger borings were performed at the approximate locations shown on the Site Plan (Figure 2). The borings were advanced to a depth of 41.5 feet below the existing ground surface. The drilling services were provided by Tri-County Drilling, Inc., using a truck-mounted CME-75 drill rig equipped with hollow-stem auger.

Prior to commencement of the field exploration activities, a site visit was performed to observe existing conditions and to select suitable locations for the soil borings. The boring locations were selected by Brezack & Associates. Subsequently, Underground Service Alert (USA) was contacted to coordinate clearance of the proposed boring locations with respect to existing buried utilities. Personnel from Coronado Golf Course assisted in locating irrigation pipes near the boring locations. AGE obtained well construction permit from the County DEH.

The soils encountered in the soil borings were visually classified and logged by an experienced engineering geologist from AGE. The logs depict the various soil types encountered and indicate the depths at which samples were obtained for laboratory testing and analysis. A Key to Logs is presented on Figures A-1 and A-2, and logs of the borings and well construction details are presented on Figures A-3 through A-8.

During drilling, Standard Penetration Tests (SPT) were performed at selected depth intervals. The SPT tests involve the use of a specially manufactured "split spoon" sampler which is driven into the soils at the bottom of the borehole by dropping a 140-pound weight from a height of 30 inches. The number of blows required to drive the sampler 18 inches into the soil was recorded. As the first 6-inch increment of penetration is considered to be a "seating interval" in disturbed soils at the bottom of the borehole, the corresponding blow count is not taken into consideration. The total number of blows for the last 12 inches of penetration are shown on the boring logs, and have been used to evaluate the relative density and consistency of the materials.

Relatively undisturbed samples were obtained by driving a 3-inch (OD) diameter modified California split-spoon sampler with a special cutting tip and inside lining of thin brass rings into the soils at the bottom of the borehole. The sampler is driven a distance of 12 inches into the soils at the bottom of the borehole by dropping a 140-pound weight from a height of 30 inches. A 6-inch long section of the soil samples that were retained in the brass rings were extracted from the sampling tube and transported to our laboratory in close-fitting, waterproof containers. In addition, loose bulk samples were also collected and stored in plastic sacks for transport to AGE's laboratory. Soil cuttings obtained from the samplers were field screened for the presence of volatile organics using a Thermo Environmental Model 580 organic vapor meter (OVM). The OVM readings are also indicated on the boring logs.

The blow counts shown on the boring logs have been corrected for overburden, hammer type and sampler types and dimensions.

Following completion of the drilling and sampling activities, borings B-1 and B-2 were converted into groundwater monitoring wells. Solinst Levelogger and Barologger devices were installed inside the wells. AGE personnel will collect data from the devices on a monthly basis for the next four months. The measurement data will be presented in separate letter reports.

KEY TO LOG OF BORING

DEPTH (FEET)	SAMPLES	BLOW COUNTS (BLOWS/FOOT)	OVM READING (PPM)	GRAPHIC LOG	SOIL DESCRIPTION	FIELD MOISTURE (% DRY WT.)	DRY DENSITY (PCF)	REMARKS
1								
2					Sample identification number			
3								
4	1				Approximate interval of bulk sample			
5								
6								
7								
8	2	28			Approximate interval of Standard California Sampler (SCS).			
9								
10					Number of blows required to advance sampler for the last 12-inch increment, or distance indicated. Blow counts shown were corrected for hammer efficiency, overburden, groundwater, sample type and dimensions.			
11	3	33			Approximate interval of Standard Penetration Test (SPT).			
12								
13								
14								
15								
16					Approximate groundwater elevation			
17								
18								
19								

(KEY TO LOG OF BORING CONTINUED ON FIGURE A-2)

PROJECT NO.
65C4

ALLIED GEOTECHNICAL ENGINEERS, INC.

FIGURE A-1

KEY TO LOG OF BORING (CONTINUED)

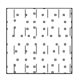
DEPTH (FEET)	SAMPLES	BLOW COUNTS (BLOWS/FOOT)	OVM READING (PPM)	GRAPHIC LOG	SOIL DESCRIPTION	FIELD MOISTURE (% DRY WT.)	DRY DENSITY (PCF)	REMARKS

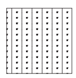
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

—?— —?— APPROXIMATE GEOLOGIC CONTACT

Symbol Description

Strata symbols

 **Poorly graded sand with silt**

 **Silty sand**

GENERAL NOTES

1. Approximate elevations and locations of borings are based on Google Earth, 2019.
2. Soil descriptions are based on visual classification made during the field exploration and, where deemed appropriate, have been modified based on the results of laboratory tests.
3. Descriptions on the logs apply only at the specific locations and at the time the work was performed. They are not warranted to be representative of subsurface conditions at other locations or times.

PROJECT NO. 65C4	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE A-2

BORING NO. B-1

DATE OF DRILLING: 10/22/2019	TOTAL BORING DEPTH: 41.5 FEET
GENERAL LOCATION: DIRT AREA APPROXIMATELY 165 FEET NORTHWEST OF HOLE NO. 1 GREEN (SEE SITE PLAN)	
APPROXIMATE SURFACE ELEV.: 10.5 FEET NAVD88	DRILLING CONTRACTOR: TRI-COUNTY DRILLING
DRILLING METHOD: HOLLOW STEM AUGER	LOGGED BY: N. BARNES

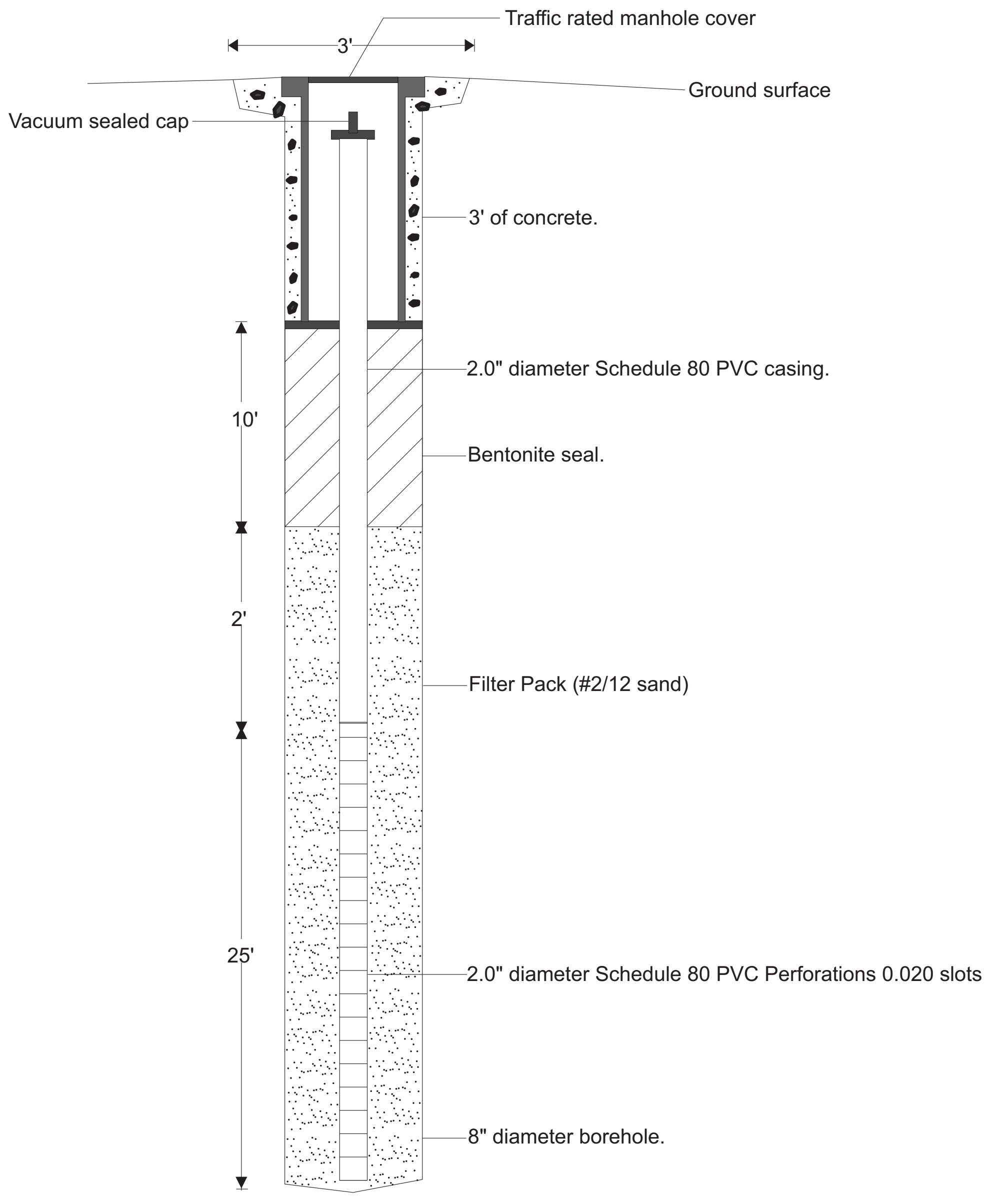
DEPTH (FEET)	SAMPLES	BLOW COUNTS BLOWS/FOOT	OVM READING (PPM)	GRAPHIC LOG	SOIL DESCRIPTION	FIELD MOISTURE % DRY WT.	DRY DENSITY LBS./CU. FT.	REMARKS
0					**FILL**			
6	1	9	0.2		Gray, damp to wet, fine-grained silty sand (SM), with trace of shell fragments.	24.1		
11	2	24	0.0		▼ Gray to dark bluish gray, wet, fine to medium-grained, poorly graded sand with silt (SP-SM) with locally abundant shell fragments.	20.3	106.7	
16	3	9	0.4			25.6		
18	4							
20			?		? ?			?
21	5	4			**MARINE DEPOSITS**			No sample recovery.
26	6	Push	0.1		Dark bluish gray, wet, loose, fine-grained, slightly micaceous, sandy silt (ML) with trace of shell fragments.	28.0		
31	7	7	0.0			26.5	100.1	
32			?		? ?			?
33	8				**OLD PARALIC DEPOSITS**			
36	9	39	0.3		Greenish gray, wet, dense, fine-grained, slightly micaceous, poorly graded sand with silt (SP-SM).	27.7		

PROJECT NO. 65C4	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE A-3

BORING NO. B-1	
DATE OF DRILLING: 10/22/2019	TOTAL BORING DEPTH: 41.5 FEET
GENERAL LOCATION: DIRT AREA APPROXIMATELY 165 FEET NORTHWEST OF HOLE NO. 1 GREEN (SEE SITE PLAN)	
APPROXIMATE SURFACE ELEV.: 10.5 FEET NAVD88	DRILLING CONTRACTOR: TRI-COUNTY DRILLING
DRILLING METHOD: HOLLOW STEM AUGER	LOGGED BY: N. BARNES

DEPTH (FEET)	SAMPLES	BLOW COUNTS BLOWS/FOOT	OVM READING (PPM)	GRAPHIC LOG	SOIL DESCRIPTION	FIELD MOISTURE % DRY WT.	DRY DENSITY LBS./CU. FT.	REMARKS
38								
39								
40					Soil is dense to very dense.			
41	10	94	0.0			26.1	98.6	
42					**REMARKS**			
43					Boring terminated at depth of 41.5 feet. No refusal. Groundwater was first observed at a depth of 10 feet and measured at a depth of 7.5' at the completion of the drilling operation. Boring was converted to 2-inch diameter monitoring well.			
44								
45								
46								
47								
48								
49								
50								
51								
52								
53								
54								
55								
56								
57								
58								
59								
60								
61								
62								
63								
64								
65								
66								
67								
68								
69								
70								
71								
72								
73								
74								

