Appendix A

Air Quality, Greenhouse Gas and Energy Information

ESA

Beverly Hills MND
Regional Emissions

SUMMER	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
			lb/day			
Well Site Demolition and Pump-to-Waste -2019	2.43	19.25	18.90	0.03	1.39	1.25
Well Construction Monitoring -2019	4.84	49.38	38.56	0.08	2.49	2.22
Well Construction Monitoring -2020	4.46	44.60	38.04	0.08	2.16	1.95
Well Equipping - 2020	0.64	7.31	3.62	0.01	0.40	0.32
Rehabilitation/ Transmission Main Installation - 2019	1.31	13.90	11.33	0.02	1.18	0.80
Rehabilitation/ Transmission Main Installation - 2020	1.23	12.92	11.22	0.02	1.00	0.71

WINTER	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
			lb/day			
Well Site Demolition and Pump-to-Waste -2019	2.43	19.26	18.86	0.03	1.39	1.25
Well Construction Monitoring -2019	4.85	49.39	38.56	0.08	2.49	2.22
Well Construction Monitoring -2020	4.46	44.61	38.04	0.08	2.16	1.95
Well Equipping - 2020	0.64	7.31	3.62	0.01	0.40	0.32
Rehabilitation/ Transmission Main Installation - 2019	1.32	13.94	11.33	0.02	1.18	0.80
Rehabilitation/ Transmission Main Installation - 2020	1.24	12.95	11.22	0.02	1.00	0.71

Maximum	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
			lb/day			
Well Site Demolition and Pump-to-Waste -2019	2.43	19.26	18.90	0.03	1.39	1.25
Well Construction Monitoring -2019	4.85	49.39	38.56	0.08	2.49	2.22
Well Construction Monitoring -2020	4.46	44.61	38.04	0.08	2.16	1.95
Well Equipping - 2020	0.64	7.31	3.62	0.01	0.40	0.32
Rehabilitation/ Transmission Main Installation - 2019	1.32	13.94	11.33	0.02	1.18	0.80
Rehabilitation/ Transmission Main Installation - 2020	1.24	12.95	11.22	0.02	1.00	0.71
Maximum Daily Emissions	4.85	49.39	38.56	0.08	2.49	2.22
SCAQMD Significance Thresholds	75.00	100.00	550.00	150.00	150.00	55.00
Above/(Under)	(70.15)	(50.61)	(511.44)	(149.92)	(147.51)	(52.78)
Exceeds Thresholds?	No	No	No	No	No	No

OVERLAP	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
			lb/day			
Well Site Demolition and Pump to Waste - 2019 and Rehabilitation/Transmission Main Installation - 2019	4	33	30	0	3	2
Well Construction Monitoring - 2019 and Rehabilitation/Transmission Main Installation - 2019	6	63	50	0	4	3
Well Construction Monitoring - 2020 and Rehabilitation/Transmission Main Installation - 2020	6	58	49	0	3	3
Well Equipping - 2020 and Rehabilitation/Transmission Main Installation - 2020	2	20	15	0	1	1
Maximum Daily Emissions	6	63	50	0	4	3
SCAQMD Significance Thresholds	75.00	100.00	550.00	150.00	150.00	55.00
Above/(Under)	(68.83)	(36.67)	(500.11)	(149.89)	(146.33)	(51.98)
Exceeds Thresholds?	No	No	No	No	No	No

Beverly Hills MND
Localized Emissions

SUMMER	NOx	CO	PM10 Total	PM2.5 Total
	lb/day			
Well Site Demolition and Pump-to-Waste -2019	19.1186	18.3943	1.276	1.2187
Well Construction Monitoring -2019	48.4868	38.1598	2.326	2.1763
Well Construction Monitoring -2020	43.7703	37.6732	2.0544	1.9197
Well Equipping - 2020	6.689	3.2956	0.3189	0.2934
Rehabilitation/ Transmission Main Installation - 2019	11.2878	10.2879	0.7349	0.6771
Rehabilitation/ Transmission Main Installation - 2020	10.4666	10.2432	0.666	0.6138

WINTER	NOx	CO	PM10 Total	PM2.5 Total
	lb/day			
Well Site Demolition and Pump-to-Waste -2019	19.12	18.39	1.28	1.22
Well Construction Monitoring -2019	48.49	38.16	2.33	2.18
Well Construction Monitoring -2020	43.77	37.67	2.05	1.92
Well Equipping - 2020	6.69	3.30	0.32	0.29
Rehabilitation/ Transmission Main Installation - 2019	11.29	10.29	0.73	0.68
Rehabilitation/ Transmission Main Installation - 2020	10.47	10.24	0.67	0.61

Maximum	NOx	CO	PM10 Total	PM2.5 Total
	lb/day			
Well Site Demolition and Pump-to-Waste -2019	19.12	18.39	1.28	1.22
Well Construction Monitoring -2019	48.49	38.16	2.33	2.18
Well Construction Monitoring -2020	43.77	37.67	2.05	1.92
Well Equipping - 2020	6.69	3.30	0.32	0.29
Rehabilitation/ Transmission Main Installation - 2019	11.29	10.29	0.73	0.68
Rehabilitation/ Transmission Main Installation - 2020	10.47	10.24	0.67	0.61

OVERLAP	NOx	CO	PM10 Total	PM2.5 Total
	lb/day			
Well Site Demolition and Pump to Waste - 2019 and Rehabilitation/Transmission Main Installation - 2019	30	29	2.0	1.9
Well Construction Monitoring - 2019 and Rehabilitation/Transmission Main Installation - 2019	60	48	3.1	2.9
Well Construction Monitoring - 2020 and Rehabilitation/Transmission Main Installation - 2020	54	48	2.7	2.5
Well Equipping - 2020 and Rehabilitation/Transmission Main Installation - 2020	17	14	1.0	0.9
Maximum Daily Emissions	60	48	3.1	2.9
SCAQMD Significance Thresholds	103	562	4.0	3.0
Above/(Under)	(43.2)	(513.6)	(0.9)	(0.15)
Exceeds Thresholds?	No	No	No	No

SRA 2, Project Site 1 Acres, 25 m distance to sensitive receptor

La Brea Subarea Wells and Transmission Main Project

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	2.70	117,140.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	11			**Operational Year**	2021
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

La Brea Subarea Wells and Transmission Main Project - Los Angeles-South Coast County, Annual

Project Characteristics -

Land Use - assume 1 well of 660 SF each + (4 miles of new transmission main x 4 LF wide) + (8000 LF proposed rehab x 4 LF wide) = approx 117,140 SF impacted

Construction Phase - per Table 1 in Project Description

Off-road Equipment - per Table 2 Project Description

Off-road Equipment - per Table 2 of Project Description

Off-road Equipment - per Table 2 Project Description

Off-road Equipment - per Table 2 of Project Description

Demolition - 67 CY construction material (assume wood, uncompacted) => 400 lbs/CY * 67 CY = 26,800 lbs = 12 metric tons
Conversion source: CalRecycle

Trips and VMT - one well only
Well construction/equipping: 76 hauling trucks * 2 = 152 truck trips
Transmission main: 11,018 CY + 185 CY soil = 11203 CY soil / 16 CY/truck = 700 trucks or 1400 hauling truck trips.
Concrete- 10,000 SF * 1/3 LF thick = 3,333 CF * 1 CY/27 CF = 123 CY / 16 CY/truck = 7.7 trucks for vendor or less than 1 per day

Grading - 11 CY soil excavated for wells, 11,018 CY soil excavated for new transmission, 185 CY soil excavated for rehab = 11214 CY

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	220.00	174.00
tblConstructionPhase	NumDays	20.00	44.00
tblConstructionPhase	NumDays	6.00	153.00
tblConstructionPhase	NumDays	3.00	87.00
tblGrading	MaterialExported	0.00	11,214.00
tblLandUse	LandUseSquareFeet	0.00	117,140.00
tblLandUse	LotAcreage	0.00	2.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Well Construction Monitoring
tblOffRoadEquipment	PhaseName		Well Construction Monitoring
tblOffRoadEquipment	PhaseName		Well Construction Monitoring
tblOffRoadEquipment	PhaseName		Well Equipping
tblOffRoadEquipment	PhaseName		Well Site Demolition and Pump-to-Waste
tblOffRoadEquipment	PhaseName		Well Site Demolition and Pump-to-Waste
tblOffRoadEquipment	PhaseName		Rehabilitation/Transmission Main Installation
tblOffRoadEquipment	PhaseName		Well Site Demolition and Pump-to-Waste
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tblOffRoadEquipment	PhaseName		Well Equipping
tblOffRoadEquipment	PhaseName		Well Construction Monitoring

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tblOffRoadEquipment	PhaseName		Well Construction Monitoring
tblOffRoadEquipment	PhaseName		Well Construction Monitoring
tblOffRoadEquipment	PhaseName		Well Site Demolition and Pump-to-Waste
tblOffRoadEquipment	PhaseName		Rehabilitation/Transmission Main Installation
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	HaulingTripNumber	4.00	14.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,400.00
tblTripsAndVMT	HaulingTripNumber	0.00	152.00
tblTripsAndVMT	HaulingTripNumber	0.00	152.00
tblTripsAndVMT	VendorTripNumber	19.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	WorkerTripNumber	18.00	10.00
tblTripsAndVMT	WorkerTripNumber	50.00	10.00
tblTripsAndVMT	WorkerTripNumber	30.00	4.00
tblTripsAndVMT	WorkerTripNumber	5.00	4.00

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					
2019	0.1501	1.4291	1.2126	2.3100e-003	0.0204	0.0781	0.0985	5.0500e-003	0.0735	0.0785	0.0000	207.2945	207.2945	0.0471	0.0000	208.4707
2020	0.2600	2.7128	2.1181	4.6500e-003	0.0285	0.1274	0.1559	7.3600e-003	0.1187	0.1260	0.0000	413.0153	413.0153	0.1042	0.0000	415.6192
Maximum	**0.2600**	**2.7128**	**2.1181**	**4.6500e-003**	**0.0285**	**0.1274**	**0.1559**	**7.3600e-003**	**0.1187**	**0.1260**	**0.0000**	**413.0153**	**413.0153**	**0.1042**	**0.0000**	**415.6192**

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					
2019	0.1501	1.4291	1.2126	2.3100e-003	0.0191	0.0781	0.0972	4.8900e-003	0.0735	0.0784	0.0000	207.2943	207.2943	0.0471	0.0000	208.4705
2020	0.2600	2.7128	2.1181	4.6500e-003	0.0273	0.1274	0.1547	7.2100e-003	0.1187	0.1259	0.0000	413.0148	413.0148	0.1042	0.0000	415.6188
Maximum	**0.2600**	**2.7128**	**2.1181**	**4.6500e-003**	**0.0273**	**0.1274**	**0.1547**	**7.2100e-003**	**0.1187**	**0.1259**	**0.0000**	**413.0148**	**413.0148**	**0.1042**	**0.0000**	**415.6188**

	ROG	NOx	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**	**5.19**	**0.00**	**0.99**	**2.50**	**0.00**	**0.15**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	10-1-2019	12-31-2019	1.5474	1.5474
2	1-1-2020	3-31-2020	2.0561	2.0561
3	4-1-2020	6-30-2020	0.5562	0.5562
4	7-1-2020	9-30-2020	0.2610	0.2610
		Highest	2.0561	2.0561

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	0.4782	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.4782**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.4782	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.4782**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	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	Well Site Demolition and Pump-to-Waste	Demolition	10/1/2019	11/29/2019	5	44	
2	Rehabilitation/Transmission Main Installation	Building Construction	10/1/2019	5/29/2020	5	174	
3	Well Construction Monitoring	Site Preparation	12/2/2019	3/31/2020	5	87	
4	Well Equipping	Grading	4/1/2020	10/30/2020	5	153	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Well Site Demolition and Pump-to-Waste	Crushing/Proc. Equipment	2	8.00	85	0.78
Well Site Demolition and Pump-to-Waste	Dumpers/Tenders	1	8.00	16	0.38
Well Site Demolition and Pump-to-Waste	Excavators	1	8.00	158	0.38
Well Site Demolition and Pump-to-Waste	Forklifts	1	8.00	89	0.20
Well Site Demolition and Pump-to-Waste	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Well Site Demolition and Pump-to-Waste	Trenchers	1	8.00	78	0.50
Well Construction Monitoring	Air Compressors	1	8.00	78	0.48
Well Construction Monitoring	Bore/Drill Rigs	2	8.00	221	0.50
Well Construction Monitoring	Cranes	1	8.00	231	0.29
Well Construction Monitoring	Generator Sets	1	8.00	84	0.74
Well Construction Monitoring	Off-Highway Trucks	1	8.00	402	0.38
Well Construction Monitoring	Other Construction Equipment	1	8.00	172	0.42
Well Construction Monitoring	Other Material Handling Equipment	3	8.00	168	0.40
Well Construction Monitoring	Pumps	1	8.00	84	0.74
Well Construction Monitoring	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Well Equipping	Cranes	1	8.00	231	0.29
Well Equipping	Forklifts	1	8.00	89	0.20
Rehabilitation/Transmission Main Installation	Dumpers/Tenders	1	6.00	16	0.38
Rehabilitation/Transmission Main Installation	Excavators	1	7.00	158	0.38
Rehabilitation/Transmission Main Installation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Rehabilitation/Transmission Main Installation	Trenchers	1	8.00	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
Well Site Demolition and Pump-to-Waste	7	10.00	0.00	14.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Construction Monitoring	12	4.00	3.00	152.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Equipping	2	4.00	3.00	152.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rehabilitation/Transmission Main Installation	5	10.00	1.00	1,400.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Well Site Demolition and Pump-to-Waste - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.3000e-004	0.0000	1.3000e-004	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0523	0.4206	0.4047	6.1000e-004		0.0280	0.0280		0.0268	0.0268	0.0000	53.7639	53.7639	0.0105	0.0000	54.0266
Total	**0.0523**	**0.4206**	**0.4047**	**6.1000e-004**	**1.3000e-004**	**0.0280**	**0.0282**	**2.0000e-005**	**0.0268**	**0.0268**	**0.0000**	**53.7639**	**53.7639**	**0.0105**	**0.0000**	**54.0266**

3.2 Well Site Demolition and Pump-to-Waste - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.0000e-005	2.2200e-003	4.7000e-004	1.0000e-005	1.2000e-004	1.0000e-005	1.3000e-004	3.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.5451	0.5451	4.0000e-005	0.0000	0.5460
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	1.1000e-003	9.2000e-004	9.9900e-003	3.0000e-005	2.4100e-003	2.0000e-005	2.4300e-003	6.4000e-004	2.0000e-005	6.6000e-004	0.0000	2.3174	2.3174	8.0000e-005	0.0000	2.3194
Total	**1.1700e-003**	**3.1400e-003**	**0.0105**	**4.0000e-005**	**2.5300e-003**	**3.0000e-005**	**2.5600e-003**	**6.7000e-004**	**3.0000e-005**	**7.0000e-004**	**0.0000**	**2.8625**	**2.8625**	**1.2000e-004**	**0.0000**	**2.8654**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0523	0.4206	0.4047	6.1000e-004		0.0280	0.0280		0.0268	0.0268	0.0000	53.7638	53.7638	0.0105	0.0000	54.0266
Total	**0.0523**	**0.4206**	**0.4047**	**6.1000e-004**	**5.0000e-005**	**0.0280**	**0.0281**	**1.0000e-005**	**0.0268**	**0.0268**	**0.0000**	**53.7638**	**53.7638**	**0.0105**	**0.0000**	**54.0266**

3.2 Well Site Demolition and Pump-to-Waste - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.0000e-005	2.2200e-003	4.7000e-004	1.0000e-005	1.2000e-004	1.0000e-005	1.3000e-004	3.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.5451	0.5451	4.0000e-005	0.0000	0.5460
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	1.1000e-003	9.2000e-004	9.9900e-003	3.0000e-005	2.4100e-003	2.0000e-005	2.4300e-003	6.4000e-004	2.0000e-005	6.6000e-004	0.0000	2.3174	2.3174	8.0000e-005	0.0000	2.3194
Total	**1.1700e-003**	**3.1400e-003**	**0.0105**	**4.0000e-005**	**2.5300e-003**	**3.0000e-005**	**2.5600e-003**	**6.7000e-004**	**3.0000e-005**	**7.0000e-004**	**0.0000**	**2.8625**	**2.8625**	**1.2000e-004**	**0.0000**	**2.8654**

3.3 Rehabilitation/Transmission Main Installation - 2019

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	0.0391	0.3725	0.3395	4.8000e-004		0.0243	0.0243		0.0224	0.0224	0.0000	43.1656	43.1656	0.0134	0.0000	43.4999
Total	**0.0391**	**0.3725**	**0.3395**	**4.8000e-004**		**0.0243**	**0.0243**		**0.0224**	**0.0224**	**0.0000**	**43.1656**	**43.1656**	**0.0134**	**0.0000**	**43.4999**

3.3 Rehabilitation/Transmission Main Installation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.5200e-003	0.0840	0.0179	2.1000e-004	0.0102	3.0000e-004	0.0105	2.6300e-003	2.9000e-004	2.9200e-003	0.0000	20.6754	20.6754	1.4600e-003	0.0000	20.7119
Vendor	1.4000e-004	3.9000e-003	1.0700e-003	1.0000e-005	2.1000e-004	2.0000e-005	2.3000e-004	6.0000e-005	2.0000e-005	8.0000e-005	0.0000	0.8252	0.8252	6.0000e-005	0.0000	0.8266
Worker	1.6500e-003	1.3800e-003	0.0150	4.0000e-005	3.6200e-003	3.0000e-005	3.6500e-003	9.6000e-004	3.0000e-005	9.9000e-004	0.0000	3.4761	3.4761	1.2000e-004	0.0000	3.4791
Total	**4.3100e-003**	**0.0893**	**0.0339**	**2.6000e-004**	**0.0140**	**3.5000e-004**	**0.0144**	**3.6500e-003**	**3.4000e-004**	**3.9900e-003**	**0.0000**	**24.9767**	**24.9767**	**1.6400e-003**	**0.0000**	**25.0176**

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	0.0391	0.3725	0.3395	4.8000e-004		0.0243	0.0243		0.0224	0.0224	0.0000	43.1656	43.1656	0.0134	0.0000	43.4999
Total	**0.0391**	**0.3725**	**0.3395**	**4.8000e-004**		**0.0243**	**0.0243**		**0.0224**	**0.0224**	**0.0000**	**43.1656**	**43.1656**	**0.0134**	**0.0000**	**43.4999**

3.3 Rehabilitation/Transmission Main Installation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.5200e-003	0.0840	0.0179	2.1000e-004	0.0102	3.0000e-004	0.0105	2.6300e-003	2.9000e-004	2.9200e-003	0.0000	20.6754	20.6754	1.4600e-003	0.0000	20.7119
Vendor	1.4000e-004	3.9000e-003	1.0700e-003	1.0000e-005	2.1000e-004	2.0000e-005	2.3000e-004	6.0000e-005	2.0000e-005	8.0000e-005	0.0000	0.8252	0.8252	6.0000e-005	0.0000	0.8266
Worker	1.6500e-003	1.3800e-003	0.0150	4.0000e-005	3.6200e-003	3.0000e-005	3.6500e-003	9.6000e-004	3.0000e-005	9.9000e-004	0.0000	3.4761	3.4761	1.2000e-004	0.0000	3.4791
Total	**4.3100e-003**	**0.0893**	**0.0339**	**2.6000e-004**	**0.0140**	**3.5000e-004**	**0.0144**	**3.6500e-003**	**3.4000e-004**	**3.9900e-003**	**0.0000**	**24.9767**	**24.9767**	**1.6400e-003**	**0.0000**	**25.0176**

3.3 Rehabilitation/Transmission Main Installation - 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	0.0598	0.5652	0.5531	7.9000e-004		0.0360	0.0360		0.0331	0.0331	0.0000	69.1543	69.1543	0.0219	0.0000	69.7013
Total	**0.0598**	**0.5652**	**0.5531**	**7.9000e-004**		**0.0360**	**0.0360**		**0.0331**	**0.0331**	**0.0000**	**69.1543**	**69.1543**	**0.0219**	**0.0000**	**69.7013**

3.3 Rehabilitation/Transmission Main Installation - 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	3.8300e-003	0.1290	0.0284	3.4000e-004	0.0109	4.0000e-004	0.0113	2.8900e-003	3.8000e-004	3.2800e-003	0.0000	33.4892	33.4892	2.3300e-003	0.0000	33.5475
Vendor	2.0000e-004	5.8500e-003	1.5800e-003	1.0000e-005	3.4000e-004	3.0000e-005	3.7000e-004	1.0000e-004	3.0000e-005	1.2000e-004	0.0000	1.3415	1.3415	9.0000e-005	0.0000	1.3436
Worker	2.4900e-003	2.0100e-003	0.0222	6.0000e-005	5.9200e-003	5.0000e-005	5.9700e-003	1.5700e-003	5.0000e-005	1.6200e-003	0.0000	5.5153	5.5153	1.7000e-004	0.0000	5.5196
Total	**6.5200e-003**	**0.1369**	**0.0523**	**4.1000e-004**	**0.0172**	**4.8000e-004**	**0.0176**	**4.5600e-003**	**4.6000e-004**	**5.0200e-003**	**0.0000**	**40.3460**	**40.3460**	**2.5900e-003**	**0.0000**	**40.4107**

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	0.0598	0.5652	0.5531	7.9000e-004		0.0360	0.0360		0.0331	0.0331	0.0000	69.1542	69.1542	0.0219	0.0000	69.7012
Total	**0.0598**	**0.5652**	**0.5531**	**7.9000e-004**		**0.0360**	**0.0360**		**0.0331**	**0.0331**	**0.0000**	**69.1542**	**69.1542**	**0.0219**	**0.0000**	**69.7012**

3.3 Rehabilitation/Transmission Main Installation - 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	3.8300e-003	0.1290	0.0284	3.4000e-004	0.0109	4.0000e-004	0.0113	2.8900e-003	3.8000e-004	3.2800e-003	0.0000	33.4892	33.4892	2.3300e-003	0.0000	33.5475
Vendor	2.0000e-004	5.8500e-003	1.5800e-003	1.0000e-005	3.4000e-004	3.0000e-005	3.7000e-004	1.0000e-004	3.0000e-005	1.2000e-004	0.0000	1.3415	1.3415	9.0000e-005	0.0000	1.3436
Worker	2.4900e-003	2.0100e-003	0.0222	6.0000e-005	5.9200e-003	5.0000e-005	5.9700e-003	1.5700e-003	5.0000e-005	1.6200e-003	0.0000	5.5153	5.5153	1.7000e-004	0.0000	5.5196
Total	**6.5200e-003**	**0.1369**	**0.0523**	**4.1000e-004**	**0.0172**	**4.8000e-004**	**0.0176**	**4.5600e-003**	**4.6000e-004**	**5.0200e-003**	**0.0000**	**40.3460**	**40.3460**	**2.5900e-003**	**0.0000**	**40.4107**

3.4 Well Construction Monitoring - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.0100e-003	0.0000	2.0100e-003	2.4000e-004	0.0000	2.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0527	0.5334	0.4198	9.0000e-004		0.0254	0.0254		0.0239	0.0239	0.0000	79.7407	79.7407	0.0212	0.0000	80.2716
Total	**0.0527**	**0.5334**	**0.4198**	**9.0000e-004**	**2.0100e-003**	**0.0254**	**0.0274**	**2.4000e-004**	**0.0239**	**0.0242**	**0.0000**	**79.7407**	**79.7407**	**0.0212**	**0.0000**	**80.2716**

3.4 Well Construction Monitoring - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.8000e-004	6.0800e-003	1.2900e-003	2.0000e-005	1.0600e-003	2.0000e-005	1.0900e-003	2.7000e-004	2.0000e-005	2.9000e-004	0.0000	1.4965	1.4965	1.1000e-004	0.0000	1.4992
Vendor	1.4000e-004	3.9000e-003	1.0700e-003	1.0000e-005	2.1000e-004	2.0000e-005	2.3000e-004	6.0000e-005	2.0000e-005	8.0000e-005	0.0000	0.8252	0.8252	6.0000e-005	0.0000	0.8266
Worker	2.2000e-004	1.8000e-004	2.0000e-003	1.0000e-005	4.8000e-004	0.0000	4.9000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4635	0.4635	2.0000e-005	0.0000	0.4639
Total	**5.4000e-004**	**0.0102**	**4.3600e-003**	**4.0000e-005**	**1.7500e-003**	**4.0000e-005**	**1.8100e-003**	**4.6000e-004**	**4.0000e-005**	**5.0000e-004**	**0.0000**	**2.7852**	**2.7852**	**1.9000e-004**	**0.0000**	**2.7896**

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					7.8000e-004	0.0000	7.8000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0527	0.5334	0.4198	9.0000e-004		0.0254	0.0254		0.0239	0.0239	0.0000	79.7406	79.7406	0.0212	0.0000	80.2715
Total	**0.0527**	**0.5334**	**0.4198**	**9.0000e-004**	**7.8000e-004**	**0.0254**	**0.0262**	**1.0000e-004**	**0.0239**	**0.0240**	**0.0000**	**79.7406**	**79.7406**	**0.0212**	**0.0000**	**80.2715**

3.4 Well Construction Monitoring - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.8000e-004	6.0800e-003	1.2900e-003	2.0000e-005	1.0600e-003	2.0000e-005	1.0900e-003	2.7000e-004	2.0000e-005	2.9000e-004	0.0000	1.4965	1.4965	1.1000e-004	0.0000	1.4992
Vendor	1.4000e-004	3.9000e-003	1.0700e-003	1.0000e-005	2.1000e-004	2.0000e-005	2.3000e-004	6.0000e-005	2.0000e-005	8.0000e-005	0.0000	0.8252	0.8252	6.0000e-005	0.0000	0.8266
Worker	2.2000e-004	1.8000e-004	2.0000e-003	1.0000e-005	4.8000e-004	0.0000	4.9000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4635	0.4635	2.0000e-005	0.0000	0.4639
Total	**5.4000e-004**	**0.0102**	**4.3600e-003**	**4.0000e-005**	**1.7500e-003**	**4.0000e-005**	**1.8100e-003**	**4.6000e-004**	**4.0000e-005**	**5.0000e-004**	**0.0000**	**2.7852**	**2.7852**	**1.9000e-004**	**0.0000**	**2.7896**

3.4 Well Construction Monitoring - 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					2.0100e-003	0.0000	2.0100e-003	2.4000e-004	0.0000	2.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1435	1.4225	1.2244	2.6500e-003		0.0662	0.0662		0.0623	0.0623	0.0000	231.6508	231.6508	0.0625	0.0000	233.2120
Total	**0.1435**	**1.4225**	**1.2244**	**2.6500e-003**	**2.0100e-003**	**0.0662**	**0.0682**	**2.4000e-004**	**0.0623**	**0.0626**	**0.0000**	**231.6508**	**231.6508**	**0.0625**	**0.0000**	**233.2120**

3.4 Well Construction Monitoring - 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	5.0000e-004	0.0169	3.7200e-003	4.0000e-005	1.2200e-003	5.0000e-005	1.2800e-003	3.3000e-004	5.0000e-005	3.8000e-004	0.0000	4.3766	4.3766	3.0000e-004	0.0000	4.3843
Vendor	3.5000e-004	0.0106	2.8600e-003	3.0000e-005	6.1000e-004	5.0000e-005	6.6000e-004	1.8000e-004	5.0000e-005	2.2000e-004	0.0000	2.4222	2.4222	1.5000e-004	0.0000	2.4260
Worker	6.0000e-004	4.8000e-004	5.3500e-003	1.0000e-005	1.4200e-003	1.0000e-005	1.4400e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.3278	1.3278	4.0000e-005	0.0000	1.3288
Total	**1.4500e-003**	**0.0279**	**0.0119**	**8.0000e-005**	**3.2500e-003**	**1.1000e-004**	**3.3800e-003**	**8.9000e-004**	**1.1000e-004**	**9.9000e-004**	**0.0000**	**8.1266**	**8.1266**	**4.9000e-004**	**0.0000**	**8.1391**

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					7.8000e-004	0.0000	7.8000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1435	1.4225	1.2244	2.6500e-003		0.0662	0.0662		0.0623	0.0623	0.0000	231.6505	231.6505	0.0625	0.0000	233.2117
Total	**0.1435**	**1.4225**	**1.2244**	**2.6500e-003**	**7.8000e-004**	**0.0662**	**0.0670**	**1.0000e-004**	**0.0623**	**0.0624**	**0.0000**	**231.6505**	**231.6505**	**0.0625**	**0.0000**	**233.2117**

3.4 Well Construction Monitoring - 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	5.0000e-004	0.0169	3.7200e-003	4.0000e-005	1.2200e-003	5.0000e-005	1.2800e-003	3.3000e-004	5.0000e-005	3.8000e-004	0.0000	4.3766	4.3766	3.0000e-004	0.0000	4.3843
Vendor	3.5000e-004	0.0106	2.8600e-003	3.0000e-005	6.1000e-004	5.0000e-005	6.6000e-004	1.8000e-004	5.0000e-005	2.2000e-004	0.0000	2.4222	2.4222	1.5000e-004	0.0000	2.4260
Worker	6.0000e-004	4.8000e-004	5.3500e-003	1.0000e-005	1.4200e-003	1.0000e-005	1.4400e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.3278	1.3278	4.0000e-005	0.0000	1.3288
Total	**1.4500e-003**	**0.0279**	**0.0119**	**8.0000e-005**	**3.2500e-003**	**1.1000e-004**	**3.3800e-003**	**8.9000e-004**	**1.1000e-004**	**9.9000e-004**	**0.0000**	**8.1266**	**8.1266**	**4.9000e-004**	**0.0000**	**8.1391**

3.5 Well Equipping - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0457	0.5117	0.2521	5.6000e-004		0.0244	0.0244		0.0225	0.0225	0.0000	49.0531	49.0531	0.0159	0.0000	49.4497
Total	**0.0457**	**0.5117**	**0.2521**	**5.6000e-004**	**0.0000**	**0.0244**	**0.0244**	**0.0000**	**0.0225**	**0.0225**	**0.0000**	**49.0531**	**49.0531**	**0.0159**	**0.0000**	**49.4497**

3.5 Well Equipping - 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	6.7000e-004	0.0226	4.9700e-003	6.0000e-005	1.3100e-003	7.0000e-005	1.3800e-003	3.6000e-004	7.0000e-005	4.3000e-004	0.0000	5.8579	5.8579	4.1000e-004	0.0000	5.8682
Vendor	8.3000e-004	0.0249	6.7300e-003	6.0000e-005	1.4500e-003	1.2000e-004	1.5600e-003	4.2000e-004	1.1000e-004	5.3000e-004	0.0000	5.7014	5.7014	3.6000e-004	0.0000	5.7104
Worker	1.4100e-003	1.1400e-003	0.0126	3.0000e-005	3.3500e-003	3.0000e-005	3.3800e-003	8.9000e-004	3.0000e-005	9.2000e-004	0.0000	3.1253	3.1253	1.0000e-004	0.0000	3.1278
Total	**2.9100e-003**	**0.0486**	**0.0243**	**1.5000e-004**	**6.1100e-003**	**2.2000e-004**	**6.3200e-003**	**1.6700e-003**	**2.1000e-004**	**1.8800e-003**	**0.0000**	**14.6847**	**14.6847**	**8.7000e-004**	**0.0000**	**14.7064**

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	0.0457	0.5117	0.2521	5.6000e-004		0.0244	0.0244		0.0225	0.0225	0.0000	49.0530	49.0530	0.0159	0.0000	49.4496
Total	**0.0457**	**0.5117**	**0.2521**	**5.6000e-004**	**0.0000**	**0.0244**	**0.0244**	**0.0000**	**0.0225**	**0.0225**	**0.0000**	**49.0530**	**49.0530**	**0.0159**	**0.0000**	**49.4496**

3.5 Well Equipping - 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	6.7000e-004	0.0226	4.9700e-003	6.0000e-005	1.3100e-003	7.0000e-005	1.3800e-003	3.6000e-004	7.0000e-005	4.3000e-004	0.0000	5.8579	5.8579	4.1000e-004	0.0000	5.8682
Vendor	8.3000e-004	0.0249	6.7300e-003	6.0000e-005	1.4500e-003	1.2000e-004	1.5600e-003	4.2000e-004	1.1000e-004	5.3000e-004	0.0000	5.7014	5.7014	3.6000e-004	0.0000	5.7104
Worker	1.4100e-003	1.1400e-003	0.0126	3.0000e-005	3.3500e-003	3.0000e-005	3.3800e-003	8.9000e-004	3.0000e-005	9.2000e-004	0.0000	3.1253	3.1253	1.0000e-004	0.0000	3.1278
Total	**2.9100e-003**	**0.0486**	**0.0243**	**1.5000e-004**	**6.1100e-003**	**2.2000e-004**	**6.3200e-003**	**1.6700e-003**	**2.1000e-004**	**1.8800e-003**	**0.0000**	**14.6847**	**14.6847**	**8.7000e-004**	**0.0000**	**14.7064**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.547192	0.045177	0.202743	0.121510	0.016147	0.006143	0.019743	0.029945	0.002479	0.002270	0.005078	0.000682	0.000891

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

5.2 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					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4782	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.4782	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

6.2 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	0.0549					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4233					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	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	**0.4782**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	ROG	NOx	CO	SO2	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	0.0549					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4233					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	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	**0.4782**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

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

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

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

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

La Brea Subarea Wells and Transmission Main Project

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	2.70	117,140.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	11			**Operational Year**	2021
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

La Brea Subarea Wells and Transmission Main Project - Los Angeles-South Coast County, Summer

Project Characteristics -

Land Use - assume 1 well of 660 SF each + (4 miles of new transmission main x 4 LF wide) + (8000 LF proposed rehab x 4 LF wide) = approx 117,140 SF impacted

Construction Phase - per Table 1 in Project Description

Off-road Equipment - per Table 2 Project Description

Off-road Equipment - per Table 2 of Project Description

Off-road Equipment - per Table 2 Project Description

Off-road Equipment - per Table 2 of Project Description

Demolition - 67 CY construction material (assume wood, uncompacted) => 400 lbs/CY * 67 CY = 26,800 lbs = 12 metric tons
Conversion source: CalRecycle

Trips and VMT - one well only
Well construction/equipping: 76 hauling trucks * 2 = 152 truck trips
Transmission main: 11,018 CY + 185 CY soil = 11203 CY soil / 16 CY/truck = 700 trucks or 1400 hauling truck trips.
Concrete- 10,000 SF * 1/3 LF thick = 3,333 CF * 1 CY/27 CF = 123 CY / 16 CY/truck = 7.7 trucks for vendor or less than 1 per day

Grading - 11 CY soil excavated for wells, 11,018 CY soil excavated for new transmission, 185 CY soil excavated for rehab = 11214 CY

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	220.00	174.00
tblConstructionPhase	NumDays	20.00	44.00
tblConstructionPhase	NumDays	6.00	153.00
tblConstructionPhase	NumDays	3.00	87.00
tblGrading	MaterialExported	0.00	11,214.00
tblLandUse	LandUseSquareFeet	0.00	117,140.00
tblLandUse	LotAcreage	0.00	2.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Well Construction Monitoring
tblOffRoadEquipment	PhaseName		Well Construction Monitoring
tblOffRoadEquipment	PhaseName		Well Construction Monitoring
tblOffRoadEquipment	PhaseName		Well Equipping
tblOffRoadEquipment	PhaseName		Well Site Demolition and Pump-to-Waste
tblOffRoadEquipment	PhaseName		Well Site Demolition and Pump-to-Waste
tblOffRoadEquipment	PhaseName		Rehabilitation/Transmission Main Installation
tblOffRoadEquipment	PhaseName		Well Site Demolition and Pump-to-Waste
tblOffRoadEquipment	PhaseName		Rehabilitation/Transmission Main Installation
tblOffRoadEquipment	PhaseName		Well Site Demolition and Pump-to-Waste
tblOffRoadEquipment	PhaseName		Well Equipping
tblOffRoadEquipment	PhaseName		Well Construction Monitoring

tblOffRoadEquipment	PhaseName		Well Construction Monitoring
tblOffRoadEquipment	PhaseName		Well Construction Monitoring
tblOffRoadEquipment	PhaseName		Well Construction Monitoring
tblOffRoadEquipment	PhaseName		Well Construction Monitoring
tblOffRoadEquipment	PhaseName		Well Site Demolition and Pump-to-Waste
tblOffRoadEquipment	PhaseName		Rehabilitation/Transmission Main Installation
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	HaulingTripNumber	4.00	14.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,400.00
tblTripsAndVMT	HaulingTripNumber	0.00	152.00
tblTripsAndVMT	HaulingTripNumber	0.00	152.00
tblTripsAndVMT	VendorTripNumber	19.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	WorkerTripNumber	18.00	10.00
tblTripsAndVMT	WorkerTripNumber	50.00	10.00
tblTripsAndVMT	WorkerTripNumber	30.00	4.00
tblTripsAndVMT	WorkerTripNumber	5.00	4.00

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					
2019	6.1562	63.2884	49.8851	0.1067	0.6419	3.0581	3.7000	0.1609	2.8658	3.0267	0.0000	10,560.6624	10,560.6624	2.6460	0.0000	10,626.8121
2020	5.6887	57.5242	49.2648	0.1066	0.4724	2.7146	3.1870	0.1193	2.5430	2.6623	0.0000	10,382.2100	10,382.2100	2.6338	0.0000	10,448.0556
Maximum	**6.1562**	**63.2884**	**49.8851**	**0.1067**	**0.6419**	**3.0581**	**3.7000**	**0.1609**	**2.8658**	**3.0267**	**0.0000**	**10,560.6624**	**10,560.6624**	**2.6460**	**0.0000**	**10,626.8121**

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					
2019	6.1562	63.2884	49.8851	0.1067	0.6137	3.0581	3.6718	0.1575	2.8658	3.0233	0.0000	10,560.6624	10,560.6624	2.6460	0.0000	10,626.8121
2020	5.6887	57.5242	49.2648	0.1066	0.4442	2.7146	3.1588	0.1159	2.5430	2.6589	0.0000	10,382.2100	10,382.2100	2.6338	0.0000	10,448.0556
Maximum	**6.1562**	**63.2884**	**49.8851**	**0.1067**	**0.6137**	**3.0581**	**3.6718**	**0.1575**	**2.8658**	**3.0233**	**0.0000**	**10,560.6624**	**10,560.6624**	**2.6460**	**0.0000**	**10,626.8121**

	ROG	NOx	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**	**5.06**	**0.00**	**0.82**	**2.45**	**0.00**	**0.12**	**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	2.6202	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**2.6202**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated 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	2.6202	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**2.6202**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	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	Well Site Demolition and Pump-to-Waste	Demolition	10/1/2019	11/29/2019	5	44	
2	Rehabilitation/Transmission Main Installation	Building Construction	10/1/2019	5/29/2020	5	174	
3	Well Construction Monitoring	Site Preparation	12/2/2019	3/31/2020	5	87	
4	Well Equipping	Grading	4/1/2020	10/30/2020	5	153	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Well Site Demolition and Pump-to-Waste	Crushing/Proc. Equipment	2	8.00	85	0.78
Well Site Demolition and Pump-to-Waste	Dumpers/Tenders	1	8.00	16	0.38
Well Site Demolition and Pump-to-Waste	Excavators	1	8.00	158	0.38
Well Site Demolition and Pump-to-Waste	Forklifts	1	8.00	89	0.20
Well Site Demolition and Pump-to-Waste	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Well Site Demolition and Pump-to-Waste	Trenchers	1	8.00	78	0.50
Well Construction Monitoring	Air Compressors	1	8.00	78	0.48
Well Construction Monitoring	Bore/Drill Rigs	2	8.00	221	0.50
Well Construction Monitoring	Cranes	1	8.00	231	0.29
Well Construction Monitoring	Generator Sets	1	8.00	84	0.74
Well Construction Monitoring	Off-Highway Trucks	1	8.00	402	0.38
Well Construction Monitoring	Other Construction Equipment	1	8.00	172	0.42
Well Construction Monitoring	Other Material Handling Equipment	3	8.00	168	0.40
Well Construction Monitoring	Pumps	1	8.00	84	0.74
Well Construction Monitoring	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Well Equipping	Cranes	1	8.00	231	0.29
Well Equipping	Forklifts	1	8.00	89	0.20
Rehabilitation/Transmission Main Installation	Dumpers/Tenders	1	6.00	16	0.38
Rehabilitation/Transmission Main Installation	Excavators	1	7.00	158	0.38
Rehabilitation/Transmission Main Installation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Rehabilitation/Transmission Main Installation	Trenchers	1	8.00	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
Well Site Demolition and Pump-to-Waste	7	10.00	0.00	14.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Construction Monitoring	12	4.00	3.00	152.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Equipping	2	4.00	3.00	152.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rehabilitation/Transmission Main Installation	5	10.00	1.00	1,400.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Well Site Demolition and Pump-to-Waste - 2019

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					5.8400e-003	0.0000	5.8400e-003	8.8000e-004	0.0000	8.8000e-004			0.0000			0.0000
Off-Road	2.3751	19.1186	18.3943	0.0280		1.2737	1.2737		1.2183	1.2183		2,693.8419	2,693.8419	0.5266		2,707.0080
Total	**2.3751**	**19.1186**	**18.3943**	**0.0280**	**5.8400e-003**	**1.2737**	**1.2796**	**8.8000e-004**	**1.2183**	**1.2192**		**2,693.8419**	**2,693.8419**	**0.5266**		**2,707.0080**

3.2 Well Site Demolition and Pump-to-Waste - 2019

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	2.9900e-003	0.0975	0.0208	2.5000e-004	5.5600e-003	3.6000e-004	5.9200e-003	1.5200e-003	3.4000e-004	1.8700e-003		27.5072	27.5072	1.8900e-003		27.5546
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	0.0500	0.0367	0.4822	1.2200e-003	0.1118	9.6000e-004	0.1127	0.0296	8.9000e-004	0.0305		121.2953	121.2953	4.1700e-003		121.3995
Total	**0.0530**	**0.1342**	**0.5029**	**1.4700e-003**	**0.1173**	**1.3200e-003**	**0.1187**	**0.0312**	**1.2300e-003**	**0.0324**		**148.8025**	**148.8025**	**6.0600e-003**		**148.9540**

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					2.2800e-003	0.0000	2.2800e-003	3.4000e-004	0.0000	3.4000e-004			0.0000			0.0000
Off-Road	2.3751	19.1186	18.3943	0.0280		1.2737	1.2737		1.2183	1.2183	0.0000	2,693.8419	2,693.8419	0.5266		2,707.0080
Total	**2.3751**	**19.1186**	**18.3943**	**0.0280**	**2.2800e-003**	**1.2737**	**1.2760**	**3.4000e-004**	**1.2183**	**1.2187**	**0.0000**	**2,693.8419**	**2,693.8419**	**0.5266**		**2,707.0080**

3.2 Well Site Demolition and Pump-to-Waste - 2019

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	2.9900e-003	0.0975	0.0208	2.5000e-004	5.5600e-003	3.6000e-004	5.9200e-003	1.5200e-003	3.4000e-004	1.8700e-003		27.5072	27.5072	1.8900e-003		27.5546
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	0.0500	0.0367	0.4822	1.2200e-003	0.1118	9.6000e-004	0.1127	0.0296	8.9000e-004	0.0305		121.2953	121.2953	4.1700e-003		121.3995
Total	**0.0530**	**0.1342**	**0.5029**	**1.4700e-003**	**0.1173**	**1.3200e-003**	**0.1187**	**0.0312**	**1.2300e-003**	**0.0324**		**148.8025**	**148.8025**	**6.0600e-003**		**148.9540**

3.3 Rehabilitation/Transmission Main Installation - 2019

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	1.1833	11.2878	10.2879	0.0147		0.7349	0.7349		0.6771	0.6771		1,441.8774	1,441.8774	0.4466		1,453.0434
Total	**1.1833**	**11.2878**	**10.2879**	**0.0147**		**0.7349**	**0.7349**		**0.6771**	**0.6771**		**1,441.8774**	**1,441.8774**	**0.4466**		**1,453.0434**

