APPENDICES

APPENDIX A

PLANNING AREA 1 LOT COVERAGES

Table 1: SP-11, Planning Area 1 Lot Coverage Calculations

Lot No.	Address	APN	Lot Size (Sq Ft)	1st Floor Built Area (Sq Ft)	Lot Coverage %	Max. Lot Coverage (35%)	Available 1st Floor Building Area (Sq Ft)	Estimated Grading Based on 1st Floor Bldg Area (CY)
1	1508 Calle Cristina	8448-038-031	99,178	7,350	7.41%	34,712	27,362	**4,500**
2	1514 Calle Cristina	8448-038-032	98,723	N/A	N/A	34,553	34,553	**12,750**
3	1520 Calle Cristina	8448-038-033	67,833	3,680	5.43%	23,742	20,062	**11,000**
4	1526 Calle Cristina	8448-038-034	60,774	3,280	5.40%	21,271	17,991	**9,250**
5	1532 Calle Cristina	8448-038-035	59,222	4,571	7.72%	20,728	16,157	**5,900**
6	1538 Calle Cristina	8448-038-036	84,909	3,800	4.48%	29,718	25,918	**14,500**
7	1544 Calle Cristina	8448-038-037	82,012	4,426	5.40%	28,704	24,278	**13,500**
8	1550 Calle Cristina	8448-038-038	92,589	5,450	5.89%	32,406	26,956	**21,500**
9	1556 Calle Cristina	8448-038-039	174,068	4,520	2.60%	60,924	56,404	**25,000**
10	1562 Calle Cristina	8448-038-040	131,895	N/A	N/A	46,163	46,163	**60,000**
11	1568 Calle Cristina	8448-008-041	932,170	7542	0.81%	326,260	318,718	**200000+**
12	1574 Calle Cristina	8448-038-041	90,599	6900	7.62%	31,710	24,810	**15,000**
13	1580 Calle Cristina	8448-038-042	41,254	6019	14.59%	14,439	8,420	**1,000**
14	2050 Paseo Lucinda	8448-038-043	156,815	6000	3.83%	54,885	48,885	**18,000**
15	2062 Paseo Lucinda	8448-038-044	95,376	3672	3.85%	33,382	29,710	**18,000**
16	2068 Paseo Lucinda	8448-008-042	135,600	2650	1.95%	47,460	44,810	**49,000**
17	2069 Paseo Lucinda	8448-008-043	67,605	5480	8.11%	23,662	18,182	**7,500**
18	2063 Paseo Lucinda	8448-008-044	48,185	4400	9.13%	16,865	12,465	**3,200**
19	2057 Paseo Lucinda	8448-038-045	43,298	N/A	N/A	15,154	15,154	**16,500**
20	1602 Calle Cristina	8448-038-046	30,317	3358	11.08%	10,611	7,253	**2,400**
21	1608 Calle Cristina	8448-038-047	40,419	3645	9.02%	14,147	10,502	**3,250**
22	1614 Calle Cristina	8448-008-045	45,865	3298	7.19%	16,053	12,755	**3,500**
23	1620 Calle Cristina	8448-008-046	62,759	7000	11.15%	21,966	14,966	**7,000**
24	1615 Calle Cristina	8448-008-047	166,971	4172	2.50%	58,440	54,268	**22,000**
25	1609 Calle Cristina	8448-008-048	157,305	3017	1.92%	55,057	52,040	**34,000**
26	1603 Calle Cristina	8448-008-055	126,675	4463	3.52%	44,336	39,873	**38,000**
27	1581 Calle Cristina	8448-038-048	72,594	2661	3.67%	25,408	22,747	**13,500**
28	1575 Calle Cristina	8448-038-049	105,370	3800	3.61%	36,880	33,080	**34,000**
29	1569 Calle Cristina	8448-038-050	105,349	4200	3.99%	36,872	32,672	**18,000**
30	N/A Calle Cristina	8448-038-051	45,346	N/A	N/A	15,871	15,871	**8,800**
31	N/A Calle Cristina	8448-038-052	75,743	N/A	N/A	26,510	26,510	**32,500**
32	1551 Calle Cristina	8448-038-053	77,187	N/A	N/A	27,015	27,015	**36,000**
33	N/A Calle Cristina	8448-038-054	71,943	N/A	N/A	25,180	25,180	**7,900**
34	1539 Calle Cristina	8448-038-055	63,605	6842	10.76%	22,262	15,420	**5,000**
35	1533 Calle Cristina	8448-038-056	54,201	7,960	14.69%	18,970	11,010	**1,200**
36	1527 Calle Cristina	8448-038-057	61,010	6,470	10.60%	21,354	14,884	**850**

		Average Lot Size:	**109,021**	**Average Lot Coverage:**	**6.5%**	**Average Available Building Area:**	**34,251**	**Average Available Grading:** **21,500 CY**
								Total Available Grading: **774,000+ CY**

APPENDIX B

AIR QUALITY AND GREENHOUSE GAS EMISSSION DATA

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	36.00	Dwelling Unit	90.10	1,233,036.00	103

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Average lot size = 109,021sq ft; 36 lots= 3,924,756sq ft= 90.1 acres
Average available building area= 34,251sq feet; 36 lots= 1,233,036 sqft

Construction Phase -

Off-road Equipment - only grading is considered

Off-road Equipment -

Trips and VMT - only grading is considered

On-road Fugitive Dust - only grading is considered

Demolition -

Grading - only grading is considered

Architectural Coating - only grading is considered

Woodstoves -

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Area Coating -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblGrading	MaterialImported	0.00	36,000.00
tblLandUse	LandUseSquareFeet	64,800.00	1,233,036.00
tblLandUse	LotAcreage	11.69	90.10

2.0 Emissions Summary

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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					
2023	0.2671	2.9883	2.3057	6.2800e-003	0.7710	0.1124	0.8834	0.2986	0.1034	0.4021	0.0000	567.5727	567.5727	0.1443	0.0212	577.4951
Maximum	**0.2671**	**2.9883**	**2.3057**	**6.2800e-003**	**0.7710**	**0.1124**	**0.8834**	**0.2986**	**0.1034**	**0.4021**	**0.0000**	**567.5727**	**567.5727**	**0.1443**	**0.0212**	**577.4951**

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					
2023	0.2671	2.9883	2.3057	6.2800e-003	0.3776	0.1124	0.4899	0.1427	0.1034	0.2461	0.0000	567.5722	567.5722	0.1443	0.0212	577.4945
Maximum	**0.2671**	**2.9883**	**2.3057**	**6.2800e-003**	**0.3776**	**0.1124**	**0.4899**	**0.1427**	**0.1034**	**0.2461**	**0.0000**	**567.5722**	**567.5722**	**0.1443**	**0.0212**	**577.4945**

	ROG	NOx	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**	**51.03**	**0.00**	**44.54**	**52.21**	**0.00**	**38.78**	**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	1-1-2023	3-31-2023	1.3490	1.3490
2	4-1-2023	6-30-2023	1.3584	1.3584
3	7-1-2023	9-30-2023	0.5225	0.5225
		Highest	1.3584	1.3584

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.9704	0.0136	0.6000	6.0000e-004		0.0364	0.0364		0.0364	0.0364	3.8239	7.9546	11.7785	0.0120	2.6000e-004	12.1555
Energy	4.9500e-003	0.0423	0.0180	2.7000e-004		3.4200e-003	3.4200e-003		3.4200e-003	3.4200e-003	0.0000	99.1413	99.1413	5.1700e-003	1.4100e-003	99.6911
Mobile	0.1783	0.2052	1.8638	4.0700e-003	0.4311	2.9900e-003	0.4341	0.1150	2.7700e-003	0.1178	0.0000	382.9447	382.9447	0.0258	0.0163	388.4549
Waste						0.0000	0.0000		0.0000	0.0000	8.5723	0.0000	8.5723	0.5066	0.0000	21.2375
Water						0.0000	0.0000		0.0000	0.0000	0.7441	8.3299	9.0740	0.0771	1.8900e-003	11.5655
Total	**5.1537**	**0.2611**	**2.4818**	**4.9400e-003**	**0.4311**	**0.0428**	**0.4739**	**0.1150**	**0.0426**	**0.1576**	**13.1403**	**498.3706**	**511.5109**	**0.6267**	**0.0199**	**533.1046**

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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	4.9704	0.0136	0.6000	6.0000e-004		0.0364	0.0364		0.0364	0.0364	3.8239	7.9546	11.7785	0.0120	2.6000e-004	12.1555
Energy	4.9500e-003	0.0423	0.0180	2.7000e-004		3.4200e-003	3.4200e-003		3.4200e-003	3.4200e-003	0.0000	99.1413	99.1413	5.1700e-003	1.4100e-003	99.6911
Mobile	0.1783	0.2052	1.8638	4.0700e-003	0.4311	2.9900e-003	0.4341	0.1150	2.7700e-003	0.1178	0.0000	382.9447	382.9447	0.0258	0.0163	388.4549
Waste						0.0000	0.0000		0.0000	0.0000	8.5723	0.0000	8.5723	0.5066	0.0000	21.2375
Water						0.0000	0.0000		0.0000	0.0000	0.7441	8.3299	9.0740	0.0771	1.8900e-003	11.5655
Total	**5.1537**	**0.2611**	**2.4818**	**4.9400e-003**	**0.4311**	**0.0428**	**0.4739**	**0.1150**	**0.0426**	**0.1576**	**13.1403**	**498.3706**	**511.5109**	**0.6267**	**0.0199**	**533.1046**

	ROG	NOx	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	Grading	Grading	1/1/2023	8/4/2023	5	155	

Acres of Grading (Site Preparation Phase): 0

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Acres of Grading (Grading Phase): 465

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
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

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
Grading	8	20.00	0.00	4,500.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

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3.2 Grading - 2023

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					0.7153	0.0000	0.7153	0.2835	0.0000	0.2835	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2574	2.6750	2.1740	4.8100e-003		0.1104	0.1104		0.1016	0.1016	0.0000	422.6479	422.6479	0.1367	0.0000	426.0652
Total	**0.2574**	**2.6750**	**2.1740**	**4.8100e-003**	**0.7153**	**0.1104**	**0.8257**	**0.2835**	**0.1016**	**0.3850**	**0.0000**	**422.6479**	**422.6479**	**0.1367**	**0.0000**	**426.0652**

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	4.7500e-003	0.3094	0.0788	1.3200e-003	0.0387	1.8500e-003	0.0406	0.0106	1.7700e-003	0.0124	0.0000	131.2356	131.2356	7.2200e-003	0.0208	137.6268
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	4.9200e-003	3.9100e-003	0.0530	1.5000e-004	0.0170	1.0000e-004	0.0171	4.5100e-003	1.0000e-004	4.6100e-003	0.0000	13.6892	13.6892	3.6000e-004	3.5000e-004	13.8031
Total	**9.6700e-003**	**0.3133**	**0.1317**	**1.4700e-003**	**0.0557**	**1.9500e-003**	**0.0577**	**0.0151**	**1.8700e-003**	**0.0170**	**0.0000**	**144.9248**	**144.9248**	**7.5800e-003**	**0.0212**	**151.4299**

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3.2 Grading - 2023

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					0.3219	0.0000	0.3219	0.1276	0.0000	0.1276	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2574	2.6750	2.1740	4.8100e-003		0.1104	0.1104		0.1016	0.1016	0.0000	422.6474	422.6474	0.1367	0.0000	426.0647
Total	**0.2574**	**2.6750**	**2.1740**	**4.8100e-003**	**0.3219**	**0.1104**	**0.4323**	**0.1276**	**0.1016**	**0.2291**	**0.0000**	**422.6474**	**422.6474**	**0.1367**	**0.0000**	**426.0647**

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	4.7500e-003	0.3094	0.0788	1.3200e-003	0.0387	1.8500e-003	0.0406	0.0106	1.7700e-003	0.0124	0.0000	131.2356	131.2356	7.2200e-003	0.0208	137.6268
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	4.9200e-003	3.9100e-003	0.0530	1.5000e-004	0.0170	1.0000e-004	0.0171	4.5100e-003	1.0000e-004	4.6100e-003	0.0000	13.6892	13.6892	3.6000e-004	3.5000e-004	13.8031
Total	**9.6700e-003**	**0.3133**	**0.1317**	**1.4700e-003**	**0.0557**	**1.9500e-003**	**0.0577**	**0.0151**	**1.8700e-003**	**0.0170**	**0.0000**	**144.9248**	**144.9248**	**7.5800e-003**	**0.0212**	**151.4299**

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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	0.1783	0.2052	1.8638	4.0700e-003	0.4311	2.9900e-003	0.4341	0.1150	2.7700e-003	0.1178	0.0000	382.9447	382.9447	0.0258	0.0163	388.4549
Unmitigated	0.1783	0.2052	1.8638	4.0700e-003	0.4311	2.9900e-003	0.4341	0.1150	2.7700e-003	0.1178	0.0000	382.9447	382.9447	0.0258	0.0163	388.4549

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	339.84	343.44	307.80	1,147,402	1,147,402
Total	339.84	343.44	307.80	1,147,402	1,147,402

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
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.542464	0.063735	0.188241	0.126899	0.023249	0.006239	0.010717	0.008079	0.000923	0.000604	0.024795	0.000702	0.003352

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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	50.1685	50.1685	4.2300e-003	5.1000e-004	50.4274
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	50.1685	50.1685	4.2300e-003	5.1000e-004	50.4274
NaturalGas Mitigated	4.9500e-003	0.0423	0.0180	2.7000e-004		3.4200e-003	3.4200e-003		3.4200e-003	3.4200e-003	0.0000	48.9728	48.9728	9.4000e-004	9.0000e-004	49.2638
NaturalGas Unmitigated	4.9500e-003	0.0423	0.0180	2.7000e-004		3.4200e-003	3.4200e-003		3.4200e-003	3.4200e-003	0.0000	48.9728	48.9728	9.4000e-004	9.0000e-004	49.2638

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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					
Single Family Housing	917715	4.9500e-003	0.0423	0.0180	2.7000e-004		3.4200e-003	3.4200e-003		3.4200e-003	3.4200e-003	0.0000	48.9728	48.9728	9.4000e-004	9.0000e-004	49.2638
Total		**4.9500e-003**	**0.0423**	**0.0180**	**2.7000e-004**		**3.4200e-003**	**3.4200e-003**		**3.4200e-003**	**3.4200e-003**	**0.0000**	**48.9728**	**48.9728**	**9.4000e-004**	**9.0000e-004**	**49.2638**

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					
Single Family Housing	917715	4.9500e-003	0.0423	0.0180	2.7000e-004		3.4200e-003	3.4200e-003		3.4200e-003	3.4200e-003	0.0000	48.9728	48.9728	9.4000e-004	9.0000e-004	49.2638
Total		**4.9500e-003**	**0.0423**	**0.0180**	**2.7000e-004**		**3.4200e-003**	**3.4200e-003**		**3.4200e-003**	**3.4200e-003**	**0.0000**	**48.9728**	**48.9728**	**9.4000e-004**	**9.0000e-004**	**49.2638**

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5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	282886	50.1685	4.2300e-003	5.1000e-004	50.4274
Total		**50.1685**	**4.2300e-003**	**5.1000e-004**	**50.4274**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	282886	50.1685	4.2300e-003	5.1000e-004	50.4274
Total		**50.1685**	**4.2300e-003**	**5.1000e-004**	**50.4274**

6.0 Area Detail

6.1 Mitigation Measures Area

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.9704	0.0136	0.6000	6.0000e-004		0.0364	0.0364		0.0364	0.0364	3.8239	7.9546	11.7785	0.0120	2.6000e-004	12.1555
Unmitigated	4.9704	0.0136	0.6000	6.0000e-004		0.0364	0.0364		0.0364	0.0364	3.8239	7.9546	11.7785	0.0120	2.6000e-004	12.1555

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	0.3858					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.4556					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.1179	9.3400e-003	0.2289	5.8000e-004		0.0344	0.0344		0.0344	0.0344	3.8239	7.3482	11.1721	0.0114	2.6000e-004	11.5345
Landscaping	0.0112	4.2800e-003	0.3711	2.0000e-005		2.0600e-003	2.0600e-003		2.0600e-003	2.0600e-003	0.0000	0.6064	0.6064	5.8000e-004	0.0000	0.6210
Total	**4.9704**	**0.0136**	**0.6000**	**6.0000e-004**		**0.0364**	**0.0364**		**0.0364**	**0.0364**	**3.8239**	**7.9546**	**11.7785**	**0.0120**	**2.6000e-004**	**12.1555**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.3858					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	4.4556					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.1179	9.3400e-003	0.2289	5.8000e-004		0.0344	0.0344		0.0344	0.0344	3.8239	7.3482	11.1721	0.0114	2.6000e-004	11.5345
Landscaping	0.0112	4.2800e-003	0.3711	2.0000e-005		2.0600e-003	2.0600e-003		2.0600e-003	2.0600e-003	0.0000	0.6064	0.6064	5.8000e-004	0.0000	0.6210
Total	**4.9704**	**0.0136**	**0.6000**	**6.0000e-004**		**0.0364**	**0.0364**		**0.0364**	**0.0364**	**3.8239**	**7.9546**	**11.7785**	**0.0120**	**2.6000e-004**	**12.1555**

7.0 Water Detail

7.1 Mitigation Measures Water

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	9.0740	0.0771	1.8900e-003	11.5655
Unmitigated	9.0740	0.0771	1.8900e-003	11.5655

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	2.34554 / 1.47871	9.0740	0.0771	1.8900e-003	11.5655
Total		**9.0740**	**0.0771**	**1.8900e-003**	**11.5655**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	2.34554 / 1.47871	9.0740	0.0771	1.8900e-003	11.5655
Total		**9.0740**	**0.0771**	**1.8900e-003**	**11.5655**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	8.5723	0.5066	0.0000	21.2375
Unmitigated	8.5723	0.5066	0.0000	21.2375

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	42.23	8.5723	0.5066	0.0000	21.2375
Total		**8.5723**	**0.5066**	**0.0000**	**21.2375**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	42.23	8.5723	0.5066	0.0000	21.2375
Total		**8.5723**	**0.5066**	**0.0000**	**21.2375**

9.0 Operational Offroad

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

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	36.00	Dwelling Unit	90.10	1,233,036.00	103

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Average lot size = 109,021sq ft; 36 lots= 3,924,756sq ft= 90.1 acres
Average available building area= 34,251sq feet; 36 lots= 1,233,036 sqft

Construction Phase -

Off-road Equipment - only grading is considered

Off-road Equipment -

Trips and VMT - only grading is considered

On-road Fugitive Dust - only grading is considered

Demolition -

Grading - only grading is considered

Architectural Coating - only grading is considered

Woodstoves -

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Area Coating -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblGrading	MaterialImported	0.00	36,000.00
tblLandUse	LandUseSquareFeet	64,800.00	1,233,036.00
tblLandUse	LotAcreage	11.69	90.10

2.0 Emissions Summary

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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					
2023	3.4487	38.3487	29.7871	0.0811	9.9616	1.4497	11.4113	3.8564	1.3346	5.1910	0.0000	8,079.7877	8,079.7877	2.0521	0.3009	8,220.7585
Maximum	**3.4487**	**38.3487**	**29.7871**	**0.0811**	**9.9616**	**1.4497**	**11.4113**	**3.8564**	**1.3346**	**5.1910**	**0.0000**	**8,079.7877**	**8,079.7877**	**2.0521**	**0.3009**	**8,220.7585**

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					
2023	3.4487	38.3487	29.7871	0.0811	4.8852	1.4497	6.3349	1.8446	1.3346	3.1792	0.0000	8,079.7877	8,079.7877	2.0521	0.3009	8,220.7585
Maximum	**3.4487**	**38.3487**	**29.7871**	**0.0811**	**4.8852**	**1.4497**	**6.3349**	**1.8446**	**1.3346**	**3.1792**	**0.0000**	**8,079.7877**	**8,079.7877**	**2.0521**	**0.3009**	**8,220.7585**

	ROG	NOx	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**	**50.96**	**0.00**	**44.49**	**52.17**	**0.00**	**38.75**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	36.0505	0.7812	21.2767	0.0469		2.7664	2.7664		2.7664	2.7664	337.2091	653.3479	990.5570	1.0108	0.0229	1,022.6462
Energy	0.0271	0.2317	0.0986	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7985	295.7985	5.6700e-003	5.4200e-003	297.5563
Mobile	1.0368	1.0529	10.6187	0.0236	2.4708	0.0168	2.4876	0.6582	0.0156	0.6738		2,451.4128	2,451.4128	0.1563	0.0963	2,484.0122
Total	**37.1144**	**2.0658**	**31.9939**	**0.0720**	**2.4708**	**2.8020**	**5.2728**	**0.6582**	**2.8008**	**3.4589**	**337.2091**	**3,400.5592**	**3,737.7682**	**1.1728**	**0.1246**	**3,804.2147**

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	36.0505	0.7812	21.2767	0.0469		2.7664	2.7664		2.7664	2.7664	337.2091	653.3479	990.5570	1.0108	0.0229	1,022.6462
Energy	0.0271	0.2317	0.0986	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7985	295.7985	5.6700e-003	5.4200e-003	297.5563
Mobile	1.0368	1.0529	10.6187	0.0236	2.4708	0.0168	2.4876	0.6582	0.0156	0.6738		2,451.4128	2,451.4128	0.1563	0.0963	2,484.0122
Total	**37.1144**	**2.0658**	**31.9939**	**0.0720**	**2.4708**	**2.8020**	**5.2728**	**0.6582**	**2.8008**	**3.4589**	**337.2091**	**3,400.5592**	**3,737.7682**	**1.1728**	**0.1246**	**3,804.2147**

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	ROG	NOx	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	Grading	Grading	1/1/2023	8/4/2023	5	155	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 465

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
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

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
Grading	8	20.00	0.00	4,500.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2299	0.0000	9.2299	3.6577	0.0000	3.6577			0.0000			0.0000
Off-Road	3.3217	34.5156	28.0512	0.0621		1.4245	1.4245		1.3105	1.3105		6,011.4777	6,011.4777	1.9442		6,060.0836
Total	**3.3217**	**34.5156**	**28.0512**	**0.0621**	**9.2299**	**1.4245**	**10.6543**	**3.6577**	**1.3105**	**4.9683**		**6,011.4777**	**6,011.4777**	**1.9442**		**6,060.0836**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Grading - 2023

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	0.0630	3.7884	1.0112	0.0170	0.5082	0.0239	0.5321	0.1393	0.0229	0.1622		1,865.7874	1,865.7874	0.1028	0.2963	1,956.6508
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
Worker	0.0640	0.0447	0.7248	1.9800e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		202.5226	202.5226	5.0400e-003	4.6200e-003	204.0242
Total	**0.1270**	**3.8331**	**1.7359**	**0.0190**	**0.7317**	**0.0253**	**0.7570**	**0.1986**	**0.0241**	**0.2227**		**2,068.3100**	**2,068.3100**	**0.1079**	**0.3009**	**2,160.6750**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.1534	0.0000	4.1534	1.6460	0.0000	1.6460			0.0000			0.0000
Off-Road	3.3217	34.5156	28.0512	0.0621		1.4245	1.4245		1.3105	1.3105	0.0000	6,011.4777	6,011.4777	1.9442		6,060.0836
Total	**3.3217**	**34.5156**	**28.0512**	**0.0621**	**4.1534**	**1.4245**	**5.5779**	**1.6460**	**1.3105**	**2.9565**	**0.0000**	**6,011.4777**	**6,011.4777**	**1.9442**		**6,060.0836**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Grading - 2023

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	0.0630	3.7884	1.0112	0.0170	0.5082	0.0239	0.5321	0.1393	0.0229	0.1622		1,865.7874	1,865.7874	0.1028	0.2963	1,956.6508
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
Worker	0.0640	0.0447	0.7248	1.9800e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		202.5226	202.5226	5.0400e-003	4.6200e-003	204.0242
Total	**0.1270**	**3.8331**	**1.7359**	**0.0190**	**0.7317**	**0.0253**	**0.7570**	**0.1986**	**0.0241**	**0.2227**		**2,068.3100**	**2,068.3100**	**0.1079**	**0.3009**	**2,160.6750**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	1.0368	1.0529	10.6187	0.0236	2.4708	0.0168	2.4876	0.6582	0.0156	0.6738		2,451.4128	2,451.4128	0.1563	0.0963	2,484.0122
Unmitigated	1.0368	1.0529	10.6187	0.0236	2.4708	0.0168	2.4876	0.6582	0.0156	0.6738		2,451.4128	2,451.4128	0.1563	0.0963	2,484.0122

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	339.84	343.44	307.80	1,147,402	1,147,402
Total	339.84	343.44	307.80	1,147,402	1,147,402

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
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.542464	0.063735	0.188241	0.126899	0.023249	0.006239	0.010717	0.008079	0.000923	0.000604	0.024795	0.000702	0.003352

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0271	0.2317	0.0986	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7985	295.7985	5.6700e-003	5.4200e-003	297.5563
NaturalGas Unmitigated	0.0271	0.2317	0.0986	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7985	295.7985	5.6700e-003	5.4200e-003	297.5563

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					
Single Family Housing	2514.29	0.0271	0.2317	0.0986	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7985	295.7985	5.6700e-003	5.4200e-003	297.5563
Total		**0.0271**	**0.2317**	**0.0986**	**1.4800e-003**		**0.0187**	**0.0187**		**0.0187**	**0.0187**		**295.7985**	**295.7985**	**5.6700e-003**	**5.4200e-003**	**297.5563**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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					
Single Family Housing	2.51429	0.0271	0.2317	0.0986	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7985	295.7985	5.6700e-003	5.4200e-003	297.5563
Total		**0.0271**	**0.2317**	**0.0986**	**1.4800e-003**		**0.0187**	**0.0187**		**0.0187**	**0.0187**		**295.7985**	**295.7985**	**5.6700e-003**	**5.4200e-003**	**297.5563**

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	36.0505	0.7812	21.2767	0.0469		2.7664	2.7664		2.7664	2.7664	337.2091	653.3479	990.5570	1.0108	0.0229	1,022.6462
Unmitigated	36.0505	0.7812	21.2767	0.0469		2.7664	2.7664		2.7664	2.7664	337.2091	653.3479	990.5570	1.0108	0.0229	1,022.6462

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	2.1138					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.4141					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	9.4333	0.7469	18.3079	0.0467		2.7500	2.7500		2.7500	2.7500	337.2091	648.0000	985.2091	1.0056	0.0229	1,017.1701
Landscaping	0.0893	0.0342	2.9688	1.6000e-004		0.0165	0.0165		0.0165	0.0165		5.3479	5.3479	5.1300e-003		5.4762
Total	**36.0505**	**0.7812**	**21.2767**	**0.0469**		**2.7664**	**2.7664**		**2.7664**	**2.7664**	**337.2091**	**653.3479**	**990.5569**	**1.0108**	**0.0229**	**1,022.6462**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.1138					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.4141					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	9.4333	0.7469	18.3079	0.0467		2.7500	2.7500		2.7500	2.7500	337.2091	648.0000	985.2091	1.0056	0.0229	1,017.1701
Landscaping	0.0893	0.0342	2.9688	1.6000e-004		0.0165	0.0165		0.0165	0.0165		5.3479	5.3479	5.1300e-003		5.4762
Total	**36.0505**	**0.7812**	**21.2767**	**0.0469**		**2.7664**	**2.7664**		**2.7664**	**2.7664**	**337.2091**	**653.3479**	**990.5569**	**1.0108**	**0.0229**	**1,022.6462**

7.0 Water Detail

7.1 Mitigation Measures Water

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	36.00	Dwelling Unit	90.10	1,233,036.00	103

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Average lot size = 109,021sq ft; 36 lots= 3,924,756sq ft= 90.1 acres
Average available building area= 34,251sq feet; 36 lots= 1,233,036 sqft

Construction Phase -

Off-road Equipment - only grading is considered

Off-road Equipment -

Trips and VMT - only grading is considered

On-road Fugitive Dust - only grading is considered

Demolition -

Grading - only grading is considered

Architectural Coating - only grading is considered

Woodstoves -

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Area Coating -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblGrading	MaterialImported	0.00	36,000.00
tblLandUse	LandUseSquareFeet	64,800.00	1,233,036.00
tblLandUse	LotAcreage	11.69	90.10

2.0 Emissions Summary

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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					
2023	3.4495	38.5204	29.7424	0.0810	9.9616	1.4498	11.4114	3.8564	1.3347	5.1910	0.0000	8,071.0771	8,071.0771	2.0520	0.3015	8,212.2334
Maximum	**3.4495**	**38.5204**	**29.7424**	**0.0810**	**9.9616**	**1.4498**	**11.4114**	**3.8564**	**1.3347**	**5.1910**	**0.0000**	**8,071.0771**	**8,071.0771**	**2.0520**	**0.3015**	**8,212.2334**

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					
2023	3.4495	38.5204	29.7424	0.0810	4.8852	1.4498	6.3350	1.8446	1.3347	3.1793	0.0000	8,071.0771	8,071.0771	2.0520	0.3015	8,212.2334
Maximum	**3.4495**	**38.5204**	**29.7424**	**0.0810**	**4.8852**	**1.4498**	**6.3350**	**1.8446**	**1.3347**	**3.1793**	**0.0000**	**8,071.0771**	**8,071.0771**	**2.0520**	**0.3015**	**8,212.2334**

	ROG	NOx	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**	**50.96**	**0.00**	**44.49**	**52.17**	**0.00**	**38.75**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	36.0505	0.7812	21.2767	0.0469		2.7664	2.7664		2.7664	2.7664	337.2091	653.3479	990.5570	1.0108	0.0229	1,022.6462
Energy	0.0271	0.2317	0.0986	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7985	295.7985	5.6700e-003	5.4200e-003	297.5563
Mobile	1.0187	1.1370	10.3796	0.0226	2.4708	0.0168	2.4876	0.6582	0.0156	0.6738		2,347.1947	2,347.1947	0.1606	0.1005	2,381.1633
Total	**37.0963**	**2.1499**	**31.7548**	**0.0710**	**2.4708**	**2.8020**	**5.2728**	**0.6582**	**2.8008**	**3.4589**	**337.2091**	**3,296.3411**	**3,633.5502**	**1.1770**	**0.1288**	**3,701.3658**

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	36.0505	0.7812	21.2767	0.0469		2.7664	2.7664		2.7664	2.7664	337.2091	653.3479	990.5570	1.0108	0.0229	1,022.6462
Energy	0.0271	0.2317	0.0986	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7985	295.7985	5.6700e-003	5.4200e-003	297.5563
Mobile	1.0187	1.1370	10.3796	0.0226	2.4708	0.0168	2.4876	0.6582	0.0156	0.6738		2,347.1947	2,347.1947	0.1606	0.1005	2,381.1633
Total	**37.0963**	**2.1499**	**31.7548**	**0.0710**	**2.4708**	**2.8020**	**5.2728**	**0.6582**	**2.8008**	**3.4589**	**337.2091**	**3,296.3411**	**3,633.5502**	**1.1770**	**0.1288**	**3,701.3658**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	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	Grading	Grading	1/1/2023	8/4/2023	5	155	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 465

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
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

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
Grading	8	20.00	0.00	4,500.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2299	0.0000	9.2299	3.6577	0.0000	3.6577			0.0000			0.0000
Off-Road	3.3217	34.5156	28.0512	0.0621		1.4245	1.4245		1.3105	1.3105		6,011.4777	6,011.4777	1.9442		6,060.0836
Total	**3.3217**	**34.5156**	**28.0512**	**0.0621**	**9.2299**	**1.4245**	**10.6543**	**3.6577**	**1.3105**	**4.9683**		**6,011.4777**	**6,011.4777**	**1.9442**		**6,060.0836**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Grading - 2023

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	0.0589	3.9554	1.0251	0.0170	0.5082	0.0240	0.5322	0.1393	0.0229	0.1623		1,867.7540	1,867.7540	0.1026	0.2966	1,958.7074
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
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1277**	**4.0048**	**1.6912**	**0.0189**	**0.7317**	**0.0253**	**0.7571**	**0.1986**	**0.0242**	**0.2228**		**2,059.5994**	**2,059.5994**	**0.1077**	**0.3015**	**2,152.1498**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.1534	0.0000	4.1534	1.6460	0.0000	1.6460			0.0000			0.0000
Off-Road	3.3217	34.5156	28.0512	0.0621		1.4245	1.4245		1.3105	1.3105	0.0000	6,011.4777	6,011.4777	1.9442		6,060.0836
Total	**3.3217**	**34.5156**	**28.0512**	**0.0621**	**4.1534**	**1.4245**	**5.5779**	**1.6460**	**1.3105**	**2.9565**	**0.0000**	**6,011.4777**	**6,011.4777**	**1.9442**		**6,060.0836**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Grading - 2023

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	0.0589	3.9554	1.0251	0.0170	0.5082	0.0240	0.5322	0.1393	0.0229	0.1623		1,867.7540	1,867.7540	0.1026	0.2966	1,958.7074
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
Worker	0.0688	0.0493	0.6662	1.8700e-003	0.2236	1.3500e-003	0.2249	0.0593	1.2400e-003	0.0605		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
Total	**0.1277**	**4.0048**	**1.6912**	**0.0189**	**0.7317**	**0.0253**	**0.7571**	**0.1986**	**0.0242**	**0.2228**		**2,059.5994**	**2,059.5994**	**0.1077**	**0.3015**	**2,152.1498**

7145_San Dimas MCTA 20-0005 - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	1.0187	1.1370	10.3796	0.0226	2.4708	0.0168	2.4876	0.6582	0.0156	0.6738		2,347.1947	2,347.1947	0.1606	0.1005	2,381.1633
Unmitigated	1.0187	1.1370	10.3796	0.0226	2.4708	0.0168	2.4876	0.6582	0.0156	0.6738		2,347.1947	2,347.1947	0.1606	0.1005	2,381.1633

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	339.84	343.44	307.80	1,147,402	1,147,402
Total	339.84	343.44	307.80	1,147,402	1,147,402

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
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.542464	0.063735	0.188241	0.126899	0.023249	0.006239	0.010717	0.008079	0.000923	0.000604	0.024795	0.000702	0.003352

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	0.0271	0.2317	0.0986	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7985	295.7985	5.6700e-003	5.4200e-003	297.5563
NaturalGas Unmitigated	0.0271	0.2317	0.0986	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7985	295.7985	5.6700e-003	5.4200e-003	297.5563

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					
Single Family Housing	2514.29	0.0271	0.2317	0.0986	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7985	295.7985	5.6700e-003	5.4200e-003	297.5563
Total		**0.0271**	**0.2317**	**0.0986**	**1.4800e-003**		**0.0187**	**0.0187**		**0.0187**	**0.0187**		**295.7985**	**295.7985**	**5.6700e-003**	**5.4200e-003**	**297.5563**

7145_San Dimas MCTA 20-0005 - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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					
Single Family Housing	2.51429	0.0271	0.2317	0.0986	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.7985	295.7985	5.6700e-003	5.4200e-003	297.5563
Total		**0.0271**	**0.2317**	**0.0986**	**1.4800e-003**		**0.0187**	**0.0187**		**0.0187**	**0.0187**		**295.7985**	**295.7985**	**5.6700e-003**	**5.4200e-003**	**297.5563**

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	36.0505	0.7812	21.2767	0.0469		2.7664	2.7664		2.7664	2.7664	337.2091	653.3479	990.5570	1.0108	0.0229	1,022.6462
Unmitigated	36.0505	0.7812	21.2767	0.0469		2.7664	2.7664		2.7664	2.7664	337.2091	653.3479	990.5570	1.0108	0.0229	1,022.6462

7145_San Dimas MCTA 20-0005 - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	2.1138					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.4141					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	9.4333	0.7469	18.3079	0.0467		2.7500	2.7500		2.7500	2.7500	337.2091	648.0000	985.2091	1.0056	0.0229	1,017.1701
Landscaping	0.0893	0.0342	2.9688	1.6000e-004		0.0165	0.0165		0.0165	0.0165		5.3479	5.3479	5.1300e-003		5.4762
Total	**36.0505**	**0.7812**	**21.2767**	**0.0469**		**2.7664**	**2.7664**		**2.7664**	**2.7664**	**337.2091**	**653.3479**	**990.5569**	**1.0108**	**0.0229**	**1,022.6462**

7145_San Dimas MCTA 20-0005 - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.1138					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	24.4141					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	9.4333	0.7469	18.3079	0.0467		2.7500	2.7500		2.7500	2.7500	337.2091	648.0000	985.2091	1.0056	0.0229	1,017.1701
Landscaping	0.0893	0.0342	2.9688	1.6000e-004		0.0165	0.0165		0.0165	0.0165		5.3479	5.3479	5.1300e-003		5.4762
Total	**36.0505**	**0.7812**	**21.2767**	**0.0469**		**2.7664**	**2.7664**		**2.7664**	**2.7664**	**337.2091**	**653.3479**	**990.5569**	**1.0108**	**0.0229**	**1,022.6462**

7.0 Water Detail

7.1 Mitigation Measures Water

7145_San Dimas MCTA 20-0005 - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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

APPENDIX C

BIOLOGICAL RESOURCES EVALUATION

Biological Resources Evaluation Report
FOR THE
SAN DIMAS MUNICIPAL CODE TEXT AMENDMENT 20-0005)
CITY OF SAN DIMAS, LOS ANGELES COUNTY, CALIFORNIA

In Support of the CEQA Analysis
Prepared for:
City of San Dimas
245 East Bonita Avenue
San Dimas, CA 91773

Prepared by:

UltraSystems
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16431 Scientific Way
Irvine, CA 92618
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UltraSystems Project No. 7145
Assessor Parcel Number.: 8387-006-903

October 2022
REVISED DECEMBER, 2022

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TABLES

APPENDICES

ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Term
amsl	above mean sea level
AOU	American Ornithological Union
APHIS	Animal and Plant Health Inspection Service
APN	Assessor's Parcel Number
BMPs	best management practices
BRE	Biological Resources Evaluation Report
BSA	Biological Study Area
BUOW	burrowing owl
Cal-IPC	California Invasive Plant Council
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
City	City of San Dimas
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
County	Los Angeles County
CRPR	California Rare Plant Rank
cuckoo	western yellow-billed cuckoo
CWA	Clean Water Act
DBESP	Determination of Biologically Equivalent or Superior Preservation
DSH	diameter at standard height
ESA	Endangered Species Act
°F	degrees Fahrenheit
FAC	facultative
FACW	facultative wetland
GIS	Geographic Information System
GPS	Global Positioning System
HCP	Habitat Conservation Plan
HMMP	Compensatory Habitat Mitigation and Monitoring Plan
IPaC	Information, Planning, and Conservation System
ISA	International Society of Arboriculture
LBV	least Bell's vireo
MBTA	Migratory Bird Treaty Act
MCTA	Municipal Code Text Amendment
MOU	Memorandum of Understanding
NCCP	Natural Community Conservation Plan
NCCP Act	California Natural Community Conservation Planning Act
NEPA	National Environmental Policy Act

Acronym/Abbreviation	Term
NHD	National Hydrography Dataset
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OHWM	ordinary high water mark
Porter-Cologne	Porter-Cologne Water Quality Control Act
Rapanos	*Rapanos v. United States*
RWQCB	Regional Water Quality Control Board
Arid West Supplement	*Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*
SWANCC	*Solid Waste Agency of Northern Cook County* vs. *United States Army Corps of Engineers*
SWFL	southwestern willow flycatchers
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
UltraSystems	UltraSystems Environmental, Inc.
U.S.	United States
U.S.C.	United States Code
USACE	United States Army Corps of Engineers
1987 Manual	*Corps of Engineers Wetlands Delineation Manual*
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
Waters of the U.S.	Waters of the United States
WDRs	Waste Discharge Requirement
WEAP	Worker Environmental Awareness Program
WQC	Water Quality Certification
§	Section
§§	Sections

EXECUTIVE SUMMARY

UltraSystems Environmental Inc. (UltraSystems) was retained by the City of San Dimas (City) to conduct biological surveys for the proposed Municipal Code Text Amendment (MCTA) 20-0005. The City of San Dimas is located in southeastern Los Angeles County, approximately 30 miles east of the City of Los Angeles.

The proposed MCTA 20-0005 would allow for up to one thousand (1,000) cubic yards of grading, cut and fill, beyond that grading necessary for the primary residence, driveway and garage (residence) for properties located within the proposed MCTA planning area (Planning Area I, Specific Plan 11). However, the proposed development area (project site(s)) includes the residence plus vacant land, up to the Scenic Easement area "conservation easement boundary" within each parcel. Per the previous Development Plan Review Board policy, a swimming pool and five (5) feet of decking surrounding the pool were exempted from the additional grading calculations, which will be codified as part of the proposed MCTA 20-0005. The proposed MCTA 20-0005 would also include development standards for the grading, landscaping and any retaining walls that the additional grading would require. Additional clean-up items are proposed by removing sections which dealt with the initial development of the area and codifying previous policies regarding Conditional Uses within the specific plan. UltraSystems has prepared this Biological Resources Evaluation (BRE) Report for the MCTA 20-0005.

UltraSystems conducted a literature review and general surveys of the biological resources potentially associated with the proposed MCTA planning area; this area is referred to as the Biological Study Area (BSA) in this BRE. The BSA encompasses approximately 105.5 acres and includes all areas that could potentially be impacted by the project. Surveys did not extend beyond the BSA. The general biological surveys covered all accessible areas of the BSA. Biologists visited the BSA to conduct the following biological surveys:

- Habitat assessment and plant community mapping.
- General plant surveys.
- General wildlife surveys.
- Wildlife movement evaluation.
- Jurisdictional assessment of waters of the U.S. or State.

This BRE documents the methods and results of the literature review and the field surveys and provides a summary of existing conditions, an assessment of the potential presence of sensitive biological resources, and an analysis of the potential impacts to those resources from project construction and development. It summarizes the biological resources present within the BSA at the time of the field surveys including land cover types, plants and wildlife species, the potential occurrence of special-status plant and wildlife species, waters of the U.S. and State, critical habitat, and potential wildlife corridors within the BSA. The BRE also identifies and analyzes the potential biological significance of implementation of the proposed MCTA 20-0005 in view of federal, state, and local laws, regulations, policies, orders, ordinances and/or management plans, and the project's consistency with local policies and ordinances protecting biological resources.

This BRE was prepared in support of the California Environmental Quality Act (CEQA) review conducted in connection with the project, as well as permits and approvals required for the project by federal and state resource agencies.

Eleven land cover types were observed and mapped within the BSA during the field surveys, seven of which are considered sensitive by CDFW.

Approximately 53 plant species from 29 distinct plant families were observed within the BSA during the field survey. The dominant tree species are coast live oak and California black walnut, with occasional stands of Peruvian pepper trees; however, no special-status plant species were observed within the BSA during the surveys. Coast live oak, California black walnut, and other mature significant trees occur throughout the planning area. Coast live oak woodland and California black walnut woodland are considered to be sensitive by CDFW. Additionally, the City of San Dimas requires tree removal permits and adherence to applicable replacement standards, as per Chapter 18.62 Tree Preservation of San Dimas Municipal Code, are required for project activities that would remove or cause damage to these trees.

Seventeen bird species, seven mammal species, and one invertebrate species were observed within the BSA. Three special-status species, monarch butterfly, Nuttall's woodpecker, and Cooper's hawk were observed within the BSA during field surveys.

The BSA contains mapped water features including freshwater forested/shrub wetlands, riverine areas, and forested/shrub riparian areas. Evidence of hydrologic features, including potential waters of the U.S. and State, were observed within the BSA.

The BSA is not located within a designated or proposed United States Fish and Wildlife Service (USFWS)-designated critical habitat for listed plant or wildlife species. The nearest USFWS-designated critical habitat is for the federal listed species coastal California gnatcatcher (*Polioptila californica californica*), located approximately 1.5 miles from the BSA.

The BSA acts as a hunting, foraging, and movement area; therefore, the BSA and surrounding areas are suitable wildlife movement corridors. Additionally, the BSA supports habitat for bat maternity roosts and hibernacula (i.e., native wildlife nursery sites).

Implementation of the proposed MCTA 20-0005 would result in direct and indirect impacts to biological resources, including potentially significant impacts to sensitive wildlife species and tree resources. Best management practices, avoidance and protection measures, and mitigation measures are recommended in this BRE to minimize or avoid impacts to biological resources. Implementation of these measures would reduce such impacts to less than significant levels.

Disclaimer Regarding MCTA Biological Analyses: The avoidance, minimization, and compensatory mitigation measures provided in Section 7.0 Mitigation Measures are intended to comprehensively address the potential impacts to biological resources within SP-11 as an entire ecological unit, and per individual parcel, based on preliminary reconnaissance surveys for the purposes of the MCTA. The MCTA considered conceptual impact areas at the time of review and were not applicable to project-specific impacts, which are unknown at this time.

The biological constraints that may require avoidance, minimization, and compensatory mitigation include sensitive vegetation communities, special-status species (e.g., plants and wildlife), seasonal species protections (e.g., reproduction and overwintering), jurisdictional wetlands and waters, riparian drainage segments, protected trees, wildlife corridors, and land management designations.

A qualified biologist will perform focused biological surveys for construction approvals, based on 65 percent to 95 percent complete professional engineering drawings at the time of proposed

development of each individual parcel. The biologist conducting the focused surveys will incorporate the focused survey results and those of the reconnaissance surveys (UltraSystems, 2022) to assign the relevant mitigation for each individual project. The City will require the mitigation in the construction specifications prior to issuance of grading plans approved for each individual land owner (or project applicant). The mitigation measures contained herein are legally binding and are required if impacts to protected biological resources occur as a result of the project.

1.0 INTRODUCTION

UltraSystems was retained by the City to conduct biological surveys and prepare this Biological Resources Evaluation (BRE) Report for the Municipal Code Text Amendment (MCTA) 20-0005. The project is located in the City of San Dimas, Los Angeles County, California (see **Appendix A,** *Figures*). The City is proposing a MCTA 20-0005 of Title 18-Zoning, Chapter 18.518: Specific Plan 11 of the San Dimas Municipal Code (project), to amend grading limits within Specific Plan 11, Planning Area I (planning area) and to make various clean-up text amendments. The proposed MCTA would also include development standards for the grading, landscaping and any retaining walls that the additional grading would require. Additional text amendments include removing sections which dealt with the initial development of the area and codifying previous policies regarding Conditional Uses within the specific plan. The City is the Lead Agency for the purposes of the CEQA.

UltraSystems conducted a literature review and general surveys of the biological resources potentially associated with the planning area (approximately 105.5 acres), this area is referred to as the Biological Study Area (BSA). The BSA includes all areas that could potentially be directly or indirectly impacted by the proposed MCTA (see **Appendix A**, Figure 1**,** *Project Boundary and Biological Study Area [BSA]*), including residential lots.

Biological surveys covered all accessible areas of the BSA and did not extend beyond the BSA. Biologists conducted the following biological surveys:

- Habitat assessment, vegetation community and land cover type mapping.
- General plant surveys.
- General wildlife surveys.
- burrowing owl (BUOW) (*Athene cunicularia*) habitat assessment.
- Wildlife movement evaluation.
- Jurisdictional assessment of waters of the U.S. and State.

UltraSystems presents the results and conclusions of the biological surveys within this BRE.

1.1 BRE Purpose

This BRE documents the methods and results of the literature review, and field surveys, and provides a summary of existing conditions, an assessment of the potential presence of sensitive biological resources, and an analysis of the potential impacts to those resources from implementation of the project. It summarizes the biological resources present within the BSA at the time of the field surveys including vegetation communities, plants, and wildlife; and the potential occurrence of special-status plant and wildlife species, jurisdictional waters, critical habitat, and potential wildlife corridors within the BSA. Plant and wildlife species protected by federal agencies, state agencies, and local conservation agencies and organizations, such as the California Native Plant Society (CNPS), are collectively referred to as "special-status species" in this BRE. Some of these plant and wildlife species are afforded special legal or management protection because they are limited in population size, and typically have a limited geographic range and/or limited habitat (avian species protected by the Migratory Bird Treaty Act are not considered special-status species). The BRE also identifies and analyzes the potential biological significance of project implementation in view of federal, state, and local laws, regulations, policies, orders, ordinances and/or management plans, and the project's consistency with local policies and ordinances protecting biological resources. Finally, it recommends, as appropriate, mitigation measures, including best management practices (BMPs),

avoidance and protection measures, and mitigation measures, to minimize or avoid potential impacts to biological resources to a less than significant level.

This BRE was prepared in support of the CEQA review conducted in connection with the project, as well as permits and approvals required for the project by federal and state resource agencies.

Figures for this BRE can be found in **Appendix A**, *Figures*. Since common names of plants and wildlife vary between references, scientific names are included upon initial mention of each species, and then the common names are used thereafter. Plant nomenclature within this BRE is based on CNPS' *Inventory of Rare and Endangered Plants of California* (online; CNPS, 2022a) and *The Jepson Manual: Vascular Plants of California*, second edition (Baldwin et al., 2012). Common plant names, when not available from this source, were taken from the CNPS website.

Disclaimer Regarding MCTA Biological Analyses: The avoidance, minimization, and compensatory mitigation measures provided in Section 7.0 Mitigation Measures are intended to comprehensively address the potential impacts to biological resources within SP-11 as an entire ecological unit, and per individual parcel, based on preliminary reconnaissance surveys for the purposes of the MCTA. The MCTA considered conceptual impact areas at the time of review and were not applicable to project-specific impacts, which are unknown at this time.

The biological constraints that may require avoidance, minimization, and compensatory mitigation include sensitive vegetation communities, special-status species (e.g., plants and wildlife), seasonal species protections (e.g., reproduction and overwintering), jurisdictional wetlands and waters, riparian drainage segments, protected trees, wildlife corridors, and land management designations.

A qualified biologist will perform focused biological surveys for construction approvals, based on 65 percent to 95 percent complete professional engineering drawings at the time of proposed development of each individual parcel. The biologist conducting the focused surveys will incorporate the focused survey results and those of the reconnaissance surveys (UltraSystems, 2022) to assign the relevant mitigation for each individual project. The City will require the mitigation in the construction specifications prior to issuance of grading plans approved for each individual land owner (or project applicant). The mitigation measures contained herein are legally binding and are required if impacts to protected biological resources occur as a result of the project.

1.2 Project Location

The planning area is located in the City of San Dimas, Los Angeles County, California (**Appendix A**, Figure 2, *Regional Location*). It is located in the San Jose Hills, generally bounded by Interstate 10 (I- 10) on the south, State Route 57 (SR-57) on the east, and Walnut Creek on the north and west (**Appendix A**, Figure 3, *Project Vicinity* and Figure 1 *Project Location and Biological Study Area*). The eastern San Gabriel Valley is north and west of the San Jose Hills, and the Pomona Valley is on the east. The BSA is located on the United States Geological Survey (USGS) 7.5-Minute Topographic Map *San Dimas* Quadrangle, and occupies Township 1 South, and Range 8 West, Sections 17 Southeast and 20 North (**Appendix A**, Figure 4, *USGS Topographic Quadrangle Map*). The existing surface elevation at the subject property ranges from approximately 680 to 960 feet above mean sea level (amsl).

The BSA is located within the USGS Big Dalton Wash Hydrologic Unit (HU; HU Code 180701060402) within the larger San Gabriel watershed (USGS HUC 18070106) The Big Dalton Wash HU drains an area of approximately 80.7 square miles (USEPA, 2022a).

Under existing conditions, stormwater generated on the undeveloped areas of the BSA either sheet flows down slopes and into the small canyons, where it ponds and infiltrates, or flows into drainage channels and discharges into the surrounding neighborhoods. Stormwater generated on most of the developed areas (residences, streets) flows down local streets and into storm drain inlets on Calle Cristina and Calle Francesca; this storm drain system runs south on Covina Hills Road to Via Verde where it turns east/northeast to Puente Street. The storm drain follows Puente Street to Walnut Creek, where it discharges.

The BSA is in Area I of the City of San Dimas Specific Plan 11, which is located within the southwestern portion of the City. Area is bordered by Puente Street to the north, Via Verde to the southeast, East Covina Hills Road to the southwest, and the City of Covina to the west.

The BSA comprises the western half of Area I (Specific Plan 11). The site is subdivided into 36 residential lots; 29 lots are developed with single-family residences, and seven lots are vacant. The project parcels are mapped on **Appendix A,** Figure 5, *Parcel Map*; the Assessor's Parcel Numbers (APNs) of these 36 lots are presented below:

- 844-800-8041
- 844-800-8042
- 844-800-8048
- 844-800-8044
- 844-800-8046
- 844-800-8055
- 844-800-8043
- 844-800-8045
- 844-800-8047
- 844-803-8034
- 844-803-8036
- 844-803-8040
- 844-803-8033
- 844-803-8035
- 844-803-8037
- 844-803-8039
- 844-803-8046
- 844-803-8048
- 844-803-8043
- 844-803-8044
- 844-8038041
- 844-803-8042
- 844-803-8049
- 844-803-8051
- 844-803-8053
- 844-803-8031
- 844-803-8038
- 844-803-8045
- 844-803-8047
- 844-803-8054
- 844-803-8032
- 844-803-8055
- 844-803-8057
- 844-803-8050
- 844-803-8052
- 844-803-8056

According to the City of San Dimas Zoning Map and General Plan, the subject property is zoned "*Single Family, Very Low": density uses are very low-density single family detached and large estate developments* (City of San Dimas, 1991).

The BSA is located in the southwestern portion of the City of San Dimas, County of Los Angeles, California. which is under the jurisdiction of the following resource agency field offices:

- **United States Fish and Wildlife Service (USFWS): Carlsbad Fish and Wildlife Office**
  2177 Salk Avenue, Suite 250
  Carlsbad, California 92008
  Phone: (760) 431-9440

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1.3 Project Background

The existing San Dimas Municipal Code Chapter 18.518: Specific Plan 11 allows for unlimited grading (cut and fill) for roadway access and excavation to construct building retaining foundations for the primary residence and garage. The Municipal Code also allows up to 35 percent of building lot coverage for the subject residential lots.

- The average lot size for SP-11, Planning Area 1 is 109,021 square feet (sf) (ranges between 30,371 sf to 932,170 sf).
- The average existing 1st floor lot coverage is 6.5 percent (ranges between 0.81 percent to 14.69 percent).
- The average additional first floor building area for the existing homes is 34,251 sf (ranges between 7,253 sf to 318,718 sf).
- The estimated average available grading to accommodate the additional 1st floor building area is 21,500 cubic yards (cy) (ranges between 850 cy to over 200,000 cy).

2.0 PROJECT DESCRIPTION

The project proposes to expand the allowable grading (cut and fill) on each of the 36 residential lots in the planning area by 1,000 cubic yards (cy) per lot, or a total of 36,000 cy. The increase in allowable grading is to permit owners to grade backyards. The current grading quantity permitted onsite is insufficient for grading backyards, and owners must use decks in the rear portions of their lots. The increase in allowable grading does not include what is necessary for the primary residence, driveway, and garage. The proposed increase in grading would not expand the allowable lot coverages of primary residences. Presently, grading for a swimming pool and decking is not allowed and thus also not included in the additional allowable grading calculations.

The current total grading quantity permitted for the primary residence, driveway, and garage on the 36 lots is approximately 774,000 cy (approximately 21,500 cy per lot); thus, the proposed increase is about 4.7 percent of the currently permitted grading quantity. Grading permitted under the existing approved Specific Plan is compared to the additional grading under the proposed MCTA 20-0005 in **Table 2.0-1** below.

Table 2.0-1
GRADING PERMITTED UNDER EXISTING SPECIFIC PLAN AND PROPOSED AMENDMENTS

	Existing Specific Plan Permitted Grading	Proposed Additional Grading
Grading quantity	774,000 total cubic yards average 21,500 cubic yards per lot	36,000 total cubic yards 1,000 cubic yards per lot
Purposes	Mass grading; grading building pads for primary residences, garages, and driveways.	Grading for usable backyards; currently decking is only option for backyard use. Additional grading is not for primary residences, garages, and driveways.

Sources: City of San Dimas, 2022. San Dimas, California Municipal Code Title 18 Zoning, Chapter 18.518 Specific Plan No. 11

2.1 Proposed Municipal Code Text Amendments

The proposed project includes the following amendments to San Dimas Municipal Code Chapter 18.518 Specific Plan No. 11 to preserve the original intent of the specific plan, minimize the visual impacts of potential grading and retaining walls, codify existing policies/practices and eliminate defunct sections of the code.

1. Requirements that proposed grading and retaining walls follow the existing topographic contours present onsite. The proposed grading cuts and/or retaining walls should not cut directly across contour lines.

2. A limitation of retaining walls to a maximum exposed height of twelve (12) feet per wall and a maximum combined exposed height of twenty-four (24) feet. This language is consistent with existing retaining wall height limit standards used in other hillside areas.

3. A requirement that if more than one retaining wall will be constructed directly adjacent to one another, the two walls must be separated by half (1/2) the height of the taller of the two adjacent walls.

4. Requirements to use gravity type retaining walls, unless onsite conditions prohibit their use.

5. Wall materials which must be either slump stone or split-face stone with a tan or earth tone color.

Landscape and irrigation standards which require the planting of trees at the base of the lowest retaining wall and drought tolerant shrubs at the base of every wall. Installation of permanent irrigation shall be required to ensure that the required landscaping survives and is healthy enough to provide screening.