PROJECT NO. 65C4	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE A-4



MONITORING WELL CONSTRUCTION DIAGRAM FOR BORING B-1 CORONADO GOLF COURSE MODERNIZATION PROJECT		
PROJECT NO. 65C4	**ALLIED GEOTECHNICAL ENGINEERS, INC.**	**FIGURE A-5**

BORING NO. B-2

DATE OF DRILLING: 10/21/2019	TOTAL BORING DEPTH: 41.5 FEET
GENERAL LOCATION: GRASSY AREA APPROXIMATELY 60 FEET NORTH OF HOLE NO. 1 GREEN (SEE SITE PLAN)	
APPROXIMATE SURFACE ELEV.: 9.5 FEET NAVD88	DRILLING CONTRACTOR: TRI-COUNTY DRILLING
DRILLING METHOD: HOLLOW STEM AUGER	LOGGED BY: N. BARNES

DEPTH (FEET)	SAMPLES	BLOW COUNTS BLOWS/FOOT	OVM READING (PPM)	GRAPHIC LOG	SOIL DESCRIPTION	FIELD MOISTURE % DRY WT.	DRY DENSITY LBS./CU. FT.	REMARKS
0					**FILL**			
1	1				Yellow brown, wet, silty sand (SM)			
2–3	2				Light gray, damp, fine-grained, poorly graded sand with silt (SP-SM) with shell fragments.			
6	3	12	0.3			5.9		
11	4	8	0.4		Greenish gray, wet, fine-grained, slightly micaceous, poorly graded sand with silt (SP-SM) and trace of shell fragments.	30.5		
16	5	5						No sample recovery.
20			?		? ?			?
21	6	Push			**MARINE DEPOSITS**			No sample recovery.
26	7	48	0.1		Greenish gray, wet, medium dense to dense, fine-grained, micaceous, poorly graded sand with silt (SP-SM), with trace of shell fragments.	23.3	107.3	
31	8	16	0.0		Dark bluish gray, wet, medium dense, fine-grained, silty sand (SM).	25.2		
32			?		? ?			?
33					**OLD PARALIC DEPOSITS**			
36	9	100+	0.2		Dark bluish gray, wet, very dense, fine-grained, micaceous, poorly graded sand with silt (SP-SM).	27.2	98.7	

PROJECT NO. 65C4

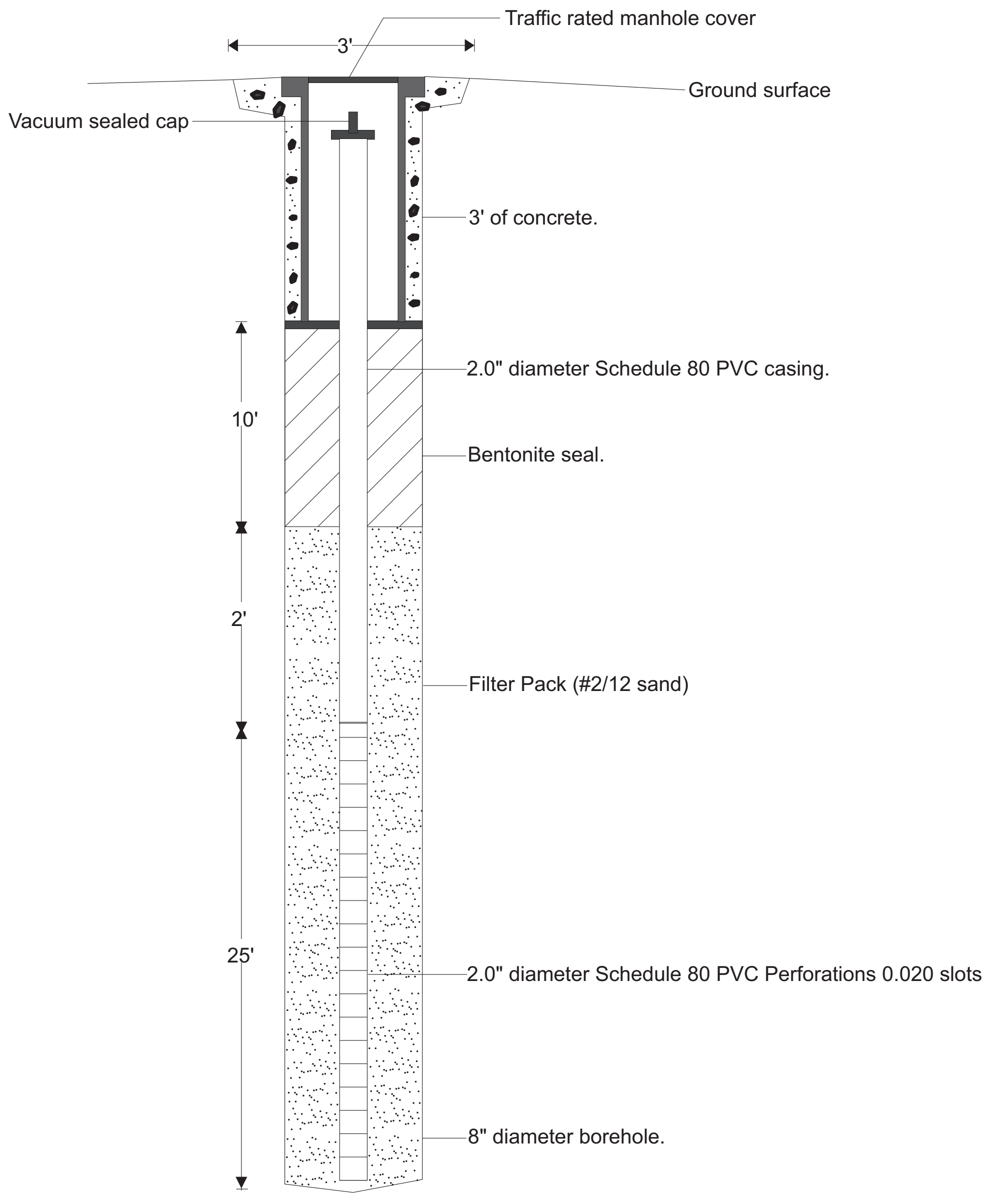
ALLIED GEOTECHNICAL ENGINEERS, INC.

FIGURE A-6

BORING NO. B-2	
DATE OF DRILLING: 10/21/2019	TOTAL BORING DEPTH: 41.5 FEET
GENERAL LOCATION: GRASSY AREA APPROXIMATELY 60 FEET NORTH OF HOLE NO. 1 GREEN (SEE SITE PLAN)	
APPROXIMATE SURFACE ELEV.: 9.5 FEET NAVD88	DRILLING CONTRACTOR: TRI-COUNTY DRILLING
DRILLING METHOD: HOLLOW STEM AUGER	LOGGED BY: N. BARNES

DEPTH (FEET)	SAMPLES	BLOW COUNTS BLOWS/FOOT	OVM READING (PPM)	GRAPHIC LOG	SOIL DESCRIPTION	FIELD MOISTURE % DRY WT.	DRY DENSITY LBS./CU. FT.	REMARKS
38								
39								
40					Greenish gray color.			
41	10	97	0.3			28.1		
42					**REMARKS**			
43								
44					Boring terminated at depth of 41.5 feet. No refusal. Groundwater was first observed at a depth of 9 feet and measured at a depth of 8' at the completion of the drilling operation. Boring was converted to 2-inch diameter monitoring well.			
45								
46								
47								
48								
49								
50								
51								
52								
53								
54								
55								
56								
57								
58								
59								
60								
61								
62								
63								
64								
65								
66								
67								
68								
69								
70								
71								
72								
73								
74								

PROJECT NO. 65C4	ALLIED GEOTECHNICAL ENGINEERS, INC.	FIGURE A-7



MONITORING WELL CONSTRUCTION DIAGRAM FOR BORING B-2
CORONADO GOLF COURSE MODERNIZATION PROJECT

PROJECT NO. 65C4	**ALLIED GEOTECHNICAL ENGINEERS, INC.**	**FIGURE A-8**

APPENDIX B

LABORATORY TESTING

APPENDIX B

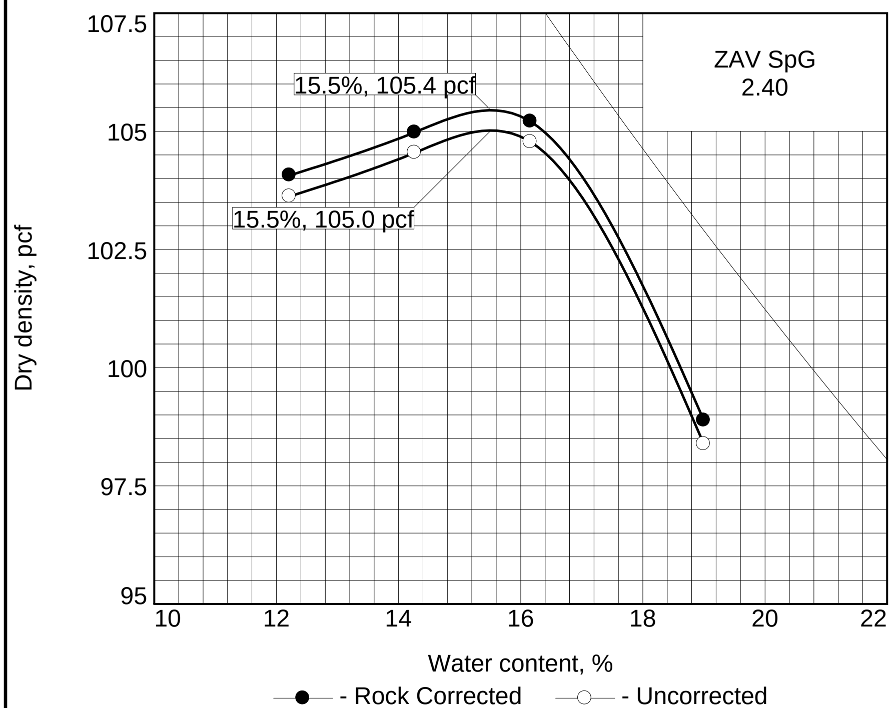
LABORATORY TESTING

Selected soil samples were tested in the laboratory to verify visual field classifications and to evaluate certain engineering characteristics. The testing was performed in accordance with the American Society for Testing and Materials (ASTM) or other generally accepted test methods, and included the following:

- Determination of in-place moisture content (ASTM D2216). The final test results are presented on the boring logs;
- Determination of in-place dry density and moisture content (ASTM D2937) based on relatively undisturbed drive samples. The final test results are presented on the boring logs;
- Maximum density and optimum moisture content (ASTM D1557), and the final test results are presented on Figure B-1;
- Sieve and hydrometer analyses (ASTM D422), and the final test results are plotted as gradation curves on Figures B-2 thru B-5;
- Atterberg limits (ASTM D4318), and the final test results are presented on Figures B-6 and B-7;
- Direct shear test (ASTM D3080), and the final test results are presented on Figure B-8; and
- Consolidation (ASTM D2435), and the final test results are presented on Figure B-9.

In addition, representative samples of the onsite soil materials were delivered to Clarkson Laboratory and Supply, Inc. for analytical (chemical) testing to determine soil pH and resistivity, soluble sulfate and chloride concentrations, and bicarbonate content. Copies of Clarkson's laboratory test data reports are included herein.