3.3 Rehabilitation/Transmission Main Installation - 2019

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	0.0756	2.4644	0.5254	6.4300e-003	0.3148	9.0400e-003	0.3238	0.0813	8.6500e-003	0.0899		695.5842	695.5842	0.0479		696.7818
Vendor	4.1600e-003	0.1157	0.0307	2.6000e-004	6.4000e-003	7.4000e-004	7.1400e-003	1.8400e-003	7.1000e-004	2.5500e-003		27.8815	27.8815	1.7900e-003		27.9261
Worker	0.0500	0.0367	0.4822	1.2200e-003	0.1118	9.6000e-004	0.1127	0.0296	8.9000e-004	0.0305		121.2953	121.2953	4.1700e-003		121.3995
Total	**0.1297**	**2.6168**	**1.0383**	**7.9100e-003**	**0.4329**	**0.0107**	**0.4437**	**0.1128**	**0.0103**	**0.1230**		**844.7609**	**844.7609**	**0.0539**		**846.1074**

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	1.1833	11.2878	10.2879	0.0147		0.7349	0.7349		0.6771	0.6771	0.0000	1,441.8774	1,441.8774	0.4466		1,453.0434
Total	**1.1833**	**11.2878**	**10.2879**	**0.0147**		**0.7349**	**0.7349**		**0.6771**	**0.6771**	**0.0000**	**1,441.8774**	**1,441.8774**	**0.4466**		**1,453.0434**

3.3 Rehabilitation/Transmission Main Installation - 2019

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	0.0756	2.4644	0.5254	6.4300e-003	0.3148	9.0400e-003	0.3238	0.0813	8.6500e-003	0.0899		695.5842	695.5842	0.0479		696.7818
Vendor	4.1600e-003	0.1157	0.0307	2.6000e-004	6.4000e-003	7.4000e-004	7.1400e-003	1.8400e-003	7.1000e-004	2.5500e-003		27.8815	27.8815	1.7900e-003		27.9261
Worker	0.0500	0.0367	0.4822	1.2200e-003	0.1118	9.6000e-004	0.1127	0.0296	8.9000e-004	0.0305		121.2953	121.2953	4.1700e-003		121.3995
Total	**0.1297**	**2.6168**	**1.0383**	**7.9100e-003**	**0.4329**	**0.0107**	**0.4437**	**0.1128**	**0.0103**	**0.1230**		**844.7609**	**844.7609**	**0.0539**		**846.1074**

3.3 Rehabilitation/Transmission Main Installation - 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	1.1082	10.4666	10.2432	0.0147		0.6660	0.6660		0.6138	0.6138		1,411.6580	1,411.6580	0.4467		1,422.8250
Total	**1.1082**	**10.4666**	**10.2432**	**0.0147**		**0.6660**	**0.6660**		**0.6138**	**0.6138**		**1,411.6580**	**1,411.6580**	**0.4467**		**1,422.8250**

3.3 Rehabilitation/Transmission Main Installation - 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	0.0703	2.3136	0.5127	6.3600e-003	0.2057	7.3800e-003	0.2131	0.0545	7.0600e-003	0.0616		688.6003	688.6003	0.0469		689.7721
Vendor	3.5600e-003	0.1064	0.0279	2.6000e-004	6.4000e-003	5.0000e-004	6.9000e-003	1.8400e-003	4.8000e-004	2.3200e-003		27.7025	27.7025	1.6900e-003		27.7447
Worker	0.0460	0.0327	0.4378	1.1800e-003	0.1118	9.3000e-004	0.1127	0.0296	8.6000e-004	0.0305		117.6113	117.6113	3.7100e-003		117.7040
Total	**0.1199**	**2.4527**	**0.9784**	**7.8000e-003**	**0.3239**	**8.8100e-003**	**0.3327**	**0.0860**	**8.4000e-003**	**0.0944**		**833.9141**	**833.9141**	**0.0523**		**835.2208**

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	1.1082	10.4666	10.2432	0.0147		0.6660	0.6660		0.6138	0.6138	0.0000	1,411.6580	1,411.6580	0.4467		1,422.8250
Total	**1.1082**	**10.4666**	**10.2432**	**0.0147**		**0.6660**	**0.6660**		**0.6138**	**0.6138**	**0.0000**	**1,411.6580**	**1,411.6580**	**0.4467**		**1,422.8250**

3.3 Rehabilitation/Transmission Main Installation - 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	0.0703	2.3136	0.5127	6.3600e-003	0.2057	7.3800e-003	0.2131	0.0545	7.0600e-003	0.0616		688.6003	688.6003	0.0469		689.7721
Vendor	3.5600e-003	0.1064	0.0279	2.6000e-004	6.4000e-003	5.0000e-004	6.9000e-003	1.8400e-003	4.8000e-004	2.3200e-003		27.7025	27.7025	1.6900e-003		27.7447
Worker	0.0460	0.0327	0.4378	1.1800e-003	0.1118	9.3000e-004	0.1127	0.0296	8.6000e-004	0.0305		117.6113	117.6113	3.7100e-003		117.7040
Total	**0.1199**	**2.4527**	**0.9784**	**7.8000e-003**	**0.3239**	**8.8100e-003**	**0.3327**	**0.0860**	**8.4000e-003**	**0.0944**		**833.9141**	**833.9141**	**0.0523**		**835.2208**

3.4 Well Construction Monitoring - 2019

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					0.0463	0.0000	0.0463	5.6300e-003	0.0000	5.6300e-003			0.0000			0.0000
Off-Road	4.7943	48.4868	38.1598	0.0815		2.3079	2.3079		2.1741	2.1741		7,990.8205	7,990.8205	2.1281		8,044.0220
Total	**4.7943**	**48.4868**	**38.1598**	**0.0815**	**0.0463**	**2.3079**	**2.3542**	**5.6300e-003**	**2.1741**	**2.1797**		**7,990.8205**	**7,990.8205**	**2.1281**		**8,044.0220**

3.4 Well Construction Monitoring - 2019

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	0.0164	0.5351	0.1141	1.4000e-003	0.0988	1.9600e-003	0.1008	0.0251	1.8800e-003	0.0270		151.0411	151.0411	0.0104		151.3012
Vendor	0.0125	0.3472	0.0921	7.8000e-004	0.0192	2.2100e-003	0.0214	5.5300e-003	2.1200e-003	7.6500e-003		83.6444	83.6444	5.3600e-003		83.7784
Worker	0.0200	0.0147	0.1929	4.9000e-004	0.0447	3.9000e-004	0.0451	0.0119	3.6000e-004	0.0122		48.5181	48.5181	1.6700e-003		48.5598
Total	**0.0489**	**0.8970**	**0.3991**	**2.6700e-003**	**0.1627**	**4.5600e-003**	**0.1673**	**0.0425**	**4.3600e-003**	**0.0469**		**283.2036**	**283.2036**	**0.0174**		**283.6394**

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					0.0181	0.0000	0.0181	2.2000e-003	0.0000	2.2000e-003			0.0000			0.0000
Off-Road	4.7943	48.4868	38.1598	0.0815		2.3079	2.3079		2.1741	2.1741	0.0000	7,990.8205	7,990.8205	2.1281		8,044.0220
Total	**4.7943**	**48.4868**	**38.1598**	**0.0815**	**0.0181**	**2.3079**	**2.3260**	**2.2000e-003**	**2.1741**	**2.1763**	**0.0000**	**7,990.8205**	**7,990.8205**	**2.1281**		**8,044.0220**

3.4 Well Construction Monitoring - 2019

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	0.0164	0.5351	0.1141	1.4000e-003	0.0988	1.9600e-003	0.1008	0.0251	1.8800e-003	0.0270		151.0411	151.0411	0.0104		151.3012
Vendor	0.0125	0.3472	0.0921	7.8000e-004	0.0192	2.2100e-003	0.0214	5.5300e-003	2.1200e-003	7.6500e-003		83.6444	83.6444	5.3600e-003		83.7784
Worker	0.0200	0.0147	0.1929	4.9000e-004	0.0447	3.9000e-004	0.0451	0.0119	3.6000e-004	0.0122		48.5181	48.5181	1.6700e-003		48.5598
Total	**0.0489**	**0.8970**	**0.3991**	**2.6700e-003**	**0.1627**	**4.5600e-003**	**0.1673**	**0.0425**	**4.3600e-003**	**0.0469**		**283.2036**	**283.2036**	**0.0174**		**283.6394**

3.4 Well Construction Monitoring - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0463	0.0000	0.0463	5.6300e-003	0.0000	5.6300e-003			0.0000			0.0000
Off-Road	4.4163	43.7703	37.6732	0.0815		2.0363	2.0363		1.9175	1.9175		7,856.9614	7,856.9614	2.1181		7,909.9149
Total	**4.4163**	**43.7703**	**37.6732**	**0.0815**	**0.0463**	**2.0363**	**2.0826**	**5.6300e-003**	**1.9175**	**1.9231**		**7,856.9614**	**7,856.9614**	**2.1181**		**7,909.9149**

3.4 Well Construction Monitoring - 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	0.0153	0.5024	0.1113	1.3800e-003	0.0384	1.6000e-003	0.0400	0.0103	1.5300e-003	0.0118		149.5246	149.5246	0.0102		149.7791
Vendor	0.0107	0.3191	0.0836	7.8000e-004	0.0192	1.5000e-003	0.0207	5.5300e-003	1.4400e-003	6.9700e-003		83.1074	83.1074	5.0700e-003		83.2342
Worker	0.0184	0.0131	0.1751	4.7000e-004	0.0447	3.7000e-004	0.0451	0.0119	3.4000e-004	0.0122		47.0445	47.0445	1.4800e-003		47.0816
Total	**0.0443**	**0.8346**	**0.3701**	**2.6300e-003**	**0.1023**	**3.4700e-003**	**0.1058**	**0.0277**	**3.3100e-003**	**0.0310**		**279.6766**	**279.6766**	**0.0167**		**280.0949**

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					0.0181	0.0000	0.0181	2.2000e-003	0.0000	2.2000e-003			0.0000			0.0000
Off-Road	4.4163	43.7703	37.6732	0.0815		2.0363	2.0363		1.9175	1.9175	0.0000	7,856.9614	7,856.9614	2.1181		7,909.9149
Total	**4.4163**	**43.7703**	**37.6732**	**0.0815**	**0.0181**	**2.0363**	**2.0544**	**2.2000e-003**	**1.9175**	**1.9197**	**0.0000**	**7,856.9614**	**7,856.9614**	**2.1181**		**7,909.9149**

3.4 Well Construction Monitoring - 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	0.0153	0.5024	0.1113	1.3800e-003	0.0384	1.6000e-003	0.0400	0.0103	1.5300e-003	0.0118		149.5246	149.5246	0.0102		149.7791
Vendor	0.0107	0.3191	0.0836	7.8000e-004	0.0192	1.5000e-003	0.0207	5.5300e-003	1.4400e-003	6.9700e-003		83.1074	83.1074	5.0700e-003		83.2342
Worker	0.0184	0.0131	0.1751	4.7000e-004	0.0447	3.7000e-004	0.0451	0.0119	3.4000e-004	0.0122		47.0445	47.0445	1.4800e-003		47.0816
Total	**0.0443**	**0.8346**	**0.3701**	**2.6300e-003**	**0.1023**	**3.4700e-003**	**0.1058**	**0.0277**	**3.3100e-003**	**0.0310**		**279.6766**	**279.6766**	**0.0167**		**280.0949**

3.5 Well Equipping - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.5974	6.6890	3.2956	7.2900e-003		0.3189	0.3189		0.2934	0.2934		706.8205	706.8205	0.2286		712.5355
Total	**0.5974**	**6.6890**	**3.2956**	**7.2900e-003**	**0.0000**	**0.3189**	**0.3189**	**0.0000**	**0.2934**	**0.2934**		**706.8205**	**706.8205**	**0.2286**		**712.5355**

3.5 Well Equipping - 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	8.6800e-003	0.2857	0.0633	7.8000e-004	0.0174	9.1000e-004	0.0183	4.7600e-003	8.7000e-004	5.6300e-003		85.0238	85.0238	5.7900e-003		85.1685
Vendor	0.0107	0.3191	0.0836	7.8000e-004	0.0192	1.5000e-003	0.0207	5.5300e-003	1.4400e-003	6.9700e-003		83.1074	83.1074	5.0700e-003		83.2342
Worker	0.0184	0.0131	0.1751	4.7000e-004	0.0447	3.7000e-004	0.0451	0.0119	3.4000e-004	0.0122		47.0445	47.0445	1.4800e-003		47.0816
Total	**0.0378**	**0.6179**	**0.3221**	**2.0300e-003**	**0.0813**	**2.7800e-003**	**0.0841**	**0.0222**	**2.6500e-003**	**0.0248**		**215.1757**	**215.1757**	**0.0123**		**215.4843**

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	0.5974	6.6890	3.2956	7.2900e-003		0.3189	0.3189		0.2934	0.2934	0.0000	706.8205	706.8205	0.2286		712.5355
Total	**0.5974**	**6.6890**	**3.2956**	**7.2900e-003**	**0.0000**	**0.3189**	**0.3189**	**0.0000**	**0.2934**	**0.2934**	**0.0000**	**706.8205**	**706.8205**	**0.2286**		**712.5355**

3.5 Well Equipping - 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	8.6800e-003	0.2857	0.0633	7.8000e-004	0.0174	9.1000e-004	0.0183	4.7600e-003	8.7000e-004	5.6300e-003		85.0238	85.0238	5.7900e-003		85.1685
Vendor	0.0107	0.3191	0.0836	7.8000e-004	0.0192	1.5000e-003	0.0207	5.5300e-003	1.4400e-003	6.9700e-003		83.1074	83.1074	5.0700e-003		83.2342
Worker	0.0184	0.0131	0.1751	4.7000e-004	0.0447	3.7000e-004	0.0451	0.0119	3.4000e-004	0.0122		47.0445	47.0445	1.4800e-003		47.0816
Total	**0.0378**	**0.6179**	**0.3221**	**2.0300e-003**	**0.0813**	**2.7800e-003**	**0.0841**	**0.0222**	**2.6500e-003**	**0.0248**		**215.1757**	**215.1757**	**0.0123**		**215.4843**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.547192	0.045177	0.202743	0.121510	0.016147	0.006143	0.019743	0.029945	0.002479	0.002270	0.005078	0.000682	0.000891

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

5.2 Energy by Land Use - NaturalGas

Mitigated

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

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.6202	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	2.6202	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

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	0.3009					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.3194					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	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	**2.6202**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.3009					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.3194					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	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	**2.6202**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

La Brea Subarea Wells and Transmission Main Project

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	2.70	117,140.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	11			**Operational Year**	2021
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

La Brea Subarea Wells and Transmission Main Project - Los Angeles-South Coast County, Winter

Project Characteristics -

Land Use - assume 1 well of 660 SF each + (4 miles of new transmission main x 4 LF wide) + (8000 LF proposed rehab x 4 LF wide) = approx 117,140 SF impacted

Construction Phase - per Table 1 in Project Description

Off-road Equipment - per Table 2 Project Description

Off-road Equipment - per Table 2 of Project Description

Off-road Equipment - per Table 2 Project Description

Off-road Equipment - per Table 2 of Project Description

Demolition - 67 CY construction material (assume wood, uncompacted) => 400 lbs/CY * 67 CY = 26,800 lbs = 12 metric tons
Conversion source: CalRecycle

Trips and VMT - one well only
Well construction/equipping: 76 hauling trucks * 2 = 152 truck trips
Transmission main: 11,018 CY + 185 CY soil = 11203 CY soil / 16 CY/truck = 700 trucks or 1400 hauling truck trips.
Concrete- 10,000 SF * 1/3 LF thick = 3,333 CF * 1 CY/27 CF = 123 CY / 16 CY/truck = 7.7 trucks for vendor or less than 1 per day

Grading - 11 CY soil excavated for wells, 11,018 CY soil excavated for new transmission, 185 CY soil excavated for rehab = 11214 CY

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	220.00	174.00
tblConstructionPhase	NumDays	20.00	44.00
tblConstructionPhase	NumDays	6.00	153.00
tblConstructionPhase	NumDays	3.00	87.00
tblGrading	MaterialExported	0.00	11,214.00
tblLandUse	LandUseSquareFeet	0.00	117,140.00
tblLandUse	LotAcreage	0.00	2.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Well Construction Monitoring
tblOffRoadEquipment	PhaseName		Well Construction Monitoring
tblOffRoadEquipment	PhaseName		Well Construction Monitoring
tblOffRoadEquipment	PhaseName		Well Equipping
tblOffRoadEquipment	PhaseName		Well Site Demolition and Pump-to-Waste
tblOffRoadEquipment	PhaseName		Well Site Demolition and Pump-to-Waste
tblOffRoadEquipment	PhaseName		Rehabilitation/Transmission Main Installation
tblOffRoadEquipment	PhaseName		Well Site Demolition and Pump-to-Waste
tblOffRoadEquipment	PhaseName		Rehabilitation/Transmission Main Installation
tblOffRoadEquipment	PhaseName		Well Site Demolition and Pump-to-Waste
tblOffRoadEquipment	PhaseName		Well Equipping
tblOffRoadEquipment	PhaseName		Well Construction Monitoring

tblOffRoadEquipment	PhaseName		Well Construction Monitoring
tblOffRoadEquipment	PhaseName		Well Construction Monitoring
tblOffRoadEquipment	PhaseName		Well Construction Monitoring
tblOffRoadEquipment	PhaseName		Well Construction Monitoring
tblOffRoadEquipment	PhaseName		Well Site Demolition and Pump-to-Waste
tblOffRoadEquipment	PhaseName		Rehabilitation/Transmission Main Installation
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	HaulingTripNumber	4.00	14.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,400.00
tblTripsAndVMT	HaulingTripNumber	0.00	152.00
tblTripsAndVMT	HaulingTripNumber	0.00	152.00
tblTripsAndVMT	VendorTripNumber	19.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	VendorTripNumber	0.00	3.00
tblTripsAndVMT	WorkerTripNumber	18.00	10.00
tblTripsAndVMT	WorkerTripNumber	50.00	10.00
tblTripsAndVMT	WorkerTripNumber	30.00	4.00
tblTripsAndVMT	WorkerTripNumber	5.00	4.00

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					
2019	6.1667	63.3345	49.8853	0.1064	0.6419	3.0583	3.7002	0.1609	2.8661	3.0270	0.0000	10,533.3736	10,533.3736	2.6484	0.0000	10,599.5824
2020	5.6985	57.5654	49.2639	0.1064	0.4724	2.7148	3.1872	0.1193	2.5432	2.6625	0.0000	10,355.1300	10,355.1300	2.6360	0.0000	10,421.0309
Maximum	**6.1667**	**63.3345**	**49.8853**	**0.1064**	**0.6419**	**3.0583**	**3.7002**	**0.1609**	**2.8661**	**3.0270**	**0.0000**	**10,533.3736**	**10,533.3736**	**2.6484**	**0.0000**	**10,599.5824**

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					
2019	6.1667	63.3345	49.8853	0.1064	0.6137	3.0583	3.6720	0.1575	2.8661	3.0236	0.0000	10,533.3736	10,533.3736	2.6484	0.0000	10,599.5824
2020	5.6985	57.5654	49.2639	0.1064	0.4442	2.7148	3.1590	0.1159	2.5432	2.6591	0.0000	10,355.1300	10,355.1300	2.6360	0.0000	10,421.0309
Maximum	**6.1667**	**63.3345**	**49.8853**	**0.1064**	**0.6137**	**3.0583**	**3.6720**	**0.1575**	**2.8661**	**3.0236**	**0.0000**	**10,533.3736**	**10,533.3736**	**2.6484**	**0.0000**	**10,599.5824**

	ROG	NOx	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**	**5.06**	**0.00**	**0.82**	**2.45**	**0.00**	**0.12**	**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	2.6202	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**2.6202**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated 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	2.6202	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**2.6202**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	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	Well Site Demolition and Pump-to-Waste	Demolition	10/1/2019	11/29/2019	5	44	
2	Rehabilitation/Transmission Main Installation	Building Construction	10/1/2019	5/29/2020	5	174	
3	Well Construction Monitoring	Site Preparation	12/2/2019	3/31/2020	5	87	
4	Well Equipping	Grading	4/1/2020	10/30/2020	5	153	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

La Brea Subarea Wells and Transmission Main Project - Los Angeles-South Coast County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Well Site Demolition and Pump-to-Waste	Crushing/Proc. Equipment	2	8.00	85	0.78
Well Site Demolition and Pump-to-Waste	Dumpers/Tenders	1	8.00	16	0.38
Well Site Demolition and Pump-to-Waste	Excavators	1	8.00	158	0.38
Well Site Demolition and Pump-to-Waste	Forklifts	1	8.00	89	0.20
Well Site Demolition and Pump-to-Waste	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Well Site Demolition and Pump-to-Waste	Trenchers	1	8.00	78	0.50
Well Construction Monitoring	Air Compressors	1	8.00	78	0.48
Well Construction Monitoring	Bore/Drill Rigs	2	8.00	221	0.50
Well Construction Monitoring	Cranes	1	8.00	231	0.29
Well Construction Monitoring	Generator Sets	1	8.00	84	0.74
Well Construction Monitoring	Off-Highway Trucks	1	8.00	402	0.38
Well Construction Monitoring	Other Construction Equipment	1	8.00	172	0.42
Well Construction Monitoring	Other Material Handling Equipment	3	8.00	168	0.40
Well Construction Monitoring	Pumps	1	8.00	84	0.74
Well Construction Monitoring	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Well Equipping	Cranes	1	8.00	231	0.29
Well Equipping	Forklifts	1	8.00	89	0.20
Rehabilitation/Transmission Main Installation	Dumpers/Tenders	1	6.00	16	0.38
Rehabilitation/Transmission Main Installation	Excavators	1	7.00	158	0.38
Rehabilitation/Transmission Main Installation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Rehabilitation/Transmission Main Installation	Trenchers	1	8.00	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
Well Site Demolition and Pump-to-Waste	7	10.00	0.00	14.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Construction Monitoring	12	4.00	3.00	152.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Equipping	2	4.00	3.00	152.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rehabilitation/Transmission Main Installation	5	10.00	1.00	1,400.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Well Site Demolition and Pump-to-Waste - 2019

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					5.8400e-003	0.0000	5.8400e-003	8.8000e-004	0.0000	8.8000e-004			0.0000			0.0000
Off-Road	2.3751	19.1186	18.3943	0.0280		1.2737	1.2737		1.2183	1.2183		2,693.8419	2,693.8419	0.5266		2,707.0080
Total	**2.3751**	**19.1186**	**18.3943**	**0.0280**	**5.8400e-003**	**1.2737**	**1.2796**	**8.8000e-004**	**1.2183**	**1.2192**		**2,693.8419**	**2,693.8419**	**0.5266**		**2,707.0080**

3.2 Well Site Demolition and Pump-to-Waste - 2019

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	3.0600e-003	0.0988	0.0222	2.5000e-004	5.5600e-003	3.6000e-004	5.9300e-003	1.5200e-003	3.5000e-004	1.8700e-003		27.0407	27.0407	1.9700e-003		27.0898
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	0.0554	0.0407	0.4425	1.1500e-003	0.1118	9.6000e-004	0.1127	0.0296	8.9000e-004	0.0305		114.2131	114.2131	3.9300e-003		114.3113
Total	**0.0584**	**0.1394**	**0.4647**	**1.4000e-003**	**0.1173**	**1.3200e-003**	**0.1187**	**0.0312**	**1.2400e-003**	**0.0324**		**141.2538**	**141.2538**	**5.9000e-003**		**141.4012**

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					2.2800e-003	0.0000	2.2800e-003	3.4000e-004	0.0000	3.4000e-004			0.0000			0.0000
Off-Road	2.3751	19.1186	18.3943	0.0280		1.2737	1.2737		1.2183	1.2183	0.0000	2,693.8419	2,693.8419	0.5266		2,707.0080
Total	**2.3751**	**19.1186**	**18.3943**	**0.0280**	**2.2800e-003**	**1.2737**	**1.2760**	**3.4000e-004**	**1.2183**	**1.2187**	**0.0000**	**2,693.8419**	**2,693.8419**	**0.5266**		**2,707.0080**

3.2 Well Site Demolition and Pump-to-Waste - 2019

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	3.0600e-003	0.0988	0.0222	2.5000e-004	5.5600e-003	3.6000e-004	5.9300e-003	1.5200e-003	3.5000e-004	1.8700e-003		27.0407	27.0407	1.9700e-003		27.0898
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	0.0554	0.0407	0.4425	1.1500e-003	0.1118	9.6000e-004	0.1127	0.0296	8.9000e-004	0.0305		114.2131	114.2131	3.9300e-003		114.3113
Total	**0.0584**	**0.1394**	**0.4647**	**1.4000e-003**	**0.1173**	**1.3200e-003**	**0.1187**	**0.0312**	**1.2400e-003**	**0.0324**		**141.2538**	**141.2538**	**5.9000e-003**		**141.4012**

3.3 Rehabilitation/Transmission Main Installation - 2019

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	1.1833	11.2878	10.2879	0.0147		0.7349	0.7349		0.6771	0.6771		1,441.8774	1,441.8774	0.4466		1,453.0434
Total	**1.1833**	**11.2878**	**10.2879**	**0.0147**		**0.7349**	**0.7349**		**0.6771**	**0.6771**		**1,441.8774**	**1,441.8774**	**0.4466**		**1,453.0434**

3.3 Rehabilitation/Transmission Main Installation - 2019

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	0.0775	2.4972	0.5609	6.3200e-003	0.3148	9.2100e-003	0.3240	0.0813	8.8100e-003	0.0901		683.7871	683.7871	0.0497		685.0303
Vendor	4.3300e-003	0.1159	0.0339	2.5000e-004	6.4000e-003	7.5000e-004	7.1500e-003	1.8400e-003	7.2000e-004	2.5600e-003		27.1277	27.1277	1.9100e-003		27.1754
Worker	0.0554	0.0407	0.4425	1.1500e-003	0.1118	9.6000e-004	0.1127	0.0296	8.9000e-004	0.0305		114.2131	114.2131	3.9300e-003		114.3113
Total	**0.1372**	**2.6538**	**1.0373**	**7.7200e-003**	**0.4329**	**0.0109**	**0.4439**	**0.1128**	**0.0104**	**0.1232**		**825.1279**	**825.1279**	**0.0556**		**826.5170**

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	1.1833	11.2878	10.2879	0.0147		0.7349	0.7349		0.6771	0.6771	0.0000	1,441.8774	1,441.8774	0.4466		1,453.0434
Total	**1.1833**	**11.2878**	**10.2879**	**0.0147**		**0.7349**	**0.7349**		**0.6771**	**0.6771**	**0.0000**	**1,441.8774**	**1,441.8774**	**0.4466**		**1,453.0434**

3.3 Rehabilitation/Transmission Main Installation - 2019

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	0.0775	2.4972	0.5609	6.3200e-003	0.3148	9.2100e-003	0.3240	0.0813	8.8100e-003	0.0901		683.7871	683.7871	0.0497		685.0303
Vendor	4.3300e-003	0.1159	0.0339	2.5000e-004	6.4000e-003	7.5000e-004	7.1500e-003	1.8400e-003	7.2000e-004	2.5600e-003		27.1277	27.1277	1.9100e-003		27.1754
Worker	0.0554	0.0407	0.4425	1.1500e-003	0.1118	9.6000e-004	0.1127	0.0296	8.9000e-004	0.0305		114.2131	114.2131	3.9300e-003		114.3113
Total	**0.1372**	**2.6538**	**1.0373**	**7.7200e-003**	**0.4329**	**0.0109**	**0.4439**	**0.1128**	**0.0104**	**0.1232**		**825.1279**	**825.1279**	**0.0556**		**826.5170**

3.3 Rehabilitation/Transmission Main Installation - 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	1.1082	10.4666	10.2432	0.0147		0.6660	0.6660		0.6138	0.6138		1,411.6580	1,411.6580	0.4467		1,422.8250
Total	**1.1082**	**10.4666**	**10.2432**	**0.0147**		**0.6660**	**0.6660**		**0.6138**	**0.6138**		**1,411.6580**	**1,411.6580**	**0.4467**		**1,422.8250**

3.3 Rehabilitation/Transmission Main Installation - 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	0.0720	2.3435	0.5448	6.2500e-003	0.2057	7.5000e-003	0.2132	0.0545	7.1700e-003	0.0617		676.7424	676.7424	0.0486		677.9567
Vendor	3.7200e-003	0.1064	0.0307	2.5000e-004	6.4000e-003	5.1000e-004	6.9100e-003	1.8400e-003	4.9000e-004	2.3300e-003		26.9449	26.9449	1.8000e-003		26.9900
Worker	0.0511	0.0363	0.4010	1.1100e-003	0.1118	9.3000e-004	0.1127	0.0296	8.6000e-004	0.0305		110.7420	110.7420	3.4900e-003		110.8293
Total	**0.1268**	**2.4861**	**0.9766**	**7.6100e-003**	**0.3239**	**8.9400e-003**	**0.3328**	**0.0860**	**8.5200e-003**	**0.0945**		**814.4293**	**814.4293**	**0.0539**		**815.7760**

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	1.1082	10.4666	10.2432	0.0147		0.6660	0.6660		0.6138	0.6138	0.0000	1,411.6580	1,411.6580	0.4467		1,422.8250
Total	**1.1082**	**10.4666**	**10.2432**	**0.0147**		**0.6660**	**0.6660**		**0.6138**	**0.6138**	**0.0000**	**1,411.6580**	**1,411.6580**	**0.4467**		**1,422.8250**

3.3 Rehabilitation/Transmission Main Installation - 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	0.0720	2.3435	0.5448	6.2500e-003	0.2057	7.5000e-003	0.2132	0.0545	7.1700e-003	0.0617		676.7424	676.7424	0.0486		677.9567
Vendor	3.7200e-003	0.1064	0.0307	2.5000e-004	6.4000e-003	5.1000e-004	6.9100e-003	1.8400e-003	4.9000e-004	2.3300e-003		26.9449	26.9449	1.8000e-003		26.9900
Worker	0.0511	0.0363	0.4010	1.1100e-003	0.1118	9.3000e-004	0.1127	0.0296	8.6000e-004	0.0305		110.7420	110.7420	3.4900e-003		110.8293
Total	**0.1268**	**2.4861**	**0.9766**	**7.6100e-003**	**0.3239**	**8.9400e-003**	**0.3328**	**0.0860**	**8.5200e-003**	**0.0945**		**814.4293**	**814.4293**	**0.0539**		**815.7760**

3.4 Well Construction Monitoring - 2019

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					0.0463	0.0000	0.0463	5.6300e-003	0.0000	5.6300e-003			0.0000			0.0000
Off-Road	4.7943	48.4868	38.1598	0.0815		2.3079	2.3079		2.1741	2.1741		7,990.8205	7,990.8205	2.1281		8,044.0220
Total	**4.7943**	**48.4868**	**38.1598**	**0.0815**	**0.0463**	**2.3079**	**2.3542**	**5.6300e-003**	**2.1741**	**2.1797**		**7,990.8205**	**7,990.8205**	**2.1281**		**8,044.0220**

3.4 Well Construction Monitoring - 2019

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	0.0168	0.5423	0.1218	1.3700e-003	0.0988	2.0000e-003	0.1008	0.0251	1.9100e-003	0.0270		148.4795	148.4795	0.0108		148.7495
Vendor	0.0130	0.3477	0.1015	7.6000e-004	0.0192	2.2500e-003	0.0215	5.5300e-003	2.1500e-003	7.6800e-003		81.3831	81.3831	5.7200e-003		81.5261
Worker	0.0222	0.0163	0.1770	4.6000e-004	0.0447	3.9000e-004	0.0451	0.0119	3.6000e-004	0.0122		45.6852	45.6852	1.5700e-003		45.7245
Total	**0.0520**	**0.9062**	**0.4003**	**2.5900e-003**	**0.1627**	**4.6400e-003**	**0.1674**	**0.0425**	**4.4200e-003**	**0.0469**		**275.5478**	**275.5478**	**0.0181**		**276.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0181	0.0000	0.0181	2.2000e-003	0.0000	2.2000e-003			0.0000			0.0000
Off-Road	4.7943	48.4868	38.1598	0.0815		2.3079	2.3079		2.1741	2.1741	0.0000	7,990.8205	7,990.8205	2.1281		8,044.0220
Total	**4.7943**	**48.4868**	**38.1598**	**0.0815**	**0.0181**	**2.3079**	**2.3260**	**2.2000e-003**	**2.1741**	**2.1763**	**0.0000**	**7,990.8205**	**7,990.8205**	**2.1281**		**8,044.0220**

3.4 Well Construction Monitoring - 2019

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	0.0168	0.5423	0.1218	1.3700e-003	0.0988	2.0000e-003	0.1008	0.0251	1.9100e-003	0.0270		148.4795	148.4795	0.0108		148.7495
Vendor	0.0130	0.3477	0.1015	7.6000e-004	0.0192	2.2500e-003	0.0215	5.5300e-003	2.1500e-003	7.6800e-003		81.3831	81.3831	5.7200e-003		81.5261
Worker	0.0222	0.0163	0.1770	4.6000e-004	0.0447	3.9000e-004	0.0451	0.0119	3.6000e-004	0.0122		45.6852	45.6852	1.5700e-003		45.7245
Total	**0.0520**	**0.9062**	**0.4003**	**2.5900e-003**	**0.1627**	**4.6400e-003**	**0.1674**	**0.0425**	**4.4200e-003**	**0.0469**		**275.5478**	**275.5478**	**0.0181**		**276.0000**

3.4 Well Construction Monitoring - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0463	0.0000	0.0463	5.6300e-003	0.0000	5.6300e-003			0.0000			0.0000
Off-Road	4.4163	43.7703	37.6732	0.0815		2.0363	2.0363		1.9175	1.9175		7,856.9614	7,856.9614	2.1181		7,909.9149
Total	**4.4163**	**43.7703**	**37.6732**	**0.0815**	**0.0463**	**2.0363**	**2.0826**	**5.6300e-003**	**1.9175**	**1.9231**		**7,856.9614**	**7,856.9614**	**2.1181**		**7,909.9149**

3.4 Well Construction Monitoring - 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	0.0156	0.5089	0.1183	1.3600e-003	0.0384	1.6300e-003	0.0400	0.0103	1.5600e-003	0.0119		146.9498	146.9498	0.0106		147.2135
Vendor	0.0112	0.3191	0.0922	7.6000e-004	0.0192	1.5300e-003	0.0207	5.5300e-003	1.4600e-003	6.9900e-003		80.8347	80.8347	5.4100e-003		80.9699
Worker	0.0204	0.0145	0.1604	4.4000e-004	0.0447	3.7000e-004	0.0451	0.0119	3.4000e-004	0.0122		44.2968	44.2968	1.4000e-003		44.3317
Total	**0.0472**	**0.8424**	**0.3709**	**2.5600e-003**	**0.1023**	**3.5300e-003**	**0.1058**	**0.0277**	**3.3600e-003**	**0.0310**		**272.0813**	**272.0813**	**0.0174**		**272.5150**

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					0.0181	0.0000	0.0181	2.2000e-003	0.0000	2.2000e-003			0.0000			0.0000
Off-Road	4.4163	43.7703	37.6732	0.0815		2.0363	2.0363		1.9175	1.9175	0.0000	7,856.9614	7,856.9614	2.1181		7,909.9149
Total	**4.4163**	**43.7703**	**37.6732**	**0.0815**	**0.0181**	**2.0363**	**2.0544**	**2.2000e-003**	**1.9175**	**1.9197**	**0.0000**	**7,856.9614**	**7,856.9614**	**2.1181**		**7,909.9149**

3.4 Well Construction Monitoring - 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	0.0156	0.5089	0.1183	1.3600e-003	0.0384	1.6300e-003	0.0400	0.0103	1.5600e-003	0.0119		146.9498	146.9498	0.0106		147.2135
Vendor	0.0112	0.3191	0.0922	7.6000e-004	0.0192	1.5300e-003	0.0207	5.5300e-003	1.4600e-003	6.9900e-003		80.8347	80.8347	5.4100e-003		80.9699
Worker	0.0204	0.0145	0.1604	4.4000e-004	0.0447	3.7000e-004	0.0451	0.0119	3.4000e-004	0.0122		44.2968	44.2968	1.4000e-003		44.3317
Total	**0.0472**	**0.8424**	**0.3709**	**2.5600e-003**	**0.1023**	**3.5300e-003**	**0.1058**	**0.0277**	**3.3600e-003**	**0.0310**		**272.0813**	**272.0813**	**0.0174**		**272.5150**

3.5 Well Equipping - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.5974	6.6890	3.2956	7.2900e-003		0.3189	0.3189		0.2934	0.2934		706.8205	706.8205	0.2286		712.5355
Total	**0.5974**	**6.6890**	**3.2956**	**7.2900e-003**	**0.0000**	**0.3189**	**0.3189**	**0.0000**	**0.2934**	**0.2934**		**706.8205**	**706.8205**	**0.2286**		**712.5355**

3.5 Well Equipping - 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	8.8900e-003	0.2894	0.0673	7.7000e-004	0.0174	9.3000e-004	0.0183	4.7600e-003	8.9000e-004	5.6500e-003		83.5597	83.5597	6.0000e-003		83.7096
Vendor	0.0112	0.3191	0.0922	7.6000e-004	0.0192	1.5300e-003	0.0207	5.5300e-003	1.4600e-003	6.9900e-003		80.8347	80.8347	5.4100e-003		80.9699
Worker	0.0204	0.0145	0.1604	4.4000e-004	0.0447	3.7000e-004	0.0451	0.0119	3.4000e-004	0.0122		44.2968	44.2968	1.4000e-003		44.3317
Total	**0.0405**	**0.6229**	**0.3199**	**1.9700e-003**	**0.0813**	**2.8300e-003**	**0.0841**	**0.0222**	**2.6900e-003**	**0.0248**		**208.6912**	**208.6912**	**0.0128**		**209.0112**

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	0.5974	6.6890	3.2956	7.2900e-003		0.3189	0.3189		0.2934	0.2934	0.0000	706.8205	706.8205	0.2286		712.5355
Total	**0.5974**	**6.6890**	**3.2956**	**7.2900e-003**	**0.0000**	**0.3189**	**0.3189**	**0.0000**	**0.2934**	**0.2934**	**0.0000**	**706.8205**	**706.8205**	**0.2286**		**712.5355**

3.5 Well Equipping - 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	8.8900e-003	0.2894	0.0673	7.7000e-004	0.0174	9.3000e-004	0.0183	4.7600e-003	8.9000e-004	5.6500e-003		83.5597	83.5597	6.0000e-003		83.7096
Vendor	0.0112	0.3191	0.0922	7.6000e-004	0.0192	1.5300e-003	0.0207	5.5300e-003	1.4600e-003	6.9900e-003		80.8347	80.8347	5.4100e-003		80.9699
Worker	0.0204	0.0145	0.1604	4.4000e-004	0.0447	3.7000e-004	0.0451	0.0119	3.4000e-004	0.0122		44.2968	44.2968	1.4000e-003		44.3317
Total	**0.0405**	**0.6229**	**0.3199**	**1.9700e-003**	**0.0813**	**2.8300e-003**	**0.0841**	**0.0222**	**2.6900e-003**	**0.0248**		**208.6912**	**208.6912**	**0.0128**		**209.0112**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.547192	0.045177	0.202743	0.121510	0.016147	0.006143	0.019743	0.029945	0.002479	0.002270	0.005078	0.000682	0.000891

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

5.2 Energy by Land Use - NaturalGas

Mitigated

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

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.6202	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	2.6202	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

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	0.3009					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.3194					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	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	**2.6202**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.3009					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.3194					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	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	**2.6202**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Beverly Hills MND

GHG Summary - Construction Emissions

	MT/year CO_2e				MT CO_2e
Phase	**Onsite**	**Hauling**	**Vendor**	**Worker**	**Total**
Well Site Demolition and Pump-to-Waste -2019	54	1	0	2	57
Well Construction Monitoring -2019	80	2	1	0	83
Well Construction Monitoring -2020	233	4	2	1	241
Well Equipping - 2020	49	6	6	3	64
Rehabilitation/ Transmission Main Installation - 2019	44	21	1	3	69
Rehabilitation/ Transmission Main Installation - 2020	70	34	1	6	110
Annual Total (2019)	178	23	2	6	208
Annual Total (2020)	352	44	9	10	416
Project Total	***530***	***67***	***11***	***16***	***624***
Amoritized Emissions (MT CO2e/year)					21

GHG Summary - Operational Emissions

Electricity use	725,089	kWh/year total - 1 well operating daily
Electricity converted to GHG Emissions[1]	513	MTCO2e/year

[1] https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

Beverly Hills MND

Energy Summary - Construction

Fuel Conversion

Source type	Total MTCO2e/year	Fuel Type	Factor KGCO2/gal	Gallons
Onsite	530	diesel	10.16	52,182
Hauling	67	diesel	10.16	6,551
Vendor	9	diesel	10.16	932
Worker	16	gasoline	8.89	1,827

Total Diesel (gal)	59,665
Total Gas (gal)	1,827

Energy Summary - Operation

Mobile Sources

No substantial increase compared to existing maintenance routine

Area, water, waste emissions

None

Energy Use

Electricity	725,089	kWh/year total - 1 well operating daily	
	150	hp pump	
	0.74	load factor	
	24	hr per day opertion	
	0.7457	kW/hp-h	
	2664	hp-h per day	
	1987	kW hr per day	
	725,089	kwh/year per pump	

LADWP Total- 2020 Energy and Demand Forecast[2]	22,492,000,000	kWh/year
	22492	GWh/year
Percentage of Project to LADWP Forecast	0.003%	

[2]http://rates.ladwp.com/Admin/Uploads/Load%20Forecast/2017/10/2017%20Retails%20Sales%20Forecast_Final.pdf