2.2 Project Operation

Project implementation would not change operation of existing and future residences onsite. Land use of the planning area would not change.

3.0 REGULATORY CONTEXT

The project is subject to several federal, state, and local regulations designed to protect and promote environmental quality, and to protect biological resources because of their ecological importance. These regulations are summarized below and are addressed throughout the document in the appropriate subsections.

3.1 Federal Statues, Regulations and Executive Orders

3.1.1 Clean Water Act (CWA)

Section 401 – Clean Water Act

Although the Clean Water Act (CWA) is a federal law, Section 401 of that law recognizes that states have the primary authority and responsibility for setting surface water quality standards, and requires the U.S. Army Corps of Engineers to obtain a state certification that their permits for discharge or dredge and fill material do not violate state water quality standards. Section 401 of the CWA requires every applicant for a Section 404 permit resulting in any discharge of dredge or fill material into Waters of the U.S. to provide a certification that any discharges will comply with the applicable state water quality standards set pursuant to the CWA and applicable state law.

Section 401 is implemented through a Water Quality Certification (WQC) process. In the State of California, the State Water Resources Control Board (SWRCB) has given the responsibility for issuing Section 401 WQCs to the RWQCBs, unless a discharge of dredged or fill material is proposed within more than one region. In the event that a project proposes discharges of dredged or fill material in more than one region, responsibility for issuance of a Section 401 WQC will lie either with the SWRCB, or, upon agreement of the RWQCBs for the affected regions, with the RWQCB chosen in the discretion of the RWQCBs. Cal. Water Code, § 13160; Cal. Code Regs., tit. 23, § 3838. Certification must be based on a finding that the proposed discharge will comply with water quality standards, which include numeric and narrative water quality objectives applicable to identified surface waters in the Water Quality Control Plan (Basin Plan) for the region in which a discharge of fill is proposed. The project would be under the jurisdiction of the Los Angeles RWQCB.

Section 402 Clean Water Act

Pursuant to Section 402(p) CWA, storm water permits are required for discharges from a municipal separate storm sewer system (MS4) serving a population of 100,000 or more. The State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCBs) have been authorized by the U.S. Environmental Protection Agency (USEPA) to implement and enforce the Municipal Storm Water Program (USEPA, 2022b).

In the County of Los Angeles, *Order No. R4-2012-0175 as amended by State Water Board Order WQ 2015-0075 and Los Angeles Water Board Order R4-2012-0175-A01 NPDES Permit No. CAS004001 Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating from the City of Long Beach MS4* (MS4 Permit) is currently in effect; the city of San Dimas is a signatory to this permit, and is subject to the waste discharge requirements set forth in this Order.

Section VI(D)(8) of the MS4 Permit applies exclusively to construction sites with construction activities involving soil disturbance with the exception of agricultural activities. Activities covered by

this permit include but are not limited to grading, vegetation clearing, soil compaction, paving, re-paving and linear underground/overhead projects. The City of San Dimas, as signatory to the MS4 permit, shall, though their erosion and sediment control ordinance and/or building permit, require the implementation of an effective combination of erosion and sediment control BMPs to prevent erosion and sediment loss, and the discharge of construction wastes.

Section 404 – Clean Water Act

- Section 404 CWA requires authorization from the Secretary of the Army, acting through the U.S. Army Corps of Engineers (USACE), for the discharge of dredged or fill material into all waters of the United States, including wetlands. Authorizations are conducted through the issuance of Nationwide (or General) Permits, for activities that would cause only minimal permanent individual (between 0.1 and 0.5 acre) and cumulative impacts; through Individual (or Standard) Permits for activities that are likely to have more than a minimal permanent (greater than 0.5 acre) or cumulative impact on aquatic resources; and through Letters of Permission (LOPs) which are a type of individual permit issued through an abbreviated process that includes coordination with federal and state fish and wildlife agencies and a public interest evaluation, but without the 30-day permit notice period that is required for Individual Permits. The project would be under the jurisdiction of the Los Angeles District of the USACE.
- Wetlands and other waters that do not meet the definition of waters of the U.S. are not covered by the CWA; however, they are regulated by the State of California through the Porter-Cologne Water Quality Control Act (Porter-Cologne) and SWRCB Resolution No. 2019-0015 for California.

3.1.2 Endangered Species Act (ESA)

The federal Endangered Species Act of 1973 (Title 16, United States Code [U.S.C.] Sections 1531-1543) (ESA), as amended, designates and provides for protection of listed threatened and endangered plant and animal species, and their critical habitat. The USFWS, in the Department of the Interior, and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS), in the Department of Commerce, share responsibility for administration of the ESA. These responsibilities include listing and delisting species, designating critical habitat, and formulating recovery plans. The USFWS has primary responsibility for terrestrial and freshwater organisms, while the responsibilities of NMFS are mainly marine wildlife.

The ESA is divided into 18 Sections that are intended to work together to prevent species from going extinct by helping to stabilize populations, reduce the threats to their survival, and helping species recover to the point that they no longer require federal protection (USFWS, 2022a; b).

Section 4 (Determination of Endangered Species and Threatened Species)

Section 4 of the ESA addresses listing of species in need of the ESA's protection. Species are listed as either endangered or threatened under Section 4 of the ESA. A federally-endangered species is one that is facing extinction throughout all or a significant portion of its range. A federally-threatened species is one likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Under Section 4, actions needed to recover those species and conserve their habitat are also identified, along with a process for reaching recovery goals that allow for a species' removal from federal protection. The presence on a BSA of any fish or wildlife species that is federally listed as endangered or threatened generally imposes constraints on development to the

extent that development is likely to result in a prohibited "take" of the species or substantial adverse modification of its habitat as described in *Section 9 (Prohibited Acts)*, below.

Section 7 (Interagency Cooperation)

Two sections of the ESA (§7 and § 10) authorize incidental take. Section 7 of the ESA regulates take associated with federal projects or projects that require a federal permit. It also requires federal agencies to use their authority to carry out conservation programs to benefit endangered and threatened species. Under § 7, federal agencies are required to consult with the USFWS or the NMFS to ensure that any action they carry out, including those they fund or authorize (such as through a permit) will not likely jeopardize the continued existence of listed species, or result in the destruction or adverse modification of proposed or designated critical habitat of such species. Under § 7, consultations can either be informal or formal.

Section 9 (Prohibited Acts)

Once a species is listed, Section 9 of the ESA makes it unlawful for any person, including private and public entities, to "take species listed as endangered or without a permit issued pursuant to Section 10 or an incidental take statement issued pursuant to Section 7. Section 9 defines "take" as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." The term "harm" is defined as "an act which actually kills or injures wildlife. Such an act may include substantial habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering."

ESA Section 9s take prohibitions apply to listed wildlife and fish species, but not to plants. Endangered plants are not protected from take, although it is unlawful to remove, possess, or maliciously damage or destroy them on federal lands. Removing or damaging listed plants on state and private lands in knowing violation of state law, or in the course of violating a state criminal trespass law, also is illegal under the ESA.

Section 10 (Incidental Take Permits and Habitat Conservation Plans)

An incidental take permit pursuant to Section 10(a)(1)(B) is required when non-Federal, otherwise lawful activities, including lawful project development, will result in take of threatened or endangered wildlife. Under this provision, the USFWS and/or NMFS may, where appropriate, authorize the taking of federally listed wildlife or fish if such taking occurs incidentally during otherwise legal activities. Section 10(a)(2)(B) requires an application for an incidental take permit to include an HCP. The purpose of the habitat conservation planning process associated with the permit is to ensure there is adequate avoidance, minimization and mitigation measures to address the effects of the authorized incidental take. Section 10 provides a clear regulatory mechanism to permit the incidental take of federally listed fish and wildlife species by private interests and non-Federal governmental agencies.

3.1.3 Migratory Bird Treaty Act (MBTA)

The Migratory Bird Treaty Act (MBTA) of 1918 (Title 16, U.S.C. Sections 703 - 712), as amended, implements various treaties and conventions between the United States (U.S.) and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. The MBTA makes it unlawful to pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird, or any part, nest, or egg or any such bird, unless authorized under a

permit issued by the Secretary of the Interior. Some regulatory exceptions apply. Take is defined in regulations implementing the MBTA as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to carry out these activities." The MBTA prohibits the collection and destruction of a migratory bird, its nest, and birds or eggs contained in the nest. The USFWS' Migratory Bird Permit Memorandum (MBPM-2) dated April 15, 2003, clarifies that destruction of most *unoccupied* bird nests is permissible under the MBTA; exceptions include nests of federally listed threatened or endangered migratory birds, bald eagles, and golden eagles. Take under the MBTA does not include habitat destruction or alteration, as long as there is not a direct taking of birds, nests, eggs, or parts thereof. The USFWS has statutory authority and responsibility for enforcing the MBTA (USFWS, 2022c).

3.1.4 National Environmental Policy Act (NEPA)

The National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. §§ 4321) requires federal agencies carrying out, funding, or permitting projects, or implementing any other major federal action that significantly adversely affects the quality of the human environment to prepare a detailed environmental impact analysis for the major Federal action. The analysis, known as the Environmental Impact Statement or an Environmental Assessment, must address the adverse environmental impacts of the proposed action, any adverse environmental effects which cannot be avoided should the proposal be implemented, alternatives to the proposed action, the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented. The Council on Environmental Quality (CEQ) has promulgated regulations for implementing NEPA's requirements. (40 C.F.R. §§ 1502 et seq.) Pursuant to state and federal law, NEPA evaluations may be prepared in combination with, or may rely upon environmental analyses prepared under the California Environmental Quality Act 40 C.F.R. §§ 1506.2, 1506.4.

3.1.5 Prevention and Control of Invasive Species - Executive Order 13112

Executive Order 13112 (February 3, 1999) directs all federal agencies to work cooperatively to prevent and control the introduction of invasive non-native species in a cost-effective and environmentally sound manner to minimize their economic, ecological, and human health impacts. Executive Order 11312 established a national Invasive Species Council made up of federal agencies and departments and a supporting Invasive Species Advisory Committee composed of state, local, and private entities. The Invasive Species Council and Advisory Committee oversee and facilitate implementation of the Executive Order, including preparation of a National Invasive Species Management Plan.

3.2 State Statutes and Regulations

3.2.1 California Environmental Quality Act (CEQA)

The California Environmental Quality Act of 1970 (Title 14, California Code of Regulations, §§ 15002-15387) (CEQA) is California's broadest environmental law (AEP, 2022). CEQA applies to certain activities of state and local public agencies. It requires lead agencies - that is, those making land use decisions – as well as any other responsible state agencies issuing discretionary permits, to evaluate and disclose the significance of all potential environmental impacts of a project. The lead agency is also responsible for identifying, negotiating and implementing feasible impact avoidance, minimization, or mitigation measures that reduce and compensate for significant environmental

impacts with the goal of reducing those impacts to less than significant levels. Lead agencies determine significance on a project-by-project basis because they must consider all potential risk, including cumulative impacts, within a local and regional context, as well as evaluate unique factors particular to the planning area when exercising their discretion to approve or disapprove a project.

The CEQA Guidelines specify that a project has a significant impact to the environment if, among other things, it has the potential to "substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or an animal community; substantially reduce the number or restrict the range of an endangered, rare or threatened species…." [CEQA Guidelines § 15065(a)(1)] (AEP, 2022).

The purpose of CEQA is to:

- Disclose to the public the significant environmental impacts of a proposed discretionary project, through the preparation of an Initial Study, Negative Declaration, or Environmental Impact Report.

- Prevent or minimize damage to the environment through development of project alternatives, mitigation measures, and mitigation monitoring.

- Disclose to the public the agency decision making process utilized to approve discretionary projects through findings and statements of overriding consideration.

- Enhance public participation in the environmental review process through scoping meetings, public notice, public review, hearings, and the judicial process.

- Improve interagency coordination through early consultations, scoping meetings, notices of preparation, and State Clearinghouse review.

3.2.2 California Endangered Species Act (CESA)

The California Endangered Species Act (CESA) (California Fish and Game Code §§ 2050-2089) was enacted in 1984 to parallel the federal ESA and allows the Fish and Game Commission to designate species, including plants, as "threatened" or "endangered" CESA states that all native species of fishes, amphibians, reptiles, birds, mammals, and plants, and their habitat, threatened with extinction and those experiencing a significant decline which, if not halted, would lead to a threatened or endangered designation, will be protected or preserved. Unlike the ESA, CESA does not include listing provisions for invertebrate species.

CESA makes it illegal to import, export, take, possess, purchase, sell, or attempt to do any of those actions to species that are designated as threatened, endangered, or candidates for listing, unless permitted by CDFW. Section 2080 of the California Fish and Game Code prohibits take of any species that the Commission determines to be an endangered species or a threatened species. "Take" is defined in Section 86 of the California Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

Under Section 2081 of CESA, CDFW may permit take or possession of threatened, endangered, or candidate species for scientific, educational, or management purposes, and may also permit take of these species that is incidental to otherwise lawful activities if certain conditions are met. Some of

the conditions for issuance of permits allowing incidental take are that the adverse effects of the take must be minimized and fully mitigated, adequate funding must be ensured for implementation of identified mitigation, and that the activity shall not jeopardize the continued existence of the listed species. CESA emphasizes early consultation to avoid potential impacts to candidate and listed endangered and threatened species, and to develop appropriate mitigation to offset project caused losses of listed species populations and their essential habitat.

3.2.3 Fully Protected Species - California Fish and Game Code § 3511, § 4700, § 5050 and § 5515

The classification of fully protected was the State of California's initial effort in the 1960s to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for birds (§ 3511), mammals (§ 4700), amphibians and reptiles (§ 5050), and fish (§ 5515). Fully protected animal species may not be taken or possessed at any time and no licenses or permits may be issued for their take, except for collecting these species for scientific research and relocation of the species for certain purposes. "Take" is defined in Section 86 of the California Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Under Section 2835 of the Fish and Game Code, CDFW may only issue permits allowing incidental take of fully protected species if a NCCP is prepared that provides for the protection of that species in accordance with the requirements and standards applicable to NCCPs (Fish and Game Code Sections 2800-2835). Alternatively, avoidance measures sufficient to prevent incidental take of fully protected species must be incorporated into project design, and construction plans and operations.

3.2.4 Bird Nests and Eggs - California Fish and Game Code § 3503

California Fish and Game Code § 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) may be considered take. Avoidance measures sufficient to prevent incidental take of bird nests and eggs protected by this statute must be incorporated into project design, and construction plans and operations.

Birds of Prey and their Eggs – California Fish and Game Code § 3503.5

The word "raptor" is the term used for a group of birds consisting of hawks, falcons, kites, eagles, vultures and owls. Raptors, also referred to as "birds of prey," are a valuable resource to the State of California. More than 30 species of raptors inhabit California at some point in their life cycle. California Fish and Game Code § 3503.5 makes it unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (raptors) or to take, possess, or destroy the nest or eggs of any such birds except as otherwise provided by this code or any regulation adopted pursuant thereto. The order Falconiformes is comprised of four families with around 311 species. These are the birds of prey (falcons, hawks, eagles, vultures, and ospreys). The order Strigiformes, comprised solely of owls, contains two families and over 130 species. All raptors and their nests are protected under § 3503.5. Avoidance measures sufficient to prevent incidental take of these species, their eggs and their nests protected by this statute must be incorporated into project design, and construction plans and operations.

Migratory Birds – California Fish and Game Code § 3513

California Fish and Game Code § 3513 protects California's migratory birds by making it unlawful to take or possess any migratory non-game bird as designated by the MBTA, except as authorized in regulations adopted by the federal government under provisions of the MBTA. Except as permitted by USFWS, avoidance measures sufficient to prevent incidental take of these species, their eggs and their nests protected by this statute must be incorporated into project design, and construction plans and operations

3.2.5 Native Plant Protection Act (NPPA) – California Fish and Game Code §§ 1900-1913

The Native Plant Protection Act (NPPA), enacted in 1977, allows the Fish and Game Commission to designate native plants as state "endangered" or "rare," mirroring the designations created for animal species by the CESA of 1970. The NPPA, administered by CDFW, requires all state agencies to utilize their authority to preserve, protect and enhance endangered or rare native plants of California. Section 1908 of the NPPA prohibits the take, possession, propagation, import, export, or sale of any native plant that the Fish and Game Commission determines to be an endangered or rare native plant, except when the take is incidental to agricultural and nursery operations, emergencies, or the possession or sale of real property on which the plant is growing.

CDFW may authorize the take, possession, import, or export of some plants that are protected by the NPPA. It may also authorize take and possession for scientific, educational or management purposes, or authorize take that is incidental to otherwise lawful activities if certain conditions are met. CDFW issues most of these permits to individuals to identify, document and voucher listed plant species, typically during botanical surveys, and may also issue permits to individuals or organizations for other scientific, educational or management purposes, most typically research or recovery actions for state-listed plant species. Section 1913(c) further provides that where the owner of land has been notified by CDFW that native plant listed as rare or endangered is growing on such land, the owner shall notify CDFW at least 10 days in advance of changing the land use to allow for salvage of the listed plant(s) subject to the notification. The failure by CDFW to salvage such plant within 10 days of notification of change in land use shall entitle the owner of the land to proceed with the change.

3.2.6 Construction General Permit; Order 2009-0009-DWQ

If a project will disturb one or more acres of soil during construction, project owners are required by the California State Water Resources Control Board (SWRCB) to obtain coverage under a General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit Order 2009 0009 DWQ, as authorized by § 402 CWA, [NPDES permit]). The Construction General Permit requires potential dischargers of pollutants into waters of the U.S. to prepare a site-specific Stormwater Pollution Prevention Plan (SWPPP), which establishes enforceable limits on discharges, requires effluent monitoring, designates reporting requirements, and requires construction best management practices (BMPs) to reduce or eliminate point and non-point source discharges of pollutants. Additionally, BMPs must be maintained, inspected before and after each precipitation event, and repaired or replaced as necessary. The SWRCB authorizes Construction General Permits.

For projects that would disturb less than one acre of soil, applicants for grading permits pursuant to the proposed MCTA would be required to comply with the Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County (except those discharges originating from the City of Long Beach MS4), Order No. R4-

2012-0175 as amended by State Water Board Order WQ 2015-0075 and Los Angeles Water Board Order R4-2012-0175-A01 NPDES Permit No. CAS004001 (referred to as the MS4 Permit), to which the City of San Dimas is a Permittee. The MS4 Permit applies to the discharge of pollutants from anthropogenic sources into waters of the U.S. through stormwater and urban runoff conveyance systems, including flood control facilities (e.g., storm drains)

Section IV(D)(8)(d)(1) of the MS4 applies to construction sites of less than one acre, and requires the implementation of an effective combination of erosion and sediment control BMPs to prevent erosion and sediment loss. Sections IV(D)(8)(e) and IV(D)(8)(f) of the MS4 require *operators of public and private construction sites within its jurisdiction to select, install, implement, and maintain BMPs that comply with its erosion and sediment control ordinance*, and state that the *requirements contained in this part apply to all activities involving soil disturbance with the exception of agricultural activities. Activities covered by this permit include but are not limited to grading, vegetation clearing, soil compaction, paving, re-paving and linear underground/overhead projects*. Grading projects of less than one acre would, with compliance with the Los Angeles County MS4 Permit, minimize or avoid potential violations of water quality standards or waste discharge requirements, and would not substantially degrade surface or groundwater quality.

Applicants for grading permits pursuant to the proposed MCTA would be required to comply with § IV(D)(8)(d) of the MS4 Permit, which requires construction best management practices (BMPs) to reduce or eliminate point and non-point source discharges of pollutants, including sediment.

3.2.7 Porter-Cologne Water Quality Control Act

Porter-Cologne defines water quality objectives as the allowable "limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisances within a specific area." Thus, water quality objectives are intended to protect the public health and welfare, and to maintain or enhance water quality in relation to the existing and/or potential beneficial uses of the water. Water quality objectives apply to both waters of the U.S. and waters of the State. In the State of California, Porter-Cologne is administered in concurrence with the § 401 CWA WQC. As with § 401 CWA, this project is within the jurisdiction of the Los Angeles RWQCB.

3.2.8 State Water Resources Control Board Resolution No. 2019-0015

The California Code of Regulations, Title 23, Section 3831(w) states that "[a]ll waters of the United States are also 'waters of the state.'" This regulation has remained in effect despite Supreme Court decisions such as Rapanos and SWANCC, which added limitations to what could be considered a water of the U.S. Because the interpretation of waters of the U.S. in place at the time § 3831(w) was adopted was broader than any post-Rapanos or post-SWANCC regulatory definitions that incorporated more limitations into the scope of federal jurisdiction, it is consistent with the Water Boards' intent to include both historic and current definitions of waters of the U.S. into the SWRCBs wetland jurisdictional framework.

As set forth in Resolution No. 2009-0026, although the state of California has historically relied primarily on requirements in the Clean Water Act to protect wetlands, U.S. Supreme Court rulings reducing the jurisdiction of the Clean Water Act over wetland areas by limiting the definition of "waters of the United States" necessitated the use of California's independent authorities under Porter-Cologne to protect these vital resources.

The inclusion of both current and historic definitions of "waters of the U.S." ensures some regulatory stability in an area that has otherwise been in flux. The status of a water of the U. S. may only be used to establish that a wetland or water qualifies as a water of the State; it cannot be used to exclude a wetland or water from qualifying as a water of the State. In other words, wetlands that are categorically excluded from qualifying as a water of the U.S. may nevertheless qualify as waters of the State under another jurisdictional category. Examples of waters of the State include (but are not limited to) ephemeral streams and isolated wetlands.

On April 2, 2019, the SWRCB adopted **Resolution No. 2019-0015**, *Amendment to the Water Quality Control Plan for Ocean Waters of California and the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California to Establish a State Wetland Definition and Procedures for Discharges of Discharges of Dredged or Fill Material to Waters of the State* (Procedures). for inclusion in the forthcoming Water Quality Control Plan for Inland Surface Waters and Enclosed Bays and Estuaries and Ocean Waters of California (SWRCB, 2019). As they apply to this project, the Procedures provide the SWRCB and its nine RWQCBs to approve a project only if the applicant has demonstrated the following:

- A sequence of actions has been taken to first avoid, then to minimize, and lastly, compensate for adverse impacts that cannot be practicably avoided or minimized to waters of the state;

- The potential impacts will not contribute to a net loss of the overall abundance, diversity, and condition of aquatic resources in a watershed (or multiple watersheds when compensatory mitigation is permitted in another watershed);

- The discharge of dredged or fill material will not violate water quality standards and will be consistent with all applicable water quality control plans and policies for water quality control; and

- The discharge of dredged or fill material will not cause or contribute to significant degradation of the waters of the state.

On January 26, 2021, the Superior Court in *San Joaquin Tributaries Authority v. California State Water Resources Control Board* issued a judgment upholding the adoption of the Procedures as part of the (1) California Ocean Plan and (2) Inland Surface Waters and Enclosed Bays and Estuaries Water Quality Control Plan (ISWEBE Plan) for "waters of the United States" as defined by the Clean Water Act.

On April 6, 2021, the SWRCB issued **Resolution No. 2021-0012** confirming that the "State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State" (1) are in effect as state policy for water quality control for all waters of the State and (2) shall be applied via the inland surface waters and enclosed bays and estuaries plan to only waters of the United States. (SWRCB, 2021)

The SWRCB and its nine RWQCBs have the authority to regulate the discharge of dredged or fill material under § 401 CWA and Porter-Cologne. Dischargers that obtain a federal permit or license that authorizes impacts to waters of the U.S. (i.e., waters that are within federal jurisdiction), such as § 404 CWA and § 10 of the Safe Rivers and Harbors Act, must obtain certification from the SWRCB or a RWQCB to ensure that the discharge does not violate state water quality standards or any other appropriate requirement of State law. When a discharge is proposed to waters outside of federal jurisdiction, the SWRCB and the RWQCBs regulate the discharge under Porter-Cologne through the

issuance of Waste Discharge Requirements (WDRs). CWA § 401 WQCs, WDRs, and waivers of WDRs are referred to as orders or permits.

This project is within the jurisdiction of the Los Angeles RWQCB.

3.2.9 Basin Plans

The SWRCB requires its nine RWQCBs to develop water quality control plans (Basin Plans) designed to preserve and enhance water quality and protect the beneficial uses of all Regional waters. Specifically, Basin Plans designate beneficial uses for surface waters and groundwater, set narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the State antidegradation policy, and describe implementation programs to protect all waters in the Regions. In addition, Basin Plans incorporate by reference all applicable State and Regional Board plans and policies, and other pertinent water quality policies and regulations. This Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties applies to this project.

3.2.10 Lake or Streambed Alteration Agreement

Sections 1600-1617 FGC of the FGC protect the natural flow and the bed, channel, and bank of any river, stream, or lake designated by the CDFW which is at any time an existing fish or wildlife resource, or a waterbody from which these resources derive benefit. General project plans must be submitted to CDWF in sufficient detail to indicate the nature of the project proposed for construction, if the project would:

- Divert, obstruct, or change a streambed;
- Use material from the streambeds;
- Result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a stream.

The project is within the jurisdiction of the South Coast Region of CDFW.

3.2.11 Natural Community Conservation Planning Act of 2003 (NCCP Act)

The California Natural Community Conservation Planning Act (NCCP Act) was enacted to encourage broad-based planning to provide for effective protection and conservation of the State's wildlife resources while continuing to allow appropriate development and growth (California Fish and Game Code §§ 2800 to 2835). NCCPs may be implemented, which identify measures necessary to conserve and manage natural biological diversity within the planning area, while allowing compatible and appropriate economic development, growth, and other human uses. An approved NCCP enables the California Department of Fish and Wildlife to authorize take of species consistent with the NCCP Act and California Fish and Game Code § 2835.

3.3 Regional and Local Ordinances, Plans and Policies

3.3.1 Significant Ecological Areas

Then Los Angeles County Significant Ecological Area (SEA) Program was originally established as a part of the 1980 County General Plan, to help conserve the genetic and physical diversity within Los Angeles County by designating biological resource areas capable of sustaining themselves into the

future. The General Plan 2035 ("General Plan") updated the SEA boundary map, goals and policies in 2015.

SEAs are places where the County deems it important to facilitate a balance between development and biological resource conservation. Where occurring within SEAs, development activities are carefully guided and reviewed with a key focus on site design as a means for conserving fragile resources such as streams, woodlands, and threatened or endangered species and their habitats.

The SEA Ordinance (Title 22 Planning and Zoning Code) implements the goals and policies of the General Plan by establishing permitting requirements, design standards, and review processes for development within SEAs. The goal of the SEA Ordinance is to guide development to the least impactful areas on a property in order to avoid adverse impacts to biological resources (LACRP 2019, pp. 6-7).

3.3.2 Chapter 18.162 Tree Preservation

Chapter 18.162 Tree Preservation Ordinance (hereafter, Tree Preservation Ordinance) of the San Dimas Municipal Code states the goal of protecting and preserving mature significant trees, as well as "other trees which are determined to be desirable". The Tree Preservation Ordinance defines a mature significant tree as follows:

> " *any tree within the city of an oak genus which measures eight inches or more in trunk diameter, and/or any other species of tree that measures ten inches or more in trunk diameter, and/or any multi-trunk tree(s) having a total circumference of thirty-eight inches or more; the multi-trunk tree shall include at least one trunk with a diameter of a minimum of four inches*".

The Tree Preservation Ordinance requires that the trunk diameter must be measured at a point thirty-six inches above the ground at the base of the tree. The ordinance also requires that no significant trees shall be removed or relocated on an undeveloped property without first submitting an arborist report and obtaining a tree removal permit from the city's Development Services, Planning Division.

Removal or relocation of mature significant trees must be approved by the director of development services or the development plan review board. Section 18.162.020 defines removal to include:

- *Any act which will cause a mature significant tree to die, including but not limited to acts which inflict damage upon the root system or other parts of the tree by fire, cutting, application of toxic substances, operation of equipment or machinery, or by changing the natural grade of land by excavation or filling the drip line area around the trunk*.

This approval is subject to conditions as deemed necessary to implement this chapter's provisions. Section 18.162.060 Conditions Imposed of the Tree Preservation Ordinance establishes the following as conditions of approval for tree relocation or removal:

- *Tree relocation and/or two for one replacement with minimum fifteen-gallon box tree(s), or other replacement of equivalent value and size, within the subject property. The two for one replacement ratio may be reduced as determined by the final decision making body, if a minimum of one of the following additional findings are made: (1) The reduced replacement requirement is consistent with the purposes of this chapter, (2) the tree(s) in question are located where the impact of the tree removal on the community is limited (such as trees in a*

generally flat portion of the rear yard of a single-family house that are deemed to have less public benefit).;

- *When on-site features, project constraints, and/or other considerations exist which prevent reasonable on-site relocation, relocation to an approved off-site location shall be permitted;*

- *If said conditions are imposed, the owner will be responsible for all replacement and relocated trees for a minimum period of two years. If during this time the tree(s) is (are) declared unhealthy by a certified arborist as set forth in Section 18.162.090, the diseased trees shall be removed and replaced at the cost of the applicant, as set forth in Section 18.162.100*

- *A maintenance agreement shall be submitted by the applicant and established for each replaced and relocated tree. The maintenance agreement and maintenance responsibility shall be transferred with the sale of the property if title to the property is transferred within the specified maintenance period. (Ord. 1165 § 4, 2006)"*

In addition, the Tree Preservation Ordinance states in Section 18.162.080 states that *All trees should be protected*, but provides a list of exceptions to the Ordinance.

4.0 STUDY METHODS

This Section describes the study methods used by biologists for evaluating the biological resources within the BSA and the project vicinity.

4.1 Literature Review and Findings

Prior to field surveys, biologists conducted a literature review to identify habitat, special-status plant and wildlife species, potential jurisdictional areas (i.e., waters of the U.S. and State), critical habitat, and wildlife movement corridors potentially associated with the BSA. Biologists reviewed relevant literature, databases, agency web sites, reports and management plans, Geographic Information System (GIS) data, maps, and aerial imagery obtained from public domain sources. The review also helped to determine which biological surveys may be required prior to site construction and development.

4.1.1 Topography and Physical Features

To gain a perspective of the topographic and physical features associated with the BSA and project vicinity, biologists reviewed maps such as the USGS 7.5-Minute Topographic Map *San Dimas Quadrangle* and current aerial imagery (Google Earth Pro, 2022). Information obtained from this review included onsite and offsite locations of city and county boundaries and jurisdictions; valleys, hills, and mountain ranges; park boundaries; natural and man-made drainages, potential wetlands, and open waters (lakes, ponds, etc.); plant community boundaries; land use such as developed land and natural open space; important landmarks; roads, highways, paths, and trails; and potential wildlife movement corridors.

4.1.2 Soils

The Web Soil Survey, operated by the United States Department of Agriculture's (USDA's) Natural Resources Conservation Service (NRCS), was used to create a custom soil resource report for a description of the soils associated with the BSA (Soil Survey Staff, 2022). The Web Soil Survey provides soil data and information produced by the National Cooperative Soil Survey.

The NRCS soil survey for *Los Angeles County, California, Southeastern Part* has mapped three soil unit types within the BSA (see **Appendix A,** Figure 6, *USDA Soils*), which are presented in **Section 5.1.3**.

4.1.3 Sensitive Vegetation Communities and Special-Status Plant and Wildlife Species

The methods described below were used to research and derive a comprehensive project-specific list of sensitive habitats, and special-status plants and wildlife to target during the field surveys. The literature review and query of the databases for reported locations of special-status species and habitat helped to identify the known locations of these resources in the project region and assisted in identifying the potential for onsite occurrence of such species.

- CDFW's California Natural Diversity Database (CNDDB) was used to identify sensitive vegetation communities and special-status plant and wildlife species that may exist within the BSA and within a ten-mile radius of the site (CNDDB, 2022a).
- The USFWS' Information, Planning, and Conservation (IPaC) system was used to identify federal threatened and endangered plant and wildlife species and other natural resources of concern that may exist within the BSA (USFWS, 2022d).

- Previous consultant studies and reports near the BSA and project vicinity were reviewed to gain a sense of the existing conditions at the time the studies were conducted.

Although the inventory list of special-status plant and wildlife species was not exhaustive of all species that might be of concern for the property, it provided a wide range of species that are representative of the habitat in the area. Special-status plant species that have been recorded within two miles of the BSA are shown in **Figure 7,** *CNDDB Known Occurrences Plant Species and Habitats* (see **Appendix A**).

Sensitive Vegetation Communities

Sensitive vegetation communities (also called sensitive natural communities or sensitive habitat) are communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental impacts of projects (CDFW, 2018). Sensitive habitats are often threatened with local extirpation and are therefore considered as valuable biological resources. The most current version of CDFW's *California Natural Community List* indicates which natural communities are sensitive given the current state of the California classification (CDFW, 2022a). The *California Natural Community List, Preliminary Descriptions of the Terrestrial Natural Communities of California. State of California* (Holland, 1986) and *A Manual of California Vegetation, Second Edition* (Sawyer et al., 2009) were referenced for ranking the conservation status of vegetation communities within the BSA. The *California Natural Community List* includes alliance rankings according to their degree of imperilment. NatureServe is a non-profit conservation organization that provides scientific information about rare and endangered species and threatened ecosystems. NatureServe rankings are included as pertinent to sensitive natural communities, discussed in **Section 5.2**. For this BRE, vegetation communities are considered "sensitive" if they meet any of the following criteria:

- Recognized and considered sensitive by CDFW, USFWS, and/or special interest groups such as the CNPS.
- Habitat is under the jurisdiction of the USACE pursuant to Section 404 of the CWA and/or is under the jurisdiction of the CDFW pursuant to §§ 1600-1612 of the California Fish and Game Code.
- Known or believed to be of high priority for inventory in the CNDDB.
- Considered regionally rare.
- Has undergone a large-scale reduction due to increased encroachment and development.
- Supports special-status plant and/or wildlife species.
- Functions as an important corridor for wildlife movement.

Based on a review of the CNDDB list generated for this project (CNDDB, 2022a), six sensitive habitats have been recorded within ten miles of the BSA (**Table 4.1-2**, *CNDDB Sensitive Habitat within Ten Miles of the BSA*).

TABLE 4.1-2
CNDDB SENSITIVE HABITAT RECORDED WITHIN TEN MILES OF THE BSA

Holland Natural Community	MCV Common Alliance Name
Riversidian alluvial fan sage scrub	California buckwheat - white sage scrub or Scale broom scrub
Southern sycamore-alder riparian woodland (62400)	California sycamore - coast live oak riparian woodlands
California walnut woodland (71210)	California walnut groves
Southern coast live oak riparian forest (61310)	Southern Coast live oak riparian forest
Walnut forest (81600)	California walnut groves
Canyon live oak forest (81320)	Canyon live oak forest and woodland

Special-Status Plants

Plant species that are designated federally or state listed endangered, threatened, candidate, or state rare under the ESA, CESA, and/or the NPPA are referred to as "listed species". Special-status plant species that have no designated status under the ESA, CESA, and/or the NPPA, but are designated as sensitive or locally important by federal agencies, state agencies, or nonprofit resource organizations such as the CNPS, are referred to as "sensitive" in this BRE.

Twenty-three special-status plant species were identified based on a literature review and query from publicly available databases (USFWS, 2022d and 2022e, CNDDB, 2022a, CNPS, 2022a) for reported occurrences within a ten-mile radius of the BSA. (see **Appendix A**, Figure 7*, CNDDB Known Occurrences Plant Species and Habitats*). Each special-status plant species was assessed for its potential to occur within the BSA by comparing its habitat, elevation range and distribution obtained from the literature review, the CNPS website (CNPS, 2022a) and other databases with the location and elevation range of the BSA. A species was determined to have "no potential to occur" or as "not expected to occur" within the BSA if the BSA is outside the species' known distribution and/or the species' known elevation range, and/or if there is lack of suitable habitat conditions within the BSA to support the species.

Special-status plant species that were determined to have no potential to occur or are not expected to occur within the BSA were eliminated from further evaluation. The analysis of the occurrence potential of special-status plant species, including those determined to have no potential to occur or not expected to occur in the BSA, can be found in **Appendix B**, *Special-Status Species Occurrence Potential Determination*.

Twelve special-status plant species were determined to have at least a low potential to occur in the BSA. The special-status plant species and sensitive natural communities that have been recorded within two miles of the BSA are shown on **Figure 7,** *CNDDB Known Occurrences: Plant Species and Habitats* (**Appendix A**).

Special-Status Wildlife

Wildlife species that are designated federally or state listed endangered, threatened, candidate, or state rare under the ESA, CESA, and/or the NPPA are referred to as "listed species". Special-status

wildlife species that have no designated status under the ESA, the CESA, and/or the NPPA, but are designated as sensitive or locally important by federal agencies, state agencies, local agencies and nonprofit resource organizations such as the CNPS are referred to as "sensitive" in this BRE.

Forty-seven special-status wildlife species were identified based on a literature review and query from publicly available databases (CNDDB, 2022a; USFWS, 2022d, e) for reported occurrences within a ten-mile radius of the BSA. These species were identified by one or more of the following means: reported in the search, recognized as occurring based on previous surveys or knowledge of the area, or observed during the habitat assessment survey. Five listed and 20 sensitive wildlife species were determined to have at least a low potential to occur in the BSA. Three special-status species were observed in the BSA and were therefore determined to be present. These species are monarch butterfly, Nuttall's woodpecker, and Cooper's hawk. Special-status wildlife species that have been recorded within two miles of the BSA are found in **Appendix A**, Figure 8, *CNDDB Known Occurrences Wildlife Species and Habitats*.

Each special-status wildlife species was assessed for its potential to occur within the BSA by comparing its habitat range and distribution (if known) with the location and elevation range of the BSA. A species was determined to have no potential to occur or is not expected to occur within the BSA if the BSA is outside the species' known geographic range and/or the species' known elevation range. Through this analysis, 10 of the special-status wildlife species were determined to have no potential to occur or are not expected to occur within the BSA and were eliminated from further evaluation. It is anticipated that the project will have no impacts to these species and they are listed but not discussed further in this BRE. All wildlife species analyzed through the literature study, including those species that were determined to have no potential to occur or are not expected to occur, are discussed in **Appendix B**, *Special-Status Species Occurrence Potential Determination*.

4.1.4 Protected Trees

Prior to field surveys, UltraSystems biologists reviewed the following federal, state, regional and local regulatory agencies to determine which habitat and tree species are protected:

- The State and Federally Listed Endangered, Threatened, and Rare Plants of California (CNDDB, 2022b) which lists species that are protected by state and/or federal acts such as CESA and ESA.
- The CNPS Inventory of Rare and Endangered Plants (CNPS, 2022a)
- City of San Dimas Tree Preservation Ordinance (City of San Dimas, 2019)

Of the abovementioned regulatory agencies, the City tree preservation ordinance (City of San Dimas, 2019) establishes the most specific protections and mitigation requirements for various tree species that occur on development sites. As described in **Section 3.3.2** of this BRE, the tree preservation ordinance defines the types of protected trees and the DSH requirements for each type of protected tree.

4.1.5 Waters of the U.S. and State (including Wetlands)

Aerial imagery was reviewed to identify natural and man-made drainages, open water (lakes, ponds, etc.), and other features that may be subject to federal or state jurisdictional authority within the BSA. The USGS 7.5-Minute Topographic Map *San Dimas* Quadrangle was reviewed to identify potential presence or absence of onsite and offsite watercourses, and topographic features than may be indicative of water features. Topographic maps do not show all drainages that may exist.

The National Wetlands Inventory (NWI) database and maps developed by the USFWS were used as preliminary indicators of potential wetland areas based on changes in vegetation patterns as observed from satellite imagery. The NWI data were viewed in GIS platforms (Google Earth Pro, 2022), including the USFWS Wetlands Mapper (USFWS, 2022f) to identify potentially jurisdictional features within the planning area as indicated from topographic changes or visible stream patterns. The digital wetland data for the project vicinity was later verified during biological surveys.

The USGS National Hydrography Dataset (NHD) was also used to identify hydrologic features such as rivers, streams, canals, lakes, and ponds. (USGS, 2022).

Additionally, the watershed boundary data set containing the most current 10-digit and 12-digit HUCs was obtained in geodatabase form from the USGS to aid with assessing USACE jurisdiction of waters draining the BSA.

The following were also reviewed and consulted:

- *Corps of Engineers Wetlands Delineation Manual* (*i.e., 1987 Manual*);
- *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (*Version 2.0*) (*Arid West Supplement;* USACE, 2008);
- *The National Wetland Plant List. version 3.4* (USACE, 2018);
- *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual* (Lichvar and McColley, 2008); and
- *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Curtis and Lichvar, 2010).

The USACE published the 1987 Manual for the identification and delineation of wetlands which have since been superseded and presented in regional supplements. In 2008, the USACE published the Arid West Supplement, which is a supplement to the 1987 Manual and describes wetland indicators, delineation guidance, and other information that is specific to the arid west region (USACE, 2008).

4.1.6 Critical Habitat

When a species is listed as federal endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. Under the ESA, the Secretary of the Department of the Interior is required to designate "critical habitat" for each species it lists under the ESA. Federal agencies are prohibited from authorizing, funding or carrying out actions that "destroy or adversely modify" critical habitat. Section 3 of the ESA defines critical habitat for a threatened or endangered species as [ESA § 3(5)(A)]:

- The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of Section 4 of the ESA, on which are found those physical or biological features essential to the conservation of the species and which may require special management considerations or protection; and

- Specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of Section 4 of the ESA, upon a determination by the Secretary that such areas are essential for the conservation of the species.

Designated critical habitat is described in 50 CFR Parts 17 and 226. Critical habitat may include areas that are not currently occupied by the species, but that will be needed for its recovery. In addition, the USFWS normally excludes developed areas within mapped critical habitat boundaries as critical habitat. The USFWS' Critical Habitat Portal was reviewed to identify federal threatened and endangered species designated final and proposed critical habitat designations within ten miles of the BSA (USFWS, 2022d).

4.1.7 Wildlife Corridors

A wildlife corridor is a connection of habitat, generally native vegetation, which joins two or more larger areas of similar habitat that are otherwise separated by natural barriers, changes in vegetation composition, or land permanently altered for human activities; and infrastructure, including roads, railroads, residential development, or fencing. When native vegetation is cleared, fragmented patches of open space or isolated "islands" of wildlife habitat are created. Fragmentation and habitat loss are the two main contributors to continuing biodiversity decline. The main goal of natural corridors is to facilitate movement of individuals, through dispersal, seasonal migration, and movement for foraging, breeding, cover, etc. Corridors allow for physical and genetic exchange between isolated wildlife populations and are critical for the maintenance of ecological processes, including allowing for the movement of animals and the continuation of viable populations and higher species diversity.

Habitat within the corridor generally contains biological and physical features that are needed to temporarily support wildlife and allow avian and ground-dwelling wildlife to safely move through it. Wildlife corridors may either be contiguous strips of vegetation and habitat, such as ridgelines or riverbeds, or intermittent patches of habitat or physical features spaced closely enough to allow safe travel. Corridors can be natural, such as a riparian corridor, or man-made, such as culverts, tunnels, drainage pipes, walls, underpasses, overpasses, or streets. Man-made corridors are often referred to as "wildlife crossings" and they allow wildlife to pass over, under, or through physical barriers that otherwise hinder movement. Wildlife corridors also vary greatly in size, shape, and composition.

In general, the wider and more safeguarded a wildlife corridor is from adjacent human activities, noise, traffic, and light, the better it functions for the movement of wildlife. To determine the potential for the BSA to contain wildlife corridors, biologists used the BIOS Habitat Connectivity Viewer to search for CDFW Essential Connectivity Areas, Natural Landscape Blocks, and Interstate Connections within the BSA and vicinity (CDFW, 2022b). In addition to reviewing the BIOS Habitat Connectivity Viewer, biologists reviewed the *San Dimas* Quadrangle Map and viewed aerial imagery to search for physical features that might serve as wildlife corridors. Biologists also used GIS software to determine the BSA's location in relation to areas that could serve as wildlife corridors. Finally, the literature review also included maps and reports on wildlife home ranges and migration and dispersal patterns (CDFW, 2014).

4.1.8 Significant Ecological Areas (SEAs)

The Los Angeles County SEA Program consists of the following components: the SEA Goals and Policies found in the Conservation and Natural Resources Element of the Los Angeles County General Plan 2035; the Significant Ecological Areas and Coastal Resource Areas Policy Map ("SEA Boundary

Map") also found in the Los Angeles County General Plan 2035; and the SEA Ordinance of the County Zoning Code.

Areas of the County designated as SEAs satisfy at least one of the following six SEA Selection Criteria:

A. *Habitat of core populations of endangered or threatened plant or animal species.*

B. *On a regional basis, biotic communities, vegetative associations, and habitat of plant or animal species that are either unique or are restricted in distribution.*

C. *Within the County, biotic communities, vegetative associations, and habitat of plant or animal species that are either unique or are restricted in distribution*

D. *Habitat that at some point in the life cycle of a species or group of species, serves as concentrated breeding, feeding, resting, migrating grounds and is limited in availability either regionally or in the County.*

E. *Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations or represent unusual variation in a population or community.*

F. *Areas that would provide for the preservation of relatively undisturbed examples of the original natural biotic communities in the County*

Appendix E of the Los Angeles County General Plan includes detailed descriptions of each SEA, including boundaries, representative resources, wildlife movement opportunities, and designation criteria analysis. The SEA designation does not identify every individual biotic resource, and SEAs are not preserves or conservation areas; rather, SEAs are areas in which planning decisions are made with extra sensitivity toward biological resources and ecosystem functions (LACRP, 2019, pp. 6-7)

4.2 Field Survey Methods

This Section describes the field survey methods used by UltraSystems biologists within the BSA during the 2022 field surveys. Biologists visited the BSA to conduct the following biological surveys:

- Habitat assessment and plant community and land cover type mapping;
- General plant surveys;
- General wildlife surveys;
- Burrowing owl (*Athene cunicularia*; BUOW) habitat assessment
- Wildlife movement evaluation;
- Jurisdictional assessment (waters of the U.S. and State).

The purpose of the field work was to evaluate the initial results of the literature review and to collect additional data on existing site conditions. The general biological surveys covered accessible areas of the BSA, including areas that will be impacted by the project. The surveys were conducted during the daytime on foot by walking slowly across each habitat type, where accessible. For the BUOW habitat assessment survey, biologists only covered those specific habitat areas that are known to provide suitable habitat for the BUOW. Biologists used binoculars from strategic vantage points whenever direct access was not possible, due to private property with no access rights, chain-linked fences, and locked gates. Observations were also made with aerial imagery for inaccessible areas.

Field surveys were conducted as described in **Table 4.2-1**.

Table 4.2-1
FIELD SURVEY INFORMATION

Survey Date	Survey Time	Temp. °F	Conditions	Biologist(s)	Survey Conducted
June 30, 2022	10:00 a.m. – 2:30 p.m.	79-83°F	0% cc 0% precip. 0-3 mph wind	MT	Reconnaissance Survey
July 1, 2022	7:45 a.m. – 5:15 p.m.	74-91°F	0% cc 0% precip. 0-1 mph wind	MT & JM	Reconnaissance Survey
July 19, 2022	8:00 a.m.- 12:00 p.m.	71-89°F	0% cc 0% precip. 0 mph wind	MT & JM	Spot check areas for mapping (no field form)
August 4, 2022	7:30 a.m. – 2:00 p.m.	70-93°F	50-70% cc 0% precip. 0 mph wind	MT/ES	Reconnaissance Survey
August 5, 2022	7:30 a.m. – 3:00 p.m.	71-94°F	0% cc 0% precip. 0 mph wind	MT/ES	Reconnaissance Survey
Notes					

MT = Michelle Tollett; JM = Joyce Mak; ES = Erik Segura – cc = cloud cover; precip = precipitation

Biologists used pertinent regional flora and fauna field guides, topographic, and aerial maps during field surveys to help direct them in the field, to assist in identifying habitat and physical features, and to identify and record special-status species. In addition, biologists used Global Positioning System (GPS) units and other GIS and survey-related techniques, hardware and software to collect data and populate attributes required by the relevant agencies. Digital color photographs were taken during the field surveys to record site conditions at the time of the field surveys. The methods for each type of biological surveys are described in the following sections.

4.2.1 Habitat Assessment and Land Cover Type Mapping

The general habitat assessment and vegetation mapping survey was conducted by UltraSystems biologists (see **Table 4.2-1**). Areas within the BSA were surveyed using a meandering search pattern pedestrian and binocular survey within the BSA. Offsite areas During the survey, plant and wildlife species, vegetation communities, and land cover types were identified.

Biologists characterized the existing habitat and searched for the presence of sensitive vegetation communities. The purpose of the habitat assessment was to ascertain existing site conditions and identify habitat areas that could be suitable for special-status plant and wildlife species.

Descriptions of vegetation communities, land cover types and habitat within the biological survey areas were based on the dominant perennial plant species or physical features. Generally, classifications of habitat types or vegetation communities were based on *A Manual of California Vegetation, Second Edition* (Sawyer et al., 2009) with modifications to better represent existing site conditions. Each habitat type identified in Sawyer et al. (2009) was cross-referenced with the following resources and classification systems so that a more accurate characterization of the existing habitat types and vegetation communities could be identified: *Preliminary Descriptions of the Terrestrial Communities of California* (Holland, 1986), and the CDFW's *California Natural Community List* (CDFW, 2020).

Vegetation communities observed by the biologists were identified and mapped in the field by marking their limits on an orthorectified aerial image or delineated using a GSP unit. Boundaries of private property (i.e., project sites) that would potentially be impacted by grading under the proposed MCTA were given particular attention.

In addition to the vegetation communities, topography, soil characteristics, substrates, and disturbed and developed areas were components of the habitat assessment in order to determine suitability for special-status plants and wildlife. Following the field mapping, UltraSystems' GIS staff downloaded the data from the GPS units and/or digitized the boundaries from aerial maps into an ArcGIS file. Once the boundaries were in ArcGIS, the acreage of each land cover feature present within the BSA was calculated.

4.2.2 General Plant Surveys

Prior to the start of field surveys, biologists researched information on the blooming periods and habitat preferences for the special-status plants determined to have potential to occur within the BSA based on known distribution and elevation extent within the species range. Biologists then surveyed the BSA to identify habitat, vegetation, and for the potential presence of special-status plant species, focusing on areas that appeared to provide suitable habitat for special-status plant species. Plant species were identified in the field and also in the office, when necessary, using plant field guides and taxonomical guides, such as *The Jepson Manual: Vascular Plants of California*, second edition (Baldwin et al., 2012). All identifiable plant species encountered during the field surveys were recorded in field notes.

The biologists paid special attention to areas that appeared to provide suitable habitat for special-status species. Special focus was given to potential jurisdictional sites. Plant species were identified using plant field and taxonomical guides, such as *The Jepson Manual: Vascular Plants of California*, second edition (Baldwin et al., 2012). Plant species that would be encountered during the field surveys would be identified, recorded in field notes, counted (if population was small) or estimated (if population was large), and mapped on an aerial map and/or with a GPS unit. Diagnostic photographs would also be taken of special-status plants where they occurred, as well as representative habitat.

Survey tasks included completion of a list of taxa identified throughout the BSA and subsequent addition of new taxa as they were discovered. Unknown species were identified at a later date using dichotomous keys, high quality photos, and other proprietary identification aids. A complete list of all species documented onsite is in **Appendix D**, *Plant and Wildlife Species Recorded During Field Surveys.*

After the field surveys and mapping of the land cover types were complete, an additional evaluation was conducted in the office for each special-status wildlife species in the wildlife inventory. The evaluation considered whether the BSA contained suitable habitat to support those special-status wildlife species. A species was determined to have no potential to occur or is not expected to occur within the BSA if suitable and adequate biological and physical features that are needed to support the wildlife species are absent from the BSA. Special-status wildlife species determined to have no potential to occur or are not expected to occur within the BSA and therefore will not be affected by the project are listed in **Section 5.4.2**, *Listed Endangered, Threatened, and Candidate Wildlife,* and **Section 5.4.3**, *Sensitive Wildlife,* but are otherwise eliminated from further evaluation and are not discussed further in this BRE. The potential to occur analysis can be found in **Appendix B**, *Special-Status Species Occurrence Potential Determination*.

The literature review, habitat assessment, and general plant surveys concluded that the BSA contains suitable habitat, soils, and/or other factors to support several of the special-status species in the plant inventory. It was determined that 14 of the special-status species in the plant inventory have at least a low potential to occur within the BSA; these species are presented in **Appendix B**, *Special-Status Species Occurrence Potential Determination.*

4.2.3 General Wildlife Surveys

Prior to conducting field surveys, biologists researched information on the natural history and habitat preferences for the special-status wildlife determined to have potential to occur within the BSA based on known distribution and recorded observations. The BSA is within the general distributional range of several special-status vertebrate species.

Biologists surveyed the BSA for common wildlife and the presence of special-status wildlife species. The purposes of the wildlife surveys were to note those species observed, ascertain general site conditions, and identify areas with habitat that would be suitable for special-status wildlife species.

Wildlife species encountered visually or audibly during the field surveys were identified and recorded in field notes. Biologists also recorded signs of wildlife, including animal tracks, burrows, dens, nests, nest sites, scat, or remains. They also surveyed areas that would potentially serve as roosting habitat and/or hibernacula for bat species.

After the field surveys and mapping of the land cover types were complete, an additional evaluation was conducted in the office for each special-status wildlife species in the wildlife inventory. The evaluation considered whether the BSA contained suitable habitat to support those special-status wildlife species. A species was determined to have "no potential to occur" within the BSA if suitable and adequate biological and physical features that are needed to support the wildlife species are absent from the BSA. Special-status wildlife species determined to have no potential to occur within the BSA, and therefore will not be affected by the project, are listed in **Section 5.4.2**, *Listed Endangered, Threatened, and Candidate Wildlife,* and **Section 5.4.3**, *Sensitive Wildlife,* but are otherwise eliminated from further evaluation and are not discussed further in this BRE. The potential

to occur analysis can be found in **Appendix B**, *Special-Status Species Occurrence Potential Determination*.

4.2.4 Waters of the U.S. and State (including Wetlands)

Under existing conditions, stormwater generated on the developed portions of the southern half of the BSA enters the municipal storm drain system on the north and south corners of Calle Cristina at the intersection of Calle Francesca and subsequently into the municipal storm drainage system (which is comprised of a combination of standard culverts and storm drains, and open ditches). Stormwater generated on the undeveloped areas of the BSA sheet flows down slopes and either into the small canyons, where it ponds and infiltrates, or directly into open ditches that direct stormwater into the storm drain system. Ultimately, stormwater generated on the BSA is discharged into Walnut Creek (see **Section 5.5**).

4.2.5 Wildlife Movement Evaluation

Biologists conducted an evaluation of potential wildlife movement within the BSA and vicinity through a literature review, field surveys, and by examining aerial imagery and maps. While in the field, biologists searched for potential natural and man-made travel routes that wildlife could use to traverse the site. Biologists assumed wildlife species would use these linear features for travel as well as natural areas. Biologists also searched for natural and man-made barriers to wildlife movement, such as permanent structures, or densely commercialized or industrialized areas that could interfere with the movement of wildlife.

5.0 RESULTS

This section describes the results of the literature review and the conditions existing within the BSA at the time the biological field surveys were conducted.

5.1 Environmental Setting

The BSA is located in a setting that contains primarily developed (residential/suburban) and landscaped areas. Much of the land surrounding the BSA has been developed and landscaped.

The topography of the BSA can be characterized as an area of ridges and small vegetated canyons. Most of the ridges are developed with single-family residences on large parcels; these parcels slope toward the canyons and tend to be well-vegetated beyond their landscaped backyards.

The BSA is not located within or adjacent to a flood hazard zone designated by the Federal Emergency Management Agency (see **Section 4.10**).

5.1.1 Land Use

Between 1948 and prior to residential development in the 1980s, the BSA consisted of open space supporting trees and grasslands, interspersed by small canyons (NETROnline, 2022).

5.1.2 Local Climate

The City of San Dimas has a mild, semi-arid climate with Mediterranean characteristics. Most precipitation falls between November and March. Semi-arid climates tend to support short or scrubby vegetation, with semi-arid areas usually dominated by either grasses or shrubs. The nearest climate data station to the BSA is operated by the California Irrigation Management System (CIMIS) and is located at Cal Poly Pomona (CIMIS Station 078), approximately two miles southeast of the BSA; this station is at an elevation of 730 feet, which is similar to the elevation of the BSA.

CIMIS Station 078 has been in operation since March 14, 1989. Between January 1, 1990 and December 31, 2021, this station recorded an average annual precipitation of 15.3 inches; average maximum air temperature for the period of record was 76.1 °F, and average minimum temperature was 50.5 °F (CIMIS, 2022).

5.1.3 Soils

The USDA NRCS Web Soil Survey (Soil Survey Staff, 2022) has mapped three soil units within the BSA. These soil units are summarized in Table 5.1-1, Summary of Mapped Soil Units (see **Appendix A**, Figure 6*, USDA Soils* and **Appendix C**, *Soils Report*). None of the soil map units are listed as hydric soils on the Soil Data Access (SDA) Hydric Soils List (USDA-NRCS, 2022a).