COMPACTION TEST REPORT



Curve No.

Test Specification:
ASTM D 1557-12 Method A Modified
ASTM D4718-15 Oversize Corr. Applied to Each Test Point

Preparation Method Wet
Hammer Wt. 10 lb.
Hammer Drop 18 in.
Number of Layers five
Blows per Layer 25
Mold Size 0.03333 cu. ft.
Test Performed on Material Passing #4 **Sieve**

NM ____ **LL** ____ **PI** ____
Sp.G. (ASTM D 854) 2.4
%>#4 2.0 **%<No.200** 5.5
USCS ____ **AASHTO** ____
Date Sampled ____
Date Tested 10/30/2019
Tested By N. Barnes

TESTING DATA

	1	2	3	4	5	6
WM + WS	5788.0	5836.0	5870.0	5800.0		
WM	4030.0	4030.0	4030.0	4030.0		
WW + T #1	454.4	433.8	450.2	450.2		
WD + T #1	412.9	387.0	396.0	388.0		
TARE #1	73.2	58.9	60.6	60.6		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	12.2	14.3	16.2	19.0		
DRY DENSITY	104.1	105.0	105.2	98.9		

ROCK CORRECTED TEST RESULTS	UNCORRECTED
Maximum dry density = 105.4 pcf	105.0 pcf
Optimum moisture = 15.5 %	15.5 %

Material Description
Light gray,fine-grained, poorly graded sand with silt and shell fragments.

Remarks:

Project No. 65C4 **Client:** BREZACK AND ASSOCIATES PLANNING
Project: CORONADO GOLF COURSE MODERNIZATION

○ **Source of Sample:** B-2 **Depth:** 2

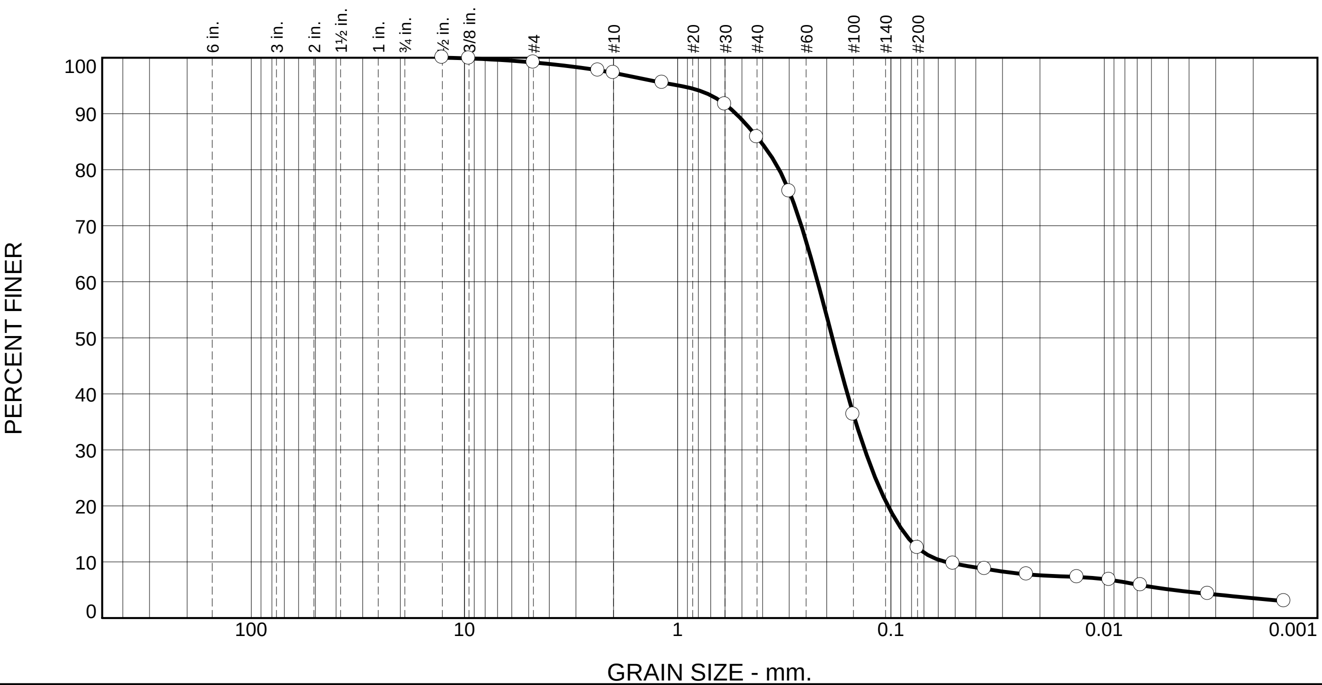
Allied Geotechnical Engineers, Inc.

Santee, CA

Checked by: Sani Sutanto
Title: Senior Project Manager

Figure B-1

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.8	1.9	11.5	73.3	7.4	5.1

Test Results (ASTM D 422 & ASTM D 1140)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
0.5	100.0		
0.375	99.9		
#4	99.2		
#8	97.7		
#10	97.3		
#16	95.5		
#30	91.7		
#40	85.8		
#50	76.2		
#100	36.3		
#200	12.5		
0.0510 mm.	9.7		
0.0363 mm.	8.8		
0.0231 mm.	7.8		
0.0134 mm.	7.3		
0.0095 mm.	6.8		
0.0067 mm.	5.9		
0.0033 mm.	4.3		
0.0014 mm.	3.0		

* (no specification provided)

Material Description

Gray to dark bluish gray silty sand (SM) and shell fragments.

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=**

Classification

USCS (D 2487)= SM **AASHTO (M 145)=** A-2-4(0)

Coefficients

D_{90}= 0.5329 D_{85}= 0.4080 D_{60}= 0.2209
D_{50}= 0.1883 D_{30}= 0.1326 D_{15}= 0.0858
D_{10}= 0.0549 C_u= 4.02 C_c= 1.45

Remarks

Date Received: **Date Tested:**

Tested By: N. Barnes

Checked By: Sani Sutanto

Title: Senior Project Manager

Source of Sample: B-1 **Depth:** 16 **Date Sampled:**

Allied Geotechnical Engineers, Inc.

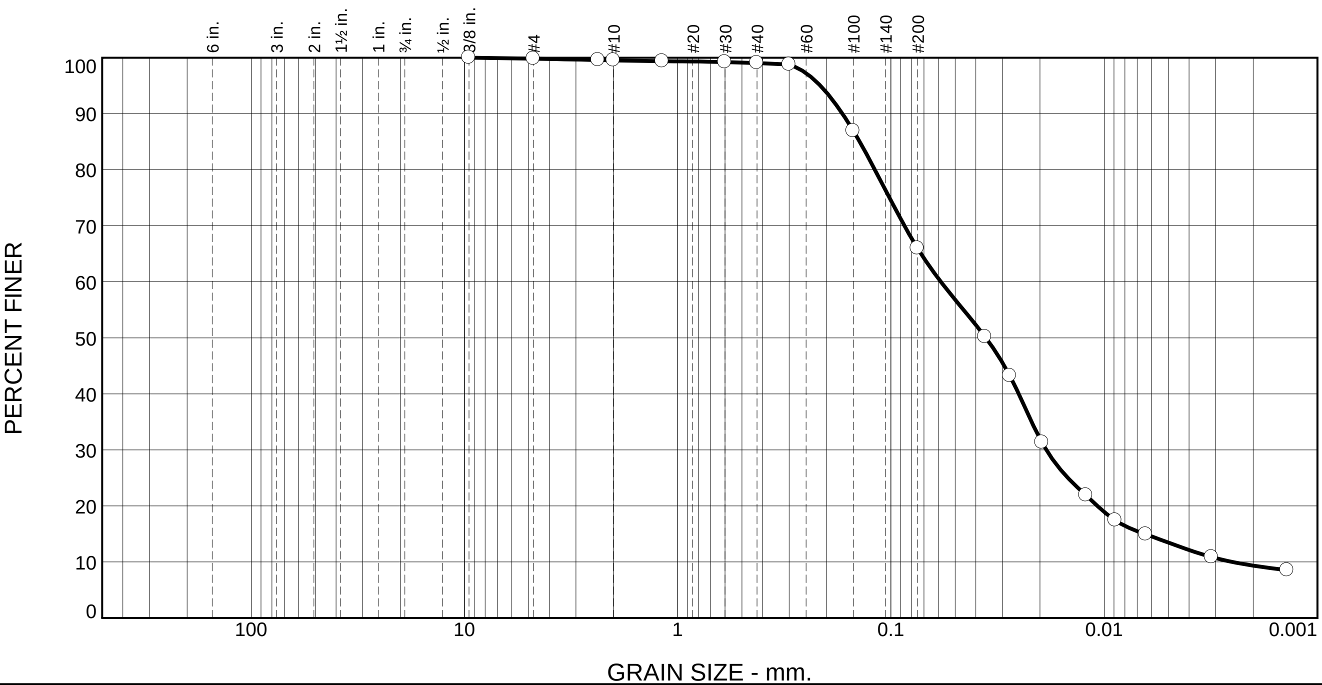
Santee, CA

Client: BREZACK AND ASSOCIATES PLANNING

Project: CORONADO GOLF COURSE MODERNIZATION

Project No: 65C4 **Figure** B-2

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	0.3	0.5	33.0	52.5	13.5

Test Results (ASTM D 422 & ASTM D 1140)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
0.375	100.0		
#4	99.8		
#8	99.6		
#10	99.5		
#16	99.4		
#30	99.2		
#40	99.0		
#50	98.8		
#100	86.9		
#200	66.0		
0.0362 mm.	50.2		
0.0277 mm.	43.2		
0.0196 mm.	31.3		
0.0122 mm.	21.9		
0.0089 mm.	17.4		
0.0064 mm.	14.9		
0.0031 mm.	10.9		
0.0014 mm.	8.5		

* (no specification provided)

Material Description

Dark bluish gray, fine sandy silt with trace of shell fragments.