Appendix B
Biological Resources Data

ESA

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Beverly Hills (3411814) OR Hollywood (3411813) OR Topanga (3411815) OR Venice (3311884) OR Inglewood (3311883) OR Van Nuys (3411824) OR Burbank (3411823) OR Canoga Park (3411825))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G2G3	S1S2	SSC
Aglaothorax longipennis Santa Monica shieldback katydid	IIORT32020	None	None	G1G2	S1S2	
Aimophila ruficeps canescens southern California rufous-crowned sparrow	ABPBX91091	None	None	G5T3	S3	WL
Anaxyrus californicus arroyo toad	AAABB01230	Endangered	None	G2G3	S2S3	SSC
Anniella sp. California legless lizard	ARACC01070	None	None	G3G4	S3S4	SSC
Anniella stebbinsi southern California legless lizard	ARACC01060	None	None	G3	S3	SSC
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Arenaria paludicola marsh sandwort	PDCAR040L0	Endangered	Endangered	G1	S1	1B.1
Arizona elegans occidentalis California glossy snake	ARADB01017	None	None	G5T2	S2	SSC
Aspidoscelis tigris stejnegeri coastal whiptail	ARACJ02143	None	None	G5T5	S3	SSC
Astragalus brauntonii Braunton's milk-vetch	PDFAB0F1G0	Endangered	None	G2	S2	1B.1
Astragalus pycnostachyus var. lanosissimus Ventura Marsh milk-vetch	PDFAB0F7B1	Endangered	Endangered	G2T1	S1	1B.1
Astragalus tener var. titi coastal dunes milk-vetch	PDFAB0F8R2	Endangered	Endangered	G2T1	S1	1B.1
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Atriplex coulteri Coulter's saltbush	PDCHE040E0	None	None	G3	S1S2	1B.2
Atriplex pacifica south coast saltscale	PDCHE041C0	None	None	G4	S2	1B.2
Atriplex parishii Parish's brittlescale	PDCHE041D0	None	None	G1G2	S1	1B.1
Atriplex serenana var. davidsonii Davidson's saltscale	PDCHE041T1	None	None	G5T1	S1	1B.2
Berberis nevinii Nevin's barberry	PDBER060A0	Endangered	Endangered	G1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G3G4	S1S2	
Brennania belkini Belkin's dune tabanid fly	IIDIP17010	None	None	G1G2	S1S2	
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
California Walnut Woodland California Walnut Woodland	CTT71210CA	None	None	G2	S2.1	
Calochortus clavatus var. gracilis slender mariposa-lily	PMLIL0D096	None	None	G4T2T3	S2S3	1B.2
Calochortus plummerae Plummer's mariposa-lily	PMLIL0D150	None	None	G4	S4	4.2
Calystegia felix lucky morning-glory	PDCON040P0	None	None	G1Q	S1	1B.1
Carolella busckana Busck's gallmoth	IILEM2X090	None	None	G1G3	SH	
Centromadia parryi ssp. australis southern tarplant	PDAST4R0P4	None	None	G3T2	S2	1B.1
Chaenactis glabriuscula var. orcuttiana Orcutt's pincushion	PDAST20095	None	None	G5T1T2	S1	1B.1
Charadrius alexandrinus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2S3	SSC
Chenopodium littoreum coastal goosefoot	PDCHE091Z0	None	None	G1	S1	1B.2
Chloropyron maritimum ssp. maritimum salt marsh bird's-beak	PDSCR0J0C2	Endangered	Endangered	G4?T1	S1	1B.2
Chorizanthe parryi var. fernandina San Fernando Valley spineflower	PDPGN040J1	Proposed Threatened	Endangered	G2T1	S1	1B.1
Cicindela hirticollis gravida sandy beach tiger beetle	IICOL02101	None	None	G5T2	S2	
Cicindela senilis frosti senile tiger beetle	IICOL02121	None	None	G2G3T1T3	S1	
Coelus globosus globose dune beetle	IICOL4A010	None	None	G1G2	S1S2	
Coturnicops noveboracensis yellow rail	ABNME01010	None	None	G4	S1S2	SSC
Danaus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	None	None	G4T2T3	S2S3	
Deinandra minthornii Santa Susana tarplant	PDAST4R0J0	None	Rare	G2	S2	1B.2
Diadophis punctatus modestus San Bernardino ringneck snake	ARADB10015	None	None	G5T2T3	S2?	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Dithyrea maritima beach spectaclepod	PDBRA10020	None	Threatened	G1	S1	1B.1
Dodecahema leptoceras slender-horned spineflower	PDPGN0V010	Endangered	Endangered	G1	S1	1B.1
Dudleya blochmaniae ssp. blochmaniae Blochman's dudleya	PDCRA04051	None	None	G3T2	S2	1B.1
Dudleya cymosa ssp. ovatifolia Santa Monica dudleya	PDCRA040A5	Threatened	None	G5T1	S1	1B.1
Dudleya multicaulis many-stemmed dudleya	PDCRA040H0	None	None	G2	S2	1B.2
Empidonax traillii extimus southwestern willow flycatcher	ABPAE33043	Endangered	Endangered	G5T2	S1	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eryngium aristulatum var. parishii San Diego button-celery	PDAPI0Z042	Endangered	Endangered	G5T1	S1	1B.1
Eucosma hennei Henne's eucosman moth	IILEM0R390	None	None	G1	S1	
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G5T4	S3S4	SSC
Euphilotes battoides allyni El Segundo blue butterfly	IILEPG201B	Endangered	None	G5T1	S1	
Helianthus nuttallii ssp. parishii Los Angeles sunflower	PDAST4N102	None	None	G5TH	SH	1A
Horkelia cuneata var. puberula mesa horkelia	PDROS0W045	None	None	G4T1	S1	1B.1
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G5	S3S4	
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Lasiurus xanthinus western yellow bat	AMACC05070	None	None	G5	S3	SSC
Lasthenia glabrata ssp. coulteri Coulter's goldfields	PDAST5L0A1	None	None	G4T2	S2	1B.1
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
Malacothamnus davidsonii Davidson's bush-mallow	PDMAL0Q040	None	None	G2	S2	1B.2
Microtus californicus stephensi south coast marsh vole	AMAFF11035	None	None	G5T1T2	S1S2	SSC
Monardella hypoleuca ssp. hypoleuca white-veined monardella	PDLAM180A5	None	None	G4T3	S3	1B.3

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Nama stenocarpa mud nama	PDHYD0A0H0	None	None	G4G5	S1S2	2B.2
Nasturtium gambelii Gambel's water cress	PDBRA270V0	Endangered	Threatened	G1	S1	1B.1
Navarretia fossalis spreading navarretia	PDPLM0C080	Threatened	None	G2	S2	1B.1
Navarretia prostrata prostrate vernal pool navarretia	PDPLM0C0Q0	None	None	G2	S2	1B.1
Neotoma lepida intermedia San Diego desert woodrat	AMAFF08041	None	None	G5T3T4	S3S4	SSC
Nyctinomops femorosaccus pocketed free-tailed bat	AMACD04010	None	None	G4	S3	SSC
Nyctinomops macrotis big free-tailed bat	AMACD04020	None	None	G5	S3	SSC
Oncorhynchus mykiss irideus pop. 10 steelhead - southern California DPS	AFCHA0209J	Endangered	None	G5T1Q	S1	
Onychobaris langei Lange's El Segundo Dune weevil	IICOL4W010	None	None	G1	S1	
Onychomys torridus ramona southern grasshopper mouse	AMAFF06022	None	None	G5T3	S3	SSC
Orcuttia californica California Orcutt grass	PMPOA4G010	Endangered	Endangered	G1	S1	1B.1
Panoquina errans wandering (=saltmarsh) skipper	IILEP84030	None	None	G4G5	S2	
Passerculus sandwichensis beldingi Belding's savannah sparrow	ABPBX99015	None	Endangered	G5T3	S3	
Pelecanus occidentalis californicus California brown pelican	ABNFC01021	Delisted	Delisted	G4T3T4	S3	FP
Perognathus longimembris brevinasus Los Angeles pocket mouse	AMAFD01041	None	None	G5T1T2	S1S2	SSC
Perognathus longimembris pacificus Pacific pocket mouse	AMAFD01042	Endangered	None	G5T1	S1	SSC
Phacelia stellaris Brand's star phacelia	PDHYD0C510	None	None	G1	S1	1B.1
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
Polioptila californica californica coastal California gnatcatcher	ABPBJ08081	Threatened	None	G4G5T2Q	S2	SSC
Potentilla multijuga Ballona cinquefoil	PDROS1B120	None	None	GX	SX	1A
Pseudognaphalium leucocephalum white rabbit-tobacco	PDAST440C0	None	None	G4	S2	2B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Quercus dumosa Nuttall's scrub oak	PDFAG050D0	None	None	G3	S3	1B.1
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Riversidian Alluvial Fan Sage Scrub Riversidian Alluvial Fan Sage Scrub	CTT32720CA	None	None	G1	S1.1	
Sidalcea neomexicana salt spring checkerbloom	PDMAL110J0	None	None	G4	S2	2B.2
Socalchemmis gertschi Gertsch's socalchemmis spider	ILARAU7010	None	None	G1	S1	
Sorex ornatus salicornicus southern California saltmarsh shrew	AMABA01104	None	None	G5T1?	S1	SSC
Southern Coast Live Oak Riparian Forest Southern Coast Live Oak Riparian Forest	CTT61310CA	None	None	G4	S4	
Southern Coastal Salt Marsh Southern Coastal Salt Marsh	CTT52120CA	None	None	G2	S2.1	
Southern Cottonwood Willow Riparian Forest Southern Cottonwood Willow Riparian Forest	CTT61330CA	None	None	G3	S3.2	
Southern Dune Scrub Southern Dune Scrub	CTT21330CA	None	None	G1	S1.1	
Southern Sycamore Alder Riparian Woodland Southern Sycamore Alder Riparian Woodland	CTT62400CA	None	None	G4	S4	
Spermolepis lateriflora western bristly scaleseed	PDAPI23080	None	None	G5	SH	2A
Sternula antillarum browni California least tern	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2	FP
Streptocephalus woottoni Riverside fairy shrimp	ICBRA07010	Endangered	None	G1G2	S1S2	
Symphyotrichum defoliatum San Bernardino aster	PDASTE80C0	None	None	G2	S2	1B.2
Symphyotrichum greatae Greata's aster	PDASTE80U0	None	None	G2	S2	1B.3
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thamnophis hammondii two-striped gartersnake	ARADB36160	None	None	G4	S3S4	SSC
Thelypteris puberula var. sonorensis Sonoran maiden fern	PPTHE05192	None	None	G5T3	S2	2B.2
Trigonoscuta dorothea dorothea Dorothy's El Segundo Dune weevil	IICOL51021	None	None	G1T1	S1	
Tryonia imitator mimic tryonia (=California brackishwater snail)	IMGASJ7040	None	None	G2	S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Vireo bellii pusillus	ABPBW01114	Endangered	Endangered	G5T2	S2	
least Bell's vireo						

Record Count: 104

Appendix C

Cultural Resources and Paleontological Resources Technical Reports, and AB 52 Consultation Materials

ESA

City of Beverly Hills La Brea Subarea Well, Water Treatment, and Transmission Main Project, City of Beverly Hills and Los Angeles, California

Cultural Resources Assessment Report

Prepared for
City of Beverly Hills
455 N. Rexford Dr.
Beverly Hills, CA 90210

September 2019

ESA

City of Beverly Hills La Brea Subarea Well, Water Treatment, and Transmission Main Project, City of Beverly Hills and Los Angeles, California

Cultural Resources Assessment Report

Prepared for:
City of Beverly Hills
455 N. Rexford Dr.
Beverly Hills, CA 90210

September 2019

Prepared by:
ESA

Project Directors:
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Margarita Jerabek, Ph.D.

Report Authors:
Sara Dietler, B.A.
Gabrielle Harlan, Ph.D.
Hanna Winzenried, M.Sc.
Michael Vader, B.A.

Project Location:
Beverly Hills (CA) USGS 7.5-minute Topographic Quad
Township 1 South, Range 14 and 15 West, Unsectioned

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ESA

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STATEMENT OF CONFIDENTIALITY

Cultural resources are nonrenewable, and their scientific, cultural, and aesthetic values can be significantly impaired by disturbance. To deter vandalism, artifact hunting, and other activities that can damage cultural resources, the locations of cultural resources are confidential. The legal authority to restrict cultural resources information is in subdivision (r) of Section 6254 and Section 6254.10 of the California Government Code, subdivision (d) of Section 15120 of Title 14 of the California Code of Regulations, Section 304 of the National Historic Preservation Act of 1966, as amended, and Section 9 of the Archaeological Resources Protection Act.

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EXECUTIVE SUMMARY

City of Beverly Hills La Brea Subarea Well, Water Treatment, and Transmission Main Project - Cultural Resources Assessment Report

The City of Beverly Hills has retained Environmental Science Associates (ESA) to prepare a cultural resources assessment in support of an Initial Study Mitigated Negative Declaration (ISMND) being prepared for the La Brea Subarea Well, Water Treatment, and Transmission Main Project (proposed project) pursuant to the California Environmental Quality Act (CEQA). The project proposes to expand local water supply by providing an additional net 1,700 acre-feet per year of groundwater supply in the La Brea Subarea within the Central Groundwater Basin. The proposed project would include the construction of one groundwater production well in the La Brea Subarea, the rehabilitation of an existing 18-inch pipeline, and the connection of the rehabilitated pipeline to a newly constructed raw water transmission main. The proposed 16-inch transmission main would connect the proposed production well to the existing Foothill Water Treatment Plant (WTP) for treatment and supply. The Well Site would be located on a property currently owned by the City of Beverly Hills, at 1956 Chariton Street in the City of Los Angeles, and the existing residential structure at the location would be demolished before the construction of Well No. 1. The City is the lead agency responsible for compliance with CEQA. The proposed project would be located within the Los Angeles Basin and overlaps areas within the City of Beverly Hills and the City of Los Angeles.

A records search for the proposed project was conducted on April 11, 2019 by ESA staff at the California Historical Resources Information System (CHRIS) South Central Coastal Information Center (SCCIC) housed at California State University, Fullerton. The records search included a review of all recorded archaeological resources and previous studies within the proposed project area and a 0.5-mile radius, and historic architectural resources within a 0.25-mile radius of the proposed project. For the purposes of this assessment, a study area beyond the project alignment was established by considering all known project components and the optimal zone of the La Brea Subarea and provided additional information on the broader context of the La Brea Subarea.. The records search results indicate that 23 cultural resources have been identified within the proposed project records search area. Three archaeological resources have been previously recorded within a 0.5-mile radius of the proposed project area and four have been previously recorded within the La Brea Subarea. Additionally, a cluster of ten prehistoric village archaeological resources, recorded in the 1950's, is located less than one-mile south and adjacent to the La Brea Subarea. Ten historic architectural resources and one California Historic Landmark (CHL) have been recorded within 0.25 miles of the proposed project and five have been previously recorded within the La Brea Subarea. The three archaeological resources previously

recorded within 0.5 miles of the proposed project as well as the four previously recorded within the La Brea Subarea are prehistoric camp or village sites. Of the 11 architectural resources previously recorded within 0.25 miles of the proposed project, four are located within 100 feet of the proposed project (P-19-187281, -187282, -187283, and -189803). Three of the four resources (P-19-187281, -187282, -187283) were demolished in the early 2000s and are no longer extant. Resource P-19-189803 is a wooden utility pole constructed sometime prior to 1966. P-19-189803, is located within 30 feet of the proposed project and has been previously determined ineligible for listing National Register of Historical Resources (NRHP), but has not been previously evaluated for inclusion in the California Register of Historical Resources (CRHR).

A Sacred Lands File (SLF) search conducted by the California Native American Heritage Commission (NAHC) on April 25, 2019 indicated that Native American cultural resources are not known to be located within the proposed project. Consultation has been initiated as required by Assembly Bill 52 (AB 52), and is ongoing between the City of Beverly Hills and Native American tribes and will be summarized in the MND.

A cultural resources survey of the proposed project area was conducted on April 24, 2019 by ESA staff. The survey was aimed at identifying historic architectural resources and archaeological resources within or immediately adjacent to the proposed project. The residence located at 1956 Chariton Street that would be demolished prior to the installation of Well No. 1 was documented and previously recorded resource, P-19-189803 (wooden utility pole,) was re-visited to assess its current condition. Both resources were evaluated by ESA, as part of this assessment and are recommended ineligible for listing in the CRHR and do not qualify as historical resources pursuant to CEQA. Ground disturbing activities associated with the proposed project have the potential to encounter unknown, sub-surface historic-period and/or prehistoric archaeological resources that could qualify as historical resource or unique archaeological resources pursuant to CEQA. Sensitivity for archaeological resources has been determined to be moderate to high and these resources could be preserved under the existing streets and historic residential development. Given the potential to encounter subsurface archaeological deposits during proposed project implementation, recommended mitigation measures for the retention of a qualified archaeologist, archaeological resources sensitivity training, archaeological monitoring, and protocols for the inadvertent discovery of archaeological resources and human remains are provided in the *Recommendations* section at the close of this report.

City of Beverly Hills La Brea Subarea Well, Water Treatment, and Transmission Main Project

Cultural Resources Assessment Report

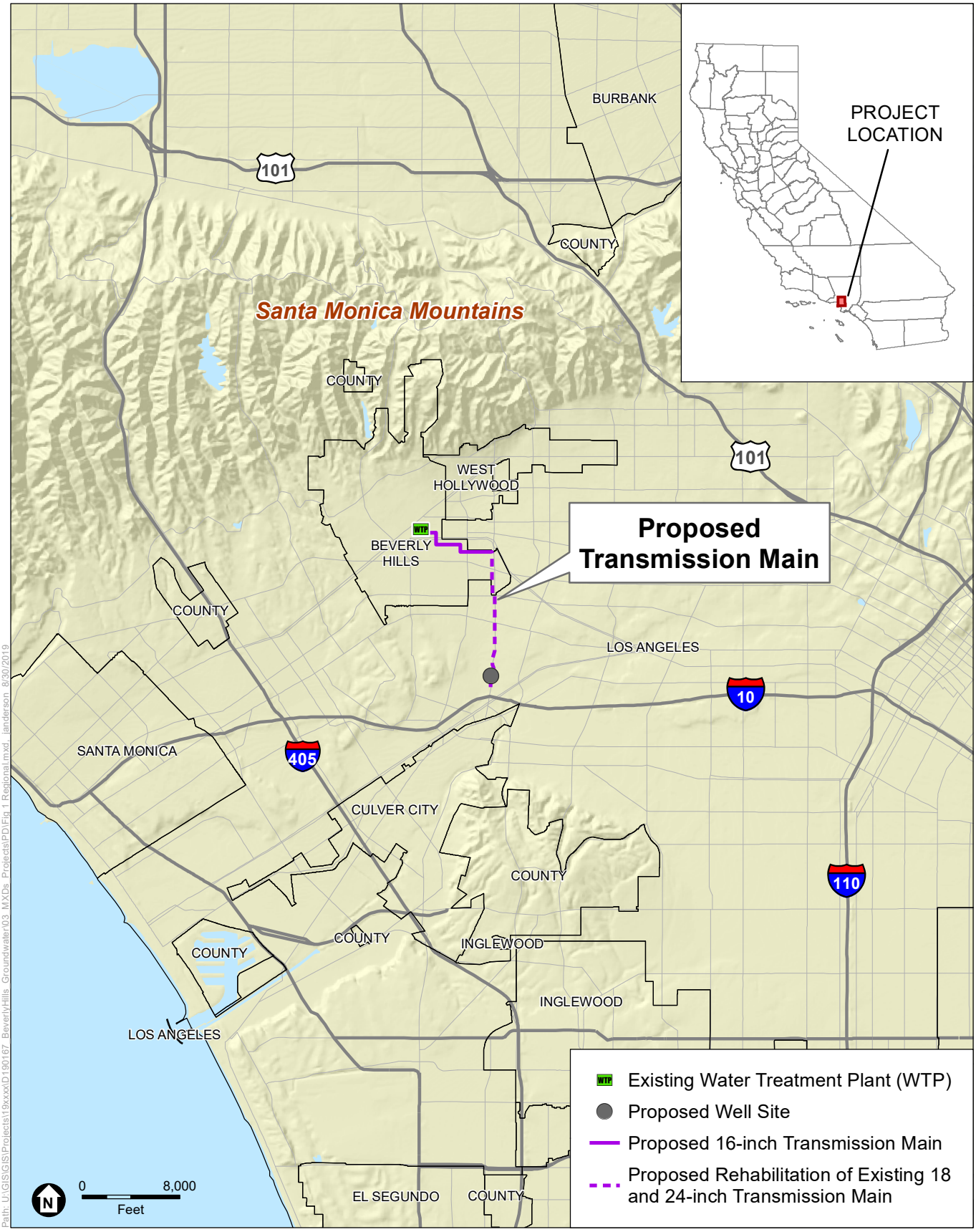
Introduction

The City of Beverly Hills (City) has retained Environmental Science Associates (ESA) to prepare a cultural resources assessment in support of an Initial Study Mitigated Negative Declaration (ISMND) being prepared for the La Brea Subarea Well, Water Treatment, and Transmission Main Project (proposed project) pursuant to the California Environmental Quality Act (CEQA). The project proposes to expand local water supply by providing an additional net 1,700 acre-feet per year (AFY) of groundwater supply in the La Brea Subarea within the Central Groundwater Basin. The proposed project would include the construction of one groundwater production well in the La Brea Subarea, the rehabilitation of an existing 18-inch pipeline, and the connection of the rehabilitated pipeline to a newly constructed raw water transmission main. The proposed 16-inch transmission main would connect the proposed production well to the existing Foothill Water Treatment Plant (WTP) for treatment and supply. The City is the lead agency responsible for compliance with CEQA.

ESA personnel involved in the preparation of this report are as follows: Monica Strauss, M.A., RPA., and Margarita Jerabek, Ph.D., project directors; Sara Dietler, B.A., project manager, surveyor, and report author; Gabrielle Harlan, Ph.D., and Michael Vader, B.A, report authors; Hanna Winzenried, M.Sc., report author and surveyor; and Jason Nielson, GIS specialist. Resumes of key personnel are included in **Appendix A**.

Project Location

The proposed project would be located within the Los Angeles Basin and overlaps areas within the City of Beverly Hills and the City of Los Angeles (**Figure 1**). Specifically, the proposed project is located within unsectioned portions of Township 1 South, Range 14 and 15 West on the Beverly Hills, CA 7.5-minute USGS topographic quadrangle (**Figure 2**).

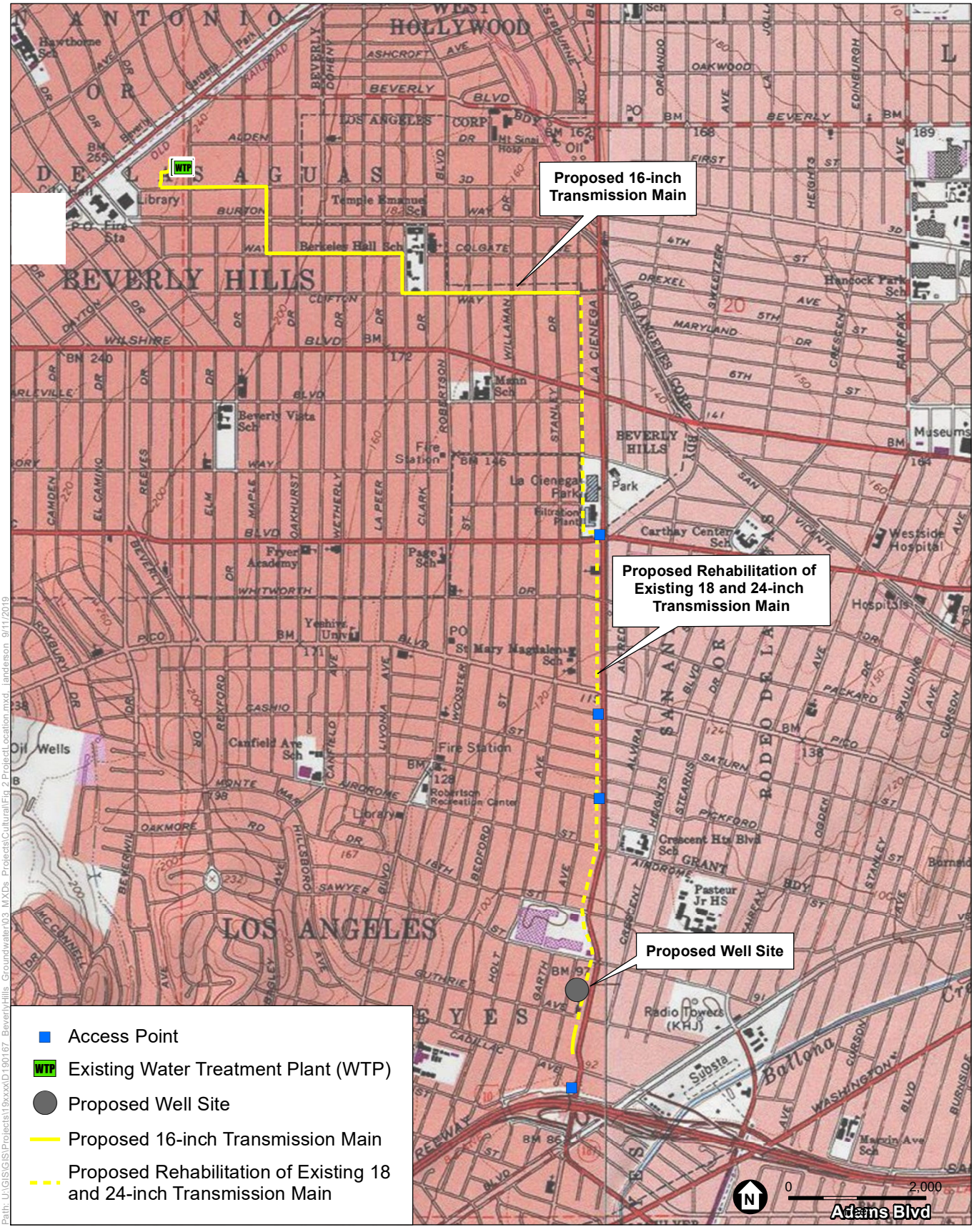


SOURCE: ESRI

La Brea Subarea Well and Transmission Main Project

Figure 1
Regional Location

ESA



SOURCE: ESRI; City of Beverly Hills; Beverly Hills and Hollywood Topoquads

La Brea Subarea Well and Transmission Main Project

Figure 2
Project Location

ESA

Project Description

The proposed project includes: the demolition of existing structures at the proposed Well Site; the construction of one well within the La Brea Subarea; the rehabilitation of existing inactive 18 and 24-inch transmission main pipelines along La Cienega Boulevard; and the construction of a new 16-inch transmission main that would convey flows from the proposed Well Site to the City's WTP for treatment. Demolition, rehabilitation, and the construction of new facilities associated with the proposed project are described further below.

The proposed Well Site would be located on 1956 Chariton Street in the City of Los Angeles (Figure 2). The area is essentially flat and the existing residential structure would be demolished before the construction of the Well. After demolition, a 15-inch storm drain (pump-to-waste pipeline) would be constructed within Chariton Street, to connect to an existing storm drain system within the local streets. When a well is turned on, typical procedure is to "pump-to-waste" for a short duration to flush the well system. This flushing procedure will discharge through the 15-inch storm drain.

The proposed well would include an approximately 150 horsepower (hp) electric pump that would be housed within a new pump building. The pump building would be approximately 700 square feet (sf) with a 3-foot by 3-foot concrete pad underneath. The well-housing would not exceed the height of adjacent structures. Total well depth would be approximately 500 feet. The predicted flow rate for the well is between 500 and 700 gpm. The well-housing would be designed to blend in with the surrounding environment.

Rehabilitation and Proposed Transmission Main

The installation of new groundwater production well in the La Brea Subarea would include the rehabilitation of existing inactive 18 and 24-inch transmission pipelines and the construction of a new 16-inch transmission main alignment to convey water to the City distribution system from the proposed Well Site.

The existing, inactive 18-inch transmission main pipeline is located just north of Interstate 10 (I-10) at La Cienega Boulevard and continues north for approximately 8,000 linear feet (lf) to Olympic Boulevard at a depth of approximately 3 feet below the ground surface (bgs). The City has an easement to allow for the rehabilitation and use of this pipeline. The alignment horizontally and vertically varies at intersections; however, the majority of the pipe is located beneath the existing sidewalk on the west side of La Cienega Boulevard. The existing inactive 24-inch transmission main is located within Le Doux Road from Gregory Way north approximately 2,250 liner feat (lf) to Clifton Way, and includes the crossing of Wilshire Blvd. The alignment is located approximately 6-feet east of street centerline at a cover depth that varies between 3.5-feet and 6-feet. The existing 18 and 24-inch pipelines would be rehabilitated as part of the overall transmission main of the project, then connect to the newly constructed 16-inch transmission main pipeline The rehabilitated and new portions of the proposed transmission main would be connected and sized appropriately for anticipated flows.

The projected operational flow rate for the proposed production well is in the range of 500 to 700 gpm. An 8-inch diameter pipe would be used for the individual discharge pipeline from the production well. The transmission main would be sized to handle the flow rate of the optimal flow of approximately (2,100 gpm), to allow for use in conjunction with potential future wells in the area. Many of the streets along the transmission main alignment are single lane roads, with existing utilities such as water, sewer, gas, electric, and storm drain.

Demolition/Site Preparation

The proposed project would demolish existing structures at the Well Site, totaling approximately 6,767 cubic yards of construction material. Generally, ground disturbance during demolition would not extend deeper than 25 feet; concrete below this depth would be left in place. Demolition and site grading activities would require approximately 5 dumpster haul trucks per day and 20 dumpster haul trucks total. Imported soil may be required to level the site after demolition.

New Facilities/Rehabilitation

Production Well

The proposed project would construct a new above-grade well-house and new below-grade production well, as described previously. Construction equipment pertaining to the Well Site would be staged onsite or immediately adjacent to the site, where such areas can be accommodated. Best management practices (BMPs) would be implemented to control erosion. The proposed production well would require continuous 24-hour drilling and testing, and therefore would require temporary overnight lighting. All temporary constructing lighting would be shielded downward and away from the adjacent properties, cars driving along Chariton Street and other roadways, and the surrounding residential neighborhoods.

Transmission Main Rehabilitation and Construction

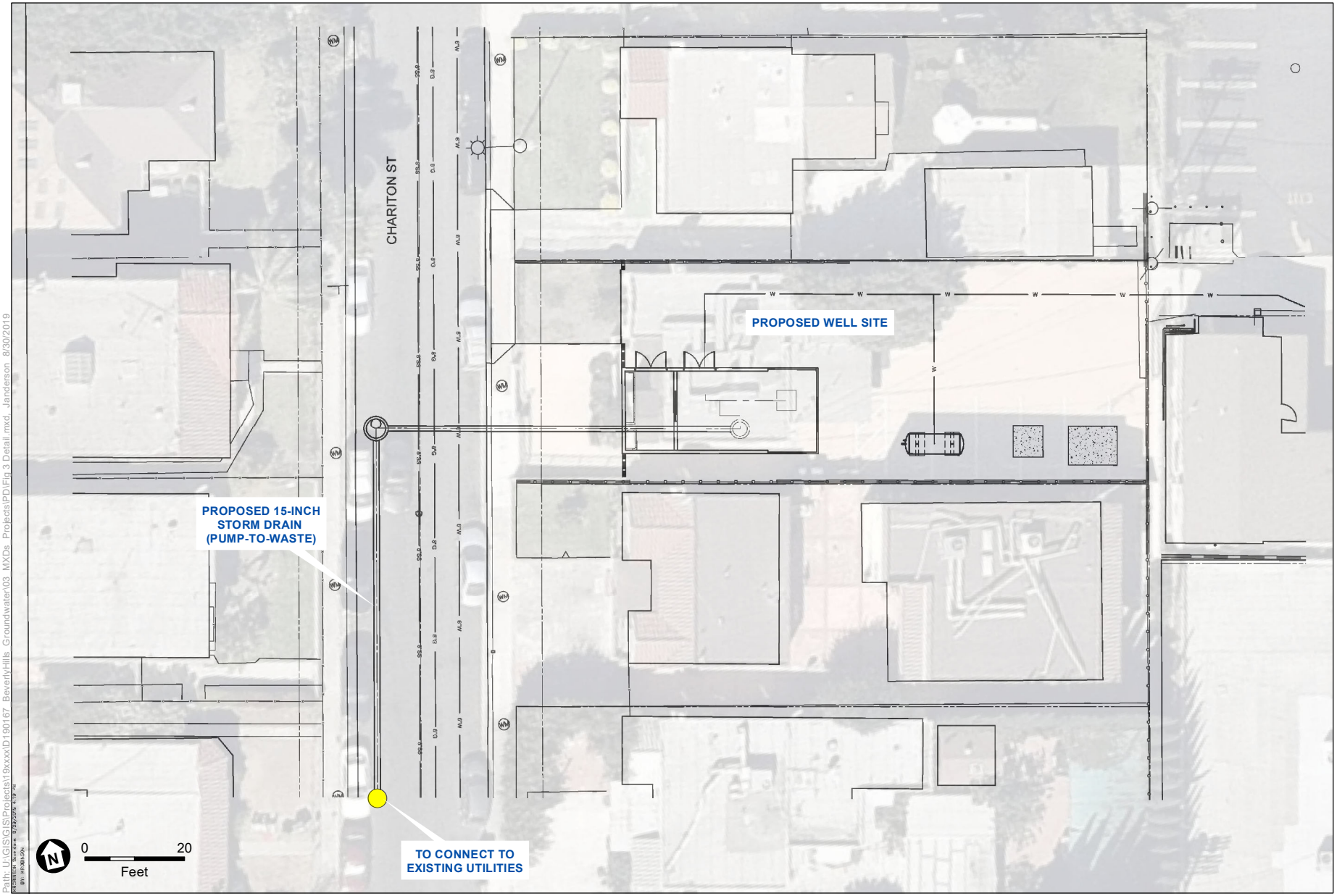
Pipeline construction equipment will be temporarily staged in areas immediately adjacent to roadways and/or stored off site. The transmission main alignment would be installed primarily within existing roadways and ROW to the extent feasible.

Construction of the proposed transmission main would involve trenching using conventional cut and cover and jack and bore techniques for pipeline portions within the City of Beverly Hills. The transmission main would run along Le Doux Road, Clifton Way, North Swall Drive, Dayton Way, North Palm Drive, and West 3rd Street. The trenching technique would include saw cutting of the pavement where applicable, trench excavation, pipe installation, backfill operations, and resurfacing. Open trenches would be between approximately 4 feet wide and 5 feet deep with vertical cuts and trench shoring. Excavation depths would vary depending on location of existing utilities. On average, about 100-200 linear feet of pipeline would be installed per day. Implementation of the new 16-inch transmission main would require the excavation of approximately 11,018 cubic yards of soil. All excavated soil would be hauled away and trenches would be backfilled with 2-sack slurry.

Rehabilitation of the existing inactive 18 and 24-inch transmission main pipelines would be executed through the sliplining technique[1].The rehabilitated portion of the 18 and 24-inch existing pipelines will be sliplined with a 13.5-inch carrier pipe (it gets inserted within the 18 and 24-inch pipes). Typical practice in pipeline design is to use pipe fittings called reducers to connect pipes of different sizes. The rehabilitated 18 and 24-inch pipes will connect to the newly constructed 16-inch portion of the transmission main by using a standard ductile iron mechanical joint (18-inch by 16-inch ductile iron reducer) fittings. The design flow rate for the pipeline is 2100 gpm, but the transmission main in its entirety is sized to accommodate up to 3000 gpm. Rehabilitation would require the excavation of approximately 185 cubic yards of soil.

All impacted areas would be returned to pre-project conditions. Approximately 1,000 sf of various portions of the west sidewalk along La Cienega Boulevard would need to be reinstalled. When a new pipeline is installed, it requires the excavation of a trench through the street/roadway. After a pipeline is installed, the trench should be backfilled and the pavement surface needs to be replaced with new pavement. This is typical construction technique for all segments of a pipeline being installed within an open-trench construction area. Le Doux Road, Clifton Way, North Swall Drive, Dayton Way, North Palm Drive, and West 3rd Street would need to be repaved once the new 16-inch transmission main is installed. The total square feet to repaved area is approximately 10,000 sf.

[1] The pipeline rehabilitation method sliplining uses High Density Polyethylene (HDPE) with the rolldown method, or traditional sliplining with fusible polyvinyl chloride (PVC). The sliplining method maximizes the internal diameter of the pipe, which maximizes the benefit of utilizing the existing inactive 18 and 24-inch inch transmission main.



SOURCE: Mapbox; City of Beverly Hills

La Brea Subarea Well and Transmission Main Project

Figure 3
Proposed Well Site

ESA

Setting

Natural Setting

The proposed project is located within residential and commercial areas of Beverly Hills and Los Angeles. Much of the proposed project area is comprised of existing streets lined with residential buildings.

Prehistoric Setting

The chronology of Southern California is typically divided into three general time periods: the Early Holocene (9,600 cal B.C. to 5,600 cal B.C.), the Middle Holocene (5,600 cal B.C. to 1,650 cal B.C.), and the Late Holocene (1,650 cal B.C. to cal A.D. 1769). This chronology is manifested in the archaeological record by particular artifacts and burial practices that indicate specific technologies, economic systems, trade networks, and other aspects of culture.

While it is not certain when humans first came to California, their presence in Southern California by about 9,600 cal B.C. has been well documented. At Daisy Cave, on San Miguel Island, cultural remains have been radiocarbon dated to between 9,150 and 9,000 cal B.C. (Byrd and Raab, 2007). During the Early Holocene (9,600 cal B.C. to 5,600 cal B.C.), the climate of Southern California became warmer and more arid and the human populations, who were represented by small hunter gathers until this point and resided mainly in coastal or inland desert areas, began exploiting a wider range of plant and animal resources (Byrd and Raab, 2007).

During the Late Holocene (1,650 cal B.C. to cal A.D. 1769), many aspects of Millingstone culture persisted, but a number of socioeconomic changes occurred (Erlandson, 1994; Wallace 1955; Warren, 1968). The native populations of Southern California were becoming less mobile and populations began to gather in small sedentary villages with satellite resource-gathering camps. Increasing population size necessitated the intensified use of existing terrestrial and marine resources (Erlandson, 1994). Evidence indicates that the overexploitation of larger, high-ranked food resources may have led to a shift in subsistence, towards a focus on acquiring greater amounts of smaller resources, such as shellfish and small-seeded plants (Byrd and Raab, 2007). Between about A.D. 800 and A.D. 1350, there was an episode of sustained drought, known as the Medieval Climatic Anomaly (MCA) (Jones et al., 1999). While this climatic event did not appear to reduce the human population, it did lead to a change in subsistence strategies in order to deal with the substantial stress on resources.

Given the increasing sedentism and growing populations during the Late Holocene, territorial conscription and competition became acute. Primary settlements or village sites were typically established in areas with available freshwater, and where two or more ecological zones intersected (McCawley, 1996). This strategic placement of living space provided a degree of security in that when subsistence resources associated with one ecological zone failed, the resources of another could be exploited (McCawley, 1996). Villages typically claimed and carefully defended fixed territories that may have averaged 30-square miles in size encompassing a variety of ecological zones that could be exploited for subsistence resources (McCawley, 1996).

The Late Holocene marks a period in which specialization in labor emerged, trading networks became an increasingly important means by which both utilitarian and non-utilitarian materials were acquired, and travel routes were extended. Trade during this period reached its zenith as asphaltum (tar), seashells, and steatite were traded from Catalina Island (*Pimu* or *Pimugna)* and coastal Southern California to the Great Basin. Major technological changes appeared as well, particularly with the advent of the bow and arrow sometime after cal A.D. 500, which largely replaced the use of the dart and atlatl (Byrd and Raab, 2007).

Ethnographic Setting

Gabrielino

The proposed project is located in a region traditionally occupied by the Takic-speaking Gabrielino Indians. The term "Gabrielino" is a general term that refers to those Native Americans who were administered by the Spanish at the Mission San Gabriel Arcángel. Prior to European colonization, the Gabrielino occupied a diverse area that included: the watersheds of the Los Angeles, San Gabriel, and Santa Ana rivers; the Los Angeles basin; and the islands of San Clemente, San Nicolas, and Santa Catalina (Kroeber, 1925). Their neighbors included the Chumash and Tataviam to the north, the Juañeno to the south, and the Serrano and Cahuilla to the east. The Gabrielino are reported to have been second only to the Chumash in terms of population size and regional influence (Bean and Smith, 1978). The Gabrielino language was part of the Takic branch of the Uto-Aztecan language family.

The Gabrielino Indians were hunter-gatherers and lived in permanent communities located near the presence of a stable food supply. Subsistence consisted of hunting, fishing, and gathering. Small terrestrial game was hunted with deadfalls, rabbit drives, and by burning undergrowth, while larger game such as deer were hunted using bows and arrows. Fish were taken by hook and line, nets, traps, spears, and poison (Bean and Smith, 1978). The primary plant resources were the acorn, gathered in the fall and processed in mortars and pestles, and various seeds that were harvested in late spring and summer and ground with manos and metates. The seeds included chia and other sages, various grasses, and islay or holly-leafed cherry. Community populations generally ranged from 50 to 100 inhabitants, although larger settlements may have existed. The Gabrielino are estimated to have had a population numbering around 5,000 in the pre-contact period (Kroeber, 1925).

The Late Prehistoric period, spanning from approximately 1,500 years B.P. to the mission era, is the period associated with the florescence of the Gabrielino (Wallace, 1955). Coming ashore near Malibu Lagoon or Mugu Lagoon in October of 1542, Juan Rodriguez Cabrillo was the first European to make contact with the Gabrielino Indians. The Gabrielino are reported to have been second only to their Chumash neighbors in terms of population size, regional influence, and degree of sedentism (Bean and Smith, 1978). Maps produced by early explorers indicate that at least 26 Gabrielino villages were within proximity to known Los Angeles River courses, while an additional 18 villages were reasonably close to the river (Gumprecht, 2001).

The closest village to the proposed project was the village of *Saa'annga*, located south of Ballona Creek approximately 2.5 miles south of the proposed project, (McCawley, 1996). The Kirkman-

Harriman Pictorial and Historical Map of Los Angeles County (Los Angeles Public Library, 1938) depicts three villages located to the north, west, and south of the proposed and are mapped within 2 miles.

Historic Setting

Spanish Period (1769–1821)

Although Spanish explorers made brief visits to the region in 1542 and 1602, sustained European exploration of southern California began in 1769, when Gaspar de Portolá and a small Spanish contingent began their exploratory journey along the California coast from San Diego to Monterey. This was followed in 1776 by the expedition of Father Francisco Garcés (Johnson and Earle, 1990). In the late 18th century, the Spanish began establishing missions in California and forcibly relocating and converting native peoples. In 1797, Father Fermín Francisco de Lasuèn founded the Mission San Fernando Rey de España, located approximately 14.5 miles north of the proposed project (California Missions Resource Center, 2018). Disease and hard labor took a toll on the native population in California; by 1900, the Native Californian population had declined by as much as 90 percent (Cook, 1978). In addition, native economies were disrupted, trade routes were interrupted, and native ways of life were significantly altered.

In an effort to promote Spanish settlement of Alta California, Spain granted several large land concessions from 1784 to 1821. At this time, unless certain requirements were met, Spain retained title to the land (State Lands Commission, 1982).

Mexican Period (1821–1846)

The Mexican Period began when Mexico won its independence from Spain in 1821. Mexico continued to promote settlement of California with the issuance of land grants. In 1833, Mexico began the process of secularizing the missions, reclaiming the majority of mission lands and redistributing them as land grants. According to the terms of the Secularization Law of 1833 and Regulations of 1834, at least a portion of the lands would be returned to the Native populations, but this did not always occur (Milliken et al., 2009).

Many ranchos continued to be used for cattle grazing by settlers during the Mexican Period. Hides and tallow from cattle became a major export for Californios, many of whom became wealthy and prominent members of society. The Californios led generally easy lives, leaving the hard work to vaqueros and Indian laborers (Pitt, 1994; Starr, 2007).

American Period (1846–present)

In 1846, the Mexican-American War broke out. Mexican forces were eventually defeated in 1847 and Mexico ceded California to the United States as part of the Treaty of Guadalupe Hildalgo in 1848. California officially became one of the United States in 1850. While the treaty recognized right of Mexican citizens to retain ownership of land granted to them by Spanish or Mexican authorities, the claimant was required to prove their right to the land before a patent was given. The process was lengthy, and generally resulted in the claimant losing at least a portion of their land to attorney's fees and other costs associated with proving ownership (Starr, 2007).

When the discovery of gold in northern California was announced in 1848, a huge influx of people from other parts of North America flooded into California. The increased population provided an additional outlet for the Californios' cattle. As demand increased, the price of beef skyrocketed and Californios reaped the benefits. However, a devastating flood in 1861, followed by droughts in 1862 and 1864, led to a rapid decline of the cattle industry; over 70 percent of cattle perished during these droughts (McWilliams, 1946; Dinkelspiel, 2008). This event, coupled with the burden of proving ownership of their lands, caused many Californios to lose their lands during this period (McWilliams, 1946). Former ranchos were subsequently subdivided and sold for agriculture and residential settlement.

The first transcontinental railroad was completed in 1869, connecting San Francisco with the eastern United States. Newcomers poured into northern California. Southern California experienced a trickle-down effect, as many of these newcomers made their way south. The Southern Pacific Railroad extended this line from San Francisco to Los Angeles in 1876. The second transcontinental line, the Santa Fe, was completed in 1886 and caused a fare war, driving fares to an unprecedented low. Settlers flooded into the region and the demand for real estate skyrocketed. As real estate prices soared, land that had been farmed for decades outlived its agricultural value and was sold to become residential communities. The subdivision of the large ranchos took place during this time (Meyer, 1981; McWilliams, 1946).

History of the Project Area

The proposed project is located in an area partially encompassed by the Mexican-era Rancho Rodeo de las Aguas, or the Ranch of the Gathering of the Waters, named for the swamps or "cienegas" that dotted the landscape. The rancho was originally granted to Mexican settlers Maria Rita Valdez and her husband Vicente Valdez in 1822. Vicente, a retired soldier, died in 1828, leaving Maria in charge of the 4,500-acre cattle ranch (PCR Services Corporation, 2011). In 1852 after suffering an Indian attack, Maria moved to the safety of the pueblo of Los Angeles. In 1854, the ranch was sold for $4,000 to two Americans, Benjamin Davis "Don Benito" Wilson and Major Henry Hancock (PCR Services Corporation, 2011). Don Benito was a major figure in the development of Southern California as well as a founder of the California citrus and viticulture industries. Hancock, a Civil War veteran, surveyed and subsequently acquired large tracts around the La Brea Tar Pits.