Table 5.1-1
SUMMARY OF MAPPED SOIL UNITS

Name	Symbol	pH	Drainage Class	Hydrologic Soil Group Rating	Acres in BSA
Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes	1007	7.9	No data	B	16.9
Zaca-Apollo, warm complex, 20 to 55 percent slopes	1141	7.9	Well-drained	C	180.0
Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced	1232	7.8	Somewhat poorly drained	C	52.4

SOURCE: Soil Survey Staff 2022
NOTES: Drainage Class: *Well-drained* soils are soils from which water is removed from the soil readily but not rapidly Water is available to plant throughout most of the growing season in humid regions, and wetness does not inhibit growth for significant periods during most growing seasons. *Somewhat poorly drained* soils are soils in which water is removed so slowly that the soil is wet at a shallow depth for significant periods during the growing season.
Hydrologic Soil Group Rating: *Group B Soils* are soils which have a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission. *Group C Soils* are soils which have a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

The BSA is dominated by *Zaca-Apollo, warm complex, 20 to 55 percent slopes*. This soil unit is primarily clay derived from colluvium and/or residuum weathered from sandstone and siltstone (Soil Survey Staff, 2022; USDA, 2011; USDA, 1995). This soil unit is found primarily on hillslopes and is well-drained with a slow water infiltration rate.

5.2 Land Cover Types

Eleven land cover types were observed and mapped within the BSA, and are presented with corresponding acreages in **Table 5.2-1**. Refer to **Appendix A**, Figures 9a through 9e, *Land Cover Types Mapbook*, for the location and extent of each land cover type within the BSA. Photographs of different land cover types onsite are located in **Appendix E**, *Representative Site Photographs*. Classifications of the plant communities are based on Holland's *Preliminary Descriptions of the Terrestrial Communities of California* (Holland, 1986) and *A Manual of California Vegetation Second Edition* (Sawyer et al., 2009).

Table 5.2-1
ACREAGE OF MAPPED LAND COVER TYPES WITHIN THE BSA

Mapped Land Cover	MCV2 Alliance Name[1]	Holland Classification[2]	BSA (acres)	35% Lot Coverage (acres)	Grading Area 20ft Beyond 35% Impact Area Limit (acres)	Parcel Non Conservation Outside 35/ 20% Zones (acres)	Total Impact Area (acres)
California buckwheat scrub	*Eriogonum fasciculatum* Shrubland Alliance	southern coastal bluff scrub (31200)	2.85	0.83	<0.01	0.54	1.37
California buckwheat scrub (disturbed)		disturbed southern coastal bluff scrub (31200)	1.54	-	-	-	-
California sagebrush - black sage scrub	*Artemisia californica - Salvia mellifera* Shrubland Alliance	Diegan coastal sage scrub, Riversidian upland sage scrub	4.86	0.98	<0.01	0.61	1.59

Mapped Land Cover	MCV2 Alliance Name[1]	Holland Classification[2]	BSA (acres)	35% Lot Coverage (acres)	Grading Area 20ft Beyond 35% Impact Area Limit (acres)	Parcel Non Conservation Outside 35/ 20% Zones (acres)	Total Impact Area (acres)
California walnut groves	*Juglans californica.* Forest and Woodland Alliance	California walnut woodland (71200)	31.01	3.71	0.53	5.06	9.30
California walnut groves (disturbed)			4.10	0.95	0.02	0.08	1.05
Coast live oak woodland and forest (disturbed)	*Quercus agrifolia* Forest & Woodland Alliance	coast live oak woodland (71160)	3.54	0.53	0.05	0.98	1.56
Coast prickly pear scrub	*Opuntia littoralis - Opuntia oricola - Cylindropuntia prolifera* Shrubland Alliance	southern coastal bluff scrub (31200)	3.85	<0.01	<0.01	0.33	0.33
Developed/Ornamental	n/a	n/a	25.28	14.28	0.70	4.67	19.64

Mapped Land Cover	MCV2 Alliance Name[1]	Holland Classification[2]	BSA (acres)	35% Lot Coverage (acres)	Grading Area 20ft Beyond 35% Impact Area Limit (acres)	Parcel Non Conservation Outside 35/ 20% Zones (acres)	Total Impact Area (acres)
Pepper tree groves	*Schinus [molle, terebinthifolius] - Myoporum laetum* Forest & Woodland Semi-Natural Alliance	southern riparian forest (31200)	0.81	0.08	<0.01	0.07	0.15
Upland mustards or star-thistle fields	*Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance	non-native grassland (42200)	10.89	0.74	0.11	0.83	0.94
Upland mustards or star-thistle fields (mowed)		non-native grassland (42200)	16.71	4.87	0.72	3.76	9.35
TOTAL			105.43	26.97	2.12	16.93	45.27

Mapped Land Cover	MCV2 Alliance Name[1]	Holland Classification[2]	BSA (acres)	35% Lot Coverage (acres)	Grading Area 20ft Beyond 35% Impact Area Limit (acres)	Parcel Non Conservation Outside 35/ 20% Zones (acres)	Total Impact Area (acres)

MCV2 Alliance Name: naming conventions based on natural community descriptions in *Manual of California Vegetation Second Edition* (Sawyer et al. 2009) California's standard vegetation classification for biological consulting firms, planners, and state and federal agencies, including the California Department of Fish and Game, United States Forest Service, National Park Service, and United States Geological Survey

Holland Classification: naming conventions based on natural community descriptions in *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland, 1986). as the classification represented is no longer supported by the State of California. It has been replaced by the *National Vegetation Classification System (*Ecological Society of America and NatureServe) and its California expression, *The Manual of California Vegetation, Second Edition* (Sawyer, Keeler-Wolf and Evens 2009) under Section 1940 of the Fish and Game Code. The MCV2 should be used when describing existing conditions in environmental documents, assessing impacts, and mapping vegetation.

Some of the vegetation communities and disturbed features identified and mapped within the BSA during the literature review and field surveys are not considered sensitive because they meet the criteria listed in **Section 4.1.3.1** of this BRE. Four sensitive land cover types/vegetation communities were identified within the BSA.

Characteristics of each plant community and disturbed features are described in the following sections. Plant species associated with onsite vegetation communities are also described.

5.2.1 California Buckwheat Scrub (*Eriogonum fasciculatum* Shrubland Alliance)

Approximately 2.85 acres of California buckwheat scrub was mapped within the BSA. California buckwheat scrub (*Eriogonum fasciculatum* shrubland alliance) occurs on upland slopes, arroyos experiencing intermittent flooding, channels and washes. This alliance occurs on coarse, well drained soils that are moderately acidic to slightly saline (CNPS, 2022b). California buckwheat is the dominant species of this mapped land cover. This observed scrub community is best characterized as Diegan coastal sage scrub described in the Preliminary Descriptions of the Terrestrial Communities of California (Holland 1986). in the A Manual of California Vegetation Second Edition (Sawyer et al., 2009) this species assemblage meets the membership rules for the *Eriogonum fasciculatum* shrubland alliance (California buckwheat scrub).

Sawyer et al. describes California buckwheat scrub as a community that is a nearly pure stand of California buckwheat. Weeds and other coastal sage scrub shrubs occur, but in low densities. The shrub canopy is continuous to intermittent. The herbaceous layer is variable. This community is usually one of the first of the coastal scrubs to establish in mechanically disturbed areas, such as road cuts or slope failures, and it persists in areas with light to moderate grazing.

California buckwheat scrub has been designated by NatureServe as a secure (G5 and S5) natural community. Secure communities are common, widespread, and abundant in the state.

This community is considered low priority for inventory by CDFW and is not considered sensitive (CDFW, 2022a; CNPS, 2022b, NatureServe, 2022).

However, California buckwheat scrub is considered a sensitive and protected vegetation community when found to support special status (listed) species, such as the California gnatcatcher (CDFW, 2022a; CNPS, 2022b).

5.2.2 California Buckwheat Scrub, Disturbed (*Eriogonum fasciculatum* Shrubland Alliance)

There are approximately 1.54 acres of disturbed California buckwheat scrub in the BSA. This mapped land cover is as described above. However, this land cover exists in a disturbed state because it contains areas that have been altered due to human activities resulting in significant soil compaction and reduction in habitat quality.

Onsite areas given the designation of “disturbed” indicate that more than 20 percent of the given polygon consists of non-native or invasive species, but did not meet the criteria to meet the membership rules for other non-native vegetation communities, such as upland mustards/star thistle fields. In its disturbed state, this vegetation community is considered of moderate to low habitat quality.

This community is considered low priority for inventory by CDFW and is not considered sensitive (CDFW, 2022a; CNPS, 2022b).

However, California buckwheat scrub is considered a sensitive and protected vegetation community when found to support special-status (listed) species, such as the California gnatcatcher (CDFW, 2022a; CNPS, 2022b).

5.2.3 California Sagebrush – Black Sage Scrub (*Artemisia californica - Salvia mellifera* Shrubland Alliance)

Approximately 4.86 acres of California sagebrush – black sage scrub was identified in the BSA. California sagebrush – black sage scrub is characterized by the co-dominance of both California sagebrush and black sage with a 30 to 60 percent relative cover in the shrub canopy. This community is typically found on steep east to-southwest-facing slopes in soils that are usually colluvial (CNPS, 2022b). At the project site, the understory ground cover is dominated by leaf litter, with low cover of non-native grass and forb species near the canopy's drip line.

This community is categorized as apparently (S4 and G4), which describes natural communities that are at moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.

This community is not considered sensitive by CDFW (CDFW, 2022a; CNPS, 2022b).

However, California sagebrush – black sage scrub is considered a sensitive and protected natural community when found to support special status (listed) species, such as the California gnatcatcher (CDFW, 2022a; CNPS, 2022b; NatureServe, 2022).

5.2.4 California Walnut Groves (*Juglans californica* Forest & Woodland Alliance)

Approximately 31.01 acres of California walnut groves was identified within the BSA. Mature California black walnut trees are the dominant and most prevalent tree species in the BSA, in some areas reaching 100 percent cover. California walnut trees occur primarily in slope depressions and swales on southern facing slopes and throughout northern facing slopes. California walnut groves are characterized by the dominance of California black walnut in densities of greater than 50 percent of relative cover in the tree canopy layer or 30 percent relative cover if codominant with coast live oak (CNPS, 2022b). The canopy in this vegetation community varies from open to continuous and the shrub layer consists of sparsely distributed herbs and grasses. California black walnut can reach a height of up to 30 feet and stands occur in association with annual grassland, mesic chaparral, coastal sage scrub, oak woodland, and riparian vegetation (CNPS, 2022b).

This community is categorized by NatureServe as vulnerable (G3 and S3.2), which are natural communities that are at moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors. considered sensitive by CDFW (CDFW, 2022a; NatureServe, 2022).

5.2.5 California Walnut Groves, Disturbed (*Juglans californica* Forest & Woodland Alliance)

Approximately 4.10 acres of disturbed California walnut groves was identified in the BSA. This mapped land cover is as described above. However, this land cover exists in a disturbed state because it contains areas that have been altered by human activities resulting in significant soil compaction and reduction in habitat quality. California black walnut is the dominant canopy species of this mapped land cover. The canopy in this vegetation community varies from open to continuous and the shrub layer consists of sparsely distributed herbs and grasses. California black walnut can reach

a height of up to 30 feet and stands occur in association with annual grassland, mesic chaparral, coastal sage scrub, oak woodland, and riparian vegetation (CNPS, 2022b).

Onsite areas given the designation of "disturbed" indicate that more than 20 percent of the given polygon consists of non-native or invasive species, but did not meet the criteria to meet the membership rules for other non-native vegetation communities, such as upland mustards/star thistle fields. In its disturbed state, this vegetation community is considered of moderate to low habitat quality. Although if found to support listed species, would be protected as sensitive, with compensatory mitigation likely assigned a reduced ratio.

This community is categorized by NatureServe as vulnerable (G3 and S3.2), which describes natural communities that are at moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors (NatureServe, 2022). This community is considered sensitive by CDFW (CDFW, 2022a).

5.2.6 Coast Live Oak Woodland and Forest, disturbed (*Quercus agrifolia* Forest & Woodland Alliance)

Approximately 3.54 acres of coast live oak woodland was identified in the BSA. Coast live oak woodland is characterized by the dominance of coast live oak in densities of greater than 50 percent of relative cover in the tree canopy layer (CNPS, 2022b). The understory in this vegetation community is typically sparse to intermittent and the herbaceous layer consists of sparsely distributed herbs, due to the natural mulch dropped by the oak trees that can inhibit germination of plant seedlings. Coast live oaks can reach a canopy height of 30 meters, but usually vary from nine to 22 meters (Sawyer et al., 2009; Barbour and Minnich, 2000). Canopy coverage varies between continuous to open. Shrub cover is occasional or common with the ground layer varying from grassy to absent (Sawyer et al. 2009). Woodlands may intergrade with grasslands such that shrub cover becomes diminished and herbaceous cover can reach 80 percent (Holland and Keil, 1995; Barbour and Minnich, 2000; CNPS, 2022b).

This community is considered vulnerable (G3 and S3) which describes natural communities that are at moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors; this community considered sensitive (CDFW, 2022a; NatureServe, 2022).

5.2.7 Coast Prickly Pear Scrub (*Opuntia littoralis - Opuntia oricola - Cylindropuntia prolifera* Shrubland Alliance)

Approximately 3.85 acres of coast prickly pear scrub was identified in the BSA. Coast prickly pear scrub is characterized by the dominance of coastal prickly pear in densities greater than 50 percent of relative cover in the shrub canopy layer or greater than 30 percent if sage scrub species, such as California buckwheat, are co-dominant. The canopy is intermittent or continuous; the herbaceous layer is open to continuous and diverse. This community is typically found on south-facing slopes and headlands in shallow loam and clay soils that may be rocky (CNPS, 2022b). Coast prickly pear is the dominant species of this mapped land cover. This community is categorized as vulnerable (S3 and G4), which describes natural communities that are at moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.

This vegetation community is considered sensitive by CDFW. (CDFW, 2022a; NatureServe, 2022).

5.2.8 Developed/Ornamental

Approximately 25.28 acres of the developed/ornamental land cover type occurs in the BSA. includes areas that often support man-made structures such as houses, sidewalks, buildings, parks, water tanks, flood control channels and transportation infrastructure (streets, bridges and culverts), as well as turf lawns and other landscaped areas containing non-native, ornamental plant species. Within the BSA, the Developed/Ornamental land cover type comprises single-family residential homes and associated paved surfaces such as roadways and driveways, utility structures, and landscaped gardens and yards with ornamental trees and plants.

This land cover type is not considered sensitive by CDFW (CDFW, 2022a; NatureServe, 2022).

5.2.9 Pepper tree groves (*Schinus* [*molle*, t*erebinthifolius*] - *Myoporum laetum* Forest & Woodland Semi-Natural Alliance)

Approximately 0.81 acre of Pepper tree or Myoporum groves *(Schinus [molle, terebinthifolius] - Myoporum laetum* Forest & Woodland Semi-Natural Alliance (Pepper tree groves) occurs on the project site. This semi-natural alliance is characterized by the dominance of *Myoporum laetum, Schinus molle* or *Schinus terebinthifolius* in the tree canopy; shrubs can occur infrequently or commonly (CNPS, 2022b). In the BSA, this vegetation community is dominated by the non-native Peruvian pepper tree, which is currently assigned a limited rating on the California Invasive Plant Inventory (Cal IPC, 2006). See Section **5.3.2** for defined California Invasive Plant Council (Cal-IPC) ratings and criteria for the rating system.

This vegetation community is not considered sensitive by CDFW (CDFW, 2022a).

5.2.10 Upland Mustards or Star-Thistle Fields (*Brassica nigra - Centaurea* (*solstitialis*, *melitensis*) Herbaceous Semi-Natural Alliance)

Approximately 10.89 acres of upland mustards or star-thistle fields (upland mustard fields) were identified in the BSA in senesced, post-fruiting, "mature" condition. Upland mustard fields are characterized by the dominance of black mustard, short-podded mustard, or other mustards occurring with non-native plants in densities greater than 80 percent of relative cover in the herbaceous layer; cover is open to continuous. This community is typically found on fallow fields, rangelands, grasslands, roadsides, levee slopes, disturbed coastal scrub, riparian areas, cleared roadsides, waste places in clay to sandy loam soils (CNPS, 2022b).

This vegetation community is not considered sensitive by CDFW (CDFW, 2022a; NatureServe, 2022).

5.2.11 Upland Mustards or Star-Thistle Fields, Mowed (*Brassica nigra - Centaurea* (*solstitialis, melitensis*) Herbaceous Semi-Natural Alliance)

Approximately 16.71 acres of upland mustards or star-thistle fields (Upland mustard fields) were identified in the BSA in a manicured "mowed" condition. Mowed areas are generally associated with fire clearance (fuel modification) requirements within 200 feet of dwelling structures. Upland mustard fields are characterized by the dominance of black mustard, short-podded mustard, or other mustards occurring with non-native plants in densities greater than 80 percent of relative cover in the herbaceous layer; cover is open to continuous. This community is typically found on fallow fields, rangelands, grasslands, roadsides, levee slopes, disturbed coastal scrub, riparian areas, cleared roadsides, waste places in clay to sandy loam soils (CNPS, 2022b).

This vegetation community is not considered sensitive by CDFW (CDFW, 2022a; NatureServe, 2022).

See **Appendix A**, Figure 9, *Land Cover Overview Map;* Figures 9a through 9e, *Land Cover Mapbook*; and **Appendix E**, *Representative Site Photographs*).

5.3 Plants

This section describes the plants detected during the field surveys and the special-status plants that have a potential to occur within the BSA as identified by the literature review and field surveys.

5.3.1 Plant Species Recorded During the Field Surveys

Approximately 53 plant species from 29 distinct plant families were observed within the BSA during the field survey. The dominant tree species are coast live oak and California black walnut, with occasional stands of Peruvian pepper trees. A list of plant species recorded within the BSA during the field surveys is provided in **Appendix D**, *Plant and Wildlife Species Observed During the Field Surveys*.

5.3.2 Non-Native Plants

Cal-IPC is a nonprofit organization that is dedicated to protecting California's lands and waters from ecologically-damaging invasive plants through science, education and policy. It maintains an inventory that categorizes non-native invasive plants that threaten the state's wildlands.

Non-native vegetation with a Cal-IPC high rating has severe ecological effects on physical processes, plant and animal communities, and vegetation structure. These exotic species' reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically (Cal-IPC, 2022).

Non-native vegetation with a Cal-IPC moderate rating has substantial and apparent (but generally not severe) ecological effects on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Non-native vegetation species with a Cal-IPC limited rating are invasive, but their ecological effects are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic (Cal-IPC, 2022).

Fifteen of the recorded plant species are non-native. The non-native plant species listed below are assigned a Cal-IPC rating (Cal-IPC, 2022). They include the following listed below in **Table 5.3-1**, *Recorded Invasive Plant Species with a Cal-IPC Rating*.

Table 5.3-1
RECORDED INVASIVE PLANT SPECIES WITH A CAL-IPC RATING

Scientific Name (=Synonym)	Common Name (=Synonym)	Cal-IPC Rating
Silybum marianum	milk thistle	limited
Eucalyptus spp.	eucalyptus	limited

Scientific Name (=Synonym)	Common Name (=Synonym)	Cal-IPC Rating
Salsola tragus	Russian thistle	limited
Marrubium vulgare	horehound	limited
Ricinus communis	castor bean	limited
Schinus molle	Peruvian pepper tree	limited
Bromus diandrus	ripgut grass	moderate
Ailanthus altissima	tree of heaven	moderate
Brassica nigra	black mustard	moderate
Nicotiana glauca	tree tobacco	moderate
Bromus diandrus	ripgut grass	moderate
Ailanthus altissima	tree of heaven	moderate
Atriplex semibaccata	Australian saltbush	moderate
Tamarix ramosissima	saltcedar	high
Bromus rubens	red brome	high

No federally listed noxious weeds were observed onsite during the field surveys, per the USDA Animal and Plant Health Inspection Service (APHIS) Federal Noxious Weed List (USDA, 2010).

5.3.3 Listed Endangered, Threatened, Candidate, and State Rare Plants

No federal or state listed plant species were observed within the BSA during the surveys (see **Appendix D**, *Plant and Wildlife Species Recorded During the Field Surveys*).

As discussed in **Section 4.1.3**, a literature review and query from publicly available databases (USFWS, 2022d; CNDDB, 2022a) for recorded observations of listed and sensitive species within a ten-mile radius of the BSA, determined that two listed plant species were determined to have a moderate potential to occur. These species are listed in **Appendix B**, *Special-Status Species Occurrence Potential Determination*.

Moderate Potential to Occur in the BSA

The BSA contains coastal sage scrub, coast live oak woodlands, California walnut groves, and other native vegetation. The soils in the BSA are clay and sandy-loam. These characteristics of the BSA result in the provision of suitable habitat for two listed plant species, which were determined to have a moderate potential to occur within the BSA (see **Appendix B,** *Special-Status Species Occurrence Potential Determination***,** for the descriptions of the status rankings and for further discussion of these species):

- thread-leaved brodiaea (*Brodiaea filifolia*) FT, SE, CRPR: 1B.1.
- Nevin's barberry (*Berberis nevinii*) FE, SE, CRPR: 1B.1

5.3.4 Sensitive Plants

No sensitive plant species were observed within the BSA during the general field surveys (**Appendix D**, *Plant and Wildlife Species Observed During the Field Surveys*).

As discussed in **Section 4.1.3**, 12 sensitive plant species were determined to have at least a low potential to occur in the BSA; the majority were determined to have a moderate potential to occur in the BSA. These species are listed in **Appendix B**, *Special-Status Species Occurrence Potential Determination*.

Moderate Potential to Occur in the BSA

The following nine sensitive species that were determined to have a moderate potential to occur as a result of the literature study and field survey are listed below with their respective protection statuses determined by various state, federal, regional and local regulatory agencies are listed below (see **Appendix B**, *Special-Status Species Occurrence Potential Determination*, for the descriptions of the status rankings and for further discussion of these species).

- white rabbit-tobacco (*Pseudognaphalium leucocephalum*) CRPR: 2B.2
- California satintail (*Imperata brevifolia*) CRPR: 2B.1
- Plummer's mariposa lily *(Calochortus plummerae)* CRPR: 4.2
- slender mariposa lily *(Calochortus clavatus* var. *gracilis)* CRPR: 1B.2
- intermediate mariposa lily *(Calochortus weedii* var. *intermedius)* CRPR: 1B.2
- Robinson's pepper grass (*Lepidium virginicum* var. *robinsonii*)
- mesa horkelia (*Horkelia cuneata* var. *puberula*) CRPR: 1B.1
- Coulter's saltbush (*Atriplex coulteri*) CRPR: 1B.2
- many-stemmed dudleya (*Dudleya multicaulis*) CRPR: 1B.2

Low Potential to Occur in the BSA

The following three sensitive species that were determined to have a low potential to occur as determined by the results of the literature study and field survey. These plant species are listed below with their respective protection statuses determined by state (see **Appendix B**, *Special-Status Species Occurrence Potential Determination,* for the descriptions of the status rankings and for further discussion of these species).

- Sonoran maiden fern (*Thelypteris puberula* var. *sonorensis*) CRPR: 2B.2
- Greata's asper (*Symphyotrichum greatae* [=*Aster greatae*]) CRPR 1B.3
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*) CRPR: 1B.2

5.4 Wildlife

This Section describes the wildlife observed and/or detected during the field surveys and the special-status wildlife that have a potential to occur within the BSA as determined by the literature review and field surveys. In this BRE, wildlife nomenclature and taxonomic sequence are based on the following:

- Amphibians and reptiles: CDFW's Complete List of Amphibian, Reptile, Bird and Mammal Species in California (CDFW, 2016).
- Birds: American Ornithologists' Union (AOU) Check-list of North American Birds, 7th edition (AOU, 1998 and supplements).

- Mammals: *Mammal Species of the World* (Wilson and Reeder, 2005).

5.4.1 Wildlife Species Recorded During the Field Surveys

The BSA supports an assortment of wildlife and provides foraging, nesting, breeding, and cover habitat to reptiles, birds (year-round residents, seasonal residents, migrants), and mammals. During the field surveys, 17 bird species, seven mammal species, and one invertebrate species were observed within the BSA (see **Appendix D**, *Plant and Wildlife Species Observed During the Field Surveys).*

Wildlife survey limitations include:

- The biological field surveys were conducted during the daytime to maximize the detection of most wildlife. Birds represent the largest component of the fauna observed because most birds are active in the daytime. In contrast, daytime surveys usually result in few observations of mammals, many of which may only be active at night. Many mammal species may also have been unnoticed due to their subterranean habitat.

- Many species of reptiles, and mammals are secretive in their habits and are difficult for biologists to observe in a walking survey.

- Many wildlife species are wide-ranging and/or they only occur on a seasonal basis; therefore, they may not have been present within the BSA at the time of the surveys.

- Many species are nocturnal, move about a territory, may have become dormant for the season, or are less active during inclement or hot weather.

- Additional wildlife species that likely use the BSA were not observed or indirectly detected during the field surveys due to their scarcity or the need for special survey methods.

Vegetation communities form the basis for wildlife habitat and provide the primary plant productivity upon which wildlife depends, along with nesting and denning sites, escape and movement cover, and protection from adverse weather. Some species are habitat specific for all their life history requirements, while many wildlife species move freely between vegetation communities to obtain all their life history needs. In general, more complex natural communities with more vegetation layers and more plant species provide higher value wildlife habitat than less complex vegetation communities. More complex communities have more niches for wildlife and usually support more animal species than less complex communities. Although simple communities may support few wildlife species, they may provide habitat for great numbers of those few species.

Birds

A variety of bird species are expected to be residents in the survey area, using the habitat throughout the year. Other species are present only during certain seasons. For example, the white-crowned sparrow (*Zonotrichia leucophrys*) and western bluebird *(Sialia mexicana*) are expected to occur in the BSA during the winter season and will then migrate north in the spring to breed during the summer.

Native bird species observed in the survey area include cliff swallow (*Petrochelidon pyrrhonota*), spotted towhee (*Pipilo maculatus*), lesser goldfinch (*Spinus psaltria*), American goldfinch, bushtit (*Psaltriparus minimus*), Nuttall's woodpecker (*Dryobates nuttallii*), Cooper's hawk (*Accipiter*

cooperii), Bewick's wren (*Thryomanes bewickii*), house wren (*Troglodytes aedon*), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), and Anna's hummingbird (*Calypte anna*).

The abovementioned species are common in southern California and are not listed as threatened or endangered; however, Nuttall's woodpecker is a Bird of Conservation Concern and Cooper's hawk is on the CDFW Watch List (season of concern: nesting). For a list of special-status birds that were determined to have a potential to occur in the BSA, refer to **Appendix B,** *Special-Status Species and Potential Occurrence Determination*.

Mammals

As with other taxonomic groups, the vegetation types present in the BSA offers habitat for a variety of mammals. Seven mammal species, including coyote (*Canis latrans*) and dusky-footed woodrat (*Neotoma fuscipes*) were observed during the field survey. These species are common in southern California and are not listed as threatened or endangered, and are not rare. A list of wildlife species that were observed during the surveys is located in **Appendix D,** *Plant and Wildlife Species Observed During Field Surveys*.

Bats occur throughout most of southern California and may use any portion of the survey area as foraging habitat. The oak woodland vegetation and the structures present in the survey area provides potential roosting habitat for bats; however, no bats or signs thereof were observed during the surveys. For a list of special-status mammals that were determined to have a potential to occur in the BSA, refer to **Appendix B,** *Special-Status Species and Potential Occurrence Determination*.

5.4.2 Listed Endangered, Threatened, and Candidate Wildlife

One wildlife species that is a candidate for federal listing (overwintering population) was observed within the BSA during the field surveys. This species, monarch butterfly (*Danaus plexippus* pop. 1), is further discussed below. The literature review and field surveys concluded that the majority of the listed species in the wildlife inventory do not have more than a low potential to occur within the BSA due to a lack of suitable biological and physical features that are adequately needed to support them.

As discussed in **Section 4.1.3**, seven listed wildlife species were determined to have at least a low potential to occur in the BSA. One listed species in the wildlife inventory, monarch butterfly, was observed during the field survey. All species evaluated in the literature study, including those determined to have no potential or are not expected to occur, are listed in **Appendix B**, *Special-Status Species Occurrence Potential Determination.*

Present in the BSA

<u>Monarch butterfly</u>

Monarch butterfly was observed in the BSA during the field survey. Monarch butterflies are found across North America in areas of suitable feeding, breeding, and overwintering habitat. The two populations, referred to as the eastern and the western populations, are distinguished by separation by the Rocky Mountains.

Monarch presence in a given area within their range depends on the time of year. They are one of few migratory insects, traveling long distances between summer breeding habitat and winter habitat where they spend several months inactive. In the summer they range as far north as southern Canada.

In the fall the eastern population migrates to the cool, high mountains of central Mexico and the western population migrates to coastal California, where they spend the entire winter.

Butterflies have different diets during their larval caterpillar phase than they do as adults. Monarch caterpillars feed exclusively on the leaves of milkweed, wildflowers in the genus *Asclepias*. North America has several dozen native milkweed species with which monarchs coevolved and upon which they rely to complete their life cycle.

Milkweed produces toxins to deter animals from eating them, but monarchs have evolved immunity to these toxins. Monarch caterpillars store these toxins in their body as they feed, causing them to taste bad, which serves as a deterrent to predators. The toxins remain in their system even after metamorphosis, protecting them as adult butterflies (National Wildlife Federation, 2022).

The overwintering population of this butterfly is designated as federal candidate for listing. Candidate species are plants and animals for which the USFWS has sufficient information on their biological status and threats to propose them for listing as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by higher priority listing actions to address species in greater need. A proposed regulation has not yet been published in the Federal Register for these species.

Moderate Potential to Occur in the BSA

The BSA contains coastal sage scrub, coast live oak woodlands, California walnut groves, and other native vegetation with riparian areas, and soils in the BSA are comprised of clay and sandy-loam. These characteristics of the BSA result in the provision of suitable habitat for several listed wildlife species.

The following three listed species that were determined to have a moderate potential to occur as a result of the literature study and field survey are listed below with their respective protection statuses determined by various state, federal, regional and local regulatory agencies are listed below (see **Appendix B**, *Special-Status Species Occurrence Potential Determination*, for the descriptions of the status rankings and for further discussion of these species).

- coastal California gnatcatcher (*Polioptila californica californica*) FT, SSC
- least Bell's vireo (*Vireo bellii pusillus*) FE, SE, Season of concern: nesting
- Southwestern willow flycatcher (*Empidonax traillii extimus*) FE, SE

<u>Coastal California gnatcatcher</u>

The coastal California gnatcatcher (*Polioptila californica;* gnatcatcher) is found on the coastal slopes of southern California, from southern Ventura southward through Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties into Baja California, Mexico. Within its range, the distribution of gnatcatcher is further defined by relatively narrow elevation limits. In general, inland populations of the gnatcatcher can be found below the 1,640-foot elevation, and coastal populations tend to be found below an elevation of 820 feet (CDFW, 2014).

The BSA contains suitable coastal sage scrub habitat to support this species.

Least Bell's vireo

Least Bell's vireo is a small, olive-grey migratory songbird, and is a summer resident of riparian areas in southern California. The species' breeding distribution is currently restricted to eight California counties: Kern, San Diego, San Bernardino, Riverside, Ventura, Los Angeles, Santa Barbara, and Imperial. Preferred habitat for this species is dense willow-dominated riparian habitat with a well-developed understory. The understory shrub thickets provide nesting habitat. Willows are most commonly used. High and low shrub layers are used as foraging substrate. Other plant species used for nesting and foraging include California wild rose and coast live oak.

The BSA contains potentially suitable nesting habitat (coast live oak) required for this species.

Southwestern willow flycatcher

The breeding range of the southwestern willow flycatcher (*Empidonax traillii extimus*; SWFL) includes southern California, Arizona, New Mexico, southwestern Colorado, and extreme southern portions of Nevada and Utah. Southwestern willow flycatcher breed and forage in relatively dense riparian tree and shrub communities associated with rivers, swamps, and other wetlands, including lakes (e.g., reservoirs). SWFL suitable habitat contains: surface water, saturated soil, or herbaceous wetland plants present during the early summer months; woody riparian vegetation is present and covers a minimum aerial extent of 20 percent over a 0.5-acre section of floodplain or adjacent streamside terrace; dense clumps or stands of woody vegetation are present. SWFLs also nests in thickets dominated by the non-native tamarisk and Russian olive and in habitats where native and non-native trees and shrubs are present in essentially even mixtures.

The BSA contains potentially suitable nesting habitat for SWFL (woody vegetation, even mixtures of native and non-native trees and shrubs; the BSA may also contain saturated soils in the bottom of canyons within the BSA).

Low Potential to Occur in the BSA

The following three listed species that were determined to have a low potential to occur as a result of the literature study and field survey are listed below with their respective protection statuses determined by various state, federal, regional and local regulatory agencies are listed below (see **Appendix B**, *Special-Status Species Occurrence Potential Determination*, for the descriptions of the status rankings and for further discussion of these species).

- arroyo toad (*Anaxyrus californicus*) FE, SSC
- Swainson's hawk (*Buteo swainsoni*) ST, BCC, Season of concern: nesting

5.4.3 Sensitive Wildlife

Two sensitive wildlife species, Cooper's hawk and Nuttall's woodpecker, were observed within the BSA during the field surveys. The literature review and field surveys concluded that the majority of the sensitive species in the wildlife inventory have at least a low potential to occur within the BSA due to the presence of suitable biological and physical features that are adequately needed to support them (see **Appendix D**, *Plant and Wildlife Species Observed During the Field Surveys*).

As discussed in **Section 4.1.3**, 20 sensitive wildlife species were determined to have at least a low potential to occur. Two of the species in the wildlife inventory, Nuttall's woodpecker and Cooper's

hawk, were observed during the field survey. These species are further discussed below. All species evaluated in the literature study, including those determined to have no potential or are not expected to occur, are listed in **Appendix B**, *Special-Status Species Inventory and Potential Occurrence Determination*.

Present in the BSA

Nuttall's woodpecker

Nuttall's woodpecker is a common, permanent resident of low-elevation riparian deciduous and oak habitats, typically occurring in the Central Valley, Transverse and Peninsular Ranges, in the Coast Ranges north to Sonoma County and rarely to Humboldt County, and in lower portions of the Cascade Range and Sierra Nevada. This woodpecker primarily forages in oak and riparian deciduous habitats while pecking, probing, and drilling for sap. Approximately 80 percent of the diet of this species is comprised of adult and larval insects, mostly beetles. Berries, poison-oak seeds, nuts, other fruits are also occasionally consumed. Breeding season occurs from late March through early July with peak activity occurring from April to early June (Bent, 1939; CDFW, 2022b; 2014; Miller and Bock, 1972).

This species is currently designated by USFWS as a bird of conservation concern (BCC). BCC species are those listed in the USFWS' 2008 Birds of Conservation Concern report (USFWS, 2008). The report identifies species, subspecies, and populations of all migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that, without additional conservation actions, are likely to become candidates for listing under the ESA. While the bird species included in the report is priorities for conservation action, the list makes no finding with regard to whether they warrant consideration for ESA listing.

Cooper's hawk

Cooper's hawks are medium-sized hawks of the woodlands. These raptors are commonly sighted in parks, neighborhoods, over fields, and even along busy streets if there are large trees nearby for perching and adequate prey species such as other birds and small mammals. They prefer to breed in more densely wooded areas than occur in the BSA, such as woodland openings and edges of riparian and oak habitat (CDFW, 2014; Cornell Lab or Ornithology, 2022). Cooper's hawks build nests in pines, oaks, Douglas-firs, beeches, spruces, and other trees. Males typically build the nest over a period of about two weeks, with just the slightest help from the female. Nests are piles of sticks roughly 27 inches in diameter and 6-17 inches high with a cup-shaped depression in the middle, 8 inches across and 4 inches deep. The cup is lined with bark flakes and, sometimes, green twigs. (Cornell Lab of Ornithology, 2022)

Cooper's hawk is included on the CDFW Watch List (CNDDB, 2022b). The CDFW Watch List includes birds identified in the California Bird Species of Special Concern (Shuford and Gardali, 2008) report and have or have had one of the following statuses: they are not on the current CDFW species of special concern list, but were on previous lists and they have not been state-listed under CESA; they were previously state or federally listed and now are on neither list; or, they are on the list of fully protected species. The report identifies species, subspecies, and populations of all migratory and non-migratory bird species (beyond those already designated as federal threatened or endangered) that, without additional conservation actions, are likely to become candidates for listing under the ESA.

Moderate Potential to Occur in the BSA

The BSA contains coastal sage scrub, coast live oak woodlands, California walnut groves, and other native vegetation. In addition, the sloping topography of the BSA may enable to formation of ephemeral water sources, especially near the drainages. Topography of the BSA also creates favorable conditions for many sensitive species that utilize sloping surfaces. The soils in the BSA are clay and sandy-loam. Lastly, the region of the BSA has a mild, semi-arid climate with Mediterranean characteristics. These characteristics of the BSA result in the provision of suitable habitat for a diverse array of sensitive wildlife species.

The following 15 sensitive species that were determined to have a moderate potential to occur as a result of the literature study and field survey are listed below with their respective protection statuses determined by various state, federal, regional and local regulatory agencies are listed below (see **Appendix B**, *Special-Status Species Occurrence Potential Determination*, for the descriptions of the status rankings and for further discussion of these species).

- pallid bat (*Antrozous pallidus*) SSC
- Crotch's bumble bee (*Bombus crotchii*) SSC
- merlin (*Falco columbarius*) WL
- western spadefoot (*Spea hammondii*) SSC
- yellow warbler (*Setophaga petechia*) SSC, BCC
- large-blotched ensatina (*Ensatina eschscholtzii klauberi*) SSC
-
- coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*) BCC
- two-striped garter snake (*Thamnophis hammondii*) SSC
- Blainville's horned lizard (*Phrynosoma blainvilli*) SSC
- California glossy snake (*Arizona elegans occidentalis*) SSC
- hoary bat (*Lasiurus cinereus)* WBWG:M
- western mastiff bat (*Eumops perotis californicus*) SSC, WBWG:H
- southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) WL
- mountain lion (*Puma concolor*) California Fish and Game Code §§ 4800 – 4810
- white-tailed kite (*Elanus leucurus*) fully protected

Low Potential to Occur in the BSA

The following 12 sensitive species that were determined to have a low potential to occur as a result of the literature study and field survey are listed below with their respective protection statuses determined by various state, federal, regional and local regulatory agencies are listed below (see **Appendix B**, *Special-Status Species Occurrence Potential Determination*, for the descriptions of the status rankings and for further discussion of these species).

- golden eagle (*Aquila chrysaetos*) fully protected, WL, BCC, CDF:S, Season of Concern: nesting and wintering
- red-diamond rattlesnake (*Crotalus ruber*) SSC
- southern California legless lizard (*Anniella stebbinsi*) SSC
- burrowing owl (*Athene cunicularia*) BCC
- California spotted owl (*Strix occidentalis occidentalis*) SSC, BCC
- western yellow bat (*Lasiurus xanthinus*) SSC, WBWG:H
- big free-tailed bat (*Nyctinomops macrotis*) SSC, WBWG:MH

- long-eared owl (*Asio otus*) SSC, Season of concern: nesting

5.5 Waters of the U.S. and State (including Wetlands)

UltraSystems biologists reviewed the aerial imagery to identify natural and man-made drainages (rivers, streams, creeks), open water (lakes, ponds, etc.), and other features that may be subject to federal or state jurisdictional authority within watersheds within the BSA (see **Appendix A**, Figure 11, *USGS Surface Waters and Watersheds*). They also reviewed USGS 7.5-Minute Topographic Map for the *San Dimas* Quadrangle to identify potential presence or absence of onsite waterways. Based on these reviews, the biologists several potential waters of the U.S. and/or State within the BSA.

The BSA contains several NWI-mapped features including freshwater forested/shrub wetlands, riverine areas, and forested/shrub riparian areas (see **Appendix A**, Figure 12a through 12e, *Biological Constraints Mapbook*).

During the survey, evidence of hydrologic features such as streams, wetlands, and ponds were evaluated. During the biological surveys, UltraSystems biologists observed hydrologic features including vegetated riverine wetlands (e.g., riparian areas).

5.6 Critical Habitat

The BSA is located less than 1.5 miles from designated critical habitat for the coastal California gnatcatcher within and surrounding Frank G. Bonelli Regional Park (**Appendix A**, Figure 13, *USFWS Critical Habitat*). Additionally, the BSA is less than one mile north of designated critical habitat for coastal California gnatcatcher which is mapped along the south-facing slopes of the San Jose Hills from northwest of the I-10/SR-57 Interchange to Highway 39 (Azusa Avenue) in West Covina.

5.7 Wildlife Corridors

A wildlife corridor is a connection of habitat, generally native vegetation, which joins two or more larger areas of similar habitat that are otherwise separated by natural barriers, changes in vegetation composition, or land permanently altered for human activities (e.g., parks, cemeteries); and by infrastructure, including roads, railroads, residential development, or fencing. When native vegetation is cleared, fragmented patches of open space or isolated "islands" of wildlife habitat are created. Fragmentation and habitat loss are the two main contributors to continuing biodiversity decline. The main goal of corridors is to facilitate movement of individuals, through dispersal, seasonal migration, and movement for foraging, breeding, cover, etc. Corridors allow for physical and genetic exchange between isolated wildlife populations and are critical for the maintenance of ecological processes, including allowing for the movement of animals and the continuation of viable populations and higher species diversity.

Wildlife corridors may either be contiguous strips of vegetation and habitat, such as ridgelines or riverbeds, or intermittent patches of habitat or physical features spaced closely enough to allow safe travel. Corridors can be natural, such as a riparian corridor, or man-made, such as culverts, tunnels, drainage pipes, walls, underpasses, overpasses, or streets. Man-made corridors are often referred to as "wildlife crossings" and they allow wildlife to pass over, under, or through physical barriers that otherwise hinder movement. Wildlife corridors also vary greatly in size, shape, and composition.

The BSA does not overlap with CDFW Essential Connectivity Areas, Natural Landscape Blocks, or other wildlife corridors. The nearest Small Natural Area is Via Verde Park, less than 0.75-mile east of

the BSA; the nearest Natural Landscape Block is approximately 1.5- mile east of the BSA at Frank G. Bonelli Regional Park (CDFW, 2022c; see **Appendix A**, Figure 14, *Wildlife Corridors*). The Angeles National Forest, approximately five miles north of the BSA, is the nearest Essential Connectivity Area (Google Earth Pro, 2022; CDFW, 2022c).

Due to the urbanization of the region, movement of some mammals that require larger dispersal distances would likely be deterred. Species that are less restricted in movement and/or are well-adapted to urbanized areas such as raccoon, skunk, coyote, and mountain lion (*Puma concolor*) likely move through areas of the BSA. The project area and a portion of the BSA support habitat, including movement habitat, for species on a local scale (habitat for reptiles, bird, and mammal species), and likely facilitates wildlife movement for some larger wildlife species on a regional scale.

Predators (e.g., coyotes) and smaller mammals (e.g., raccoons [*Procyon lotor*] and striped skunks [*Mephitis mephitis*]) are known to use medium- to low-density residential neighborhoods, golf courses, and washes for hunting and foraging, using washes (natural and channelized), culverts, underpasses, and city streets for travelling, often but not necessarily limited to overnight hours when human activity decreases (Baker and Timm, 1998; Grubbs and Krausman, 2009; Ng et. al., 2004). Urban areas provide a unique ecosystem with ecological opportunity in the form of anthropogenic food sources such as discarded human food, pet food, human-associated fruits, and domestic animals (Larson et. al., 2020). Observations recorded during the biological surveys, including the coyote observed on the BSA, and examination of aerial imagery indicate that the BSA acts as a hunting, foraging, and movement area, and the BSA and surrounding areas are suitable wildlife movement corridors.

5.8 Significant Ecological Areas: East San Gabriel Significant Ecological Area

The East San Gabriel Valley SEA is located in the easternmost portion of the San Gabriel Valley, which includes the San Jose Hills (see **Appendix A**, Figure 15, *Significant Ecological Areas [SEAs]*). For the purpose of delineating an area-wide ecological unit with interacting component habitat areas, this SEA includes incorporated as well as unincorporated lands. The area represents several ridgelines and hilltops and a major drainage at the eastern end of the San Jose Hills which have been surrounded by urban development over the past four decades. The largest component of this SEA is Frank G. Bonelli Regional County Park (Bonelli Park) and a portion of Walnut Creek Park, both of which are unincorporated. Other component parts are South Hills Park and surrounding undeveloped land in the City of Glendora, Buzzard Peak and undeveloped hillsides to the southwest within the cities of West Covina and Walnut, undeveloped slopes to the west of Bonelli Park and Interstate 210 (I-210) in the City of San Dimas, and Elephant Hill and an adjoining ridgeline in the City of Pomona (PCR 2006, p. 1).

Generally, the topography within this SEA consists of moderate to steep hillsides with north, south, east and west slope aspects. Ridgelines vary in width from narrow to broad with well-defined drainages in between. One major drainage, Walnut Creek, and a man-made reservoir, Puddingstone Reservoir, are found within this SEA. Elevations range from a low of approximately 560 feet above Mean Sea Level (MSL) in the Walnut Creek drainage to a high of approximately 1,375 feet above MSL at Buzzard Peak.

The biological communities found in this SEA vary according to physical habitat conditions (i.e., slope exposure, soil type and depth, and the availability of water) and the area's history of grazing practices. Elevation plays almost no role in defining habitat types. Many slopes support oak and walnut woodland which often intergrade with prevalent stands of mixed chaparral. Coastal sage

scrub is also found on slopes with shallower, drier soils. Drainages are typically vegetated with oak riparian woodlands and forests, with stands of western sycamore and willow woodland (PCR 2006, pp. 1-2).

Wildlife populations within the East San Gabriel Valley SEA are generally expected to reflect lower diversity and abundance. This is due to the influences of surrounding development and location of recreational uses over relatively large areas of the SEA components which tends to compromise habitat quality and value (PCR 2006, p. 4).

A high diversity of birds is documented within this SEA including a population of coastal California gnatcatcher, a federally threatened species. For numerous upland, raptorial, and water associated birds the East San Gabriel Valley SEA provides a mosaic of habitats. Between woodland, shrubland, grassland and wetlands, diverse populations of birds are able to meet nesting, foraging, and migratory requirements (PCR 2006, p. 4).

Mammal populations also reflect the suburban environs imparting this SEA. Small mammals are expected to be uneven in their diversity with more adaptive, introduced European species in greater numbers compared to others species. Medium sized mammal populations are expected to exhibit the same characteristics. Large mammals are largely absent on a resident basis (PCR 2006, p. 4). Sensitive wildlife species occurring or potentially occurring within the SEA are discussed in **Section 4.1.3**.

6.0 POTENTIAL IMPACTS OF THE PROJECT

6.1 Limitations of Survey Data and Analyses

This BRE documents the methods and results of the literature review, field surveys, and resulting impact analyses based on the existing project plans, project description, and other relevant data furnished by the City for the project.

Therefore, this BRE provides a summary of existing conditions, based on the best available data at the time of preparation. The limitations of survey data and analyses are provided below.

1. This BRE incorporated findings from the original EIR documents (Takata Associates, 1991; The Planning Center, 1983; and UltraSystems, 1977) to inform our understanding of the existing biological resources at the time of the initial development of the project area. For example, the locations of the pre-project vegetation communities, protected trees, special-status species, wetlands and waters, and wildlife corridors, may not be adequately summarized in the historic documents. Erroneous or inadequate information within the baseline documents may affect findings within this BRE.

2. This BRE documents the initial reconnaissance-level evaluation of biological resources within the project area based on aerial photography, visual estimates of vegetation community boundaries, percent cover of dominant, co-dominant, and sub-dominant species, and photo documentation collected during field surveys.

3. The reconnaissance surveys (UltraSystems, 2022) were performed for the sole purpose of the MCTA 20-0005 project and do not absolve individual landowners from performing project-specific surveys during the engineering design phase.

   For parcels supporting protected biological resources, focused surveys are required to meet local, regional, state, and federal regulations to accurately determine the resources within the MCTA-approved areas.

   Landowners should be aware that biological resource surveys are generally valid for a duration of up to one to three years, dependent upon the survey focus. Due to the uncertainty and temporal variation of individual parcel design, planning, and development phases, additional reconnaissance surveys may be combined with the initial focused biological surveys to meet the regulatory framework at the time any individual project is proposed. Surveys would be performed for sensitive habitats, protected plants and wildlife species, wildlife corridors, proposed and designated land management areas, changes to species listing statuses, and jurisdictional areas (waters of the U.S., waters of the State).

   Focused survey requirements vary season-to-season as determined by the species protocols. Seasonally dependent surveys must occur within the required season; therefore, surveys may need to be performed up to one year (sometimes two) prior to expected construction. For example, if surveys must occur during the spring and summer, then the landowner must plan the project accordingly to coordinate mitigation with final grading permits. No focused protocol surveys were performed for this MCTA 20-0005 project.

4. Mitigation measures for avoidance, minimization, and compensatory mitigation are based on conditions at the time of survey. Potential impacts to protected resources will be refined

during future focused protocol surveys, when required. Additional mitigation may be necessary and should be employed based on the focused survey findings and regulatory context at the time of the proposed development.

5. Time of year, drought conditions, temperature, and individual surveyor observations may affect survey findings, although the margin for error is expected to be negligible during this reconnaissance-level survey.

6. The drainages displayed in Appendix A, Figures 12-12e Biological Constraints were derived from the NWI dataset, NHD datasets, USGS topographic maps, and field observations during the reconnaissance level surveys. Actual limits of jurisdictional areas require additional habitat assessments and may trigger formal jurisdictional delineations for parcels with wetlands and waters during the planning and design phase. Overlays provided are for informational purposes only until delimited at a future date.

6.2 Impact Types

This section discusses potential significant effects, or impacts, if any, to the environmental baseline and sensitive biological resources that could result from implementation of activities by individual property owners pursuant to the proposed MCTA. Individual properties were numbered 1 through 36 for reference, and potential impacts were determined with regard to each lot (see **Table 6.2-1** and **Appendix A,** Figure 16*, Residential Lots and Associated Assessor's Parcel Numbers [APNs]*). With regard to potential or expected impacts and their related mitigation measures, MCTA-related activities will also be referred to as "projects" in Section 6.0, Section 7.0, and Section 8.0.

Table 6.2-1
RESIDENTIAL LOTS AND ASSOCIATED ASSESSOR'S PARCEL NUMBERS (APNs)

Lot Number	APN	Lot Number	APN
1	8448-038-031	19	8448-038-045
2	8448-038-032	20	8448-038-046
3	8448-038-033	21	8448-038-047
4	8448-038-034	22	8448-008-045
5	8448-038-035	23	8448-008-046
6	8448-038-036	24	8448-008-047
7	8448-038-037	25	8448-008-048
8	8448-038-038	26	8448-008-055
9	8448-038-039	27	8448-038-048
10	8448-038-040	28	8448-038-049
11	8448-008-041	29	8448-038-050
12	8448-038-041	30	8448-038-051
13	8448-038-042	31	8448-038-052
14	8448-038-043	32	8448-038-053
15	8448-038-044	33	8448-038-054
16	8448-008-042	34	8448-038-055
17	8448-008-043	35	8448-038-056
18	8448-008-044	36	8448-038-057

Impact analysis is an important step in the CEQA process. Biological resources may be either "directly" or "indirectly" impacted by a project (defined by CEQA Guidelines § 15358). Direct and indirect impacts may be either "permanent" or "temporary" in nature. These impact categories are defined below.

- **Direct impact**: Direct impacts are those that may cause an immediate effect on the species or its habitat and occur at the same time and place. Any loss, alteration, disturbance or destruction of biological resources that could result from project-related activities is a direct impact. Examples include vegetation clearing and loss of habitat, encroaching into wetlands, diverting natural surface water flows, and the loss of individual species.

- **Indirect impact**: As a result of project-related activities, biological resources may also be affected in a manner that is not direct. Indirect impacts are caused by the project and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect or secondary effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems. Indirect impacts can affect biological resources within a project site, adjacent to a project site, or away from a project site. Examples of indirect impacts include increased human activity, elevated noise, light, and dust levels, decreased water quality, soil compaction, erosion created by the removal of vegetation, and the introduction of invasive plants and unnatural predators. Indirect impacts may be both short term and long-term in their extent. Indirect impacts are also referred to as "edge effects."

- **Permanent impacts (long term)**: All impacts that result in the long-term or irreversible removal of biological resources are considered permanent. Examples include constructing a building or permanent road on an area containing biological resources. Permanent impacts cannot be mitigated in-place.

- **Temporary impacts (short term)**: Impacts considered to have reversible impacts to biological resources can be viewed as temporary. Examples include short-term increased vehicle traffic and noise and the generation of fugitive dust during construction; or removing vegetation and either allowing the natural vegetation to recolonize or actively revegetating the impact area. Temporary impacts can be reversed with the implementation of in-place mitigation measures.

6.3 Thresholds of Significance

This section describes the significance criteria used for determining impacts to biological resources. As mentioned in the CEQA Guidelines (§ 15064.7[a]), each public agency is encouraged to develop and publish thresholds of significance (significance criteria) that it uses to determine the significance of environmental impacts. A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental impact, non-compliance with which means the impact will normally be determined to be significant by the agency and compliance with which means the impact normally will be determined to be less than significant.

Significance criteria serve as benchmarks for determining if a project would result in a significant adverse environmental impact when evaluated against the baseline. CEQA Guidelines § 15065(a) states that a project may have a "significant impact" on the environment if the project has the potential to:

- Substantially degrade the quality of the environment,
- Substantially reduce the habitat of a fish or wildlife species,
- Cause a fish or wildlife population to drop below self-sustaining levels,
- Threaten to eliminate a plant or animal community, or
- Substantially reduce the number or restrict the range of an endangered, rare or threatened species.

The Environmental Checklist Form in Appendix G of the CEQA Statute and Guidelines (2014) was reviewed in order to determine the level of significance of project related impacts to biological resources. Under CEQA Guidelines impacts to biological resources are considered potentially "significant" if one or more of the following thresholds are exceeded with construction and operation of the project.

Threshold 1: The project would have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by CDFW and USFWS.

Threshold 2: The project would have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW and USFWS.

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

Threshold 4: The project would interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

Threshold 5: The project would conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Threshold 6: The project would conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state HCP.

Significant impacts can be reduced to less than significant levels by incorporating off-setting mitigation measures, including BMPs, avoidance and protection measures, and/or mitigation measures. Less than significant impacts are those in which impacts would potentially occur, but are not expected to be substantial. Impacts to biological resources that are considered less than significant include impacts to biological resources which are reasonably widespread or that exist in a degraded or disturbed state, rendering them less valuable as habitat to support wildlife diversity or special-status species, or impacts that do not meet or exceed the significance thresholds defined above. These less than significant impacts do not require mitigation measures, although conservation measure may be applied to further minimize (or avoid) potential impacts.

6.4 Potential Impacts to Vegetation Communities (Land Cover Types)

6.4.1 Direct Impacts

Direct impacts to vegetation communities have immediate consequences, such as the changes that occur when land is cleared for permanent development and vegetation communities are altered or removed during project activities. Direct permanent impacts include all areas within the limits of activities on project sites. **Appendix F,** *Lot-Specific Impacts* provides the approximate acreages of each plant community and non-vegetated feature that is anticipated to be directly impacted by project activities. Calculations were based on existing APNs (not including conservation easements) in conjunction with vegetation mapping from field surveys and aerial imagery (see **Appendix A,** Figure 10, *Land Cover Types Impact Areas Overview* and Figures 10a through 10e, *Land Cover Impacts*).

A species may have other sensitive designations in addition to their federal or state listing. Coast live oak woodland and forest, and California walnut groves found on a project site are considered as locally and regional rare, unique and/or uncommon; and/or regionally rare vegetation communities; that is, communities that are rare or uncommon in a local or regional context and, as such, would meet the CEQA definition of a rare species (CEQA § 15380). The loss of onsite populations of coast live oak woodland and forest and California walnut groves would be potentially significant from a project and cumulative perspective under CEQA.

Development of project sites will result in direct impacts (permanent loss of vegetation) to vegetation communities and habitat. Coast live oak woodland and forest is ranked by the State of California as Vulnerable (state rank of S3), and California walnut groves are considered Vulnerable: Extremely Threatened (S3.1); therefore, these vegetation communities are considered special-status. Direct impacts to coast live oak woodlands and California walnut groves would be considered significant because these habitats are considered special-status. vegetation communities.

6.4.2 Indirect Impacts

Indirect impacts to vegetation communities result in secondary consequences and are likely to be temporary. Indirect impacts could occur to vegetation communities within areas located adjacent to project sites. Examples of indirect, temporary impacts include the effects of fugitive dust and mud splatter created by construction activities. Construction-generated fugitive dust and mud splatter can adversely affect vegetation communities by settling on plant surfaces and inhibiting metabolic processes such as photosynthesis and respiration. Construction-related erosion, runoff, siltation, sedimentation, soil compaction, and alteration of drainage patterns could affect vegetation communities by altering conditions within the BSA such that they become unsuitable for survival of these communities.

Implementation of a project could result in indirect impacts to the coast live oak woodland and forest and California walnut groves communities onsite through alteration of drainage patterns which alter the quantity of available water (via stormwater) to these communities; loss of vertical and horizontal structural complexity; and loss of understory species diversity. Indirect impacts to coast live oak woodland and forest and to California walnut groves meet or exceed significance thresholds and are considered significant.