Atterberg Limits (ASTM D 4318)

PL= 22 **LL=** 26 **PI=** 4

Classification

USCS (D 2487)= CL-ML **AASHTO (M 145)=** A-4(1)

Coefficients

D_{90}= 0.1688 D_{85}= 0.1402 D_{60}= 0.0583
D_{50}= 0.0359 D_{30}= 0.0187 D_{15}= 0.0064
D_{10}= 0.0025 C_u= 23.34 C_c= 2.40

Remarks

Date Received: **Date Tested:**

Tested By: N. Barnes

Checked By: Sani Sutanto

Title: Senior Project Manager

Source of Sample: B-1 **Depth:** 25 **Date Sampled:**
Sample Number: 6

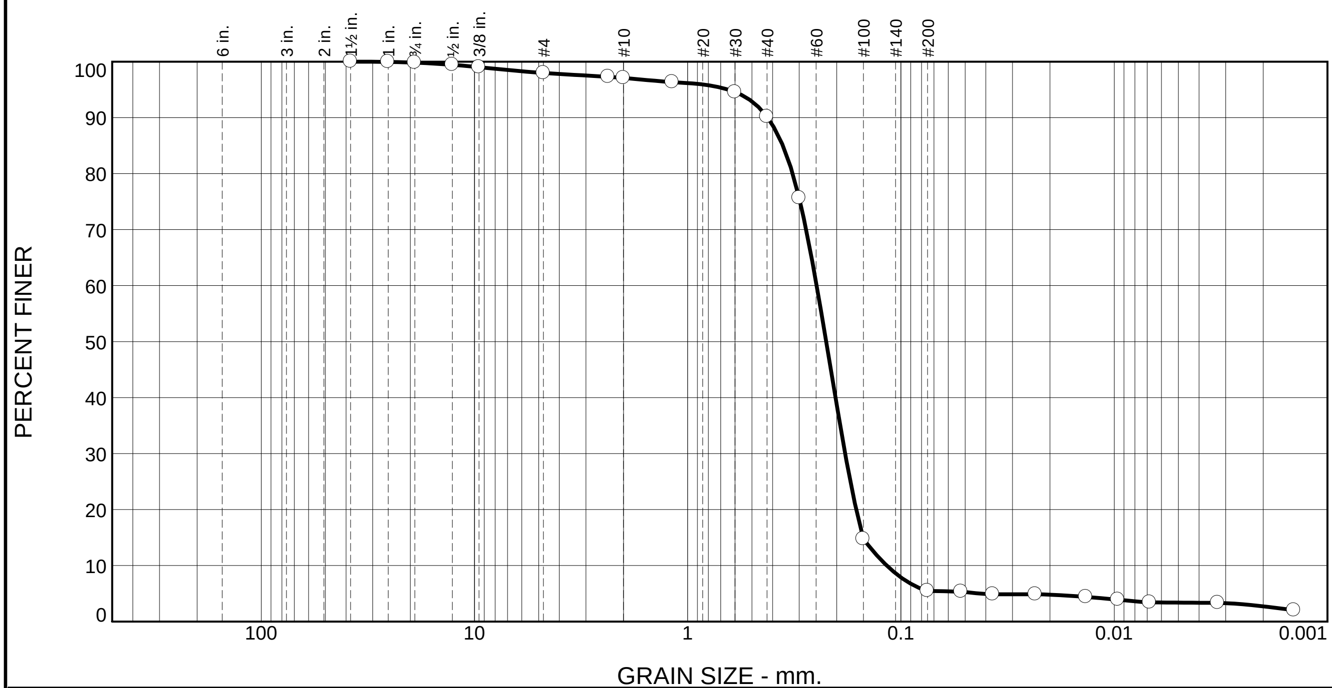
Allied Geotechnical Engineers, Inc.

Santee, CA

Client: BREZACK AND ASSOCIATES PLANNING
Project: CORONADO GOLF COURSE MODERNIZATION

Project No: 65C4 **Figure** B-3

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.2	1.8	0.9	6.9	84.7	2.1	3.4

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1.5	100.0		
1	99.9		
.75	99.8		
0.5	99.4		
0.375	99.0		
#4	98.0		
#8	97.3		
#10	97.1		
#16	96.3		
#30	94.6		
#40	90.2		
#50	75.7		
#100	14.7		
#200	5.5		
0.0522 mm.	5.4		
0.0370 mm.	4.9		
0.0234 mm.	4.9		
0.0136 mm.	4.4		
0.0096 mm.	3.9		
0.0068 mm.	3.4		
0.0033 mm.	3.3		
0.0014 mm.	2.0		

* (no specification provided)

Material Description

Light gray,fine-grained, poorly graded sand with silt (SP-SM) and shell fragments.

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= SP-SM **AASHTO (M 145)=** A-3

Coefficients

$D_{90}=$ 0.4220 $D_{85}=$ 0.3578 $D_{60}=$ 0.2485
$D_{50}=$ 0.2242 $D_{30}=$ 0.1827 $D_{15}=$ 0.1506
$D_{10}=$ 0.1166 $C_u=$ 2.13 $C_c=$ 1.15

Remarks

Date Received: **Date Tested:**

Tested By: N. Barnes

Checked By: Sani Sutanto

Title: Senior Project Manager

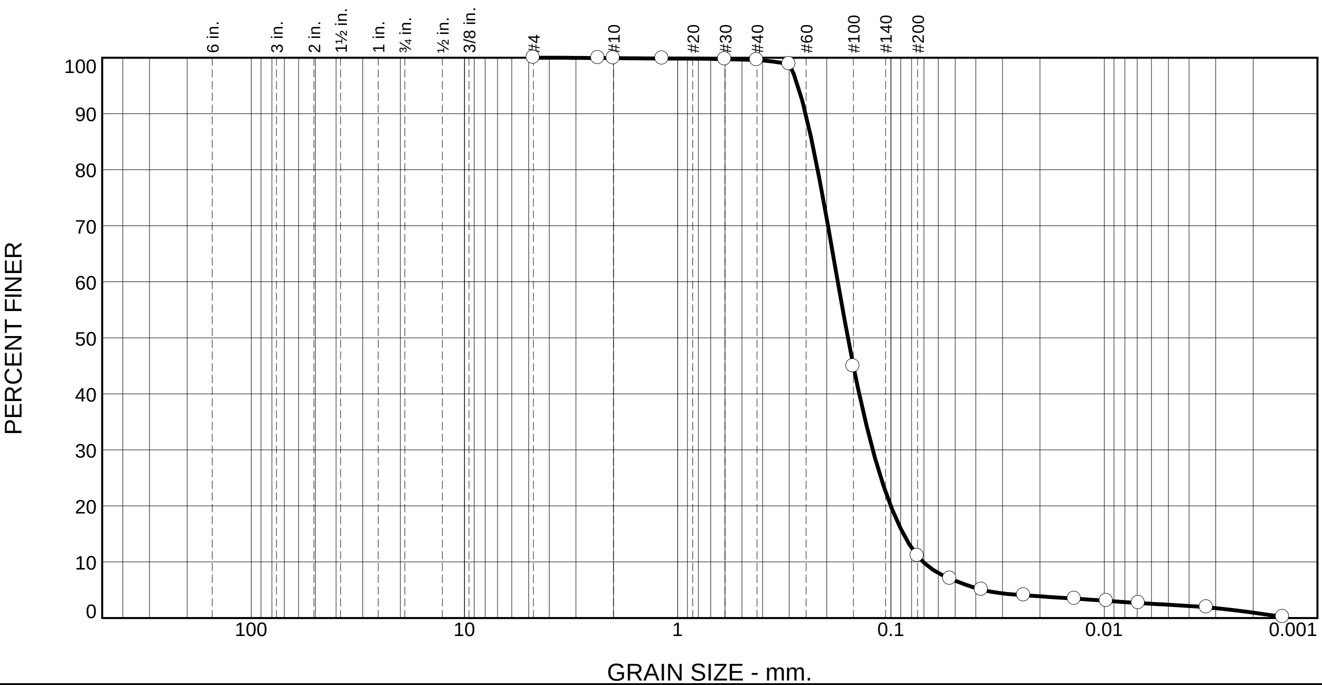
Source of Sample: B-2 **Depth:** 2 **Date Sampled:**

Allied Geotechnical Engineers, Inc.

Santee, CA

Client: BREZACK AND ASSOCIATES PLANNING
Project: CORONADO GOLF COURSE MODERNIZATION
Project No: 65C4 **Figure** B-4

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	0.3	88.5	8.7	2.4

Test Results (ASTM D 422 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#4	100.0		
#8	99.9		
#10	99.9		
#16	99.9		
#30	99.7		
#40	99.6		
#50	98.9		
#100	44.9		
#200	11.1		
0.0528 mm.	7.0		
0.0375 mm.	5.1		
0.0238 mm.	4.1		
0.0138 mm.	3.5		
0.0097 mm.	3.1		
0.0069 mm.	2.7		
0.0033 mm.	1.9		
0.0015 mm.	0.2		

* (no specification provided)

Material Description

Greenish gray, fine-grained, poorly graded sand with silt (SP-SM) and trace of shell fragments

Atterberg Limits (ASTM D 4318)

PL= NP **LL=** NV **PI=** NP

Classification

USCS (D 2487)= SP-SM **AASHTO (M 145)=** A-2-4(0)

Coefficients

D_{90}= 0.2513 D_{85}= 0.2347 D_{60}= 0.1775
D_{50}= 0.1591 D_{30}= 0.1217 D_{15}= 0.0875
D_{10}= 0.0706 C_u= 2.51 C_c= 1.18

Remarks

Date Received: **Date Tested:**

Tested By: N. Barnes

Checked By: Sani Sutanto

Title: Senior Project Manager

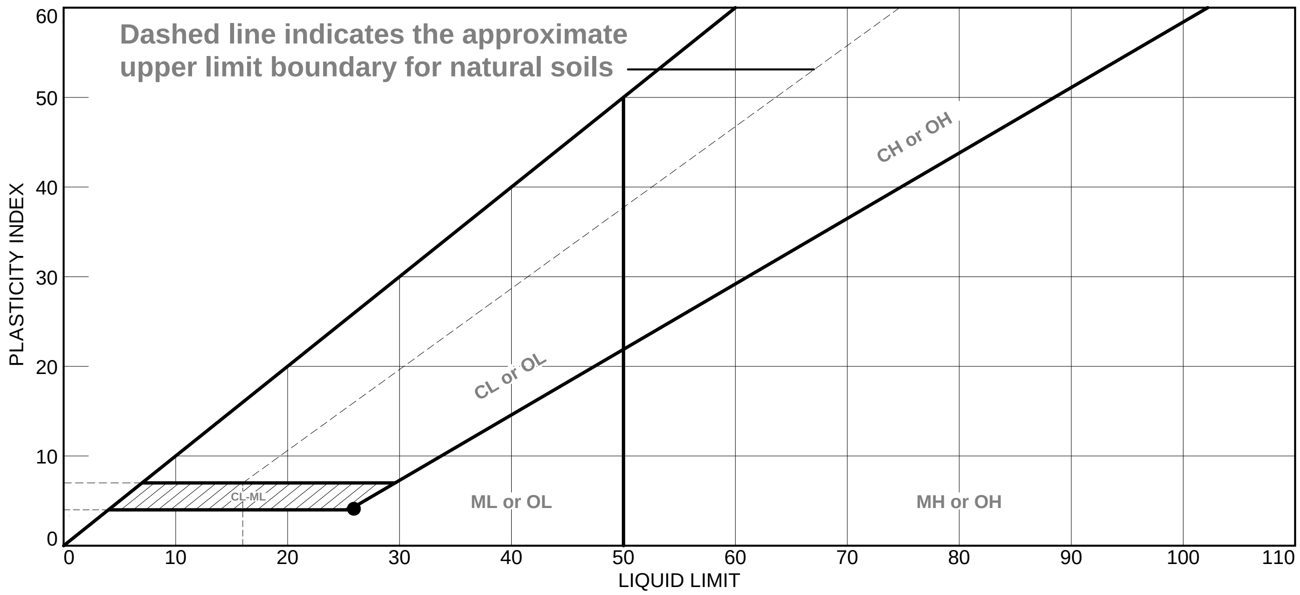
Source of Sample: B-2 **Depth:** 10 **Date Sampled:**
Sample Number: 4