In 1862, Hancock sold his interests in the rancho to William Workman, who planned to convert he pasturelands of the rancho to agricultural use. Due to ongoing droughts, Workman's agricultural endeavors failed and much of the rancho lands were sold incrementally for sheep herding. In 1868, much of the rancho was purchased by wool dealer Edward O. Preuss. In 1869, Preuss sold a half-interest in the rancho to Francis F.P. Temple and the two created the De Las Aguas Land Association to subdivide the ranch into 75-acre farms (PCR Services, 2011). The land company failed and the rancho was sold to Henry Hanimel and Charles Denker, managers of the U.S. Hotel in Los Angeles, in 1881. Hanimel and Denker proposed the townsite of Morocco and subdivided the area in 1888. The town was centered around the train station located at present-day Canon Drive and Beverly Drive (PCR Services Corporation, 2011).

The townsite of Morocco never materialized and portions of the ranch passed to the Amalgamated Oil Company. However, the oil reserves underlying the area were too deeply buried to be accessed with the technology of the time, and, in 1906, the Amalgamated Oil Company reorganized as the Rodeo Land and Water Company and began to sub-divide the rancho for sale (PCR Services Corporation, 2011). The Rodeo Land and Water Company hired notable California park planner, Wilbur F. Cook, Jr., to plan a community. The community would become Beverly Hills and was one of the earliest planned communities in Southern California.

The Rodeo Land and Water Company's proposed the construction of a large resort hotel to attract investors and buyers. In 1911, the company commissioned architect Elmer Grey to design the Beverly Hills Hotel (PCR Services Corporation, 2011). In 1914, concern over establishment of a secure water system and the desire to improve the local school system prompted incorporation of City of Beverly Hills. Beginning the 1920s, Beverly Hills became a residential center for stars of the nascent movie industry. In 1920, newlyweds Douglas Fairbanks and Mary Pickford moved to the area, drawing other movie stars including Gloria Swanson, Will Rogers, and Charles Chaplin, creating the "Movie Colony" (PCR Services Corporation, 2011).

The southern portion of the Project Site was originally part of the Rincon De Los Bueyes land grant which means "Corner of the Oxen", it was known as this due to a large ravine at the southeast corner of the grant which served as a natural corral. La Cienega Boulevard, in the present day, follows the former route of this ravine. (Kielbasa 1997:111). Lying immediately south of Ranch Rodeo de las Aguas, Rincon De Los Bueyes was originally public land where citizens from the pueblo could graze their cattle. In 1823the rancho was granted to Bernardo Hiǵuera and Cornelio Lopez. Hiǵuera later bequeathed his ownership in the rancho to his two sons Francisco and Secundino. Franciso then conveyed 100 acres of the rancho to Jose Antonio Rocha II in 1872 who later built the Rocha Adobe which still stands today on Shenandoah Street which continued to be farmland until much of the area and the larger Rancho was repeatedly subdivided, and then later annexed to the City of Los Angeles in 1915as part of the Palms District (Kielbasa 1997:111-114).

Architectural Themes

This report includes an evaluation for a portion of the Project Area located at 1956 Chariton Street and the following themes provide a context for the historic evaluation.

Spanish Colonial Revival, 1912-1942 (SurveyLA, 2018)

By the early 1920s the Mission Revival had given way to the Spanish Colonial Revival. Influential in its spread were the Spanish-style buildings at the 1915 Panama California Exposition in San Diego, designed by Bertram Goodhue and Carleton Winslow, Sr. The buildings in San Diego provided a variety of Spanish forms, including the ornate Churrigueresque, discussed below as a separate sub-theme.

Closer to home is an earlier example of the Spanish Colonial Revival, the Southwest Museum (L.A. Historic-Cultural Monument No. 283) (**Figure 4**). It is located at 234 Museum Drive in the Mount Washington neighborhood of Northeast Los Angeles and constructed of reinforced concrete between 1912 and 1914. Its architects were Sumner Hunt and Silas R. Burns. (It is

reached from Museum Drive by way of a tunnel and elevator, the portal to which was designed by Allison and Allison in a Pre-Columbian Revival style and completed in 1920) (Herr, 2002).

Beverly Hills MND Groundwater Well and Pipeline Project/190167.00

SOURCE: Los Angeles Public Library

Figure 4
Southwest Museum, 1912-1914, L.A. HCM No. 283

The Southwest Museum as an institution was founded in 1903 by Charles Lummis, whose home, El Alisal (L.A. Historic-Cultural Monument No. 68) is nearby. The purpose of the museum was to collect, preserve, and exhibit artifacts of the Native Americans of the Southwest. It was the first museum established in Los Angeles and the oldest privately-endowed museum in the state dedicated to Native American culture (Herr, 2002).

The Southwest Museum building illustrates the Spanish Colonial Revival treatment of the structure as a series of picturesquely arranged masses, to be seen in three dimensions. The detailing is austere, with characteristic features limited to expanses of undecorated walls, low-pitched red-tiled gabled roofs, arched windows, and an occasional tower with a parapeted, hipped, or conical roof. This approach was influenced by growing interest in the vernacular architecture of Andalusia, in southern Spain).

Advancing the Spanish Colonial Revival were publications by architects who had studied the historic structures of Mexico and the Mediterranean, in particular that of Andalusia. Typical was *Architectural Details: Spain and the Mediterranean*, published in 1926 by Richard Requa. It stressed the appropriateness of Mediterranean form for a climate such as Southern California and called out the elements of the style. In addition to expanses of unbroken white or pastel-colored walls and low-sloped red tile roofs, Requa noted the importance of enclosed outdoor spaces and the need for details such as wrought iron for balconies and for *rejas*, or window grilles (Polyzoides et al., 1992).

Because of the stress on picturesquely assembled masses, the Spanish Colonial Revival was extremely flexible. It could vary in scale and use. Its only limitation was that it worked best in stand-alone buildings, where its three-dimensional nature could be shown. It was less successful as part of a dense streetscape, tight against neighboring buildings. For that it often employed a variation, the Churrigueresque style (Gebhard and Winter, 2003).

The Spanish Colonial became ubiquitous in 1920s Los Angeles. Most every building type made use of it, employing all forms of construction –wood frame, brick masonry, reinforced concrete, even adobe (discussed in a separate sub-theme). Because of its widespread use, it is best examined by separating examples into building-type categories. These include residential (single-family and multi-family), commercial, industrial, and institutional.

Single-Family Residential

The Spanish-Colonial Revival was particularly popular in automobile-oriented residential districts developed during the 1920s. Single family homes ranged from small one-story cottages built on speculation by contractors to large multi-story villas designed by noted architects.[2] All were characterized by stucco walls, red-tile roofs, simplified detailing, and picturesque massing. An example of a relatively modest architect-designed single-story home is the Octavius W. Morgan Residence of 1929 (L.A. Historic-Cultural Monument No. 444). Located at 181 South Alta Vista Boulevard in the Wilshire district, it was the home of one of the principles in the architectural firm of Morgan, Walls and Clements (Herr, 2002).

Of note is the characteristic asymmetry of the façade, along with the assemblage of low-sloped redtiled gabled roofs and limited openings punched through apparently thick walls. Although construction is stucco on wood frame, Morgan was able to create the feeling of adobe with recessed windows. Also characteristic of the Spanish Colonial Revival are the gable-end attic vents consisting of small-diameter clay pipes arranged in triangles and diamonds (LADBS).

An example of a large two-story single-family residence is the Outpost II from 1929 (L.A. Historic-Cultural Monument No. 673) (**Figure 5**). Located at 1851 Outpost Drive in Hollywood, it occupies the site of the Outpost, an adobe structure in which the Treaty of Cahuenga was signed in 1847, ending California's role in the Mexican War. The architect was R. F. Pierson and construction of the two-story house is of stucco on metal lath over wood frame (Herr, 2002).

Beverly Hills MND Groundwater Well and Pipeline Project/190167.00

SOURCE : Office of Historic Resources

[2] Neighborhoods of Spanish Colonial Revival style residences are discussed in the Period Revival/Housing the Masses theme of the Architecture and Engineering context.

Figure 5
The Outpost II, 1929, LA HCM No. 673

The vocabulary of stucco walls, low-sloped tiled roofs, and picturesque massing is the same as that found in the Octavius W. Morgan residence (**Figure 6**). Of note are the use of the single-slope or shed roof on the far-left mass, the occasional arched opening, and the stepped enclosure for the exterior stairway at the center left. Of note also is the exterior balcony. It is a feature that is typical of the Monterey Revival Style, discussed below, but here it is treated in a heavier and more ornate manner that is characteristic of the Spanish Colonial Revival.

Beverly Hills MND Groundwater Well and Pipeline Project/190167.00
SOURCE : Office of Historic Resources

Figure 6
Octavius W. Morgan Residence, 1929, LA HCM No. 444

Community and Operative Builders (1888-1940) (SurvyeLA, 2016)

Single- and multi-family residential districts that were developed by prominent 20th century developer-builders were evaluated using the Developers and the Development Process theme. Within the West Adams-Baldwin Hills-Leimert CPA, there are subdivisions and planned communities developed by significant individuals such as Elwain Steinkamp and Walter Leimert. Resources representing this Context/Theme are located throughout the CPA and generally date to the 1930s (**Figures 7, 8, and 9**). These districts were also evaluated by SurveyLA under the Architecture and Engineering context as significant concentrations of Period Revival style architecture, primarily Spanish Colonial Revival.

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SOURCE : SurveyLA

Figure 7
Dublin Avenue in the Donna Park Historic District (1937-1938)

Beverly Hills MND Groundwater Well and Pipeline Project/190167.00

SOURCE : SurveyLA

Figure 8
3861 S. Roxton Avenue (contributor to the Donna Park Historic District), 1938

Beverly Hills MND Groundwater Well and Pipeline Project/190167.00

SOURCE : SurveyLA

Figure 9

4256 S. Creed Avenue (contributor to the Leimert Park Historic District), 1932

Early Single-Family Residential Development (1880-1930) (SurveyLA, 2016)

Resources were determined to be eligible as significant examples of early residential development within the CPA if they largely pre-dated the development of surrounding neighborhoods. In the West Adams-Baldwin Hills-Leimert CPA, this included late 19th century and early 20th century residences (**Figures 10, 11, and 12**). These resources are rare remaining examples of the earliest periods of residential development in the area.

Beverly Hills MND Groundwater Well and Pipeline Project/190167.00

SOURCE : SurveyLA

Figure 10
2861 S. Corning Avenue, 1904

Beverly Hills MND Groundwater Well and Pipeline Project/190167.00

SOURCE : SurveyLA

Figure 11
5615 W. Homeside Avenue, 1890

Beverly Hills MND Groundwater Well and Pipeline Project/190167.00

SOURCE : SurveyLA

Figure 12
4711 W. St. Elmo Drive, 1902

Regulatory Framework

Numerous laws and regulations require state, and local agencies to consider the effects a project may have on cultural resources. These laws and regulations stipulate a process for compliance, define the responsibilities of the various agencies proposing the action, and prescribe the relationship among other involved agencies.

State

California Environmental Quality Act

CEQA is the principal statute governing environmental review of projects occurring in the state and is codified at *Public Resources Code (PRC) Section 21000 et seq.* CEQA requires lead agencies to determine if a proposed project would have a significant effect on the environment, including significant effects on historical or unique archaeological resources. Under CEQA (PRC Section 21084.1), a project 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.

The *CEQA Guidelines* (Title 14 California Code of Regulations [CCR] Section 15000 et seq.) recognize in CCR Section 15064.5that historical resources include: (1) a resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (CRHR); (2) a resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); and (3) any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California by the lead agency, provided the lead agency's determination is supported by substantial evidence in light of

the whole record. The fact that a resource does not meet the three criteria outlined above does not preclude the lead agency from determining that the resource may be an historical resource as defined in PRC Sections 5020.1(j) or 5024.1.

If a lead agency determines that an archaeological site is a historical resource, the provisions of PRC Section 21084.1 of CEQA and CCR Section 15064.5 of the *CEQA Guidelines* apply. If an archaeological site does not meet the criteria for a historical resource contained in the *CEQA Guidelines*, then the site may be treated in accordance with the provisions of PRC Section 21083, which is as a unique archaeological resource. As defined in PRC Section 21083.2 of CEQA a "unique" archaeological resource is an archaeological artifact, object, or site, about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

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

If an archaeological site meets the criteria for a unique archaeological resource as defined in PRC Section 21083.2, then the site is to be treated in accordance with the provisions of Section PRC 21083.2, which state that if the lead agency determines that a project would have a significant effect on unique archaeological resources, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place (PRC Section 21083.1(a)). If preservation in place is not feasible, mitigation measures shall be required. The *CEQA Guidelines* note that if an archaeological resource is neither a unique archaeological nor a historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment (CCR Section 15064.5(c)(4)).

A significant effect under CEQA would occur if a project results in a substantial adverse change in the significance of a historical resource as defined in *CEQA Guidelines* Section 15064.5(a). Substantial adverse change is defined as "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired" (CCR Section 15064.5(b)(1)). According to CCR Section 15064.5(b)(2), the significance of a historical resource is materially impaired when a project demolishes or materially alters in an adverse manner those physical characteristics that:

A. Convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the CRHR; or

B. Account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the PRC or its identification in a historical resources survey meeting the requirements of PCR section 5024.1(g), 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

C. Convey its historical significance and that justify its eligibility for inclusion in the CRHR as determined by a Lead Agency for purposes of CEQA.

In general, a project that complies with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* (Standards) (Grimmer, 2017) is considered to have mitigated its impacts to historical resources to a less-than-significant level (CCR Section 15064.5(b)(3)).

California Register of Historical Resources

The CRHR is "an authoritative guide in California to be used by State and local agencies, private groups, and citizens to identify the State's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from t substantial adverse change" (PRC Section 5024.1(a)). The criteria for eligibility for the CRHR are based upon NRHP criteria (PRC Section 5024.1(b)). Certain resources are determined by the statute to be automatically included in the CRHR, including California properties formally determined eligible for, or listed in, the NRHP.

To be eligible for the CRHR, a prehistoric or historic-period property must be significant at the local, state, and/or federal level under one or more of the following four criteria:

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

A resource eligible for the CRHR must meet one of the criteria of significance described above, and retain enough of its historic character or appearance (integrity) to be recognizable as a historical resource and to convey the reason for its significance. It is possible that a historic resource may not retain sufficient integrity to meet the criteria for listing in the NRHP, but it may still be eligible for listing in the CRHR.

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

- California properties listed on the NRHP and those formally determined eligible for the NRHP;
- California Registered Historical Landmarks from No. 770 onward; and,
- Those California Points of Historical Interest that have been evaluated by the OHP and have been recommended to the State Historical Commission for inclusion on the CRHR.

Other resources that may be nominated to the CRHR include:

- Historical resources with a significance rating of Category 3 through 5 (those properties identified as eligible for listing in the NRHP, the CRHR, and/or a local jurisdiction register);
- Individual historical resources;
- Historical resources contributing to historic districts; and,
- Historical resources designated or listed as local landmarks, or designated under any local ordinance, such as an historic preservation overlay zone.

California Health and Safety Code Section 7050.5

California Health and Safety Code Section 7050.5 requires that in the event human remains are discovered, the County Coroner be contacted to determine the nature of the remains. In the event the remains are determined to be Native American in origin, the Coroner is required to contact the California Native American Heritage Commission (NAHC) within 24 hours to relinquish jurisdiction.

California Public Resources Code Section 5097.98

California PRC Section 5097.98, as amended, provides procedures in the event human remains of Native American origin are discovered during project implementation. PRC Section 5097.98 requires that no further disturbances occur in the immediate vicinity of the discovery, that the discovery is adequately protected according to generally accepted cultural and archaeological standards, and that further activities take into account the possibility of multiple burials. PRC Section 5097.98 further requires the NAHC, upon notification by a County Coroner, designate and notify a Most Likely Descendant (MLD) regarding the discovery of Native American human remains. The MLD has 48 hours from the time of being granted access to the site by the landowner to inspect the discovery and provide recommendations to the landowner for the treatment of the human remains and any associated grave goods.

In the event that no descendant is identified, or the descendant fails to make a recommendation for disposition, or if the land owner rejects the recommendation of the descendant, the landowner may, with appropriate dignity, reinter the remains and burial items on the property in a location that will not be subject to further disturbance.

California Government Code Sections 6254(r) and 6254.10

These sections of the California Public Records Act were enacted to protect archaeological sites from unauthorized excavation, looting, or vandalism. Section 6254(r) explicitly authorizes public agencies to withhold information from the public relating to "Native American graves, cemeteries, and sacred places and records of Native American places, features, and objects described in PRC Sections 5097.9 and 5097.993 maintained by, or in the possession of, the Native American Heritage Commission, another state agency, or a local agency." Section 6254.10 specifically exempts from disclosure requests for "records that relate to archaeological site information and reports, maintained by, or in the possession of the Department of Parks and Recreation, the State Historical Resources Commission, the State Lands Commission, the Native American Heritage Commission, another state agency, or a local agency, including the records

that the agency obtains through a consultation process between a California Native American tribe and a state or local agency."

Assembly Bill 52 and Related Public Resources Code Sections

Assembly Bill (AB) 52 was approved by California State Governor Edmund Gerry "Jerry" Brown, Jr. on September 25, 2014. The act amended California PRC Section 5097.94, and added PRC Sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3. AB 52 applies specifically to projects for which a Notice of Preparation (NOP) or a Notice of Intent to Adopt a Negative Declaration or Mitigated Negative Declaration (MND) will be filed on or after July 1, 2015. The primary intent of AB 52 was to include California Native American Tribes early in the environmental review process and to establish a new category of resources related to Native Americans that require consideration under CEQA, known as tribal cultural resources. PRC Section 21074(a)(1) and (2) defines tribal cultural resources as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe" that are either included or determined to be eligible for inclusion in the CRHR or included in a local register of historical resources, or a resource that is determined to be a tribal cultural resource by a lead agency, in its discretion and supported by substantial evidence. On July 30, 2016, the California Natural Resources Agency adopted the final text for tribal cultural resources update to Appendix G of the CEQA Guidelines, which was approved by the Office of Administrative Law on December 28, 2018.

PRC Section 21080.3.1 requires that within 14 days of a lead agency determining that an application for a project is complete, or a decision by a public agency to undertake a project, the lead agency provide formal notification to the designated contact, or a tribal representative, of California Native American Tribes that are traditionally and culturally affiliated with the geographic area of the project (as defined in PRC Section 21073) and who have requested in writing to be informed by the lead agency (PRC Section 21080.3.1(b)). Tribes interested in consultation must respond in writing within 30 days from receipt of the lead agency's formal notification and the lead agency must begin consultation within 30 days of receiving the tribe's request for consultation (PRC Sections 21080.3.1(d) and 21080.3.1(e)).

PRC Section 21080.3.2(a) identifies the following as potential consultation discussion topics: the type of environmental review necessary; the significance of tribal cultural resources; the significance of the project's impacts on the tribal cultural resources; project alternatives or appropriate measures for preservation; and mitigation measures. Consultation is considered concluded when either: (1) the parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or (2) a party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached (PRC Section 21080.3.2(b)).

If a California Native American tribe has requested consultation pursuant to Section 21080.3.1 and has failed to provide comments to the lead agency, or otherwise failed to engage in the consultation process, or if the lead agency has complied with Section 21080.3.1(d) and the California Native American tribe has failed to request consultation within 30 days, the lead agency may certify an EIR or adopt an MND (PRC Section 21082.3(d)(2) and (3)).

PRC Section 21082.3(c)(1) states that any information, including, but not limited to, the location, description, and use of the tribal cultural resources, that is submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public without the prior consent of the tribe that provided the information. If the lead agency publishes any information submitted by a California Native American tribe during the consultation or environmental review process, that information shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public.

Local

City of Beverly Hills

The City's Historic Preservation Ordinance (Municipal Code Title 10 Chapter 3 Article 32; BHMC 10-3- 32) authorizes the Cultural Heritage Commission (CHC) to recommend the nomination of properties as local landmarks to the City Council. The Council may designate local landmarks and historic districts by the procedures outlined in the ordinance. The Preservation Ordinance also establishes criteria and the process for evaluating and designating properties as potential local landmarks. Under the City's criteria a property must be more than 45 years old, unless it possesses exceptional significance; retain sufficient historical integrity to physically illustrate its significance; and satisfy significance criteria.

To be eligible for local designation as a historic landmark ((Municipal Code Title 10 Chapter 3 Article 32; BHMC 10-3- 3212), properties must satisfy the following criteria:

A. A Landmark must satisfy all of the following requirements:

1. It is at least forty five (45) years of age, or is a property of extraordinary significance;
2. It possesses high artistic or aesthetic value, and embodies the distinctive characteristics of an architectural style or architectural type or architectural period;
3. It retains substantial integrity from its period of significance; and
4. It has continued historic value to the community such that its designation as a landmark is reasonable and necessary to promote and further the purposes of this article.

B. In addition to the requirements set forth in Paragraph A above, a landmark must satisfy at least one of the following requirements:

1. It is listed on the NRHP of Historic Places;
2. It is an exceptional work by a master architect;
3. It is an exceptional work that was owned and occupied by a person of great importance, and was directly connected to a momentous event in the person's endeavors or the history

of the nation. For purposes of this paragraph, personal events such as birth, death, marriage, social interaction, and the like shall not be deemed to be momentous;

4. It is an exceptional property that was owned and occupied by a person of great local prominence;

5. It is an iconic property; or

6. The landmark designation procedure is initiated, or expressly agreed to, by the owner(s) of the property.

City of Los Angeles General Plan

The City of Los Angeles General Plan (adopted 2001) states as its objective, to "protect the City's archaeological and paleontological resources for historical, cultural, research, and/or educational purposes" by continuing "to identify and protect significant archaeological and paleontological resources known to exist or that are identified during land development, demolition, or property modification activities."

In addition, the City will:

> *continue to protect historic and cultural sites and/or resources potentially affected by proposed land development, demolition, or property modification activities…The City's environmental guidelines require the applicant to secure services of a bona fide archaeologist to monitor excavations or other subsurface activities associated with a development project in which all or a portion is deemed to be of archaeological significance. Discovery of archaeological materials may temporarily halt the project until the site has been assessed, potential impacts evaluated and, if deemed appropriate, the resources protected, documented and/or removed (City of Los Angeles, 2001).*

In addition to the NRHP and the CRHR, three additional types of historic designations may apply at a local level:

1. Historic-Cultural Monument
2. Designation by the Community Redevelopment Agency as being of cultural or historical significance within a designated redevelopment area
3. Classification by the City Council as an Historic Preservation Overlay Zone

In addition, the Los Angeles Municipal Code (LAMC) Section 91.106.4.5 states that the Building Department "shall not issue a permit to demolish, alter or remove a building or structure of historical, archaeological or architectural consequence if such building or structure has been officially designated" by a federal, state, or local authority.

City of Los Angeles Cultural Heritage Ordinance

The City of Los Angeles enacted a Cultural Heritage Ordinance in April 1962, which defines Historic-Cultural Monuments as sites, buildings, or structures of particular historic or cultural

significance to the City in which the broad cultural, political, or social history of the nation, state, or City is reflected or exemplified, including sites and buildings associated with important personages or which embody certain distinguishing architectural characteristics and are associated with a notable architect. These Historic-Cultural Monuments are regulated by the City of Los Angeles' Cultural Heritage Commission and the City Council.

Los Angeles Cultural Heritage Ordinance Eligibility Criteria

The Los Angeles City Council adopted the Cultural Heritage Ordinance in 1967 and amended it in 2007 (Los Angeles Administrative Code, Chapter 9, Division 22, Article 1, Section 22.171.7). The Cultural Heritage Ordinance establishes criteria for designating a local historical resource as an Historic-Cultural Monument (HCM). An HCM is any site (including significant trees or other plant life located on the site), building or structure of particular historic or cultural significance to the City, including historic structures or sites:

1. In which the broad cultural, economic or social history of the nation, State or community is reflected or exemplified; or
2. Which is identified with historic personages or with important events in the main currents of national, State or local history; or
3. Which embodies the distinguishing characteristics of an architectural type specimen, inherently valuable for a study of a period, style or method of construction; or
4. Which is a notable work of a master builder, designer, or architect whose individual genius influenced his or her age.

SurveyLA Eligibility Standards

SurveyLA was a citywide survey that identified and documented significant historic resources representing important themes in the City of Los Angeles' history. The survey and resource evaluations were completed by consultant teams under contract to the City of Los Angeles and the supervision of the Office of Historic Resources (OHR). The program was managed by the OHR, which maintains a website for SurveyLA (SurveyLA, 2017). The field surveys covered the period from approximately 1850 to 1980 and included individual resources such as buildings, structures, objects, natural features and cultural landscapes, as well as areas and districts (archaeological resources will be included in a future survey phase). Significant resources reflected important themes in the City of Los Angeles' growth and development in various areas including architecture, city planning, social history, ethnic heritage, politics, industry, transportation, commerce, entertainment, and others. Field surveys, conducted from 2010 to 2017, were completed in three phases by Community Plan Area. All tools and methods developed for SurveyLA met state and federal professional standards for survey work.

Los Angeles' citywide Historic Context Statement (HCS) was designed for use by SurveyLA field surveyors and by all agencies, organizations, and professionals completing historic resources surveys in the City of Los Angeles. The context statement was organized using the Multiple Property Documentation (MPD) format developed by the National Park Service (NPS) for use in nominating properties related by theme to the NRHP. This format provided a consistent framework for evaluating historic resources. It was adapted for local use to evaluate the eligibility

of properties for city, state, and federal designation programs and to facilitate environmental review processes (City of Los Angeles, 2016). The HCS used Eligibility Standards to identify the character defining, associative features, and integrity aspects a property should retain to be a significant example of a type within a defined theme. Eligibility Standards also indicate the general geographic location, area of significance, applicable criteria, and period of significance associated with that type. These Eligibility Standards are guidelines based on knowledge of known significant examples of property types; properties do not need to meet all of them in order to be eligible. Assessment of integrity considers several variables, include the significance criteria under which the resource is eligible.

Archival Research

SCCIC Records Search

A records search for the proposed project was conducted on April 11, 2019 by ESA staff at the California Historical Resources Information System (CHRIS) South Central Coastal Information Center (SCCIC) housed at California State University, Fullerton. The records search included a review of all recorded archaeological resources and previous studies within the proposed project area and a 0.5-mile radius as well as the optimal zone of the La Brea Subarea where additional wells would later be sited, and historic architectural resources within 0.25 miles of the proposed project. In addition, the California Points of Historical Interest, the California Historical Landmarks, the CRHR, the NRHP, the Archaeological Determinations of Eligibility, and the California State Historic Resources Inventory (HRI) were reviewed.

Previous Cultural Resources Investigations

The records search results indicate that 67 cultural resources studies have been conducted within a 0.5-mile radius of the proposed project area (**Table 1**). Approximately 10 percent of the 0.5-mile records search radius has been included in previous cultural resources surveys. Of the 67 previous studies, eight (LA-01968, -04881, -07088, -08955, -11005, -11363, -11822, and -12522) overlap the proposed project. Approximately 5 percent of the proposed project has been included as part of previous studies.

TABLE 1
PREVIOUS CULTURAL RESOURCES INVESTIGATIONS

Authors	Report No. (LA-)	Title	Year
Anonymous	03673	*Historic Property Survey Report North Outfall Relief Sewer*	1987
Anonymous	03678	*Request for Determination of Eligibility for Inclusion in the National Register of Historic Places*	n.d.
Anonymous	03679	*Request for Determination of Eligibility for Inclusion in the National Register of Historic Places*	n.d.
Anonymous	03680	*Request for Determination of Eligibility for Inclusion in the National Register of Historic Places*	n.d.
Bartoy, K.	07334	*San Francisquito Women's Club Park (Special Use Permit SCM302301) Angeles National Forest, Los Angeles County, California*	2003
Belous, Russell E. and Charles E. Rozaire	00751	*Preliminary Report on the Archaeology of the La Ballona Creek Area, Los Angeles County*	1950

Authors	Report No. (LA-)	Title	Year
Billat, Lorna	06520	*Nextel Communications Proposed Wireless Telecommunications Service Facilities Southern California*	2001
Bissell, Ronald M.	01968*	*Cultural Resources Literature Review of Metro Rail Red Line Western Extension Alternatives, Los, Angeles, Los Angeles County, California*	1989
Bolin, David P.	06518	*Proposed AT&T Wireless Telecommunication Equipment Installation 911 Wilshire Boulevard, Beverly Hill, 90210*	2001
Bonner, Wayne	10661	*Cultural Resources Records Search and Site Visit Results for AT7T Mobility, LLC Candidate ELO352-01 (Wilshire Medical Center), 9033 Wilshire Boulevard, Beverly Hills, Los Angeles County, California*	2010
Bonner, Wayne	11946	*Cultural Resources Records Search and Site Visit Results for T-Mobile West, LLC Candidate SV11698A (Emack Building), 6330 San Vicente Boulevard, Los Angeles, Los Angeles County, California*	2012
Bonner, Wayne	12004	*Cultural Resources Records Search and Site Visit Results for T-Mobile West, LLC Candidate SV01671B (01671 Amir Development) 8730 Wilshire Boulevard, Beverly Hills, Los Angeles County, California*	2012
Bonner, Wayne and Kathleen Crawford	12146	*Cultural Resources Records Search and Site Visit Results for T-Mobile West, LLC Candidate SV00225A (LA225 Hall Studio) 5005 Washington Boulevard, Los Angeles, Los Angeles County, California*	2012
Bonner, Wayne andKathleen Crawford	12114	*Cultural Resources Records Search and Site Visit Results for T-Mobile West, LLC Candidate SV00065A (SM039 Lexington Ventures) 9350 Wilshire Boulevard, Beverly Hills, Los Angeles County, California*	2012
Bonner, Wayne H.	07340	*Cultural Resource Records Search and Site Visit Results for Cingular Telecommunications Facility Candidate La-467-01 (el-044-01) 5035 Coliseum Street, Los Angeles, Los Angeles County, California*	2005
Bonner, Wayne H. and Christeen Taniguchi	07344	*Records Search Results and Site Visit for Sprint Telecommunications Facility Candidate La60x424a (Louisiana) 5005 West Washington Boulevard, Los Angeles, Los Angeles County, California*	2004
Bucknam, Bonnie M.	03583	*The Los Angeles Basin and Vicinity: a Gazetteer and Compilation of Archaeological Site Information*	1974
Chartkoff, Joe and Kerry Chartkoff	03524	*Ucas-073 Venice Boulevard 7-la-187, Los Angeles County*	1965
Chartkoff, Kerry and Joe Chartkoff	03525	*Ucas-092 Route 2 Freeway Los Angeles County West, Los Angeles, Beverly Hills*	1966
Daly, Pam and Nancy Sikes	11642	*Westside Subway Extension Project, Historic Properties and Archaeological Resources Supplemental Survey Technical Reports*	2012
Dillon, Brian D.	03501	*Archaeological Record Search and Impact Evaluation for the Los Angeles Wastewater Program Management Project Los Angeles, California*	1990
Duke, Curt	04553	*Cultural Resource Assessment for Pacific Bell Mobile Services Facility La 619-06, in the County of Los Angeles, California*	1999
Duke, Curt	05351	*Cultural Resources Assessment for AT&T Fixed Wireless Services Facility Number R315.1, County of Los Angeles, California*	2000
Duke, Curt	06483	*Cultural Resource Assessment Cingular Wireless Facility No. Sm 022-01 Los Angeles County, California*	2001
Duke, Curt	06501	*Cultural Resource Assessment Cingular Wireless Facility No. Sm 039-01 Los Angeles County, California*	2001
Duke, Curt	06510	*Cultural Resource Assessment Cingular Wireless Facility No. Sm 129-02 Los Angeles County, California*	2002
Duke, Curt	06513	*Cultural Resource Assessment for AT&T Wireless Services Facility Number C924.1, County of Los Angeles, California*	2001
Duke, Curt and Judith Marvin	08096	*Cultural Resources Assessment Cingular Wireless Facility No. La453-04 City and County of Los Angeles, California*	2003
Foster, John M. and Dana Slawson	04667	*Historic Resource Evaluation Report Exposition Boulevard Right-of-way Regional Bikeway Project Los Angeles County, California*	1999
Greenwood, Roberta S., Scott Savastio, and Peter Messick	10506	*Cultural Resources Monitoring: North Outfall Sewer - East Central Interceptor Sewer Project*	2004
Hatheway, Roger G.	11822*	*Archival Documentation Report for the Chateau Arnaz Condominium Project Documenting Buildings Located at 143, 145, 147, and 149 N Arnaz Dr, Beverly Hills, California*	2001
Hatoff, Brian	10580	*Verizon Cellular Communications Tower Site - LTE Beverly Vista, 9033 Wilshire Boulevard, Beverly Hills, CA. 90211*	2010
Horne, Melinda C.	11409	*Construction Phase Cultural Resources Monitoring and Treatment Plan for the City of Los Angeles North Outfall - East Central Interceptor Sewer Project*	2000

Authors	Report No. (LA-)	Title	Year
King, Chester	03587	*Prehistoric Native American Cultural Sites in the Santa Monica Mountains*	1994
King, Phil V.	08955*	*Final Report for Year Three Historical and Cultural Resources Survey of Los Angeles: Sylmar, Watts, Crenshaw, and Vermont/Slauson*	1983
Kry, Linda, Marc A. Beherec, and Alec Stevenson	13264	*La Cienega Interceptor Sewer Rehabilitation Project, Archaeological Survey Report Los Angeles, California*	2014
Kyle, Carolyn E.	07088*	*Cultural Resource Assessment for Cingular Wireless Facility Sm 226-01 City of Los Angeles Los Angeles County, California*	2002
Lapin, Philippe	05008	*Cultural Resource Assessment for Modifications to Pacific Bell Wireless Facility La 281-04, County of Los Angeles, Ca*	2000
Lapin, Philippe	05328	*Cultural Resource Assessment for Pacific Bell Mobile Services Facility La 225-02, in the County of Los Angeles, California*	2000
Loftus, Shannon	11363*	*Cultural Resource Records search and Site Survey and Historic Architectural Resource-Inventory and Assessment - AT&T Site: EL0417-8 9268 West 3rd Street, Beverly Hills, Los Angeles County, California 90210 CASPR #3551016878*	2011
Loftus, Shannon	11364	*Cultural Resource Records Search and Site Survey and Historic Architectural Resource-Inventory and Assessment, AT&T Site: EL0417-9 424 North Maple Drive, Beverly Hills, Los Angeles County, California 90210 CASPR #3551016878*	2011
Loftus, Shannon	11369	*Cultural Resource Records Search and Site Survey and Historic Architectural Resource-Inventory and Assessment, AT&T Site: EL0456-6*	2011
Loftus, Shannon	11376	*Cultural Resource Records Search and Site Survey - AT&T Site LAC147, Beverly Hills, 464 North Rexford Drive, Beverly Hills, Los Angeles County, California 90210*	2011
Loftus, Shannon	11383	*Cultural Resource Records Search and Site Survey and Historic Architectural Resource-Inventory and Assessment - AT&T Site: EL0417-10 8950 Beverly Boulevard, West Hollywood, Los Angeles County, California 90210 CASPR #3551016879*	2011
Loftus, Shannon	11431	*Cultural Resource Records Search and Site Survey and Historic Architectural Resource-Inventory and Assessment. AT&T Site: EL0459-7 602 North Crescent Drive Beverly Hills, Los Angeles County, California 90210 CASPR#3551016879*	2011
Loftus, Shannon	11437	*Cultural Resource Records Search and Site Survey and Historic Architectural Resource-Inventory and Assessment. AT&T Site: EL0456-10, 8725 Wilshire Boulevard Beverly Hills, Los Angeles County, California 90211. CASPR#3551016878*	2011
Loftus, Shannon	11442	*Cultural Resource Records Search and Site Survey and Historic Architectural Resource-Inventory and Assessment. AT&T Site: EL0463-6. West Olympic Boulevard and South Maple Drive Beverly Hills, Los Angeles County, California 90212 CASPR#3551016879*	2011
Loftus, Shannon	11445	*Cultural Resource Records Search and Site Survey and Historic Architectural Resource-Inventory and Assessment. AT&T Site: EL0463-11. 9001 West Olympic Boulevard Beverly Hills, Los Angeles County, California 90210. CASPR#3551016879*	2011
Loftus, Shannon	12522*	*AT&T Site: LAC047, C047 Beverly Hills Ovrelay-C047, 248 North Robertson Boulevard, Beverly Hills, Los Angeles County, CA*	2012
Loftus, Shannon	12560	*Cultural Resources Records Search and Site Survey AT&T Site EL0462, Wilshire Boulevard, 9301 Wilshire Boulevard Beverly Hills, Los Angeles County, California*	2013
McLean, Deborah K.	04198	*Archaeological Assessment for Pacific Bell Mobile Services Telecommunications Facility La 573-01, Located at 3560 South La Cienega Boulevard, City and County of Los Angeles, California*	1998
Racer, F.H.	11482	*Camp Sites in Harbor District*	1939
Robinson, Mark	10860	*Exposition Corridor Light Rail Transit Project Construction Phase Cultural Resources Monitoring and Treatment Plan*	2007
Robinson, R. W.	00501	*Cultural Resources Investigation Prepared for Engineering Services Corporation*	1977
Rogers, Leslie	11785	*Final Environmental Impact Statement/Final Environmental Impact Report for the Westside Subway Extension*	2012
Sirro, Adam	05357	*Negative Archaeological Survey Report: 07-la-10-15.4/16.25-07-173-023140, Soundwall on Westbound Route 10 From East of Washington Blvd.*	2000
Slawson, Dana	10574	*Bridge Evaluation Report: Exposition Boulevard Right-of-way Regional Bikeway Project, Los Angeles County, California*	1999
Slawson, Dana and John M. Foster	10575	*Historic Property Survey Report - Exposition Boulevard Right of way Regional Bikeway Project, Los Angeles County, California*	1999
Smith, Philomene C.	04881*	*Cold-Planning of 30 Mm of Asphalt Concrete Pavement, Replacing It With Rubberized Asphalt Pavement in #1 Lane on Route 10*	2000
Starzak, Richard, Alma Carlisle, Gail Miller,	10887	*Historic Property Survey Report for the North Outfall Sewer-East Central Interceptor Sewer, City of Los Angeles, County of Los Angeles, California*	2001

Authors	Report No. (LA-)	Title	Year
Catherine Barner, and Jessica Feldman			
Supernowicz, Dana E.	08415	*Cultural Resources Study of the Ionic Building Project, Royal Street Communications Site No. La0378b, 1122 S. La Cienaga Boulevard, Los Angeles, Los Angeles County, California 90035*	2007
Treffers, Steven	12335	*Historic Evaluation for 1514 Bedford Street, City and County of Los Angeles, California*	2013
Unknown	10568	*City of West Hollywood Historic Resources Survey 1986-1987 Final Report*	1987
Unknown	11005*	*Westside Subway Extension Historic Property Survey Report and Cultural Resources Technical Report*	2010
Unknown	11973	*Crenshaw/LAX Transit Corridor Project Final Environmental Impact Report/Final Environmental Impact Statement*	2011
Watson, Tracy	12519	*McDonald's Restaurant No.876 Wireless Antenna Indoor Installation 5930 West Pico Boulevard Los Angeles, Los Angeles County, California*	2012
Wlodarski, Robert J.	02838	*Results of a Phase 1 Archaeological Study for the Proposed East Central Interceptor Sewer Project, East-west Alignment, Los Angeles County, California*	1993

*Indicates study overlaps proposed project

Previously Recorded Cultural Resources

The records search results indicate that 23 cultural resources have been identified within the proposed project records search area (**Table 1**). Three archaeological resources have been previously recorded within a 0.5-mile radius of the proposed project area and four have been previously recorded within the La Brea Subarea. Additionally, a cluster of ten prehistoric village archaeological resources, recorded in the 1950's, is located less than one-mile south and adjacent to the La Brea Subarea. Ten historic architectural resources and one CHL have been recorded within 0.25 miles of the proposed project and five have been previously recorded within the La Brea Subarea. The three archaeological resources previously recorded within 0.5 miles of the proposed project as well as the four previously recorded within the La Brea Subarea are prehistoric camp or village sites. Of the 11 architectural resources previously recorded within 0.25 miles of the proposed project, four are located within 100 feet of the proposed project (P-19-187281, -187282, -187283, and -189803). These resources are described in the following paragraphs. A

TABLE 2
PREVIOUSLY RECORDED CULTURAL RESOURCES

Primary No (P-19-)	Permanent Trinomial (CA-LAN-)	Other Identifier	Description	Date Recorded	Distance from Project/Within La Brea Subarea	NRHP/CRHR Eligibility
170398	-	2345 Orange Drive	Historic architectural resources: residence constructed in 1918	Not stated	Within La Brea Subarea	Not evaluated
170399	-	Cienega Elementary School	Historic architectural resource: elementary school constructed in 1940	Not stated	Within La Brea Subarea	Not evaluated
170400	-	2838 Orange Drive	Historic architectural resources: residence constructed in 1905	Not stated	Within La Brea Subarea	Not evaluated
175248	-	Los Angeles Center for Enriched Studies	Historic architectural district: multiple buildings associated with Los Angeles Center for Enriched Studies constructed in 1939	1995	0.12 miles	NRHP and CRHR eligible
176946	-	Payne Furnace & Supply Co	Historic architectural resource: industrial building constructed in 1925	1986	180 feet	Appears eligible for NRHP

177314	-	Regina Theater	Historic architectural resource: theater constructed in 1938	2010	225 feet	Appears eligible for NRHP
177330	-	CHL No.665	California Historic Landmark: plaque commemorating Portola Camp Site	1979	175 feet	Not eligible
187281	-	Salvage Street Maintenance Bldg	Historic architectural resource: public utility building constructed in 1948	1999	50 feet	Determined NRHP ineligible
187282	-	Service Vehicle & Maintenance Bldg	Historic architectural resource: public utility building constructed in 1948	1999	50 feet	Determined NRHP ineligible
187283	-	-	Historic architectural resource: public utility building constructed in 1924	1999	60 feet	Determined NRHP ineligible
187322	-	The Stadium Theater	Historic architectural resource: theater constructed in 1930	2003	0.25 miles	Appears eligible for NRHP
187459	-	LADWP Western District Headquarters	Historic architectural resource: commercial building constructed in 1947	2003	0.21 miles	Not evaluated
187849		3809 61st Street	Historic architectural resources: residence constructed in 1925	2001	Within La Brea Subarea	Recommended not eligible
189803	-	-	Historic architectural resource: wooden utility pole constructed prior to 1966	2011	30 feet	Determined NRHP ineligible
190145	-	Newton Building	Historic architectural resource: commercial building constructed in 1940	2012	Within La Brea Subarea	Determined NRHP ineligible
190565	-	-	Historic architectural resource: multiple family building constructed in 1930	2013	0.10 miles	Recommended not eligible

Resource Descriptions

P-19-187281 (Salvage Street Maintenance Building)

Resource P-19-187281 is a historic architectural resource consisting of a public utility building constructed in 1948 (SCCIC, 2019a). The resource has been previously evaluated and determined ineligible for listing in the NRHP (Status Code 6Y), but does not appear to have been evaluated for listing in the CRHR. The mapped location of the building is within 50 feet of the proposed transmission main segment on West 3rd Street. A review of Google Earth and confirmed during the survey indicates the building was demolished sometime after 2005 and is no longer present. Therefore, this resource is not considered further in this report.

P-19-187282 (Service Vehicle & Maintenance Building)

Resource P-19-187282 is a historic architectural resource consisting of a public utility building constructed in 1948 (SCCIC, 2019b). The resource has been previously evaluated and determined ineligible for listing in the NRHP (Status Code 6Y), but does not appear to have been evaluated for listing in the CRHR. The mapped location of the building is within 50 feet of the proposed transmission main segment on West 3rd Street. A review of Google Earth and confirmed during the survey indicates the building was demolished sometime after 2005 and is no longer present. Therefore, this resource is not considered further in this report.

P-19-187283 (Public Utility Building)

Resource P-19-187283 is a historic architectural resource consisting of a public utility building constructed in 1924 (SCCIC, 2019c). The resource has been previously evaluated and determined

ineligible for listing in the NRHP (Status Code 6Y), but does not appear to have been evaluated for listing in the CRHR. The mapped location of the building is within 60 feet of the proposed transmission main's northern terminus. A review of Google Earth and confirmed during the survey indicates the building was demolished sometime after 2002 and is no longer present. Therefore, this resource is not considered further in this report.