6.4.3 Mitigation Measures

Implementation of a project pursuant to the proposed MCTA could result in direct and indirect impacts to sensitive vegetation communities (see **Table 7.0-1**). These impacts to sensitive vegetation communities would be significant; therefore, mitigation measures are required.

Implementation of **BIO-1,** *Vegetation Community Replacement Plan*, would require projects to avoid areas of protected sensitive vegetation communities, including California walnut groves, coast live oak woodland and forest, coast prickly pear scrub, California sagebrush-black sage scrub, and/or California buckwheat scrub If these communities cannot be avoided, then, mitigation measure **BIO-1** would require projects to provide compensatory mitigation for impacted vegetation communities in the form of mitigation bank credits or the payment of in-lieu fees to a mitigation bank (see **Section 7.1)**.

In addition to protecting sensitive vegetation communities designated by CDFW, mitigation measure **BIO-1** may also serve to satisfy the requirements of the City of San Dimas tree protection ordinances (§§ 16.42.020, 16.42.090, 18.162.060, 18.162. 070, and 18.162.100) as mandated by the City's required tree removal permit for Mature Significant Trees (see **Section 6.9** and **Section 7.18**).

Mitigation measure **BIO-2**, *Project Limits and Designated Areas*, will specify the limits of ground and vegetation disturbance or removal, and ensure that project-related work limits are delineated and clearly visible to work crews; work crews will be restricted to working within these limits, as described in **Section 7.2**.

Mitigation Measure **BIO-3**, *General Vegetation and Wildlife Avoidance*, will require that removal of native vegetation shall be avoided or minimized to the maximum extent possible. Temporarily impacted areas shall be returned to pre-existing contours and revegetated with appropriate native species.

6.4.4 Impact Determination

Significance criterion*: impacts would be considered significant if the project were to have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS.*

Less than Significant Impact with Mitigation Incorporated.

Direct and indirect impacts to sensitive vegetation communities designated by CDFW would occur as a result of project activities pursuant to the proposed MCTA 20-0005. Implementation of mitigation measures **BIO-1, BIO-2,** and **BIO-3** would minimize or avoid potential impacts to special-status vegetation communities, such as California walnut groves, coast live oak woodland and forest, coast prickly pear scrub, California sagebrush-black sage scrub, and/or California buckwheat scrub within the property of an applicant, requiring compensatory mitigation, delineating work areas, and restoring temporarily impacted areas as described in **Section 7.1, Section 7.2,** and **Section 7.3**.

Projects would have substantial adverse effects to sensitive natural communities; (see **Appendix F**, *Lot-Specific Impacts*) however, with implementation of mitigation measure **BIO-1**, **BIO-2**, and **BIO-3**, potential impacts would be less than significant.

6.5 Potential Impacts to Special-Status Plants

California black walnut (*Juglans californica*) is present in the BSA; impacts to this species as a vegetation community are described in **Section 6.2**. No additional listed or sensitive plants were observed within the BSA during the field surveys. However, the literature review and field surveys concluded that the majority of the plant species in the plant inventory have a moderate potential to occur within the BSA (see **Appendix F**, *Lot-Specific Impacts*)due to the presence of suitable habitat, soils, and/or other factors to support them.

6.5.1 Direct Impacts

Direct impacts to special-status plant species may occur as a result of the proposed MCTA due to the moderate potential for most of the special-status plant species in the plant inventory to occur in the BSA. Special-status plant species occurring in areas adjacent to the BSA, including on conservation easements, could be indirectly impacted as a result of the project, in the same manner as direct and

indirect impacts to vegetation communities. Without appropriate avoidance and minimization measures for special-status plants, potential significant impacts associated with subsequent construction include loss of habitat, loss or reduction of productivity, and direct mortality. Therefore, mitigation is required.

6.5.2 Indirect Impacts

Indirect impacts that could occur as a result of the project activities include effects of fugitive dust and mud splatter created by construction activities. Construction-generated fugitive dust and mud splatter can adversely affect vegetation by settling on plant surfaces and inhibiting metabolic processes such as photosynthesis and respiration. Construction-related erosion, runoff, siltation, sedimentation, soil compaction, and alteration of drainage patterns could affect vegetation communities by altering conditions within the BSA such that they become unsuitable for survival of these plants.

Implementation of a project could result in indirect impacts to plant species that were determined to have a moderate potential to occur on the project site through alteration of drainage patterns which alter the quantity of available water (via stormwater) to these plant species.

6.5.3 Mitigation Measures

Implementation of projects pursuant to the proposed MCTA may result in direct and indirect impacts to special-status plants (see **Appendix F**, *Lot-Specific Impacts*); therefore, mitigation measures are required (see **Table 7.0-1**).

Mitigation measure **BIO-4**, *Focused Botanical Surveys*, will require a qualified biologist to conduct focused botanical surveys for special-status plants that are likely to occur based on habitat, soils, elevation, climate, and other conditions, as described in **Section 7.4**. The focused plant surveys will be conducted in accordance with the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CNPS, 2018) and the *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants* (USFWS, 2000), and conducted in the field at appropriate times of the year to coincide with the growing season and different blooming periods and when optimum conditions for identification (generally blooms, fruits, and leaves) are present. Biologists will pay special attention to those habitat areas that appear to provide suitable habitat for special-status species.

Following completion of the focused botanical surveys, a focused botanical survey report will be prepared in accordance with agency guidelines. The report will: 1) summarize information regarding the habitat of the survey area and the habitat's suitability for special-status plants; 2) assess the potential presence of special-status plants onsite; 3) analyze the potential impacts to special-status plants from project development; and 4) recommend, as appropriate, BMPs, avoidance and protection measures, and mitigation measures to reduce or avoid potential impacts to special-status plants (see **Section 7.4**).

Mitigation measures **BIO-1, BIO-2, BIO-3,** and **BIO-4** will also minimize or avoid impacts to special-status plant species, as described in **Section 7.1, Section 7.2, Section 7.3,** and **7.4.**

6.5.4 Impact Determination

Significance criterion: *impacts would be considered significant if the project were to have a substantial adverse effect, either directly or through habitat modifications, to any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.*

Less than Significant Impact with Mitigation Incorporated

The BSA contains at least one sensitive plant species, California black walnut. Conditions on the project site may support additional special-status plant species; therefore, the project is anticipated to have direct impacts to listed or sensitive plants. The project is also anticipated to have indirect impacts to special-status plant species through loss of habitat, loss or reduction of productivity, and other future habitat modifications. Implementation of mitigation measures **BIO-1, BIO-2, BIO-3,** and **BIO-4** would minimize or avoid significant impacts to special-status plant species to less than significant.

6.6 Potential Impacts to Special-Status Wildlife

One listed wildlife species, monarch butterfly, was observed within the BSA during the general biological surveys. However, the BSA has the potential to support additional listed wildlife species, including (but not limited to) coastal California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, Swainson's hawk, and arroyo toad.

Two sensitive wildlife species, Nuttall's woodpecker and Cooper's hawk, were observed within the BSA during the biological surveys. Habitat in the BSA may support additional sensitive species, including (but not limited to) least Bell's vireo (LBV), southwestern willow flycatcher (SWFL), California gnatcatcher (CAGN), cactus wren, golden eagle, red-diamond rattlesnake, southern California legless lizard, burrowing owl, California spotted owl, long-eared owl, western yellow bat, big free-tailed bat, and mountain lion.

6.6.1 Direct Impacts

Potential direct impacts to common and special-status wildlife occupying the BSA could occur from project-related mortality, injury, or harassment of individuals as a result of permanent development of project sites, and from the removal and direct loss of breeding, foraging, and/or sheltering habitat. Direct permanent impacts include all areas within the limits of grading in project sites.

- Ground-disturbing and habitat-altering activities could result in significant impacts to common and special-status ground-dwelling animals or nesting birds. Examples include grading, clearing, disking, grubbing, excavation, trenching, paving, mowing, heavy equipment compacting, driving over habitat to access the construction work sites, tree removal and other vegetation management activities, and use of herbicides and pesticides.

- Direct impacts to less mobile fossorial (burrowing) animals that are underground during most of the day or year (e.g., small mammals or lizards) or have a life stage in the soil or on plants could occur from encounters with vehicles or heavy equipment as many of these animals do not run away from construction vehicles/equipment and would most likely be killed. These species could be expected to experience direct mortality, injury, harassment, and displacement from increased human activity and vehicle/equipment travel if they are

present onsite within the project footprint at the time of construction. Individual losses are more likely, especially during clearing activities. The loss of these animals could also affect other common and special-status wildlife that depend on them as prey.

- The BSA also supports large trees and other physical features that could potentially provide foraging, nesting, and cover habitat to support a diverse assortment of special-status bird species (year-round residents, seasonal residents, and migrants). It unlawful to take special-status birds, and their nests, eggs, and young. Activities which are most likely to result in take of migratory birds during the breeding bird season when eggs or young are likely to be present include, but are not limited to clearing or grubbing of bird nesting habitat, tree removal, or structure demolition. The project has a potential to directly take individual breeding birds, their nests, young, or eggs.

- Large trees and buildings in the BSA also provide suitable foraging and nesting habitat for special-status bat species. Clearing or grubbing of bat nesting habitat, including tree removal, is likely to impact special-status bats.

6.6.2 Indirect Impacts

Indirect impacts could occur within areas located adjacent to project sites, including within conservation easements. Indirect impacts are more subtle than direct impacts. Indirect impacts may either be short-term (related to construction) or long-term, affecting populations and habitat quality over an extended period of time long after construction activities have been completed. Examples of indirect impacts include the following:

- The permanent loss of habitat and physical features that would occur from clearing and grading could indirectly impact wildlife species through the loss of foraging, roosting, denning, and/or breeding habitat available. Habitat loss could displace species from existing territories and reduce the home range of those species and impact nearby populations of similar species. Displaced species would then have to compete for and/or find new territories and compete for food with resident species. This could result in delayed nest building, fewer nest attempts, reduced clutch size, and an overall reduction in reproductive output.

- Ground-disturbing and construction activities could result in temporary increased ambient noise levels, vibration, lighting and/or human intrusion in and near habitat. This could disrupt natural foraging, roosting, denning, and/or breeding behavior of wildlife species. Wildlife species stressed by these factors may disperse from habitat in a project site and project vicinity. In addition, increased noise levels could interfere with territorial and mating vocalizations, thereby interfering with wildlife reproduction.

- Ground-disturbing and construction activities could increase fugitive dust, pollution, runoff, siltation, sedimentation, and erosion. This could result in degradation and alteration of habitat and soils. Consequently, the ability of onsite and adjacent vegetation communities to support wildlife populations may decrease.

- Use of artificial lighting could disrupt natural foraging and breeding behaviors and/or alter wildlife movement patterns and migratory routes of nocturnally active species such as mammals and snakes. Most animals would attempt to avoid moving in or near the lighting; however, some animals such as insects, migratory birds, and bats might be attracted to the lighting, increasing construction-related mortalities. Artificial lighting could also indirectly

affect wildlife by increasing detection by predators. The new development could also provide an increase in artificial lighting and glare which could disrupt nocturnal wildlife behavior.

- An increase and continuation of human activities within and adjacent to a project site could lead to mortality, injury, or harassment of wildlife species by providing anthropogenic food sources in the form of trash and litter or water which attracts predators such as the common raven (*Corvus corax*), northern raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), and coyote.

6.6.3 Mitigation Measures

Special-status wildlife species were observed during the surveys, and the BSA contains habitat that could support additional special-status species. A negative survey finding does not preclude the occupation by special-status species of any location within the BSA. Mitigation measures will be implemented to minimize and avoid impacts to special-status wildlife species (see **Table 7.0-1**).

Prior to project approval, applicants will implement the following mitigation measures: **BIO-2** and **BIO-3**, described in **Sections 7.2** and **7.3; BIO-5**, *Habitat Assessment for Least Bell's Vireo and Southwestern Willow Flycatcher* and **BIO-6**, *Focused Coastal California Gnatcatcher Surveys*, to determine the presence and location of these species if they are occupying a project site. The applicant's qualified (permitted) biologist will conduct these surveys in accordance with the methodology set forth in **Section 7.5** and **Section 7.6** (or in accordance with current protocol or guidelines) and submit survey reports to the USFWS and to CDFW. If special-status bird species are present on a project site, the qualified biologist will consult with USFWS and CDFW to determine appropriate avoidance and mitigation measures to minimize impacts to these species.

Applicants will also implement mitigation measure **BIO-7**, *Focused Cactus Wren Surveys* prior to grading plan approval, to assess the presence of and use by cactus wren, as described in **Section 7.7**. If avoidance of occupied habitat is not possible, then payment into a mitigation bank or onsite restoration will occur (See **BIO-1**).

Because the BSA supports hunting and foraging habitat for mountain lions, applicants will implement mitigation measure **BIO-8**, *Preconstruction Mountain Lion Avoidance (Natal Dens)* prior to grading plan approval, to survey areas that may provide habitat for mountain lions to determine presence/absence and potential for natal dens and avoidance of impacts to mountain lions as described in **Section 7.8**.

Implementation of mitigation measure **BIO-9**, *Preconstruction Wildlife Surveys*, will ensure that sensitive wildlife species are cleared from a project site to the greatest practicable extent, thus minimizing direct impacts to sensitive wildlife species (see **Section 7.9**); **BIO-10**, *14-Day Preconstruction Burrowing Owl Surveys*, will be implemented no more than 14 days prior to initiation of ground-disturbing activities will minimize or avoid potential impacts to burrowing owl, as detailed in **Section 7.10**; mitigation measure **BIO-11**, *Preconstruction Bat Surveys*, requires that a bat survey be conducted by a qualified biologist within 30 days prior to vegetation removal to minimize or avoid impacts to bats and bat maternity roosts (see **Section 7.11**). Mitigation Measure **BIO-12**, *Preconstruction Breeding Bird Surveys*, requires that a qualified biologist conduct preconstruction surveys for breeding birds (including hawks) and their nests, as described in **Section 7.12**.

Mitigation measure **BIO-13**, *Worker Environmental Awareness Program*, requires all contractors, subcontractors, etc., working on a project site to attend a the WEAP prior to performing any work on

project site, as described in **Section 7.13**. The WEAP is intended to inform workers of the special-status plant and wildlife species known to occur on a project site, what species may occur, and steps to take if special-status species are observed by workers. Mitigation measure **BIO-14**, *Biological Monitor*, requires the presence of a qualified biological monitor on a project site, as described in **Section 7.14**. The biological monitor will ensure the implementation of mitigation measures **Bio-15**, *Wildlife Entrapment Avoidance*; and **BIO-16**, *Construction Best Management Practices*. These mitigation measures are intended to minimize or avoid direct and indirect impacts to wildlife through avoiding inadvertent entrapment of wildlife on a project site, and the maintenance of a clean project site to avoid attracting wildlife by littering and degradation of water quality, and accidental release of hazardous materials as described in **Sections 7.15** and **7.16**.

The biological monitor will also ensure the implementation of mitigation measures **BIO-2** and **BIO- 3**.

6.6.4 Impact Determination

Significance criterion: *impacts would be considered significant if the project were to have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.*

Less than Significant Impact with Mitigation Incorporated

The BSA contains at least three special-status wildlife species: monarch butterfly, Nuttall's woodpecker and Cooper's hawk. Conditions within the BSA may support additional special-status wildlife species; therefore, the project is anticipated to have direct impacts to listed or sensitive wildlife. The project is also anticipated to have indirect impacts to special-status wildlife species through increased ambient noise, human activities, lighting, etc. (see **Section 6.4.2**). Implementation of mitigation measures **BIO-2,** through **BIO-16** would minimize or avoid significant direct and indirect impacts to special-status wildlife species to less than significant (see **Table 7.0-1**).

6.7 Potential Impacts to Breeding Birds

The BSA supports large trees, shrubs, cacti, and other physical features that could provide foraging, nesting, and cover habitat to support a diverse assortment of bird species (year-round residents, seasonal residents, and migrants). Many bird species that could potentially breed within the BSA are protected by the MBTA and by Fish and Game Code § 3503, § 3503.5, and § 3513. The statutes make it unlawful to take native breeding birds, and their nests, eggs, and young. Project activities which are most likely to result in take of migratory birds during the breeding bird season when eggs or young are likely to be present include, but are not limited to, clearing or grubbing of bird nesting habitat, tree removal, grading, or structure construction. Projects have the potential to directly and indirectly impact individual breeding birds, their nests, young, or eggs.

6.7.1 Direct Impacts

Activities which are most likely to result in take of migratory birds during the breeding bird season when eggs or young are likely to be present include, but are not limited to clearing or grubbing of bird nesting habitat, structure demolition, tree removal, and vegetation trimming or clearing. The project has a potential to directly impact (take) individual breeding birds, their nests, young, or eggs; therefore, mitigation is required.

6.7.2 Indirect Impacts

Indirect impacts to breeding birds could occur from increased noise, vibration, lighting dust, and human activity during project implementation, which could adversely affect the breeding behavior of some birds and lead to the loss (take) of eggs and chicks, or nest abandonment. The project has a low potential to indirectly impact individual breeding birds, their nests, young, or eggs; therefore, mitigation is required.

6.7.3 Mitigation Measures

Prior to the onset of project-related activities, a qualified biologist will conduct preconstruction breeding bird surveys as described in mitigation measure **BIO-12** (see **Table 7.0-1**). Implementation of mitigation measure **BIO-12** will minimize or avoid potential impacts to breed birds, their nests, young, or eggs.

6.7.4 Impact Determination

Less than Significant Impact with Mitigation Incorporated

Project activities are expected to result in impacts to bird species that breed and nest on or adjacent to a project site. Direct and indirect impacts to breeding birds, their nests, young, or eggs would potentially occur as a result of the project. With the reduction of suitable breeding and nesting habitat and other project-related impacts; potential impacts to breeding birds, their nests, young, or eggs would potentially be significant. Implementing the recommended mitigation measure **BIO-12,** as described in **Section 7.12,** will minimize or avoid significant impacts to breeding birds, their nests, young, or eggs to less than significant levels.

6.8 Potential Impacts to Waters of the U.S. and State, Including Wetlands

This section discusses potential significant effects or impacts (if any), to waters of the U.S. and State, including wetlands and other waters, water quality, water quantity, and aquatic/riparian habitat that could result from project development. Biological resources may be either directly or indirectly impacted by a project (defined by CEQA Guidelines § 15358). Direct and indirect impacts may be either permanent or temporary in nature. These impact categories are defined below.

- **Direct impact**: Direct impacts caused by the project are impacts that may cause an immediate effect to jurisdictional wetlands and other waters, water quality, water quantity, and aquatic/riparian habitat and occur at the same time and place. Any loss, alteration, disturbance or destruction of biological resources that would result from project-related activities is a direct impact. Examples include vegetation clearing, encroaching into wetlands, diverting natural surface water flows, and the loss of habitat. Direct impacts are long-term.

- **Indirect impact**: As a result of project-related activities, jurisdictional wetlands and other waters, water quality, water quantity, and aquatic/riparian habitat may also be affected in a manner that is not direct. Indirect impacts caused by the project occur later in time or farther removed in distance, but are still reasonably foreseeable. Indirect or secondary effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including aquatic ecosystems. Examples of indirect impacts include increased human activity, elevated dust levels, decreased water quality, soil compaction,

erosion created by the removal of vegetation, and the introduction of invasive plants. These indirect impacts may be both short term and long-term in their extent.

- **Permanent impacts**: All impacts that result in the long-term or irreversible removal of jurisdictional resources are considered permanent. Examples include constructing a building or permanent road on an area containing jurisdictional areas.

- **Temporary impacts**: Impacts considered to have reversible effects on jurisdictional resources can be viewed as temporary. Examples include short-term increased vehicle traffic and the generation of fugitive dust during construction; or removing vegetation and either allowing the natural vegetation to recolonize or actively revegetating the impact area.

All impacts (permanent and temporary) to jurisdictional waters are considered significant due to regulation by those agencies. Impacts to waters of the U.S. and State (including wetlands and other waters, water quality, water quantity, and aquatic/riparian habitat) are regulated by USACE, RWQCB, and CDFW, and permits would be required.

6.8.1 Direct Impacts

Direct impacts to waters of the U.S. and State (water features including, but not limited to, wetlands, ephemeral and intermittent streams, water quality, water quantity and availability, and aquatic/riparian habitat) have immediate consequences, such as the changes that occur when land is cleared and graded for permanent development and waters of the U.S. and State are altered or filled in during project construction activities. Examples of potential direct impacts which could destroy or significantly impact water features include any ground-disturbing activities, such as grading, clearing, disking, grubbing, excavation, trenching, paving, or compacting that would permanently remove or alter water features. Other examples of potential direct impacts to water features include filling, stockpiling, channelization, bank stabilization, road crossings, or other permanent drainage modification. Such impacts are considered to be significant; therefore, mitigation is required.

6.8.2 Indirect Impacts

Indirect impacts to water features, water quality, water quantity and availability, and aquatic/riparian habitat result in secondary consequences and are likely to be temporary during construction, but they could also be long-term as a result of the introduction of impervious surfaces and permanent development. Indirect impacts from project implementation could occur within areas adjacent to a project site, including conservation easements, and eventually within downstream areas. Construction-related pollution including fugitive dust, erosion, increased runoff, siltation, sedimentation, and soil compaction could adversely affect water features, water quality, water quantity and availability, and aquatic/riparian habitat. Alteration of drainage patterns could affect downstream water features, plants, and habitat by redirecting flow and runoff to new areas.

The BSA contains waters of the U.S. and State; water which drains from the site into gutters or storm drains ultimately discharge into Walnut Creek. Project implementation would have significant direct and indirect impacts to water features (including, but not limited to, wetlands, ephemeral and intermittent streams, water quality, water quantity and availability, and aquatic/riparian habitat), within the BSA and in receiving waters, such as Walnut Creek. Therefore, mitigation is required (see **Table 7.0-1**).

6.8.3 Mitigation Measures

Prior to project approval, the applicant will implement mitigation measure **BIO-17**, *Jurisdictional Delineation Survey and Report.* Applicants of grading permits pursuant to the proposed MCTA would be required to contract with an authorized biologist to conduct a jurisdictional delineation assessment on their property to determine the presence and extent of potential waters of the U.S. or State (including but not limited to wetlands, ephemeral and intermittent drainages, and associated vegetation communities) that would be subject to the jurisdictional authority of the United States Army Corps of Engineers (USACE), the California State Water Resources Control Board (SWRCB, as represented by the Los Angeles RWQCB), and CDFW. If the assessment determines that the subject property may contain waters of the U.S. or State, a jurisdictional delineation survey is required.

If waters of the U.S. and/or State are present on project site, this mitigation measure would require a survey and delineation of potential waters of the U.S. and State on a project site and adjacent conservation easement on the property of the applicant; following the survey, the qualified biologist will prepare a jurisdictional delineation report as detailed in **Section 7.17**. The report will include a list of permits/authorizations/agreements required by the applicant from each agency. The report will also recommend impact avoidance and/or minimization measures and best management practices, and compensatory mitigation, as applicable.

6.8.4 Impact Determination

Less than Significant with Mitigation Incorporated

Significance threshold: *impacts would be considered significant if the project would have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.*

The literature search and field surveys determined that the BSA contains waters of the U.S. and State, including riverine and riparian areas. The City of San Dimas, pursuant to Section VI(D)(8) of the MS4 permit, will require the implementation of an effective combination of erosion and sediment control BMPs to prevent erosion and sediment loss, and impacts to water quality including those resulting from the discharge of construction wastes within the planning area and to receiving waters (e.g., Walnut Creek).

With regard to the significance criterion for jurisdictional areas, the project is anticipated to result in substantial adverse effect to waters under the jurisdiction of USACE, CDFW, RWQCB; however, implementation of mitigation measure **BIO-17**, as described in **Section 7.17,** will minimize or avoid impacts to waters of the U.S. and State (including aquatic and riparian habitat), and impacts would be less than significant.

6.9 Potential Impacts to Critical Habitat

USFWS-designated critical habitat for coastal California gnatcatcher (*Polioptila californica californica*) is within two miles of the project stie, including Frank G. Bonelli Regional Park and the San Jose Hills. However, the BSA is not located within or adjacent to this critical habitat, the nearest of which is approximately 0.65 mile south of the BSA, in the San Jose Hills south of I- 10.

6.9.1 Direct and Indirect Impacts

No direct or indirect impacts to critical habitat are anticipated as a result of construction of the project.

6.9.2 Mitigation Measures

Critical habitat is not anticipated to be significantly impacted; therefore, no mitigation measures are required.

6.9.3 Impact Determination

No Impact

Significance criterion: *impacts would be considered significant if the project were to have a substantial adverse effect on any critical habitat identified by USFWS.*

The literature review and field surveys determined that the BSA does not contain critical habitat; therefore, the project is not anticipated to have direct or indirect impacts to critical habitat. In regard to the significance criterion, the project is anticipated to have no impact to critical habitat; therefore, no mitigation is proposed.

6.10 Potential Impacts to Fish or Wildlife Movement or Native Wildlife Nursery Sites

A review of aerial imagery and observations recorded during the biological surveys, including the coyote observed on the BSA, and examination of aerial imagery indicate that all lots in the BSA acts as a hunting, foraging, and movement area, and the BSA and surrounding areas are suitable wildlife movement corridors. Additionally, the BSA supports habitat for bat maternity roosts and hibernacula

6.10.1 Direct Impacts

The BSA contributes to regional wildlife movement east to west and south to north within the area, and supports the passage of large and small mammals as well as migrating birds and sensitive species foraging in the area. In addition, habitat in the BSA supports the natural areas and the open space in the vicinity. Direct impacts to wildlife corridors and crossings occur as a result of loss of cover and hunting or foraging habitat for wildlife species utilizing these areas.

Direct impacts to bat maternity roosts and hibernacula occurs when trees and vegetation are cleared, removing suitable habitat for maternity roosts and hibernation sites.

6.10.2 Indirect Impacts

Indirect impacts to wildlife corridors occur when vegetation removal results in fragmented patches of open space or isolated “islands” of wildlife habitat. Because wildlife corridors facilitate movement of individuals through dispersal, seasonal migration, and movement for foraging, breeding, and cover, corridors allow for physical and genetic exchange between isolated wildlife populations and are critical for the maintenance of ecological processes, including allowing for the movement of animals and the continuation of viable populations and higher species diversity.

Indirect impacts to bat maternity roosts and hibernacula occur when removal of vegetation reduces available habitat for insects, reptiles, and small mammal species which in turn reduces the available area for hunting and foraging.

Increased lighting and level of human activity would result in indirect impacts to both wildlife corridors and bat maternity roost and hibernacula.

Wildlife corridors and native wildlife nursery sites are anticipated to be impacted as a result of project activities. Because Small Natural Areas occur on all sides of the planning area and a Natural Landscape Block (i.e., Frank G. Bonelli Regional Park) is located approximately 1.5 miles east of the planning area, the loss of open space and vegetation within the planning area, combined with the loss of habitat for bat maternity roosts and hibernacula, would be a potentially significant impact; therefore, mitigation is required.

6.10.3 Mitigation Measures

To minimize or avoid impacts to wildlife corridors, bat maternity roosts, and hibernacula, mitigation measures **BIO-1**, **BIO-2**, **BIO-3**, **BIO-11**, and **BIO-16** will be implemented (see **Table 7.0-1**) as described in Section 7.0 to minimize or avoid removal of native vegetation and other habitat. Implementation of these mitigation measures would preserve valuable resources essential to wildlife corridors, bat maternity roosts, and hibernacula, and preserve native vegetation and habitat which supports hunting and foraging areas. Implementation of mitigation measure **BIO-11** will identify existing maternity roost or hibernacula minimize or avoid impacts to them by safely evicting non-breeding bats, establishing avoidance buffers, or replacing roosts at a suitable location.

6.10.4 Impact Determination

Significance criterion: *impacts would be considered significant if the project were to interfere substantially with the movement of native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites*.

Less Than Significant Impact with Mitigation Incorporated

The literature review and field surveys determined that the planning area functions as a wildlife corridor and potentially contains native wildlife nursery sites (e.g., bat maternity roosts). Implementation of mitigation measures **BIO-1**, **BIO-2**, **BIO-3**, **BIO-11**, and **BIO-16**, impacts to wildlife corridors and native wildlife nursery sites would be less than significant.

6.11 Potential Impacts to Local Policies Protecting Biological Resources

The BSA contains numerous trees that qualify for protection under the San Dimas Municipal Code Chapter 18.182 *Tree Preservation*.

The ordinance designates mature significant tree as follows:

> *" any tree within the city of an oak genus which measures eight inches or more in trunk diameter, and/or any other species of tree that measures ten inches or more in trunk diameter, and/or any multi-trunk tree(s) having a total circumference of thirty-eight inches or more; the multi-trunk tree shall include at least one trunk with a diameter of a minimum of four inches".*

Future removal or relocation of mature significant trees must be approved by the director of development services or the development plan review board. This approval is subject to conditions as deemed necessary to implement the provisions of the ordinance. No protected tree shall be removed or otherwise destroyed unless a tree removal permit has been approved by the director.

6.11.1 Direct Impacts

The removal of the existing protected trees on a project site would cause direct impacts as a result of construction of the project. Other direct impacts to trees scheduled for preservation is that ground-disturbing construction activities such as grading, disking, excavating, soil compaction, and operation of heavy equipment could damage lateral tree roots that extend beyond the tree protection zone. To minimize direct impacts to the root system of protected trees, fencing will be placed around the perimeter of the trees, thus protecting the majority of the trees' feeder roots.

6.11.2 Indirect Impacts

Potential indirect impacts to mature significant trees in a project site include increased dust levels. Dust generated during project activities may have indirect impacts to the preservation of protected trees. Dust can coat the leaves throughout a tree's canopy and reduce the tree's ability to conduct photosynthetic processes necessary for growth and survival.

As detailed in **Section 3.3.2**, the City of San Dimas requires a Tree Removal Permit before mature significant trees may be removed. The City defines "remove" as *any act which will cause a mature significant tree to die, including but not limited to acts which inflict damage upon the root system or other parts of the tree by fire, cutting, application of toxic substances, operation of equipment or machinery, or by changing the natural grade of land by excavation or filling the drip line area around the trunk*. Project activities have the potential to impact mature significant trees that have not been approved for removal per the Tree Removal Permit.

6.11.3 Mitigation Measures

To minimize impacts to the root system or other parts of protected trees, mitigation measure **BIO-18** will be implemented (see **Table 7.0-1**); **BIO-18**, *Mature Significant Tree Protection Measures*, requires mitigation for trees permitted by the City for removal, as detailed in **Section 7.18**.

Mitigation measure **BIO-1** will also be implemented as described in **Section 6.2** and **Section 7.1**.

6.11.4 Impact Determination

Significance criterion: *impacts would be considered significant if the project were to conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.*

Less than Significant Impact with Mitigation Incorporated

Potential project impacts to protected trees that are not covered by the City of San Dimas Tree Removal Permit would be impacted during project-related activities. Implementing mitigation measures **BIO-1** and **BIO-18** will minimize the significant impacts to protected and mature significant trees to a less than significant level.

6.12 Potential Impacts to HCPs or NCCPs

The planning area is not located within an HCP or NCP boundary. Components of the East San Gabriel Significant Ecological Area are within approximately 0.5-mile of the planning area; however, the planning area does not intersect with nor is it immediately adjacent to these SEA components. No impact would occur.

6.12.1 Mitigation Measures

Impacts to HCPs, NCCPs, or the East San Gabriel SEA would not occur. Mitigation is not required.

6.12.2 Impact Determination

Significance threshold: *impacts would be considered significant if the project would conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state HCP.*

No Impact

The project would not conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state HCP including the East San Gabriel SEA.

7.0 MITIGATION MEASURES

CEQA states that "mitigation measures are not required for effects which are not found to be significant" (§15126.4[a]([3])Therefore, no mitigation measures are proposed for impacts to biological resources that are less than significant. However; if significant impacts to biological resources are identified, then possible mitigation measures are recommended to avoid, eliminate or reduce the level of the impacts to less than significant levels. There are several forms of mitigation. Under CEQA (§ 15370), "mitigation" includes all of the following:

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

The following mitigation measures are intended to minimize or avoid direct or indirect impacts to biological resources to less than significant levels and to comply with all applicable environmental laws, ordinances, policies, regulations, and management plans. **Table 7.0-1** presents the mitigation measures that would be applicable to each lot (property) and project owner (i.e., property owner) for activities pursuant to the proposed MCTA. Residential lots and associate APNs are presented in **Table 6.2-1** and shown in **Appendix A,** Figure 16, *Residential Lots and Associated Assessor's Parcel Numbers*.

Disclaimer Regarding MCTA Biological Analyses: The avoidance, minimization, and compensatory mitigation measures provided in Section 7.0 Mitigation Measures are intended to comprehensively address the potential impacts to biological resources within SP-11 as an entire ecological unit, and per individual parcel, based on preliminary reconnaissance surveys for the purposes of the MCTA. The MCTA considered conceptual impact areas at the time of review and were not applicable to project-specific impacts, which are unknown at this time.

The biological constraints that may require avoidance, minimization, and compensatory mitigation include sensitive vegetation communities, special-status species (e.g., plants and wildlife), seasonal species protections (e.g., reproduction and overwintering), jurisdictional wetlands and waters, riparian drainage segments, protected trees, wildlife corridors, and land management designations.

A qualified biologist will perform focused biological surveys for construction approvals, based on 65 percent to 95 percent complete professional engineering drawings at the time of proposed development of each individual parcel. The biologist conducting the focused surveys will incorporate the focused survey results and those of the reconnaissance surveys (UltraSystems, 2022) to assign the relevant mitigation for each individual project. The City will require the mitigation in the construction specifications prior to issuance of grading plans approved for each individual land owner (or project applicant). The mitigation measures contained herein are legally binding and are required if impacts to protected biological resources occur as a result of the project.

Table 7.0-1
RESIDENTIAL LOTS AND ASSOCIATED MITIGATION MEASURES

Lot No.	Vegetation Community Replacement Plan	Project Limits and Designated Areas	General Vegetation and Wildlife Avoidance	Focused Botanical Surveys	Habitat Assessment for LBV & SWFL	Focused CAGN Surveys	Focused Cactus Wren Surveys	Pre-Construction Mountain Lion Avoidance	Pre-con Wildlife Surveys	14-Day Pre-con BUOW Surveys	Pre-con Bat Surveys	Pre-con Breeding Bird Survey	Worker Environmental Awareness Program (WEAP)	Biological Monitor	Wildlife Entrapment Avoidance	Construction Best Management Practices	Jurisdictional Delineation Habitat Assessment or as-needed Survey	Significant Tree Protection Measures
	BIO-1	BIO-2	BIO-3	BIO-4	BIO-5	BIO-6	BIO-7	BIO-8	BIO-9	BIO-10	BIO-11	BIO-12	BIO-13	BIO-14	BIO-15:	BIO-16	BIO-17	BIO-18
1		X	X						X			X			X	X		X
2	P	X	P	P					X	X		X	P	P	X	X	P	P
3	X	X	X	P			P		X	X	X	X	X	X	X	X	X	X
4		X	X	P		P	P		X	X	X	X	X	X	X	X	X	X
5		X	X							X		X			X	X		
6		X	X							X		X			X	X		
7	X	X	X	P		P	P		X	X	P	X			X	X		X
8	X	X	X	X		X	X	X	X	X	P	X	X	X	X	X	X	X
9	P	X	X	P		P	P	P	P	X	P	X	P	P	X	X	P	X
10	P	X	X	P		P	P	P	P	P	P	X	P	X	X	X	X	X
11	P	X	X	P	P	P	P	P	P	X	P	X	X	X	X	X	P	P
12	X	X	X	P	P	P	P	P	X	X	P	X	X	X	X	X	P	P
13	P	X	X	P	P	P	P	X	P	X	P	X	P	X	X	X	P	P
14	P	X	X	P		P	P	P	P	X		X	P	X	X	X	P	P
15	P	X	X	P		P	P	P	P	X		X	P	X	X	X	P	P
16	P	X	X	P		P	P	P	P	X		X	P	X	X	X	P	P
17	X	X	X	X		P	P	X	X	X	X	X	X	X	X	X	P	X
18	X	X	X	X		P	P	X	X	X	X	X	X	X	X	X	P	X
19	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
20	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
21	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	P	X
22	X	X	X	X		X	X	X	X	X	P	X	X	X	X	X	P	X
23	X	X	X	X		P	P	X	X	P	P	X	P	P	X	X	P	X
24	P	X	X	P		X	X	X	X	P	P	X	P	P	X	X	X	X
25	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
26	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	X
27	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
28	P	X	X	P		X	X	X	X	P	P	X	X	X	X	X	P	X
29	P	X	X	P		P	P	P	X	P	P	X	P	P	X	X	X	X
30	P	X	X	P		P	P	P	X	P		X	P	P	X	X	P	P
31	X	X	X	X		P	P	P	X	X	P	X	X	X	X	X	X	X
32	X	X	X	X		X	X	X	X	X		X	X	X	X	X	P	X
33	X	X	X	X		X	X	X	X	X		X	P	P	X	X	P	X
34	P	X	X	P		P	P	P	X	P	P	X	P	P	X	X		P
35	P	X	X	P		P	P	P	X	P	P	X	P	P	X	X	P	X
36		X	X					P	X			X	P	P	X	X	P	X

***Note: X** = Mitigation required for any area of the parcel, **P** = Mitigation required if impacts extend into the remaining parcel (extension to Conservation Easement boundary).*

7.1 BIO-1: Vegetation Community Replacement Plan

Sensitive natural communities (vegetation communities) are communities that have a limited distribution and are often vulnerable to the environmental effects of projects. These communities may or may not contain special-status species or their habitats. For purposes of this BRE, sensitive natural communities are considered to include vegetation communities listed in the CNDDB and communities (alliances and/or associations) listed in the CDFW Natural Communities List with a rarity rank of S1 (critically imperiled), S2 (imperiled), or S3 (vulnerable) (CDFW, 2022). Replacement and maintenance of natural resources with ecological viability is required in the FEIR (The Planning Center, 1983), General Plan (Takata Associates, 1991), and as per CEQA§ 21081.6 Findings or Negative Declarations; Reporting or Monitoring Project Changes; Effect on Environment; Conditions (CEQA § 21081.6).

As the project contains multiple areas of protected sensitive vegetation communities, including California walnut groves, coast live oak woodland and forest, coast prickly pear scrub, California sagebrush-black sage scrub, and/or California buckwheat scrub (if occupied by CAGN or other listed species), and if impacts cannot be avoided, then the following mitigation would be implemented.

Delimit Sensitive Vegetation Communities: A qualified biologist will survey the project site and field verify the mapped locations and extent of sensitive vegetation communities, per the 2022 surveys (Appendix A, BRE report; UltraSystems, 2022) If discrepancies are observed, then corrections will be made to determine the extent of impact. In inaccessible areas due to topography and/or dense vegetation, a visual estimate may be used to map the vegetation extent via binocular survey, photo documentation, drawn on aerial imagery, then digitized using GIS to estimate the number, maturity, condition, and habitat value of the sampled area. Mitigation will then be fulfilled as follows.

Compensatory mitigation is required for impacts to sensitive natural communities per § 21081.6 Findings or Negative Declarations; Reporting or Monitoring Project Changes; Effect on Environment; Conditions. Therefore, the following compensatory mitigation is provided:

Mitigation Bank. The primary, streamlined approach for compensatory mitigation is payment into a local mitigation bank. The project should ideally be within the service area for the mitigation bank providing available credits for "in kind" impacts to the aforementioned sensitive vegetation communities. The minimum compensatory mitigation ratio for sensitive vegetation communities will be 3:1. If the project applicant uses an existing mitigation bank, such as Soquel Canyon Mitigation Bank[1]: (https://landveritasmitigationbanks.com/soquel.html) or similar, the fee fully mitigates onsite impacts and no further mitigation is necessary per **BIO-1**.

Vegetation Communities Replacement Plan (in lieu of mitigation bank). In the event impacts cannot be mitigated through an approved mitigation bank, then on-site and/or off-site replanting is required at a 3:1 ratio for the impacted vegetation. The replacement plantings will be planted to mimic the surrounding natural habitat in an effort to retain the functions and values per each tree-dominated vegetation community.

A certified arborist, qualified biologist, or licensed landscape architect will prepare a Vegetation Communities Replacement Plan ("habitat mitigation and monitoring plan"; HMMP) which shall be submitted to the City of San Dimas and CDFW (as feasible) for approval. A project-specific HMMP will

[1] The Soquel Mitigation Bank is administered by Land Veritas and provides mitigation credits for walnut woodlands, oak woodlands, and coastal sage scrub

include location and techniques for habitat restoration, revegetation. The HMMP will define the proposed mitigation site, mitigation site preparation, installation of native vegetation replacement, seed palette, irrigation schedule, maintenance, monitoring, reporting, and performance success criteria. The HMMP will recommend feasible measures for mitigating any impacts to trees, sensitive native vegetation water quality, riparian, and biological resources from project implementation. The minimum monitoring period for restoration and replanting will be 5-years.

In addition to protecting sensitive vegetation communities, **BIO-1** may also serve to satisfy a portion of the requirements of the City of San Dimas tree protection ordinances (§§16.42.020, 16.42.090, 18.162.060, 18.162. 070, and 18.162.100) as mandated by the City's required tree removal permit for Mature Significant Trees (see **Section 7.18 and MM-18, below**).

7.2 BIO-2: Project Limits and Designated Areas

To avoid impacts to sensitive biological resources, the property owners will collectively implement the following measures prior to project construction and commencement of any ground-disturbing activities or vegetation removal.

- Specifications for the project boundary, limits of construction, project-related parking, storage areas, laydown sites, and equipment storage areas will be mapped and clearly marked in the field with temporary fencing, screens, silt fencing, signs, stakes, flags, rope, cord, or other appropriate markers.

- All markers will be maintained until the completion of activities in that area. Construction employees will be informed to strictly limit their activities, vehicles, equipment, and construction materials to the proposed project footprint and designated staging areas and routes of travel. The construction area(s) shall be the minimal area necessary to complete the project and shall be specified in the construction plans.

- The construction crew will inspect excavated areas daily to detect the presence of trapped wildlife. See **BIO-15** Wildlife Entrapment Avoidance and **BIO-16** Construction Best Management Practices, below.

7.3 BIO-3: General Vegetation and Wildlife Avoidance

The BSA contains vegetation communities that can support many special-status plant and wildlife species. The property owner will implement the following general avoidance and protection measures to protect vegetation and wildlife, to the extent practical:

- Cleared or trimmed native vegetation and woody debris will be chipped and left onsite. Cleared or trimmed non-native, invasive vegetation that are in the flowering and/or seeding/fruiting stages, then the seed heads will be bagged tightly and disposed of will be disposed of in a legal manner at an approved disposal site (landfill) as soon as possible to prevent regrowth and the spread of weeds.

- The removal of native vegetation shall be avoided and minimized to the maximum extent practicable. Temporary impacts shall be returned to pre-existing contours and revegetated with appropriate native species.

- Vehicles and equipment will be free of caked mud or debris prior to entering a project site to avoid the introduction of new invasive weedy plant species.

- To minimize construction-related mortalities of nocturnally active species such as mammals and snakes, it is recommended that all work be conducted during daylight hours. Nighttime work (and use of artificial lighting) will not be permitted unless specifically authorized. If required, night lighting will be directed away from the preserved open space areas to protect species from direct night lighting. All unnecessary lights will be turned off at sunset to avoid attracting wildlife such as insects, migratory birds, and bats.

- If any wildlife is encountered during the course of project activities, said wildlife will be allowed to freely leave the area unharmed.

- Wildlife will not be disturbed, captured, harassed, or handled. Animal nests, burrows and dens will not be disturbed without prior survey and authorization from a qualified biologist.

- Covered trash receptacles will be placed at each designated work site and the contents will be properly disposed at least once a week. Trash removal will reduce the attractiveness of the area to opportunistic predators such as common ravens, coyotes, northern raccoons, and Virginia opossums.

- The contractors and project applicant will ensure that storm water BMPs include erosion control measures for construction-related disturbance near undeveloped land with ponded water to avoid sedimentation of breeding grounds for special-status sensitive amphibians and invertebrates, such as the spadefoot toad.

- Post-construction lighting. The MCTA will ensure that construction specifications provide provisions to reduce light pollution, including down-shielding or removal of motion sensor lighting, as this type of lighting can deter wildlife and impede movement throughout the area. Night lighting can disrupt the circadian rhythms of many wildlife species. Therefore, if night lighting is required at entry points, we recommend low level lighting. All non-essential lighting should be eliminated. The Project should avoid or limit the use of artificial light during the hours of dawn and dusk, as these intervals of time are when many wildlife species are most active.

- The contractors and project applicant will ensure that storm water BMPs include erosion control measures for construction-related disturbance near undeveloped land with ponded water to avoid sedimentation of breeding grounds for special-status sensitive amphibians and invertebrates, such as the spadefoot toad.

7.4 BIO-4: Focused Botanical Surveys

To avoid impacts to special-status plant species, a qualified biologist will survey the project site for the presence of special-status plant species that are likely to occur based on habitat, soils, elevation, climate, and other conditions of the project site. The focused plant surveys will be conducted in accordance with the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CNPS, 2018) and the Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants (USFWS, 2000). The surveys will be conducted in the field at appropriate times of the year to coincide with the growing season and different blooming periods and when optimum conditions for identification

(generally blooms, fruits, and leaves) are present. Biologists will pay special attention to those habitat areas that appear to provide suitable habitat for special-status species.

A minimum of two surveys would be conducted during different seasons of the same year to adequately capture the floristic diversity of a site, with a focus on areas that will be directly or indirectly receiving impacts from project activities. Plant taxa that occur on site will be identified to the taxonomic level necessary to determine rarity and listing status, as feasible. Plant species will be identified by an expert botanist if a question of rarity and listing status occurs. Special-status plant species will be identified, recorded in field notes, counted or estimated, and mapped on an aerial map or with a GPS unit.

Following completion of the focused botanical surveys, a focused botanical survey report will be prepared in accordance with agency guidelines. The report will: 1) summarize information regarding the habitat of the survey area and the habitat's suitability for special-status plants; 2) assess the potential presence of special-status plants onsite; 3) analyze the potential impacts to special-status plants from project development; and 4) recommend, as appropriate, BMPs, avoidance and protection measures, and mitigation measures to reduce or avoid potential impacts to special-status plants. The report will include: 1) methods and results of the literature review and field surveys; 2) figures depicting the location of special-status plants; 3) a complete flora compendium; and 4) site photographs.

Because CDFW generally considers botanical surveys to be valid for a period of up to three years, some aspects of the proposed project may warrant periodic updated surveys for certain sensitive taxa, particularly if the project is proposed to occur over a protracted time frame, or in phases, or if surveys are completed during periods of drought.

7.5 BIO-5: Habitat Assessment for Least Bell's Vireo and Southwestern Willow Flycatcher

Potential indirect impacts to downstream riparian habitat may require a biologist with a valid Section 10(a)(1)(A) permit will perform a habitat assessment for the least Bell's vireo (LBV) (*Vireo bellii pusillus*) and the southwestern willow flycatcher (SWFL) (*Empidonax traillii extimus*) to determine if the downstream riparian areas may support special-status species and project activities may cause an adverse effect (direct or indirect) to said species.

If the qualified biologist determines there is potential for project activities to cause an adverse effect (direct or indirect) to special-status avian species, then the authorized biologist will conduct protocol LBV surveys in accordance with the United States Fish and Wildlife's (USFWS) LBV Survey Guidelines (dated February 1992 and revised January 19, 2001 [USFWS, 2001]) and protocol SWFL surveys in accordance with the guidelines set forth by the USFWS and the United States Geological Survey (USGS) survey protocol for the SWFL (dated July 11, 2000 [USFWS, 2000] and revised June 22, 2010 [Sogge et al., 2010]). This habitat assessment report will be submitted to USFWS and the South Coast (Region 5) CDFW office within 45 days of survey effort completion. In addition, all survey efforts completed during the calendar year should be submitted to the abovementioned agencies (USFWS, 2001a).

7.6 BIO-6: Focused Coastal California Gnatcatcher Surveys

The BSA is located in the known distributional range of the California gnatcatcher (CAGN) and contains suitable coastal sage scrub habitat (coast prickly pear scrub, California sagebrush-black sage

scrub, California buckwheat scrub) to potentially support this bird; therefore, focused surveys in accordance with the *Coastal California Gnatcatcher Presence/Absence Survey Protocol* (USFWS, 1997; survey protocol) will be required. The property owners will be responsible for retaining a qualified biologist holding a Section 10(a)(1)(A) permit issued by the USFWS to conduct focused surveys for CAGN. This authorized biologist will coordinate with the Carlsbad USFWS Office prior to survey.

A minimum of six surveys shall be conducted at least one week apart, between March 15 and June 30. A minimum of nine surveys shall be conducted at least two weeks apart between July 1 and March 14. Surveys should be conducted between the hours of 6:00 a.m. and 12:00 p.m. and shall avoid period of inclement conditions. No more than 80 acres of suitable CAGN habitat should be surveyed per biologist per day.

If avoidance of occupied habitat is not possible, then payment into a mitigation bank or onsite restoration will occur (See **BIO-1**).

A survey report should then be prepared and submitted within 45 days from survey effort completion to the Carlsbad USFWS Office and the CDFW South Coast (Region 5) Office. The survey report should include the names and permit numbers of all surveyors, survey area locations, descriptions of and mapped extent of the vegetation communities in the survey area and areas adjacent. Number age, sex, and applicable color band information for detected CAGNs should be reported by the authorized biologist.

Note: Incidental observations of raptors and sensitive avian species shall be recorded during the CAGN surveys; incidental species include *but are not limited to*: Cooper's hawk, merlin, golden eagle, burrowing owl, California spotted owl, long-eared owl, coastal cactus wren, yellow warbler, and southern California rufous-crowned sparrow.

7.7 BIO-7: Focused Cactus Wren Surveys

The BSA is located in the known distributional range of the cactus wren (*Campylorhynchus brunneicapillus*; CAWR) and contains suitable coastal sage scrub habitat (coast prickly pear scrub, California sagebrush-black sage scrub, California buckwheat scrub) to potentially support this bird; therefore, focused surveys for this species should occur within areas of suitable habitat.

Cactus wren and the CAGN (see BIO-6) occur within similar suitable habitats. Providing that the authorized biologist with a Section 10(a)(1)(A) recovery permit for CAGN has the experience and expertise to conduct the CAWR survey, surveys may be conducted concurrently. If avoidance of occupied habitat is not possible, then payment into a mitigation bank or onsite restoration will occur (See **BIO-1**).

7.8 BIO-8: Preconstruction Mountain Lion Surveys (for Natal Dens)

The project occurs within the Southern California/Central Coast Evolutionary Significant Unit (ESA) of the mountain lion, which is currently a Candidate State Threatened species. As a Candidate species, protections are given as a listed status species would be protected, which is full protections under CESA.

Protections for mountain lion wildlife corridors, and potential hunting, foraging habitat, and breeding opportunities within the area of the proposed MCTA, a qualified biologist familiar with the mountain lion species behavior and life history should conduct pre-construction surveys within the

project area and 500-foot buffer that will occur within 30 days prior to project mobilization and ground-moving activities (clear, grub, grade, excavation, etc.)

A qualified biologist familiar with the mountain lion species behavior and life history should conduct surveys in areas that may provide possible habitat for mountain lion to determine the potential presence/absence of natal dens for the species. Surveys should be conducted when the species is most likely to be detected, during crepuscular periods at dawn and dusk. Survey results including negative findings should be submitted to CDFW prior to initiation of project activities.

Should an active natal den be located within 500 feet, the applicant should cease work and inform CDFW with 24 hours. No construction activities should occur in the 500-foot buffer zone until a qualified biologist in consultation with CDFW establishes an appropriate setback from the den that would not adversely affect the successful rearing of the cubs. No construction activities or human intrusion should occur within the established setback until the cubs have been successfully reared or the cats have left the area.

If take or adverse impacts to mountain lion cannot be avoided either during project construction or over the life of the project, project proponent shall consult CDFW and must acquire a CESA Incidental Take Permit (pursuant to Fish & Game Code, §2080 et seq.).

If there are no adverse effects to the mountain lion habitat, then project activities may commence without further mitigation.

7.9 BIO-9: Preconstruction Wildlife Surveys

To comply with California Fish and Game Code §§2050-2089, §3511, §4700, §5050 and §5515, the following measures will be implemented to minimize impacts to sensitive species which include, but are not limited to: southern California legless lizard, Crotch's bumble bee, western spadefoot toad, large-blotched ensatina, coast range newt, two-striped garter snake, Blainville's horned lizard, California glossy snake, and red diamond rattlesnake. The measures below will help to minimize or avoid direct and indirect impacts caused by project implementation to sensitive species.

- The project applicant will retain a qualified biologist to conduct pre-construction wildlife surveys within the applicant's APN (aka project site) and associated conservation easements.

- The survey will be conducted at least seven days prior to the onset of scheduled activities, (e.g., staging and stockpiling, structure removal, clear and grub, grading, fill, etc.).

- Pre-construction surveys for special-status wildlife species will concentrate attention in areas with potential to detect protected species, their nests, or indicators of presence (i.e., tracks, middens, fur, pellets, claw marks, scat, burrows, and/or vocalizations); observations of special-status species and/or sign will be recorded and mapped. During the surveys, the biologist will also record incidental observations of non-special-status species and/or their sign.

- Upon completion of the pre-construction wildlife surveys, the qualified biologist will prepare a brief letter report summarizing methods, results, and recommendations for project commencement. If greater than 7 days lapse in construction-related activities occurs within the subject parcel then an additional pre-construction survey is required.

- If it is determined that a federally-listed and/or state-listed or sensitive plant/wildlife species will be directly impacted by the project, the qualified biologist will consult with the USFWS in accordance with the Endangered Species Act § 7 and the CDFW in accordance with CESA under California Fish and Game Code § 2081(b), respectively. However, if the qualified biologist conducts thorough pre-construction surveys and determines there is no threat to special-status species, then construction may commence.

- Sensitive wildlife species and/or potential nesting sites will not be disturbed, captured, handled or moved.

7.10 BIO-10: 14-Day Preconstruction Burrowing Owl Surveys

A qualified biologist will conduct a preconstruction BUOW survey (Take Avoidance Survey) in accordance with the Staff Report on Burrowing Owl Mitigation (Staff Report) (CDFG, 2012) no less than 14 days prior to initiating ground disturbance activities. The survey shall be conducted in accessible portions of the Biological Study Area (BSA), a zone 500 feet out from the project site that contain BUOW essential habitat (nesting, foraging, wintering, and dispersal habitat). The survey will be conducted from sunrise to 10:00 a.m. or from two hours before sunset until evening twilight when weather conditions are conducive to BUOW observations. The biologist shall walk belt transects spaced no more than 20 meters apart to allow 100 percent visual coverage of the survey area, and examine entrances of potential burrows and suitable man-made structures for BUOWs and signs of BUOW. The biologist shall identify, record, and map with a global positioning system (GPS) unit BUOWs and potential BUOW signs. Detailed notes, including observations of wildlife species encountered during the survey, shall be recorded in field notes. A final preconstruction BUOW survey (Take Avoidance Survey) shall be conducted within 24 hours prior to ground disturbance, following the survey methodology described above (CDFG 2012).

Following the completion of the preconstruction BUOW surveys, the biologist shall prepare and electronically submit to the applicant a report summarizing the results of the survey. The report shall be prepared in accordance with the instructions described in the Staff Report. The applicant will submit one electronic copy to the project proponent and one electronic copy of the report to the City for review and concurrence prior to conducting project activities.

- The results of the 14-day preconstruction BUOW surveys will be valid for 14 days. If construction is delayed more than 14 days, then the 14-day preconstruction BUOW surveys must be repeated. That will require a change order.

- If no BUOW or signs of BUOW are observed during the survey and concurrence is received from the City, project activities may begin and no further mitigation will be required.

- If BUOW or signs of BUOW are observed during the survey, the site will be considered occupied and the BUOW may require noise and activity shielding BMPs and/or require passively relocation. The qualified biologist will notify the City and contact CDFW to assist in the development of avoidance, minimization, and mitigation measures prior to commencing project activities. A passive relocation program (Burrowing Owl Mitigation Monitoring and Artificial Burrow and Exclusion Plan) may be necessary and will require approval by CDFW prior to commencing project activities.

7.11 BIO-11: Preconstruction Bat Surveys

The BSA provides suitable oak woodland habitat and other large trees and structures including buildings that provide roosting sites for several special-status bay species. Three sensitive bat species were determined to have a moderate potential to occur in the BSA due to presence of suitable habitat and recent occurrences data (CNDDB, 2022a). These species are pallid bat, western mastiff bat, and big free-tailed bat.

Within 30 days prior to commencement of vegetation removal, a preconstruction bat survey shall be conducted by a qualified biologist during nighttime hours for the presence of any roosting bats.

Acoustic recognition technology shall be used for the bay survey if feasible and appropriate. If either a bat maternity roost or hibernacula (structures used by bats for hibernation) are present, a qualified biologist will develop and implement appropriate protection measures for that maternity roost or hibernacula.