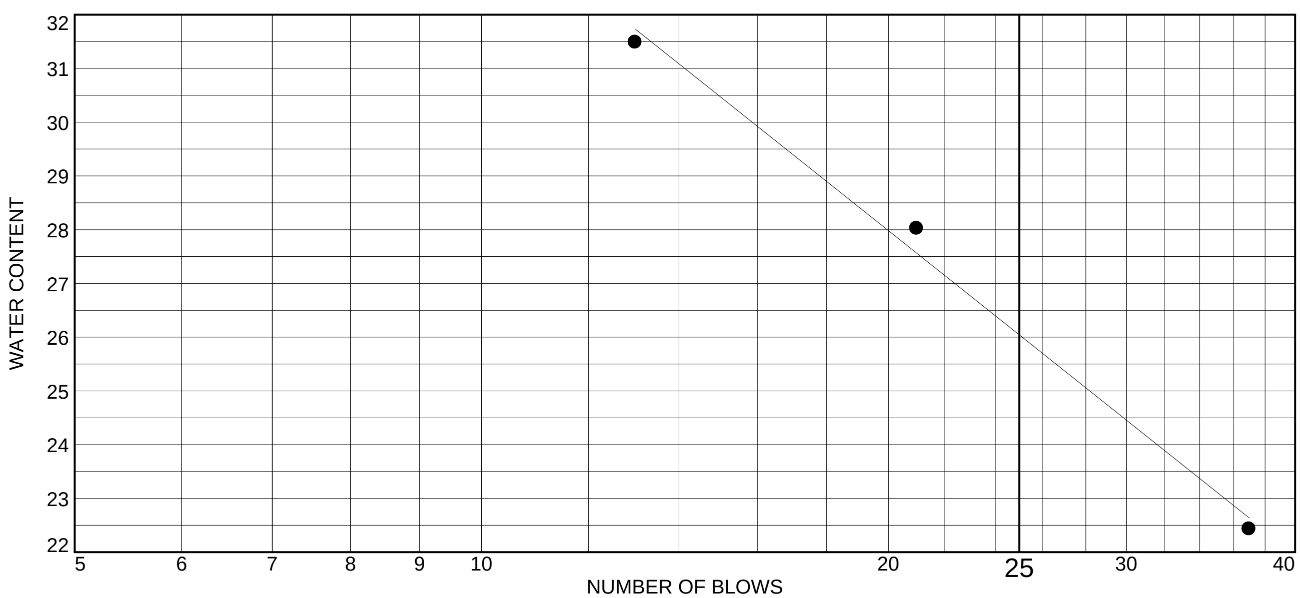
Allied Geotechnical Engineers, Inc.

Santee, CA

Client: BREZACK AND ASSOCIATES PLANNING
Project: CORONADO GOLF COURSE MODERNIZATION
Project No: 65C4 **Figure** B-5

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Dark bluish gray, fine sandy silt (ML) with trace of shell fragments.	26	22	4	99.0	66.0	CL-ML

Project No. 65C4 **Client:** BREZACK AND ASSOCIATES PLANNING

Project: CORONADO GOLF COURSE MODERNIZATION

Source of Sample: B-1 **Depth:** 25
Sample Number: 6

Remarks:

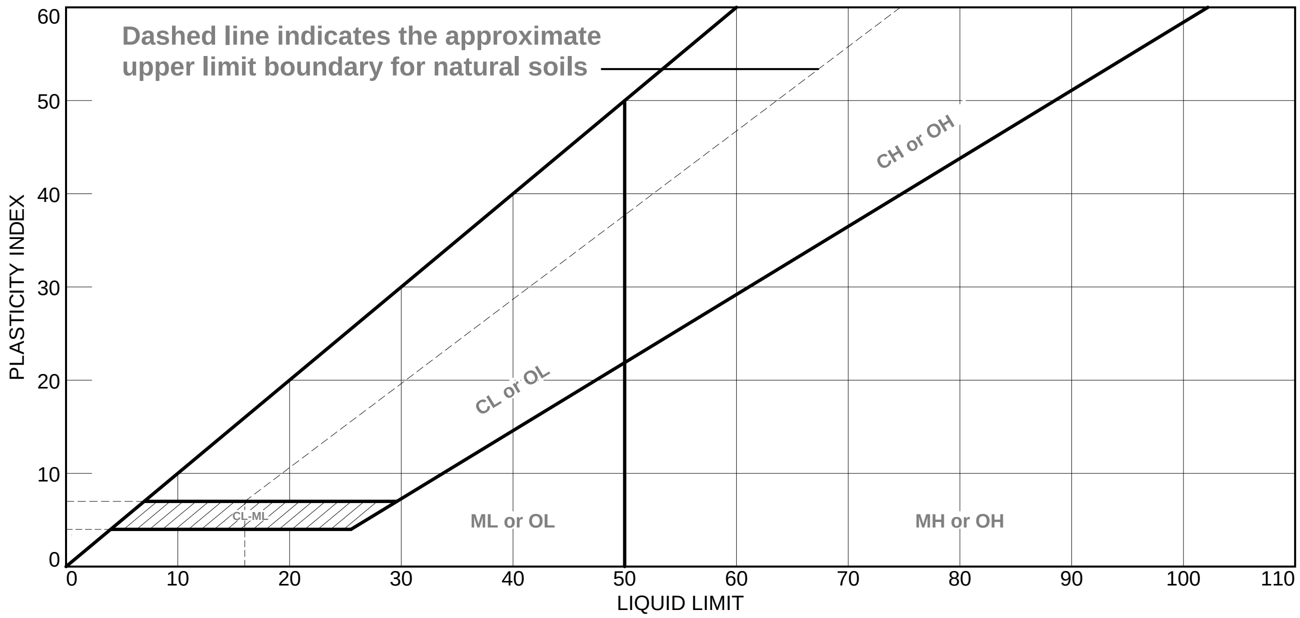
Allied Geotechnical Engineers, Inc.

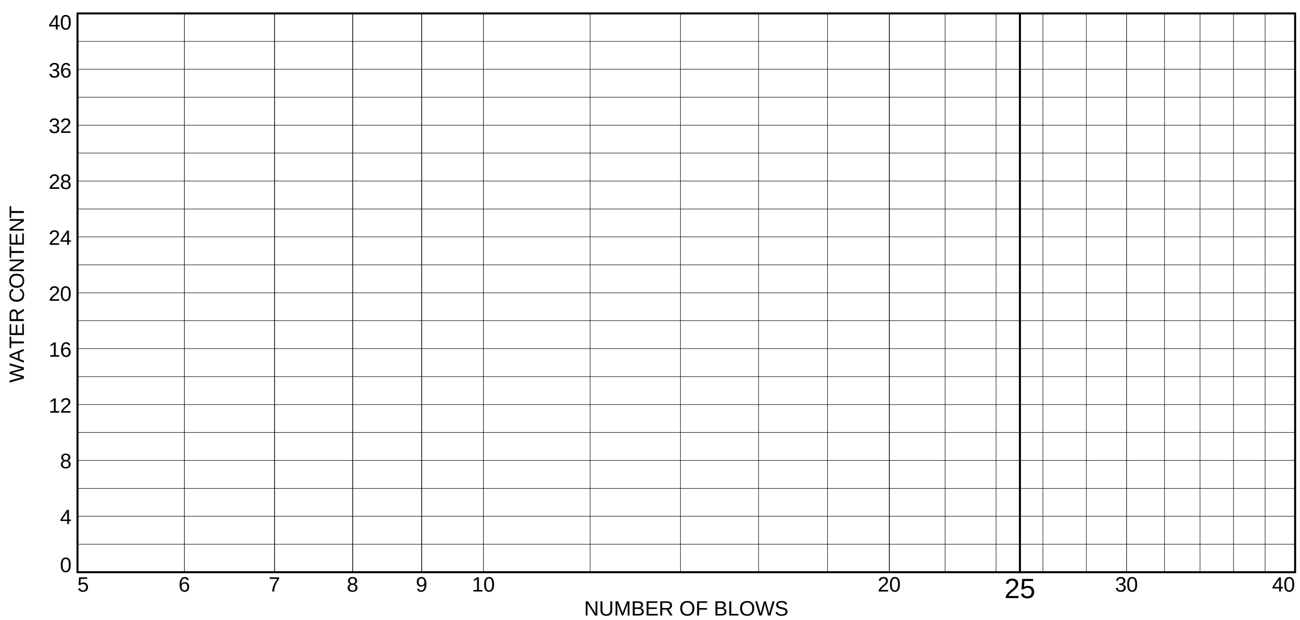
Santee, CA

Figure B-6

Tested By: N. Barnes **Checked By:** Sani Sutanto

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Greenish gray, fine-grained, poorly graded sand with silt (SP-SM) and trace of shell fragments	NV	NP	NP	99.6	11.1	SP-SM

Project No. 65C4 **Client:** BREZACK AND ASSOCIATES PLANNING

Project: CORONADO GOLF COURSE MODERNIZATION

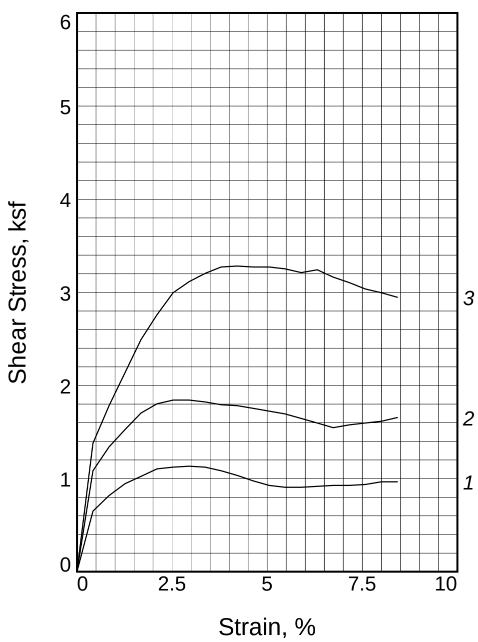
Source of Sample: B-2 **Depth:** 10
Sample Number: 4

Remarks:

Allied Geotechnical Engineers, Inc.

Santee, CA

Figure B-7



	Sample No.	1	2	3
Initial	Water Content, %	25.1	21.8	20.1
	Dry Density, pcf	102.5	105.0	106.3
	Saturation, %	105.1	97.2	92.8
	Void Ratio	0.6444	0.6053	0.5859
	Diameter, in.	2.38	2.38	2.38
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	25.2	22.6	22.3
	Dry Density, pcf	102.5	105.0	106.3
	Saturation, %	105.5	100.8	102.9
	Void Ratio	0.6444	0.6053	0.5859
	Diameter, in.	2.38	2.38	2.38
	Height, in.	1.00	1.00	1.00
	Normal Stress, ksf	1.00	2.00	3.00
	Fail. Stress, ksf	1.13	1.84	3.28
	Strain, %	2.9	2.5	4.2
	Ult. Stress, ksf			
	Strain, %			
	Strain rate, in./min.	0.006	0.006	0.006

Sample Type: In-situ
Description: Gray, fine to medium-grained silty sand

Specific Gravity= 2.70
Remarks:

Figure B-8

Client: BREZACK AND ASSOCIATES PLANNING

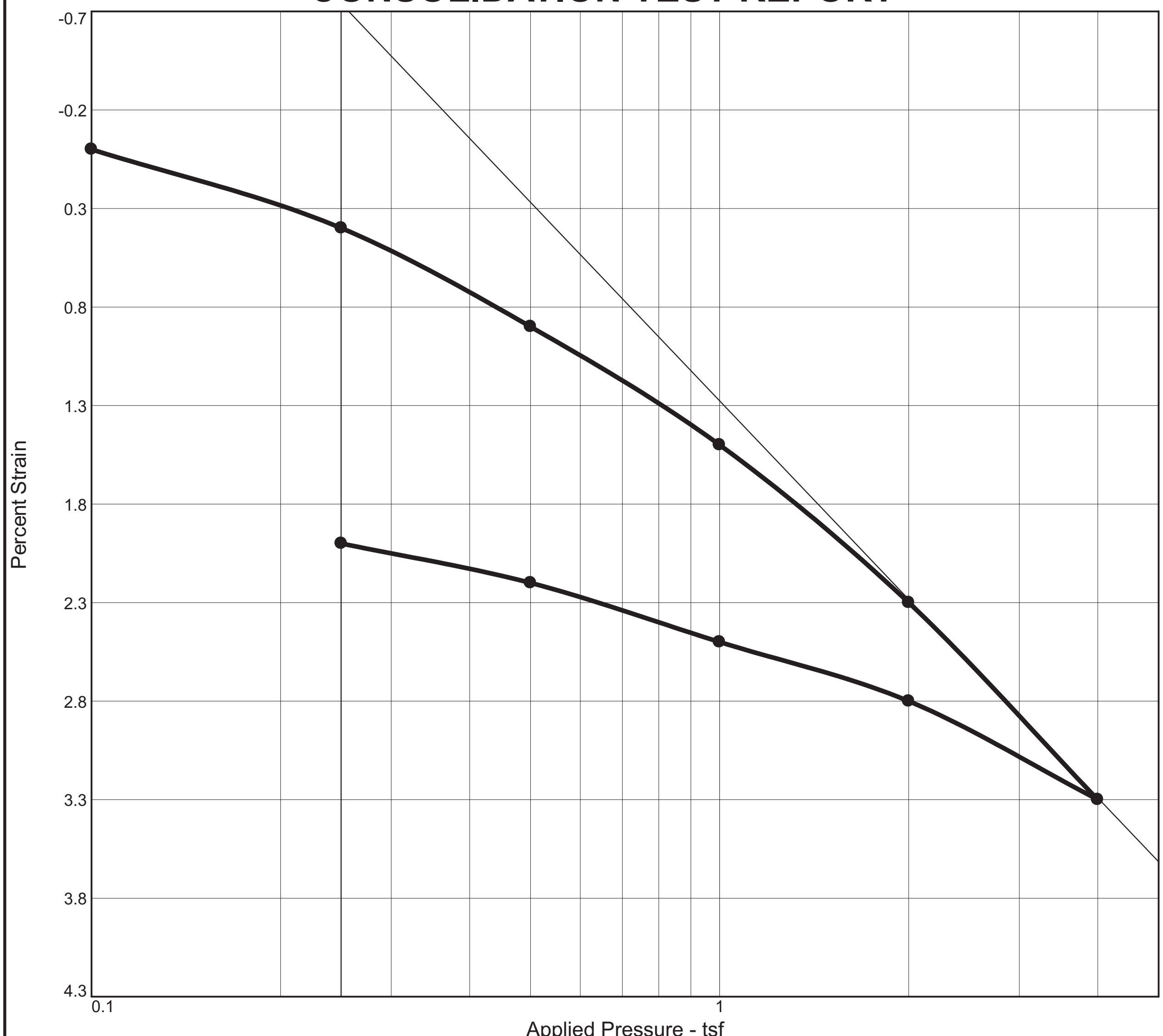
Project: CORONADO GOLF COURSE MODERNIZATION

Source of Sample: B-1 **Depth:** 10
Sample Number: 2
Proj. No.: 65C4 **Date Sampled:** 10/22/19

DIRECT SHEAR TEST REPORT
Allied Geotechnical Engineers, Inc.
Santee, CA

Tested By: N. Barnes

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (tsf)	P_c (tsf)	C_c	C_r	Initial Void Ratio
Saturation	Moisture									
100.8 %	24.1 %	102.2			2.7	0.1	0.7	0.06		0.646

MATERIAL DESCRIPTION	USCS	AASHTO
Gray, fine to medium-grained silty sand (SM) with shell fragments.		

Project No. 65C4 **Client:** BREZACK AND ASSOCIATES PLANNING

Project: CORONADO GOLF COURSE MODERNIZATION

Source of Sample: B-1 **Depth:** 10 **Sample Number:** 2

Remarks:

Allied Geotechnical Engineers, Inc.

Santee, CA

Figure B-10

Tested By: N. Barnes **Checked By:** Sani Sutanto

L A B O R A T O R Y   R E P O R T

Telephone (619) 425-1993   Fax 425-7917   Established 1928

C L A R K S O N L A B O R A T O R Y A N D S U P P L Y I N C.
350 Trousdale Dr. Chula Vista, Ca. 91910 www.clarksonlab.com
A N A L Y T I C A L A N D C O N S U L T I N G C H E M I S T S

Date: November 1, 2019
Purchase Order Number: 65 C4
Sales Order Number: 46089
Account Number: ALLG

To:

Allied Geotechnical Engineers
1810 Gillespie Way Ste 104
El Cajon, CA 92020
Attention: Sani Sutanto

Laboratory Number: SO7581-1   Customers Phone: 619-449-5900
Fax: 619-449-5902
Sample Designation:

One soil sample received on 10/25/19 at 9:00am,
taken from Job# Coronado Golf Course Modernization
Project 65 C4 marked as B-1#8@32'-34'

Analysis By California Test 643, 1999, Department of Transportation Division of Construction, Method for Estimating the Service Life of Steel Culverts.

pH 8.4

Water Added (ml)	Resistivity (ohm-cm)
10	3900
5	2100
5	1800
5	1000
5	860
5	750
5	750
5	810
5	840

27 years to perforation for a 16 gauge metal culvert.
35 years to perforation for a 14 gauge metal culvert.
49 years to perforation for a 12 gauge metal culvert.
62 years to perforation for a 10 gauge metal culvert.
76 years to perforation for a 8 gauge metal culvert.

Water Soluble Sulfate Calif. Test 417   0.069% (690ppm)

Water Soluble Chloride Calif. Test 422   0.034% (340ppm)

Bicarbonate (HCO_3)   38ppm
([illegible]er extraction)

Rosa Bernal
RMB/js

L A B O R A T O R Y   R E P O R T

Telephone (619) 425-1993   Fax 425-7917   Established 1928

C L A R K S O N   L A B O R A T O R Y   A N D   S U P P L Y   I N C.
350 Trousdale Dr. Chula Vista, Ca. 91910 www.clarksonlab.com
A N A L Y T I C A L   A N D   C O N S U L T I N G   C H E M I S T S

Date: November 1, 2019
Purchase Order Number: 65 C4
Sales Order Number: 46089
Account Number: ALLG

To:

Allied Geotechnical Engineers
1810 Gillespie Way Ste 104
El Cajon, CA 92020
Attention: Sani Sutanto

Laboratory Number: SO7581-2   Customers Phone: 619-449-5900
Fax: 619-449-5902
Sample Designation:

One soil sample received on 10/25/19 at 9:00am,
taken from Job# Coronado Golf Course Modernization
Project 65 C4 marked as B-2#1@1'-2'

Analysis By California Test 643, 1999, Department of Transportation Division of Construction, Method for Estimating the Service Life of Steel Culverts.

pH 7.9

Water Added (ml)	Resistivity (ohm-cm)
10	11000
5	9600
5	8200
5	7600
5	6700
5	6000
5	6000
5	6100
5	6300

64 years to perforation for a 16 gauge metal culvert.
83 years to perforation for a 14 gauge metal culvert.
115 years to perforation for a 12 gauge metal culvert.
147 years to perforation for a 10 gauge metal culvert.
178 years to perforation for a 8 gauge metal culvert.

Water Soluble Sulfate Calif. Test 417   0.006% (60ppm)

Water Soluble Chloride Calif. Test 422   0.004% (43ppm)

Bicarbonate   (HCO_3)   30ppm
(as 1:3 water extraction)

Rosa Bernal
RMB/js

APPENDIX C

SHEAR WAVE VELOCITIES (V_{S100}) CALCULATIONS

APPENDIX C-1
CORONADO GOLF COURSE MODERNIZATION PROJECT
SUMMARY OF SHEAR WAVE VELOCITY CALCULATIONS BASED ON CORRECTED BLOW COUNTS IN BORINGS

Boring B-1

Depth	N60	V_S (m/s)	V_{S30} (m/s)	V_{S100}(ft/s)	V_{S100} int. (ft/s)	V_{S100} site (ft/s)
5	9	180.7460457	257.9499117	846.2923613	846.2923613	846.2923613
10	24	250.6364227	351.9637157	1154.7366	1000.514481	1000.514481
15	9	180.7460457	249.6862025	819.1804545	986.9585272	940.0698053
20	4	137.9387771	187.3981051	614.8231794	717.0018169	858.7581488
25	0	0	0	0	307.4115897	687.006519
30	7	166.2229376	218.2241214	715.9584036	357.9792018	691.8318331
35	39	294.6602887	380.1058792	1247.066533	981.5124681	771.1510759
40	100	403.2921573	511.0195583	1676.573354	1461.819943	884.3288607
100	100	403.2921573	400.3884537	1313.610412	1328.733868	1241.712601

APPENDIX C-2
CORONADO GOLF COURSE MODERNIZATION PROJECT
SUMMARY OF SHEAR WAVE VELOCITY CALCULATIONS BASED ON CORRECTED BLOW COUNTS IN BORINGS

Boring B-2

Depth	N60	V_S (m/s)	V_{S30} (m/s)	V_{S100}(ft/s)	V_{S100} int. (ft/s)	V_{S100} site (ft/s)
5	12	198.9348569	283.9078916	931.4563373	931.4563373	931.4563373
10	8	173.7879535	244.0469474	800.6789612	866.0676492	866.0676492
15	5	148.5889381	205.2637308	673.4374371	737.0581991	801.8575785
20	0	0	0	0	336.7187185	601.3931839
25	48	315.7748088	421.7804121	1383.794003	691.8970015	757.8733477
30	16	218.9540419	287.4516244	943.0827571	1163.43838	788.7415826
35	100	403.2921573	520.238817	1706.820266	1324.951511	919.8956802
40	100	403.2921573	511.0195583	1676.573354	1691.69681	1014.480389
100	100	403.2921573	400.3884537	1313.610412	1328.733868	1293.773212

Appendix D

Noise Report

38 NORTH MARENGO AVENUE
PASADENA, CALIFORNIA 91101
T 626.204.9800 F 626.204.9834

GOLF COURSE WATER RECYCLING AND TURF CARE FACILITY PROJECT

MITIGATED NEGATIVE DECLARATION – SECTION 3.13 NOISE – APPENDIX D

Prepared by: Mark Storm, INCE Bd. Cert. (Dudek--Acoustic Services Manager)
Date: April 6, 2020

The information provided below is intended to provide supporting detail for the Golf Course Water Recycling and Turf Care Facility Project (Project) operational noise impact assessment.

ACOUSTICAL FUNDAMENTALS

Noise Characteristics and Descriptors

Sound is mechanical energy transmitted by pressure waves in a compressible medium, such as air. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired. The sound-pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. The unit of measurement of sound pressure is a decibel (dB). Under controlled conditions in an acoustics laboratory, the trained, healthy human ear is able to discern changes in sound levels of one dB when exposed to steady, single-frequency signals in the mid-frequency range. Outside such controlled conditions, the trained ear can detect changes of two dB in normal environmental noise. It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of three dB. A change of five dB is readily perceptible, and a change of 10 dB is perceived as twice or half as loud. A doubling of sound energy results in a three dB increase in sound, which means that a doubling of sound energy (e.g., doubling the number of daily trips along a given road) would result in a barely perceptible change in sound level.

Sound may be described in terms of level or amplitude (measured in dB), frequency or pitch (measured in hertz or cycles per second), and duration (measured in seconds or minutes). Because the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale is used to relate noise to human sensitivity. The A-weighted decibel (dBA) scale performs this compensation by discriminating against low and very high frequencies in a manner approximating the sensitivity of the human ear.