P-19-189803 (Wooden Utility Pole)

Resource P-19-189803 is a historic architectural resource consisting of a wooden utility pole constructed sometime prior to 1966 (Loftus, 2011), and meeting the age criteria for a historic resource. The resource has been previously evaluated and determined ineligible for listing in the NRHP (Status Code 6Y), but has not been evaluated for inclusion in the CRHR. The resource is located within 30 feet of the proposed transmission main segment on West 3rd Street.

Sacred Lands File Search

The NAHC maintains a confidential Sacred Lands File (SLF) which contains sites of traditional, cultural, or religious value to the Native American community. The NAHC was contacted on April 10, 2019 to request a search of the SLF. The NAHC responded to the request in a letter dated April 25, 2019. The results of the SLF search conducted by the NAHC indicate that Native American cultural resources are not known to be located within the proposed project area (**Appendix B**). The City is conducting consultation with appropriate tribes per the requirements AB 52, and the results of this consultation will be summarized in the IS/MND. During consultation for AB 52, the Tribe expressed concern about the high sensitivity of the project alignment.

Historic Maps and Aerial Photographs

Historic maps and aerial photographs were examined to provide historical information about land uses of the proposed project area and to contribute to an assessment of the proposed project's archaeological sensitivity. Available topographic maps include the 1894 and 1900 Los Angeles 30-minute quadrangles, the 1896, 1898, 1902, and 1921 Santa Monica 30-minute quadrangles, the 1924 and 1926 Hollywood 7.5-minute quadrangles, and the 1950 and 1965 Beverly Hills 7.5-minute quadrangles. Sanborn Fire Insurance maps were available for the years 1927 and 1950. Historic aerial photographs were available for the years 1938, 1947, 1953, 1964, 1972, 1989, 1994, 2002, and 2014 (historicaerials.com, 2019).

The 1894, 1896, 1898, 1900, and 1902 maps show little development within the proposed project aside from north-south and east-west oriented roads that bisect the pipeline alignments at various points. A number of swamplands and two tributary of Ballona Creek are depicted in the immediate vicinity of the proposed project. The 1921, 1924, and 1926 maps show the northern half of the proposed project has been developed and is largely comprised of north-south and east-west oriented streets lined with buildings. The Santa Monica via Beverly Hills/Sawtelle Line of the Pacific Electric railway bisects the pipeline alignment near Burton Way in the northern portion of the proposed project. The southern half remains largely undeveloped. The 1955 and 1965 maps show the entirety of the proposed project is developed with north-south and east-west oriented streets. The Pacific Electric railway is no longer depicted bisecting the proposed project.

The Sanborn Fire Insurance Maps largely indicate what is depicted by the historic aerial: that the proposed project area is largely comprised of north-south and east-west oriented streets lined with residential buildings. The maps indicate that the northern terminus of the pipeline alignment was located in the vicinity of a lumber yard, an ice house, and bakery, and that segments of the Pacific Electric railway bisect the present-day streets in which the pipeline alignments would be installed. A large creamery is depicted east of where the proposed pipeline would cross West 18th Street on La Cienega. A residence is depicted at 1956 Chariton Street, where Well No. 1 would be installed, as early as 1927.

The historic aerial photographs indicate that much of the proposed project was developed with residential streets by 1947. The aerials indicate that the larger buildings adjacent to the proposed project area such as the lumber yard, bakery, ice house, and creamery depicted in the Sanborn maps were demolished at various times and new buildings constructed. The 2002 and 2014 aerial photographs indicate that many of the buildings at the northern terminus of the pipeline alignment were demolished and replaced with the buildings that presently occupy the northern portion of 3rd Street. The 1938 shows the residence at 1956 Chariton Street where Well No. 1 would be installed.

Building Permits

Production Well No. 1 located at 1956 Chariton Street is the only above ground proposed project component that would directly impact a historic architectural resource. Therefore, building permits from the City of Los Angeles's Division of Building and Safety were reviewed to determine the ownership and construction history of the building that could be impacted by well installation (**Table 3**). The first permits on file were the original building permits for the Chariton Street property, which includes both a residence and garage building. These original permits were issued on April 13, 1929 to Timothy R. Kerr. The residence, which was executed in the Spanish Colonial Revival style, was a simple rectangular shape in plan. A permit was also issued at the same time for the construction of a garage, which was square in plan and measured 18 feet by 18 feet. A little more than twenty years after the residence's original construction, a permit was issued on April 5, 1951 for a 12 foot by 17-foot bedroom addition to the rear of the property, flush with the north (side) elevation of the primary residence. A patio roof measuring 14 feet by 14 feet was constructed at the rear of the building and south of the bedroom addition. On September 3, 1982, a permit was issued for another addition measuring 8 feet by 8 feet just south of the location of the previous bedroom addition and where the patio roof was located. This second addition to the building is set back from the south (side) elevation of the primary residence. Other, minor alterations to the residence include the repair of a chimney in 1994 and the re-roofing of the building in 2005.

TABLE 3
CITY OF LOS ANGELES BUILDING PERMITS FOR 1956 CHARITON STREET

Issued	Permit#	Owner	Contractor	Architect	Valuation	Description
4/13/1929	10037	Timothy R. Kerr	Owner	Owner	$2,500	Construction of a new five room residence measuring 34'x28' and 14 feet tall.
4/13/1929	10028	Timothy R. Kerr	Owner	Owner	$743	Construction of a garage measuring 18'x18' and 10' tall.
4/5/1951	1597	Mr. and Mrs. Hatton	Illegible	-	1,400	Addition to the rear (east) elevation of the building measuring 12'x17' consisting of a bedroom
8/27/1951	LA13359	Mr. and Mrs. Hatton	L.O. Bergum	-	$250	Construction of a patio roof measuring 14'x14'
9/3/1982	LA49352	Adams	'	'	$3,200	Addition to bathroom, located at the rear of the property, south of the previous addition, and set back from the south (side) façade. Measures 8'x8'
11/28/1994	LA33826	Alcuen Adams	-	-	$2,000	Repair EQ damaged chimney per LA City
7/22/2005	05016-30000-15029	Robert A. and Laura M. Adams	Estrada J.C. Roofing Inc.	-	$4,500	Re-roof with class "a" materials. 16 squares. Tear off existing roofing. Built up roof/hot mop (max 1 overlay total)

Cultural Resources Survey

Methods

A cultural resources survey of the proposed project area was conducted on April 24, 2019 by ESA staff Sara Dietler, B.A, and Hanna Winzenried, M.Sc. The survey was aimed at identifying

archaeological resources within the proposed project area including the Well Site, and along the Proposed Rehabilitation and Proposed Transmission Main routes. Historic architectural survey focused on the documentation of the building at the Well Site (1956 Chariton Street) and the immediate surroundings. Because the remainder of the project area will include subterranean components, it was not surveyed for historic architectural resources. All resources meeting the OHP's 45-year age threshold were documented on California Department of Parks and Recreation (DPR) 523 forms (**Appendix C**).

Results

The entirety of the proposed pipeline alignment and rehabilitation is within city streets (**Figure 13 through 15**), surrounded by residential and business development. A windshield survey of the alignment was conducted with periodic inspections of visible ground surfaces adjacent to the roads with landscaping and any ground visibility. The Chariton property was subject to a reconnaissance-level survey and the landscaped surfaces were intensively inspected for the presence of archaeological materials. No archaeological resources were identified as a result of the survey.

Beverly Hills MND Groundwater Well and Pipeline Project/190167.00

SOURCE : ESA, 2019

Figure 13

View of northern portion of the proposed transmission main alignment on West 3rd Street (view facing east)

Beverly Hills MND Groundwater Well and Pipeline Project/190167.00

SOURCE : ESA, 2019

Figure 14

View of southern portion of the proposed rehabilitation alignment on La Cienega Boulevard at Pico Boulevard (view facing south)

Beverly Hills MND Groundwater Well and Pipeline Project/190167.00

SOURCE : ESA, 2019

Figure 15

View of southern terminus of the proposed rehabilitation alignment on La Cienega Boulevard at the 10 Freeway overpass (view facing south)

Resource Descriptions

Previously Recorded Resources

P-19-189803 (Wooden Utility Pole)

Resource P-19-189803 is a historic architectural resource consisting of a wooden utility pole constructed sometime prior to 1966. The resource was visited during the survey and was found to match previous descriptions. The resource has been previously evaluated and determined ineligible for listing in the NRHP (NRHP Status Code 6Y), but has not been evaluated for inclusion in the CRHR or local listing. The resource is located within 30 feet of the proposed transmission main segment located on 3rd Street.

Newly Recorded Resources

1956 Chariton Street

Architectural Description

1956 Chariton Street (APN 4302-033-273) is a residential building and is a modest example of the Spanish Colonial Revival style of architecture (**Figure 16**). The garage outbuilding that was originally constructed to the rear of the property is no longer extant. 1956 Chariton Street features a rectangular footprint constructed on a concrete foundation. The building has a flat roof, and it is clad in stucco.

Beverly Hills MND Groundwater Well and Pipeline Project/190167.00

SOURCE : ESA, 2019

Figure 16

View of the Primary (west) elevation of 1956 Chariton (view facing west)

Primary Elevation (west)

The residence's primary (west) elevation faces Chariton Street. The front façade of the residence is C-shaped with two projecting wings, the northernmost one features a parapet roof, and the southernmost one has a street-facing gabled roof. On the parapet wing, there are three rounded decorative windows with security bars (alteration). On the south side of the parapet wing is the entrance porch with stucco arches and a shed roof. The front door is non-original. To the south of the door is a large three-paned fixed wood window. A stucco wall partially encloses a patio between the projecting wings. The projecting wing with the street-facing gabled roof (the south wing) has a vinyl hung window with security bars (alteration) **(Figure 17)**.

Beverly Hills MND Groundwater Well and Pipeline Project/190167.00

SOURCE : ESA, 2019

Figure 17
View of the primary (west) elevation (view facing east)

Side Elevation (south)

The side (south) elevation has four windows, one in the rear entry patio, and three on the side elevation. The window by the rear entrance door is a non-original sliding window (alteration). On the side elevation, the easternmost window is a wood casement window with true-divided lites. West of that is a sliding aluminum window (alteration), and the last window on the south elevation is an aluminum sliding window (alteration) **(Figure 18)**.

Beverly Hills MND Groundwater Well and Pipeline Project/190167.00

SOURCE : ESA, 2019

Figure 18

View of the south (side) elevation of the residence (view facing northwest)

Rear Elevation (east)

The residence's rear (east) elevation has two additions and a non-original patio roof (alterations). There is a large addition on the north half with wood clearstory sliding windows. On the addition's south elevation there is a rear entrance patio with a non-original door. A smaller bathroom addition is built south of the larger addition. To the south of that is a jalousie window (alteration) **(Figure 18)**.

Beverly Hills MND Groundwater Well and Pipeline Project/190167.00

SOURCE : ESA, 2019

Figure 19
Rear (east) elevation of the residence (view facing west)

Side Elevation (north)

The residence's north (side) elevation is largely obscured, due to its close proximity to the neighboring residence. Therefore, observations of the features that define it were made from the interior of the residence, rather than from the exterior. Based upon these observations from the interior, there are two wood casement windows located on the west half of the north elevation, and a vinyl hung window to the west (alteration) **(Figure 20)**.

Beverly Hills MND Groundwater Well and Pipeline Project/190167.00

SOURCE : ESA, 2019

Figure 20
Wood casement windows on the north (side) elevation, as viewed from the interior (view facing north)

Interior

The interior of the structure has been altered. However, the main entrance hall and living room have the curved shape of the ceiling, original wood floors, trim, and fireplace, windows, and archways **(Figure 21)**.

Beverly Hills MND Groundwater Well and Pipeline Project/190167.00

SOURCE : ESA, 2019

Figure 21
Interior view of the living room (view facing west)

Occupancy and Ownership History

City directories and building permits on file with the City's Building Division, as well as the County Assessor, U. S. Census, and other records, were reviewed to determine if the subject property has any significant associations with the productive lives of historic personages. **Table 4** below summarizes the occupancy and ownership history of 19566 Chariton Street.

TABLE 4
OWNER/OCCUPANCY HISTORY FOR 1956 CHARITON STREET

Year	Source	Owner/Occupant
1929	Building Permit	Timothy R. Kerr
1942	Los Angeles Directory Co.	Leslie Mellor
1951	Building Permits	Mr. and Mrs. Hatton

Year	Source	Owner/Occupant
1953-1956	R.L. Polk & Co. Voter Registration Pacific Telephone	Roger L. Holtan Irene Holtan
1980	Pacific Telephone	Sceka Abubakri
1982-1994	Building Permits	Alcuen Adams
1985`	Pacific Bell	Eric S. Bross
2005	Building Permits	Robert A Adams Laura M. Adams
2006	Haines Co., Inc.	Junald Bavani

Significance Findings

Two historic architectural resources have been identified within or immediately adjacent to the proposed project and include an wooden utility pole constructed prior to 1966 (P-19-189803) and the residence located at 1956 Chariton Street. The following paragraphs present the significance findings for both resources.

P-19-189803

Resource P-19-189803 has been determined ineligible for listing in the NRHP (Status Code 6Y), but has not been previously evaluated for inclusion in the CRHR. The NRHP evaluation for the resource did not identify that the resource was associated with a significant event (Criteria A/1), nor does it appear to be associated with a significant person or persons (Criterion B/2) (Loftus,2011). The resource is a typical example of a mid-20th century wooden utility pole does not possess qualities of design or distinctive characteristics of design and the work of a master (Criterion C/3) (Loftus, 2011). Based on this evaluation, ESA recommends that resource P-19-189803 is not eligible for listing in the CRHR and does not qualify as a historical resource. In addition, the resource is not listed for local significance. This resource will not be directly or indirectly impacted by the project and no additional evaluation or recommendations are warranted.

1956 Chariton Street

As previously described, 1956 Chariton Street is a single-family residence, and this building type was evaluated under the historical and architectural themes that follow: the Spanish Colonial Revival Architectural Style (1912-1942), Community and Operative Builders (1888-1940), and Early Single-Family Residential Development (1880-1930).

Criterion 1: Events

The subject property is located in Tract 1250 in the West Adams Community Planning Area, and this tract was a medium-sized subdivision first established in 1911. Significant development in the neighborhood primarily included single-family residential construction. However, there was also with some additional commercial development along South La Cienega Boulevard that was built to serve the neighborhood. This tract is one of many developed throughout West Adams in

the early 20th century. Additionally, the primary residence was constructed in 1929 which was roughly around the time the rest of the tract was developed. West Adams-Baldwin Hills-Leimert Community Plan Area (CPA) is largely comprised of single-family residential neighborhoods such as the neighborhood that 1956 Chariton Street is located within. However, Tract 1250 is not a tract with excellent examples of architectural styles, nor is it a significant example of streetcar-related development. Furthermore, the neighborhood was not developed by any significant individuals such as Elwain Steinkamp or Walter Leimert. 1956 Chariton Street is an example of a relatively early single-family residence, as it was developed in 1929. However, it is not a rare remaining example of the earliest periods of residential development in the area. Therefore, while 1956 Chariton Street is an example of the development patterns of the neighborhood, it does not appear to have made a significant contribution to the settlement patterns of the area as it is not unique or precedent-setting in any way. Additional research on 1956 Chariton Street did not reveal any significant events associated with either the primary residence or the (now-demolished) garage buildings. Moreover, 1956 Chariton Street was not found to be historically significant in SurveyLA's survey of West Adams-Baldwin Hills-Leimert, which was conducted in 2016, and ESA concurs with the survey's findings. As a result, 1956 Chariton Street does not appear to meet the eligibility requirements as either an individual resource or a contributor to a district under CRHR Criterion 1, or Los Angeles Historic-Cultural Monument Criterion 1.

Criterion 2: Significant Persons

The occupancy and ownership history for the subject property was researched by reviewing City of Los Angeles directories, building permits, Los Angeles County Assessor records, and the U. S. Census. Archival research did not reveal any significant persons associated with the property. Therefore, 1956 Chariton Street does not appear to be associated with significant personages or events in order to meet the eligibility requirements as either an individual resource or a contributor to a district under CRHR Criterion 2, or Los Angeles Historic-Cultural Monument Criterion 2.

Criterion 3: Design/Construction

The residence is a modest example of a Spanish Colonial Revival style single-family residence. It has some of the character-defining features such as asymmetrical facades, stucco siding, tile trim, and arched openings. However, it does not have higher design elements such as distinctive capped chimneys, or towers used as vertical accents. Further, the building has been altered with changed window types, including one on the front façade on the south wing, and materials as well as large additions to the rear of the residence and the demolition of the original garage. Further, it was not designed by any architect, let alone a master architect. Therefore, 1956 Chariton Street does not appear to meet the eligibility requirements as either an individual resource or a contributor to a district under CRHR Criterion 3, or Los Angeles Historic-Cultural Monument Criterion 3.

Criterion 4: Data Potential

While most often applied to archaeological districts and sites, Criterion 4 can also apply to buildings, structures, and objects that contain important information. In order for these types of properties to be eligible under Criterion 4, they themselves must be, or must have been, the

principal source of the important information. 1956 Chariton Street does not appear to yield significant information that would expand our current knowledge or theories of design, methods of construction, operation, or other information that is not already known. Therefore, 1956 Chariton Street has not yielded or are not likely to yield information important to prehistory or history and do not appear to satisfy CRHR Criterion 4.

Integrity

The CRHR recognizes a property's integrity through seven aspects or qualities: location, design, setting, materials, workmanship, feeling, and association. Eligible properties should retain several, if not most, of these aspects. Both registers require that a resource retain sufficient integrity to convey its significance, and the property must retain the essential physical features that enable it to convey its historical identity. Integrity is based on significance and understanding why a property is important. *National Register Bulletin 15* states that "only after significance is fully established can you proceed to the issue of integrity" (U.S. Department of the Interior, 2002). Since 1956 Chariton Street was not identified as significant under any of the applicable state criteria, an integrity analysis was not conducted.

Recommendations

As a result of this study, one historic architectural resources, 1956 Chariton Street was identified within the proposed project area. This resource is recommended ineligible for listing in the CRHR, is not listed locally, and does not qualify as historical resources pursuant to CEQA. As such the proposed project would not result in significant impacts to known historical resources.

Prior to project approval, should future wells be added, a review of the record search and other background data on land use shall be reviewed and any areas that were not surveyed as part of this study, should be surveyed by a qualified archaeologist and a qualified architectural historian for the purposes of identifying eligible resources. The survey should identify and evaluate the significance of any potentially eligible resources that may be directly or indirectly impacted by the proposed project, and should be documented in an addendum technical report. Any eligible resources identified in newly surveyed areas should be avoided, where feasible, and appropriate treatment and mitigation procedures implemented where avoidance is not possible.

No archaeological resources were identified within or immediately adjacent to the known proposed project area. The proposed project includes the installation of a new transmission main, the rehabilitation of an existing transmission main, and the installation of Well No. 1. The installation and rehabilitation of the transmission mains would involve cut and cover excavations extending to depths of 5 feet within existing city streets. The installation of Well No. 1 would require the demolition of the residence at 1956 Chariton Street and excavations associated with the demolition would extend to depths of up to 25 feet. These ground disturbing activities have the potential to encounter unknown, sub-surface historic-period and/or prehistoric archaeological resources that could qualify as historical resource or unique archaeological resources pursuant to CEQA. Given that the rehabilitation of the transmission mains will occur within city streets with existing utilities, the likelihood of encountering intact archaeological deposits is moderate to low. However, the installation of new transmission mains may include trenching in undisturbed or

moderately disturbed sediments and so the sensitivity is considered moderate to high. As described above the majority of the project alignment is within historic roads which were built in the 1940's. Historically, road construction did not require substantial excavation and historic and prehistoric sites or resources may be capped and preserved under the roads. A large number of prehistoric sites and villages are known to have been located less than a mile from the southern terminus of the known project alignment and redeposited archaeological material could be encountered during excavation, and intact materials could be encountered in trench sidewalls or if the rehabilitation requires additional excavation. During consultation for AB 52, the Tribe expressed concern about the high sensitivity of the project alignment. The demolition work at 1956 Chariton Street also has a high likelihood of encountering historic-period subsurface archaeological deposits associated with the residence such as privies or refuse deposits.

Given the potential to encounter subsurface archaeological deposits during proposed project implementation, ESA provides the following recommended mitigation measures to reduce potential impacts to archaeological deposits that may qualify as historical resources or unique archaeological resources to less than significant.

Mitigation Measure CUL-1: Retention of Qualified Archaeologist. Prior to the start of any ground disturbing activities, a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Standards for professional archaeology (U.S. Department of the Interior, 2008) shall be retained by the City of Beverly Hills to carry out all mitigation measures related to cultural resources. In addition, the City of Beverly Hills will retain a Native American monitor to work in tandem with the archaeologist in the areas and during activities with potential to encounter prehistoric archaeological resources.

CUL-2: Cultural Resources Sensitivity Training. Prior to start of any ground-disturbing activities, the qualified archaeologist shall conduct cultural resources sensitivity training for all construction personnel associated with the proposed project. Construction personnel shall be informed of the types of cultural resources that may be encountered during construction, and of the proper procedures to be enacted in the event of an inadvertent discovery of archaeological resources or human remains. The City of Beverly Hills shall ensure that construction personnel are made available for and attend the training and retain documentation demonstrating attendance

CUL-3: Construction Monitoring. An archaeological monitor (working under the direct supervision of the qualified archaeologist) shall observe all excavation activities associated with the installation of Well No. 1. For the portion of the alignment requiring installation of the new transmission mains, an archaeological monitor and Native American monitor will conduct full time monitoring of all excavations including trenching and bore pits. For the portion of the alignment which involves the rehabilitation of existing transmission mains, an archaeological monitor and Native American monitor will conduct full time monitoring on all access points along the rehabilitation alignment. Should the soils prove to be too disturbed to contain archaeological resources these spot checks can be reduced or discontinued. Conversely, if the sediments are found to contain archaeological resources, the qualified archaeologist may recommend full time monitoring for such areas along the route.

The qualified archaeologist, in coordination with the City of Beverly Hills, may reduce or discontinue monitoring if it is determined that the possibility of encountering buried archaeological deposits is low based on observations of soil stratigraphy or other factors. Archaeological monitoring shall be conducted by an archaeologist familiar with the types of archaeological resources that could be encountered within the proposed project. The archaeological monitor(s) shall be empowered to halt or redirect ground-disturbing activities away from the vicinity of a discovery until the qualified archaeologist has evaluated the discovery and determined appropriate treatment (as prescribed in Mitigation Measure CUL-4). The archaeological monitor shall keep daily logs detailing the types of activities and soils observed, and any discoveries. After monitoring has been completed, the qualified archaeologist shall prepare a monitoring report that details the results of monitoring. The report shall be submitted to the City of Beverly Hills. The qualified archaeologist shall submit a copy of the final report to the SCCIC.

CUL-4: Unanticipated Discoveries. In the event of an unanticipated discovery of archaeological materials, all work shall immediately cease in the area (within approximately 100 feet) of the discovery until it can be evaluated by the qualified archaeologist. Construction shall not resume until the qualified archaeologist has conferred with the City of Beverly Hills, and the appropriate Native American representatives for prehistoric resources, on the significance of the resource.

If it is determined that the discovered archaeological resource constitutes a historical resource or a unique archaeological resource under CEQA, avoidance and preservation in place is the preferred manner of mitigation. Preservation in place may be accomplished by, but is not limited to, avoidance, incorporating the resource into open space, capping, or deeding the site into a permanent conservation easement. In the event that preservation in place is demonstrated to be infeasible and data recovery through excavation is the only feasible mitigation available, an Archaeological Resources Treatment Plan shall be prepared and implemented by the qualified archaeologist in consultation with the City of Beverly Hills that provides for the adequate recovery of the scientifically consequential information contained in the archaeological resource and makes recommendations for curation or donation to appropriate curation facilities. The qualified archaeologist and the City of Beverly Hills shall consult with appropriate Native American representatives in determining treatment for prehistoric or Native American resources to ensure cultural values ascribed to the resource, beyond those that are scientifically important, are considered.

CUL-5: Unanticipated Discovery of Human Remains and Associated Funerary Objects. In the event human remains and/or associated funerary objects are encountered during construction of the proposed project, all activity in the vicinity of the find shall cease (within 100 feet). Human remains discoveries shall be treated in accordance with and California Health and Safety Code Section 7050.5 and Public Resources Code Section 5097.98, requiring assessment of the discovery by the County Coroner, assignment of a Most Likely Descendant by the NAHC, and consultation between the Most Likely Descendant and the landowner regarding treatment of the discovery. Until the landowner has conferred with the Most Likely Descendant, the City of Beverly Hills shall ensure that the

immediate vicinity where the discovery occurred is not disturbed by further activity and that further activities take into account the possibility of multiple burials.

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APPENDIX A
Personnel

Monica Strauss, RPA

Director, Southern California Cultural Resources Group

EDUCATION

MA, Archaeology, California State University, Northridge

BA, Anthropology, California State University, Northridge

AA, Humanities, Los Angeles Pierce College

22 YEARS OF EXPERIENCE

SPECIALIZED EXPERIENCE

Treatment of Historic and Prehistoric Human Remains

Archaeological Monitoring

Complex Shell Midden Sites

Groundstone Analysis

PROFESSIONAL AFFILIATIONS

Register of Professional Archaeologists (RPA), #12805

Society for California Archaeology (SCA)

Society for American Archaeology (SAA)

QUALIFICATIONS

Exceeds Secretary of Interior Standards

CA State BLM Permitted

Monica provides senior oversight to a multi-disciplinary team of cultural resources specialists throughout Southern California, including archaeologists, architectural historians, historians, and paleontologists. During her 22 years of practice, Monica has successfully directed hundreds of cultural resources projects meeting local, state, and/or federal regulatory requirements. Monica's strength lies in assisting clients in navigating complex cultural resources issues in the contexts of the California Environmental Quality Act (CEQA), the National Environmental Policy Act (NEPA), and Section 106 of the National Historic Preservation Act (NHPA). Monica's experience ranges from large infrastructure projects that are controversial and multi-jurisdictional to smaller development projects that are important to local agencies and stakeholders. She has excellent experience working with agencies to develop creative mitigation to address challenging cultural resources impacts. She directs a staff who conduct Phase 1 archaeological/ paleontological and historic architectural surveys, construction monitoring, Native American outreach, archaeological testing and treatment, historic resource significance evaluations, and large-scale data recovery programs. Monica is expert in the area of Assembly Bill 52 and routinely provides training to her clients as well as being a workshop content author and session presenter for the Association of Environmental Professionals on the topic.

Relevant Experience

County of Los Angeles, Department of Public Works, Arroyo Seco Bike Path Phase I Cultural Resources Evaluation, Los Angeles, CA. *Project Director.* Working for the County of Los Angeles, Department of Public Works in connection with a project to make improvements to the Arroyo Seco Channel, Monica managed all aspects of Section 106 review in accordance with Caltrans Cultural Resources Environmental guidelines. Monica and her team evaluated the Arroyo Seco Channel, identified character-defining features, informed the design of channel improvements to retain such features, and addressed the channels' potential for eligibility as part of a larger Los Angeles Country water management district. She developed the research strategy, directed the field teams, and prepared cultural resources assessment documentation for approval by Caltrans and FHWA, as well as the cultural resources section for a Mitigated Negative Declaration.

Los Angeles Department of Water and Power (LADWP) Foothill Trunk Line Project. City of Los Angeles, CA. *Cultural Resources Senior Reviewer.* ESA archaeologists have prepared a Phase I cultural resources study and EIR cultural resources section for the Los Angeles Department of Water and Power (LADWP) Trunk Line Project, located in the City of Los Angeles, CA. The proposed project includes the replacement of 16,600 feet of existing 24-inch-, 26-inch-, and 36-inch-

diameter welded steel pipe and 30-inch-diameter riveted steel pipe with a 54-inch-diameter welded steel pipe along Foothill Boulevard within the districts of Pacoima and Sylmar. Monica served as the Senior Reviewer for the Phase I cultural resources study and EIR section.

Los Angeles Department of Water and Power, Scattergood Olympic Transmission Line Monitoring, Los Angeles County, CA. *Cultural Resources Principal Investigator.* The Los Angeles Department of Water and Power (LADWP) is proposing to construct and operate approximately 11.4 miles of new 230 kilovolt (kv) underground transmission line that would connect the Scattergood Generation Station and Olympic Receiving Station. The project includes monitoring of potential vault location testing. Monica currently coordinates and provides daily oversight to archaeological, Native American, and paleontological monitors. An Archaeological Resources Monitoring Report and a Paleontological Resources Monitoring Report documenting the monitoring findings will be submitted, together with daily monitoring logs, at the close of the project.

Los Angeles County Waterworks District 40 (LACWWD40) Regional Recycled Water Project, Phase 2, Palmdale, CA. *Cultural Resources Project Director.* ESA was retained by LACWWD40 in 2009 to prepare an Initial Study/Environmental Assessment and cultural resources technical study for Phase 2 of the Regional Recycled Water Project. In 2010 and 2011, Monica directed a team of ESA archaeologists who performed a pedestrian survey of the 5.25 linear mile project area and documented archaeological sites encountered. Nine cultural resources were documented during the survey; however, because the project APE was narrowed after the survey, only four are located within the current project area.

Sweetwater Reservoir, Water Main Replacement, San Diego County, CA. *Cultural Resources Principal Investigator.* ESA was retained by Sweetwater Authority to prepare an IS/MND for the replacement of a 36-inch pipeline leading from Sweetwater Dam. Sweetwater Dam was originally constructed in the late 19th century and was subject to upgrades in 1917. ESA conducted a Phase 1 Cultural Resources Assessment including archival research, pedestrian, survey, historical research, Native American outreach, and the preparation of a technical report documenting archaeological and historic-architectural resources that might be impacted by the project. The study concluded that features that would be altered by the project that were contributing elements to the historic dam would need to be replaced in kind. Monica directed the team of researchers which conducted this work, assisted in evaluating project impacts to the dam, and facilitated in the development of appropriate mitigation.

City of Los Angeles, Department of Water and Power, First Street Trunk Line Monitoring and Assessment, Los Angeles, CA. *Project Director.* As a consultant to the City of Los Angeles Department of Water and Power, Monica directed paleontological and archaeological monitoring of utilities installations on a continuous basis for over one year. She responded to monitoring discoveries including historic-period utility pipes and determined the appropriate mitigation in the form of recordation.

Dr. Jerabek, PhD

Historic Resources Director

EDUCATION

PhD, Art History, University of California, Los Angeles

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

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

B.A., Art History, Oberlin College

30 YEARS EXPERIENCE

AWARDS

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

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

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

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

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

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

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

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

PROFESSIONAL AFFILIATIONS

California Preservation Foundation

Santa Monica Conservancy

Society of Architectural Historians, Life Member

American Institute of Architects (AIA), National Allied Member

Neutra Institute, Fellow

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

Mills Act Tax Credit Application, 1210 Coldwater Canyon, Beverly Hills, CA. *Project Manager and Principle Investigator.* ESA prepared a landmark nomination and Mills Act Tax Credit Application for the Rosenstiel Residence, a Mid-Century Modern style single-family residence designed by the architectural firm of Gruen + Krummeck in 1950. As an exceptional example of Mid-century Modern style residential architecture designed by master architect Victer Gruen, the Rosenstiel Residence was designated City of Beverly Hills. Following the designation of the Rosenstiel Residence, ESA provided preservation consultation to usher the client through the Mills Act process. Working with the client's architect and contractor, ESA provided guidance and consultation regarding the required Rehabilitation/ Restoration Maintenance Plan's compliance with the Secretary of Interior's Standards for Rehabilitation. ESA worked with the city of Beverly Hills' Community Development Department to ensure all Mills Act materials were filled out appropriately and attend the final site walk and Cultural Heritage Commission hearing where the Rosenstiel Residence was successfully awarded a Mills Act contract in July of 2017.

1228 N. Flores Historic Resources Assessment and Mills Act Tax Credit Application, West Hollywood, CA. *Project Director and Principal Investigator.* ESA conducted a historic resources assessment of a single-family residence located at 1228 North Flores Street in the city of West Hollywood for compliance with CEQA. The proposed project intended to demolish one existing single-family residence for redevelopment of the property site. The property was determined eligible as a contributor to a potential thematic grouping of historic Craftsman residences in the City of West Hollywood. After the property was designated, ESA subsequently prepared a restoration plan and Mills Act application for the property.

603 Doheny Road Landmark Nomination and Mills Act Tax Credit Application, Beverly Hills, CA. *Project Manager and Author.* ESA prepared a Landmark Nomination and Mills Act Tax Credit Application for The William E. Palmer and Liliore Green Palmer Residential Estate, 603 Doheny Road in Beverly Hills, California. Built in 1940, the Regency style estate is the most architecturally significant residence of master builder James F. Dickason in Beverly Hills. Dickason incorporated a pre-existing Canary Pine Forest and natural spring into the project. The property is identified with an important event in local history, creation of the urgency ordinance prohibiting the removal of trees after Merv Griffin sought a permit to remove Canary Pine trees and subdivide the estate. The property embodies the distinctive characteristics and ideals of Regency and Rustic architecture and possesses high artistic values as an example of an interwar-period estate that sought to harmonize with the natural setting. The ESA Mills Act application included maintenance, repair and restoration projects for the residence, pool house, Rustic-style cabin, spring house and Canary Pine

Sara Dietler

Archaeologist

EDUCATION

BA. Anthropology, San Diego State University

20 YEARS OF EXPERIENCE

CERTIFICATIONS/ REGISTRATION

California BLM Permit, Principal Investigator, Statewide

Nevada BLM Permit, Paleontology, Field Agent, Statewide

PROFESSIONAL AFFILIATIONS

Society for American Archaeology (SAA)

Society for California Archaeology (SCA)

Sara is a senior archaeology and paleontology lead with 20 years of experience in cultural resources management in Southern California. As a senior project manager, she manages technical studies including archaeological and paleontological assessments and surveys, as well as monitoring and fossil salvage for many clients, including public agencies and private developers. She is a cross-trained paleontological monitor and supervisor, familiar with regulations and guidelines implementing the National Historic Preservation Act (NHPA), National Environmental Policy Act (NEPA), California Environmental Quality Act (CEQA), and the Society of Vertebrate Paleontology guidelines. She has extensive experience providing oversight for long-term monitoring projects throughout the Los Angeles Basin for archaeological, Native American, and paleontological monitoring compliance projects and provides streamlined management for these disciplines.

Relevant Experience

Venice Dual Force Main Project, Venice, CA. *Cultural Resources Lead.* The Venice Dual Force Main Project is an $88 million sewer force main construction project spanning 2 miles within Venice, Marina del Rey, and Playa del Rey. Contracted to Vadnais Trenchless Services and reporting to the City of Los Angeles, Bureau of Engineering, Environmental Management Group, ESA is serving as the project's environmental resource manager. Sara provides quality control oversight for the archaeological and paleontological mitigation.

Advanced Water Treatment Facility Project Groundwater Reliability Improvement Project, Pico Rivera, CA. *Project Manager.* ESA is providing environmental compliance monitoring for the Water Replenishment District to ensure compliance with the conditions contained in the Mitigation and Monitoring Reporting Programs associated with three environmental documents, including the Final EIR, a Mitigated Negative Declaration, and a Supplemental EIR, pertaining to three infrastructure components associated with the project. ESA provides general compliance monitoring at varying rates of frequency depending on the nature of the activities and is sometimes on-site for 4-hour spot checks and other times for full 24-hour rotations. The project is located near a residential neighborhood and adjacent the San Gabriel River. Issues of concern include noise, vibration, night lighting, biological resources, cultural resources, and air quality. Sara provides quality assurance and oversight of the field monitoring, and day-to-day response to issues. She oversees archaeological and Native American monitoring for ground disturbance and coordinates all sub-consultants for the project. She provides daily, weekly, and quarterly reporting on project compliance to support permitting and agency oversight.

Scattergood Olympic Transmission Line, Los Angeles, CA. *Report Author*. The Los Angeles Department of Water and Power is proposing to construct and operate approximately 11.4 miles of new 230 kilovolt (kv) underground transmission line that would connect the Scattergood Generation Station and Olympic Receiving Station. The project includes monitoring of construction activities occurring in street rights-of-way. Sara is providing final reporting for the long-term monitoring and QA/QC of the field data.

Hansen Dam Golf Course Water Recycling Project, Los Angeles, CA. *Senior Archaeologist* and *Project Manager.* Sara directed a phase I historical assessment for the Hansen Dam Golf Course Water Recycling Project located in the San Fernando Valley, City of Los Angeles, California. The project included the construction of an outdoor pumping station adjacent to the existing Hansen Tank located at the Los Angeles Department of Water and Power's (LADWP's) Valley Generating Station. In addition, a pipeline or distribution line was planned to be installed from the pumping station to the Hansen Dam Golf Course along the Tujunga Wash. The phase I study of this project included mitigation for the effects of the project on the portion of the golf course falling within the area of potential effects, which was potentially sensitive for buried cultural resources as the result of a complex of World War II housing units placed on the site between the 1940s and the 1960s. Sara conducted consultation with the USACE regarding the project.

Gabrielle Harlan, Ph.D.

Architectural Historian

EDUCATION

Doctor of Philosophy, History of Art and Architecture, University of Virginia

Master of Architectural History, University of Virginia

Certificate in Historic Preservation, University of Virginia

Bachelor of Architecture, University of Arizona

20 YEARS OF EXPERIENCE

AWARDS

Andrew Mellon Foundation Fellowship Recipient, Huntington Library, San Marino, California, 2010

Helen Bing Fellowship Recipient, Huntington Library, San Marino, California, 2010

Du Pont Fellowship Recipient, University of Virginia, Charlottesville, Virginia, 2005

William Rucker Art and Architecture Fellowship Recipient and Du Pont Fellowship Recipient, University of Virginia, Charlottesville, Virginia, 2004

Dean's Forum Fellowship Recipient, University of Virginia, Charlottesville, Virginia, 2003

Arizona Women in Construction Scholarship Recipient, University of Arizona, Tucson, Arizona, 1994

Gabrielle is a senior architectural historian with more than 20 years of academic and professional experience preparing documentation to address the restoration, rehabilitation, and adaptive reuse of historic properties—including historic structures reports, preservation and interpretation plans, and National Register of Historic Places nominations. Gabrielle also has experience contributing to California Environmental Quality Act (CEQA)-level documents. She has worked primarily in California for the last ten years, and she continues to expand upon her knowledge of Southern California history by conducting primary source research and developing historic contexts.

Relevant Experience

Hollywood Burbank Airport Replacement Terminal EIS, Los Angeles County, CA. *Architectural Historian*. The Burbank-Glendale-Pasadena Airport Authority (Authority) is proposing to replace the existing passenger terminal to enhance airport safety and meet ADA standards, to consolidate passenger and baggage screening functions, and to provide a new, modern, energy-efficient passenger terminal. The project would replace the existing 14-gate, 232,000-square-foot passenger terminal with a 14-gate passenger terminal that meets current California seismic design and FAA airport design standards. The replacement passenger terminal would be developed in accordance with modern design standards to provide enhanced passenger amenities; security screening facilities that meet the latest TSA requirements; and other airport facilities (including holdrooms, baggage claim areas, and public areas) that are designed and sized for the kinds of aircraft the airlines routinely operate. Gabrielle is the architectural historian for the project, and is providing peer review of historic resources reports to ensure they meet Section 106 requirements. She will also co-author the cultural resources section of the EIS, and analyze effects to historic architectural resources.

Pasadena Rose Bowl Lighting Replacement Project, Pasadena, CA. *Architectural Historian*. The Rose Bowl Operating Company, the concessioner of a City of Pasadena-owned property, is proposing to replace the exterior pole-mounted lighting at the site, which is a National Historic Landmark listed on the National Register of Historic Places. The proposed project would modernize and improve the existing lighting at the Rose Bowl Stadium by replacing existing tower light fixtures with new modern fixtures. The overall purpose is to enhance the quality of lighting for events consistent with other stadiums, to improve the viewing experience, and to increase efficiency. In order to facilitate a successful project that would maintain the integrity of the historical resource, ESA prepared a technical memorandum analyzing the project for its conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties. The technical memorandum provided documentation in support of an application for

a categorical exemption under the California Environmental Quality Act (CEQA). Gabrielle conducted a site survey and prepared the technical memorandum.

Long Beach Landmark List Analysis, Long Beach, CA. *Architectural Historian.* The City of Long Beach requested that ESA work with its list of locally-designated properties in order to ascertain which properties might be good candidates for both listing on the National Register of Historic Places and potential rehabilitation tax-credits. This effort encompasses an initial research effort to identify which local landmarks are already listed or determined eligible to the National Register of Historic Places, which ones are listed on the California Register, and which properties have previously been surveyed and assigned historical resource status codes that indicate that they are good candidates for listing. Subsequent to this initial effort, further research is being undertaken to identify the historic contexts and criteria under which potential candidates are likely eligible for listing. The intent of this research and inventory effort is so that the City of Long Beach has the necessary information at its disposal to better encourage the full utilization of the federal government's historic tax-credit incentives program for historic preservation projects within the community. Gabrielle developed the research approach and is supervising others in the completion of the research efforts.

Historical Resource Assessment for Mariners' Medical Arts Building, Newport Beach, CA. *Architectural Historian.* This project for the City of Newport Beach established the historic significance of a medical office building complex designed by architect Richard Neutra in the early 1960s. Gabrielle was responsible for writing the historic context and a majority of the historic research effort, as well as for directing and supervising junior staff in archival research tasks and the production of the final document.

Victor Clothing Company Building, Los Angeles, CA. *Architectural Historian*. The project was to assist the owner of an early twentieth-century commercial mid-rise building located in downtown Los Angeles in developing a successful approach for historic restoration of the facade and interior commercial space and elevator lobby in order to comply with the terms of a federal tax-credit. Gabrielle's responsibilities as project manager were to gather and analyze research, to coordinate the work of sub-consultants, to consult with the California Office of Historic Preservation and to prepare the required documentation for the tax-credit application.

Hollywood Historic Resources Survey for the Los Angeles Community Redevelopment Agency, Los Angeles, CA. *Architectural Historian*. This project was to survey potential historic resources in Hollywood and to prepare multiple historic context statements for the various property types. These ranged from large industrial film and music studios to religious facilities and civic institutions to small-scale domestic architecture. Gabrielle's primary responsibility on the project was to research and write the majority of the historic context statements, and to oversee the preparation of historic context statements by other staff. She also participated as a member of the survey team and trained junior staff on inventory methods.

Michael Vader

Senior Associate

EDUCATION

BA, Physical Anthropology, University of California, Santa Barbara

M.A., Applied Archaeology (In Progress), California State University San Bernardino

13 YEARS OF EXPERIENCE

PROFESSIONAL AFFILIATIONS

Society for California Archaeology (SCA)

Society for American Archaeology (SAA)

Pacific Coast Archaeological Society (PCAS)

SPECIALIZED EXPERIENCE

Analysis of faunal remains including fish and shellfish species

Archaeological Monitoring

Paleontological Monitoring

Environmental Compliance Monitoring

Human osteology and bioarchaeology

Michael is cultural resources specialist with experience working on survey, data recovery, and monitoring projects. Michael has experience with project management, has led crews on multiple surveys and excavations, and is familiar with environmental compliance documents. He has worked on a variety of energy and water infrastructure projects throughout California, including projects in Riverside, San Diego, Imperial, San Bernardino, Los Angeles, Orange, Santa Barbara, San Luis Obispo, Kern, Fresno, Madera, and Inyo Counties, as well as in Clark County Nevada. Michael regularly works as part of a team, coordinating with field staff and agency leads.

Relevant Experience

Ventura Water Supply Projects, Ventura County, CA. *Project Manager.* The City of San Buenaventura (City) Water and Wastewater Department (Ventura Water) retained Environmental Science Associates to conduct a cultural resources assessment for the proposed Ventura Water Supply Projects in support of an Environmental Impact Report. The City is proposing to develop reliable potable water supplies for the population of the Ventura Water service area while at the same time complying with the Consent Decree among the City, Wishtoyo Foundation/Ventura Coastkeeper, and Heal the Bay. Michael managed cultural resources staff, led the survey, and authored the cultural resources assessment report.