If either a maternity roost or hibernacula is identified, a qualified biologist will develop and implement appropriate protection measures for that maternity roost or hibernacula. These protection measures shall include, as appropriate, safely evicting non-breeding bats, establishment of avoidance buffers, or replacement of roosts at a suitable location.

7.12 BIO-12: Preconstruction Breeding Bird Survey

To maintain compliance with the MBTA and Fish and Game Code, and to avoid impacts or take of migratory non-game breeding birds and other native birds, their nests, young, and eggs, the following measures will be implemented. Impacts to nesting birds would be a potential significant impact if protected breeding birds are present; therefore, the measures below will help to reduce direct and indirect impacts caused by construction-related activities to less than significant levels.

- If project activities cannot be avoided during February 15 through September 15, a qualified biologist will conduct a preconstruction breeding bird survey for active nests (adult birds, eggs, nestlings, fledglings, and those dependent upon the nest). The breeding bird nesting season is typically from February 15 through September 15 but can vary slightly from year to year, usually depending on weather conditions.

- The survey will be conducted between three to seven days prior to the onset of scheduled activities and will include all potential nest sites, such as open ground, trees, shrubs, grasses, burrows, and structures during the breeding season.

- The project applicant will make every effort to conduct the pre-construction survey and subsequent removal of all physical features that could potentially serve as nest sites (e.g., staging and stockpiling, structure removal, clear and grub, grading, fill, etc.) to avoid impacts to nesting birds.

- If a breeding bird territory or an active bird nest is located during the pre-construction survey and will potentially be impacted, the site will be mapped and location provided to the construction foreman, City, and project applicant. The qualified biologist will establish a buffer zone around the active nest, which will be delimited (fencing, stakes, flagging, orange snow fencing, etc.) at a minimum of 100 feet, or as the qualified biologist determines is appropriate, for the detected species. The biologist will determine the appropriate buffer size

based on the planned activities and tolerances of the nesting birds. This no-activity buffer zone will not be disturbed until a qualified biologist has determined that the nest is inactive, the young have fledged, the young are no longer being fed by the parents, the young have left the area, or the young will no longer be impacted by project activities. Periodic monitoring by a biologist will be performed to determine when nesting is complete. Once the nesting cycle has finished, project activities may begin within the buffer zone.

- If listed bird species are observed within a project site during the preconstruction survey, the biologist will immediately map the area and notify the appropriate resource agency to determine suitable protection measures and/or mitigation measures and to determine if additional mitigation is necessary. Project activities may begin within the area only when concurrence is received from the appropriate resource agency.

- Birds or their active nests will not be disturbed, captured, handled or moved. Active nests cannot be removed or disturbed; however, nests can be removed or disturbed if determined inactive by a qualified biologist.

If no breeding birds or active nests are observed during the preconstruction survey or they are observed and will not be impacted, project activities may begin and no further mitigation will be required.

7.13 BIO-13: Worker Environmental Awareness Program (WEAP)

Prior to project construction activities, a qualified biologist will prepare and conduct a Worker Environmental Awareness Program (WEAP) to describe the biological constraints of the project.

- All personnel who will work within a project site will attend the WEAP prior to performing any work. The WEAP will include, but not be limited to: results of preconstruction surveys; description of sensitive biological resources potentially present within a project site; legal protections afforded the sensitive biological resources; BMPs for protecting sensitive biological resources (i.e., restrictions, avoidance, protection, and minimization measures); individual responsibilities associated with the project. The program will also include the reporting requirements if workers encounter a sensitive wildlife species (i.e., notifying the biological monitor or the construction foreman, who will then notify the biological monitor).

- A condition shall be placed on grading permits requiring a qualified biologist to conduct a training session for project personnel prior to grading.

- Training materials will be language-appropriate for all construction personnel. Upon completion of the WEAP, workers will provide their signature on a "sign-in sheet" stating that they attended the program, understand all protection measures, and will abide all the rules of the WEAP. A record of all trained personnel will be kept with the construction foreman at the project field construction office and will be made available to any resource agency personnel.

- If new construction personnel are added to the project later, the construction foreman will ensure that new personnel receive training before they start working. The biologist will provide written hard copies of the WEAP and photos of the sensitive biological resources to the construction foreman.

7.14 BIO-14: Biological Monitor

A qualified project biologist shall monitor construction activities for the duration of the project to ensure that practicable measures are being employed to avoid incidental disturbance of habitat and species of concern outside the project footprint.

If special-status wildlife species or nesting bird species are observed and determined present within a project site during the pre-construction surveys or as required by the resource agencies, then a biological monitor shall be onsite to monitor throughout earth-moving activities that result in tree or vegetation removal, to minimize the likelihood of inadvertent impacts to protected biological resources. Monitoring shall also be conducted periodically during construction activities to ensure no new nests are built during any vegetation removal or building demolition activities between February 15 through September 15. The biological monitor shall ensure that all BMPs, avoidance, protection and mitigation measures described in the relevant project permits and reports are in place and are adhered to.

The biological monitor shall have the authority to temporarily halt all construction activities and all non-emergency actions if protected biological resources are identified and would be directly affected. The monitor shall notify the project applicant, the City, and then the appropriate resource agency if the issue cannot be resolved. If necessary, the biological monitor shall relocate wildlife "out of harm's way," outside of the work area. Work can continue at the location if the qualified biological monitor determines that the activity will not result in adverse effects on the protected resource.

The appropriate agencies shall be notified if a dead or injured protected species is located within a project site. Written notification shall be made within 15 days of the date and time of the finding or incident (if known) and must include; location of the carcass, a photograph, cause of death (if known), and other pertinent information.

7.15 BIO-15: Wildlife Entrapment Avoidance

Project-related excavations shall be secured to prevent wildlife entry and entrapment.

- Holes and trenches shall be backfilled, securely covered, or fenced. Excavations that cannot be fully secured shall incorporate appropriate wildlife ramp(s) at a slope of no more than a 3:1 ratio (horizontal: vertical), or other means to allow trapped animals to escape.

- Biological monitors shall provide guidance to construction crews to ensure that wildlife ramps or other means are sufficient to allow trapped animals to escape.

- At the end of each work day, a biological monitor shall ensure that excavations have been secured or provided with appropriate means for wildlife escape.

- All pipes or other construction materials or supplies will be covered or capped in storage or laydown areas. No pipes or tubing will be left open either temporarily or permanently, except during use or installation.

Any construction pipe, culvert, or other hollow materials will be inspected for wildlife before it is moved, buried, or capped. This type of inspection will be conducted to preclude or minimize potential impacts to all targeted species.

7.16 BIO-16: Construction Best Management Practices

Project work crews will be directed to use BMPs where applicable. These measures will be identified prior to construction and incorporated into the construction operations.

Implementation of this mitigation measure will help to avoid, eliminate or reduce impacts to sensitive biological resources, such as special-status terrestrial wildlife species, to less than significant levels. BMPs that apply to this project construction and development are as follows:

- Water pollution and erosion control plans shall be developed and implemented in accordance with RWQCB (NPDES, § CWA, and/or SWRCB Resolution No. 2019-0015 [Waste Discharge Requirements]) requirements, as discussed in Sections 3.2.7 and 3.2.8.

- Equipment storage, fueling, and staging areas shall be located on upland sites with minimal risks of direct drainage into riparian areas or another sensitive habitat. These designated areas shall be located in such a manner as to prevent any runoff from entering sensitive habitat. Necessary precautions shall be taken to prevent the release of cement or other toxic substances into surface waters. Project-related spills of hazardous materials shall be reported to appropriate entities including but not limited to applicable jurisdictional areas per the City, USFWS, and CDFG, RWQCB and shall be cleaned up immediately and contaminated soils removed to approved disposal areas.

- The natural resource agencies shall have the right to access and inspect any sites of approved projects including any restoration/enhancement area for compliance with project approval conditions including these BMPs.

7.17 BIO-17: Jurisdictional Delineation Survey and Report

Applicants of grading permits pursuant to the proposed MCTA would be required to contract with an authorized biologist to conduct a jurisdictional delineation assessment on their property to determine the presence and extent of potential waters of the U.S. or State (including but not limited to wetlands, ephemeral and intermittent drainages, and associated vegetation communities) that would be subject to the jurisdictional authority of the United States Army Corps of Engineers (USACE), the California State Water Resources Control Board (SWRCB, as represented by the Los Angeles RWQCB), and CDFW. If the assessment determines that the subject property may contain waters of the U.S. or State, a jurisdictional delineation survey is required.

Upon completion of the survey, waters of the U.S or State, if present on the applicant's property, would be mapped and described in a jurisdictional delineation report that meets or exceeds the report standards of the USACE, Los Angeles District office. The report would include a determination of potential impacts to waters of the U.S. or State (including associated vegetation communities) that would result from the applicant's project, quantify the area (in acres and square feet) of impacts to waters under the jurisdiction of each agency, and provide a list of permits, authorizations, and agreements required by the applicant from each agency. The report would also recommend impact avoidance and/or minimization measures and best management practices, and compensatory mitigation, as applicable.

7.18 BIO-18: Mature Significant Tree Protection Measures

There are numerous trees in the project areas that are designated as "mature significant trees" as per the City's tree preservation ordinance. Refer to Section **3.3.2** for an expanded discussion of the tree ordinance.

Prior to the issuance of a grading permit, in accordance with the tree preservation ordinance, a certified arborist will conduct a complete tree inventory of the project site and adjacent areas within the property of the applicant, including conservation easements. The tree inventory will include the location, species, estimated height, canopy dripline (estimate if inaccessible), health, and diameter(s) (see measurement requirements below). Transplantable saplings will also be noted.

Measurements. The trunk diameter must be measured at a point thirty-six inches above the ground at the base of the tree. Mature significant trees include:

- Any tree of the Genus *Quercus* (oak) measuring greater than eight inches or more in trunk diameter, and/or
- Any other species of tree that measures ten inches or more in trunk diameter, and/or
- Any multi-trunk tree(s) having a total circumference of thirty-eight inches or more; the multi-trunk tree shall include at least one trunk with a diameter of a minimum of four inches".

The ordinance also requires that no significant trees shall be removed or relocated on an undeveloped area of a property without first submitting an arborist report and obtaining a tree removal permit from the City's Development Services, Planning Division.

The arborist report will incorporate the aforementioned tree inventory criteria, as well as provisions for disease management using best available management practices including: (1) treated infected trees before removing them from the project site; (2) cleaning and disinfecting all pruning and power tools before and after use to prevent the introduction and/or spread of pathogens; (3) and irrigation avoidance within oak tree canopies. Recommendations for onsite and/or offsite replanting methods will be provided. It is suggested that the City require replanting efforts to mimic the surrounding landscape and avoid separate landscape tree plantings as replacement, which do not meet the definition of CEQA for appropriate mitigation to less than a significant level.

§ 18.162.060 Conditions Imposed of the Tree Preservation Ordinance:

- *Tree relocation and/or two for one replacement with minimum fifteen-gallon box tree(s), or other replacement of equivalent value and size, within the subject property. The two for one replacement ratio may be reduced as determined by the final decision-making body, if a minimum of one of the following additional findings are made: (1) The reduced replacement requirement is consistent with the purposes of this chapter; (2) the tree(s) in question are located where the impact of the tree removal on the community is limited (such as trees in a generally flat portion of the rear yard of a single-family house that are deemed to have less public benefit);*

- *When on-site features, project constraints, and/or other considerations exist which prevent reasonable on-site relocation, relocation to an approved off-site location shall be permitted;*

- *If said conditions are imposed, the owner will be responsible for all replacement and relocated trees for a minimum period of two years. If during this time the tree(s) is (are) declared*

unhealthy by a certified arborist as set forth in § 18.162.090, the diseased trees shall be removed and replaced at the cost of the applicant, as set forth in § 18.162.100

- *A maintenance agreement shall be submitted by the applicant and established for each replaced and relocated tree. The maintenance agreement and maintenance responsibility shall be transferred with the sale of the property if title to the property is transferred within the specified maintenance period. (Ord. 1165 § 4, 2006)"*

If approved by the City, compensatory mitigation may occur through a fee payment into a local mitigation bank and/or through development and implementation of an HMMP (see **BIO-1**).

Replanting may occur onsite or offsite (within the reserved open space conservation easement) as "restoration/rehabilitation" and/or "enhancement." The conservation easement must allow for habitat restoration activities if available as an option. The replacement plantings will be planted to mimic the surrounding natural habitat in an effort to retain the functions and values per each tree-dominated vegetation community. Individual disjointed plantings will be avoided to the maximum extent feasible, in an effort to maintain or prevent net loss of the existing surrounding landscape.

Upon City approval, **BIO-1** may fully mitigate for **BIO-18**, This mitigation will satisfy the City's Tree Preservation and Protection ordinance (Municipal Code Chapter 106.39) and will ensure equal or superior ecological viability as required in the FEIR, General Plan, and as per CEQA§ 21081.6 Findings or Negative Declarations; Reporting or Monitoring Project Changes; Effect on Environment; Conditions.

8.0 POTENTIAL FEDERAL, STATE AND LOCAL BIOLOGICAL PERMITS, AND APPROVALS

Each project pursuant to the proposed MCTA must comply with federal, state, and local environmental laws, regulations, and ordinances. Any project that proposes to fill or otherwise physically alter creeks, wetlands, or other waters requires federal, state and, in some cases, local permits before it can proceed. Both permanent and temporary impacts would require permits. Prior to project implementation and impacts (permanent or temporary) to waters of the U.S. and/or State, a project may need to submit the following federal and state notifications and potentially obtain the following federal and/or state biological permits and/or approvals, as determined by the resource agencies:

- Preconstruction Notification to the U.S. Army Corps of Engineers, Los Angeles District Office (USACE)
- Section 401 Water Quality Certification or a California Waste Discharge Requirement Permit from the Los Angeles Regional Water Quality Control Board (RWQCB)
- Lake or Streambed Alteration Agreement from the California Department of Fish and Wildlife, South Coast Region (CDFW)
- General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit) Order 2009-0009-DWQ) or proof of compliance with Section IV(D)(8)(d)(1) of the MS4 Permit (Order No. R4-2012-0175 as amended by State Water Board Order WQ 2015-0075 and Los Angeles Water Board Order R4-2012-0175-A01 NPDES Permit No. CAS004001)
- Incidental Take Permit from the CDFW
- Tree Removal Permit from the City of San Dimas.

The following sections describe the process to obtain the necessary permits and approvals.

8.1 Section 404 Preconstruction Notification

Waters of the U.S. under the jurisdiction of the USACE (§ 404 CWA) occur within the BSA; therefore, further evaluation through a jurisdictional delineation survey (**BIO-17**) is required for projects pursuant to the proposed MCTA. A jurisdictional delineation survey is necessary to determine whether, and to what extent, a project will result in impacts to waters of the U.S. If a project will impact waters of the U.S., a Preconstruction Notification (PCN) must be submitted to the USACE, Los Angeles District Office. The USACE will review the PCN and determine if the project may proceed or if the project requires a permit (e.g., Nationwide Permit, § 404 permit) pursuant to § 404 of the CWA. Jurisdictional delineation surveys are discussed in **Section 7.17**.

8.2 Section 401 Water Quality Certification

Waters of the U.S. under the jurisdiction of the RWQCB occur within the BSA; therefore, further evaluation through a jurisdictional delineation survey (**BIO-17**) is required for projects pursuant to the proposed MCTA. A jurisdictional delineation survey is necessary to determine whether, and to what extent, a project will result in impacts to waters of the U.S. If a project will impact waters of the U.S., a Water Quality Certification (WQC) application must be submitted to the RWQCB. The RWQCB will review the WQC application and determine if the project may proceed or if the project requires

a WQC pursuant to § 401 of the CWA. Jurisdictional delineation surveys are discussed in **Section 7.17**.

8.3 State Water Resources Control Board Waste Discharge Requirements Permit

Waters of the State under the jurisdiction of the RWQCB occur within the BSA; therefore, further evaluation through a jurisdictional delineation survey (**BIO-17**) is required for projects pursuant to the proposed MCTA. A jurisdictional delineation survey is necessary to determine whether, and to what extent, a project will result in impacts to waters of the State. If a project will impact waters of the State, a Waste Discharge Requirements (WDR) permit application must be submitted to the RWQCB. The RWQCB will review the WDR application and determine if the project may proceed or if the project requires a WDR pursuant to State Water Resources Control Board Resolution No. 2019- 0015. Jurisdictional delineation surveys are discussed in **Section 7.17**.

8.4 Lake or Streambed Alteration Agreement

Waters of the State under the jurisdiction of CDFW occur within the BSA; therefore, further evaluation through a jurisdictional delineation survey (**BIO-17**) is required for projects pursuant to the proposed MCTA. A jurisdictional delineation survey is necessary to determine whether, and to what extent, a project will result in impacts to waters of the State under CDFW jurisdiction. If a project will impact waters of the State, a Lake or Streambed Alteration Notification must be submitted to CDFW via their Environmental Permit Information Management System (EPIMS) website. CDFW will review the Notification and determine if the project may proceed or if the project requires a Lake or Streambed Alteration Agreement (LSAA) pursuant to § 1600 et seq. of the California Fish and Game Code. Jurisdictional delineation surveys are discussed in **Section 7.17**.

8.5 Construction Stormwater Permits

To minimize or avoid erosion, sediment-laden stormwater, contaminated stormwater, or non-stormwater contaminates from entering storm drains and drainages, projects pursuant to the proposed MCTA are required to obtain a Construction General Permit (for projects that would disturb one or more acres of soil during construction) or show compliance with § IV(D)(8)(d)(1) of the MS4 Permit (for projects that would disturb less than one acre of soil during construction). These permits require the preparation of a project-specific SWPPP and implementation, management, and (if necessary) replacement of construction stormwater BMPs as directed in the SWPPP.

8.6 Incidental Take Permits

Federal or state listed endangered or threatened wildlife species may occur within the BSA; therefore, further evaluation through focused and protocol wildlife surveys (**BIO-4**, **BIO-5**, and **BIO- 6**) is required for projects pursuant to the proposed MCTA. Focused and protocol surveys are necessary to determine whether, and to what extent, a project will result in impacts to federal listed endangered or threatened species or if the project will impact state listed. If a project will impact federal and/or state listed endangered, threatened, or candidate species, an incidental take permit (ITP) pursuant to Section 10(a)(1)(B) of the FESA is required when non-federal, otherwise lawful activities, including lawful project development, will result in take of threatened or endangered wildlife. Likewise, an ITP pursuant to CESA from CDFW is required when such projects will result in impacts to state listed endangered, threatened, or candidate species. The agencies may authorize an ITP is certain conditions are met.

8.7 Compensatory Habitat Mitigation and Monitoring Plan

The USACE and State of California have set a goal to prevent further decline of wetlands through a "no net loss" approach. Projects are required to be in compliance with wetland laws and regulations and to implement the State and federal policies of no net loss of wetlands. As a result, project related impacts to jurisdictional waters and wetlands require mitigation through the creation, restoration, enhancement, and/or preservation of wetlands within a project site or offsite.

A draft Habitat Mitigation and Monitoring Plan (HMMP), if required by the regulatory agencies, will need to be prepared and submitted along with the permit packages and applications (described in the following sections) to the appropriate resource agencies. The HMMP will describe the mitigation, monitoring, and management of waters and habitat provided as mitigation, as required by all the resource agencies (USACE, RWQCB, CDFW). This may include onsite or offsite preservation, restoration, and enhancement. The objective of the compensatory mitigation is to replace functions and values lost by impacts to jurisdictional waters and sensitive habitat after avoidance and minimization has been achieved to the maximum extent practicable. The format of the plan will follow the regulation set forth in the USACE's *Los Angeles District Mitigation Guidelines and Monitoring Requirements*, dated April 19, 2004, as amended, and the Mitigation Rule (33 CFR part 332; 73 FR 19670-19687 [April 10, 2008]). In compliance with the 2008 regulations (33 CFR 332.4[c]), the HMMP will address the following items; objectives, site selection, site protection instrument, baseline information, determination of credits, mitigation work plan, maintenance plan, performance standards, monitoring requirements, long-term management plan, adaptive management plan, and financial assurances. No work in jurisdictional areas will be authorized until the project proponent receives, in writing (by letter or email), USACE approval of the final HMMP.

Waters of the U.S. and State, including wetlands and sensitive habitats occur throughout the BSA; therefore, a compensatory HMMP may be required.

8.8 Tree Removal Permit

A tree removal permit pursuant to the City of San Dimas Municipal Code 18.162 for removal of protected mature significant trees and other trees which are determined to be desirable is required. Removal or relocation of mature significant trees and must be approved by the Director of Development Services or the Development Plan Review Board. This approval is subject to conditions as deemed necessary to implement the provisions of the ordinance. Measures applicable to the Tree Removal Permit are discussed in **BIO-1** and **BIO-18**.

9.0 LITERATURE CITED AND REFERENCES

AEP (Association of Environmental Professionals), 2022. 2022 California Environmental Quality Act (CEQA) Statutes and Guidelines. Association of Environmental Professionals. Palm Desert, California.

AOU (The American Ornithologists' Union), 1998. The AOU *Check-list of North American Birds. 7th Edition*. American Ornithologists' Union, Washington, D.C. 829 pp. Available at https://americanornithology.org/publications/north-and-middle-american-checklist/.

Baker, R. O, & Timm, R. M., (1998). Management of conflicts between urban coyotes and humans in Southern California. Proceedings of the Vertebrate Pest Conference, 18. http://dx.doi.org/10.5070/V418110164 Retrieved from https://escholarship.org/uc/item/5064c0n7.

Baldwin, B. G., et al., 2012. The Jepson Manual: Vascular Plants of California, second edition. University California Press, Berkeley.

Baldwin, R. A., 2019. Pest Notes: Pocket Gophers. UC ANR Publication 7433, revised July 2019. University of California Agriculture and Natural Resources. Statewide Integrated Pest Management Program. Available at http://ipm.ucanr.edu/PMG/PESTNOTES/pn7433.html. Accessed on May 9, 2022.

Barbour, M.G. and Minnich, R.A., 2000. Californian Upland Forests and Woodlands. In: M.G. Barbour and W.D. Billings, editors. North American terrestrial vegetation. 2nd edition. Cambridge, United Kingdom: Cambridge University Press; 161-202.

Bent, A. C., 1939. Life histories of North American woodpeckers. U.S. Natl. Mus. Bull. 174. 334 pp. Accessed on September 30, 2022.

Calflora, 2022. Information on California plants for education, research and conservation. Observation Search. Available at https://www.calflora.org/entry/observ.html. Accessed on May 6, 2022.

California Legislative Information, 2022a. Fish and Game Code §§ 2050-2089, California Endangered Species Act (CESA). Available at https://leginfo.legislature.ca.gov/faces/codes_displayexpandedbranch.xhtml?tocCode=FGC&division=3.&title=&part=&chapter=1.5.&article=. Accessed on July 17, 2022.

Cal-IPC (California Invasive Plant Council), 2022. About the Cal-IPC Inventory. Available at: https://www.cal-ipc.org/plants/inventory/about-the-inventory/ Accessed on September 25, 2022

CDFG (California Department of Fish and Game), 2012. Staff Report on Burrowing Owl Mitigation. State of California, Natural Resources Agency, Department of Fish and Game. March 7, 2012. Accessed on June 4, 2022.

CDFW (California Department of Fish and Wildlife), 2012. Staff Report on Burrowing Owl Mitigation. State of California, Natural Resources Agency, Department of Fish and Game. March 7, 2012.

CDFW, 2014. CDFW California Interagency Wildlife Task Group. CWHR version 9.0 personal computer program. Sacramento, CA. Retrieved from https://wildlife.ca.gov/Data/CWHR/Life-History-and-Range. Accessed on August 27, 2022.

CDFW, 2016. Complete List of Amphibian, Reptile, Bird and Mammal Species in California. May, 2016. Available at https://wildlife.ca.gov/Data/CWHR/Life-History-and-Range.

CDFW, 2018. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities. California Natural Resources Agency, Department of Fish and Wildlife. March 20, 2022.

CDFW, 2022a. California Natural Community List. Retrieved from https://wildlife.ca.gov/Data/VegCAMP/Natural-Communities. Accessed on August 2, 2022.

CDFW, 2022b. BIOS Habitat Connectivity Viewer. Accessed at ftp://ftp.dfg.ca.gov/BDB/GIS/BIOS/Habitat_Connectivity/. Accessed on May 20, 2022.

CIMIS (California Irrigation Management System), 2022. Monthly report for Station 078: June 1989 – June 2022. Available at https://cimis.water.ca.gov/. Accessed on July 15, 2022.

City of San Dimas, 1991. General Plan. Accessed online at: https://www.sandimasca.gov/departments/community_development/planning_division/general_plan/general_plan_sections.php, on July 7, 2022.

CNDDB (California Natural Diversity Database), 2022a. RareFind 5 (Internet). California Department of Fish and Wildlife (5.2.14). Available at: https://wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed on September 4, 2022.

CNDDB, 2022b. State and Federally Listed Endangered, Threatened, and Rare Plants of California. Last updated April 2021. California Department of Fish and Wildlife, Sacramento, CA. Accessed on September 4, 2022.

CNDDB, 2022c. Special Animals List. July 2022. State of California, The Resources Agency, Department of Fish and Wildlife, Biogeographic Data Branch, California Natural Diversity Database, Sacramento, CA. Available at https://wildlife.ca.gov/Conservation/SSC. Accessed on July 27, 2022.

CNPS, 2022a. Rare Plant Program. Inventory of Rare and Endangered Plants (online edition, v. 8-03 0.39). Retrieved from: http://www.rareplants.cnps.org. Accessed on May 20, 2022.

CNPS, 2022b. A Manual of California Vegetation, Online Edition. California Native Plant Society, CA. 1300 pp. Retrieved from: https://www.cnps.org/vegetation/manual-of-california-vegetation/. Accessed on May 13, 2022.

CNPS, 2022c. Calscape. Available at https://calscape.org/ Accessed on September 22, 2022.

Cornell Lab of Ornithology, 2022. All About Birds. Cornell Lab of Ornithology, Ithaca, New York. Available at https://www.allaboutbirds.org Accessed on April 28, 2022.

eBird, 2022. eBird: An online database of bird distribution and abundance [web application]. eBird, Cornell Lab of Ornithology, Ithaca, New York. Available at https://ebird.org/map. Accessed on September 22, 2022.

Environmental Laboratory, 1987. Corps of Engineers wetlands delineation manual. Technical Report Y-87-1. Vicksburg, MS: U.S. Army Engineer Waterways Experiment Station. Retrieved from: http://el.erdc.usace.army.mil/wetlands/pdfs/wlman87.pdf

Google Earth Pro, 2022. Version 7.3.4.8642 (May 12, 2022). Specific Plan 11, Planning Area I, San Dimas, Los Angeles County, California. 34°04'34.28" N -117°50'36.13 W. Eye altitude 12,000 feet. Imagery dates: December 2, 1985 to April 4, 2022. ©Google 2022. Accessed on July 26, 2021.

Grubbs, Shannon E., and Paul R. Kraussman, 2009. Use of urban landscape by coyotes. The Southwestern Naturalist 54(1):1-12. March 2009.

Holland, R.F., 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. State of California, The Resources Agency, Nongame Heritage Program, California Department of Fish & Game, Sacramento, Calif. 156 pp.

Holland, V. L. and David J. Keil, 1995. California Vegetation. Kendall/Hunt Publishing Company. Dubuque, Iowa

Jepson Flora Project (Jepson), 2022. Jepson eFlora, Available at http://ucjeps.berkeley.edu/eflora/. Accessed on May 16, 2022.

LACRP (Los Angeles County Regional Planning), 2019. Significant Ecological Areas (SEA) Ordinance Implementation Guide (Effective January 16, 2020). Available at https://planning.lacounty.gov/site/sea/ordinance-and-guide/. Downloaded on July 14, 2022.

Larson, Rachel N., Justin L. Brown, Tim Karels, and Seth P,D. Riley, 2020. Effects of urbanization on resource use and individual specialization in coyotes (Canis latrans) in southern California. PLoS ONE 15(2): e0228881. https://doi.org/10.1371/journal.pone.0228881.

Miller, A. H., and C. E. Bock, 1972. Natural history of the Nuttall's woodpecker at the Hastings Reservation. Condor 74:284-294. Accessed on September 30, 2022.

National Wildlife Federation, 2022. Monarch Butterfly Available at: https://www.nwf.org/Educational-Resources/Wildlife-Guide/Invertebrates/Monarch-Butterfly. Accessed on September 30, 2022.

NatureServe, 2022. Definitions of NatureServe Conservation Status Ranks. Available at: https://help.natureserve.org/biotics/content/record_management/Element_Files/Element_Tracking/ETRACK_Definitions_of_Heritage_Conservation_Status_Ranks.html. Accessed on September 30, 2022.

NETROnline. 2022. 1948 Aerial image of MCTA Project Area. Available at https://www.historicaerials.com/viewer. Accessed on October 3, 2022.

Ng, Sandra J., Jim W. Dole, Raymond M. Sauvajot, Seth P.D. Riley, and Thomas J. Valone, 2003. Use of highway undercrossings by wildlife in southern California. Biological Conservation 115 (2004) 499–507.

PCR Services Corporation, 2006. Significant Ecological Area Update Study, Biological Resources Assessment for the East San Gabriel Valley Significant Ecological Area. Available at https://planning.lacounty.gov/view/east_san_gabriel_valley_sea. Downloaded on July 14, 2022.

Quinn, N. M. et al., 2018. Pest Notes: Ground Squirrels. UC ANR Publication 7438, revised December 2018. University of California Agriculture and Natural Resources. Statewide Integrated Pest Management Program. Available at http://ipm.ucanr.edu/PMG/PESTNOTES/pn7438.html. Accessed on September 19, 2022.

Sawyer et al., J.O., T. Keeler-Wolf, J.M. Evens, 2009. A Manual of California Vegetation, Second Edition. California Native Plant Society Press. Sacramento, CA. 1300 pp.

Spencer, W.D, P. Beier, K. Penrod, K. Winters, C. Paulman, H. Rustigian-Ronsos, J. Strittholt, M. Parisi, and A. Pettler, 2010. California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California. Prepared for California Department of Transportation, California Department of Fish and Game, and Federal Highways Administration.

Shuford et al., 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

Sibley, David Allen, 2000. National Audubon Society, The Sibley Guide to Birds. Alfred A. Knopf, New York.

Sogge et.al., 2010. A natural history summary and survey protocol for the southwestern willow flycatcher: U.S. Geological Survey Techniques and Methods 2A-IO. Available at: https://pubs.usgs.gov/tm/tm2a10/pdf/tm2a10.pdf. Accessed on October 5, 2022.

Soil Survey Staff, 2022. Natural Resources Conservation Service, United States Department of Agriculture, Web Soil Survey: Custom Soil Resource Report for Los Angeles County, Southeastern Part, California. Available at https://websoilsurvey.sc.egov.usda.gov/. Downloaded on July 8, 2022.

SWRCB (State Water Resources Control Board)., 2009. Resolution No. 2009-0026. https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2009/rs2009_0026.pdf

SWRCB, 2019. Resolution No. 2019-0015. https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/rs2019_0015.pdf. Accessed on May 18, 2022.

Takata Associates, 1991. City of San Dimas Final Environmental Impact Report, SCH #91011017, General Plan Revision. May 1991. Accessed online at: https://cms8.revize.com/revize/sandimasca/Document_Center/Department/Community

%20development/Planning%20division/Development%20Projects%20Environmental%20Info/FINAL-EIR-1991.pdf, on April 19, 2022.

The Planning Center, 1983. Focused Environmental Impact Report, Via Verde Parcel 'D', Specific Plan No. 11, Zone Change 83-1. Draft February 1983. Final certified on April 26, 1983. Accessed online at: https://cms8.revize.com/revize/sandimasca/Document_Center/Department/Community%20development/Planning%20division/Development%20Projects%20Environmental%20Info/SP-11-Via-Verde-Parcel-D-Final-EIR.pdf, on April 19, 2022.

UltraSystems, 1977. Final Environmental Impact Report, Tentative Tract No. 33026, Zone Change No. 182, Via Verde Area III. January 1977. Accessed online at: https://sandimasca.gov/Document_Center/Department/Community%20development/Planning%20division/Development%20Projects%20Environmental%20Info/Tentative-Tract-No.-33026-Via-Verde-Area-III-Final-EIR.pdf, on April 19, 2022.

USACE (United States Army Corps of Engineers), 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

USACE, 2018. National Wetland Plant List, version 3.4. Retrieved from: http://wetland-plants.usace.army.mil/.

USACE, 2020. National Wetland Plant List, 2020 List of Proposed Changes. Retrieved from: http://wetland-plants.usace.army.mil/.

USDA (United States Department of Agriculture), 1997. Official Soil Series Descriptions: Apollo Series, Soil Survey Staff, Natural Resources Conservation Service. Available at: https://soilseries.sc.egov.usda.gov/OSD_Docs/A/APOLLO.html#:~:text=The%20Apollo%20series%20consists%20of,temperature%20is%2060%20degrees%20F. Accessed on September 2, 2022.

USDA, 2010. Federal Noxious Weed List. December 10, 2010. Available at http://www.aphis.usda.gov/plant_health/plant_pest_info/weeds/downloads/weedlist.pdf. Accessed on September 20, 2022.

USDA NRCS (United States Department of Agriculture, Natural Resources Soil Conservation Service). 2022a. Soil Data Access (SDA) State Hydric Soils List. Available at https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1316619.html. Accessed on August 20, 2022.

USDA NRCS, 2011. Official Soil Series Descriptions: Zaca Series, Soil Survey Staff, Natural Resources Conservation Service. Available at: https://soilseries.sc.egov.usda.gov/OSD_Docs/Z/ZACA.html#:~:text=The%20soils%20of%20the%20Zaca,F%20(16%20degrees%20C). Accessed on September 2, 2022.

USEPA (United States Environmental Protection Agency), 2022a. EPA Waters GeoViewer. Available at https://www.epa.gov/waterdata/waters-geoviewer. Accessed on August 14, 2022.

USEPA, 2022b. Endangered Species Act. Available at http://www2.epa.gov/laws-regulations/summary-endangered-species-act. Accessed on August 14, 2022

USFS (United States Forest Service), 2022. Monarch Butterfly Migration and Overwintering, Webpage. Available at: https://www.fs.usda.gov/wildflowers/pollinators/Monarch_Butterfly/migration/index.shtml#:~:text=The%20eastern%20population%20of%20North,2%20miles%20above%20sea%20level) Accessed on September 27, 2022.

USFWS (United States Fish and Wildlife Service), 1997. Coastal California Gnatcatcher Presence/Absence Survey Protocol. Available at: https://www.fws.gov/sites/default/files/documents/survey-protocol-for-coastal-california-gnatcatcher.pdf Accessed on September 29, 2022.

USFWS, 2000. Southwestern Willow Flycatcher Protocol Revision. Available at: https://www.wrc-rca.org/species/survey_protocols/SWWFlycatcher.2000.protocol.pdf. Accessed on June 30, 2022.

USFWS, 2001a. Least Bell's Vireo Survey Guidelines. Available at: https://www.fws.gov/sites/default/files/documents/survey-protocol-for-least-bells-vireo.pdf Accessed on September 29, 2022.

USFWS, 2001b. Minimum Qualifications for Coastal California Gnatcatcher Recovery Permits Available at: https://www.fws.gov/sites/default/files/documents/minimum-qualifications-for-coastal-california-gnatcatcher.pdf Accessed on September 29, 2022.

USFWS, 2022a. Endangered Species Act – Section 3. Available at https://www.fws.gov/endangered/laws-policies/Section-3.html. Accessed on August 14, 2022.

USFWS, 2022b. Endangered Species Act – Section 7(a)(2). Available at https://www.fws.gov/midwest/endangered/section7/index.html. Accessed on August 14, 2021.

USFWS, 2022c. Migratory Bird Program's Migratory Bird Treaty Act Summary. Available at https://www.fws.gov/birds/policies-and-regulations/laws-legislations/migratory-bird-treaty-act.php. Accessed on August 17, 2022.

USFWS , 2022d. Information for Planning, and Consultation (IPaC). Carlsbad Fish and Wildlife Office. IPaC Official Species List. Consultation Code: 0061097-2022 Available at http://ecos.fws.gov/ipac/. Downloaded on July 6, 2022.

USFWS, 2022e USFWS Critical Habitat Portal: http://ecos.fws.gov/crithab/. Latest database search conducted on March 3, 2022

USFWS, 2022f. August 27, 2019. National Wetlands Inventory (NWI) website, U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. Retrieved from https://www.fws.gov/wetlands/. Accessed on April 15, 2022.

USGS (U.S. Geological Survey), 2022. National Hydrography Dataset (ver. USGS National Hydrography Dataset Best Resolution (NHD) for Hydrologic Unit (HU) 8. Available at

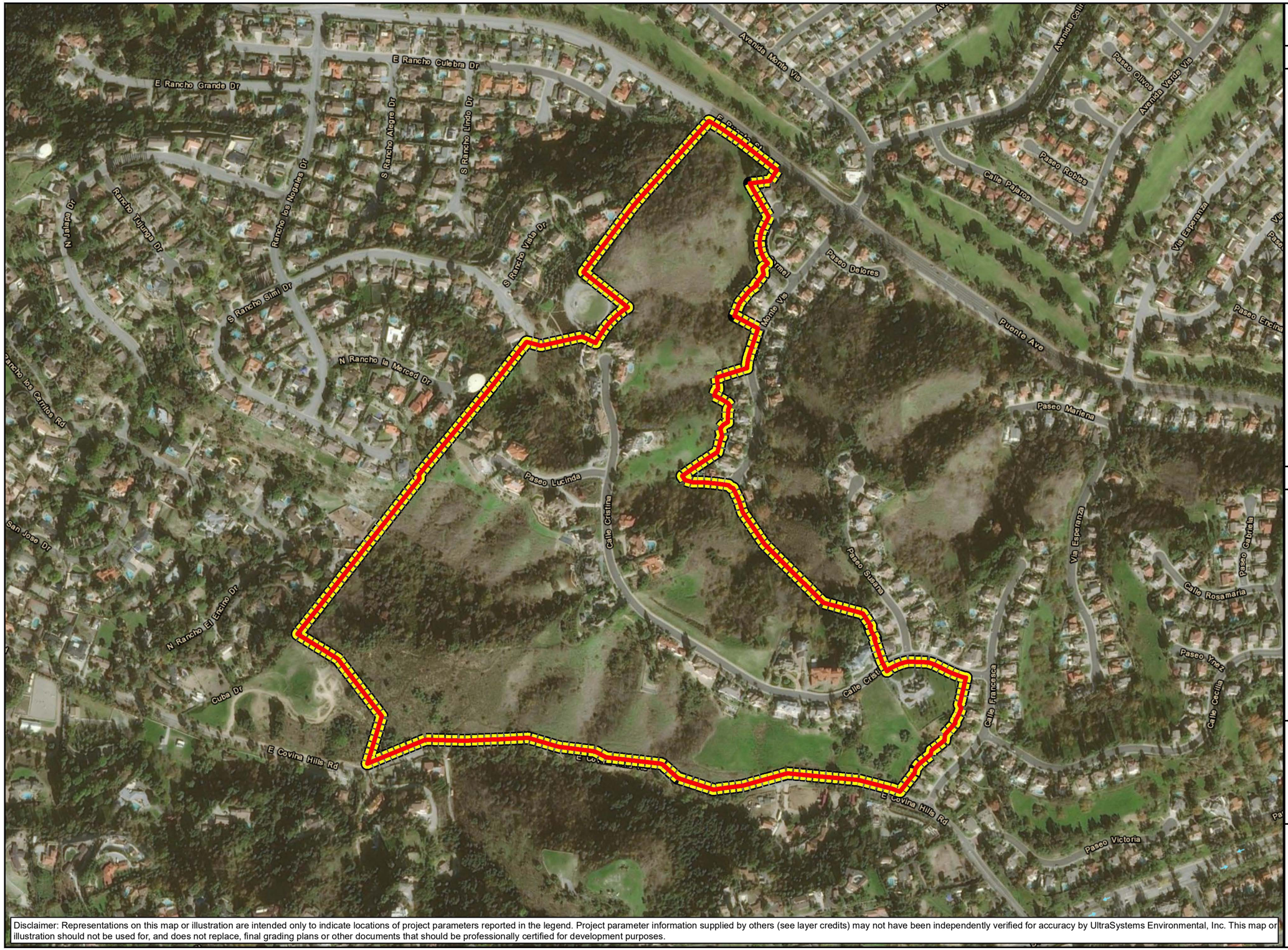
https://www.usgs.gov/core-science-systems/ngp/national-hydrography/access-national-hydrography-products. Downloaded on April 29, 2021.

Wilson, D.E. and D.M. Reeder (editors), 2005. Mammal Species of the World. A Taxonomic and Geographic Reference (3rd ed), Johns Hopkins University Press. 2,142 pp.

WRCC (Western Regional Climate Center), 2022. Climate Summaries. Retrieved from: http://www.wrcc.dri.edu/current-obs/ Accessed on September 23, 2022.

APPENDIX A

FIGURES



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San Dimas
MCTA 20-0005

Legend

Project Boundary

Biological Study Area (BSA)

Key Map

0 225 450 Feet

0 60 120 Meters

N

Scale: 1:5,400

Project Boundary and Biological Study Area (BSA)

Figure 1

UltraSystems
environmental • management • planning

October 21, 2022

Path: \\gissvr\GIS\Projects\7145_SanDimas_MunicipalCode_ISMND\MXDs\BIO\7145_San_Dimas_MCTA_Project_Location_BSA_2022_10_21.mxd
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community; UltraSystems Environmental, Inc., 2022.

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February 10, 2022

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community; Los Angeles County, 2021; UltraSystems Environmental, Inc., 2022

Scale: 1:633,600

N

0 5 10 Miles

0 5.5 11 Kilometers

Legend

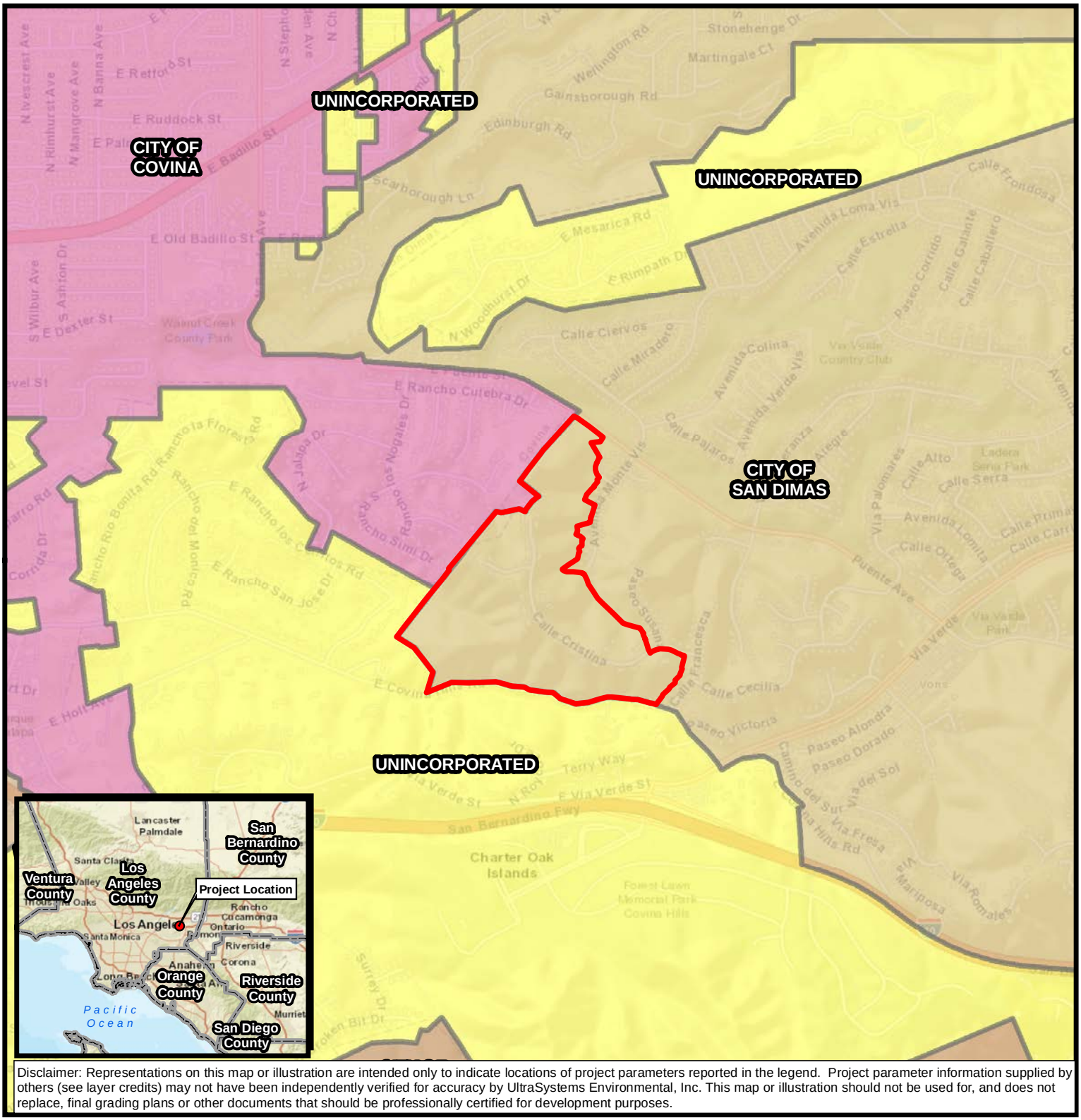
Project Location

San Dimas MCTA

Regional Location

Figure 2

UltraSystems environmental•management•planning



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Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community; Los Angeles County, 2020-2021; UltraSystems Environmental, Inc., 2022

February 10, 2022

Scale: 1:18,000

N

0 750 1,500 Feet

0 0.15 0.3 Kilometers

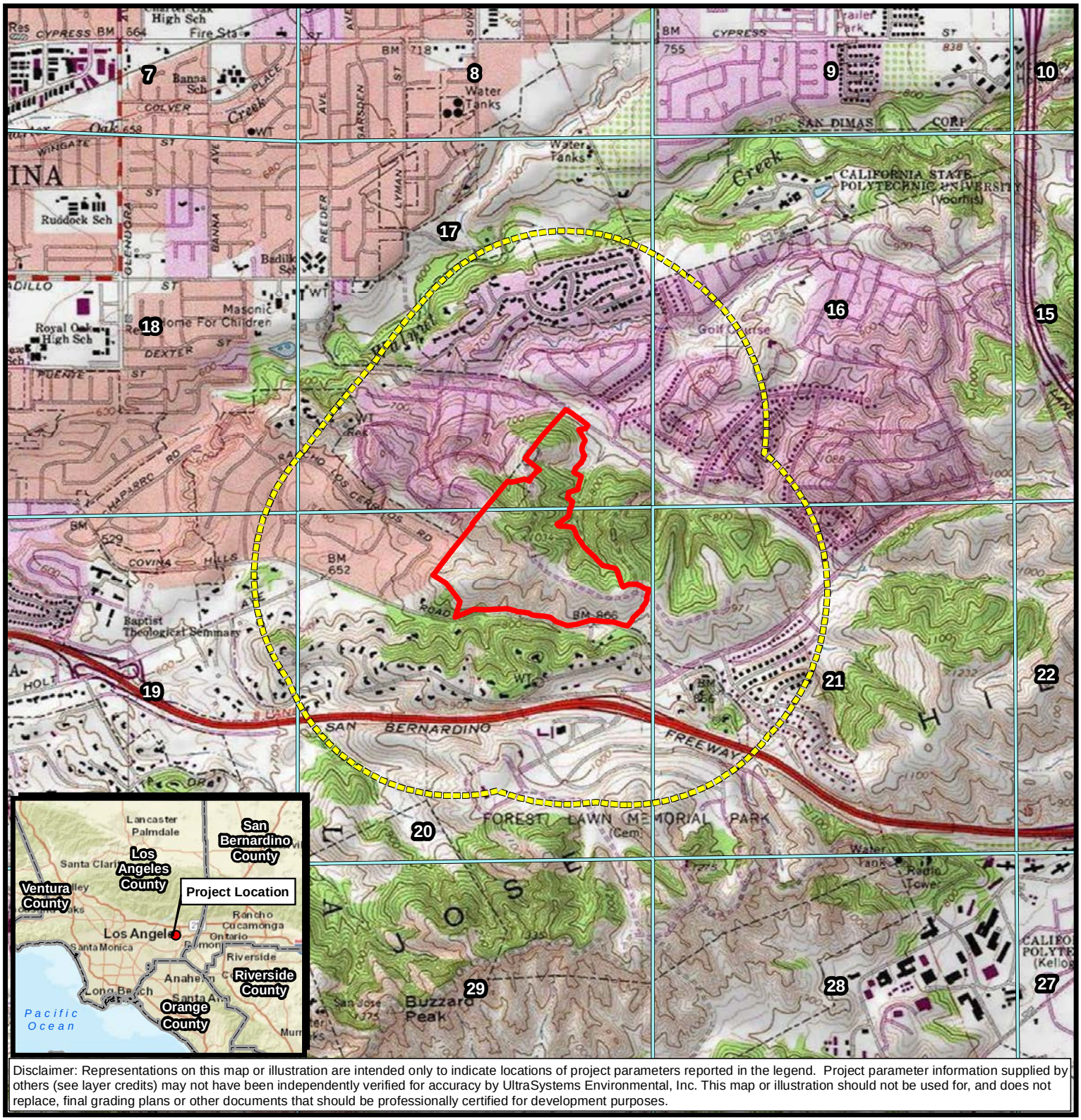
Legend

Project Boundary

San Dimas MCTA

Project Vicinity
Figure 3

UltraSystems
environmental • management • planning



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February 10, 2022

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Scale: 1:24,000

N

0 1,000 2,000 Feet

0 250 500 Meters

Legend

- Project Boundary
- Half-Mile Radius
- Section Boundary

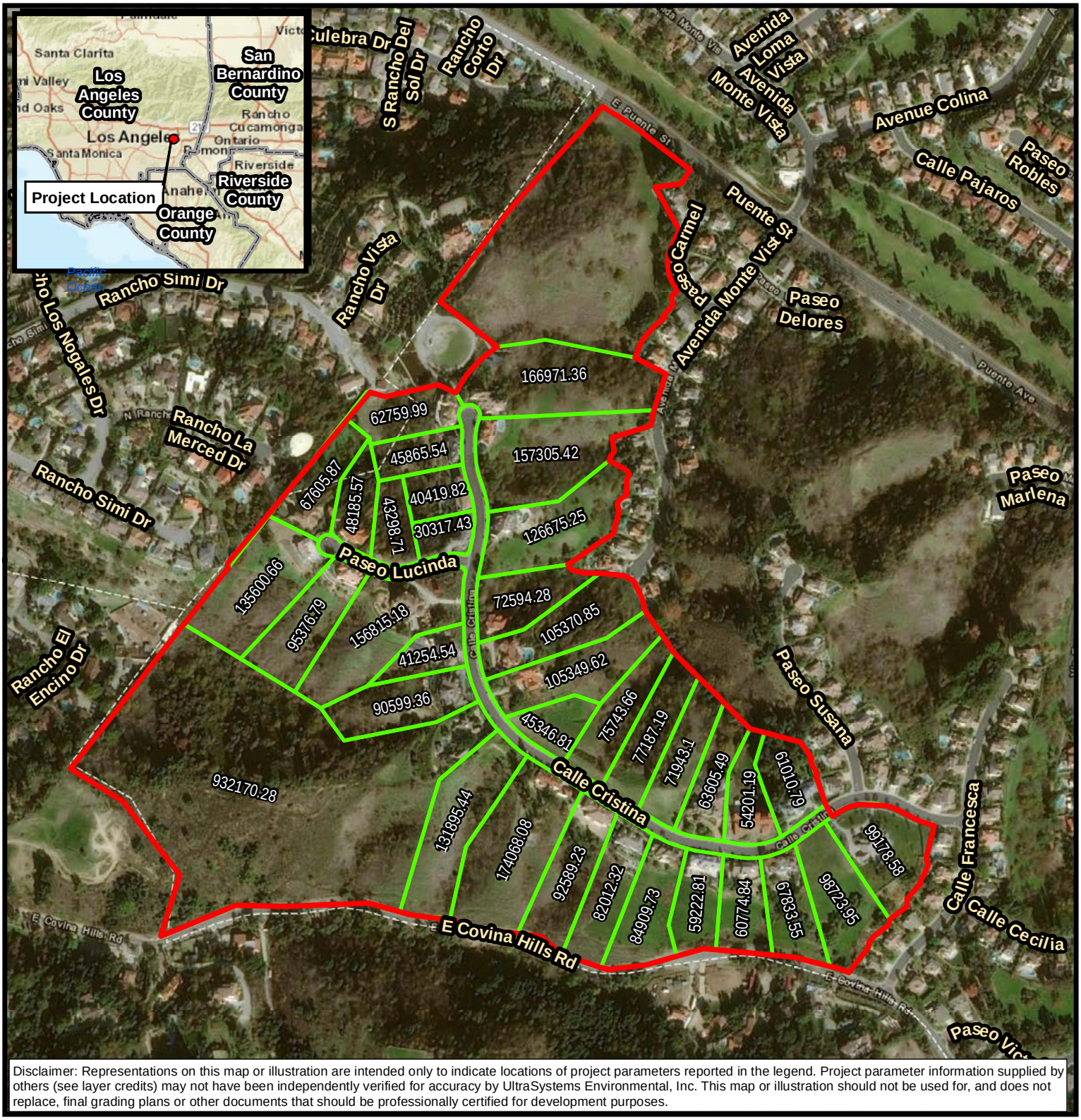
San Dimas MCTA

USGS Topographic Quadrangle Map

Figure 4

USGS Quadrangle: San Dimas
Township: 1S Range: 9W
Sections:17,20

UltraSystems
environmental • management • planning



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Path: \\Gissvr\gis\Projects\7145_SanDimas_MunicipalCode_ISMND\MXDs\7145_SanDimas_MCTA_PARCELS_INFO_AreaSQFT_2022_04_20.mxd

April 20, 2022

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community UltraSystems Environmental, Inc., 2022

Scale: 1:6,000

N

0 250 500 Feet

0 70 140 Meters

Legend

Project Boundary

Project Parcel (sqft)

San Dimas MCTA

Parcel Map

Figure 5

UltraSystems environmental • management • planning

San Dimas
MCTA

Legend

Project Boundary

500ft Biological Study Area

Soil Map Unit

1007-Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes

1141-Zaca-Apollo, warm complex 20 to 55 percent slopes

1232-Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced

Key Map

0 225 450 Feet

0 60 120 Meters

N

Scale: 1:5,400

USDA Soils

Figure 6

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Path: \\gissvr\GIS\Projects\7145_SanDimas_MunicipalCode_ISMND\MXDs\BIO\7145_SanDimas_MCTA_4_4_Soil_11x17_2022_09_29.mxd

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community; USDA, 2020; UltraSystems Environmental, Inc., 2022

September 29, 2022

San Dimas MCTA

Legend

- Project Boundry
- 2-Mile Radius

Common Name, Scientific Name

- California Walnut Woodland
- Plummer's mariposa-lily, *Calochortus plummerae*
- Walnut Forest
- Chaparral ragwort, *Senecio aphanactis*
- Intermediate mariposa-lily, *Calochortus weedii var. intermedius*
- Many-stemmed dudleya, *Dudleya multicaulis*

Key Map

0 0.25 0.5 Miles

0 0.25 0.5 Kilometers

N

Scale: 1:31,680

CNDDB Known Occurrences Plant Species and Habitats

Figure 7

UltraSystems environmental•management•planning

Disclaimer: Representations on this map or illustration are intended only to indicate locations of project parameters reported in the legend. Project parameter information supplied by others (see layer credits) may not have been independently verified for accuracy by UltraSystems Environmental, Inc. This map or illustration should not be used for, and does not replace, final grading plans or other documents that should be professionally certified for development purposes.

Path: \\gissvr\GIS\Projects\7145_SanDimas_MunicipalCode_ISMND\MXDs\BIO\7145_SanDimas_MCTA_CNDDB_Plant_2022_09_30.mxd

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community; CDFW, September 2022; UltraSystems Environmental, Inc., 2022.

September 30, 2022

San Dimas MCTA

Legend

- Project Boundry
- 2-Mile Radius

Common Name, Scientific Name

- American badger, *Taxidea*
- Arroyo chub, *Gila orcuttii*
- Coastal California gnatcatcher, *Polioptila californica californica*
- Coastal whiptail, *Aspidoscelis tigris stejnegeri*
- Merlin, *Falco columbarius*
- Pallid bat, *Antrozous pallidus*
- Pocketed free-tailed bat, *Nyctinomops femorosaccus*
- Southern California rufous-crowned sparrow, *Aimophila ruficeps canescens*
- Western mastiff bat, *Eumops perotis californicus*

Key Map

0 0.25 0.5 Miles

N

0 0.25 0.5 Kilometers

Scale: 1:31,680

CNDDB Known Occurrences Wildlife Species and Habitat

Figure 8

UltraSystems environmental•management•planning

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Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community; CDFW, September 2022; UltraSystems Environmental, Inc., 2022.