Several descriptors of noise (noise metrics) exist to help predict average community reactions to the adverse effects of environmental noise, including traffic-generated noise. These descriptors include the equivalent noise level over a given period (L_{eq}), the day–night average noise level (L_{dn}), and the community noise equivalent level (CNEL). Each of these descriptors uses units of dBA.

L_{eq} is a decibel quantity that represents the constant or energy-averaged value equivalent to the amount of variable sound energy received by a receptor during a time interval. For example, a one hour L_{eq} measurement of 60 dBA would represent the average amount of energy contained in all the noise that occurred in that hour.

L_{eq} is an effective noise descriptor because of its ability to assess the total time-varying effects of noise on sensitive receptors, which can then be compared to an established L_{eq} standard or threshold of the same duration. Another descriptor is maximum sound level (L_{max}), which is the greatest sound level measured during a designated time interval or event. The minimum sound level (L_{min}) is often called the floor of a measurement period.

Unlike the L_{eq}, L_{max}, and L_{min} metrics, L_{dn} and CNEL descriptors always represent 24-hour periods and differ from a 24-hour L_{eq} value because they apply a time-weighted factor designed to emphasize noise events that occur during the non-daytime hours (when speech and sleep disturbance is of more concern). Time weighted refers to the fact that L_{dn} and CNEL penalize noise that occurs during certain sensitive periods. In the case of CNEL, noise occurring during the daytime (7:00 a.m. to 7:00 p.m.) receives no penalty. Noise during the evening (7:00 p.m. to 10:00 p.m.) is penalized by adding five dB, and nighttime (10:00 p.m. to 7:00 a.m.) noise is penalized by adding 10 dB. L_{dn} differs from CNEL in that the daytime period is longer (defined instead as 7:00 a.m. to 10:00 p.m.), thus eliminating the dB adjustment for the evening period. L_{dn} and CNEL are the predominant criteria used to measure roadway noise affecting residential receptors. These two metrics generally differ from one another by no more than 0.5 to one dB, and are often considered or actually defined as being essentially equivalent by many jurisdictions.

Vibration Characteristics and Descriptors

Vibration is oscillatory movement of mass (typically a solid) over time. It is described in terms of frequency and amplitude and, unlike sound, can be expressed as displacement, velocity, or acceleration. For environmental studies, vibration is often studied as a velocity that, akin to the discussion of sound pressure levels, can also be expressed in dB as a way to cast a large range of quantities into a more convenient scale. Vibration impacts to buildings are generally discussed in terms of inches per second (ips) peak particle velocity (PPV), which will be used herein to discuss vibration levels for ease of reading and comparison with relevant standards. Vibration can also be annoying and thereby impact occupants of structures, and vibration of sufficient amplitude can disrupt sensitive equipment and processes, such as those involving the use of electron microscopes and lithography equipment. Common sources of vibration within communities include construction activities and railroads. Groundborne vibration generated by construction projects is usually highest during pile driving, rock blasting, soil compacting, jack hammering, and demolition-related activities where sudden releases of subterranean energy or powerful impacts of tools on hard materials occur. Depending on their distances to a sensitive receptor, operation of large bulldozers, graders, loaded dump trucks, or other heavy construction equipment and vehicles on a construction site also have the potential to cause high vibration amplitudes. The maximum vibration level standard used by the California Department of Transportation (Caltrans) for the prevention of structural damage to typical older residential buildings is 0.2 ips PPV. This limit is with respect to continuous or otherwise frequent vibration events, and where the receiving structure has foundation walls and floors in concrete, masonry walls, and wooden ceilings. The same limit is associated with an “annoyed” human reaction to perceived vibration within an occupied structure (Caltrans 2013).

BASELINE SOUND LEVEL SURVEY

SPL measurements were conducted from February 4th to February 5th, 2020, to quantify and characterize the existing pre-Project outdoor noise levels at the Golf Course and the vicinity of the Public Services Buildings. Figure A-1 presents these short-term and long-term (24-hour) sound pressure level (SPL) monitor positions. Two SoftdB "Piccolo II" brand sound level meters (SLM) were deployed at locations on the Gold Course: ST-1/LT-1 and ST-2/LT-2. SLMs at these positions were left unattended to automatically measure and collect (i.e., store to onboard memory) SPL data at sequential one-minute duration intervals. Operation of these two SLM deployments (serial numbers [SN]: 1704 and 2501), photographed in Figures A-2 and A-3, was checked on the night of February 4th after 10:00 p.m. Additionally, an attending Dudek acoustician performed short-term SPL measurements with an additional SoftdB "Piccolo I" brand SLM (SN: 5008) at each of these two representative Golf Course locations and at a third location on A Avenue (ST-3, see Figure A-4) during an afternoon and nighttime survey period. Each Piccolo I and Piccolo II SLM meets the current American National Standards Institute (ANSI) Type 2 (general usage) standard. The accuracy of each sound level meter was verified with measurements of a calibrator (Rion NC-74 [SN: 5809]) reference signal; and measurements were conducted with the SLM microphone positioned approximately five feet above the ground.

Figure A-1. Baseline Sound Level Survey Locations

Figure A-2. Photograph of ST-1/LT-1 Sound Level Monitoring Position (facing northeast)

Figure A-3. Photograph of ST-2/LT-2 Sound Level Monitoring Position (facing north)

Figure A-4. Photograph of A Avenue Sound Level Monitoring Position (facing north)

CONSTRUCTION NOISE ANALYSIS

<u>On-site Construction Activities</u>

Construction noise and vibration are temporary phenomena. Construction noise and vibration levels vary from hour to hour and day to day, depending on the equipment in use, the operations performed, and the distance between the source and receptor. Equipment that would be in use during construction would include, in part, backhoes, rubber-tired dozers, cranes, forklifts, cement mixers, and rollers. Usually, construction equipment operates in alternating cycles of full power and low power, producing average noise levels over time that are less than the maximum noise level. The average sound level of construction activity also depends on the amount of time that the equipment operates and the intensity of construction activities during that time.

Aggregate noise emission from proposed Project construction activities, broken down by sequential phase, was predicted at a distance between the nearest residentially-zoned receiving property line and the geographic center of the construction zone, which serves as the time-averaged location or geographic "acoustical centroid" of active construction equipment for the phase under study. In some instances, such as construction of the Access Lane on the Golf Course, the analysis considers this acoustical centroid to be located where the zone would temporarily be closest to the receptor of interest and thus prior to the zone "moving" further away as construction progress of the Access Lane occurs over time. This source-to-receptor distance is comparable to the "general assessment" technique as described in Federal Transit Administration (FTA) guidance for construction noise level prediction, when the location of individual equipment for a given construction phase is uncertain over some extent of (or the entirety of) the construction zone. Because of this uncertainty, the assessment is done based on all the equipment for a construction phase operating—on average—from the acoustical centroid.

Using these source-to-receptor distances as an input parameter, Appendix B shows that a Microsoft Excel–based noise prediction model emulating and using reference data from the Federal Highway Administration Roadway Construction Noise Model (RCNM) estimated construction noise levels at the nearest residentially-zoned property. This model incorporates default RCNM acoustical usage factors (AUF) and reference A-weighted L_{max} values at 50 feet (FHWA 2006) for equipment types expected to be involved in the construction phases as detailed in the Project Description. Conservatively, no topographical or structural shielding was assumed in the modeling, and noise-reducing acoustical absorption due to atmospheric and ground surface effects have also been neglected.

OPERATION NOISE ANALYSIS

<u>Methodology</u>

Prediction of post-construction operation noise attributed to operating major equipment at the SWRF complex on the Golf Course and the diversion pump station on the grounds of the Public Services Buildings utilized an Excel-based tool that has algorithms based on the International Organization of Standardization (ISO) Standard 9613-2, "Attenuation of Sound During Propagation Outdoors, Part 2: General Method of Calculation" (ISO 1996). Source sound levels for the SWRF and diversion pump station were assumed to reflect the following conditions and parameters:

- The SWRF complex constitutes:
    - Three buildings or structures (SWRF, Turf Maintenance Facility, and Chemical Storage) that are surrounded by an 8'-tall solid wall (concrete masonry unit [CMU], wooden fencing with no gaps, etc.) enclosing a ground area of approximately 15,000 square feet. If this wall features a gate or other means of vehicle access, it must be composed of a material assembly having an apparent sound transmission class (STC) rating of at least 20. While SWRF equipment is operating normally, the door or gate must not be left open for any period of time substantially longer than what is required to allow personnel or vehicle ingress or egress.
    - The SWRF building that houses the recycled water pump (240 horsepower [HP]) and ancillary components would be designed to feature interior noise control and structural envelope (walls, personnel access door[s], equipment access roof hatch[es] or roll-up door[s], ventilation air

intake and exhaust means, etc.) sound abatement so that the resulting sound emission from its normal operation would be—if represented by a point source six feet above grade—no greater than 103 dBA sound power level.

- Alternately, and to provide the Project flexibility in its design and implementation, the proposed building envelopes (i.e., exterior wall assemblies that include necessary air intakes, access doors, and other penetrations) representing the SWRF, Turf Maintenance Facility, and Chemical Storage structures could feature sufficient sound transmission loss performance that results in no more than an interior-to-exterior noise emission level of 58 dBA L_{eq} (due to enclosed operating equipment, such as the SWRF pump) at the exterior facades that may adjoin the offsite Golf Course areas and thus eliminate the need for an afore-mentioned sound-reducing separate wall or solid fence.

- The Diversion Pump Station, rated for 50 HP would be housed within an enclosure so that the resulting sound emission from its normal operation would be—if represented by a point source six feet above grade—no greater than 91 dBA sound power level.
- Although there are some gaps between them, existing City of Coronado Public Services Buildings surround the anticipated site on which the Diversion Pump Station would be installed and operate.

Important calculation parameters that establish how the model predicts combined noise level from these above-listed Project sources include as follows:

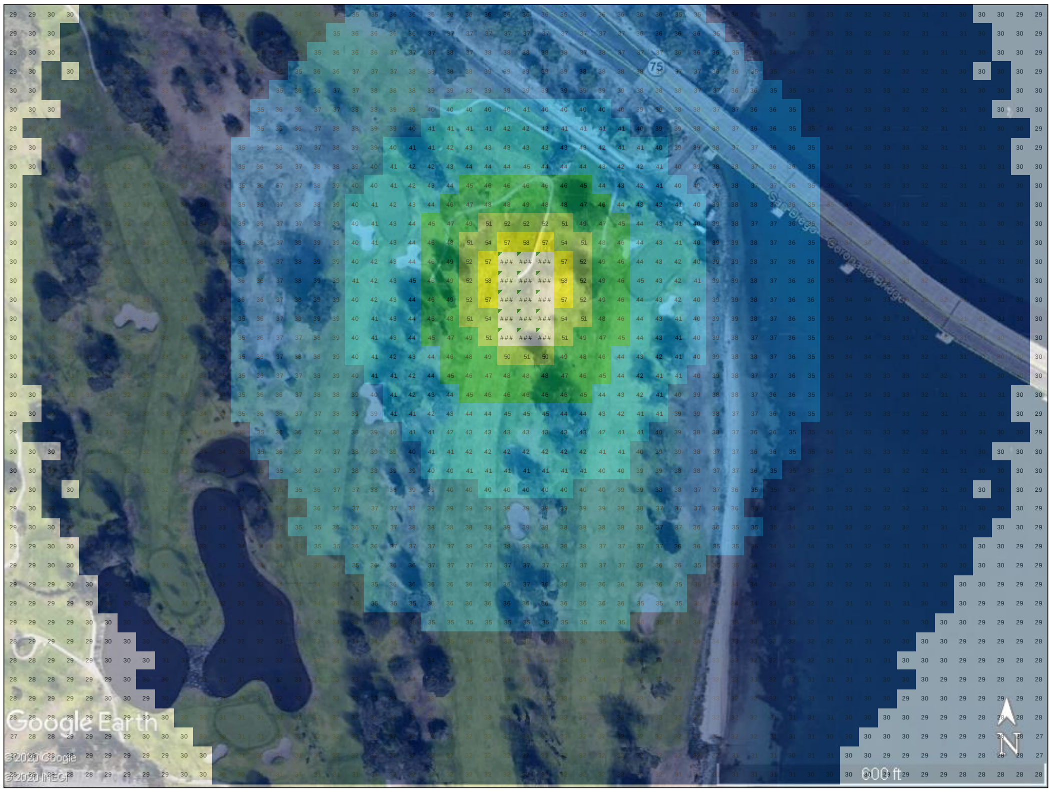
- Outdoor sound propagation per International Organization of Standardization (ISO) 9613-2;
- Default ground absorption coefficient yields noise reduction that can be estimated with Equation 10 from ISO 9613-2;
- Atmospheric absorption is approximated by -1 dBA per thousand feet of distance traveled;
- No reflection; and,
- Climate conditions are 68 degrees Fahrenheit, 50% relative humidity.