San Jacinto Valley Raw Water Facilities Project - Cultural Resources Assessment, Riverside County, CA. *Archaeologist.* The Eastern Municipal Water District (EMWD) retained Environmental Science Associates to conduct a cultural resources assessment for the San Jacinto Valley Raw Water Conveyance Facilities Project in support of an Initial Study/Mitigated Negative Declaration . The Project would provide a water conveyance system to work in conjunction with EMWD's existing facilities, providing additional groundwater recharge and banking capacity. Michael conducted the cultural resources survey and co-authored the cultural resources assessment report.

Sterling Natural Resource Center Project, Highland, CA. *Archaeologist*. The San Bernardino Valley Municipal Water District retained ESA to prepare a Phase I Cultural Resources Study in support of an Environmental Impact Report for the proposed Sterling Natural Resource Center Project. The project includes the construction a new treatment facility in the City of Highland to treat locally generated wastewater for beneficial reuse in the upper Santa Ana River watershed. Michael led the Phase I survey of the project area and assisted in the preparation of the cultural resources study.

City of Escondido MFRO Facility for Agriculture Project, Escondido, CA. *Archaeologist.* The City of Escondido retained ESA to prepare an ISMND for the

proposed Micro Filtration Reverse Osmosis Facility (MFRO Facility) for Agriculture Project .The Project includes the construction of an MFRO Facility, to provide advanced treatment for Title 22 quality reuse water. In support of the ISMND, ESA conducted a Phase I cultural resources study that complied with CEQA-Plus guidelines. Michael conducted the Phase I survey of the project area, and prepared the Phase I cultural resources study and IS/MND.

Richard A. Reynolds Desalination Plant Phase 2 Expansion - Cultural Resources, San Diego, CA. *Archaeologist.* ESA was contracted by the Sweetwater Authority to perform a cultural resources study for the Phase 2 Expansion at the Richard A. Reynolds Desalination Plant. The expansion would increase the desalinated potable water production at the desalination plant from its current 5 million gallons per day (mgd) capacity to 10 mgd. The project requires funding from the United States Bureau of Reclamation (BOR), making it subject to Section 106 of the National Historic Preservation Act. Michael conducted the cultural resources survey, coordinated with the BOR archaeologist, and prepared the cultural resources study for the expansion.

City of Los Angeles Department of Water and Power, City Trunk Line Unit 3 Project, Los Angeles, CA. *Archaeologist.* ESA has conducted a Phase 1 cultural resources assessment for the Los Angeles Department of Water and Power (LADWP), City Trunk Line Unit 3 Project. LADWP plans replacing a portion of the City Trunk Line on Coldwater Canyon Avenue between Vanowen Street and Magnolia Boulevard, within the City of Los Angeles. The proposed Project would involve the installation of approximately 10,250 linear feet of 60-inch diameter water pipeline constructed of welded steel. Michael led the Phase 1 cultural resources survey of the Project area and prepared the technical report and the cultural resources ISMND section.

City of Los Angeles Department of Water and Power, Foothill Trunk Line Project, Los Angeles, CA. *Archaeologist.* ESA was retained by the Los Angeles Department of Water and Power (LADWP) to conduct a Phase 1cultural resources study for the Foothill Trunk Line Project. LADWP proposes to replace 16,600 feet of existing 24-inch, 26-inch, and 36-inch diameter welded steel pipe and 30-inch diameter riveted steel pipe with a 54-inch diameter welded steel pipe along Foothill Boulevard within the districts of Pacoima and Sylmar, in the City of Los Angeles. Michael prepared the Phase 1 technical report for the Project.

EDUCATION

MSc Historic Conservation, Oxford Brookes University

BA, European Studies, Brigham Young University

3 YEARS OF EXPERIENCE

PROFESSIONAL AFFILIATIONS

The Society for the Protection of Ancient Buildings

Historic England

National Trust for Places of Historic Interest or Natural Beauty

Hanna Winzenried

Architectural Historian

Hanna is an architectural historian with 3 years of academic and professional experience performing building conservation, historic research, and field surveys and conducting plan reviews for conformance with local regulations and ordinances. Prior to joining ESA, she has 1.5 years of experience with the City of Los Angeles, Department of Planning, in the Office of Historic Resources Historic Preservation Overlay Zones (HPOZ) Unit. Her experience and education both in California and abroad have given her a wide set of interdisciplinary skills, including strong technical and research skills.

Relevant Experience

9120 W. Olympic Boulevard Preliminary Assessment and Character Defining Features Analysis for the Harkham Hillel Hebrew Academy, Beverly Hills, CA. *Contributor.* ESA prepared a Phase I Historic Resources Assessment for the modernist educational building at 9120 W. Olympic Boulevard. The purpose of the report is to identify and evaluate potential historic resources. The subject property was built in 1963 as the largest Jewish day school. It was built in the Modernist architectural style by the renowned architect Sydney Eisenshtate. The Academy enrollment has outgrown the existing space, and the school is looking for a way to expand its square footage. Hanna performed research and prepared of the reports.

Universal Hilton Environmental Impacts Report and Historic Resources Technical Report for 555 W Universal Terrace Parkway, Los Angeles, CA. *Contributor.* ESA prepared an Environmental Impacts Report including a Historic Resources Technical Report. The Universal Hilton Hotel was designed by master architect, William L. Pereira in 1983 in the postmodern style. The hotel was designed to accommodate visitors to the Universal Theme Parks. The hotel management wants to expand the number of rooms by building a large addition. Hanna performed research and assisted in the preparation of the report.

361 Myrtle Street Peer Review Letter for the residence at 361 Myrtle Street, Glendale, CA. *Contributor.* ESA prepared a peer review letter to conduct a peer review of previous historic resource evaluations and analyze potential cumulative impacts of the demolition for the property at 361 Myrtle Street. Previous evaluations and the impact of demolishing the residence were reviewed and analyzed. Hanna performed research and assisted with the preparation of the report.

Nestor Way Affordable Housing Project Historical Resources Technical Report, San Diego, CA. *Contributor.* ESA prepared a Historical Resources Technical Report for 1120 and 1130 Nestor Way on behalf of the Federal Housing Administration. The site is improved with a Methodist church built in 1896 in the Gothic Revival architectural style and multiple ancillary buildings. The City of San

Diego is planning on constructing permanent supportive housing containing 100 units, consisting of multi-family affordable housing for formerly homeless seniors 55 years of age and older. Hanna performed research and assisted with the preparation of the reports.

Nelles School Site Redevelopment, Whittier, CA. *Contributor.* ESA oversaw the documentation and architectural salvage of the Fred C. Nelles School. Brookfield Residential plans on redeveloping the whole site into a residential neighborhood while maintaining four historically significant structures. Hanna helped draft a documentation and architectural features salvage plan according to the character defining features list and oversaw the deconstruction of the other school buildings to ensure the architectural features were salvaged correctly.

Riverside Cement Company, Crestmore Plant HAER, Jurupa Valley, CA. *Contributor.* ESA prepared two Historic American Engineering Records for the Crestmore Plant for the White Cement Mill and for the Stock House. The Riverside Cement Company, Crestmore Plant was a former cement plant that was initially constructed in 1909, although went through multiple periods of alteration. Developers proposed an industrial and open space development at the facility. Hanna helped drafts HAERs which had to be made as a mitigating measure for deconstruction of the historically eligible buildings, the White Cement Mill and the Stock House.

APPENDIX B

Sacred Lands File Search

ESA

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

www.esassoc.com

April 10, 2019

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

Subject: **Sacred Lands File Search Request for the Proposed La Brea Groundwater Project, City of Beverly Hills, California (D190167.00)**

To whom it may concern:

Environmental Science Associates (ESA) is conducting a cultural resources assessment for the La Brea Groundwater Project (Project) located in the City of Beverly Hills (City). The City is proposing to construct approximately 11,900 linear feet (LF) of new 16-inch raw water transmission main pipeline, rehabilitate approximately 8,200 LF of an existing, abandoned, 18-inch pipeline, and construct up to three new groundwater extraction wells. The new pipeline would connect the extraction wells to the existing Foothill Water Treatment Plant.

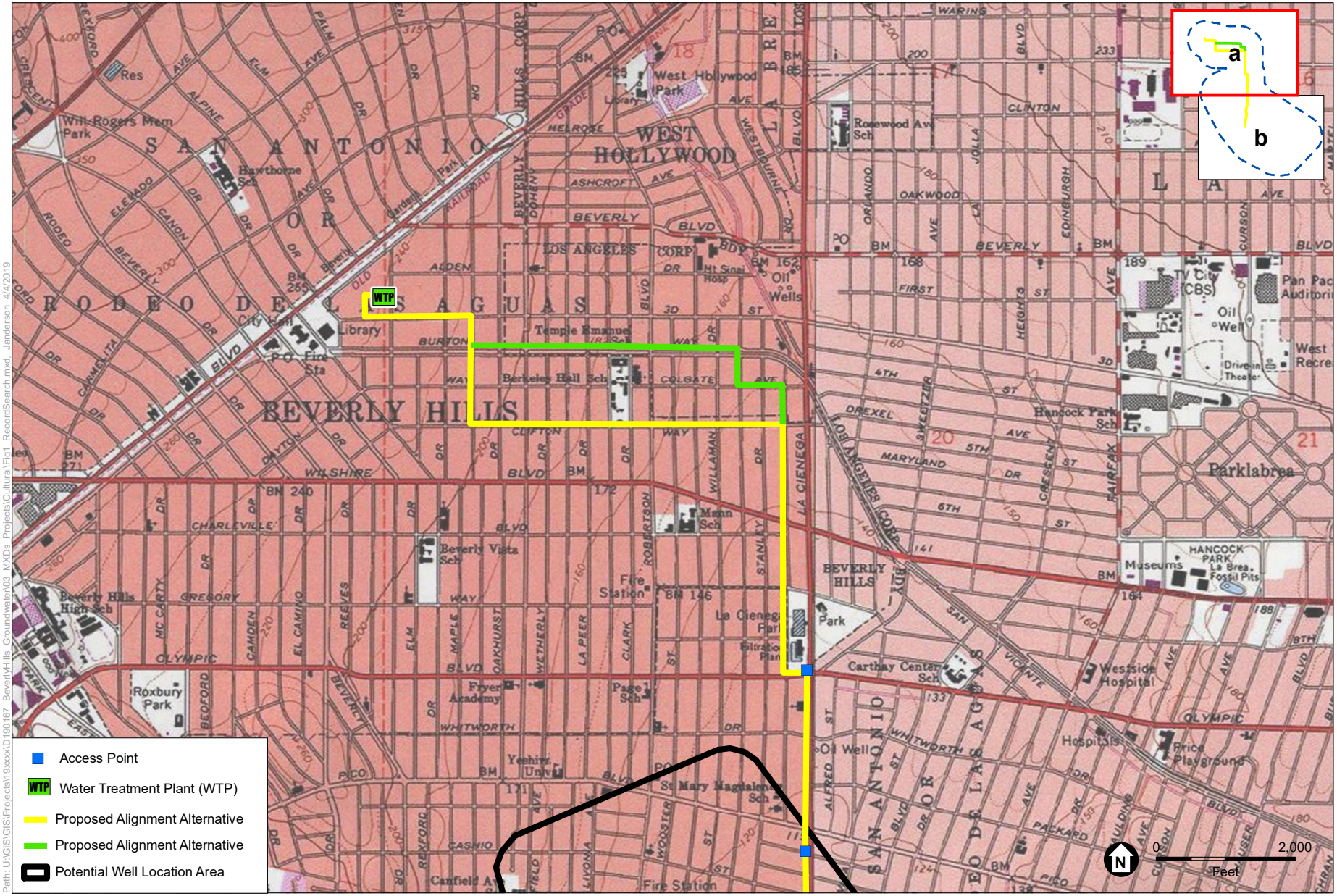
The Project is located within an unsectioned portions of Township 1 South, Range 14 and 15 West on the Beverly Hills and Hollywood, CA U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles (**Figures 1a and 1b**).

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

Thank you for your time and assistance regarding this matter. To expedite the delivery of search results, please e-mail them to fclark@esassoc.com. Please contact me at 949.753.7001 or via e-mail me if you have any questions.

Sincerely,

Fatima Clark
Archaeologist



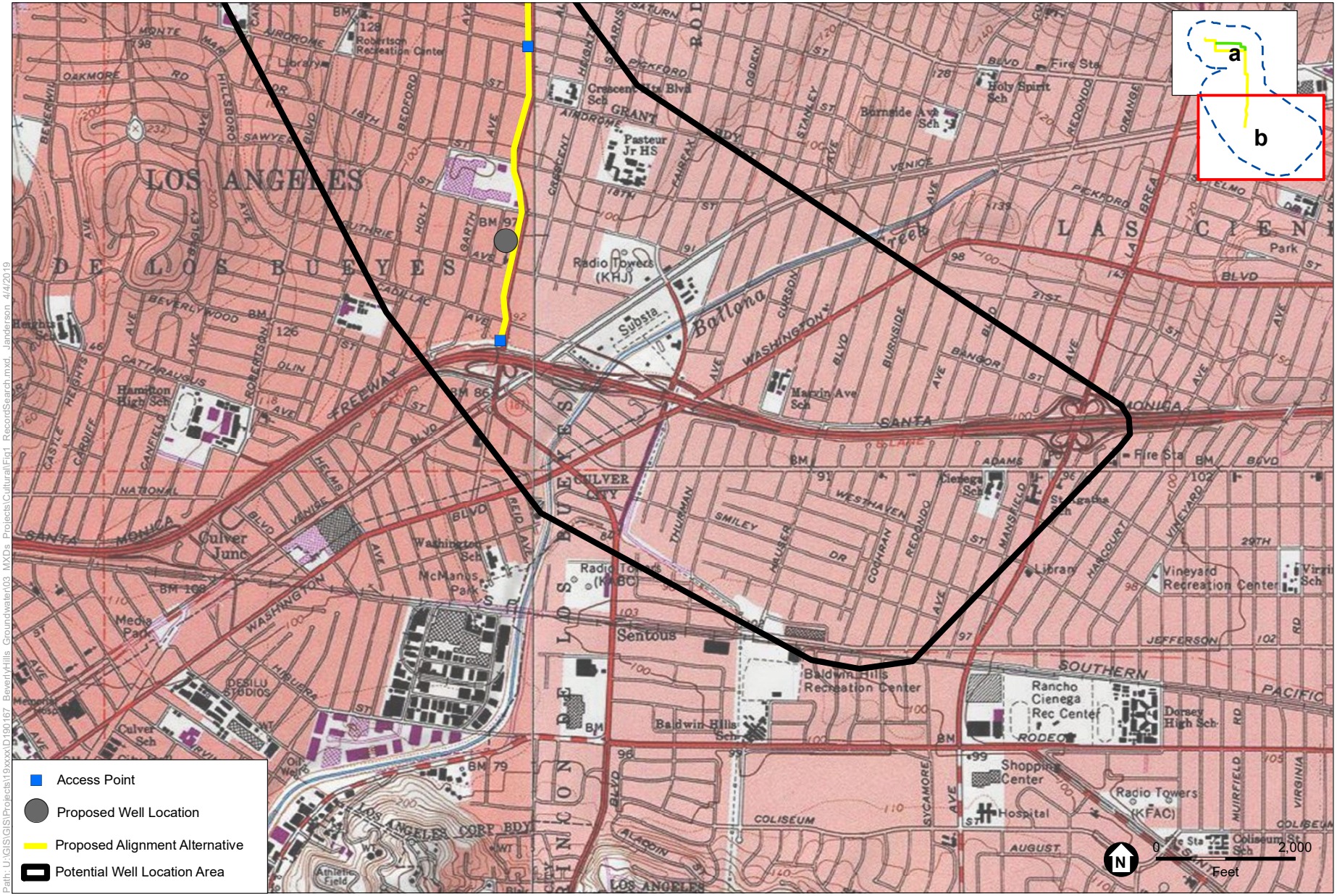
SOURCE: ESRI; City of Beverly Hills; Beverly Hills and Hollywood Topoquads

Beverly Hills Groundwater Wells and Pipeline Project

Figure 1a

Record Search

ESA



SOURCE: ESRI; City of Beverly Hills; Beverly Hills and Hollywood Topoquads

Beverly Hills Groundwater Wells and Pipeline Project

Figure 1b

Record Search

ESA

STATE OF CALIFORNIA **Gavin Newsom, Governor**

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov
Twitter: @CA_NAHC

April 25, 2019

Fatima Clark
ESA

VIA Email to: fclark@esassoc.com

RE: La Brea Groundwater Project, Los Angeles County.

Dear Ms. Clark:

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 negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. 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: katy.sanchez@nahc.ca.gov.

Sincerely,

Katy Sanchez

KATY SANCHEZ
Associate Environmental Planner

Attachment

Native American Heritage Commission
Native American Contacts List
4/24/2019

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chairperson
P.O. Box 393 Gabrielino
Covina ,CA 91723
admin@gabrielenoindians.org
(626) 926-4131

Gabrielino-Tongva Tribe
Charles Alvarez, Councilmember
23454 Vanowen St. Gabrielino
West Hills ,CA 91307
roadkingcharles@aol.com
(310) 403-6048

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

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

Gabrielino Tongva Indians of California Tribal Council
Robert F. Dorame, Chairman
P.O. Box 490 Gabrielino Tongva
Bellflower ,CA 90707
gtongva@gmail.com
(562) 761-6417 Voice/Fax

Gabrielino-Tongva Tribe
Linda Candelaria, Chairperson
80839 Camino Santa Juliana Gabrielino
Indio ,CA 92203
lcandelaria1@gabrielinotribe.org

This list is current as of the date of this document and is based on the information available to the Commission on the date it was produced.

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 Resources Code, or Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans Tribes for the proposed: La Brea Groundwater Project, Los Angeles County.

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City of Beverly Hills La Brea Subarea Wells, Water Treatment, and Transmission Main Project, City of Beverly Hills and Los Angeles, California

Paleontological Resources Assessment Report

September 11, 2019

City of Beverly Hills

City of Beverly Hills La Brea Subarea Wells, Water Treatment, and Transmission Main Project, City of Beverly Hills and Los Angeles, California

Paleontological Resources Assessment Report

Prepared for:
City of Beverly Hills

September 11, 2019

Prepared by:
ESA
626 Wilshire Blvd. Suite 1100
Los Angeles, CA 90017

Project Directors:
Monica Strauss, M.A., RPA

Project Manager:
Sara Dietler, B.A.

Paleontological Principal Investigator and Report Author:
Alyssa Bell, Ph.D.

Project Location:
Beverly Hills and Hollywood (CA) USGS 7.5-minute Topographic Quads

626 Wilshire Boulevard
Suite 1100
Los Angeles, CA 90017
213.599.4300
www.esassoc.com

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City of Beverly Hills La Brea Subarea Wells, Water Treatment, and Transmission Main Project – Paleontological Resources Assessment Report

Appendices

DEPARTMENT OF PUBLIC WORKS
345 Foothill Road
Beverly Hills, CA 90210

Engineering Division
(310) 285-2452
FAX: (310) 278-1838

June 21, 2019

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

Subject: AB 52 Consultation (Public Resources Code Section 21080.3.1)
La Brea Subarea Wells and Transmission Main Project

Dear Mr. Ontiveros:

Pursuant to Assembly Bill 52 (Public Resources Code Section 21080.3.1) and in an effort to fully evaluate potential adverse effects to cultural resources, the City of Beverly Hills is contacting you to elicit information not contained in the present database and to provide an opportunity for California Native American tribes to discuss the proposed La Brea Subarea Wells and Transmission Main Project ("Project").

Project Description: The City of Beverly Hills (City) is proposing to implement the La Brea Subarea Wells and Transmission Main Project (proposed project), and is preparing an Initial Study/Mitigated Negative Declaration (IS/MND) to analyze the environmental effects of the Project. In order to expand the local water supply, the City proposes to develop the proposed project by providing an additional net 1,700 acre-feet per year (AFY) of groundwater supply in the La Brea Subarea within the Central Groundwater Basin. The proposed project would include the construction of three groundwater production wells in the La Brea Subarea, the rehabilitation of an existing 18-inch pipeline, and the connection of the rehabilitated pipeline to a newly constructed raw water transmission main. The proposed transmission main would connect the proposed production wells to the existing Foothill Water Treatment Plant (WTP) for treatment and supply.

Project Location: The proposed project would be located within two jurisdictions; the City of Beverly Hills and the City of Los Angeles, as depicted on the attached Figure 1 (Regional Location) and Figure 2 (Project Location). The City of Beverly Hill's Foothill WTP is located on Foothill Road between Alden Drive and Third Street. The Foothill WTP is a developed water treatment plant which contains RO facilities that would treat the raw water received from the proposed groundwater production wells (Figure 2).

The proposed Well Site No. 1 would be located at 1945 La Cienega Boulevard within the City of Los Angeles. Well Site No. 1 is owned by the City of Beverly Hills and is currently developed with a residential structure. Implementation of Well No. 1 would require the installation of 15-inch storm drain alignment, which would be located within the paved right-of-way (ROW). The precise locations of the two additional wells have not been determined at this time; however, they would be located within the City of Los Angeles in the La Brea Subarea boundary as illustrated on Figure 2, labeled as "Potential Well Location Area". The proposed transmission main would be approximately four miles long.

In accordance with Public Resources Code Section 21080.3.1, the City is offering you the opportunity to consult on this Project. You may respond regarding the proposed La Brea Subarea Wells and Transmission Main Project within thirty (30) days of receiving this letter. Alternatively, if you find that the nature of this Project does not require consultation, you are requested to sign the bottom of this letter, agreeing that no further consultation is necessary.

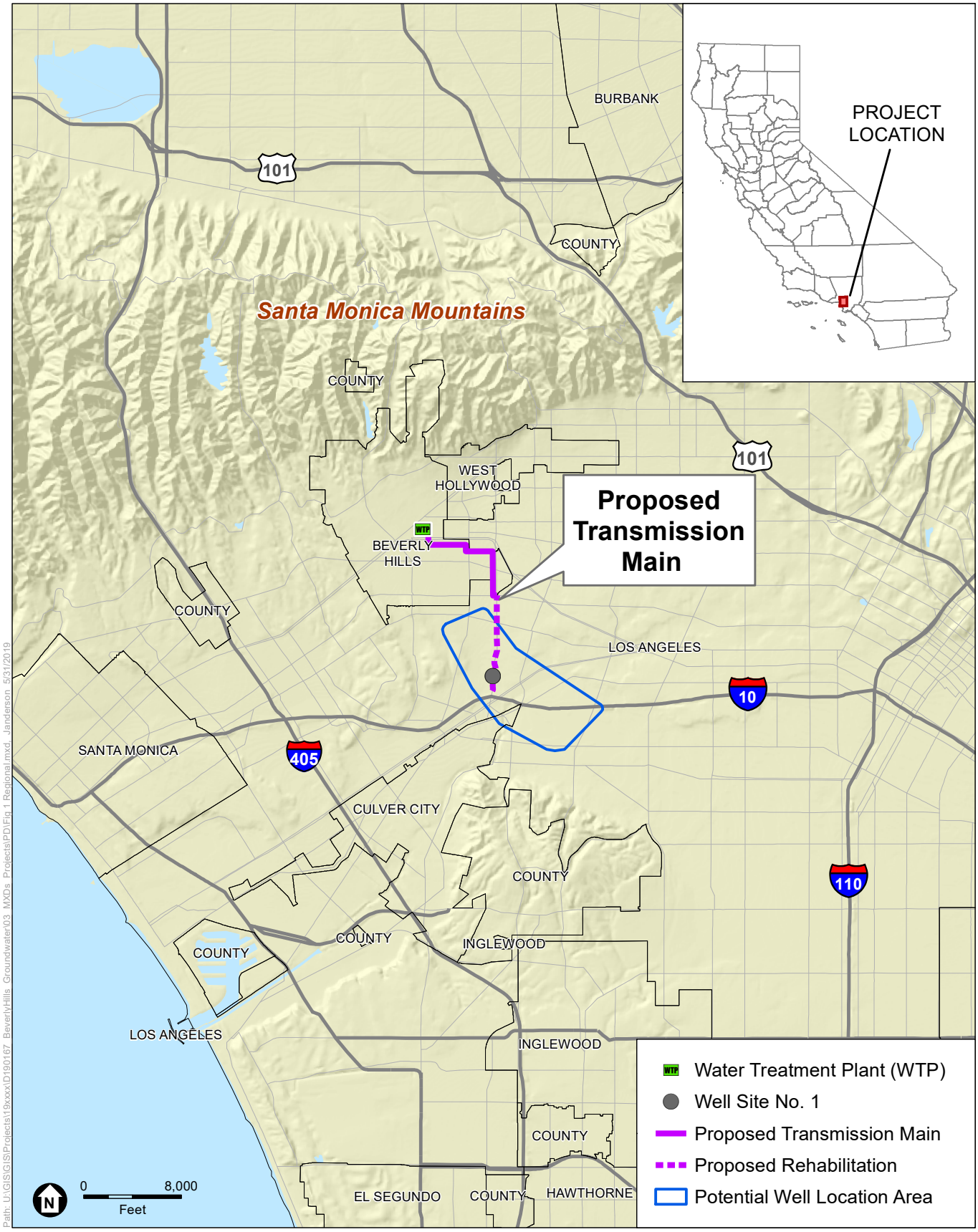
Your prompt response would be appreciated. Should you have any further questions regarding this matter, please feel free to contact me at (310) 285-2512 or via email at tmalabanan@beverlyhills.com. Thank you for your consideration of this request.

Sincerely,

Tristan D. Malabanan, P.E.
Project Manager

Enclosures

I, _____, agree that no further consultation is necessary due to the nature of the La Brea Subarea Wells and Transmission Main Project.

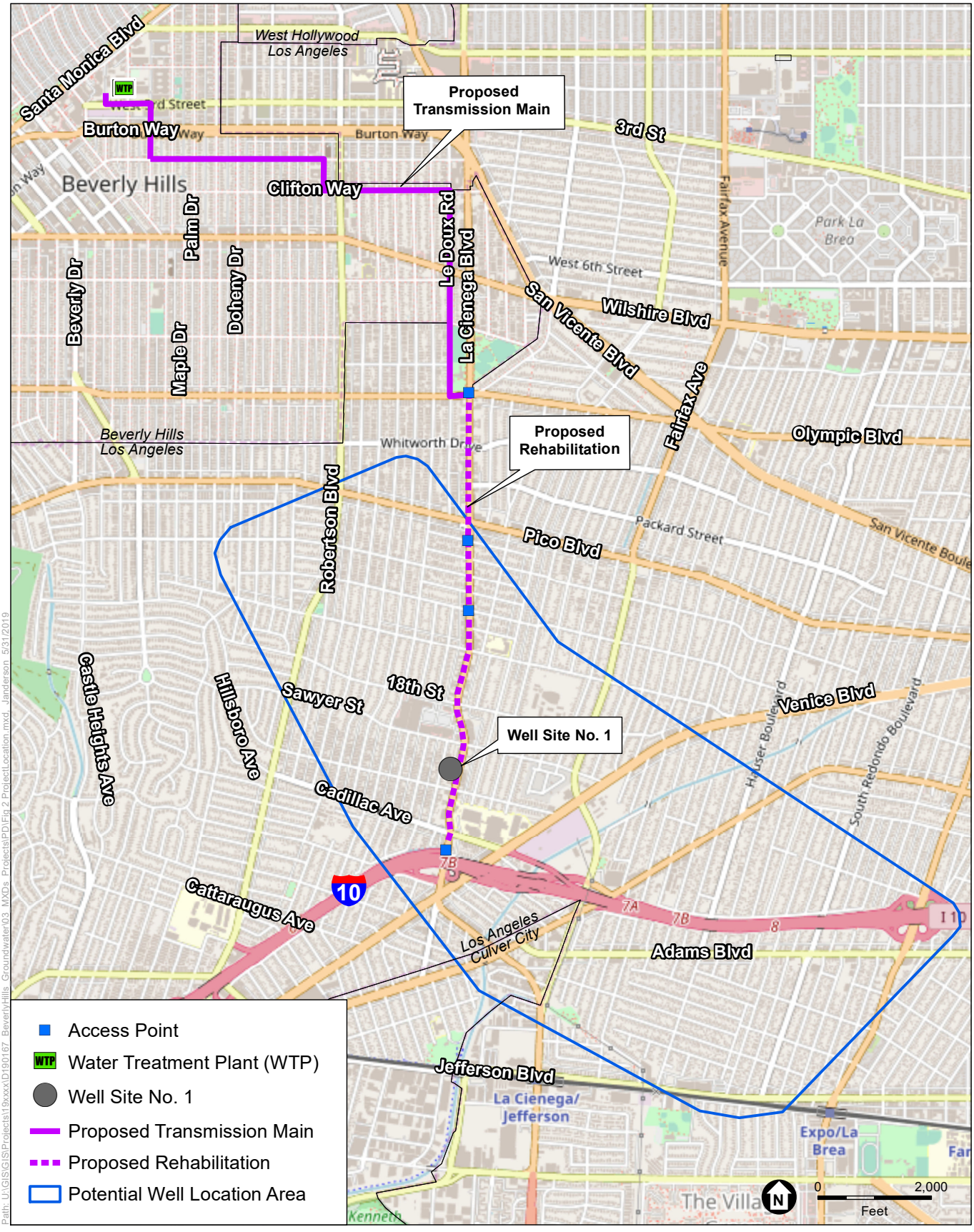


SOURCE: ESRI

La Brea Subarea Wells and Transmission Main Project

Figure 1
Regional Location

ESA



SOURCE: ESRI; City of Beverly Hills

La Brea Subarea Wells and Transmission Main Project

Figure 2
Project Location

ESA

DEPARTMENT OF PUBLIC WORKS
345 Foothill Road
Beverly Hills, CA 90210

Engineering Division
(310) 285-2452
FAX: (310) 278-1838

June 21, 2019

Michael Mirelez
Cultural Resource Coordinator
Torres Martinez Desert Cahuilla Indians
P.O. Box 1160
Thermal, CA 92274

Subject: AB 52 Consultation (Public Resources Code Section 21080.3.1)
La Brea Subarea Wells and Transmission Main Project

Dear Mr. Mirelez:

Pursuant to Assembly Bill 52 (Public Resources Code Section 21080.3.1) and in an effort to fully evaluate potential adverse effects to cultural resources, the City of Beverly Hills is contacting you to elicit information not contained in the present database and to provide an opportunity for California Native American tribes to discuss the proposed La Brea Subarea Wells and Transmission Main Project ("Project").

Project Description: The City of Beverly Hills (City) is proposing to implement the La Brea Subarea Wells and Transmission Main Project (proposed project), and is preparing an Initial Study/Mitigated Negative Declaration (IS/MND) to analyze the environmental effects of the Project. In order to expand the local water supply, the City proposes to develop the proposed project by providing an additional net 1,700 acre-feet per year (AFY) of groundwater supply in the La Brea Subarea within the Central Groundwater Basin. The proposed project would include the construction of three groundwater production wells in the La Brea Subarea, the rehabilitation of an existing 18-inch pipeline, and the connection of the rehabilitated pipeline to a newly constructed raw water transmission main. The proposed transmission main would connect the proposed production wells to the existing Foothill Water Treatment Plant (WTP) for treatment and supply.

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In accordance with Public Resources Code Section 21080.3.1, the City is offering you the opportunity to consult on this Project. You may respond regarding the proposed La Brea Subarea Wells and Transmission Main Project within thirty (30) days of receiving this letter. Alternatively, if you find that the nature of this Project does not require consultation, you are requested to sign the bottom of this letter, agreeing that no further consultation is necessary.

Your prompt response would be appreciated. Should you have any further questions regarding this matter, please feel free to contact me at (310) 285-2512 or via email at tmalabanan@beverlyhills.com. Thank you for your consideration of this request.

Sincerely,

Tristan D. Malabanan, P.E.
Project Manager

Enclosures

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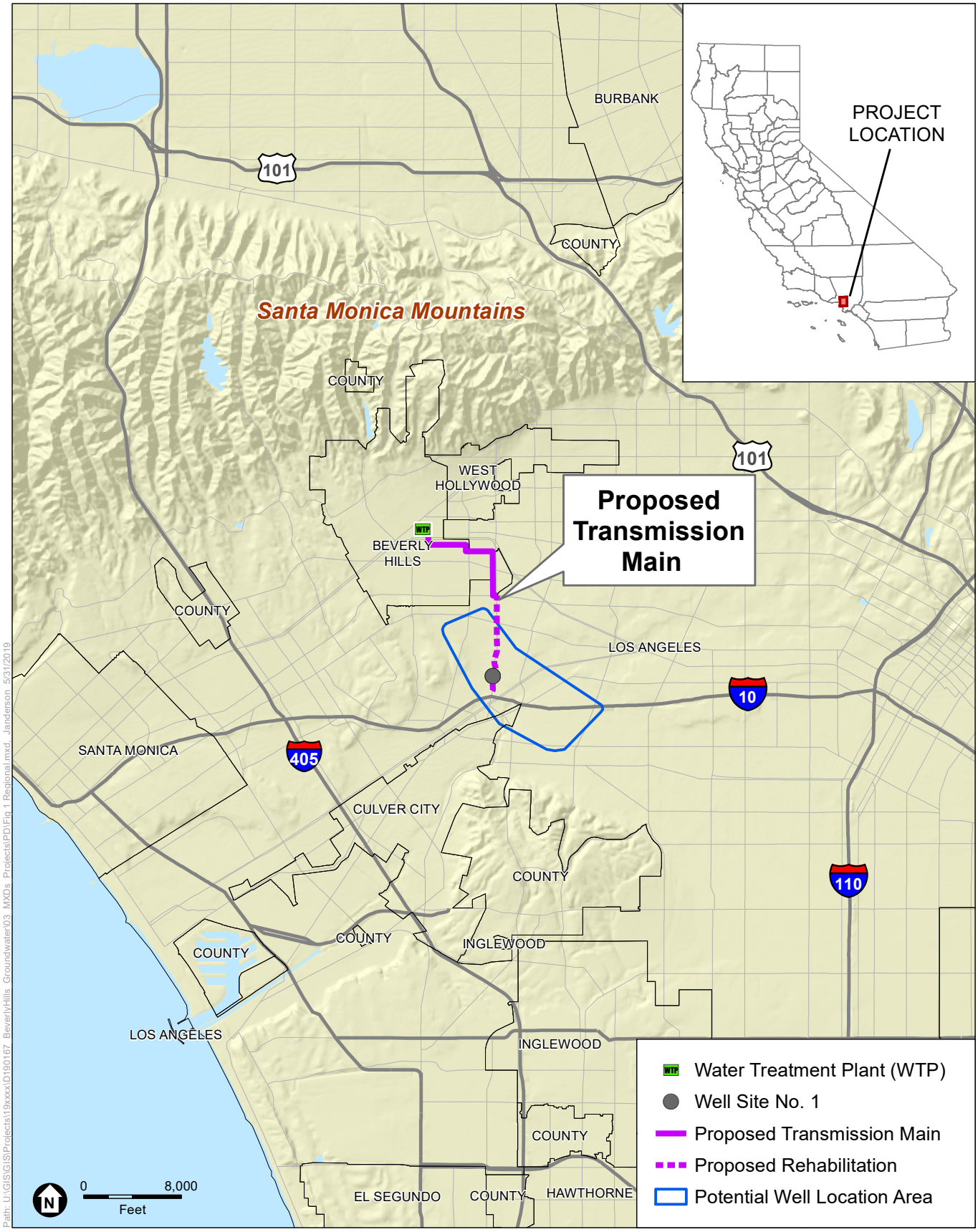
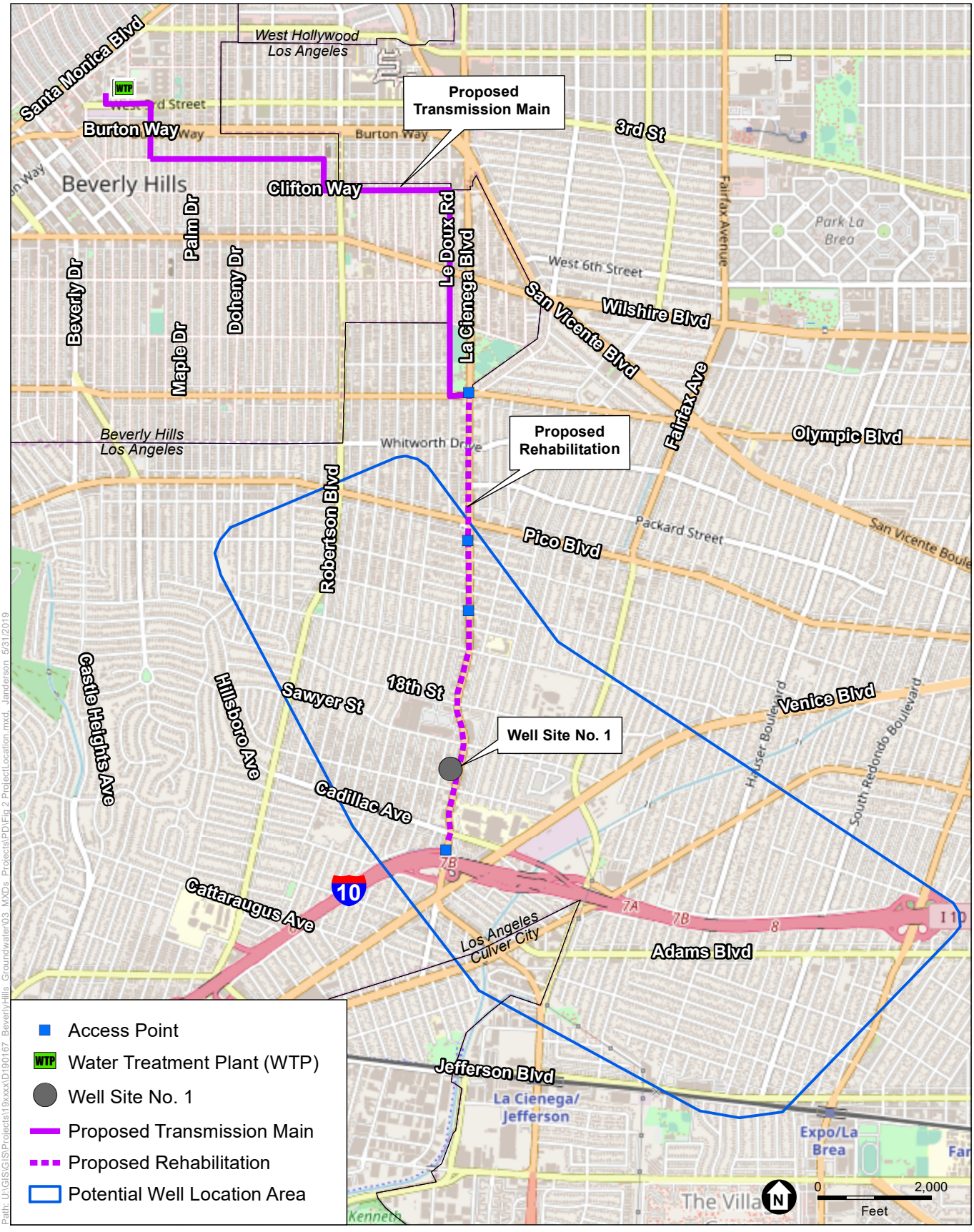


SOURCE: ESRI

La Brea Subarea Wells and Transmission Main Project

Figure 1
Regional Location

ESA



SOURCE: ESRI; City of Beverly Hills

La Brea Subarea Wells and Transmission Main Project

Figure 2
Project Location

ESA

DEPARTMENT OF PUBLIC WORKS
345 Foothill Road
Beverly Hills, CA 90210

Engineering Division
(310) 285-2452
FAX: (310) 278-1838

June 21, 2019

Andrew Salas
Chairman
Gabrieleño Band of Mission Indians — Kizh Nation
P0 Box 393
Covina, CA 91723

Subject: AB 52 Consultation (Public Resources Code Section 21080.3.1)
La Brea Subarea Wells and Transmission Main Project

Dear Mr. Salas:

Pursuant to Assembly Bill 52 (Public Resources Code Section 21080.3.1) and in an effort to fully evaluate potential adverse effects to cultural resources, the City of Beverly Hills is contacting you to elicit information not contained in the present database and to provide an opportunity for California Native American tribes to discuss the proposed La Brea Subarea Wells and Transmission Main Project ("Project").

Project Description: The City of Beverly Hills (City) is proposing to implement the La Brea Subarea Wells and Transmission Main Project (proposed project), and is preparing an Initial Study/Mitigated Negative Declaration (IS/MND) to analyze the environmental effects of the Project. In order to expand the local water supply, the City proposes to develop the proposed project by providing an additional net 1,700 acre-feet per year (AFY) of groundwater supply in the La Brea Subarea within the Central Groundwater Basin. The proposed project would include the construction of three groundwater production wells in the La Brea Subarea, the rehabilitation of an existing 18-inch pipeline, and the connection of the rehabilitated pipeline to a newly constructed raw water transmission main. The proposed transmission main would connect the proposed production wells to the existing Foothill Water Treatment Plant (WTP) for treatment and supply.

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The proposed Well Site No. 1 would be located at 1945 La Cienega Boulevard within the City of Los Angeles. Well Site No. 1 is owned by the City of Beverly Hills and is currently developed with a residential structure. Implementation of Well No. 1 would require the installation of 15-inch storm drain alignment, which would be located within the paved right-of-way (ROW). The precise locations of the two additional wells have not been determined at this time; however, they would be located within the City of Los Angeles in the La Brea Subarea boundary as illustrated on Figure 2, labeled as "Potential Well Location Area". The proposed transmission main would be approximately four miles long.

In accordance with Public Resources Code Section 21080.3.1, the City is offering you the opportunity to consult on this Project. You may respond regarding the proposed La Brea Subarea Wells and Transmission Main Project within thirty (30) days of receiving this letter. Alternatively, if you find that the nature of this Project does not require consultation, you are requested to sign the bottom of this letter, agreeing that no further consultation is necessary.

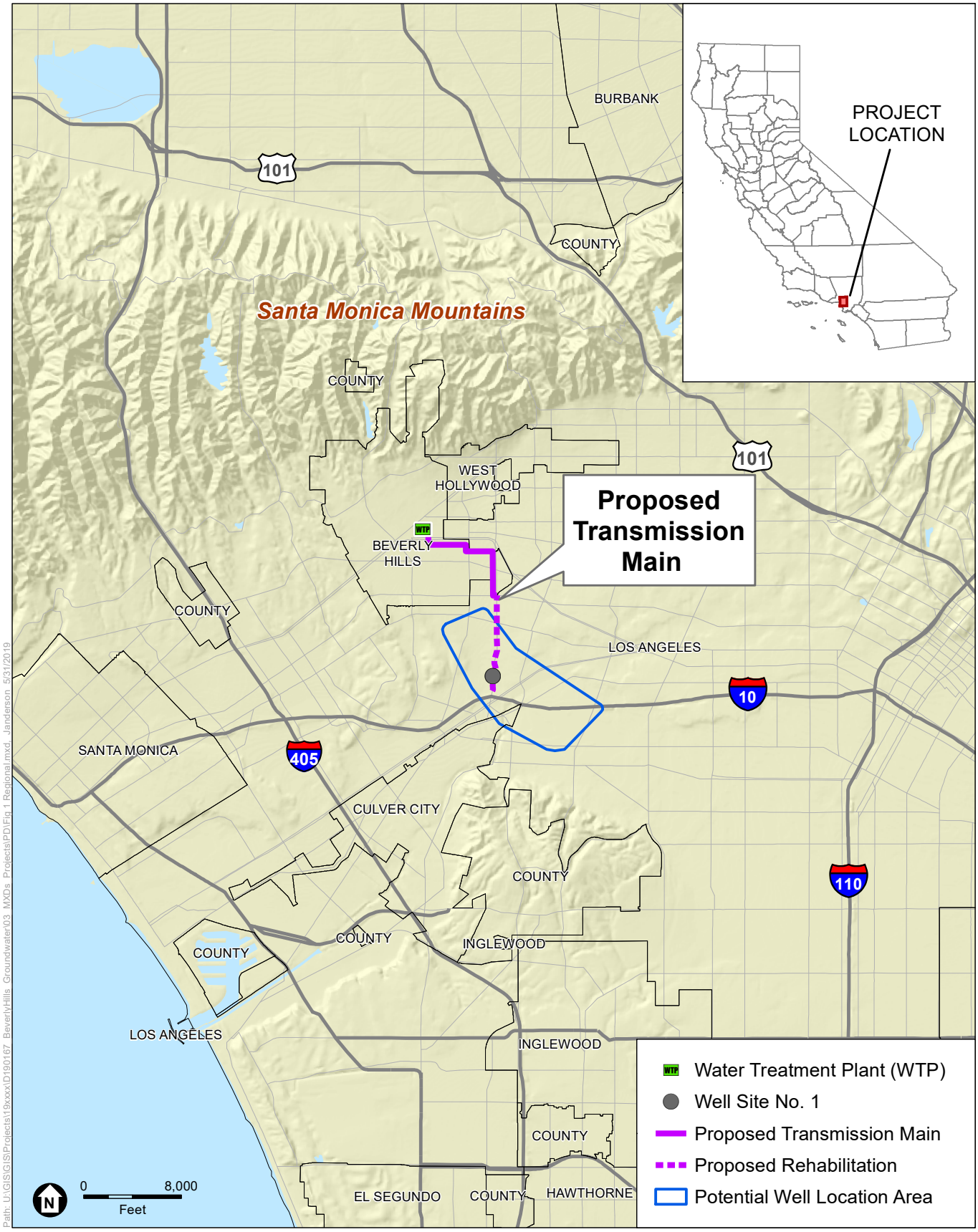
Your prompt response would be appreciated. Should you have any further questions regarding this matter, please feel free to contact me at (310) 285-2512 or via email at tmalabanan@beverlyhills.com. Thank you for your consideration of this request.