September 30, 2022

San Dimas
MCTA 20-0005

Legend

- Project Boundary
- Project Parcels
- Conservation Easement

Land Cover

- California buckwheat scrub
- California buckwheat scrub (disturbed)
- California sagebrush - black sage scrub
- California walnut groves
- California walnut groves (disturbed)
- Coast live oak woodland and forest (disturbed)
- Coast prickly pear scrub
- Developed/Ornamental
- Pepper tree groves
- Upland mustards or star-thistle fields
- Upland mustards or star-thistle fields (mowed)

Key Map

0 175 350 Feet

0 50 100 Meters

N

Scale: 1:4,200

Land Cover Overview Map

Figure 9

Page 1 of 6

UltraSystems
environmental • management • planning

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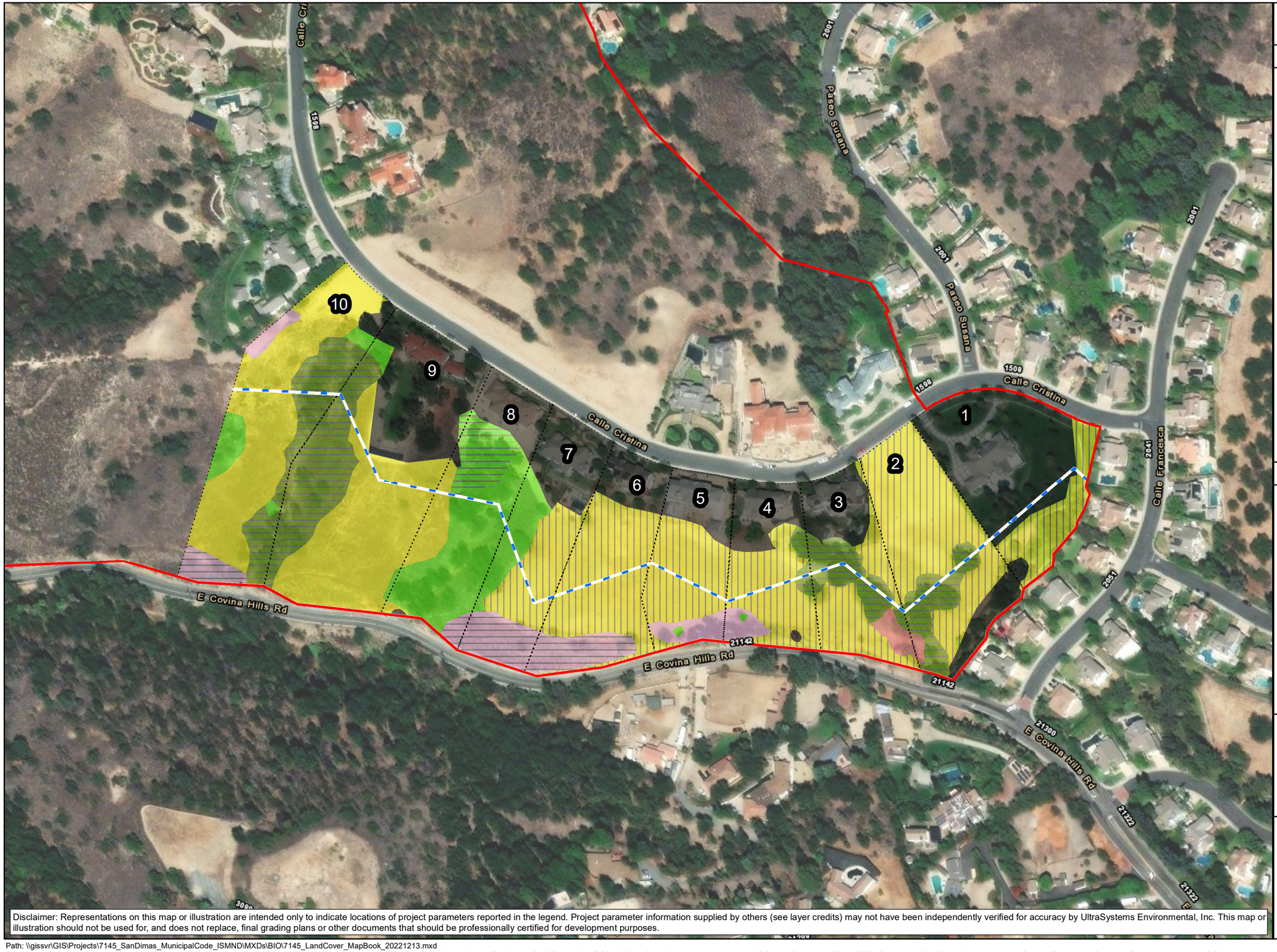
December 12, 2022



San Dimas
MCTA 20-0005

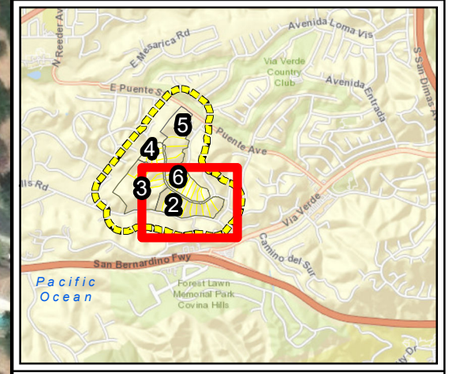
Legend

- Project Boundary
- Project Parcels
- Conservation Easement

Land Cover

- California buckwheat scrub
- California buckwheat scrub (disturbed)
- California walnut groves
- California walnut groves (disturbed)
- Coast live oak woodland and forest (disturbed)
- Coast prickly pear scrub
- Developed/Ornamental
- Upland mustards or star-thistle fields
- Upland mustards or star-thistle fields (mowed)

Key Map



0 100 200 Feet

0 25 50 Meters

N

Scale: 1:2,400

Land Cover
Figure 9a
Page 2 of 6

UltraSystems
environmental • management • planning

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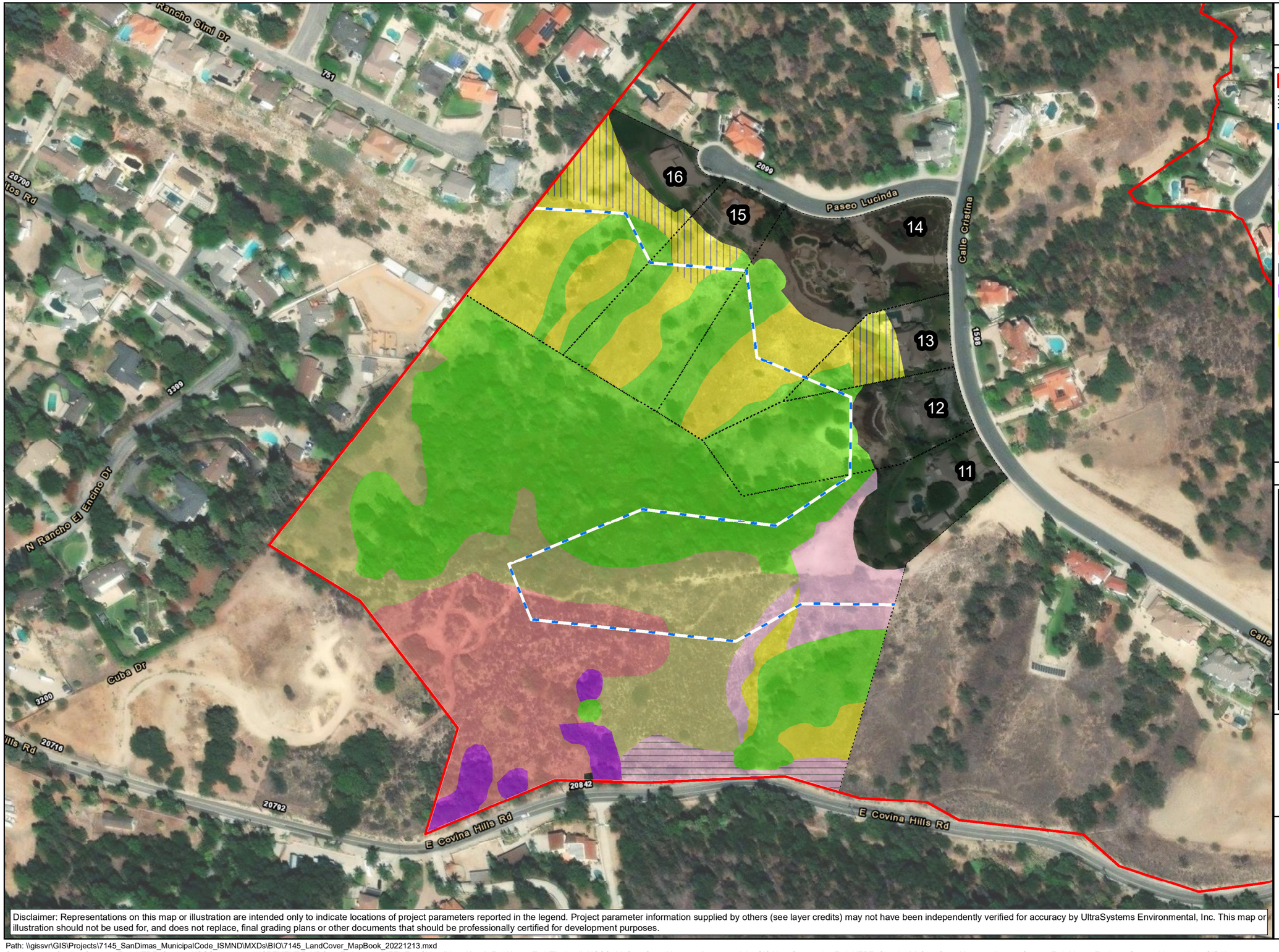


San Dimas
MCTA 20-0005

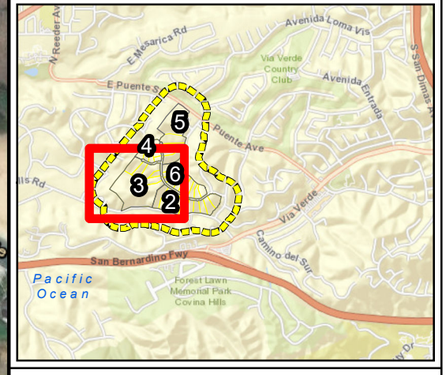
Legend

- Project Boundary
- Project Parcels
- Conservation Easement

Land Cover

- California buckwheat scrub
- California buckwheat scrub (disturbed)
- California sagebrush - black sage scrub
- California walnut groves
- Coast prickly pear scrub
- Developed/Ornamental
- Pepper tree groves
- Upland mustards or star-thistle fields
- Upland mustards or star-thistle fields (mowed)

Key Map



0 100 200 Feet

0 25 50 Meters

N

Scale: 1:2,400

Land Cover
Figure 9b
Page 3 of 6

UltraSystems
environmental•management•planning

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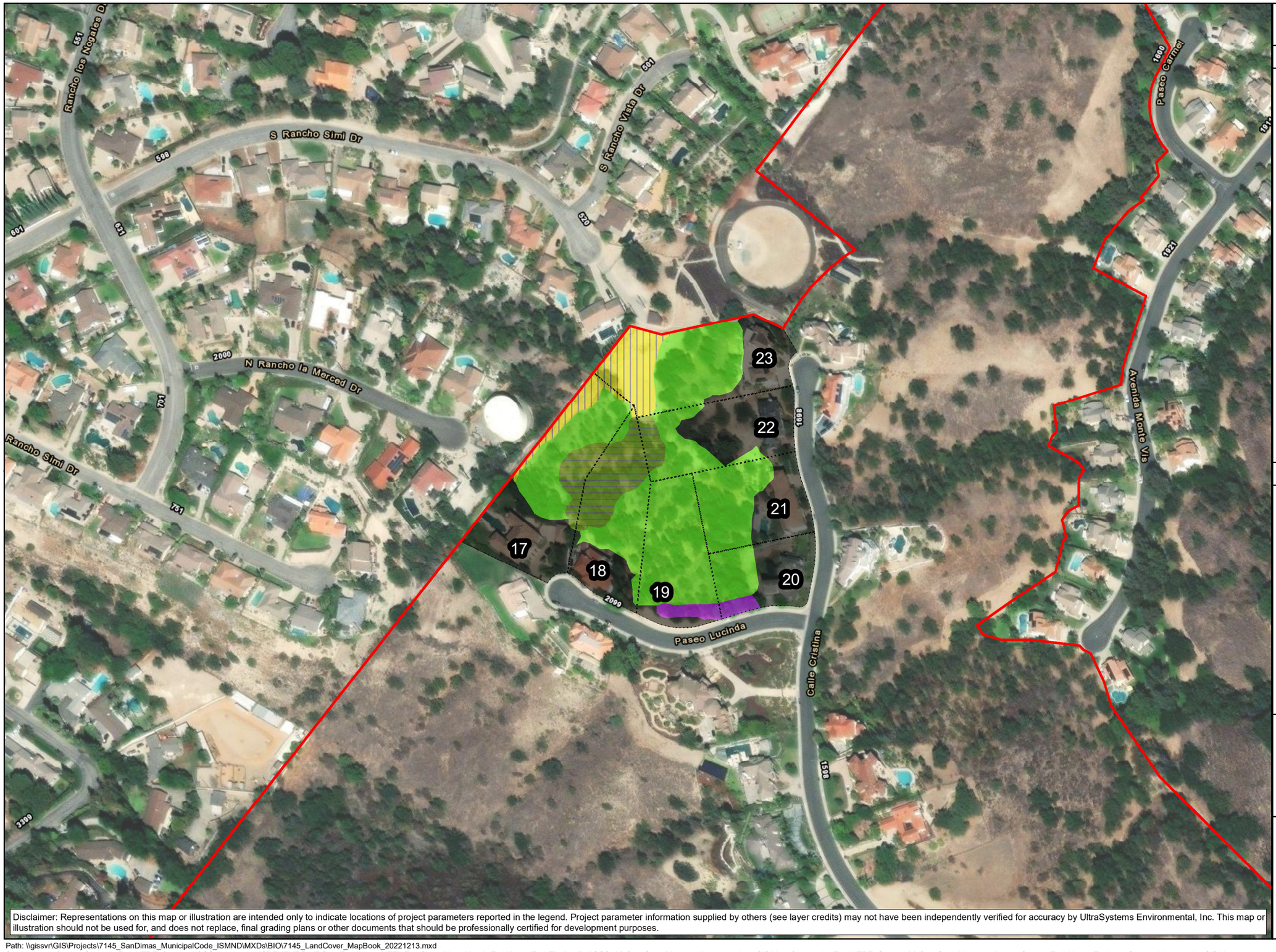

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San Dimas
MCTA 20-0005

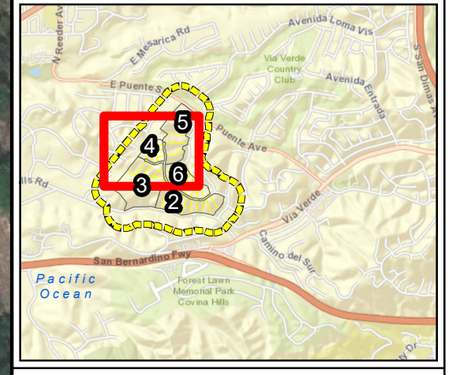
Legend

- Project Boundary
- Project Parcels

Land Cover

- California buckwheat scrub
- California walnut groves
- Coast live oak woodland and forest (disturbed)
- Developed/Ornamental
- Pepper tree groves
- Upland mustards or star-thistle fields (mowed)

Key Map



0 100 200 Feet

0 25 50 Meters

N

Scale: 1:2,400

Land Cover
Figure 9c
Page 4 of 6

UltraSystems
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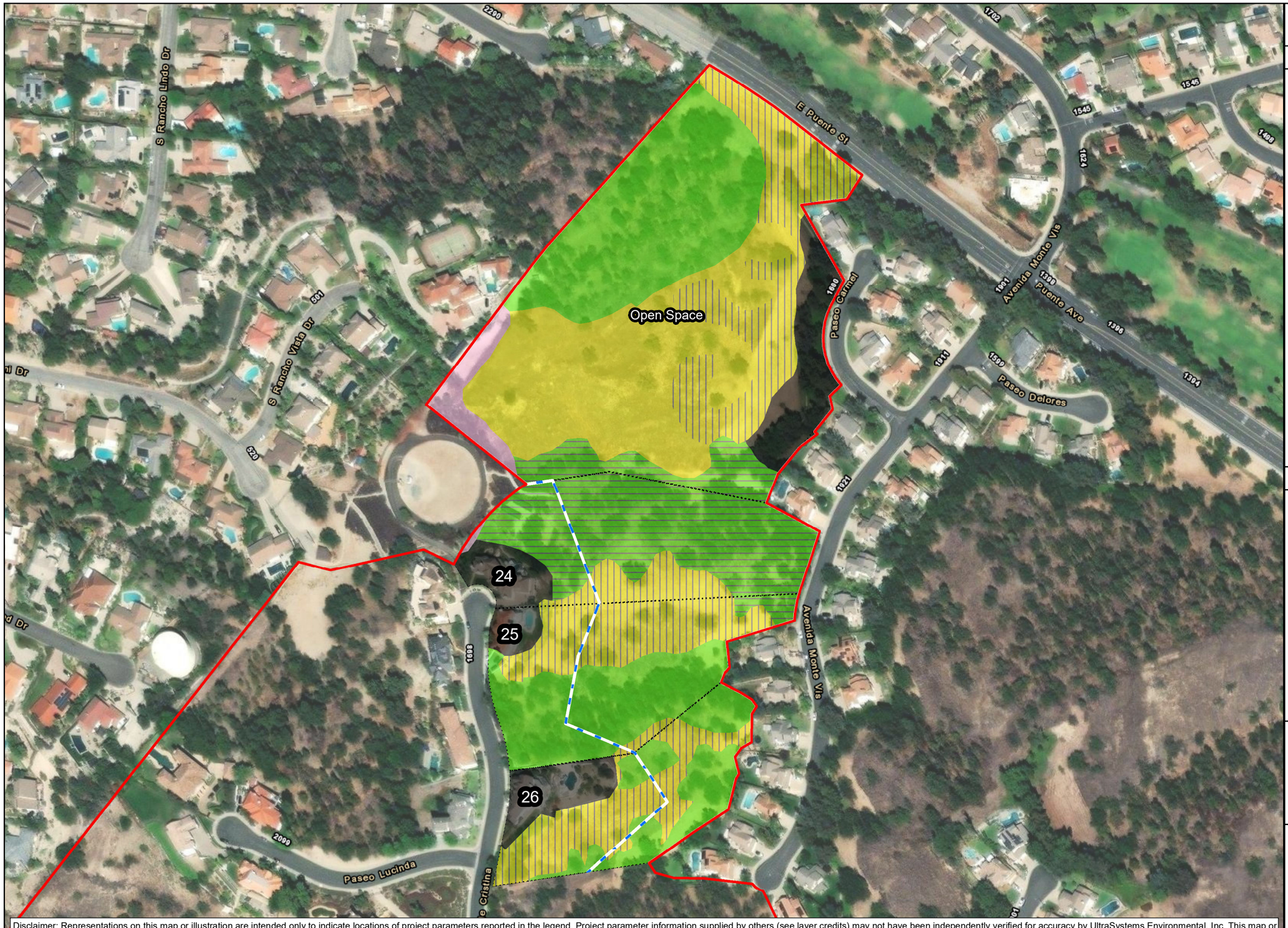
December 12, 2022



San Dimas
MCTA 20-0005

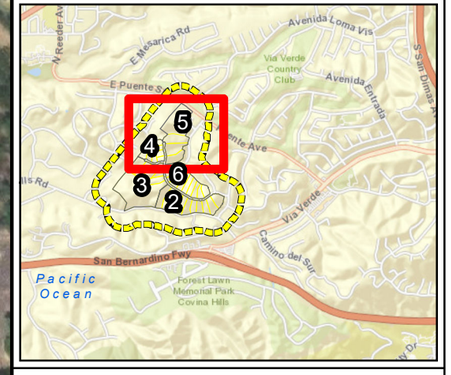
Legend

- 7145_OpenSpaceParcel
- Project Boundary
- Project Parcels
- Conservation Easement

Land Cover

- California buckwheat scrub
- California walnut groves
- California walnut groves (disturbed)
- Developed/Ornamental
- Upland mustards or star-thistle fields
- Upland mustards or star-thistle fields (mowed)

Key Map



0 100 200 Feet

0 25 50 Meters

N

Scale: 1:2,400

Land Cover
Figure 9d

UltraSystems
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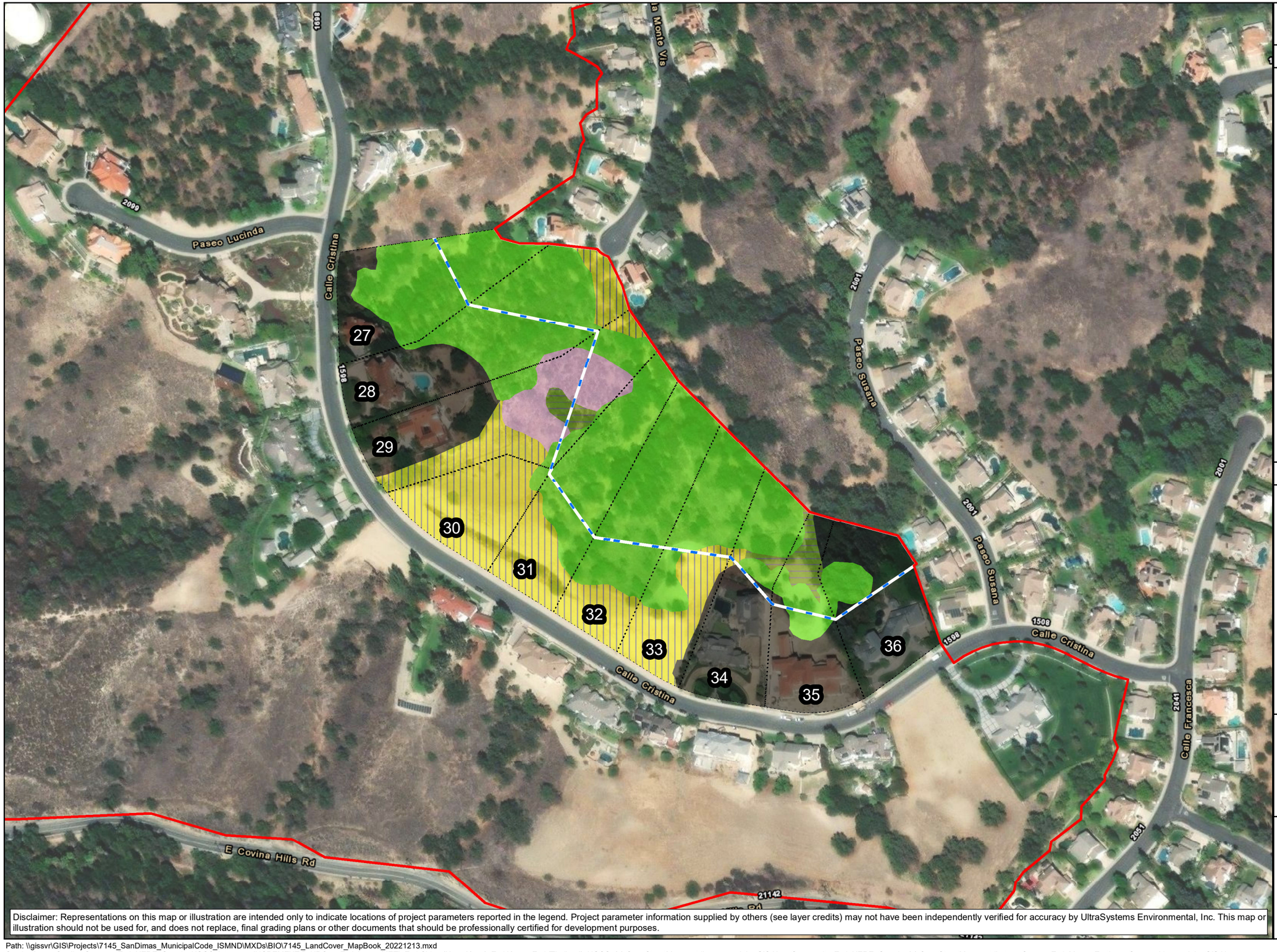
December 12, 2022



San Dimas
MCTA 20-0005

Legend

- Project Boundary
- Project Parcels
- Conservation Easement

Land Cover

- California buckwheat scrub
- California walnut groves
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- Developed/Ornamental
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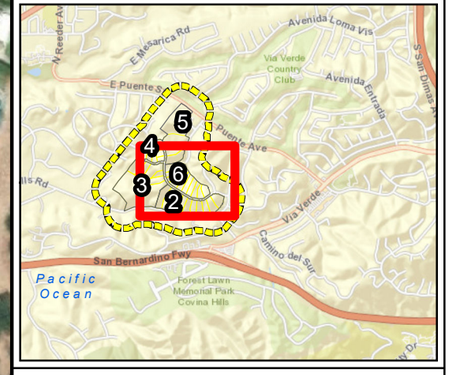
Key Map



0 100 200 Feet

0 25 50 Meters

N

Scale: 1:2,400

Land Cover
Figure 9e
Page 6 of 6

UltraSystems
environmental • management • planning

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December 12, 2022

San Dimas
MCTA 20-0005

Legend

- Project Boundary
- Project Parcels
- 35% Lot Coverage (existing allowance)
- 20ft Grading Area Extension (MCTA, 1,000cuyd)
- Remaining Parcel (extension to CE Boundary)
- Conservation Easement

Land Cover

- California buckwheat scrub
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- Upland mustards or star-thistle fields (mowed)

Key Map

0 175 350 Feet

0 50 100 Meters

N

Scale: 1:4,200

Land Cover Impacts Overview Map

Figure 10

UltraSystems environmental • management • planning

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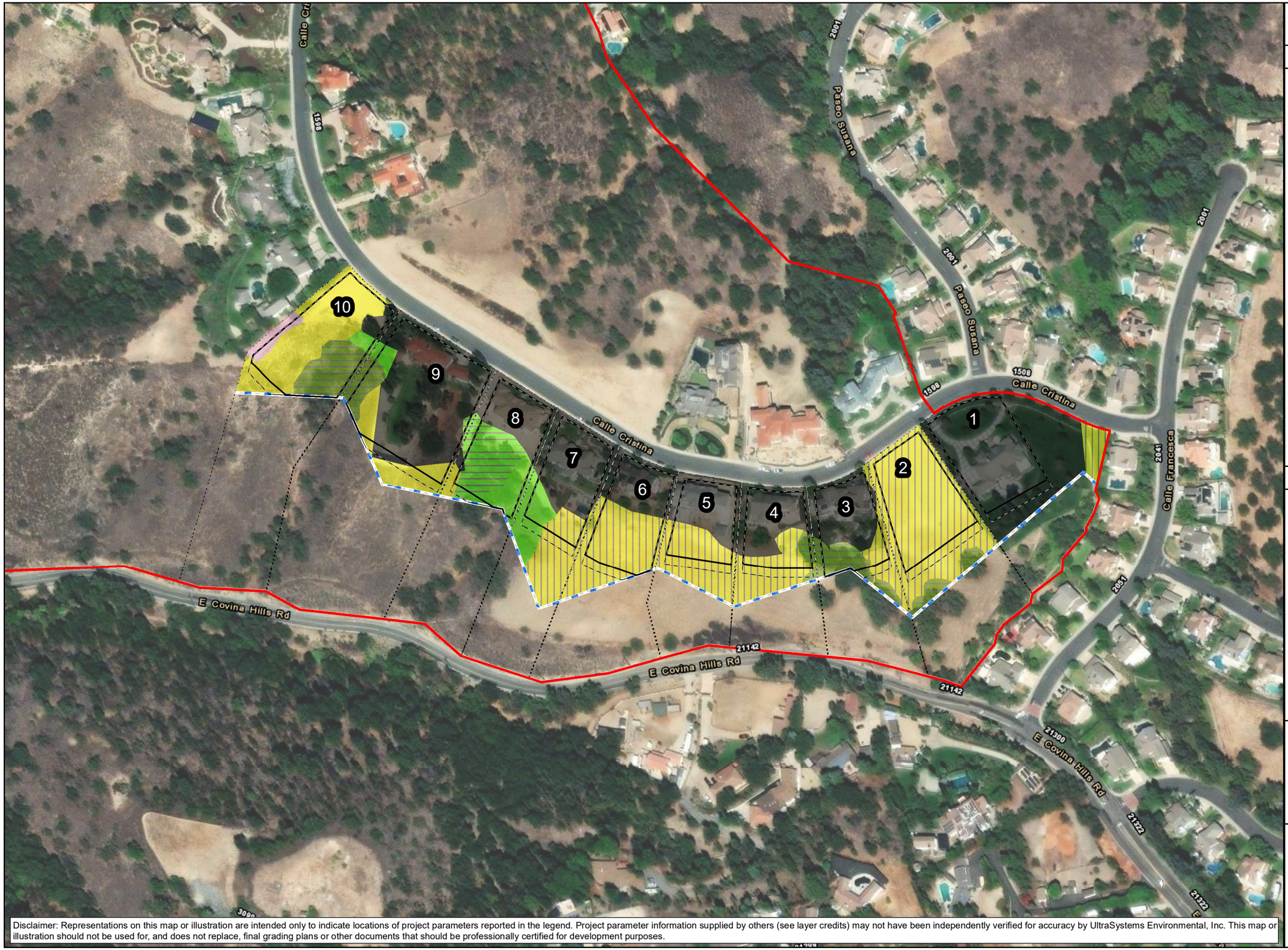
December 13, 2022



San Dimas
MCTA 20-0005

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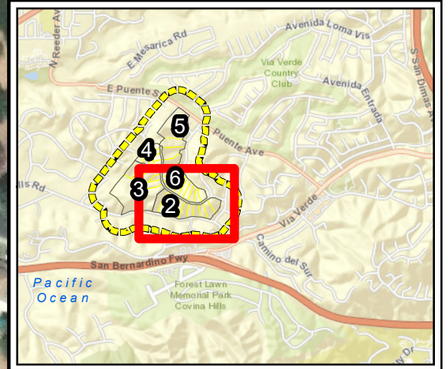

0 100 200 Feet

0 25 50 Meters

N

Scale: 1:2,400

Land Cover Impacts
Figure 10a
Page 2 of 6

UltraSystems
environmental • management • planning

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December 13, 2022

San Dimas
MCTA 20-0005

Legend

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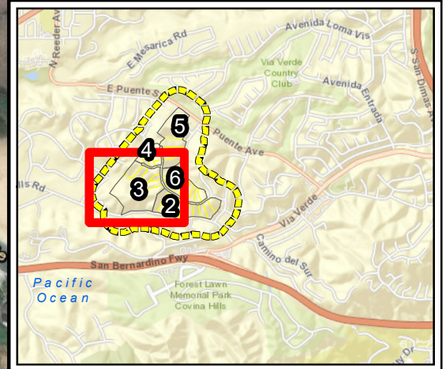

0 100 200 Feet

0 25 50 Meters

N

Scale: 1:2,400

Land Cover Impacts
Figure 10b
Page 3 of 6

UltraSystems
environmental • management • planning

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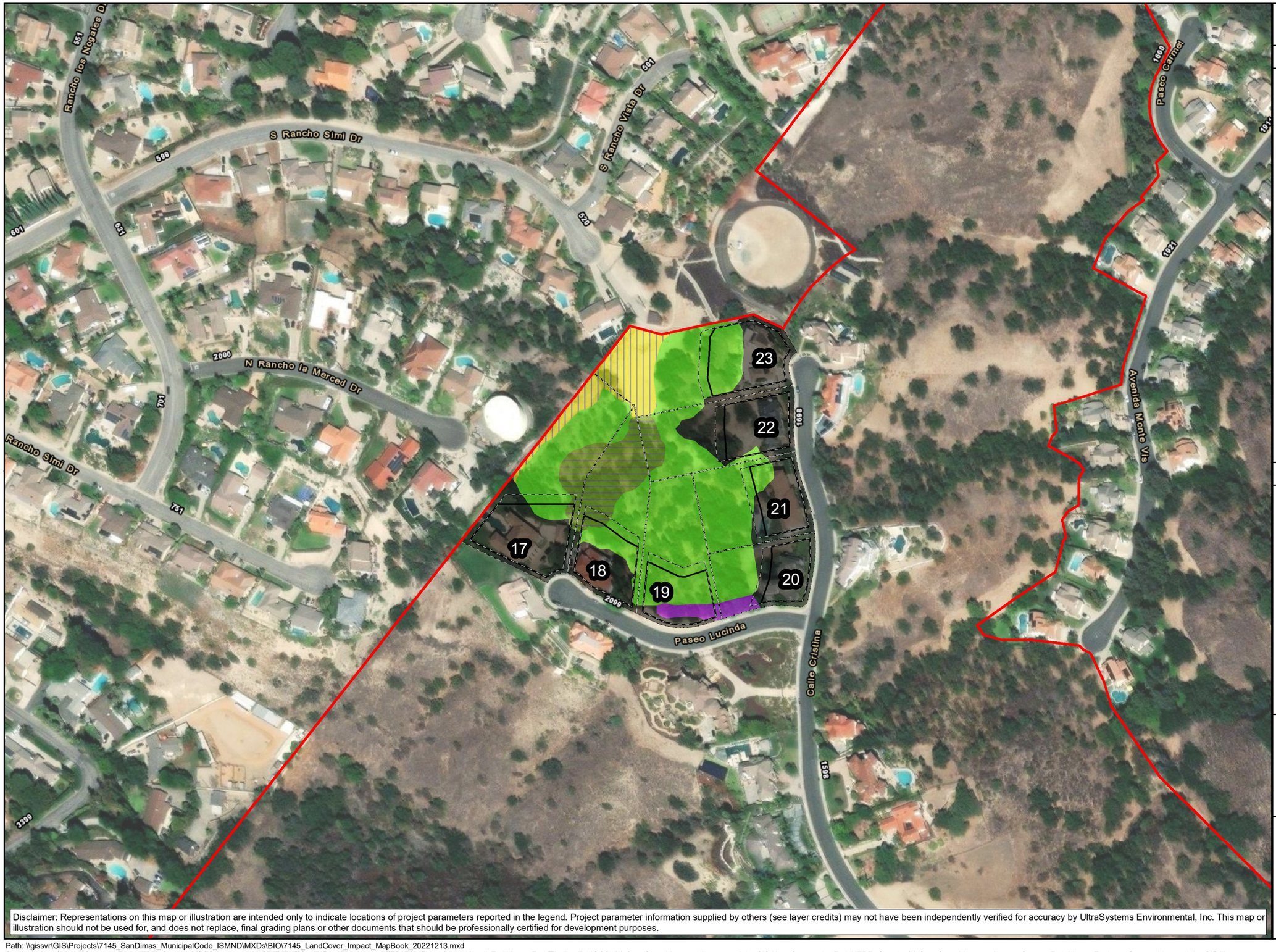
December 13, 2022



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San Dimas
MCTA 20-0005

Legend

- Project Boundary
- Project Parcels
- 35% Lot Coverage (existing allowance)
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Land Cover

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- Pepper tree groves
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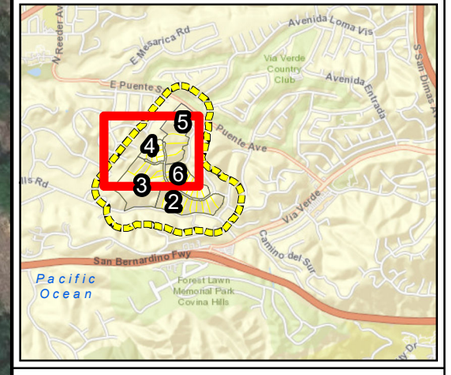
Key Map



0 100 200 Feet

0 25 50 Meters

N

Scale: 1:2,400

Land Cover Impacts
Figure 10c

UltraSystems
environmental • management • planning

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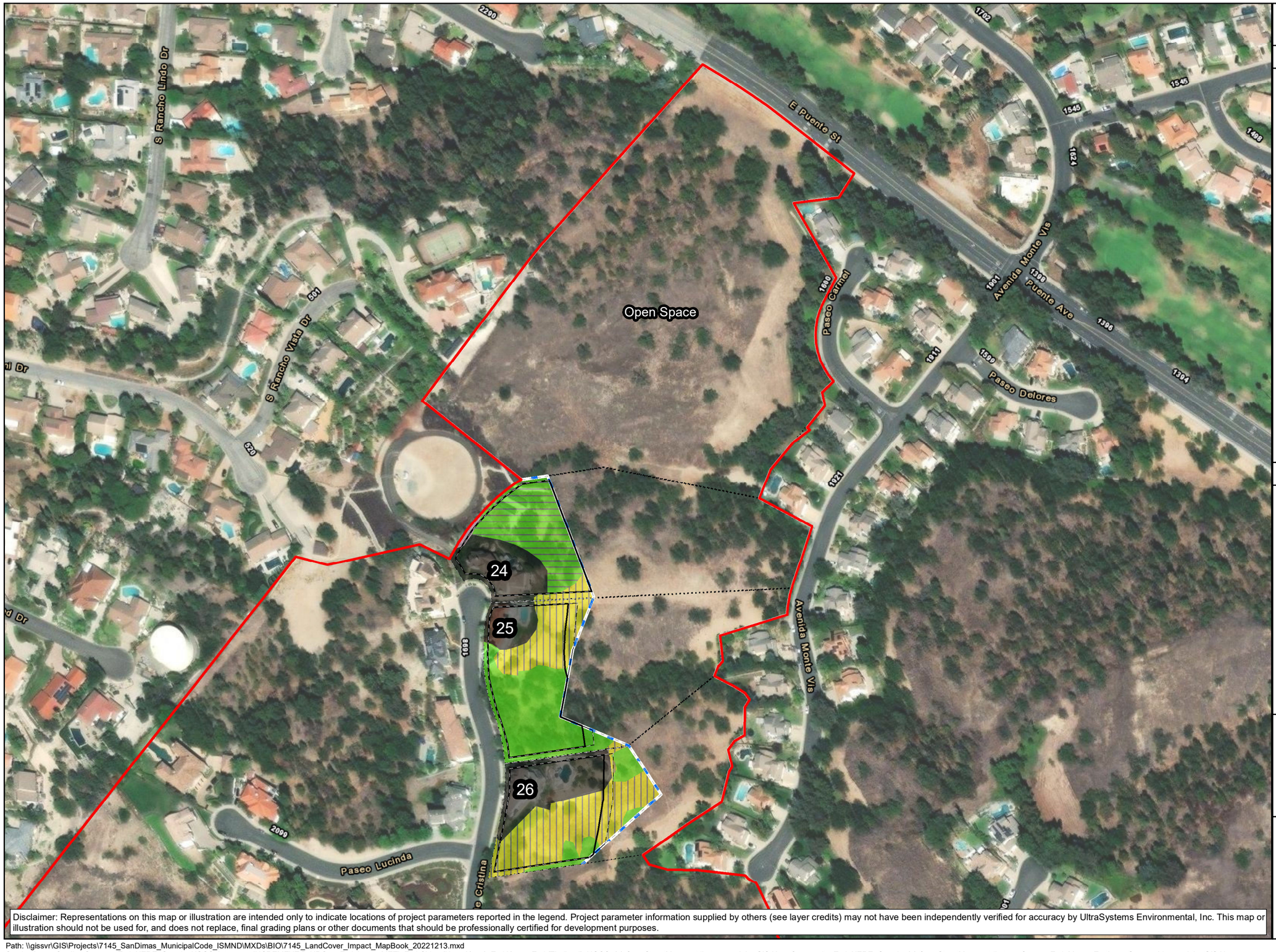

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San Dimas
MCTA 20-0005

Legend

- 7145_OpenSpaceParcel
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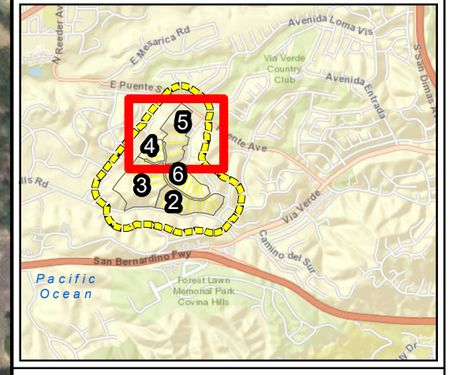
Key Map



0 100 200 Feet

0 25 50 Meters

N

Scale: 1:2,400

Land Cover Impacts
Figure 10d
Page 5 of 6

UltraSystems
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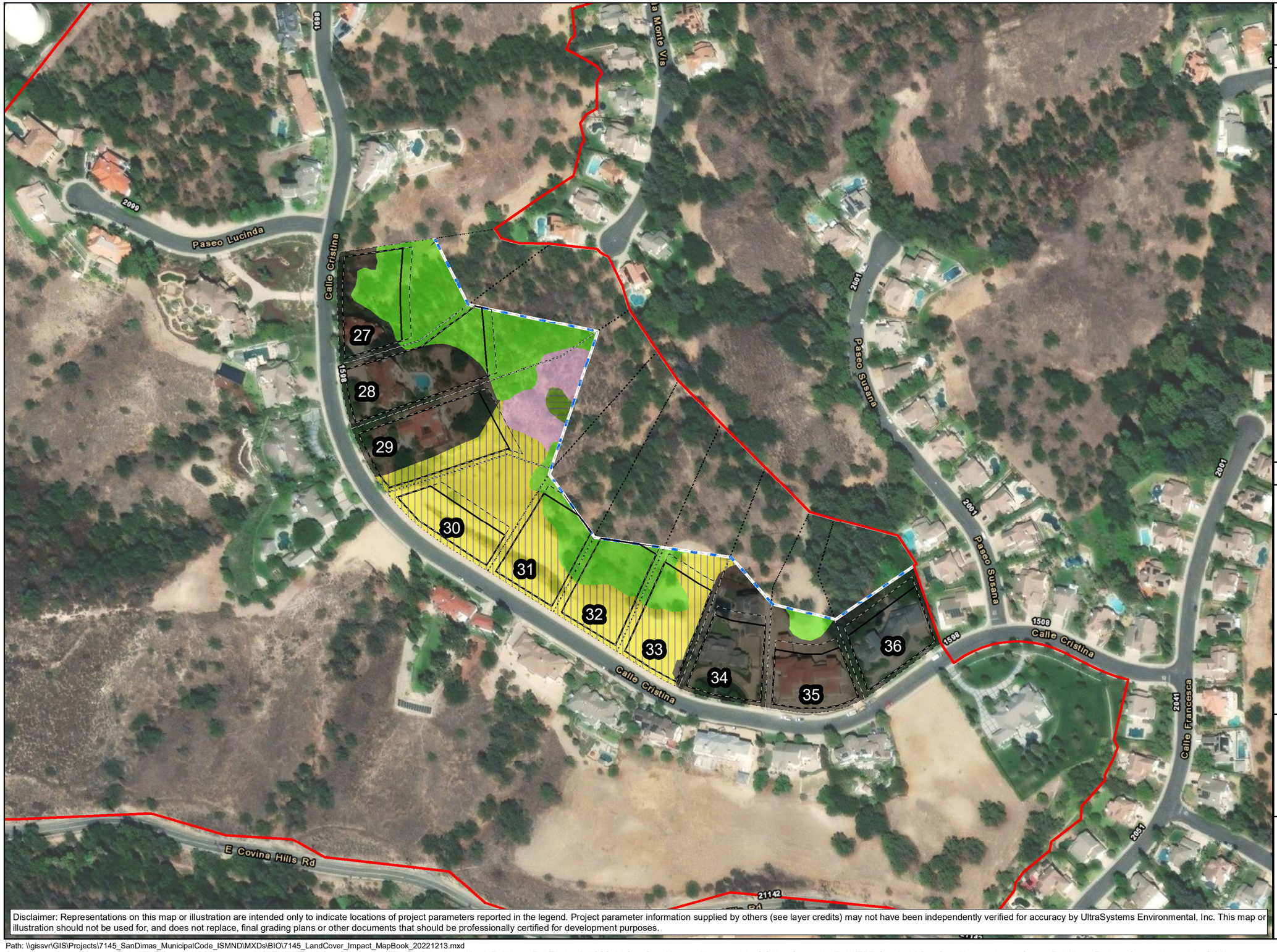
December 13, 2022



San Dimas
MCTA 20-0005

Legend

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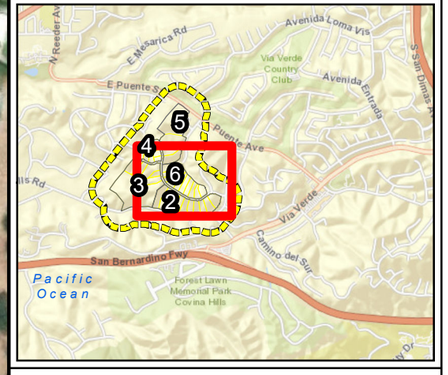
Key Map



0 100 200 Feet

0 25 50 Meters

N

Scale: 1:2,400

Land Cover Impacts
Figure 10e
Page 6 of 6

UltraSystems
environmental • management • planning

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December 13, 2022

San Dimas MCTA

Legend

Project Boundary

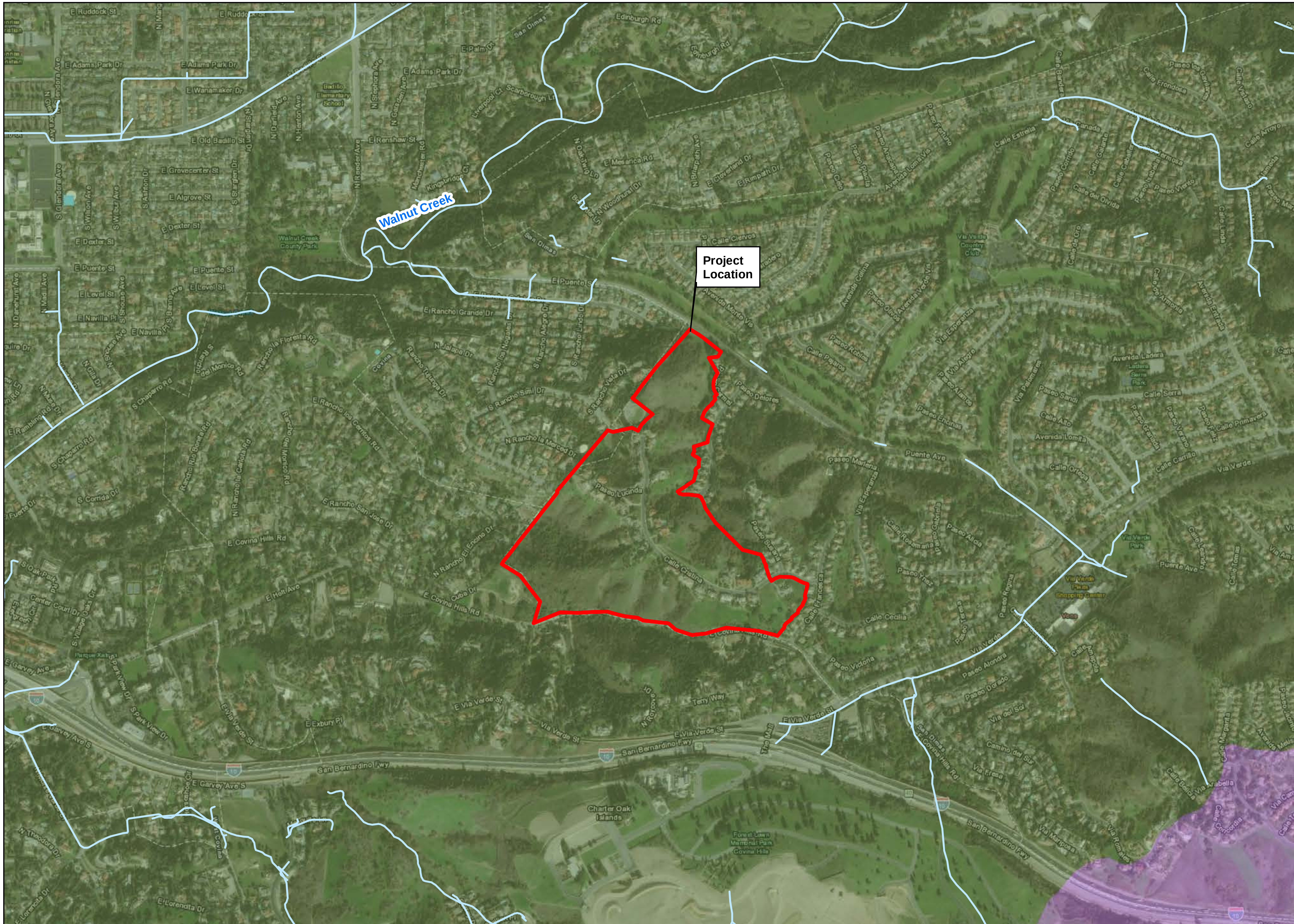
USGS Stream

HUC12, Name

180701060402, Big Dalton Wash

180701060501, Upper San Jose Creek

USGS Waterbody



Key Map

0 500 1,000 Feet

0 300 Meters

N

Scale: 1:12,000

USGS Surface Waters and Watersheds

Figure 11

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March 07, 2022

San Dimas
MCTA 20-0005

Drainages

- Culvert
- Catchbasin
- Ribbon Drain
- Drainage (assessed from
- Underground Culvert
- Open Channel

USFWS NWI Wetland Type

- Freshwater Forested/Shrub
- Freshwater Pond
- Riverine

Riparian Wetland Type

- Forested/Shrub Riparian

Legend

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- Upland mustards or star-thistle fields (mowed)

Key Map

0 175 350 Feet

0 50 100 Meters

N

Scale: 1:4,200

Bio Constarints Impacts Overview Map
Figure 12
Page 1 of 6

UltraSystems
environmental • management • planning

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December 13, 2022

San Dimas
MCTA 20-0005

Drainages
- Culvert
- Catchbasin
- Ribbon Drain
- Drainage (assessed from
- Underground Culvert
- Open Channel

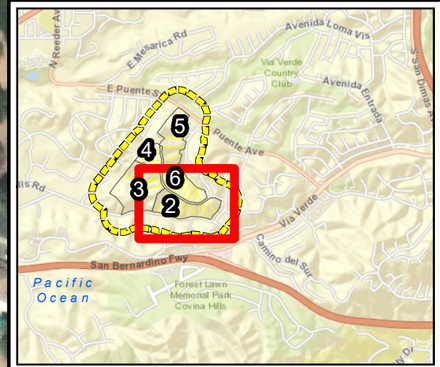
USFWS NWI Wetland
- Freshwater Forested/Shrub
- Freshwater Pond
- Riverine

Riparian Wetland Type
- Forested/Shrub Riparian

Legend
- Project Boundary
- Project Parcels
- 35% Lot Coverage (existing allowance)
- 20ft Grading Area Extension (MCTA, 1,000cuyd)
- Remaining Parcel (extension to CE Boundary)
- Conservation Easement

Land Cover
- California buckwheat scrub
- California walnut groves
- California walnut groves (disturbed)
- Coast live oak woodland and forest (disturbed)
- Developed/Ornamental
- Upland mustards or star-thistle fields
- Upland mustards or star-thistle fields (mowed)

Key Map



0 100 200 Feet

0 25 50 Meters

N

Scale: 1:2,400

Bio Constraints Impacts
Figure 12a
Page 2 of 6

UltraSystems
environmental • management • planning

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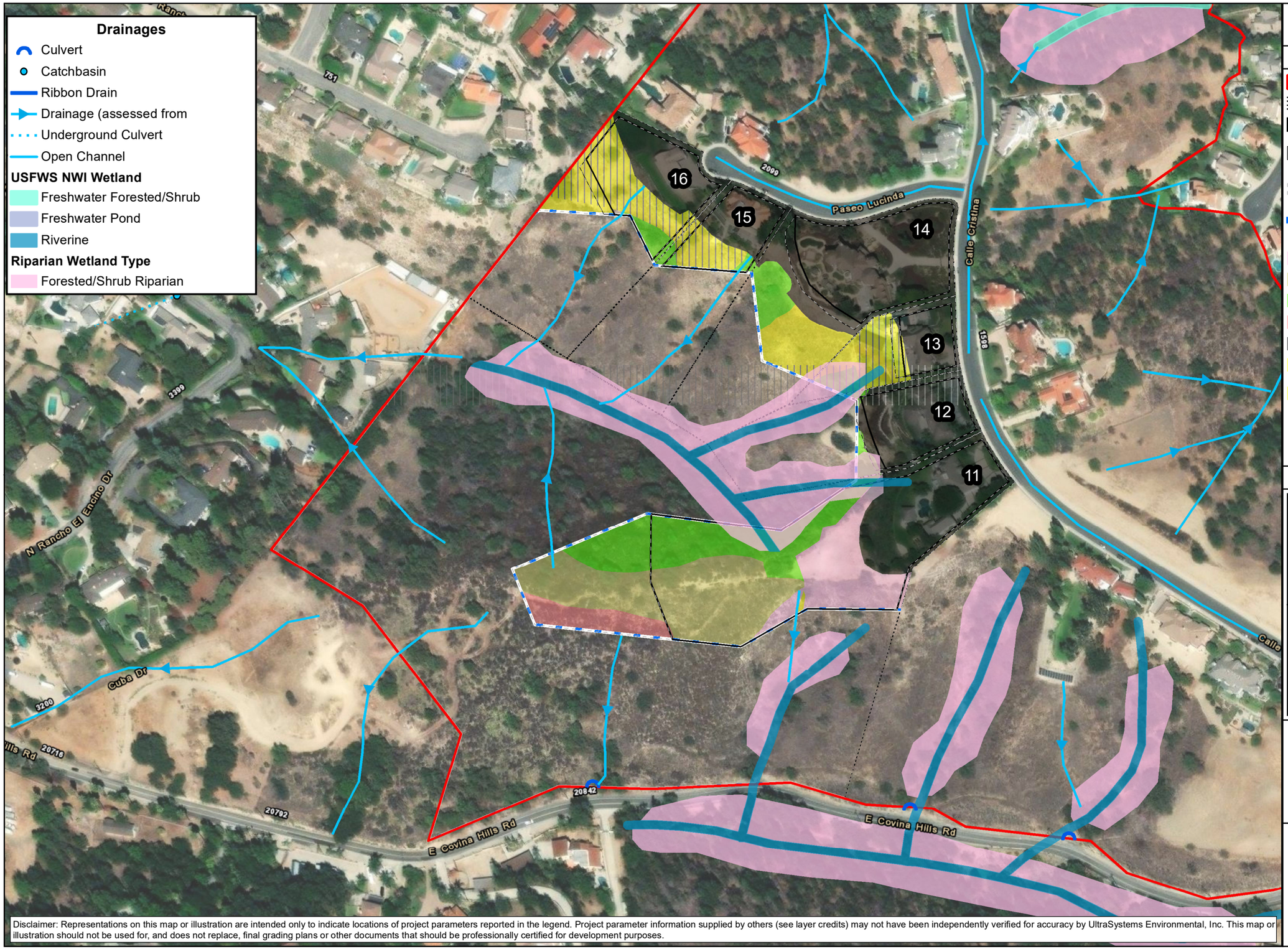
December 13, 2022



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San Dimas
MCTA 20-0005

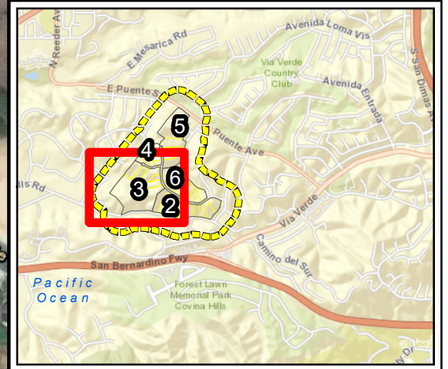
Legend

- Project Boundary
- Project Parcels
- 35% Lot Coverage (existing allowance)
- 20ft Grading Area Extension (MCTA, 1,000cuyd)
- Remaining Parcel (extension to CE Boundary)
- Conservation Easement

Land Cover

- California buckwheat scrub
- California sagebrush - black sage scrub
- California walnut groves
- Coast prickly pear scrub
- Developed/Ornamental
- Upland mustards or star-thistle fields
- Upland mustards or star-thistle fields (mowed)

Key Map



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Scale: 1:2,400

Bio Constraints Impacts
Figure 12b

UltraSystems
environmental • management • planning

Path: \\gissvr\GIS\Projects\7145_SanDimas_MunicipalCode_ISMND\MXDs\BIO\7145_BioConstr_Impact_MapBook_20221213.mxd
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December 13, 2022

San Dimas
MCTA 20-0005

Drainages
- Culvert
- Catchbasin
- Ribbon Drain
- Drainage (assessed from
- Underground Culvert
- Open Channel

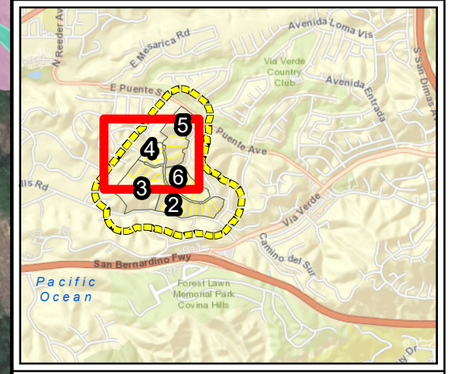
USFWS NWI Wetland
- Freshwater Forested/Shrub
- Freshwater Pond
- Riverine