<u>Predicted Results</u>

As appearing in Figure A-5, predicted sound propagation for the proposed SWRF complex is presented as a visual “grid” of colored geographic regions having comparable L_{eq} values (i.e., within a 5 dBA range, per the legend). This grid predicts the propagation of sound from the modeled SWRF complex noise-producing sources across a horizontal plane positioned 5 feet above grade—typical of what may be the height of a person’s hearing faculties for a visitor or staff-person on the Golf Course. The combined noise sources from the proposed SWRF, Turf Maintenance, and Chemical Storage facilities are conservatively within an approximate 18,000 square foot region bounded by a perimeter wall (or, alternatively, outer building envelopes) that results in a predicted exterior noise level no greater than 58 dBA. This bounded region is a small portion of the larger 1.65-acre site planned for the proposed Project.

Figure A-6 displays a predicted sound propagation field in the vicinity of the Public Services Building.

Note that the existing outdoor ambient sound level is not included in either of these two presentations of predicted operation noise attributed solely to the Project.



Output SPL Legend
(user: enter dBA values in table)

Color	dBA range High	dBA range Low
	80	75
	75	70
	70	65
	65	60
	60	55
	55	50
	50	45
	45	40
	40	35
	35	30

Selected Receptors
(user: enter rcvr tag from input map)

Tag	dBA

Figure A-5. Predicted Operation Noise Propagation from the SWRF Complex

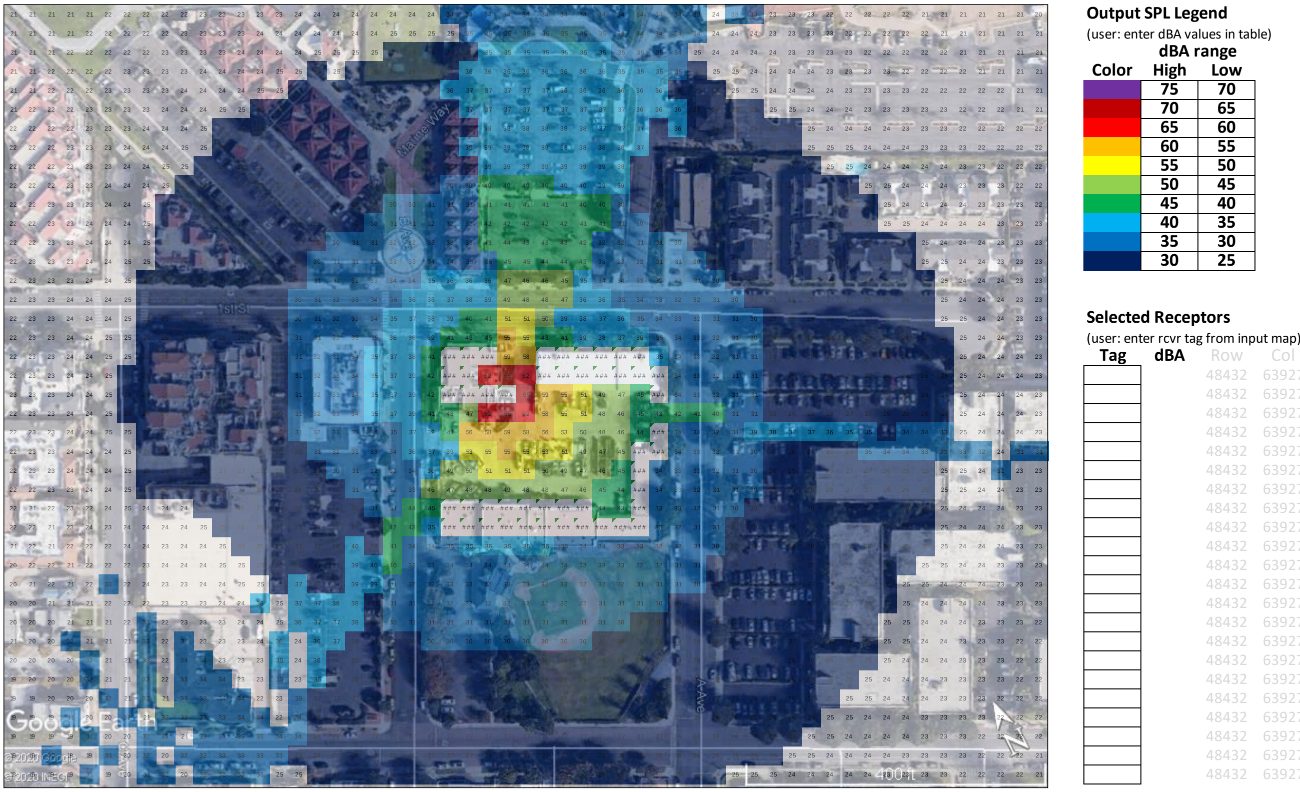


Figure A-6. Predicted Operation Noise Propagation from the Diversion Pump Station

REFERENCES

California Department of Transportation (Caltrans). 2013. Transportation and Construction Vibration Guidance Manual. Report No. CTHWANP-RT-13-069.25.3. September. Available at http://www.dot.ca.gov/hq/env/noise/pub/TCVGM_Sep13_FINAL.pdf.

U.S. Department of Transportation. Federal Highway Administration (FHWA). 2006. FHWA Roadway Construction Noise Model User's Guide. FHWA-HEP-05-054. Final Report. January. Available at https://www.fhwa.dot.gov/environment/noise/construction_noise/rcnm/rcnm.pdf.

International Organization of Standardization (ISO). 1996. 9613-2: "Attenuation of Sound During Propagation Outdoors, Part 2: General Method of Calculation". December. https://www.iso.org/standard/20649.html

Appendix E

Construction Noise Modeling

To User: bordered cells are inputs, unbordered cells have formulae

noise level limit for construction phase, per City of Coronado = 75
allowable hours over which Leq is to be averaged (example: 1 hour per City of Coronado MC 41.10.050) = 1

Construction Phase or Feature	Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) User's Guide Equipment Type	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Project Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 1-hour Leq
Golf Course Master Planning	Dozer	1	40	82		600	60.4	1	60	56
	Backhoe	1	40	78		600	56.4	1	60	52
	Chain Saw	1	20	84		600	62.4	1	60	55
	Compactor (ground)	1	20	80		600	58.4	1	60	51
	Concrete Mixer Truck	1	40	79		600	57.4	1	60	53
	Tractor	1	40	84		600	62.4	1	60	58
	Dump Truck	1	40	76		600	54.4	1	60	50
								Total for Golf Course Master Planning Phase:		**63.3**
Access Lane	Dozer	1	40	82		100	76.0	1	60	72
	Backhoe	1	40	78		100	72.0	1	60	68
	Dump Truck	1	40	76		100	70.0	1	60	66
								Total for Access Lane Phase:		**74.2**
Recycled Water Storage Ponds	Scraper	1	40	84		1200	56.4	1	60	52
	Backhoe	1	40	78		1200	50.4	1	60	46
	Dump Truck	1	40	76		1200	48.4	1	60	44
								Total for Recycled Water Storage Ponds Phase:		**53.9**
SWRF and Turf Care Buildings	Backhoe	1	40	78		1300	49.7	1	60	46
	Crane	1	16	81		1300	52.7	1	60	45
	Tractor	1	40	84		1300	55.7	1	60	52
	Grader	1	40	85		1300	56.7	1	60	53
								Total for SWRF and Turf Care Buildings Phase:		**56.1**
Recycled Water Treatment System	Excavator	1	40	81		1300	52.7	1	60	49
	Backhoe	1	40	78		1300	49.7	1	60	46
	Dump Truck	1	40	76		1300	47.7	1	60	44
	Crane	1	16	81		1300	52.7	1	60	45
	Concrete Pump Truck	1	20	81		1300	52.7	1	60	46
	Man Lift	1	20	75	"fork lift"	1300	46.7	1	60	40
								Total for Recycled Water Treatment System Phase:		**53.3**
Wastewater Diversion Pump Station and Pipeline	Excavator	1	40	81		30	85.4	1	60	81
	Backhoe	1	40	78		30	82.4	1	60	78
	Dump Truck	1	40	76		30	80.4	1	60	76
	Dozer	1	40	82		30	86.4	1	60	82
	Paver	1	50	77		30	81.4	1	60	78
	Flat Bed Truck	1	40	74		30	78.4	1	60	74
								Total for Wastewater Diversion Pump Station and Pipeline Phase:		**87.2**
Discharge Pipeline	Excavator	1	40	81		30	85.4	1	60	81
	Backhoe	1	40	78		30	82.4	1	60	78
	Dump Truck	1	40	76		30	80.4	1	60	76
	Dozer	1	40	82		30	86.4	1	60	82
	Paver	1	50	77		30	81.4	1	60	78
	Flat Bed Truck	1	40	74		30	78.4	1	60	74
								Total for Discharge Pipeline Phase:		**87.2**
Recycled Water Distribution System (off golf course)	Excavator	1	40	81		30	85.4	1	60	81
	Backhoe	1	40	78		30	82.4	1	60	78
	Dump Truck	1	40	76		30	80.4	1	60	76
	Dozer	1	40	82		30	86.4	1	60	82
	Paver	1	50	77		30	81.4	1	60	78
	Flat Bed Truck	1	40	74		30	78.4	1	60	74
								Total for Recycled Water Distribution System (off golf course) Phase:		**87.2**
Irrigation System (golf course)	Backhoe	1	40	78	"track trencher, wheel trencher, vibratory plow"	100	72.0	1	60	68
	Roller	1	20	80		100	74.0	1	60	67
	Pickup Truck	1	40	55		100	49.0	1	60	45
	Chain Saw	1	20	84		100	78.0	1	60	71
	Compactor (ground)	1	20	80		100	74.0	1	60	67
								Total for Irrigation System (golf course) Phase:		**74.6**
Turf Establishment of New Holes	Man Lift	1	20	75	"fork lift"	500	55.0	1	60	48
	Pickup Truck	1	40	55	"big roll sod installer"	500	35.0	1	60	31
								Total for Turf Establishment of New Holes Phase:		**48.1**