Sincerely,

Tristan D. Malabanan, P.E.
Project Manager

Enclosures

I, _____, agree that no further consultation is necessary due to the nature of the La Brea Subarea Wells and Transmission Main Project.

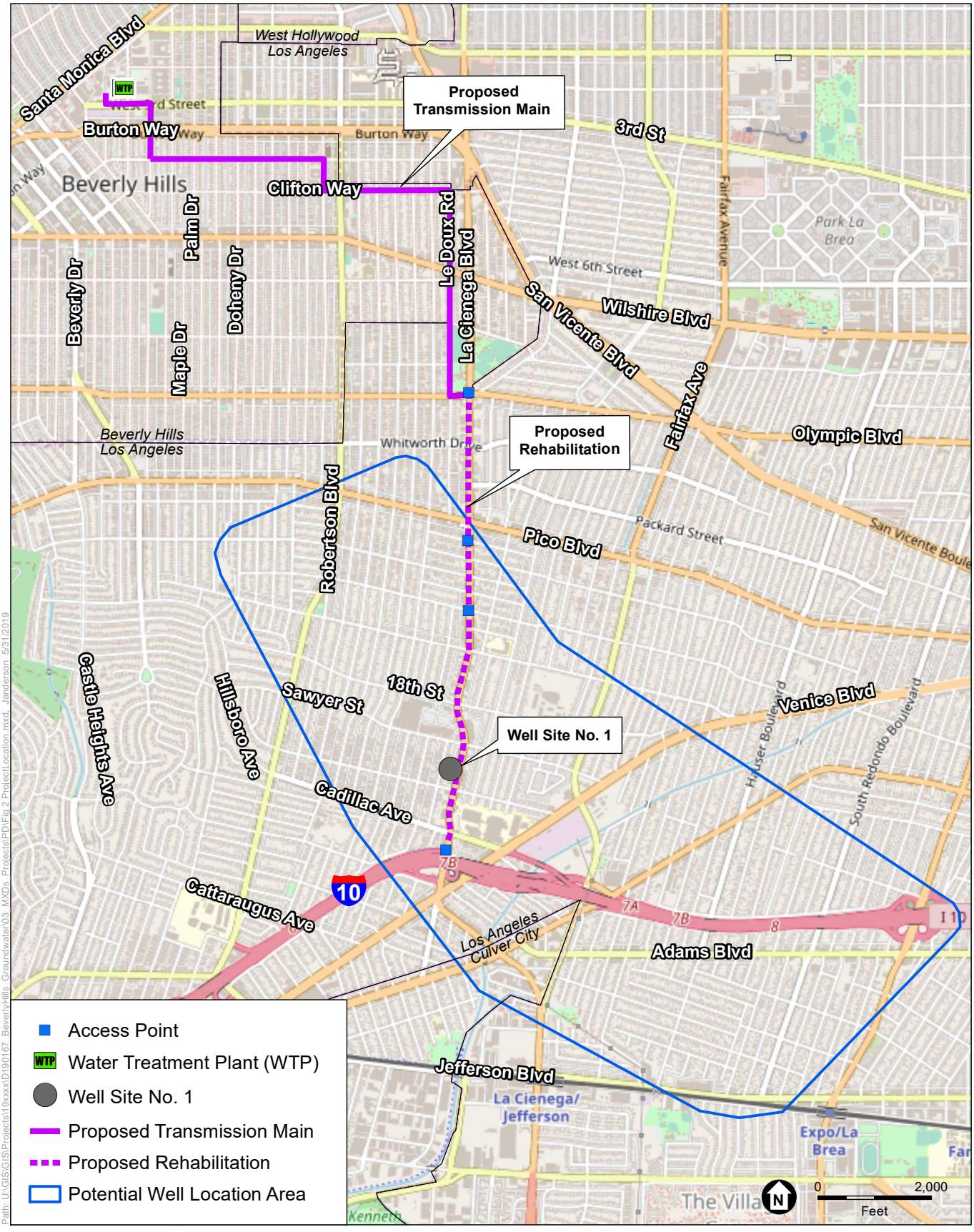


SOURCE: ESRI

La Brea Subarea Wells and Transmission Main Project

Figure 1
Regional Location

ESA



SOURCE: ESRI; City of Beverly Hills

La Brea Subarea Wells and Transmission Main Project

Figure 2
Project Location

ESA

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

Project Name: La Brea Subarea wells and Transmission main project city of Beverly Hills

Dear Tristan D. Malabanan,

Thank you for your letter dated June 24, 2019 regarding AB52 consultation. The above proposed project location is within our Ancestral Tribal Territory; therefore, our Tribal Government requests to schedule a consultation with you as the lead agency, to discuss the project and the surrounding location in further detail .

Please contact us at your earliest convenience. ***Please Note :AB 52, "consultation" shall have the same meaning as provided in SB 18 (Govt. Code Section 65352.4).***

Thank you for your time,

Andrew Salas, Chairman
Gabrieleno Band of Mission Indians – Kizh Nation
1(844)390-0787

List of Figures

CITY OF BEVERLY HILLS LA BREA SUBAREA WELLS, WATER TREATMENT, AND TRANSMISSION MAIN PROJECT

Paleontological Resources Assessment Report

Introduction

The City of Beverly Hills (City) proposes to develop the La Brea Subarea Wells, Water Treatment, and Transmission Main Project (proposed project). Environmental Science Associates (ESA) has conducted a paleontological resources assessment in support of an Initial Study/Mitigated Negative Declaration (IS/MND) The proposed project would include the construction of a groundwater production well in the La Brea Subarea (that would provide approximately 1,700 AFY of new water supply), the rehabilitation of an existing (inactive) 18 and 24-inch pipelines, and the connection of the rehabilitated pipeline to a newly constructed raw water transmission main with a diameter of 16-inches (collectively, referred to herein as "proposed transmission main"). The proposed transmission main would connect the proposed production well to the existing Foothill Water Treatment Plant (WTP) for treatment and supply. The pipelines would be sized to accommodate 3,000 gallons per minute (gpm), which would be from the currently proposed well and, potentially, other wells in the area although the need for and locations of any such future wells is unknown at this time.

ESA personnel involved in the preparation of this assessment are as follows: Monica Strauss, M.A., RPA, program director; Sara Dietler, B.A., Project Manager; Alyssa Bell, Ph.D., Paleontological Principal Investigator and assessment author; and Jessie Lee, GIS specialist. Resumes of key personnel are included in **Appendix A**.

Project Location

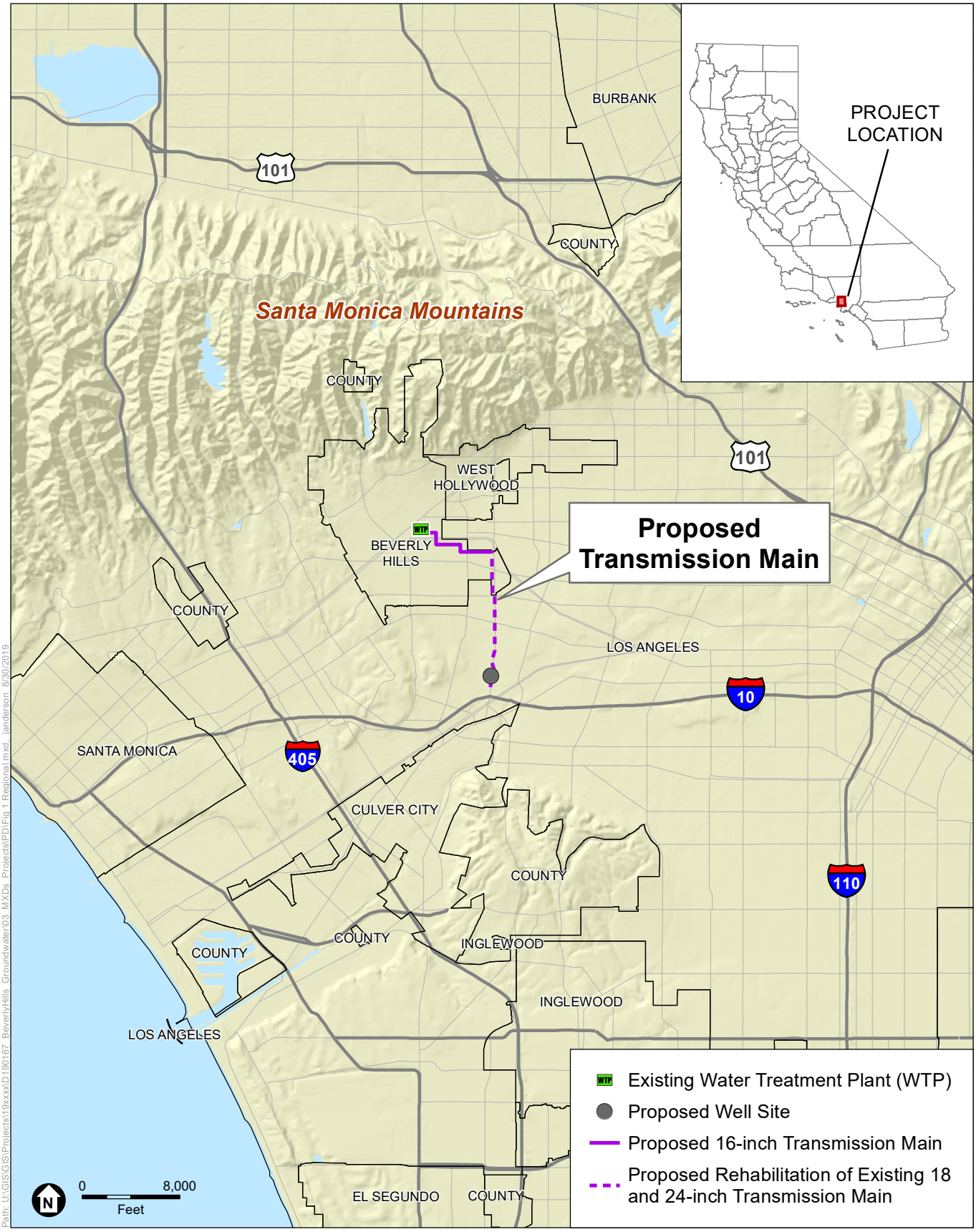
The proposed project would be located within two jurisdictions; the City of Beverly Hills and the City of Los Angeles, as depicted on **Figure 1, Regional Location** and **Figure 2, Project Location**. The City of Beverly Hill's Foothill WTP is located on Foothill Road between Alden Drive and Third Street. The Foothill WTP is a developed water treatment plant which contains reverse osmosis (RO) facilities that would treat the raw water received from the proposed groundwater production well (Figure 2).

The proposed Well Site would be implemented on a City-owned property located at 1956 Chariton Street in the City of Los Angeles, as depicted on **Figure 3, Proposed Well Site**. The proposed Well Site has a land use designation of Low Medium II Residential and is zoned as

Restricted Density Multiple Dwelling Zone (RD2-1). The site is currently developed with a residential structure; however, there are no current residents living in the structure. The site is surrounded by other residences to the north, west and south. To the east is an area designated as Neighborhood Commercial, which consists of City-owned property, and other commercial properties along La Cienega Boulevard. Implementation of the Well Site would require the installation of 15-inch storm drain pipe, which would be located within the paved right-of-way (ROW) along Chariton Street. The storm drain would dispose of water being flushed through the well during well testing and during normal operations.

While there may be a need of additional wells in the area to meet the production goal, the need for and locations of any such future wells have not been determined at this time. The La Brea Subarea is located in the northern unadjudicated portion of the Central Basin.

The proposed transmission main, in its entirety would be approximately four miles long. The proposed rehabilitation area of the transmission main (existing 18 and 24-inch inactive pipelines) would proceed north within La Cienega Boulevard to Olympic Boulevard and within Le Doux Road from Gregory Way to Clifton Way (see Figure 2) and to connect to the proposed 16-inch new pipeline The length of the proposed new 16-inch transmission main would then continue westward until turning north on North Swall Drive, then west on Dayton Way. The transmission main would continue westerly along Dayton Way until turning north on North Palm Drive, then westward on 3rd street then through the City yard to connect to the utilities inlet side of the Foothill WTP (Figure 2).

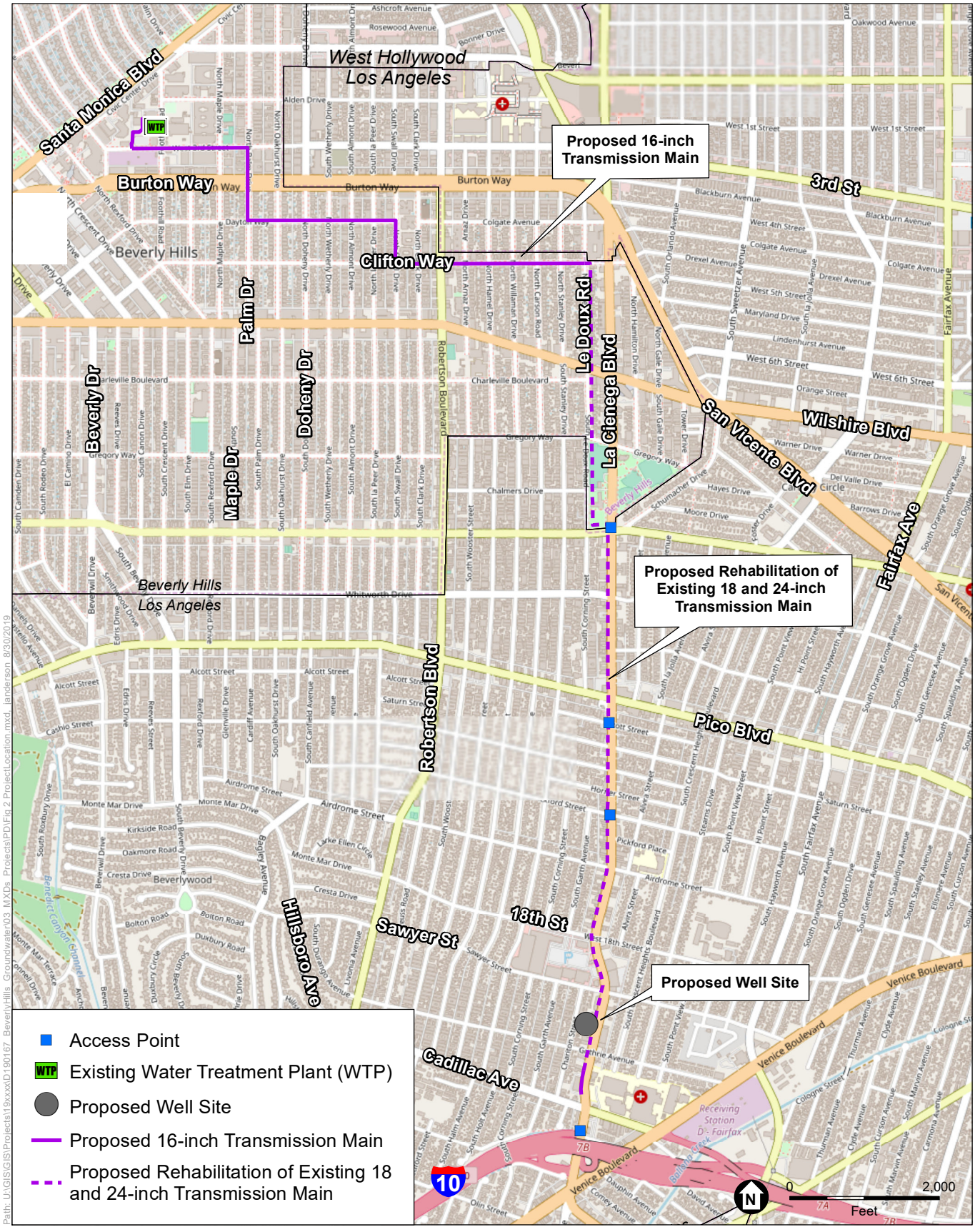


SOURCE: ESRI

La Brea Subarea Well and Transmission Main Project

Figure 1
Regional Location

ESA

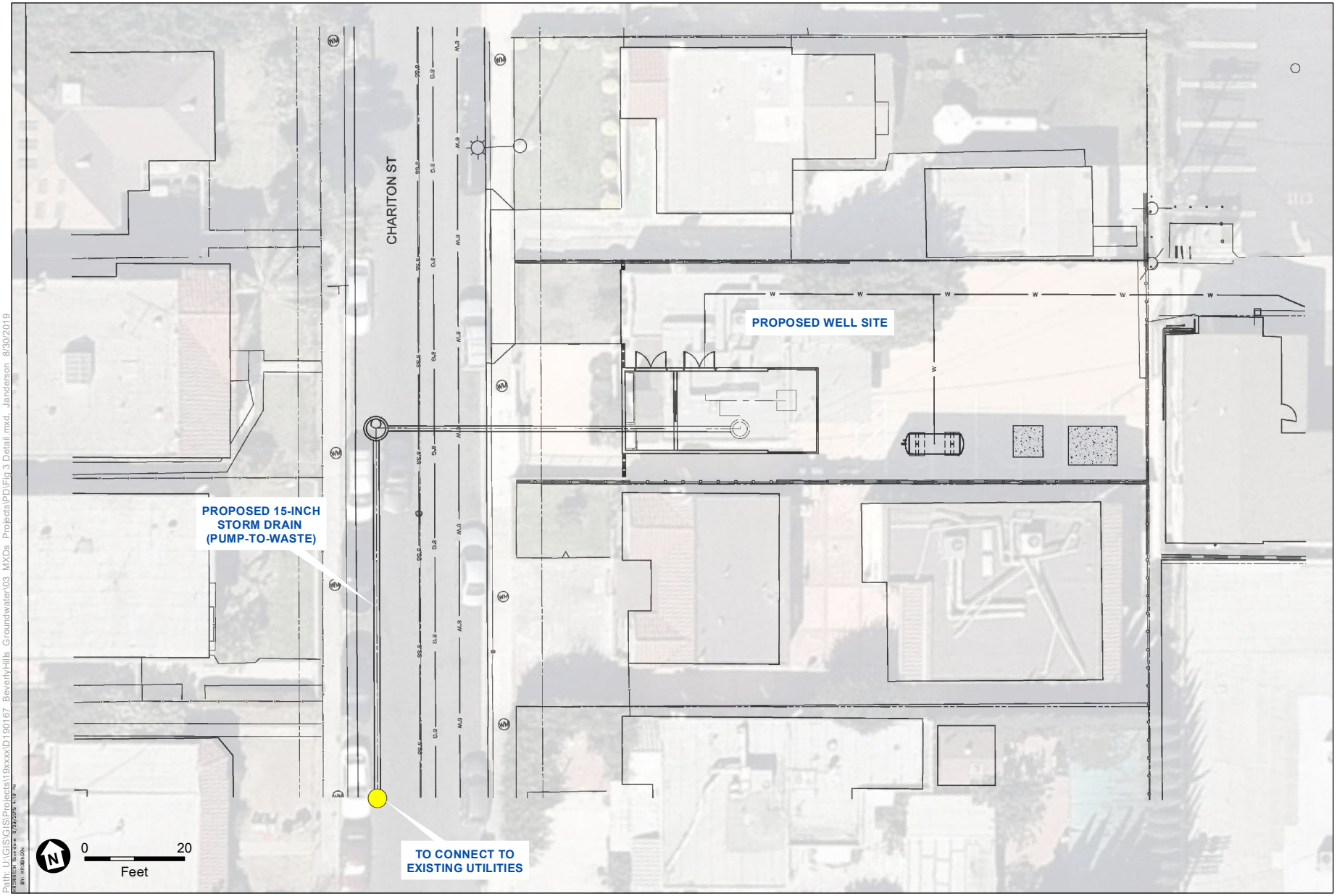


SOURCE: ESRI; City of Beverly Hills

La Brea Subarea Well and Transmission Main Project

Figure 2
Project Location

ESA



SOURCE: Mapbox; City of Beverly Hills

La Brea Subarea Well and Transmission Main Project

Figure 3
Proposed Well Site

ESA

Project Description

The proposed project includes: the demolition of existing structures at the proposed Well Site; the construction of one well within the La Brea Subarea; the rehabilitation of existing inactive 18 and 24-inch transmission main pipelines along La Cienega Boulevard; and the construction of a new 16-inch transmission main that would convey flows from the proposed Well Site to the City's WTP for treatment. Demolition, rehabilitation, and the construction of new facilities associated with the proposed project are described further below.

The proposed Well Site would be located on 1956 Chariton Street in the City of Los Angeles (Figure 2). The area is essentially flat and the existing residential structure would be demolished before the construction of the Well. After demolition, a 15-inch storm drain (pump-to-waste pipeline) would be constructed within Chariton Street, to connect to an existing storm drain system within the local streets. When a well is turned on, typical procedure is to "pump-to-waste" for a short duration to flush the well system. This flushing procedure will discharge through the 15-inch storm drain.

The proposed well would include an approximately 150 horsepower (hp) electric pump that would be housed within a new pump building. The pump building would be approximately 700 square feet (sf) with a 3-foot by 3-foot concrete pad underneath. The well-housing would not exceed the height of adjacent structures. Total well depth would be approximately 500 feet. The predicted flow rate for the well is between 500 and 700 gpm. The well-housing would be designed to blend in with the surrounding environment.

Rehabilitation and Proposed Transmission Main

The installation of new groundwater production well in the La Brea Subarea would include the rehabilitation of existing inactive 18 and 24-inch transmission pipelines and the construction of a new 16-inch transmission main alignment to convey water to the City distribution system from the proposed Well Site.

The existing, inactive 18-inch transmission main pipeline is located just north of Interstate 10 (I-10) at La Cienega Boulevard and continues north for approximately 8,000 linear feet (lf) to Olympic Boulevard at a depth of approximately 3 feet below the ground surface (bgs). The City has an easement to allow for the rehabilitation and use of this pipeline. The alignment horizontally and vertically varies at intersections; however, the majority of the pipe is located beneath the existing sidewalk on the west side of La Cienega Boulevard. The existing inactive 24-inch transmission main is located within Le Doux Road from Gregory Way north approximately 2,250 liner feat (lf) to Clifton Way, and includes the crossing of Wilshire Blvd. The alignment is located approximately 6-feet east of street centerline at a cover depth that varies between 3.5-feet and 6-feet. The existing 18 and 24-inch pipelines would be rehabilitated as part of the overall transmission main of the project, then connect to the newly constructed 16-inch transmission main pipeline The rehabilitated and new portions of the proposed transmission main would be connected and sized appropriately for anticipated flows.

The projected operational flow rate for the proposed production well is in the range of 500 to 700 gpm. An 8-inch diameter pipe would be used for the individual discharge pipeline from the production well. The transmission main would be sized to handle the flow rate of the optimal flow of approximately (2,100 gpm), to allow for use in conjunction with potential future wells in the area. Many of the streets along the transmission main alignment are single lane roads, with existing utilities such as water, sewer, gas, electric, and storm drain.

Demolition/Site Preparation

The proposed project would demolish existing structures at the Well Site, totaling approximately 6,767 cubic yards of construction material. Generally, ground disturbance during demolition would not extend deeper than 25 feet; concrete below this depth would be left in place. Demolition and site grading activities would require approximately 5 dumpster haul trucks per day and 20 dumpster haul trucks total. Imported soil may be required to level the site after demolition.

New Facilities/Rehabilitation

Production Well

The proposed project would construct a new above-grade well-house and new below-grade production well, as described previously. Construction equipment pertaining to the Well Site would be staged onsite or immediately adjacent to the site, where such areas can be accommodated. Best management practices (BMPs) would be implemented to control erosion. The proposed production well would require continuous 24-hour drilling and testing, and therefore would require temporary overnight lighting. All temporary constructing lighting would be shielded downward and away from the adjacent properties, cars driving along Chariton Street and other roadways, and the surrounding residential neighborhoods.

Transmission Main Rehabilitation and Construction

Pipeline construction equipment will be temporarily staged in areas immediately adjacent to roadways and/or stored off site. The transmission main alignment would be installed primarily within existing roadways and ROW to the extent feasible.

Construction of the proposed transmission main would involve trenching using conventional cut and cover and jack and bore techniques for pipeline portions within the City of Beverly Hills. The transmission main would run along Le Doux Road, Clifton Way, North Swall Drive, Dayton Way, North Palm Drive, and West 3rd Street. The trenching technique would include saw cutting of the pavement where applicable, trench excavation, pipe installation, backfill operations, and resurfacing. Open trenches would be between approximately 4 feet wide and 5 feet deep with vertical cuts and trench shoring. Excavation depths would vary depending on location of existing utilities. On average, about 100-200 linear feet of pipeline would be installed per day. Implementation of the new 16-inch transmission main would require the excavation of approximately 11,018 cubic yards of soil. All excavated soil would be hauled away and trenches would be backfilled with 2-sack slurry.

Rehabilitation of the existing inactive 18 and 24-inch transmission main pipelines would be executed through the sliplining technique[1].The rehabilitated portion of the 18 and 24-inch existing pipelines will be sliplined with a 13.5-inch carrier pipe (it gets inserted within the 18 and 24-inch pipes). Typical practice in pipeline design is to use pipe fittings called reducers to connect pipes of different sizes. The rehabilitated 18 and 24-inch pipes will connect to the newly constructed 16-inch portion of the transmission main by using a standard ductile iron mechanical joint (18-inch by 16-inch ductile iron reducer) fittings. The design flow rate for the pipeline is 2100 gpm, but the transmission main in its entirety is sized to accommodate up to 3000 gpm. Rehabilitation would require the excavation of approximately 185 cubic yards of soil.

All impacted areas would be returned to pre-project conditions. Approximately 1,000 sf of various portions of the west sidewalk along La Cienega Boulevard would need to be reinstalled. When a new pipeline is installed, it requires the excavation of a trench through the street/roadway. After a pipeline is installed, the trench should be backfilled and the pavement surface needs to be replaced with new pavement. This is typical construction technique for all segments of a pipeline being installed within an open-trench construction area. Le Doux Road, Clifton Way, North Swall Drive, Dayton Way, North Palm Drive, and West 3rd Street would need to be repaved once the new 16-inch transmission main is installed. The total square feet to repaved area is approximately 10,000 sf.

Regulatory Framework

State and Local Regulations

Paleontological resources are limited, nonrenewable resources of scientific, cultural, and educational value that are afforded protection under state laws and regulations. The following section summarizes the applicable federal and state laws and regulations, as well as professional standards provided by the Society of Vertebrate Paleontology (SVP, 2010).

State Regulations

California Environmental Quality Act

The State CEQA Guidelines (Title 14, Chapter 3 of the California Code of Regulations, Section 15000 *et seq*.), are prescribed by the Secretary of Resources to be followed by state and local agencies in California in their implementation of the CEQA. Appendix G of the State CEQA Guidelines includes an Environmental Checklist Form with questions that may be used by public agencies in their assessment of impacts on the environment. The question within Appendix G that relates to paleontological resources states: "Will the proposed project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" The City of Los Angeles uses this question as its threshold of significance for determining whether impacts of

[1] The pipeline rehabilitation method sliplining uses High Density Polyethylene (HDPE) with the rolldown method, or traditional sliplining with fusible polyvinyl chloride (PVC). The sliplining method maximizes the internal diameter of the pipe, which maximizes the benefit of utilizing the existing inactive 18 and 24-inch inch transmission main.

paleontological resources are significant. CEQA protects paleontological resources by requiring an assessment of a project's potential paleontological impacts.

Public Resources Code Section 5097.5 and Section 30244

Other state requirements for paleontological resource management are included in PRC Section 5097.5 and Section 30244. These statutes prohibit the removal of any paleontological site or feature from public lands without permission of the jurisdictional agency, define the removal of paleontological sites or features as a misdemeanor, and require reasonable mitigation of adverse impacts to paleontological resources from developments on public (state, county, city, district) lands.

Local Regulations

City of Los Angeles – General Plan

The Conservation Element of the City of Los Angeles General Plan recognizes paleontological resources in Section 3: "Archeological and Paleontological" (II-3), specifically the La Brea Tar Pits, and identifies protection of paleontological resources as an objective (II-5). The General Plan identifies site protection as important, stating, "Pursuant to CEQA, if a land development project is within a potentially significant paleontological area, the developer is required to contact a bona fide paleontologist to arrange for assessment of the potential impact and mitigation of potential disruption of or damage to the site. If significant paleontological resources are uncovered during project execution, authorities are to be notified and the designated paleontologist may order excavations stopped, within reasonable time limits, to enable assessment, removal or protection of the resources" (City of Los Angeles, 2001[2]).

Methods and Results

Society for Vertebrate Paleontology

The SVP has established standard guidelines (SVP, 1995, 2010) that outline professional protocols and practices for conducting paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation. Most practicing professional vertebrate paleontologists adhere closely to the SVP's assessment, mitigation, and monitoring requirements as specifically provided in its standard guidelines. Most state regulatory agencies with paleontological resource-specific Laws, Ordinances, Regulations, and Standards (LORS) accept and use the professional standards set forth by the SVP.

As defined by the SVP (2010:11), significant nonrenewable paleontological resources are:

> *Fossils and fossiliferous deposits, here defined as consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are considered to be older than*

[2] For documents referenced in this Report, please see References for full citations.

> *recorded human history and/or older than middle Holocene (i. e., older than about 5,000 radiocarbon years)*.

As defined by the SVP (1995:26), significant fossiliferous deposits are:

> *A rock unit or formation which contains significant nonrenewable paleontologic resources, here defined as comprising one or more identifiable vertebrate fossils, large or small, and any associated invertebrate and plant fossils, traces, and other data that provide taphonomic, taxonomic, phylogenetic, ecologic, and stratigraphic information (ichnites and trace fossils generated by vertebrate animals, e.g., trackways, or nests and middens which provide datable material and climatic information). Paleontologic resources are considered to be older than recorded history and/or older than 5,000 years BP [before present].*

Based on the significance definitions of the SVP (1995), all identifiable vertebrate fossils are considered to have significant scientific value. This position is adhered to because vertebrate fossils are relatively uncommon, and only rarely will a fossil locality yield a statistically significant number of specimens of the same genus. Therefore, every vertebrate fossil found has the potential to provide significant new information on the taxon it represents, its paleoenvironment, and/or its distribution. Furthermore, all geologic units in which vertebrate fossils have previously been found are considered to have high sensitivity. Identifiable plant and invertebrate fossils are considered significant if found in association with vertebrate fossils or if defined as significant by project paleontologists, specialists, or local government agencies.

A geologic unit known to contain significant fossils is considered to be "sensitive" to adverse impacts if there is a high probability that earth-moving or ground-disturbing activities in that rock unit will either directly or indirectly disturb or destroy fossil remains. Paleontological sites indicate that the containing sedimentary rock unit or formation is fossiliferous. The limits of the entire rock formation, both areal and stratigraphic, therefore define the scope of the paleontological potential in each case (SVP, 1995).

Fossils are contained within surficial sediments or bedrock, and are therefore not observable or detectable unless exposed by erosion or human activity. Therefore, without natural erosion or human-caused exposure, paleontologists cannot know either the quality or quantity of fossils. As a result, even in the absence of surface fossils, it is necessary to assess the sensitivity of rock units based on their known potential to produce significant fossils elsewhere within the same geologic unit (both within and outside of the study area), a similar geologic unit, or based on whether the unit in question was deposited in a type of environment that is known to be favorable for fossil preservation. Monitoring by experienced paleontologists greatly increases the probability that fossils will be discovered during ground-disturbing activities and that, if the fossils are significant, that successful mitigation and salvage efforts may be undertaken.

Paleontological Potential

Paleontological potential is defined as the potential for a geologic unit to produce scientifically significant fossils. This is determined by rock type, past history of the geologic unit in producing significant fossils, and fossil localities recorded from that unit. Paleontological potential is

derived from the known fossil data collected from the entire geologic unit, not just from a specific survey. In its "Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources," the SVP (2010) defines four categories of paleontological sensitivity (potential) for rock units: high, low, undetermined, and no potential:

- **High Potential.** Rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional significant paleontological resources. Rocks units classified as having high potential for producing paleontological resources include, but are not limited to, sedimentary formations and some volcaniclastic formations (e. g., ashes or tephras), and some low-grade metamorphic rocks which contain significant paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils (e. g., middle Holocene and older, fine-grained fluvial sandstones, argillaceous and carbonate-rich paleosols, cross-bedded point bar sandstones, fine-grained marine sandstones, etc.).

- **Low Potential.** Reports in the paleontological literature or field surveys by a qualified professional paleontologist may allow determination that some rock units have low potential for yielding significant fossils. Such rock units will be poorly represented by fossil specimens in institutional collections, or based on general scientific consensus only preserve fossils in rare circumstances and the presence of fossils is the exception not the rule, e. g. basalt flows or Recent colluvium. Rock units with low potential typically will not require impact mitigation measures to protect fossils.

- **Undetermined Potential.** Rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment are considered to have undetermined potential. Further study is necessary to determine if these rock units have high or low potential to contain significant paleontological resources. A field survey by a qualified professional paleontologist to specifically determine the paleontological resource potential of these rock units is required before a paleontological resource impact mitigation program can be developed. In cases where no subsurface data are available, paleontological potential can sometimes be determined by strategically located excavations into subsurface stratigraphy.

- **No Potential.** Some rock units have no potential to contain significant paleontological resources, for instance high-grade metamorphic rocks (such as gneisses and schists) and plutonic igneous rocks (such as granites and diorites). Rock units with no potential require no protection nor impact mitigation measures relative to paleontological resources. [SVP, 2010; 1-2]

For geologic units with high potential, full-time monitoring is generally recommended during any project-related ground disturbance. For geologic units with low potential, protection or salvage efforts will not generally be required. For geologic units with undetermined potential, field surveys by a qualified vertebrate paleontologist should be conducted to specifically determine the paleontologic potential of the rock units present within the study area.

Paleontological Resources Significance Criteria

Numerous paleontological studies have developed criteria for the assessment of significance for fossil discoveries (e.g. Eisentraut and Cooper, 2002; Murphey and Daitch, 2007; Scott and

Springer, 2003, etc.). In general, these studies assess fossils as significant if one or more of the following criteria apply:

1. The fossils provide information on the evolutionary relationships and developmental trends among organisms, living or extinct;
2. The fossils provide data useful in determining the age(s) of the rock unit or sedimentary stratum, including data important in determining the depositional history of the region and the timing of geologic events therein;
3. The fossils provide data regarding the development of biological communities or interaction between paleobotanical and paleozoological biotas;
4. The fossils demonstrate unusual or spectacular circumstances in the history of life; or
5. The fossils are in short supply and/or in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and are not found in other geographic locations.

In summary, significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, uncommon, or diagnostically important (Eisentraut and Cooper, 2002; Murphey and Daitch, 2007; Scott and Springer, 2003). Significant fossils can include remains of large to very small aquatic and terrestrial vertebrates or remains of plants and animals previously not represented in certain portions of the stratigraphy. Assemblages of fossils that might aid stratigraphic correlation, particularly those offering data for the interpretation of tectonic events, geomorphologic evolution, and paleoclimatology are also critically important (Scott and Springer, 2003; Scott et al., 2004).

Archival Research

The Project Site was the subject of thorough background research and analysis. The research included a paleontological records search conducted by the Natural History Museum of Los Angeles County (LACM), as well as geologic map and literature reviews conducted by ESA paleontologist Alyssa Bell, Ph.D.

Geologic Setting

The Project Site is located in the Los Angeles Basin, a structural depression approximately 50 miles long and 20 miles wide in the northernmost Peninsular Ranges Geomorphic Province (Ingersoll and Rumelhart, 1999). The Los Angeles basin developed as a result of tectonic forces and the San Andreas fault zone, with subsidence occurring 18 – 3 million years ago (Ma) (Critelli et al., 1995). While sediments dating back to the Cretaceous (66 Ma) are preserved in the basin, continuous sedimentation began in the middle Miocene (around 13 Ma) (Yerkes et al., 1965). Since that time, sediments have been eroded into the basin from the surrounding highlands, resulting in thousands of feet of accumulation (Yerkes et al., 1965). Most of these sediments are marine, as they eroded from surrounding marine formations, until sea level dropped in the Pleistocene Epoch and deposition of the alluvial sediments that compose the uppermost units in the Los Angeles Basin began.

The Los Angeles Basin is subdivided into four structural blocks, with the Project Site located in the northwestern-most part of the Central Block, where sediments range from 32,000 to 35,000 feet thick (Yerkes et al., 1965). The Central Block is wedge-shaped, extending from the Santa Monica Mountains in the northwest, where it is about 10 miles wide, to the San Joaquin Hills to the southeast, where it widens to around 20 miles across (Yerkes et al., 1965).

Geologic Map & Literature Review

Geologic mapping by Dibblee and Ehrenspeck (1991) indicates that the surface of the Project Site is covered with Holocene-aged younger alluvium (mapped as Qa in **Figure 3**), likely overlying older alluvium and marine sediments, which in turn may overlie the Monterey Formation at undetermined depths. These geologic units are discussed below.

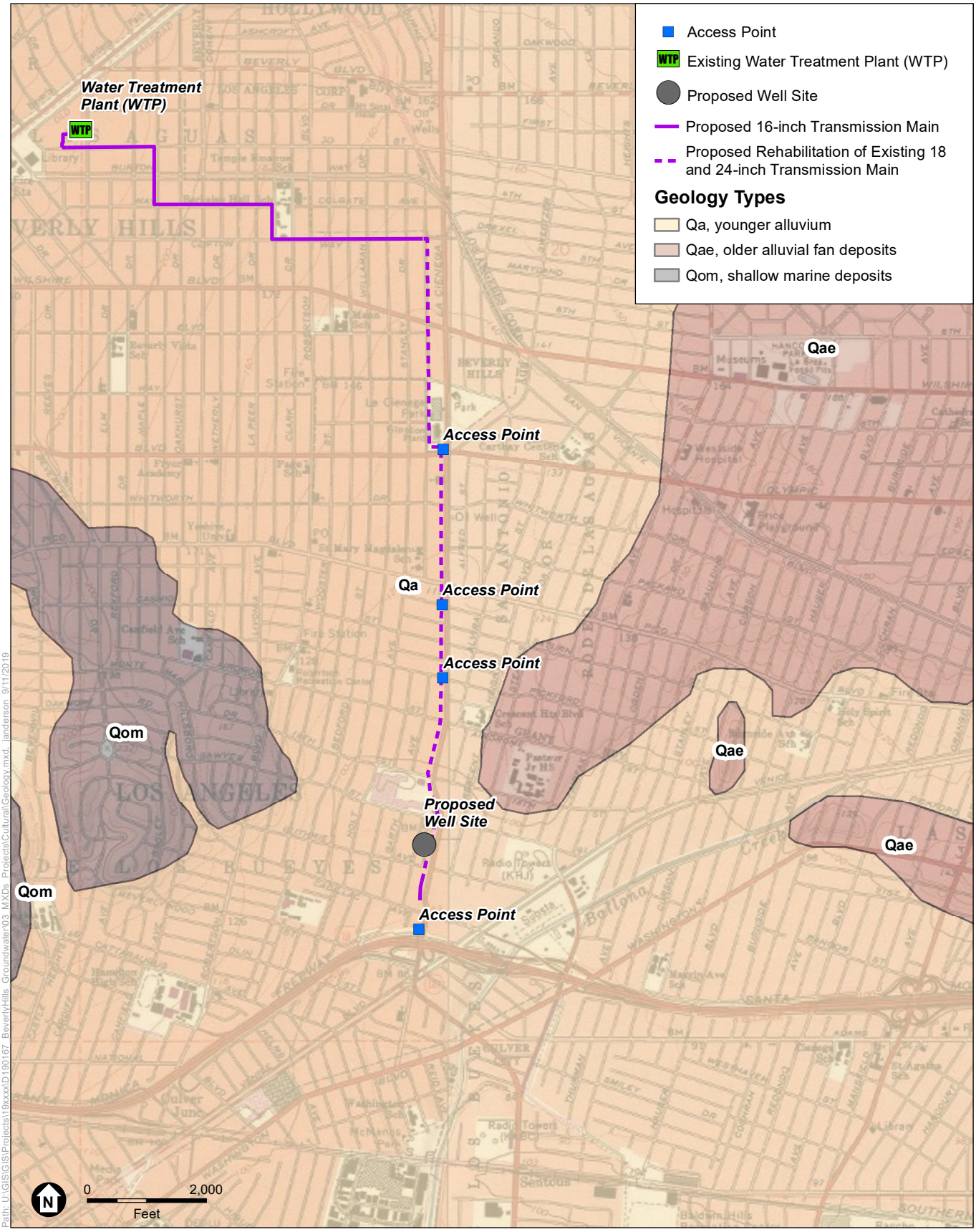
Younger Alluvium (Qa). These sediments consist of unconsolidated silt, sand, and gravel and date from modern times to the Holocene (Dibblee and Ehrenspeck, 1991). Younger alluvium is mapped as occurring across the entirety of the Project Site at the surface. Due to the young age of these deposits, they have low paleontological potential at the surface; however, these sediments increase in age with depth, and therefore fossil resources may be encountered in the deeper levels of this unit. While the exact depth at which the transition to older, high potential sediments [>5,000 years old, following the SVP's definition (SVP, 2010)] is not known, fossils have been discovered across the LA Basin as shallowly as 5-10 feet below ground surface (Jefferson, 1991a, 1991b). These fossils are similar to those described below from older alluvial fan deposits.

Older Alluvial Fan Deposits (Qae). Older alluvial fan deposits occur just to the east of the Project Site, as close as 0.1 – 0.2 miles from the Project Site, indicating these sediments may be present in the subsurface of the Project Site at relatively shallow depths. These sediments date to the Pleistocene and consist of tan to light reddish brown sand with minor gravel detritus from the highlands to the north (Diblee and Ehrenspeck, 1991). These Pleistocene sediments have a rich fossil history in the Los Angeles Basin (Hudson and Brattstrom, 1977; Jefferson, 1991a and b; McDonald and Jefferson, 2008; Miller, 1941, 1971; Roth, 1984; Scott, 2010, Scott and Cox, 2008; Springer et al., 2009). The most common Pleistocene terrestrial mammal fossils include the bones of mammoth, bison, deer, and small mammals, but other taxa, including horse, lion, cheetah, wolf, camel, antelope, peccary, mastodon, capybara, and giant ground sloth, have been reported (Graham and Lundelius, 1994), as well as reptiles such as frogs, salamanders, and snakes (Hudson and Brattstrom, 1977). In addition to illuminating the striking differences between Southern California in the Pleistocene and today, this abundant fossil record has been vital in studies of extinction (e.g. Sandom et al., 2014; Barnosky et al., 2004), ecology (e.g. Connin et al., 1998), and climate change (e.g. Roy et al., 1996).