Riparian Wetland Type
- Forested/Shrub Riparian

Legend
- Project Boundary
- Project Parcels
- 35% Lot Coverage (existing allowance)
- 20ft Grading Area Extension (MCTA, 1,000cuyd)
- Remaining Parcel (extension to CE Boundary)

Land Cover
- California buckwheat scrub
- California walnut groves
- Coast live oak woodland and forest (disturbed)
- Developed/Ornamental
- Pepper tree groves
- Upland mustards or star-thistle fields (mowed)

Key Map



0 100 200 Feet

0 25 50 Meters

N

Scale: 1:2,400

Bio Constraints Impacts
Figure 12c
Page 4 of 6

UltraSystems
environmental • management • planning

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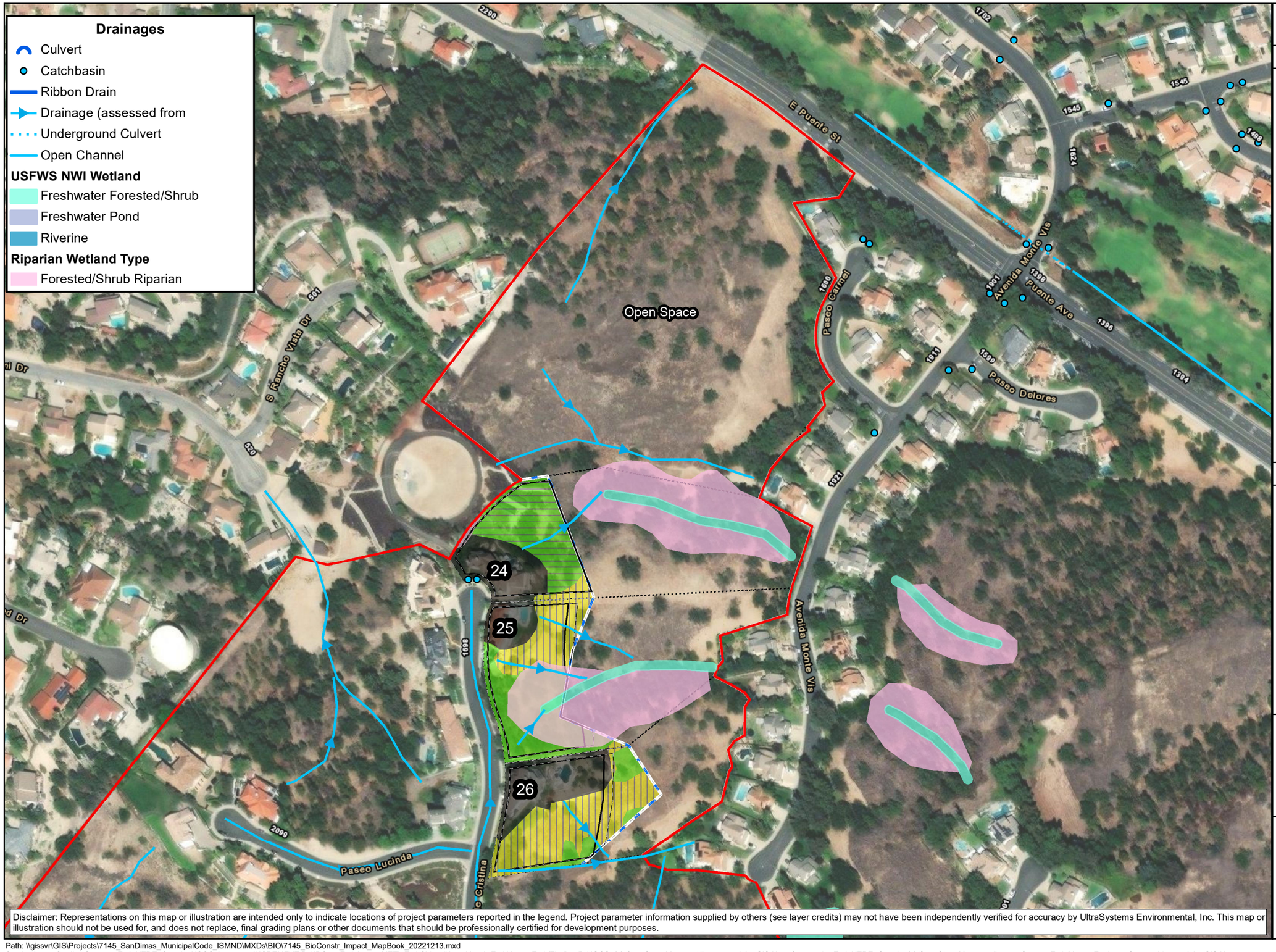
December 13, 2022



San Dimas
MCTA 20-0005

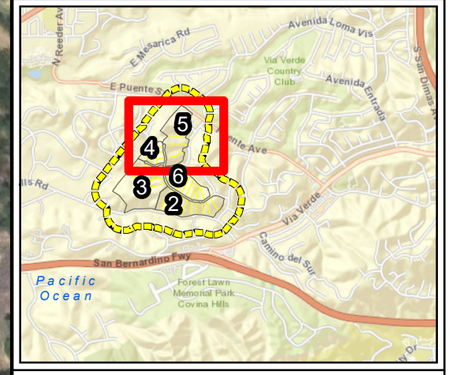
Legend

- 7145_OpenSpaceParcel
- Project Boundary
- Project Parcels
- 35% Lot Coverage (existing allowance)
- 20ft Grading Area Extension (MCTA, 1,000cuyd)
- Remaining Parcel (extension to CE Boundary)
- Conservation Easement

Land Cover

- California buckwheat scrub
- California walnut groves
- California walnut groves (disturbed)
- Developed/Ornamental
- Upland mustards or star-thistle fields (mowed)

Key Map



0 100 200 Feet

0 25 50 Meters

N

Scale: 1:2,400

Bio Constraints Impacts
Figure 12d
Page 5 of 6

UltraSystems
environmental•management•planning

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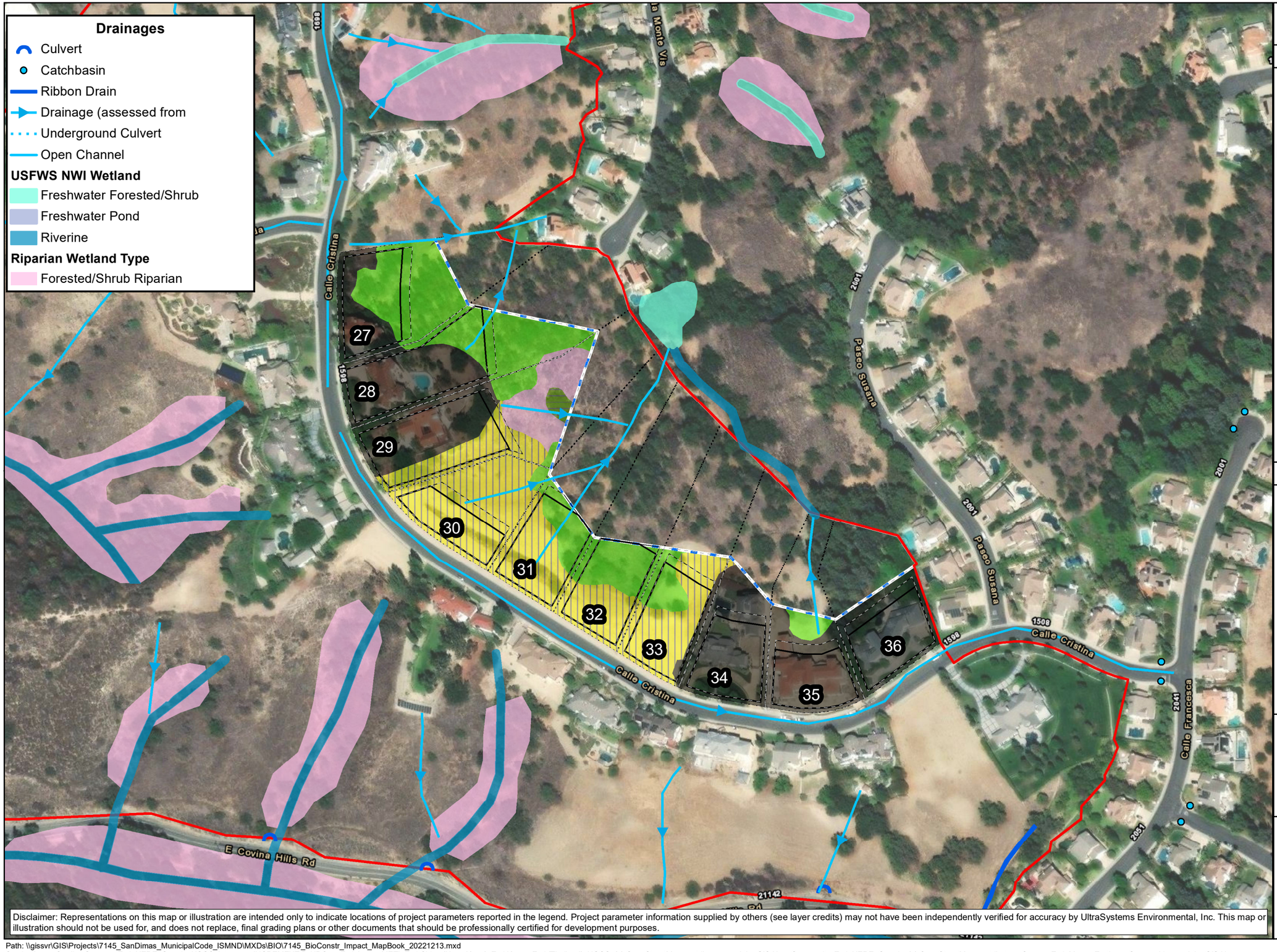

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San Dimas
MCTA 20-0005

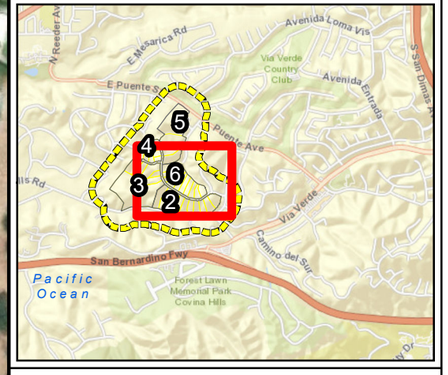
Legend

- Project Boundary
- Project Parcels
- 35% Lot Coverage (existing allowance)
- 20ft Grading Area Extension (MCTA, 1,000cuyd)
- Remaining Parcel (extension to CE Boundary)
- Conservation Easement

Land Cover

- California buckwheat scrub
- California walnut groves
- Coast live oak woodland and forest (disturbed)
- Developed/Ornamental
- Upland mustards or star-thistle fields (mowed)

Key Map



0 100 200 Feet

0 25 50 Meters

N

Scale: 1:2,400

Bio Constraints Impacts
Figure 12e
Page 6 of 6

UltraSystems
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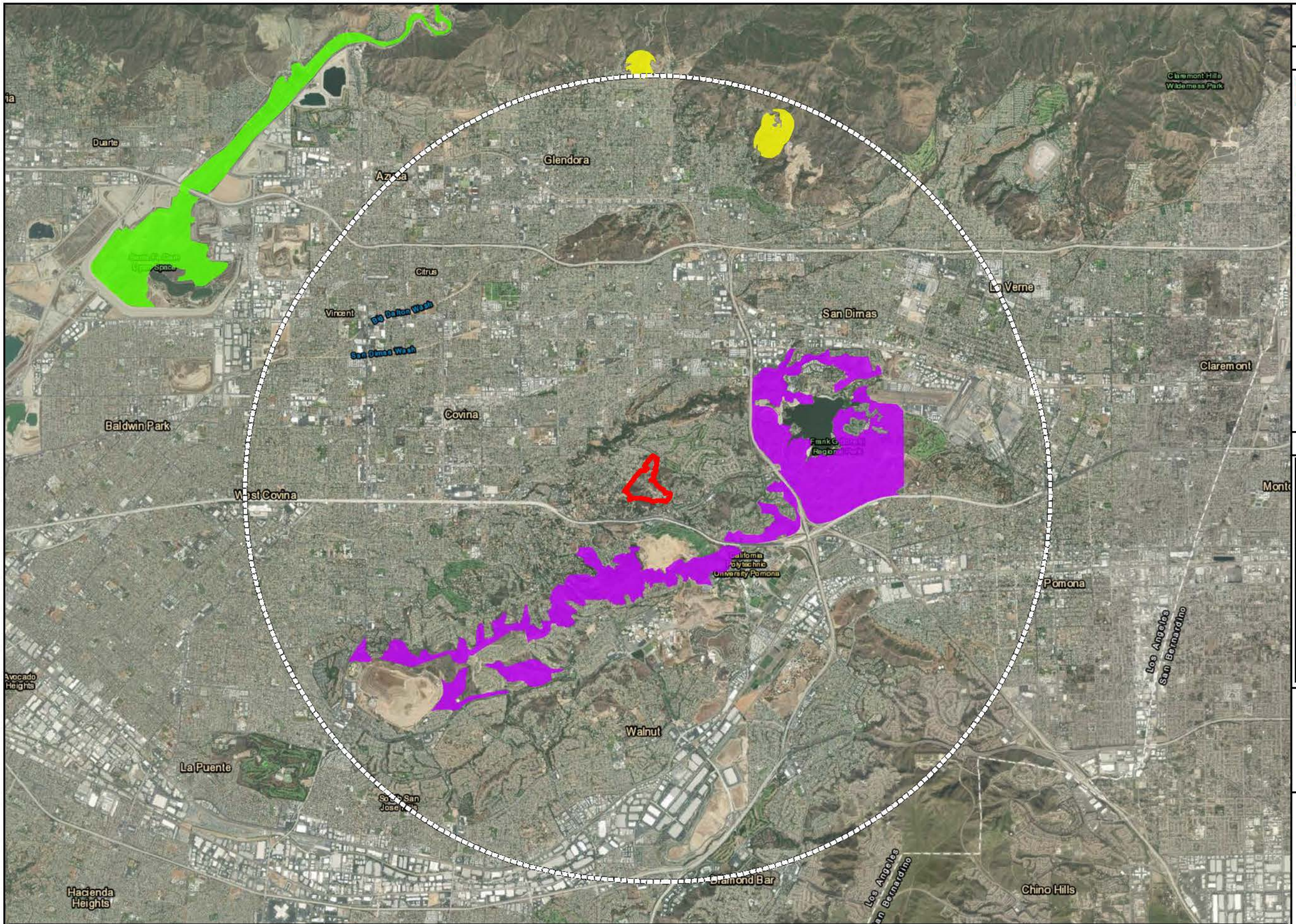
December 13, 2022



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San Dimas
MCTA

Legend

- Project Boundary
- 5-Mile Radius

USFWS Critical Habitat

- Coastal California gnatcatcher, *Polioptila californica californica*
- Southwestern willow flycatcher, *Empidonax traillii extimus*
- Thread-leaved brodiaea, *Brodiaea filifolia*

Key Map

0 0.625 1.25 Miles

N

Scale: 1:79,200

0 0.6 1.2 Kilometers

USFWS Critical Habitats

Figure 13

UltraSystems
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Path: \\gissvr\GIS\Projects\7145_SanDimas_MunicipalCode_ISMND\MXDs\BIO\7145_SanDimas_MCTA_4_4_CritHab_2022_09_29.mxd
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September 29, 2022

San Dimas MCTA

Legend

- Project Boundary
- 5-Mile Radius
- Natural Landscape Block
- Essential Connectivity Area
- Small Natural Areas
- Potential Riparian Connections

LINKAGE TYPE, NAME

- Choke-point, Puente Chino Hills
- Missing Link, San Gabriel River
- Linkage Network of the California Desert

Key Map

0 0.625 1.25 Miles

0 0.6 1.2 Kilometers

N

Scale: 1:79,200

CDFW Wildlife Corridors

Figure 14

UltraSystems
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March 02, 2022

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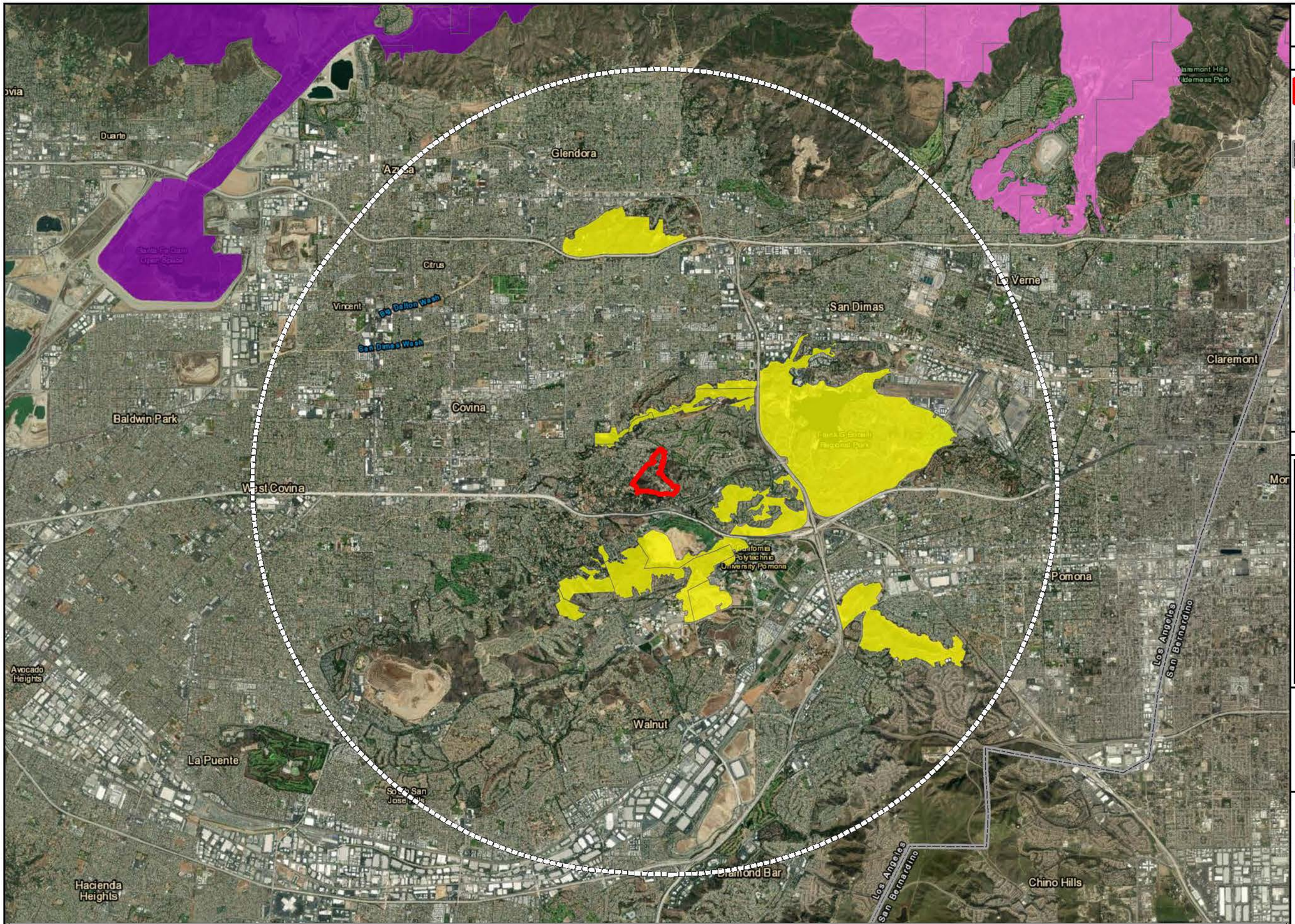

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San Dimas
MCTA

Legend

- Project Boundary
- 5-Mile Radius
- County Boundary

Significant Ecological Areas

- East San Gabriel Valley
- San Dimas Canyon/San Antonio Wash
- San Gabriel Canyon

Key Map

0 0.625 1.25 Miles

0 0.6 1.2 Kilometers

N

Scale: 1:79,200

Significant Ecological Areas (SEAs)

Figure 15

UltraSystems
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Path: \\gissvr\GIS\Projects\7145_SanDimas_MunicipalCode_ISMND\MXDs\BIO\7145_SanDimas_MCTA_4_4_SEA_2022_09_29.mxd
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September 29, 2022

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San Dimas
MCTA 20-0005

Legend

- Project Boundary
- Project Parcels
- Conservation Easement

Key Map

0 175 350 Feet

0 50 100 Meters

N

Scale: 1:4,200

Residential Lots and Associated Assessors Parcel Numbers (APNs)

Figure 16

UltraSystems
environmental • management • planning

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December 14, 2022

APPENDIX B

SPECIAL-STATUS SPECIES POTENTIAL OCCURRENCE DETERMINATION

Scientific Name (=Synonym)	Common Name (=Synonym)	Status	General Habitat Description in California	Plant Elevation Range (feet amsl)	BSA Contains Potential Suitable Habitat	BSA is Located Within the Plant Species' Known:		Potential For Occurrence in the BSA
						Elevation Range	General Distribution	
Listed Endangered, Threatened, Candidate and State Rare Plants: Plants with official status under the federal Endangered Species Act (ESA), the California Endangered Species Act (CESA), and/or the Native Plant Protection Act (NPPA). A species may have other sensitive designations in addition to their federal or state listing.								
Berberis nevinii (=Mahonia nevinii)	Nevin's barberry	FE, SE, CRPR: 1B.1	Lifeform: perennial evergreen shrub Habitats: two habitat types- alluvial scrub community, chaparral community Soils: alluvial scrub community it grows on sandy and gravelly substrates along the margins of dry washes, chaparral community, it grows on steep, north-facing slopes with coarse soils and rocky slopes Bloom Period: February to June	229 – 2,706	Yes	Yes	Yes	**Moderate potential to occur**. There are some sandy-loam soils in the BSA, which could potentially create suitable consitions to support this species. In addition, the BSA contains steep slopes and contains chaparral habitat.
Phacelia stellaris	Brand's star phacelia (=Brand's phacelia)	FC, CRPR: 1B.1	Lifeform: annual herb Habitats: open areas in coastal dunes and coastal scrub Soils: sandy openings, sandy benches, dunes, sandy washes, or flood plains of rivers Bloom Period: March to June	3 – 1,312	No	Yes	Yes	**No potential to occur**. The soils of the project site and the BSA are not sandy. The BSA does not occur In a sandy wash or dune.
Brodiaea filifolia	thread-leaved brodiaea (=threadleaf clusterlily)	FT, SE, CRPR: 1B.1	Lifeform: perennial bulbiferous herb Habitats: gentle hillsides, valleys, and floodplains in semi-alkaline mudflats, vernal pools, mesic southern needlegrass grasslands, mixed native-nonnative grasslands and alkali grasslands plant communities Soils: clay to fine sand Bloom Period: March to June	82 – 3,674	Yes	Yes	Yes	**Moderate potential to occur.** The soils of the project site are fine and contain some clay. USFWS-Critical Habitat for this species is located approximately 4.5 miles from the project site.
Sensitive Plants: These plants have no official status under the ESA, the CESA, and/or the NPPA; however they are designated as sensitive or locally important by federal agencies, state agencies, and/or local conservation agencies and organizations.								
Thelypteris puberula var. sonorensis	Sonoran maiden fern	CRPR: 2B.2	Lifeform: perennial rhizomatous herb Habitats: meadows and seeps along streams and seepage areas Bloom Period: January to September	164 – 2,001	Yes	Yes	Yes	**Low potential to occur.** The BSA support marginally suitable habitat (seeps and other wet areas) required by this species. Drainages in the BSA are ephemeral.
Pseudognaphalium leucocephalum (=Gnaphalium leucocephalum)	white rabbit-tobacco	CRPR: 2B.2	Lifeform: perennial herb Habitats: chaparral, cismontane woodlands, coastal scrub and riparian woodlands; sandy or gravelly benches, dry stream bottoms, canyon bottoms Soils: sandy and gravelly sites Bloom Period: (July) August to November (December)	0 – 6,888	Yes	Yes	Yes	**Moderate potential to occur.** . The soils of the BSA are somewhat sandy although also contain significant clay and loam components, and the sloping topography of the project site could cause presence of enough water to support this species, especially at the points of lowest elevation and in the drainages. In addition, the BSA contails coastal scrub and cismontane woodlands which create suitable habitat to support this species.
Senecio aphanactis	chaparral ragwort (=rayless ragwort)	CRPR: 2B.2	Lifeform: annual herb Habitats: rocky limestone slopes and washes in pinyon and juniper woodlands (carbonate) Bloom Period: January to April (May)	49 – 2,624	No	Yes	Yes	**No potential to occur.** The BSA does not contain pinyon-juniper woodlands; a natural community in which this species is typically associated or carbonate soils.

Symphyotrichum greatae (=Aster greatae)	Greata's aster	CRPR: 1B.3	Lifeform: perennial rhizomatous herb Habitats: mesic canyons of broad leafed upland forests, chaparral, cismontane woodlands, lower montane coniferous forests, and riparian woodlands Bloom Period: June to October	984 – 6,593	Yes	Yes	Yes	**Low potential to occur.** The BSA supports suitable habitat (riparian woodlands) required for this species. The majority of the documented observations of this species within the vicinity of the BSA occur in the Angeles National Forest.
Lepidium virginicum var. robinsonii	Robinson's pepper-grass	CRPR: 4.3	Lifeform: annual herb Habitats: chaparral and coastal sage scrub often around rock outcrops Soils: dry soils Bloom Period: January to July	3 – 2,903	Yes	Yes	Yes	**Moderate potential to occur.** The BSA provides some areas of suitable coastal sage scrub and chaparral habitat, particularly at Areas 4 & 5, to support this species.
Thysanocarpus rigidus	rigid fringepod	CRPR: 1B.2	Lifeform: annual herb Habitats: pinyon and juniper woodlands on dry rocky slopes and ridges of oak and pine woodlands in arid mountain ranges Bloom Period: February to May	1,968 – 7,216	No	No	Yes	**No potential to occur.** The BSA is below the known elevation range of this species.
Atriplex coulteri	Coulter's saltbush	CRPR: 1B.2	Lifeform: perennial herb Habitats: coastal bluff scrub; on coastal dunes; and on ridge tops Soils: clay soils and alkaline low places Bloom Period: March to October	10 – 1,508	Yes	Yes	Yes	**Moderate potential to occur**. The project area does not contain coastal dunes, which are habitat types in which this species is typically found, However, the project area consists primarily of Zaca-Apollo soils, which have a significant amount of clay (Zaca). Soils of the project site are consistent with those preferred by this species.
Calystegia felix	lucky morning-glory	CRPR: 3.1	Lifeform: annual rhizomatous herb Habitats: meadows and seeps (sometimes alkaline) and alluvial riparian scrub Soils: silty loam and alkaline soils Wetlands, Drainages, or Seeps: Yes Bloom Period: March to September	98 - 705	No	Yes	Yes	**No potential to occur**. The BSA does not support suitable habitat (wetlands and seeps) required for this species. Drainages in the BSA are ephemeral.
Cuscuta obtusiflora var. glandulosa	Peruvian dodder	CRPR: 2B.2	Lifeform: annual parasitic vine Habitats: freshwater marshes and swamps Bloom Period: July to October	49 - 918	No	Yes	Yes	**No potential to occur.** The BSA does not contain marshes or swamps that would be necessary to support this species.
Dudleya cymosa ssp. crebrifolia	San Gabriel River dudleya	CRPR: 1B.2	Lifeform: perennial herb Habitats: steep cliff faces Soils: granitic soils within chaparral Bloom Period: April to July	902 – 1,499	No	Yes	Yes	**No potential to occur**. The BSA does not support suitable habitat (cliff faces, chaparral) required for this species.
Dudleya multicaulis	many-stemmed dudleya	CRPR: 1B.2	Lifeform: perennial herb Habitats: barrens, rocky places, and ridgelines as well as thinly vegetated openings in chaparral, valley and foothill grasslands, and coastal sage scrub Soils: clay soils, heavy soils, often clay Bloom Period: April to July	49 – 2,591	Yes	Yes	Yes	**Moderate potential to occur**. The BSA contains suitable clay soils to support this species, particularly in Area 5 of the plannng area. The BSA contains some vegetated openings in chaparral, therefore providing suitable habitat for this species.
Sidalcea neomexicana	salt spring checkerbloom (=mountain sidalcea)	CRPR: 2B.2	Lifeform: perennial herb Habitats: alkaline, mesic sites in chaparral, coastal scrub, lower montane coniferous forests, Mojavean desert scrub, alkali playas, and brackish marshes. Usually in wetlands. Bloom Period: March to June	49 – 5,018	No	Yes	Yes	**No potential to occur**. The BSA does not support suitable habitat (alkali playas, brackish marshes, wetlands) required for this species.
Chorizanthe parryi var. parryi	Parry's spineflower	CRPR: 1B.1	Lifeform: annual herb Habitats: coastal scrub, chaparral, cismontane woodlands, and valley and foothill grasslands Soils: sandy or rocky soils Bloom Period: April to June	902 – 4,002	Yes	Yes	Yes	**Low potential to occur**. The BSA contains chaparral, coastal scrub, and cismontane woodlands, both of which are suitable habitat types for this species. However, the soils of the project site and the BSA are fine-loamy and clay soils; the BSA does not contain the sandy, rocky soils necessary to support this species and therefore this species was determined to have a low potential to occur.

Horkelia cuneata var. puberula (=Horkelia cuneata ssp. puperula)	mesa horkelia	CRPR: 1B.1	Lifeform: perennial herb Habitats: maritime chaparral, coastal scrub, and cismontane woodlands Soils: sandy or gravelly sites Bloom Period: February to September	230 – 2,657	Yes	Yes	Yes	**Moderate potential to occur**. There is some suitable cismontane woodland, coastal scrub, and chaparral habitat in the BSA. The soils over most of the BSA contan sand components that could create suitable conditions for this species.
Galium grande	San Gabriel bedstraw	CRPR: 1B.2	Lifeform: perennial deciduous shrub Habitats: broad leafed upland forests, chaparral, cismontane woodlands, and lower montane coniferous forests Bloom Period: January to July	1,394 – 4,920	No	No	Yes	**No potential to occur.** The BSA is at a lowere elevation than the known elevation range for this species..
Cladium californicum	California sawgrass	CRPR: 2B.2	Lifeform: perennial rhizomatous herb Habitats: meadows and seeps and alkaline or freshwater marshes and swamps Wetlands, Drainages, or Seeps: Yes Bloom Period: June to September	197 – 2,837	No	Yes	Yes	**No potential to occur**. The BSA does not support suitable habitat (meadows and seeps, marshes, or swamps) required for this species..
Calochortus clavatus var. gracilis	slender mariposa lily	CRPR: 1B.2	Lifeform: perennial bulbiferous herb Habitats: shaded foothill canyons often on grassy slopes within other habitat, chaparral and coastal scrub Bloom Period: March to June (November)	1,050 – 3,280	Yes	Yes	Yes	**Moderate potential to occur.** The project area contains some grassy slopes and shaded areas.
Calochortus plummerae	Plummer's mariposa lily	CRPR: 4.2	Lifeform: perennial bulbiferous herb Habitats: chaparral, cismontane woodlands, coastal scrub, valley and foothill grasslands, and lower montane coniferous forests Soils: dry, rocky slopes and soils Bloom Period: May to July	328 – 5,576	Yes	Yes	Yes	**Moderate potential to occur.** The project site contains some foothill grasslands that create low-quality suitable habitat for this species. The majority of the soils in the BSA are well-drained dry soils.
Calochortus weedii var. intermedius	intermediate mariposa lily (=Weeds mariposa lily)	CRPR: 1B.2	Lifeform: perennial bulbiferous herb Habitats: dry, rocky open slopes and rock outcrops in coastal scrub and chaparral Bloom Period: May to July	344 – 2,804	Yes	Yes	Yes	**Moderate potential to occur.** There are recent observations of this species within a 2-mile radius of the project site. The BSA contains slopes and chaparral habitat that would create suitable conditions to support this species.
Imperata brevifolia	California satintail	CRPR: 2B.1	Lifeform: perennial rhizomatous herb Habitats: mesic sites within chaparral, coastal scrub, Mojavean desert scrub, meadows and seeps (often alkali), and riparian scrub Wetlands, Drainages, or Seeps: Yes Bloom Period: September to May	0 – 3,985	Yes	Yes	Yes	**Moderate potential to occur.** The BSA contains some areas of suitable habitat to support this species including chaparral and coastal scrub.

Legend and Notes

Federal Endangered Species Act (ESA) Listing Codes: the ESA is administered by the USFWS and NMFS. The USFWS has primary responsibility for terrestrial and freshwater organisms, while the responsibilities of NMFS are mainly marine wildlife such as whales and anadromous fish such as salmon. For the purposes of the ESA, Congress defined species to include subspecies, varieties, and, for vertebrates, distinct population segments. The official federal listing of Endangered and Threatened plants is published in 50 CFR § 17.12.

- **FE** = federally listed as endangered: any species of plant or animal that is in danger of extinction throughout all or a significant portion of their range.

- **FC** = federal candidate for listing: candidate species are plants and animals for which the USFWS has sufficient information on their biological status and threats to propose them for listing as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by higher priority listing actions to address species in greater need. A proposed regulation has not yet been published in the Federal Register for these species.

California Endangered Species Act (CESA) and California Native Plant Protection Act (NPPA) Listing Codes: *tth* e CESA and NPPA are administered by CDFW. The official listing of Plants of California Declared to Be Endangered, Threatened or Rare is contained in the California Code of Regulations, Title 14, § 670.2. Species, subspecies and varieties of California native plants are declared to be endangered, threatened as defined by § 2062 and § 2067 of the Fish and Game Code or rare as defined by § 1901 of the Fish and Game Code.

- **SE = state-listed as endangered**: "endangered species" means a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease (Fish and Game Code § 2062).

California Rare Plant Ranks (Formerly known as CNPS Lists): the CNPS is a statewide, nonprofit organization that maintains, with CDFW, an Inventory of Rare and Endangered Plants of California. In the spring of 2011, CNPS and CDFW officially changed the name "CNPS List" or "CNPS Ranks" to "California Rare Plant Rank" (or CPRP). This was done to reduce confusion over the fact that CNPS and CDFW jointly manage the Rare Plant Status Review Groups and the rank assignments are the product of a collaborative effort and not solely a CNPS assignment.

- **CRPR: 1A** = California Rare Plant Rank 1A - plants presumed extirpated in California and either rare or extinct elsewhere: the plants with a CRPA of 1A are presumed extirpated because they have not been seen or collected in the wild in California for many years. This rank includes plants that are both presumed extinct as well as those plants which are presumed extirpated in California. All of the plants constituting CRPR 1A meet the definitions of § 2062 and § 2067 (CESA) of the Fish and Game Code, and are eligible for state listing. Should these taxa be rediscovered, it is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.
- **CRPR 1B** = California Rare Plant Rank 1B - plants rare, threatened, or endangered in California and elsewhere: plants with a CRPR of 1B are rare throughout their range with the majority of them endemic to California. Most of the plants that are ranked 1B have declined significantly over the last century. All of the plants constituting CRPR 1B meet the definitions of § 2062 and § 2067 (CESA) of the Fish and Game Code, and are eligible for state listing. It is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.
- **CRPR 2A** = California Rare Plant Rank 2A - plants presumed extirpated in California, but more common elsewhere: the plant taxa of CRPR 2A are presumed extirpated because they have not been observed or documented in California for many years. This list includes only those plant taxa that are presumed extirpated in California, but more common elsewhere in their range. All of the plants on List 2A meet the definitions of § 2062 and § 2067 (CESA) of the Fish and Game Code, and are eligible for state listing. Should these taxa be rediscovered, it is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.
- **CRPR 2B** = California Rare Plant Rank 2B - plants rare, threatened, or endangered in California, but more common elsewhere: except for being common beyond the boundaries of California, plants with a CRPR of 2B would have been ranked 1B. From the federal perspective, plants common in other states or countries are not eligible for consideration under the provisions of the ESA. All of the plants constituting CRPR 2B meet the definitions of § 2062 and § 2067 (CESA) of the Fish and Game Code, and are eligible for state listing. It is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.
- **CRPR 3** = California Rare Plant Rank 3 - plants about which more information is needed - a review list: the plants that comprise CRPR 3 are united by one common theme – CNPS and CDFW lack the necessary information to assign them to one of the other ranks or to reject them. Nearly all of the plants constituting CRPR 3 are taxonomically problematic. Some of the plants constituting CRPR 3 meet the definitions of § 2062 and § 2067 (CESA) of the Fish and Game Code, and are eligible for state listing. CNPS strongly recommends that CRPR 3 plants be evaluated for consideration during preparation of environmental documents relating to CEQA.
- **CRPR 4** = California Rare Plant Rank 4 - plants of limited distribution - a watch list: the plants in this category are of limited distribution or infrequent throughout a broader area in California. While CNPS and CDFW cannot call these plants "rare" from a statewide perspective, they are uncommon enough that their status should be monitored regularly. Should the degree of endangerment or rarity of a CRPR 4 plant change, CNPS and CDFW will transfer it to a more appropriate rank. Some of the plants constituting CRPR 4 meet the definitions of § 2062 and § 2067 (CESA) of the Fish and Game Code, and few, if any, are eligible for state listing. Nevertheless, many of them are significant locally, and CNPS strongly recommends that CRPR 4 plants be evaluated for consideration during preparation of environmental documents relating to CEQA.
- **Considered But Rejected** = plants that have been considered for inclusion into the CNPS Inventory, but were not included for various reasons.

California Native Plant Society (CNPS) Threat Ranks: The CNPS Threat Rank is an extension added onto the California Rare Plant Rank (CRPR) (as a decimal code) and designates the level of threats by a 1 to 3 ranking with 1 being the most threatened and 3 being the least threatened. A Threat Rank is present for all CRPR 1B's, 2B's, 4's, and the majority of CRPR 3's. CRPR 4 plants are seldom assigned a Threat Rank of .1, as they generally have large enough populations to not have significant threats to their continued existence in California; however, certain conditions exist to make the plant a species of concern and hence be assigned a CRPR. In addition, all CRPR 1A and 2A (presumed extirpated in California), and some CRPR 3 (need more information) plants, which lack threat information, do not have a Threat Rank extension.

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

Notes:

The BSA contains approximate elevations ranging from 680 to 960 feet above mean sea level.

Yes = the BSA is located within the plant species' known distribution, elevation range, and/or the BSA contains suitable habitats and/or soils to support the plant species. The plant species has a potential to occur within the BSA. Further evaluation is needed.
No = the BSA is located outside the plant species' known distribution, elevation range, and/or the BSA lacks suitable habitats and/or soils to support the plant species. It is highly unlikely for the plant species to have a potential to occur within the BSA. No further evaluation is needed.
Present = observed within the BSA during surveys.
A CNPS elevation range is provided for each taxon in feet. The stated range is for the California portion of a plant's range only (if the taxon also occurs outside the state). These CNPS elevation range data are accumulated from literature, herbarium specimens, and field survey information.

Resources

- *The Jepson Desert Manual (Baldwin et al., 2002);*
- *The Jepson Manual: Vascular Plants of California, second edition (Baldwin et al., 2012);*
- *BLM Special Status Plants under the jurisdiction of the California State Office as of October 30, 2013 (BLM, 2013);*
- *The Final Environmental Impact Report and Statement (Final EIR/S) for the West Mojave Plan (BLM, 2005);*

Scientific Name (=Synonym)	**Common Name (=Synonym)**	**Status**	**General Habitat Descriptions in California**	**The BSA:**		**Potential For Occurrence in the BSA**
				Located Within Species' Distribution and/or Elevation Range (if known)	**Contains Suitable Foraging, Roosting, and/or Breeding Habitats**	
Listed Endangered, Threatened, and Candidate Wildlife: Wildlife with official status under the federal Endangered Species Act (ESA) and/or the California Endangered Species Act (CESA). A species may have other sensitive designations in addition to their federal or state listing.						
Listed Invertebrates						
Danaus plexippus pop. 1	monarch butterfly	FC: California overwintering population	Habitats: wind-protected tree groves (eucalyptus [*Eucalyptus* sp.], Monterey pine [*Pinus radiata*], cypress), with nectar and water sources nearby	Yes	Yes	**Present.** This species was observed in the BSA during field surveys.
Listed Fish						
Catostomus santaanae	Santa Ana sucker	FT[2], SSC	Habitats: small, shallow streams, less than 25 feet in width, with currents ranging from swift in the canyons to sluggish in the bottom lands, permanent streams in water ranging in depth from a few centimeters to a meter or more Soils: gravel, rubble, and boulders with growths of filamentous algae, sand/mud substrates Characteristics: most abundant where the water is cool, clean, and clear	Yes	No	**No potential to occur.** The BSA does not contain suitable aquatic habitats to support fish species.
Listed Amphibians						
Anaxyrus californicus (=Bufo californicus)	arroyo toad	FE, SSC	Habitats: sandy riverbanks, streams, washes, and arroyos, breeds in and near streams Characteristics: nearby sandy terraces, dampened in places by capillary action, and with some scattered vegetation providing surface sheltering and burrowing sites and foraging areas	Yes	No	**Low potential to occur**. The BSA does contain some suitable riparian, oak, and scrub habitats to support this toad. However, thie BSA generally lacks adequate water sources with sandy river banks that would create a suitable breeding habitat for this species.
Listed Birds						
Buteo swainsoni	Swainson's hawk	ST, BCC, Season of Concern: nesting	Habitats: large, open areas with abundant prey in association with suitable nest trees, native grasslands or lightly grazed pastures and croplands, open deserts, sparse shrub lands Characteristics: nest in juniper trees of juniper-sage flats not near riparian zones	Yes	Yes	**Low potential to occur.** While there are no suitable nesting sites for this species in the BSA, this species may utilize the BSA for passage or foraging because the BSA does support suitable habitat for many of the prey species of this raptor.
Laterallus jamaicensis coturniculus	California black rail	ST, fully protected, BCC	Habitats: high coastal marshes to freshwater marshes along the lower Colorado River, pickleweed, bulrushes, and matted salt grass (Distichlis spicata) and other marsh vegetation Characteristics: they use areas of shallow water with relatively stable water levels and flat shoreline	Yes	No	**Not expected to occur**. The BSA does not contain marsh vegetation or marshland habitat to support this species.
Empidonax traillii extimus	southwestern willow flycatcher	FE, SE, Season of Concern: nesting	Habitats: dense riparian tree and shrub communities associated with rivers, swamps, and other wetlands, including lakes, surface water, saturated soil, or herbaceous wetland plants present during the early summer months; woody riparian vegetation is present	Yes	Yes	**Moderate potential to occur.** The BSA contains riparian tree and shrub communities that create suitable habitat to support this species.
Vireo bellii pusillus	least Bell's vireo	FE, SE Season of Concern: nesting	Habitats: dry, intermittent streams, on the desert slopes mesquite (Prosopis sp.) and sandbar willow in canyon locations, willow-dominated riverine riparian habitats with well-developed overstories, understories, and low densities of aquatic and herbaceous cover	Yes	No	**Moderate potential to occur**. The BSA contains suitable habitat to support this species such as riparian/riverine areas in a canyon setting.
Riparia riparia	bank swallow	ST, Season of Concern: nesting	Habitats: naturally eroding habitats of major lowland river systems, sandy, vertical bluffs or riverbanks Characteristics: birds build nests within two to three-foot deep burrows that are dug perpendicularly into near vertical earthen banks along streams, coastal bluffs, and sand and gravel pits	Yes	No	**Not expected to occur**. The BSA does not contain vertical bluffs or riverbanks/lowland river systems to support this species.
Polioptila californica californica	coastal California gnatcatcher	FT, SSC	Habitats: small, non-migratory, permanent resident of coastal sage scrub, small, non-migratory, permanent resident of coastal sage scrub	Yes	Yes	**Moderate potential to occur.** The BSA contains areas with suitable coastal sage scrub to support this species.
Agelaius tricolor	tricolored blackbird	ST, SSC , BCC, Season of Concern: nesting colony	Habitats: fresh water, preferably in emergent wetland with tall, dense cattails (Typha sp.) or tules, natural grassland, woodland, or agricultural cropland Characteristics: species is not migratory, but is nomadic and highly colonial	Yes	No	**Not expected to occur.** The BSA generally lacks suitable aquatic sites and suitable vegetation to support this species.
Listed Mammals						
Dipodomys merriami parvus	San Bernardino kangaroo rat	FE, SSC	Habitats: Riversidean alluvial fan sage scrub, river and stream terraces, flood plains, and along washes with nearby sage scrub Soil: sandy loam soils, alluvial fans	Yes	No	**Not expected to occur.** The BSA does not support suitable habitat (alluvial fan sage scrub, river and stream terraces, floodplains, washes) required for the species..
Sensitive Wildlife: These animals have no official status under the ESA and/or the CESA; however they are designated as sensitive or locally important by federal agencies, state agencies, and/or local conservation agencies and organizations						
Sensitive Invertebrates						
Bombus crotchii	Crotch bumble bee	SSC	Habitats: grasslands and shrublands. Hotter and drier environment than other bumblebee species. Prefers milkweeds, dusty maidens, lupines, medics, phacelias, sages, clarkias, poppies, and wild buckwheats: This species occurs primarily in California, including the Mediterranean region, Pacific Coast, Western Desert, Great Valley, and adjacent foothills through most of southwestern California. It has also been documented in southwest Nevada, near the California border.	Yes	Yes	**Moderate potential to occur.** The BSA contains suitable shrublands with buckwheat and other suitable plants that create favorable conditions for this species.
Diplectrona californica	California diplectronan caddisfly	Special Animals List	Habitats: No information has been published on the larva of this species, but other larvae in the genus live in fast-flowing, cool streams	Yes	No	**No potential to occur.** The BSA does not contain suitable aquatic breeding sites for this species.
Sensitive Fish						
Gila orcuttii	arroyo chub	SSC	Habitats: slow-moving or backwater sections of warm to cool (10-24 C) streams with mud or sand substrates	Yes	No	**No potential to occur.** The BSA does not contain suitable aquatic habitats to support fish species.
Sensitive Amphibians						
Rana boylii	foothill yellow-legged frog	SSC	Habitats: Stream or river frog of woodlands, chaparral, and forests, rocky streams in a variety of habitats, including valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, Ponderosa pine (Pinus ponderosa), mixed conifer, coastal scrub, mixed chaparral, and wet meadow types Characteristics: foothill yellow-legged frogs are infrequent or absent in habitats where introduced aquatic predators	Yes	No	**Not expected to occur.** The BSA does not contain suitable aquatic breeding habitats to support this species. This frog requires a permanent water source, which is not present in the BSA.
Spea hammondii	western spadefoot	SSC	Habitats: coastal sage scrub, open chaparral, pine-oak woodlands and grassland habitats, grasslands with vernal pools or mixed grassland/coastal sage scrub areas Characteristics: upland habitats adjacent to potential breeding sites in burrows approximating 1 meter in depth	Yes	No	**No potential to occur**. The BSA dows not supports suitable aquatic breeding sites to support this toad.
Ensatina eschscholtzii klauberi	large-blotched salamander	SSC	Habitats: conifer and woodland associations; found in leaf litter, decaying logs, and shrubs in heavily forested areas.	Yes	No	**No potential to occur**. The BSA does not support suitable habitat (conifer woodlands, heavily forested areas) required for this species.
Taricha torosa	Coast Range newt (=California newt)	SSC (Monterey County and south)	Habitats: terrestrial habitats (grassland, woodland and forest), but breeds in ponds, reservoirs, and slow moving streams within coastal drainages Characteristics: can migrate over 1 km to breeding areas	Yes	No	**No potential to occur.** The BSA does not support suitable breeding habitat for this species. The nearest suitable breeding habitat are seperated from the BSA by suburban streets and a freeway, which would be avoided as movement corridors by this species.
Sensitive Reptiles						
Actinemys marmorata (=Actinemys marmorata marmorata) (=Emys marmorata)	northern western pond turtle (=northern western pond turtle)	SSC	Habitats: stagnant or slow-moving water in aquatic habitats, ponds, lakes, rivers, streams, creeks, marshes, and irrigation ditches, with abundant vegetation, and either rocky or muddy bottoms, in woodland, forest, and grassland	Yes	No	**No potential to occur**. The BSA does not support suitable aquatic habitat required for this species.
Anniella stebbinsi	southern California legless lizard	SSC	Habitats: occurs in many habitats with sandy soil. Coastal sand dunes and a variety of interior habitats, including sandy washes and alluvial fans. Population occurs in Piute and Tehachapi mountains at elevation of 400-900 m in oak woodland and mixed conifer forest	Yes	Yes	**Low potential to occur.** The BSA contains some sandy-loam soils and oak woodlands which could create suitable habitat for this species.
Phrynosoma blainvilli (=Phrynosoma coronatum) (=Phrynosoma coronatum blainvillei)	Blainville's horned lizard (=coast horned lizard) (=San Diego horned lizard)	SSC	Habitats: wide variety of vegetation types including coastal sage scrub, annual grassland, chaparral, oak woodland, riparian woodland and coniferous forest, habitats are loose, fine soils with a high sand fraction; an abundance of native ants or other insects; and open areas with limited overstory for basking and low	Yes	Yes	**Moderate potential to occur**. The project site does contain some coastal scrub and oak woodland habitats to support this species. The soils in the BSA are primarily sandy-loam and clay; however there are some areas in the BSA that provide gravelly and loose soils.
Aspidoscelis tigris stejnegeri (=Cnemidophorus tigris multiscutatus)	San Diegan whiptail (=coastal whiptail)	SSC	Habitats: variety of ecosystems, primarily hot and dry open areas with sparse foliage such as deserts, chaparral and semiarid, found in open, often rocky areas with little vegetation or sunny microhabitats within shrub or grassland Characteristics: ground may be firm soil, sandy, or rocky	Yes	No	**No potential to occur.** The BSA contains vegetation cover considered too dense to be desireable by this species. The BSA does not offer optimal open, rocky areas.
Arizona elegans occidentalis	California glossy snake	SSC	Habitats: all ecological zones, from the coast to the mountain foothills, light shrubby to barren desert, sagebrush flats, grassland, chaparral-covered slopes, and woodlands Characteristics: refugia takes the form of mammal burrows, rock outcrops, and to a lesser extent	Yes	Yes	**Moderate potential to occur.** The BSA contains oak woodlands, which create suitable habitat to support this species. Area 5 in particular offers habitat that would be considered favorable to this species.

Scientific Name (=Synonym)	**Common Name (=Synonym)**	**Status**	**General Habitat Descriptions in California**	**The BSA:**		**Potential For Occurrence in the BSA**
				Located Within Species' Distribution and/or Elevation Range (if known)	**Contains Suitable Foraging, Roosting, and/or Breeding Habitats**	
Crotalus ruber	red diamond rattlesnake	SSC	Habitats: desert, through dense chaparral in the foothills (it avoids the mountains above around 4,000 feet), to warm inland mesas and valleys, all the way to the cool ocean shore Characteristics: need rodent burrows, cracks in rocks or surface cover objects	Yes	Yes	**Low potential to occur.** This species typically prefers rocky, sandy soils. The soils in the BSA are sandy-loam and clay. This species is adaptive to a variety of habitat types. While the BSA could potentially support this species, the soils types are not optimal for this species.
Thamnophis hammondii	two-striped garter snake	SSC	Habitats: aquatic and it is rarely found far from water, permanent or semi-permanent bodies of freshwater and adjacent riparian habitat, oak woodlands, chaparral and coniferous forests on the coastal slopes of mountains and foothills to sea level	Yes	No	**No potential to occur**. The BSA does not support suitable aquatic habitat required for this species.
Sensitive Birds						
Elanus leucurus	white-tailed kite	fully protected	Habitats: undisturbed, open grasslands, meadows, emergent wetlands, farmlands, crops, pastures, and other cultivated habitats Characteristics: adjacent to their nesting woodland must be open foraging grasslands	Yes	Yes	**Moderate potential to occur**. The BSA supports suitable nesting and foraging habitat required for this species.
Accipiter cooperii	Cooper's hawk	WL, Season of Concern: nesting	Habitats: broken woodland and habitat edges Characteristics: tolerant of human activities near the nest and is seen more often nesting in urban/residential areas	Yes	Yes	**Present.** This species was observed in the BSA during field surveys.
Aquila chrysaetos	golden eagle	fully protected, WL, BCC, Season of Concern: nesting and wintering	Habitats: mountainous canyon land, rimrock terrain of open desert and grassland areas, open rolling foothills of grasslands, oak savannas, oak and juniper woodlands, chaparral, mountain areas, and desert, open habitats including grasslands, deserts, savannahs, and shrublands Characteristics: hilly or mountainous country, deeply cut canyons rising to open mountain slopes and crags are ideal habitat	Yes	Yes	**Low potential to occur.** This species occurs in a variety of habitat types, and the BSA and project site could offer feeding habitat due to the presence of grasslands, rolling slopes, and chaparral.
Athene cunicularia	burrowing owl	SSC, BCC, Season of Concern: burrowing sites and some wintering sites	Habitats: open, dry, flat ground or low rolling hills with sparse vegetation and available burrows; however, this species may be found in a viariety of habitats. Characteristics: if no burrows are available, may dig their own burrows or utelize pipes, cracks in debris piles, and other artificial structures.	Yes	Yes	**Low potential to occur.** The BSA supports some suitable habitat required to support this species.
Strix occidentalis occidentalis	California spotted owl	SSC, BCC	Habitats: forests and woodlands with large old trees and snags, high basal areas of trees and snags, dense canopies (>70% canopy closure), multiple canopy layers, and downed woody debris Characteristics: low elevations, it uses coastal oak woodland, valley foothill riparian, and redwood (Sequoia sempervirens) forests	Yes	Yes	**Low potential to occur**. The BSA contains suitable oak woodlands to support this species, however this species prefers vegetative cover that is highly dense and multi-layered. Therefore, this species is determiend to have only a low potential to occur in the BSA.
Asio otus	long-eared owl	SSC Season of Concern: nesting	Habitats: conifer, oak, riparian, pinyon-juniper, and desert woodlands Characteristics: long-eared owl appears to be more associated with forest edge habitat	Yes	Yes	**Low potential to occur.** The BSA provides suitable oak woodland habitat to support this species.
Dryobates nuttallii (= Picoides nuttallii)	Nuttall's woodpecker	BCC	Habitats: low-elevation oak (any species) woodlands, especially where mixed with California sycamore (Platanus racemosa) and deciduous riparian habitats Characteristics: nests are located mostly in riparian habitat	Yes	Yes	**Present.** This species was observed in the BSA during field surveys.
Falco columbarius	merlin	WL	Habitats: Alaska and Canada, Merlins winter in California from September to May , annual grasslands to open ponderosa pine and montane hardwood-conifer habitats, and coastlines, savannahs, woodlands, lakes, and wetlands Characteristics: dense tree stands may be used for cover and are frequently close to bodies of water	Yes	Yes	**Moderate potential to occur.** There are recent (<15 years) observations of this species within a 2-mile radius of the project site. The project also offers some suitable nesting woodland habitat. The trees with dense canopies on-site could create a suitable habitat for this species.
Eremophila alpestris actia	California horned lark	WL	Habitats: grasslands along the coast and deserts near sea level to alpine dwarf-shrub habitat above treeline Characteristics: birds forage on the ground in either bare areas	Yes	No	**Not expected to occur.** The BSA does not contain suitable open habitats with short vegetation to support breeding or foraging California horned larks.
Campylorhynchus brunneicapillus sandiegensis	coastal cactus wren (=San Diego cactus wren)	BCC	Habitats: coastal sage scrub plant community in which cacti are prominent Characteristics: usually absent from areas where only low, sprawling cacti grow	Yes	Yes	**Moderate potential to occur.** The BSA does contain suitable coastal sage scrub and coastal prickly pear scrub habitats with suitable nesting cactus vegetation to support this species.
Setophaga petechia (=Dendroica petechia)	yellow warbler	SSC, BCC	Habitats: deciduous trees of the riparian woodland from coastal desert woodlands to the Sierra Nevada – willows (*Salix* sp.), cottonwoods (*Populus* sp.), aspens (*Populus* sp.), California sycamores (*Platanus racemosa*), and alders (*Alnus* sp.) Characteristics: nests are deep cups, placed in an upright fork in a deciduous sapling or shrub, typically 2 to 16 feet high	Yes	Yes	**Moderate potential to occur.** The BSA does contain some suitable breeding and foraging habitats to support this species. Yellow warblers occur principally as a migrant and summer resident in California from late March through early October and breeds from April to late July.
Icteria virens	yellow-breasted chat	SSC	Habitats: dense riparian thickets of willows, vines, and brush associated with streams and other wetland habitats Characteristics: nest is an open cup placed in dense shrubs or thickets within 3 to 8 feet above ground along a stream or river	Yes	No	**No potential to occur.** The BSA does not support suitable nesting habitat (riparian thickets associated with streams or wetlands) required for this species.
Aimophila ruficeps canescens	southern California rufous-crowned sparrow	WL	Habitats: dry, steep sloping land and hillsides with a moderate density of low, scattered shrubs, coastal sage scrub, interspersed with grasses and forbs and occasional rock outcrops for song perches Characteristics: nests are placed in small depressions on the ground	Yes	Yes	**Moderate potential to occur.** The BSA contains steep slopes and coastal sage scrub which create suitable conditions for this species.
Sensitive Mammals						
Chaetodipus fallax fallax	northwestern San Diego pocket mouse	SSC	Habitats: open, sandy areas of both the Upper and Lower Sonoran life-zones of southwestern California and northern Baja California Characteristics: grassland and open sage scrub vegetation with sandy-loam to loam soils	Yes	No	**Not expected to occur**. The BSA does not provide sufficient open sandy areas to support this species.
Eumops perotis californicus	western mastiff bat	SSC, WBWG:H	Habitats: low-lying desert areas of southern California, desert riparian, desert wash, desert scrub, desert succulent shrub, alkali desert scrub, palm oasis, conifer and deciduous woodlands, coastal scrub, annual and perennial grassslands, chaparral, urban. Roosts in crevices in cliff faces, high buildings, trees, and tunnels Characteristics: bats often are found in large groups	Yes	Yes	**Moderate potential to occur.** The BSA provides suitable woodland and coastal scrub habitat toupport this species.
Nyctinomops femorosaccus	pocketed free-tailed bat	SSC	Habitats: pinyon-juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, chaparral, and palm oasis Characteristics: prefer rock crevices in cliffs as roosting sites	Yes	No	**No potential to occur**. The BSA does not support suitable desert habitat required for this species.
Nyctinomops macrotis	big free-tailed bat	SSC, WBWG:MH	Habitats: rugged, rocky habitats in arid landscapes, located in a variety of plant associations including desert shrub, woodlands, and evergreen forests. This bat roosts mainly in the crevices of cliff rocks although may roost in buildings, caves, and tree cavities. Characteristics: appears to be associated with lowlands primarily below 5,900 ft in the southwestern U.S.	Yes	Yes	**Low potential to occur.** The BSA provides suitable woodland and coastal scrub habitat required to support this species.
Lasiurus cinereus	hoary bat	WBWG:M	Habitats: near open grassy areas in coniferous and deciduous forest or near lakes, open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding Characteristics: winter roosts include sides of buildings and tree trunks	Yes	Yes	**Moderate potential to occur.**The BSA provides suitable woodland and coastal scrub habitat to support this species.
Lasiurus xanthinus	western yellow bat	SSC, WBWG:H	Habitats: valley foothill riparian, desert riparian, desert wash, and palm oasis habitats Characteristics: occurs year-round in California	Yes	Yes	**Low potential to occur.** The BSA supports some suitable habitat (valley foothill riparian) required for this species.
Antrozous pallidus	pallid bat	SSC	Habitats: variety of habitats is occupied by pallid bats, including deserts, grasslands, shrublands, woodlands, and forests form sea level up through mixed conifer forests Characteristics: night roosts may be in more open sites, such as porches and open buildings	Yes	Yes	**Moderate potential to occur** in the BSA for foraging. The BSA is located within this bat's distribution and contains suitable grassland, shrubland, and woodland habitats; however they are most common in deserts, preferring areas of open, dry habitats, with rocky areas for roosting and water nearby.
Puma concolor	mountain lion (=cougar)	Protected by California Fish and Game Code §§ 4800 – 4810	Habitats: desert scrub, chaparral, swamps, and forests Characteristics: use rocky areas, cliffs, and ledges that provide cover within open woodlands and chaparral	Yes	Yes	**Moderate potntial to occur**. The BSA contains suitable scrub and woodland habitats and prey items. Mountain lions are highly mobile and may pass through or hunt within the BSA.
Taxidea taxus	American badger	SSC	Habitats: Most abundant in drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Required sufficient foor sources (e.g., burrowing rodents). Characteristics: requirements - sufficient food, friable soils, and relatively open, uncultivated ground	Yes	Yes	**Not expected to occur.** The BSA contains marginally suitable habitat for this species; however, the BSA may not provide sufficient food sources for multiple individuals.