Shallow Marine Deposits (Qom). Shallow marine deposits occur to the west of the Project Site, as close as 0.4 miles. indicating they may be present in the shallow subsurface of the Project Site. These sediments consist of light gray to light brown sand, pebbly sand gravel, and silt deposited when the area was last submerged by the ocean during the Pleistocene (Diblee and Ehrenspeck, 1991). Similar sediments have a rich fossil history in the LA Basin. In the Cheviot Hills, roughly 1.5 miles west of the southern portion of the Project Site, over one hundred species of marine invertebrates, primarily mollusks, were identified from Pleistocene marine sediments (Rodda,

1957). Across the LA Basin shallow marine deposits assigned to the San Pedro Sand have a strong record of preserving Pleistocene marine and terrestrial fossils. The San Pedro Sand has yielded a diverse fauna of nearshore marine invertebrates such as crabs, snails, bivalves, gastropods, and echinoids (Kennedy, 1975; Valentine, 1989; Woodring, 1957) and vertebrates such as sharks, bony fish, amphibians, reptiles, birds, whales, antelopes, mammoth, dire wolves, rodents, and bison (Barnes and McLeod, 1984; Fitch, 1967; Kennedy, 1975; Woodring, 1957).

Fernando Formation. While the Fernando Formation does not crop out in the vicinity of the Project Site due to truncation by the Hollywood-Santa Monica Fault Zone to the north of the Project Site, subsurficial cross sections developed by Diblee and Ehrenspeck (1991) indicate it is likely present in the subsurface underlying alluvial sediments within the range of the depth for the well (500 ft below ground surface [bgs]). The Fernando Formation dates to the Pliocene and consists of marine siltstone, sandstone, pebbly sandstone, and conglomerate (Morton and Miller, 2006). The lower part of the Fernando Formation consists of a pebble-cobble conglomerate in a sandstone matrix that fines upwards into a coarse sandstone and then a silty sandstone (Schoellhamer et al., 1981). The upper Fernando Formation consists of coarse grained sandstone with conglomerate lenses (Schoellhamer et al., 1981). The Fernando Formation has an extensive record of preserving scientifically significant fossils, including invertebrates such as mollusks, echinoids, and bryozoans (Groves, 1992; Morris, 1976; Woodring, 1938), fish (Huddleston and Takeuchi, 2006), squid (Clarke et al., 1980), and a number of unidentified megafossils (Schoellhamer et al., 1981).



SOURCE: USGS 7.5' Topo Quad Beverly Hills 1978, 1981; Hollywood 1978, 1982; Dibblee Geological Foundation

Beverly Hills Groundwater Wells and Pipeline Project

Figure 3
Geology

ESA

LACM Records Search

On April 19, 2019, ESA requested a database search from the LACM for records of fossil localities in and around the Project Site. The purpose of the museum records search was to: (1) determine whether any previously recorded fossil localities occur in the Project Site, (2) assess the potential for disturbance of these localities during construction, and (3) evaluate the paleontological sensitivity within the Project Site and vicinity.

The records search identified three fossil localities from within 0.1 miles of the Project Site and an additional six localities within one mile. While exact coordinate data is not provided by the LACM, it appears that at least one of these sites may fall within the Project Site. These localities preserve a wide variety of terrestrial vertebrates, such as mammoth, mastodon, bison, horse, birds, and rodents, as well as plants and invertebrate fossils (McLeod, 2019). While the depths of several of these localities are unstated, recorded depths range from 13 to 30 ft below ground surface (bgs) (McLeod, 2019). These results are consistent with the Pleistocene terrestrial fossil record of the LA Basin, as reported in the literature review above.

Paleontological Sensitivity Analysis

The review of the scientific literature and geologic mapping, as well as the records search from LACM, were used to assign paleontological potentials to the geologic units present at the surface and subsurface of the Project Site that would be subject to ground-disturbing activities, following the guidelines of the SVP (1995, 2010):

- **Younger Alluvium (Qa)** – Surficial sediments; **low-to-high potential, increasing with depth**. A wide variety of Ice Age fossils have been found in older alluvial sediments across southern California, as reviewed above, including multiple specimens known from the very near vicinity of the Project Site (McLeod, 2019). The exact depth at which the transition from low to high potential occurs is unknown in the Project Site, depths of 5-10 feet are common in the region (Jefferson, 1991a, 1991b).
- **Older Alluvial Fan Deposits (Qae) –** Subsurficial sediments; **high potential**. A wide variety of Ice Age fossils have been found in these sediments across the Los Angeles Basin, as reviewed above, including multiple localities known from within one mile of the Project Site (McLeod, 2019).
- **Shallow Marine Deposits (Qom)** - Subsurficial sediments; **high potential**. Similar sediments have produced extensive marine fossils of both vertebrate and invertebrate animals, some as close as 1.5 miles from the Project Site (Rodda, 1957).
- **Fernando Formation** – Subsurface; **high potential**. The Fernando Formation is well-known in Southern California for preserving a wide array of marine fossils such as sharks, bony fishes, and marine invertebrates.

Conclusions and Recommendations

As a result of this study, sediments present across the Project Site identified as younger alluvium are assigned low-to-high paleontological potential, increasing with depth. The underlying older

alluvial fan and shallow marine deposits, as well as the Fernando Formation, have high paleontological potential. This classification indicates a high potential for fossils to be present in the subsurface. The following recommendations would serve to protect potentially unique paleontological resources or unique geological features, should they be encountered:

1. A qualified paleontologist meeting the Society of Vertebrate Paleontology (SVP) Standards (SVP, 2010) (Qualified Paleontologist) shall be retained prior to the approval of demolition or grading permits. The Qualified Paleontologist shall provide technical and compliance oversight of all work as it relates to paleontological resources, shall attend the Project kick-off meeting and Project progress meetings on a regular basis, and shall report to the Project Site in the event potential paleontological resources are encountered.
2. The Qualified Paleontologist shall conduct construction worker paleontological resources sensitivity training at the Project kick-off meeting prior to the start of ground disturbing activities (including vegetation removal, pavement removal, etc.). In the event construction crews are phased, additional training shall be conducted for new construction personnel. The training session shall focus on the recognition of the types of paleontological resources that could be encountered within the Project Site and the procedures to be followed if they are found. Documentation shall be retained by the Qualified Paleontologist demonstrating that the appropriate construction personnel attended the training.
3. The Qualified Paleontologist shall develop a Paleontological Resources Monitoring Plan (PRMP) that shall detail the monitoring program necessary for the Project, based off of specific construction methodologies and locations. Construction activities have varying impacts on paleontological resources and may require different monitoring procedures. The PRMP shall take the specific construction plans for the Project to tailor a monitoring plan to the types of construction activities and the geologic units each may encounter. In general, ground disturbance across the Project Site that occurs in undisturbed sediments and exceeds 5-10 feet in depth may impact high potential sediments and therefore should be monitored. This includes; excavation and site preparation at the Well Site, drilling for the Production Well, cut and cover and entrance and exit pits for jack and bore along the proposed transmission main and at all access points for the rehabilitation of the transmission main. Paleontological resources monitoring shall be performed by a qualified paleontological monitor (meeting the standards of the SVP, 2010) under the direction of the Qualified Paleontologist. Depending on the conditions encountered, full-time monitoring can be reduced to part-time inspections or ceased entirely if determined adequate by the Qualified Paleontologist. The Qualified Paleontologist shall spot check the excavation on an intermittent basis and recommend whether the depth of required monitoring should be revised based on his/her observations. Monitors shall have the authority to temporarily halt or divert work away from exposed fossils or potential fossils. Monitors shall prepare daily logs detailing the types of activities and soils observed, and any discoveries. Any significant fossils collected during project-related excavations shall be prepared to the point of identification and curated into an accredited repository with retrievable storage. The Qualified Paleontologist shall prepare a final monitoring and mitigation report for submittal to the City in order to document the results of the monitoring effort and any discoveries.

4. Any significant fossils collected during project-related excavations shall be prepared to the point of identification and curated into an accredited repository with retrievable storage. The Qualified Paleontologist shall prepare a final monitoring and mitigation report for submittal to the City in order to document the results of the monitoring effort and any discoveries. If there are significant discoveries, fossil locality information and final disposition will be included with the final report which will be submitted to the appropriate repository and the City.

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Appendix A

Personnel

EDUCATION

Ph.D., Vertebrate Paleontology; University of Southern California

M.S., Environmental Microbiology; University of Tennessee

B.A. with honors, Ecology and Systematics; William Jewell College & Homerton College, Cambridge University

10 YEARS EXPERIENCE

Alyssa Bell, PhD

Paleontologist

Dr. Alyssa Bell has supervised and peformed field work, authored project reports, and provided scientific and compliance direction and quality control for paleontological projects throughout Southern California. Dr. Bell has accumulated a wealth of field experience, working with crews from a variety of institutions on field sites in California, Arizona, New Mexico, South Dakota, and Utah, and has led her own expeditions in Montana. She has performed all manner of investigations from surveys and assessments to monitoring and fossil idenfitication over the last 15 years as a part of her academic pursuits and professional consultation, with the last three years being exclusively professional endeavors.

In addition to consulting, Dr. Bell serves as a postdoctoral fellow at the Dinosaur Institute of the Natural History Museum of Los Angeles County (LACM). There she is involved in pursuing her own research into fossil birds as well as working with the Institute's field projects and museum-wide education and outreach initiatives. She has also published peer-reviewed articles and book chapters and given numerous presentations at scientific conferences on both her paleontological and microbiological research.

Relevant Experience

ICHA Area 10 (PA 10-2 & 10-4) Archaeological and Paleontological Monitoring, Irvine, CA. *Principal Investigator & Project Paleontologist.* Dr. Bell managed the curatorial process for fossils collected during monitoring of pre-construction activities at the University of California, Irvine, and authored the final report.

Suncrest Reactive Power Support Project, San Diego County, CA. *Principal Investigator.* Dr. Bell authored the paleontological assessment for the Proponent's Environmental Assessment (PEA) in support for a dynamic reactive power support facility and associated 230-kilovolt (kV) transmission line near Alpine, California. The application for Certificate of Public Convenience and Necessary was filed in summer 2015 and the PEA was deemed complete in December 2015.

Washington National Archaeological and Paleontological Monitoring (Access Culver City), Culver City, CA. *Principal Investigator & Project Paleontologist.* Dr. Bell managed the curatorial process for fossils collected during monitoring of pre-construction activities at the Washington national site in Culver City, CA and authored the final report.

OTO Hotels Santa Monica Archaeological and Paleontological Service, Santa Monica, CA. *Principal Investigator.* Dr. Bell supervised paleontological monitoring and mitigation services during construction excavations and grading. Services included implementation of a paleontological mitigation monitoring program and reporting.

Sacred Heart Specific Plan Environmental Impact Report (EIR), La Canada Flintridge, CA. *Principal Investigator.* Dr. Bell prepared paleontological studies and

developed monitoring & mitigation recommendations for the Sacred Heart development project.

Sixth & Bixel Paleontological Monitoring Services Project, Los Angeles, CA. *Principal Investigator & Project Paleontologist.* Dr. Bell supervised paleontological monitoring of preconstruction activities in support of a development project encompassing two parcels in downtown Los Angeles. During these activities, monitors identified and recovered numerous significant vertebrate fossils. Dr. Bell supervised the excavation of fossilized whale remains discovered on-site, and oversaw the collection and curation of all fossil specimens.

Natural and Cultural Support for the Gordon Mull Subdivision EIR, Glendora, CA. *Principal Investigator.* Dr. Bell collected the necessary data to prepare the technical sections and mitigation recommendations to support an EIR prepared by another firm to address the Gordon Mull Subdivision in the city of Glendora. The project is proposes to redevelop a 71-acre, 19-lot located in the San Gabriel Foothills.

Lake Elsinore Lakeshore Town Center Permitting, Riverside County, CA. *Principal Investigator.* Dr. Bell provided paleontological studies and developed monitoring and mitigation recommendations for the Lake Elsinore Town Center project in Riverside County.

San Pedro Plaza Park - Phase III Archaeological Monitor, Los Angeles, CA. *Principal Investigator.* Dr. Bell identified fossils during the mitigation measurement-required archaeological monitoring of earthmoving activities in San Pedro Park Plaza. She is also responsible for curation of the fossil material and authorship of the paleontological section of the final report.

City of Hope Specific Plan and EIR, Duarte, CA. *Principal Investigator.* Dr. Bell provided paleontological resource studies for the City of Hope Specific Plan Project.

Blythe Solar Power Project, Units 1 & 2, Riverside County, CA. *Project Paleontologist.* Dr. Bell supervised paleontological monitoring of preconstruction activities for a solar photo-voltaic cell power-generating facility outside the city of Blythe. As a part of her role, she provided oversight and management of paleontological monitors and development of the final monitoring report.

Industrial Project Environmental Impact Report, Colton, CA. *Principal Investigator.* Dr. Bell provided a paleontological resources study for a six-acre industrial project site at the southwest corner of Agua Mansa Road and Rancho Avenue in the city of Colton.

Mojave Solar Project Paleontological Reporting, San Bernardino County, CA. *Principal Investigator.* Dr. Bell managed curation of fossil materials and authored the final report of paleontological monitoring services provided for construction activities in support of a solar field development project in San Bernardino County.

El Camino Real Bridge Replacement Environmental Services, Atascadero, CA. *Principal Investigator.* Dr. Bell provided environmental services, including preparation of all California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) documentation, technical studies, and permitting, for the replacement of the El Camino Real Bridge over Santa Margarita Creek in Atascadero.

Recycled Water Transmission Water Main Paleo Monitoring, Fresno, CA. *Principal Investigator.* Dr. Bell developed a monitoring and mitigation plan for the city of Fresno recycled water main construction project.

Shafter Wasco Irrigation District Natural and Cultural Resource Evaluations and Air Quality, Kern County CA. *Principal Investigator.* Dr. Bell provided paleontological studies and developed recommendations for the monitoring and mitigation of paleontological resources for the project.

Valentine EIR, Kern County, CA. *Principal Investigator.* Dr. Bell provided paleontological resources support for a 2,000-acre solar PV project in the Mojave Desert. Deliverables included comprehensive technical reports, GIS impact analysis, strategic and permitting support, and a paleontological field survey in the preparation of an EIR and other permitting requirements.

Valentine Solar EIR 115MW Supplemental Reports, Kern County, CA. *Principal Investigator.* Dr. Bell provided paleontological studies in support of changes to the previously established Valentine Solar project.

Valentine Solar Biological and Paleontological Study Updates, Rosamond, Kern County, CA. *Principal Investigator & Project Paleontologist.* Dr. Bell provided paleontological studies, carried out a paleontological survey, and developed monitoring and mitigation guidelines for the Valentine Solar project.

Field Research

2006-Present. The Dinosaur Institute, LACM. Coordinator and Team Leader on expeditions in Montana (Niobrara and Pierre Shale Formations) and Arizona (Chinle Formation). Field assistant on expeditions to Montana (Hell Creek Formation), Utah (Morrison Formation), Arizona (Chinle Formation), New Mexico (Kirtland Formation), and California (Aztec Sandstone). During this period approximately four-six weeks are spent in the field in various locations every year.

2015. Principal Investigator, Field Manager. SWCA Environmental Consultants. Supervision of all paleontological field work, including excavation of a partial whale fossil from a downtown Los Angeles construction site and numerous monitoring projects.

2014. University of Southern California. Field Assistant on an expedition to South Africa (Pre-Cambrian).

2005. Cambridge University. Field Assistant on an expedition in Badlands National Park, South Dakota (White River Group).

2002-2004. Montana State University Northern. Field Assistant on excavations in Montana (Judith River Formation).

Publications

Bell, A. and L. Chiappe, 2015. Identification of a new Hesperornithiform from the Cretaceous Niobrara Chalk and implications for ecologic diversity among early diving birds. PLOS One 10: e0141690.

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evolution among the earliest diving birds. Journal of Systematic Palaeontology 14: 239-251.

Liu, D., L. Chiappe, Y. Zhang, A. Bell, Q. Meng, Q. Ji, and X. Wang, 2014. An advanced, new long-legged bird from the Early Cretaceous of the Jehol Group (northeastern China): insights into the temporal divergence of modern birds. Zootaxa 3884: 253-266.

Bell, A. and L. Chiappe, 2011. Statistical approach for inferring the ecology of Mesozoic birds. Journal of Systematic Paleontology 9: 119-133.

Bell, A. and M.J. Everhart, 2011. Remains of small avians from a Late Cretaceous (Cenomanian) microsite in north central Kansas. Transactions of the Kansas Academy of Science 114: 115-123

O'Connor, J., L. Chiappe, and A. Bell, 2011. Pre-modern birds: avian divergences in the Mesozoic in Kaiser, G. and G. Dyke, Living Dinosaurs. Oxford: Wiley-Blackwell Publishing. pp. 39-114.

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Bell, A., L. McKay, A. Layton, and D. Williams, 2009. Factors influencing the persistence of fecal Bacteroides in stream water. Journal of Environmental Quality 38: 1224-1232.

Bell, A. and M.J. Everhart, 2009. A new specimen of Parahesperornis (Aves: Hesperornithiformes) from the Smoky Hill Chalk (Early Campanian) of western Kansas. Transactions of the Kansas Academy of Science 112: 7-14.

Everhart, M.J. and A. Bell, 2009. A hesperornithiform limb bone from the basal Greenhorn Formation (Late Cretaceous; Middle Cenomanian) of north central Kansas. Journal of Vertebrate Paleontology 29: 952-956.

Conference Presentations

Bell, A., Y.-H.Wu, L. M. Chiappe, 2016. Use of morphometric data in taxonomy and functional morphology: a case study of modern and Cretaceous diving birds. 35th International Geological Congress. Cape Town, South Africa.

Bell, A., 2011. Inferring the ecology of extinct European birds from the Mesozoic and Tertiary. European Association of Vertebrate Paleontology. Heraklion, Crete.

Bell, A. and L.M. Chiappe, 2010. Identifying trends in avian ecomorphology. International Ornithological Congress. Sao Paulo, Brazil.

Bell, A., L.M. Chiappe, and J. O'Connor, 2009. Ecological diversity of Mesozoic birds: morphometric analysis with a phylogenetic perspective. Society of Vertebrate Paleontology. Bristol, United Kingdom.

Bell, A., Z.J. Tseng, and L. Chiappe, 2008. Diving mechanics of the extinct Hesperornithiformes: comparison to modern diving birds. Society of Vertebrate Paleontology. Cleveland, Ohio.

Bell, A., L. Chiappe, S. Susuki, and M. Watanabe, 2008. Phylogenetic and morphometric analysis of a new ornithuromorph from the Barun Goyot Formation, Southern Mongolia. Society of Avian Paleontology and Evolution. Sydney, Australia.

Bell, A., 2008. Diving mechanics of the extinct Hesperornithiformes: comparison to modern diving birds. CalPaleo. Sacramento, California.

Bell, A., L. McKay, A. Layton, D. Williams, 2007. Persistence of Bacteroides in surface water. American Society for Microbiology. Chicago, Illinois.

Bell, A., L. McKay, and A. Layton, 2006. Survival and transport of Bacteroides in streams. Geological Society of America, Southeastern Section. Knoxville, Tennessee.

Bell, A., L. McKay, and A. Layton, 2006. Survival and transport of Bacteroides in streams. American Water Resources Association, Tennessee Division. Nashville, Tennessee.

Bell, A., 2004. Avian phylogenetics: a combined molecular and morphological analysis. David Nelson Duke Colloquium. Kansas City, Missouri.

Appendix D
Noise and Vibration Information

ESA

Project: Beverly Hills Pipeline

Construction Noise Impact on Sensitive Receptors

Parameters

Construction Hours:	8	Daytime hours (7 am to 7 pm)
	0	Evening hours (7 pm to 10 pm)
	0	Nighttime hours (10 pm to 7 am)
Leq to L10 factor	3	

				R1 (Well Site)				Pipeline Work			
Construction Phase **Equipment Type**	**No. of Equip.**	**Reference Noise Level at 50ft, Lmax**	**Acoustical Usage Factor**	**Distance (ft)**	**Lmax**	**Leq**	**L10**	**Distance (ft)**	**Lmax**	**Leq**	**L10**
Well Site Demolition and Pump-to-Waste					**93**	***88***			**93**	***88***	
Jaw Crusher	2	84	10%	25	93	83	86	25	93	83	86
Dozer	1	82	40%	25	88	84	87	25	88	84	87
Excavator	1	81	40%	50	81	77	80	40	83	79	82
Forklift	1	75	10%	50	75	65	68	40	77	67	70
Tractor/Loader/Backhoe	1	80	25%	75	76	70	73	55	79	73	76
Other Equipment	1	85	50%	75	81	78	81	55	84	81	84
Well Construction Monitoring					**88**	***88***			**89**	***89***	
Air Compressor	1	78	40%	25	84	80	83	25	84	80	83
Bore/Drill Rig Truck	2	79	20%	25	88	81	84	25	88	81	84
Cranes	1	81	40%	50	81	77	80	40	83	79	82
Generator Sets	1	81	50%	50	81	78	81	40	83	80	83
Dump/Haul Trucks	1	76	40%	75	72	68	71	65	74	70	73
Other Equipment	4	85	50%	75	87	84	87	65	89	86	89
Pumps	1	81	50%	100	75	72	75	90	76	73	76
Tractor/Loader/Backhoe	1	80	25%	100	74	68	71	90	75	69	72
Well Equipping					**87**	***83***			**87**	***83***	
Cranes	1	81	40%	25	87	83	86	25	87	83	86
Forklift	1	75	10%	50	75	65	68	50	75	65	68
Rehabilitation/Transmission Main Installation					**88**	***87***			**88**	***87***	
Dozer	1	82	40%	25	88	84	87	25	88	84	87
Excavator	1	81	40%	25	87	83	86	25	87	83	86
Tractor/Loader/Backhoe	2	80	25%	75	79	73	76	75	79	73	76
Other Equipment	1	85	50%	150	75	72	75	150	75	72	75
Maximum Noise Level (Overlapping Phases)						***91***				***87***	
(1)Well Site Demo/Pump-to-Waste + Rehab/Transmission Main Installation						***90***					
(2) Rehab/Transmission Main Installation + Well Construction Monitoring						***91***					
(3) Rehab/Transmission Main Installation + Well Equipping						***88***					

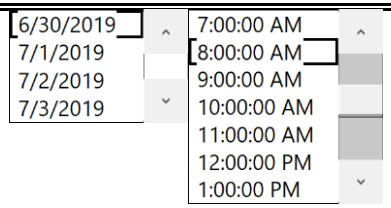
Source for Ref. Noise Levels: LA CEQA Guides, 2006 & FHWA RCNM, 2005

Noise Measurement Data

Project: BH Pipeline **Location:** R1

	06/30/19	07/01/19	07/02/19	07/03/19
12:00:00 AM		44.1		
1:00:00 AM		44.6		
2:00:00 AM		43.4		
3:00:00 AM		48.5		
4:00:00 AM		50.5		
5:00:00 AM		50.8		
6:00:00 AM		52.3		
7:00:00 AM		55.4		
8:00:00 AM	55.0			
9:00:00 AM	63.4			
10:00:00 AM	55.4			
11:00:00 AM	55.4			
12:00:00 PM	53.1			
1:00:00 PM	54.7			
2:00:00 PM	55.4			
3:00:00 PM	54.9			
4:00:00 PM	53.6			
5:00:00 PM	53.9			
6:00:00 PM	53.2			
7:00:00 PM	52.5			
8:00:00 PM	52.1			
9:00:00 PM	50.8			
10:00:00 PM	47.9			
11:00:00 PM	53.0			

Start Date and Time



Start
6/30/19 8:00 AM
End
7/1/19 8:00 AM

CNEL	**58.0**
L_{dn}	57.7
24-hr Max.	63.4
24-hr Min.	43.4
24-hr Nighttime Average[a]	49.6
24-hr Nighttime Max	53.0
24-hr Nighttime Min	43.4
24-hr Daytime Average[a]	55.9
24-hr Daytime Max	63.4
24-hr Daytime Min	50.8
Total Period Average	54.4
Total Period Max	63.4
Total Period Min	43.4
Total Period Daytime Average	55.9
Total Period Daytime Max	63.4
Total Period Daytime Min	53.1
Total Period Nighttime Average	49.6
Total Period Nighttime Max	53.0
Total Period Nighttime Min	43.4

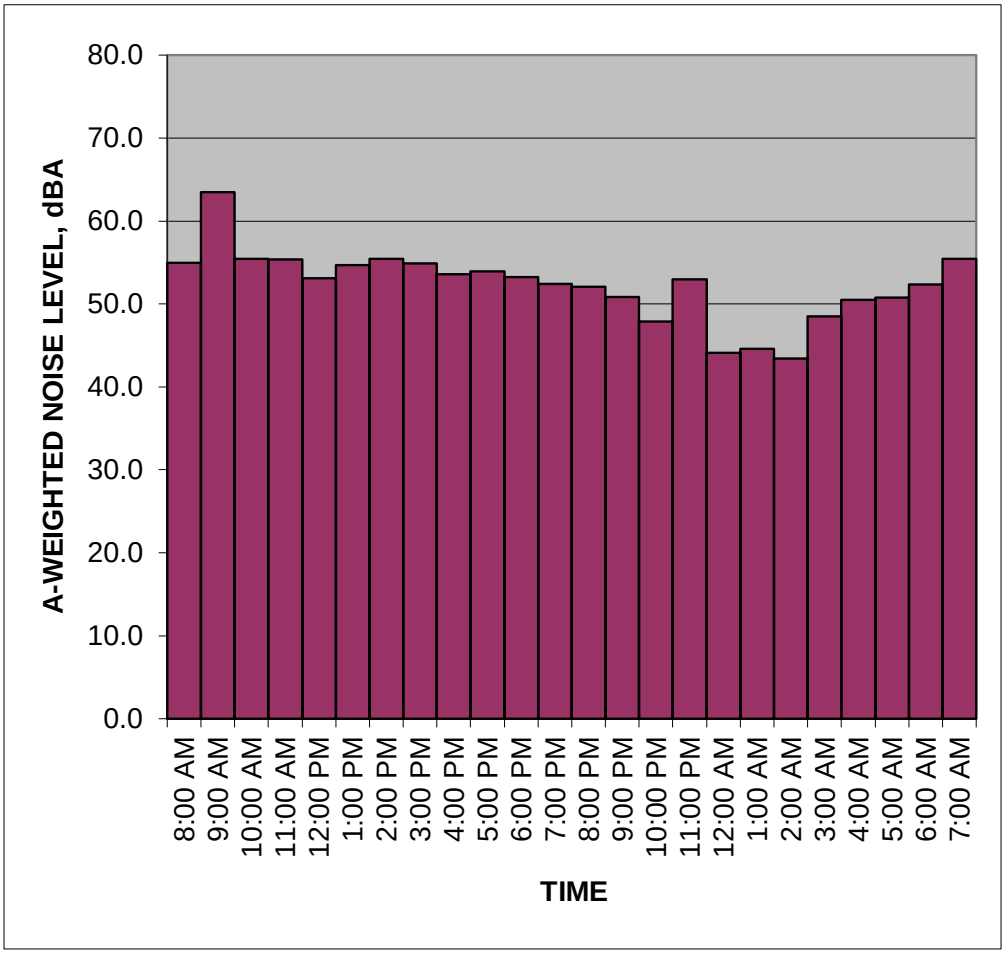
[a] Daytime hours are from 7:00 a.m. to 10:00 p.m., and nighttime hours are from 10:00 p.m. to 7:00 a.m.

Measured Ambient Noise Levels

Project: BH Pipeline
Location: R1
Sources: Ambient

Date: June 30 - July 1, 2019

TIME	HNL, dB(A)
8:00 AM	55.0
9:00 AM	63.4
10:00 AM	55.4
11:00 AM	55.4
12:00 PM	53.1
1:00 PM	54.7
2:00 PM	55.4
3:00 PM	54.9
4:00 PM	53.6
5:00 PM	53.9
6:00 PM	53.2
7:00 PM	52.5
8:00 PM	52.1
9:00 PM	50.8
10:00 PM	47.9
11:00 PM	53.0
12:00 AM	44.1
1:00 AM	44.6
2:00 AM	43.4
3:00 AM	48.5
4:00 AM	50.5
5:00 AM	50.8
6:00 AM	52.3
7:00 AM	55.4
CNEL, dB(A):	**58.0**



NOTES:

Summary

File Name on Meter	R2
File Name on PC	SLM_0005055_LxT_Data_031.01.ldbin
Serial Number	0005055
Model	SoundTrack LxT®
Firmware Version	2.302
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2019-07-01 10:12:36
Stop	2019-07-01 10:27:36
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre Calibration	2019-07-01 09:33:36
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamp	PRMLxT1			
Microphone Correction	Off			
Integration Method	Exponential			
Overload	144.5 dB			
	A	**C**	**Z**	
Under Range Peak	**100.8**	97.8	102.8	dB
Under Range Limit	**49.8**	47.8	55.8	dB
Noise Floor	36.6	37.3	44.9	dB

Results

LA_{Seq}	78.3	dB	
LASE	107.9	dB	
EAS	6.833	mPa^2h	
EAS8	218.655	mPa^2h	
EAS40	1.093	Pa^2h	
$LA_{Speak\ (max)}$	2019-07-01 10:17:00	111.2	dB
LAS_{max}	2019-07-01 10:17:00	99.4	dB
LAS_{min}	2019-07-01 10:17:31	57.8	dB
SEA	-99.9	dB	

Summary

File Name on Meter	R2 Nighttime
File Name on PC	SLM_0005055_LxT_Data_039.00.ldbin
Serial Number	0005055
Model	SoundTrack LxT®
Firmware Version	2.302
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2019-07-02 00:27:55
Stop	2019-07-02 00:42:55
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre Calibration	2019-07-01 09:33:36
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamp	PRMLxT1
Microphone Correction	Off
Integration Method	Exponential
Overload	144.5 dB

	A	**C**	**Z**	
Under Range Peak	100.8	97.8	**102.8**	dB
Under Range Limit	**49.8**	47.8	55.8	dB
Noise Floor	36.6	37.3	44.9	dB

Results

LA_{Seq}	73.8	dB	
LASE	103.3	dB	
EAS	2.388	mPa²h	
EAS8	76.429	mPa²h	
EAS40	382.144	mPa²h	
$LZ_{Speak\ (max)}$	2019-07-02 00:39:10	107.9	dB
LAS_{max}	2019-07-02 00:39:10	85.7	dB
LAS_{min}	2019-07-02 00:27:57	51.8	dB
SEA	-99.9	dB	

LAS > 85.0 dB (Exceedance Counts / Duration)	1	1.8 s
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0 s
LZ_{Speak} > 135.0 dB (Exceedance Counts / Duration)	0	0.0 s
LZ_{Speak} > 137.0 dB (Exceedance Counts / Duration)	0	0.0 s
LZ_{Speak} > 140.0 dB (Exceedance Counts / Duration)	0	0.0 s

Summary

File Name on Meter	R3
File Name on PC	SLM_0005055_LxT_Data_032.01.ldbin
Serial Number	0005055
Model	SoundTrack LxT®
Firmware Version	2.302
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2019-07-01 10:32:56
Stop	2019-07-01 10:47:56
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre Calibration	2019-07-01 09:33:36
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamp	PRMLxT1			
Microphone Correction	Off			
Integration Method	Exponential			
Overload	144.5 dB			
	A	**C**	**Z**	
Under Range Peak	**100.8**	97.8	102.8	dB
Under Range Limit	**49.8**	47.8	55.8	dB
Noise Floor	36.6	37.3	44.9	dB

Results

LA_{Seq}	74.4	dB	
LASE	103.9	dB	
EAS	2.733	mPa^2h	
EAS8	87.461	mPa^2h	
EAS40	437.306	mPa^2h	
$LA_{Speak\ (max)}$	2019-07-01 10:39:07	100.6	dB
LA_{Smax}	2019-07-01 10:42:27	82.3	dB
LA_{Smin}	2019-07-01 10:47:14	54.1	dB
SEA	-99.9	dB	

Summary

File Name on Meter	R3 Nighttime
File Name on PC	SLM_0005055_LxT_Data_038.00.ldbin
Serial Number	0005055
Model	SoundTrack LxT®
Firmware Version	2.302
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2019-07-02 00:10:09
Stop	2019-07-02 00:25:09
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre Calibration	2019-07-01 09:33:36
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamp	PRMLxT1
Microphone Correction	Off
Integration Method	Exponential
Overload	144.5 dB

	A	**C**	**Z**	
Under Range Peak	100.8	97.8	**102.8**	dB
Under Range Limit	**49.8**	47.8	55.8	dB
Noise Floor	36.6	37.3	44.9	dB

Results

LA_{Seq}	74.7 dB		
LASE	104.2 dB		
EAS	2.920 mPa²h		
EAS8	93.444 mPa²h		
EAS40	467.221 mPa²h		
$LZ_{Speak\ (max)}$	2019-07-02 00:17:57	104.0	dB
LAS_{max}	2019-07-02 00:11:13	82.3	dB
LAS_{min}	2019-07-02 00:22:55	53.0	dB
SEA	-99.9 dB		

LAS > 85.0 dB (Exceedance Counts / Duration)	0	0.0 s
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0 s
LZ_{Speak} > 135.0 dB (Exceedance Counts / Duration)	0	0.0 s
LZ_{Speak} > 137.0 dB (Exceedance Counts / Duration)	0	0.0 s
LZ_{Speak} > 140.0 dB (Exceedance Counts / Duration)	0	0.0 s

Summary

File Name on Meter	R4
File Name on PC	SLM_0005055_LxT_Data_033.01.ldbin
Serial Number	0005055
Model	SoundTrack LxT®
Firmware Version	2.302
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2019-07-01 10:55:41
Stop	2019-07-01 11:10:41
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre Calibration	2019-07-01 09:33:36
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamp	PRMLxT1			
Microphone Correction	Off			
Integration Method	Exponential			
Overload	144.5 dB			
	A	**C**	**Z**	
Under Range Peak	**100.8**	97.8	102.8	dB
Under Range Limit	**49.8**	47.8	55.8	dB
Noise Floor	36.6	37.3	44.9	dB

Results

LA_{Seq}	75.0	dB	
LASE	104.6	dB	
EAS	3.169	mPa^2h	
EAS8	101.417	mPa^2h	
EAS40	507.083	mPa^2h	
$LA_{Speak\ (max)}$	2019-07-01 10:58:10	109.7	dB
LA_{Smax}	2019-07-01 10:58:10	93.0	dB
LA_{Smin}	2019-07-01 11:02:10	59.0	dB
SEA	-99.9	dB	

Summary

File Name on Meter	R4 Nighttime
File Name on PC	SLM_0005055_LxT_Data_037.01.ldbin
Serial Number	0005055
Model	SoundTrack LxT®
Firmware Version	2.302
User	
Location	
Job Description	
Note	

Measurement

Description		
Start	2019-07-01	23:48:45
Stop	2019-07-02	00:03:45
Duration		00:15:00.0
Run Time		00:15:00.0
Pause		00:00:00.0
Pre Calibration	2019-07-01	09:33:36
Post Calibration		None
Calibration Deviation		---

Overall Settings

RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamp	PRMLxT1
Microphone Correction	Off
Integration Method	Exponential
Overload	144.5 dB

	A	**C**	**Z**	
Under Range Peak	100.8	97.8	**102.8**	dB
Under Range Limit	**49.8**	47.8	55.8	dB
Noise Floor	36.6	37.3	44.9	dB

Results

LA_{Seq}	74.0	dB		
LASE	103.6	dB		
EAS	2.526	mPa^2h		
EAS8	80.819	mPa^2h		
EAS40	404.097	mPa^2h		
$LZ_{Speak\ (max)}$	2019-07-01 23:53:58		110.4	dB
LAS_{max}	2019-07-01 23:51:44		84.9	dB
LAS_{min}	2019-07-01 23:53:23		49.6	dB
SEA	-99.9	dB		

LAS > 85.0 dB (Exceedance Counts / Duration)	0	0.0 s
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0 s
LZ_{Speak} > 135.0 dB (Exceedance Counts / Duration)	0	0.0 s
LZ_{Speak} > 137.0 dB (Exceedance Counts / Duration)	0	0.0 s
LZ_{Speak} > 140.0 dB (Exceedance Counts / Duration)	0	0.0 s

Summary

File Name on Meter	R5
File Name on PC	SLM_0005055_LxT_Data_034.01.ldbin
Serial Number	0005055
Model	SoundTrack LxT®
Firmware Version	2.302
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2019-07-01 11:21:46
Stop	2019-07-01 11:36:46
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre Calibration	2019-07-01 09:33:36
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamp	PRMLxT1			
Microphone Correction	Off			
Integration Method	Exponential			
Overload	144.5 dB			
	A	**C**	**Z**	
Under Range Peak	**100.8**	97.8	102.8	dB
Under Range Limit	**49.8**	47.8	55.8	dB
Noise Floor	36.6	37.3	44.9	dB

Results

LA_{Seq}	70.7	dB	
LASE	100.2	dB	
EAS	1.174	mPa^2h	
EAS8	37.574	mPa^2h	
EAS40	187.868	mPa^2h	
$LA_{Speak\ (max)}$	2019-07-01 11:33:22	98.7	dB
LA_{Smax}	2019-07-01 11:33:44	84.7	dB
LA_{Smin}	2019-07-01 11:36:22	57.6	dB
SEA	-99.9	dB	

Summary

File Name on Meter	R5 Nighttime
File Name on PC	SLM_0005055_LxT_Data_036.01.ldbin
Serial Number	0005055
Model	SoundTrack LxT®
Firmware Version	2.302
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2019-07-01 23:26:21
Stop	2019-07-01 23:41:21
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre Calibration	2019-07-01 09:33:36
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamp	PRMLxT1
Microphone Correction	Off
Integration Method	Exponential
Overload	144.5 dB

	A	**C**	**Z**	
Under Range Peak	100.8	97.8	**102.8**	dB
Under Range Limit	**49.8**	47.8	55.8	dB
Noise Floor	36.6	37.3	44.9	dB

Results

LA_{Seq}	74.7	dB	
LASE	104.3	dB	
EAS	2.979	mPa^2h	
EAS8	95.327	mPa^2h	
EAS40	476.634	mPa^2h	
$LZ_{Speak\ (max)}$	2019-07-01 23:38:10	112.8	dB
LAS_{max}	2019-07-01 23:38:10	90.8	dB
LAS_{min}	2019-07-01 23:26:48	49.6	dB
SEA	-99.9	dB	

LAS > 85.0 dB (Exceedance Counts / Duration)	2	5.8 s
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0 s
LZ_{Speak} > 135.0 dB (Exceedance Counts / Duration)	0	0.0 s
LZ_{Speak} > 137.0 dB (Exceedance Counts / Duration)	0	0.0 s
LZ_{Speak} > 140.0 dB (Exceedance Counts / Duration)	0	0.0 s

Summary

File Name on Meter	R6
File Name on PC	SLM_0004285_LxT_Data_119.00.ldbin
Serial Number	0004285
Model	SoundTrack LxT®
Firmware Version	2.302
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2019-07-01 11:33:07
Stop	2019-07-01 11:48:07
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre Calibration	2019-07-01 10:19:11
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamp	PRMLxT2B			
Microphone Correction	Off			
Integration Method	Exponential			
Overload	144.7 dB			
	A	**C**	**Z**	
Under Range Peak	**101.0**	98.0	103.0	dB
Under Range Limit	**50.0**	48.0	56.0	dB
Noise Floor	36.8	37.5	45.1	dB

Results

LA_{Seq}	63.3	dB	
LASE	92.9	dB	
EAS	216.028	µPa²h	
EAS8	6.913	mPa²h	
EAS40	34.565	mPa²h	
$LA_{peak\ (max)}$	2019-07-01 11:37:48	101.0	dB
LA_{max}	2019-07-01 11:46:11	81.9	dB
LA_{min}	2019-07-01 11:35:33	45.0	dB
SEA	-99.9	dB	

Summary

File Name on Meter	R7
File Name on PC	SLM_0004285_LxT_Data_118.00.ldbin
Serial Number	0004285
Model	SoundTrack LxT®
Firmware Version	2.302
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2019-07-01 11:06:23
Stop	2019-07-01 11:21:23
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre Calibration	2019-07-01 10:19:11
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamp	PRMLxT2B			
Microphone Correction	Off			
Integration Method	Exponential			
Overload	144.7 dB			
	A		**C**	**Z**
Under Range Peak	**101.0**		98.0	103.0 dB
Under Range Limit	**50.0**		48.0	56.0 dB
Noise Floor	36.8		37.5	45.1 dB

Results

LA_{Seq}	61.8 dB		
LASE	91.3 dB		
EAS	150.936 µPa²h		
EAS8	4.830 mPa²h		
EAS40	24.150 mPa²h		
$LA_{Speak\ (max)}$	2019-07-01 11:07:52	93.6	dB
LA_{Smax}	2019-07-01 11:07:52	79.7	dB
LA_{Smin}	2019-07-01 11:16:29	47.8	dB
SEA	-99.9 dB		

LAS > 85.0 dB (Exceedance Counts / Duration)	0	0.0 s
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0 s
LA_{Speak} > 135.0 dB (Exceedance Counts / Duration)	0	0.0 s
LA_{Speak} > 137.0 dB (Exceedance Counts / Duration)	0	0.0 s
LA_{Speak} > 140.0 dB (Exceedance Counts / Duration)	0	0.0 s

Summary

File Name on Meter	R8
File Name on PC	SLM_0004285_LxT_Data_117.00.ldbin
Serial Number	0004285
Model	SoundTrack LxT®
Firmware Version	2.302
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2019-07-01 10:41:52
Stop	2019-07-01 10:56:52
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre Calibration	2019-07-01 10:19:11
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamp	PRMLxT2B			
Microphone Correction	Off			
Integration Method	Exponential			
Overload	144.7 dB			
	A	**C**	**Z**	
Under Range Peak	**101.0**	98.0	103.0	dB
Under Range Limit	**50.0**	48.0	56.0	dB
Noise Floor	36.8	37.5	45.1	dB

Results

LASeq	54.2	dB	
LASE	83.8	dB	
EAS	26.584	µPa²h	
EAS8	850.703	µPa²h	
EAS40	4.254	mPa²h	
LASpeak (max)	2019-07-01 10:46:27	95.4	dB
LASmax	2019-07-01 10:46:45	68.6	dB
LASmin	2019-07-01 10:49:45	43.5	dB
SEA	-99.9	dB	
LAS > 85.0 dB (Exceedance Counts / Duration)	0	0.0	s
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0	s
LASpeak > 135.0 dB (Exceedance Counts / Duration)	0	0.0	s
LASpeak > 137.0 dB (Exceedance Counts / Duration)	0	0.0	s
LASpeak > 140.0 dB (Exceedance Counts / Duration)	0	0.0	s
LCSeq	63.8	dB	
LASeq	54.2	dB	
LCSeq - LASeq	9.6	dB	
LAIeq	59.0	dB	
LAeq	54.2	dB	
LAIeq - LAeq	4.8	dB	

Summary

File Name on Meter	R9
File Name on PC	SLM_0004285_LxT_Data_116.00.ldbin
Serial Number	0004285
Model	SoundTrack LxT®
Firmware Version	2.302
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2019-07-01 10:21:52
Stop	2019-07-01 10:36:52
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre Calibration	2019-07-01 10:19:12
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamp	PRMLxT2B			
Microphone Correction	Off			
Integration Method	Exponential			
Overload	144.7 dB			
	A	**C**	**Z**	
Under Range Peak	**101.0**	98.0	103.0	dB
Under Range Limit	**50.0**	48.0	56.0	dB
Noise Floor	36.8	37.5	45.1	dB

Results

LA_{Seq}	57.9	dB	
LASE	87.4	dB	
EAS	61.383	µPa²h	
EAS8	1.964	mPa²h	
EAS40	9.821	mPa²h	
$LA_{Speak\ (max)}$	2019-07-01 10:31:33	91.2	dB
LA_{Smax}	2019-07-01 10:29:23	74.5	dB
LA_{Smin}	2019-07-01 10:34:30	45.4	dB
SEA	-99.9	dB	

LAS > 85.0 dB (Exceedance Counts / Duration)	0	0.0 s
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0 s
LA_{Speak} > 135.0 dB (Exceedance Counts / Duration)	0	0.0 s
LA_{Speak} > 137.0 dB (Exceedance Counts / Duration)	0	0.0 s
LA_{Speak} > 140.0 dB (Exceedance Counts / Duration)	0	0.0 s