Legend and Notes

Scientific Name (=Synonym)	Common Name (=Synonym)	Status	General Habitat Descriptions in California	The BSA:		Potential For Occurrence in the BSA
				Located Within Species' Distribution and/or Elevation Range (if known)	Contains Suitable Foraging, Roosting, and/or Breeding Habitats	

Federal Endangered Species Act (ESA) Listing Codes: the ESA is administered by the USFWS and NMFS. The USFWS has primary responsibility for terrestrial and freshwater organisms, while the responsibilities of NMFS are mainly marine wildlife such as whales and anadromous fish such as salmon. For the purposes of the ESA, Congress defined species to include subspecies, varieties, and, for vertebrates, distinct population segments. The official federal listing of Endangered and Threatened animals is published in 50 CFR § 17.11.

- **FE** = federally listed as endangered: any species of plant or animal that is in danger of extinction throughout all or a significant portion of their range.
- **FT** = federally listed as threatened: any species of plant or animal that is considered likely to become endangered throughout all or a significant portion of its range within the foreseeable future.
- **FC** = federal candidate for listing: candidate species are plants and animals for which the USFWS has sufficient information on their biological status and threats to propose them for listing as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by higher priority listing actions to address species in greater need. A proposed regulation has not yet been published in the Federal Register for these species.

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California Endangered Species Act (CESA) Listing Codes: the CESA is administered by CDFW. The official listing of Animals of California Declared To Be Endangered or Threatened is contained in the California Code of Regulations, Title 14, § 670.5. Species and subspecies of California native animals are declared to be endangered or threatened as defined by §§ 2062 and 2067 of the Fish and Game Code.

- **SE =** state-listed as endangered: "endangered species" means a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease (Fish and Game Code § 2062).
- **ST** = state-listed as threatened: "threatened species" means a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts (Fish and Game Code § 2067).

California Department of Fish and Wildlife (CDFW) Designations:

For some wildlife species, the CNDDB is only concerned with specific portions of the life history, such as roosts, rookeries, or nesting colonies. For many species of birds, the primary emphasis is on the breeding population in California. For some species which do not breed in California but winter here, emphasis is on wintering range. The SSC designation thus may include a comment regarding the specific protection provided such as nesting or wintering

- **SSC = species of special concern**: a species of special concern is a species, subspecies, or distinct population of an animal (fish, amphibian, reptile, bird and mammal) native to California that currently satisfies one or more of the following (not necessarily mutually exclusive) criteria: is extirpated from the state or, in the case of birds, in its primary seasonal or breeding role; is listed as federally-, but not state-, threatened or endangered; meets the state definition of threatened or endangered, but has not formally been listed; is experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for state threatened or endangered status; has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for state threatened or endangered status.
- **Fully protected:** fully protected animal species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock. Lists were created for fish (Fish and Game Code § 5515), amphibians and reptiles (Fish and Game Code § 5050), birds (Fish and Game Code § 3511) and mammals (Fish and Game Code § 4700).
- **WL = watch list**: this list includes birds identified in the California Bird Species of Special Concern (Shuford and Gardali, 2008) report and are not on the current CDFW species of special concern list, but were on previous lists and they have not been state-listed under CESA; were previously state or federally listed and now are on neither list; or are on the list of fully protected species.
- **Special Animals List**: The Special Animals List contains taxa that are actively inventoried, tracked, and mapped by the CNDDB, as well as taxa for which mapped data may not yet be incorporated into CNDDB user products

United States Fish and Wildlife Service (USFWS) Designations:

- **FSC = federal species of concern**: federal species of concern is an informal term. It is not defined in the ESA. The term commonly refers to species that are declining or appear to be in need of conservation.
- **BCC = bird of conservation concern**: a bird of conservation concern is listed in the USFWS' 2008 Birds of Conservation Concern report. The report identifies species, subspecies, and populations of all migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that, without additional conservation actions, are likely to become candidates for listing under the ESA. While all of the bird species included in the report is priorities for conservation action, the list makes no finding with regard to whether they warrant consideration for ESA listing.

Western Bat Working Group (WBWG) Designations:

The WBWG is composed of agencies, organizations, and individuals interested in bat research, management, and conservation from 13 western states and provinces. Species are ranked as High, Medium, or Low Priority in each of 10 regions in western North America.

- **H = High Priority:** These species are considered the highest priority for funding, planning, and conservation actions, Information about status and hreats to most species could result in effective conservation actions being implemented should a commitment to management exist. These species are imperiled or are at high risk of imperilment.
- **M = Medium Priority:** These species warrant closer evaluation, more research, and conservation actions of both the species and possible threats. A lack of meaningful information is a major obstacle in adequately assessing these species' status and should be considered a threat.

Resources

- *Check-List of North American Birds, 7th edition (AOU, 1998);*
- *(AOU website);*
- *Amphibian species accounts (Amphibiaweb website);*
- *Terrestrial Mammal Species of Special Concern in California (Bolster, 1998);*
- *Mammals of North America (Bowers et al., 2004);*
- *Special Status Animals in California, Including BLM Designated Sensitive Species (BLM, 2010);*
- *Life History Accounts and Range Maps (CDFG, 1988a and updates; CDFG, 1988b and updates; CDFG, 1988c and updates);*
- *The Status of Rare, Threatened, and Endangered Plants and Animals of California, 2000–2004 (CDFG, 2005);*
- *Atlas of the Biodiversity of California (CDFG, 2003);*
- *RareFind, CDFW, California Natural Diversity Database (CNDDB);*
- *State & Federally Listed Endangered & Threatened Animals of California (CDFW, 2016);*
- *Special Animals List (CDFG, 2016);*
- *CDFW's California Wildlife Habitat Relationships: Online Life History Accounts and Range Maps ;*
- *California Herps website ;*
- *California Partners in Flight website ;*
- *CNAH website ;*
- *AOU supplement (Chesser et al., 2015);*
- *A Field Guide to Hawks of North America, Second Edition (Clark and Wheeler, 2001);*
- *Mammals of California (Eder, 2005);*
- *Fairy Shrimps of California's Puddles, Pools, and Playas (Eriksen and Belk, 1999);*
- *Atlas of Breeding Birds, Orange County, California (Gallagher, 1997);*

Scientific Name (=Synonym)	Common Name (=Synonym)	Status	General Habitat Descriptions in California	The BSA:		Potential For Occurrence in the BSA
				Located Within Species' Distribution and/or Elevation Range (if known)	Contains Suitable Foraging, Roosting, and/or Breeding Habitats	

• *Amphibian and Reptile Species of Special Concern in California (Jennings and Hayes, 1994);*
• *Mammals of North America (Kays and Wilson, 2002);*
• *Inland Fishes of Californica (Moyle, 2002);*
• *Fish Species of Special Concern in California, Third Edition (Moyle et al., 2015);*
• *Reference Atlas to the Birds of North America (National Geographic Society, 2003);*
• *Complete Birds of North America (National Geographic Society, 2006);*
• *Field Guide to the Birds of North America, 4th Ed (National Geographic Society, 2002);*
• *(NatureServe Explorer website);*
• *Shorebirds of North America. The Photographic Guide (Paulson, 2005);*
• *A Field Guide to Mammals of North America North of Mexico. Fourth Edition (Reid, 2006);*
• *A Natural History of California (Schoenherr, 1992);*
• *California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California (Shuford and Gardali, 2008);*
• *National Audubon Society, The Sibley Guide to Birds (Sibley, 2000);*
• *A Field Guide to Western Reptiles and Amphibians, Third Edition (Stebbins, 2003);*
• *(The Birds of North America Online website);*
• *Life on the Edge: A Guide to California's Endangered Natural Resources. Wildlife (Thelander et al., 1994);*
• *(California Fish Website);*
• *United States Department of Agriculture (USDA) Forest Service, Pacific Southwest Region, Sensitive Animal Species by Forest (USFS, 2013);*
• *Mammalian Species of Special Concern in California (Williams, 1986);*
• *Mammal Species of the World (Wilson and Reeder, 2005);*
• *The Smithsonian Book of North American Mammals (Wilson and Ruff, 1999);*
• *The Final Environmental Impact Report and Statement (Final EIR/S) for the West Mojave Plan (BLM, 2005);*
• *Proposed Northern & Eastern Colorado Desert Coordinated Management Plan (NECO) (BLM and CDFG, 2002);*
• *UltraSystems in-house records.*

Notes:
•***Yes*** *= the BSA is located within the wildlife species' known distribution, elevation range, and/or the BSA contains suitable habitats or conditions to support the species. The wildlife species has a potential to occur within the BSA. Further evaluation is needed.*
•***No*** *= the BSA is located outside the wildlife species' known distribution, elevation range, and/or the BSA lacks suitable habitats or conditions to support the species. It is highly unlikely for the wildlife species to have a potential to occur within the BSA. No further evaluation is needed.*
•***Present*** *= observed within the BSA during surveys.*
•***Elevation =*** *The BSA contains elevations ranging from 680 to 960 feet above mean sea level.*

APPENDIX C

SOILS REPORT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Los Angeles County, California, Southeastern Part

Expanded and Updated July 8, 2022

July 8, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

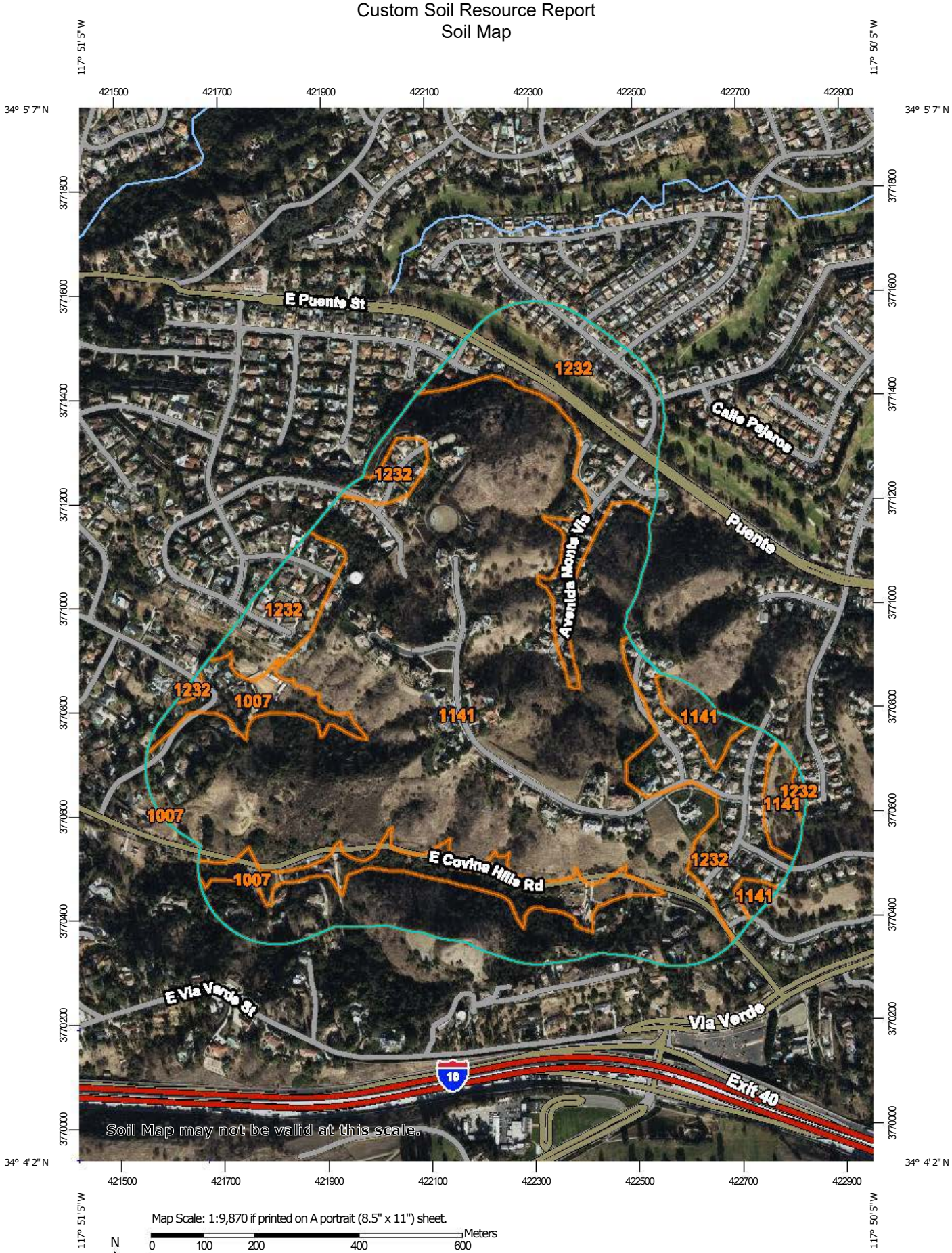
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



Map Scale: 1:9,870 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 100 200 400 600

Feet
0 450 900 1800 2700

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Los Angeles County, California, Southeastern Part
Survey Area Data: Version 8, Sep 13, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 5, 2020—Feb 6, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1007	Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes	16.9	6.8%
1141	Zaca-Apollo, warm complex, 20 to 55 percent slopes	180.0	72.2%
1232	Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced	52.4	21.0%
Totals for Area of Interest		**249.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate

pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Los Angeles County, California, Southeastern Part

1007—Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2qds9
Elevation: 60 to 1,140 feet
Mean annual precipitation: 13 to 20 inches
Mean annual air temperature: 64 to 67 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition

Urban land: 45 percent
Biscailuz and similar soils: 30 percent
Pico and similar soils: 15 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Alluvial fans

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 0 inches to manufactured layer
Runoff class: Very high
Frequency of flooding: RareNone

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Ecological site: R019XG911CA - Loamy Fan
Hydric soil rating: No

Description of Biscailuz

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Discontinuous human-transported material over mixed alluvium derived from granite and/or sedimentary rock

Typical profile

Ap - 0 to 13 inches: loam
Bk1 - 13 to 28 inches: loam
Bk2 - 28 to 37 inches: loam
Bkg - 37 to 49 inches: sandy clay loam
C1 - 49 to 57 inches: sandy loam
C2 - 57 to 79 inches: sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 25.0
Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B
Ecological site: R019XG911CA - Loamy Fan
Hydric soil rating: No

Description of Pico

Setting

Landform: Flood plains, alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Discontinuous human-transported material over mixed alluvium derived from granite and/or sedimentary rock

Typical profile

A - 0 to 16 inches: loam
Bk1 - 16 to 28 inches: loam
Bk2 - 28 to 55 inches: sandy loam
C2 - 55 to 79 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: R019XG907CA - Loamy Bottom
Hydric soil rating: No

Minor Components

Metz

Percent of map unit: 5 percent
Landform: Alluvial fans, flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Pachic calcixerolls

Percent of map unit: 3 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Cropley

Percent of map unit: 2 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

1141—Zaca-Apollo, warm complex, 20 to 55 percent slopes

Map Unit Setting

National map unit symbol: 2pt45
Elevation: 220 to 1,630 feet
Mean annual precipitation: 14 to 21 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 355 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Zaca and similar soils: 50 percent
Apollo, warm, and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Zaca

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Colluvium and/or residuum weathered from sandstone and siltstone

Typical profile

A - 0 to 8 inches: clay
Bkss1 - 8 to 21 inches: clay
Bkss2 - 21 to 37 inches: clay
Bk - 37 to 53 inches: clay
Cr - 53 to 63 inches: bedrock

Properties and qualities

Slope: 20 to 55 percent
Depth to restrictive feature: 37 to 69 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Apollo, Warm

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Colluvium and/or residuum weathered from sandstone and siltstone

Typical profile

A - 0 to 4 inches: clay loam
Btk1 - 4 to 11 inches: clay loam
Btk2 - 11 to 26 inches: clay loam
Bk - 26 to 45 inches: clay loam
Cr - 45 to 55 inches: bedrock

Properties and qualities

Slope: 20 to 55 percent
Depth to restrictive feature: 31 to 55 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Boades

Percent of map unit: 8 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Balcom

Percent of map unit: 7 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

1232—Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced

Map Unit Setting

National map unit symbol: 2pt4f
Elevation: 160 to 1,330 feet
Mean annual precipitation: 14 to 19 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 320 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Counterfeit and similar soils: 45 percent
Urban land: 40 percent

Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Counterfeit

Setting
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, riser, tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Human-transported material consisting mostly of colluvium and/or residuum weathered from sedimentary rock

Typical profile
^Au - 0 to 5 inches: clay loam
^Cu1 - 5 to 18 inches: clay
^Cu2 - 18 to 37 inches: clay
^Cu3 - 37 to 57 inches: clay loam
^C - 57 to 79 inches: sandy loam

Properties and qualities
Slope: 10 to 35 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 12 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.4 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Urban Land

Setting
Landform: Hillslopes

Properties and qualities
Slope: 0 to 10 percent
Depth to restrictive feature: 0 inches to manufactured layer
Runoff class: Very high

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Minor Components

Apollo, warm

Percent of map unit: 6 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Zaca

Percent of map unit: 6 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Balcom

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Chemical Properties

Soil Chemical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil chemical properties include pH, cation exchange capacity, calcium carbonate, gypsum, and electrical conductivity.

pH (1 to 1 Water)

Soil reaction is a measure of acidity or alkalinity. It is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion. In general, soils that are either highly alkaline or highly acid are likely to be very corrosive to steel. The most common soil laboratory measurement of pH is the 1:1 water method. A crushed soil sample is mixed with an equal amount of water, and a measurement is made of the suspension.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Map Scale: 1:9,870 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 100 200 400 600

Feet
0 450 900 1800 2700

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Ultra acid (ph < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Soil Rating Lines

- Ultra acid (ph < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Soil Rating Points

- Ultra acid (ph < 3.5)
- Extremely acid (pH 3.5 - 4.4)
- Very strongly acid (pH 4.5 - 5.0)
- Strongly acid (pH 5.1 - 5.5)
- Moderately acid (pH 5.6 - 6.0)
- Slightly acid (pH 6.1 - 6.5)
- Neutral (pH 6.6 - 7.3)
- Slightly alkaline (pH 7.4 - 7.8)
- Moderately alkaline (pH 7.9 - 8.4)
- Strongly alkaline (pH 8.5 - 9.0)
- Very strongly alkaline (pH > 9.0)
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Los Angeles County, California, Southeastern Part
Survey Area Data: Version 8, Sep 13, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 5, 2020—Feb 6, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—pH (1 to 1 Water)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1007	Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes	7.9	16.9	6.8%
1141	Zaca-Apollo, warm complex, 20 to 55 percent slopes	7.9	180.0	72.2%
1232	Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced	7.8	52.4	21.0%
Totals for Area of Interest			**249.3**	**100.0%**

Rating Options—pH (1 to 1 Water)

Aggregation Method: Weighted Average

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

Soil Erosion Factors

Soil Erosion Factors are soil properties and interpretations used in evaluating the soil for potential erosion. Example soil erosion factors can include K factor for the whole soil or on a rock free basis, T factor, wind erodibility group and wind erodibility index.

K Factor, Whole Soil

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Factor K does not apply to organic horizons and is not reported for those layers.


117° 51' 5" W
117° 50' 5" W
421500
421700
421900
422100
422300
422500
422700
422900
34° 5' 7" N
34° 4' 2" N
3771800
3771600
3771400
3771200
3771000
3770800
3770600
3770400
3770200
3770000
E Puente St
Calle Pajaros
Puente
Avenida Monte Vis
E Covina Hills Rd
E Via Verde St
Via Verde
Exit 40
18
1232
1007
1141
Soil Map may not be valid at this scale.
Map Scale: 1:9,870 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0
100
200
400
600
Feet
0
450
900
1800
2700
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Soil Rating Lines

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Soil Rating Points

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Los Angeles County, California, Southeastern Part
Survey Area Data: Version 8, Sep 13, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 5, 2020—Feb 6, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND	MAP INFORMATION
	imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—K Factor, Whole Soil

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1007	Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes		16.9	6.8%
1141	Zaca-Apollo, warm complex, 20 to 55 percent slopes	.32	180.0	72.2%
1232	Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced	.37	52.4	21.0%
Totals for Area of Interest			**249.3**	**100.0%**

Rating Options—K Factor, Whole Soil

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

For an attribute of a soil horizon, a depth qualification must be specified. In most cases it is probably most appropriate to specify a fixed depth range, either in centimeters or inches. The Bottom Depth must be greater than the Top Depth, and the Top Depth can be greater than zero. The choice of "inches" or "centimeters" only applies to the depth of soil to be evaluated. It has no influence on the units of measure the data are presented in.

When "Surface Layer" is specified as the depth qualifier, only the surface layer or horizon is considered when deriving a value for a component, but keep in mind that the thickness of the surface layer varies from component to component.

When "All Layers" is specified as the depth qualifier, all layers recorded for a component are considered when deriving the value for that component.

Whenever more than one layer or horizon is considered when deriving a value for a component, and the attribute being aggregated is a numeric attribute, a weighted average value is returned, where the weighting factor is the layer or horizon thickness.

T Factor

The T factor is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Map Scale: 1:9,870 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 100 200 400 600

Feet
0 450 900 1800 2700

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- 1
- 2
- 3
- 4
- 5
- Not rated or not available

Soil Rating Lines

- 1
- 2
- 3
- 4
- 5
- Not rated or not available

Soil Rating Points

- 1
- 2
- 3
- 4
- 5
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Los Angeles County, California, Southeastern Part
Survey Area Data: Version 8, Sep 13, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 5, 2020—Feb 6, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND	MAP INFORMATION
	imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—T Factor

Map unit symbol	Map unit name	Rating (tons per acre per year)	Acres in AOI	Percent of AOI
1007	Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes	4	16.9	6.8%
1141	Zaca-Apollo, warm complex, 20 to 55 percent slopes	4	180.0	72.2%
1232	Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced	5	52.4	21.0%
Totals for Area of Interest			**249.3**	**100.0%**

Rating Options—T Factor

Units of Measure: tons per acre per year

Aggregation Method: Weighted Average

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Weighted Average" computes a weighted average value for all components in the map unit. Percent composition is the weighting factor. The result returned by this aggregation method represents a weighted average value of the corresponding attribute throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Lower

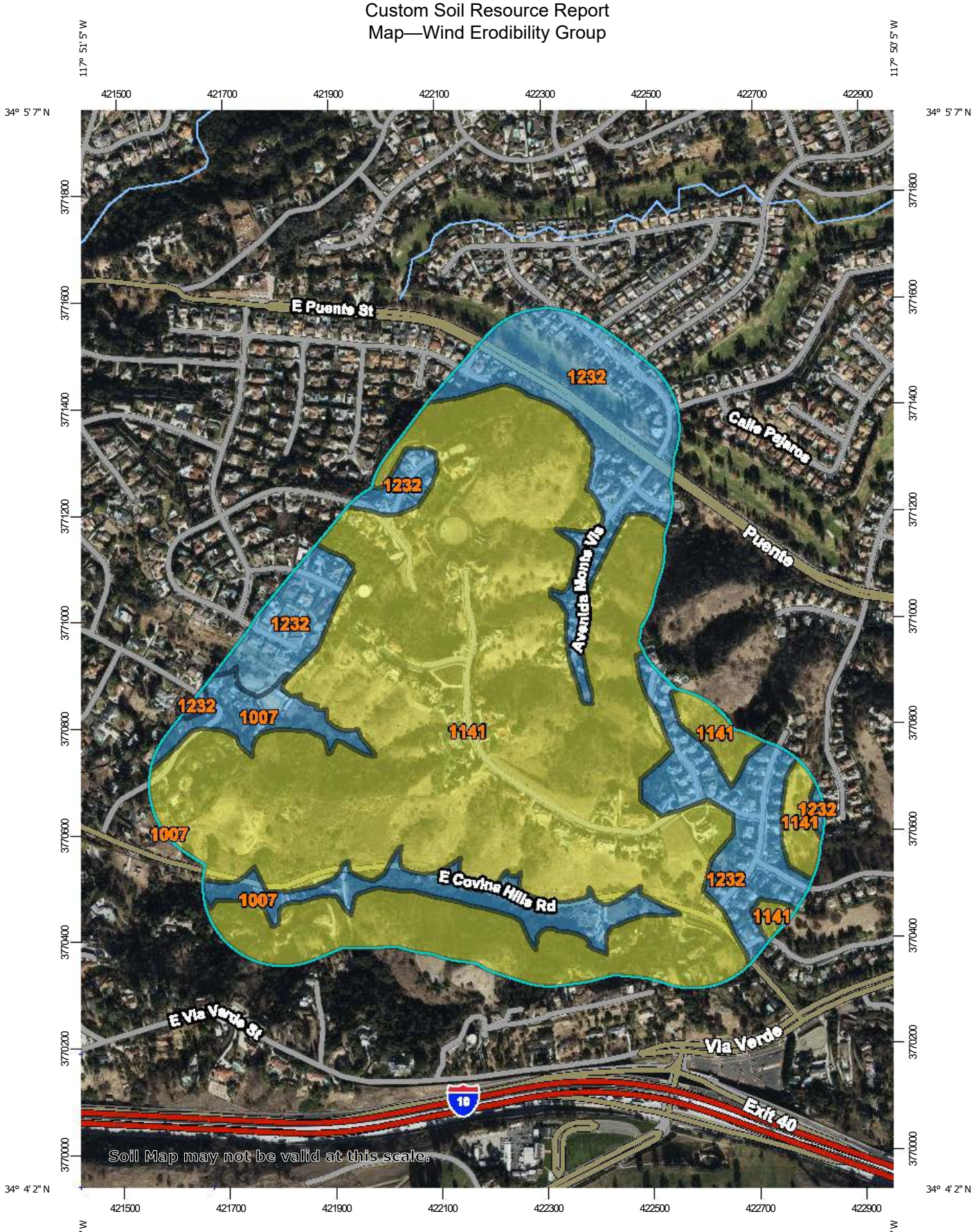
The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: No

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Wind Erodibility Group

A wind erodibility group (WEG) consists of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.



Map Scale: 1:9,870 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 450 900 1800 2700

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

1
2
3
4
4L
5
6
7
8
Not rated or not available

Soil Rating Lines

1
2
3
4
4L
5
6
7
8
Not rated or not available

Soil Rating Points

1
2
3
4
4L
5
6
7
8
Not rated or not available

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Los Angeles County, California, Southeastern Part
Survey Area Data: Version 8, Sep 13, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 5, 2020—Feb 6, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND	MAP INFORMATION
	imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Wind Erodibility Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1007	Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes	6	16.9	6.8%
1141	Zaca-Apollo, warm complex, 20 to 55 percent slopes	4	180.0	72.2%
1232	Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced	6	52.4	21.0%
Totals for Area of Interest			**249.3**	**100.0%**

Rating Options—Wind Erodibility Group

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Soil Physical Properties

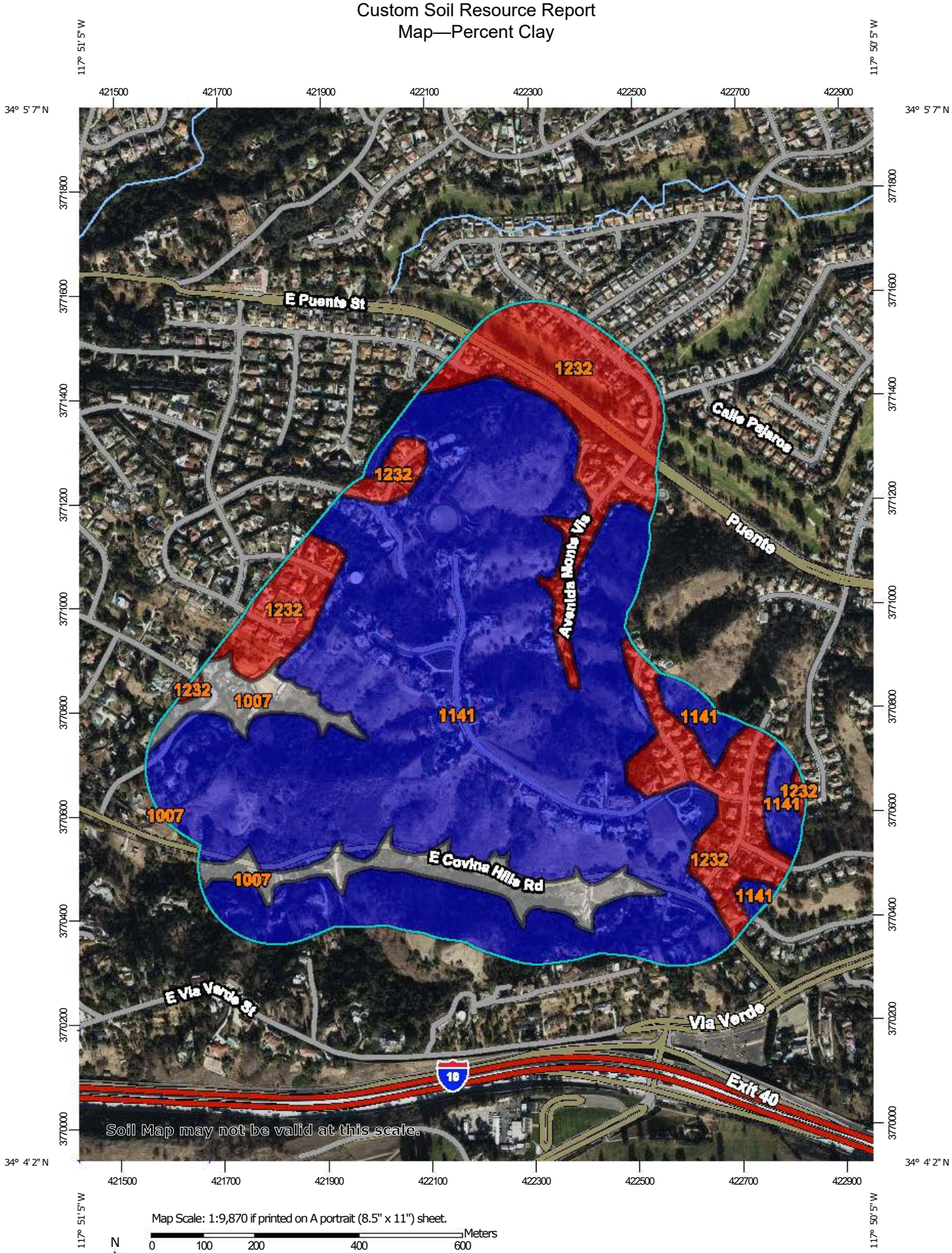
Soil Physical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Percent Clay

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. The estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

Most of the material is in one of three groups of clay minerals or a mixture of these clay minerals. The groups are kaolinite, smectite, and hydrous mica, the best known member of which is illite.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.



Map Scale: 1:9,870 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 100 200 400 600

Feet
0 450 900 1800 2700

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- <= 33.7
- > 33.7 and <= 48.8
- Not rated or not available

Soil Rating Lines

- <= 33.7
- > 33.7 and <= 48.8
- Not rated or not available

Soil Rating Points

- <= 33.7
- > 33.7 and <= 48.8
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Soil Survey Area: Los Angeles County, California, Southeastern Part
Survey Area Data: Version 8, Sep 13, 2021

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Date(s) aerial images were photographed: Dec 5, 2020—Feb 6, 2021

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MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Percent Clay

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
1007	Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes		16.9	6.8%
1141	Zaca-Apollo, warm complex, 20 to 55 percent slopes	48.8	180.0	72.2%
1232	Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced	33.7	52.4	21.0%
Totals for Area of Interest			**249.3**	**100.0%**

Rating Options—Percent Clay

Units of Measure: percent

Aggregation Method: Dominant Component

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Component" returns the attribute value associated with the component with the highest percent composition in the map unit. If more than one component shares the highest percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher attribute value should be returned in the case of a percent composition tie. The result returned by this aggregation method may or may not represent the dominant condition throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: No

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

For an attribute of a soil horizon, a depth qualification must be specified. In most cases it is probably most appropriate to specify a fixed depth range, either in centimeters or inches. The Bottom Depth must be greater than the Top Depth, and the Top Depth can be greater than zero. The choice of "inches" or "centimeters" only applies to the depth of soil to be evaluated. It has no influence on the units of measure the data are presented in.

When "Surface Layer" is specified as the depth qualifier, only the surface layer or horizon is considered when deriving a value for a component, but keep in mind that the thickness of the surface layer varies from component to component.

When "All Layers" is specified as the depth qualifier, all layers recorded for a component are considered when deriving the value for that component.

Whenever more than one layer or horizon is considered when deriving a value for a component, and the attribute being aggregated is a numeric attribute, a weighted average value is returned, where the weighting factor is the layer or horizon thickness.

Top Depth: 1

Bottom Depth: 120

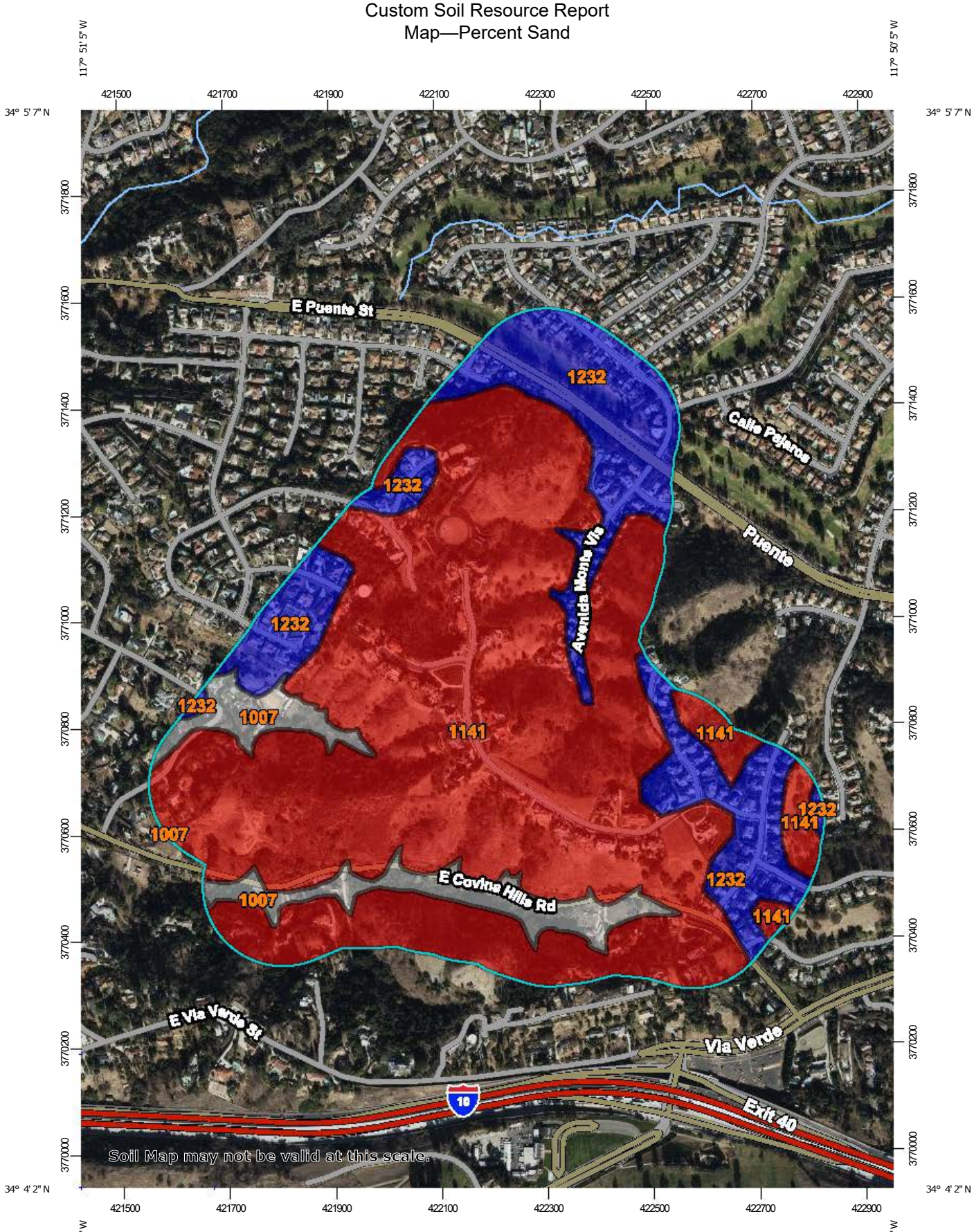
Units of Measure: Inches

Percent Sand

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In the database, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report
Map—Percent Sand



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

<= 14.9

> 14.9 and <= 34.0

Not rated or not available

Soil Rating Lines

<= 14.9

> 14.9 and <= 34.0

Not rated or not available

Soil Rating Points

<= 14.9

> 14.9 and <= 34.0

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Los Angeles County, California, Southeastern Part
Survey Area Data: Version 8, Sep 13, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 5, 2020—Feb 6, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Percent Sand

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
1007	Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes		16.9	6.8%
1141	Zaca-Apollo, warm complex, 20 to 55 percent slopes	14.9	180.0	72.2%
1232	Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced	34.0	52.4	21.0%
Totals for Area of Interest			**249.3**	**100.0%**

Rating Options—Percent Sand

Units of Measure: percent

Aggregation Method: Dominant Component

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Component" returns the attribute value associated with the component with the highest percent composition in the map unit. If more than one component shares the highest percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher attribute value should be returned in the case of a percent composition tie. The result returned by this aggregation method may or may not represent the dominant condition throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: No

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

For an attribute of a soil horizon, a depth qualification must be specified. In most cases it is probably most appropriate to specify a fixed depth range, either in centimeters or inches. The Bottom Depth must be greater than the Top Depth, and the Top Depth can be greater than zero. The choice of "inches" or "centimeters" only applies to the depth of soil to be evaluated. It has no influence on the units of measure the data are presented in.

When "Surface Layer" is specified as the depth qualifier, only the surface layer or horizon is considered when deriving a value for a component, but keep in mind that the thickness of the surface layer varies from component to component.

When "All Layers" is specified as the depth qualifier, all layers recorded for a component are considered when deriving the value for that component.

Whenever more than one layer or horizon is considered when deriving a value for a component, and the attribute being aggregated is a numeric attribute, a weighted average value is returned, where the weighting factor is the layer or horizon thickness.

Top Depth: 1

Bottom Depth: 120

Units of Measure: Inches

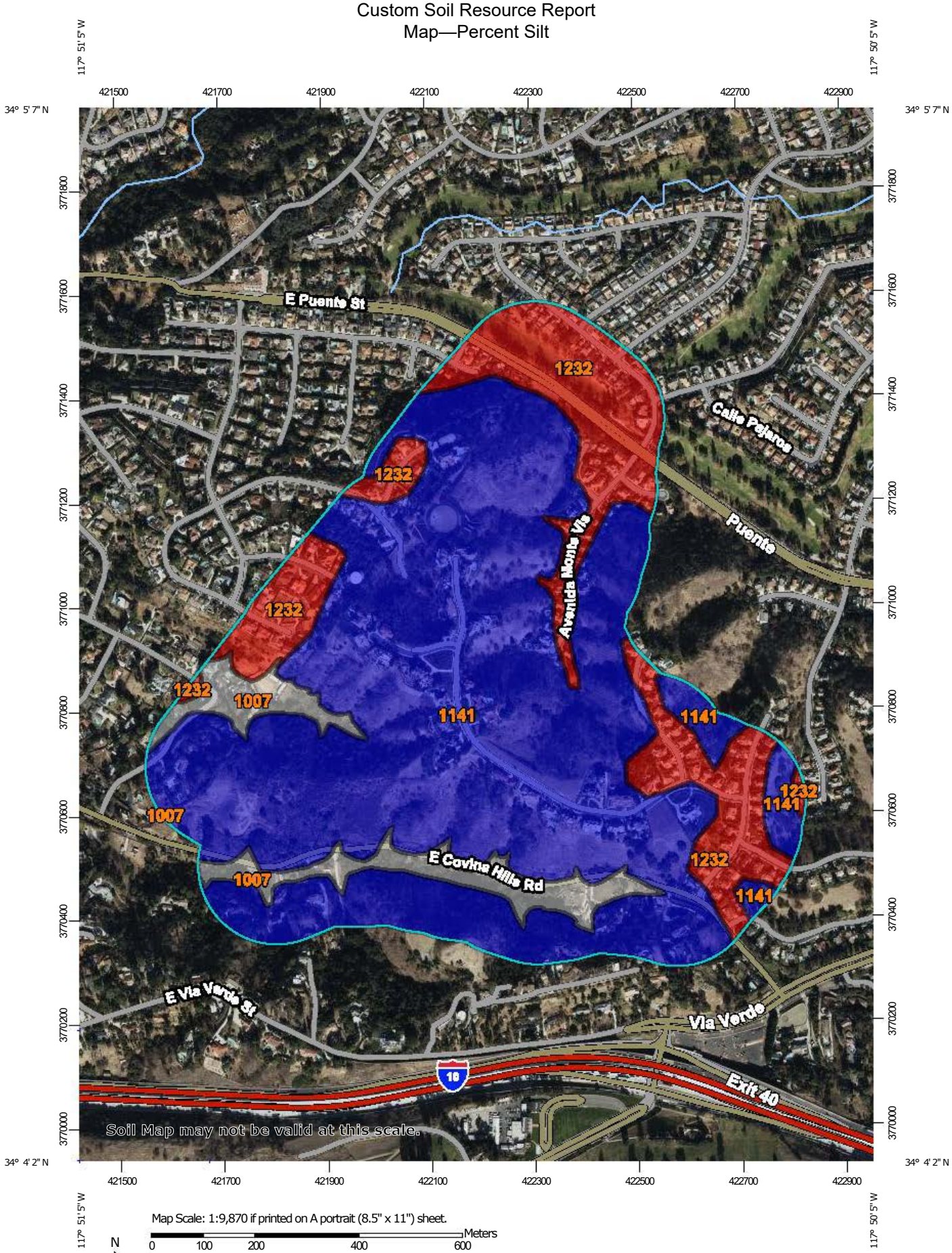
Percent Silt

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In the database, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this

attribute for the component. For this soil property, only the representative value is used.



Map Scale: 1:9,870 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 100 200 400 600

Feet
0 450 900 1800 2700

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- <= 32.3
- > 32.3 and <= 36.4
- Not rated or not available

Soil Rating Lines

- <= 32.3
- > 32.3 and <= 36.4
- Not rated or not available

Soil Rating Points

- <= 32.3
- > 32.3 and <= 36.4
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Date(s) aerial images were photographed: Dec 5, 2020—Feb 6, 2021

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MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Percent Silt

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
1007	Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes		16.9	6.8%
1141	Zaca-Apollo, warm complex, 20 to 55 percent slopes	36.4	180.0	72.2%
1232	Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced	32.3	52.4	21.0%
Totals for Area of Interest			**249.3**	**100.0%**

Rating Options—Percent Silt

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 1

Bottom Depth: 120

Units of Measure: Inches

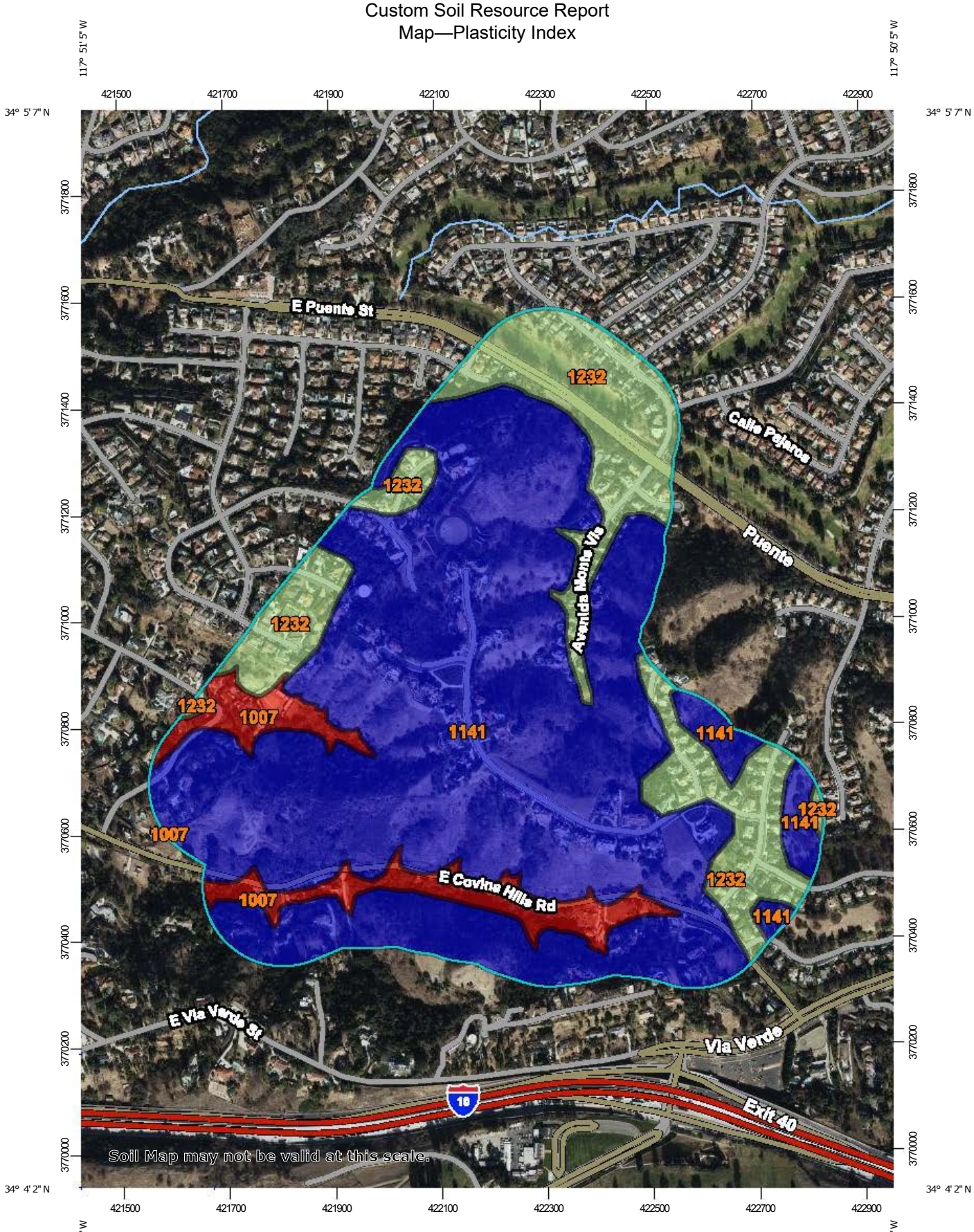
Plasticity Index

Plasticity index (PI) is one of the standard Atterberg limits used to indicate the plasticity characteristics of a soil. It is defined as the numerical difference between the liquid limit and plastic limit of the soil. It is the range of water content in which a soil exhibits the characteristics of a plastic solid.

The plastic limit is the water content that corresponds to an arbitrary limit between the plastic and semisolid states of a soil. The liquid limit is the water content, on a percent by weight basis, of the soil (passing #40 sieve) at which the soil changes from a plastic to a liquid state.

Soils that have a high plasticity index have a wide range of moisture content in which the soil performs as a plastic material. Highly and moderately plastic clays have large PI values. Plasticity index is used in classifying soils in the Unified and AASHTO classification systems.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.



Map Scale: 1:9,870 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 100 200 400 600

Feet
0 450 900 1800 2700

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

<= 11.1

> 11.1 and <= 24.0

> 24.0 and <= 27.0

Not rated or not available

Soil Rating Lines

<= 11.1

> 11.1 and <= 24.0

> 24.0 and <= 27.0

Not rated or not available

Soil Rating Points

<= 11.1

> 11.1 and <= 24.0

> 24.0 and <= 27.0

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Plasticity Index

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
1007	Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes	11.1	16.9	6.8%
1141	Zaca-Apollo, warm complex, 20 to 55 percent slopes	27.0	180.0	72.2%
1232	Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced	24.0	52.4	21.0%
Totals for Area of Interest			**249.3**	**100.0%**

Rating Options—Plasticity Index

Units of Measure: percent

Aggregation Method: Weighted Average

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Weighted Average" computes a weighted average value for all components in the map unit. Percent composition is the weighting factor. The result returned by this aggregation method represents a weighted average value of the corresponding attribute throughout the map unit.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Interpret Nulls as Zero: No

This option indicates if a null value for a component should be converted to zero before aggregation occurs. This will be done only if a map unit has at least one component where this value is not null.

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

For an attribute of a soil horizon, a depth qualification must be specified. In most cases it is probably most appropriate to specify a fixed depth range, either in centimeters or inches. The Bottom Depth must be greater than the Top Depth, and the Top Depth can be greater than zero. The choice of "inches" or "centimeters" only applies to the depth of soil to be evaluated. It has no influence on the units of measure the data are presented in.

When "Surface Layer" is specified as the depth qualifier, only the surface layer or horizon is considered when deriving a value for a component, but keep in mind that the thickness of the surface layer varies from component to component.

When "All Layers" is specified as the depth qualifier, all layers recorded for a component are considered when deriving the value for that component.

Whenever more than one layer or horizon is considered when deriving a value for a component, and the attribute being aggregated is a numeric attribute, a weighted average value is returned, where the weighting factor is the layer or horizon thickness.

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the following National Soil Survey Handbook link: “National Soil Survey Handbook.”

ABC soil

A soil having an A, a B, and a C horizon.

Ablation till

Loose, relatively permeable earthy material deposited during the downwasting of nearly static glacial ice, either contained within or accumulated on the surface of the glacier.

AC soil

A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil

The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil

Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil

A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial cone

A semiconical type of alluvial fan having very steep slopes. It is higher, narrower, and steeper than a fan and is composed of coarser and thicker layers of material deposited by a combination of alluvial episodes and (to a much lesser degree) landslides (debris flow). The coarsest materials tend to be concentrated at the apex of the cone.

Alluvial fan

A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.

Alluvium

Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Alpha,alpha-dipyridyl

A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

Animal unit month (AUM)

The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions

Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon

A subsoil horizon characterized by an accumulation of illuvial clay.

Arroyo

The flat-floored channel of an ephemeral stream, commonly with very steep to vertical banks cut in unconsolidated material. It is usually dry but can be transformed into a temporary watercourse or short-lived torrent after heavy rain within the watershed.

Aspect

The direction toward which a slope faces. Also called slope aspect.

Association, soil

A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity)

The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low: 0 to 3
Low: 3 to 6
Moderate: 6 to 9
High: 9 to 12
Very high: More than 12

Backslope

The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Backswamp

A flood-plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.

Badland

A landscape that is intricately dissected and characterized by a very fine drainage network with high drainage densities and short, steep slopes and narrow interfluves. Badlands develop on surfaces that have little or no vegetative cover overlying unconsolidated or poorly cemented materials (clays, silts, or sandstones) with, in some cases, soluble minerals, such as gypsum or halite.

Bajada

A broad, gently inclined alluvial piedmont slope extending from the base of a mountain range out into a basin and formed by the lateral coalescence of a series of alluvial fans. Typically, it has a broadly undulating transverse profile, parallel to the mountain front, resulting from the convexities of component fans. The term is generally restricted to constructional slopes of intermontane basins.

Basal area

The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation

The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope (geomorphology)

A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Bedding plane

A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology)

from the preceding or following layer; a plane of deposition. It commonly marks a change in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.

Bedding system

A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock

The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography

A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench terrace

A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum

Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Blowout (map symbol)

A saucer-, cup-, or trough-shaped depression formed by wind erosion on a preexisting dune or other sand deposit, especially in an area of shifting sand or loose soil or where protective vegetation is disturbed or destroyed. The adjoining accumulation of sand derived from the depression, where recognizable, is commonly included. Blowouts are commonly small.

Borrow pit (map symbol)

An open excavation from which soil and underlying material have been removed, usually for construction purposes.

Bottom land

An informal term loosely applied to various portions of a flood plain.

Boulders

Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks

A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.

Breast height

An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management

Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Butte

An isolated, generally flat-topped hill or mountain with relatively steep slopes and talus or precipitous cliffs and characterized by summit width that is less than the height of bounding escarpments; commonly topped by a caprock of resistant material and representing an erosion remnant carved from flat-lying rocks.

Cable yarding

A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil

A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Caliche

A general term for a prominent zone of secondary carbonate accumulation in surficial materials in warm, subhumid to arid areas. Caliche is formed by both geologic and pedologic processes. Finely crystalline calcium carbonate forms a nearly continuous surface-coating and void-filling medium in geologic (parent) materials. Cementation ranges from weak in nonindurated forms to very strong in indurated forms. Other minerals (e.g., carbonates, silicate, and sulfate) may occur as accessory cements. Most petrocalcic horizons and some calcic horizons are caliche.

California bearing ratio (CBR)

The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy

The leafy crown of trees or shrubs. (See Crown.)

Canyon

A long, deep, narrow valley with high, precipitous walls in an area of high local relief.

Capillary water

Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena

A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.

Cation

An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity

The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Catsteps

See Terracettes.

Cement rock

Shaly limestone used in the manufacture of cement.

Channery soil material

Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment

Control of unwanted vegetation through the use of chemicals.

Chiseling

Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Cirque

A steep-walled, semicircular or crescent-shaped, half-bowl-like recess or hollow, commonly situated at the head of a glaciated mountain valley or high on the side of a mountain. It was produced by the erosive activity of a mountain glacier. It commonly contains a small round lake (tarn).

Clay

As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions

See Redoximorphic features.

Clay film

A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Clay spot (map symbol)

A spot where the surface texture is silty clay or clay in areas where the surface layer of the soils in the surrounding map unit is sandy loam, loam, silt loam, or coarser.

Claypan

A dense, compact subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. The layer restricts the downward movement of water through the soil. A claypan is commonly hard when dry and plastic and sticky when wet.

Climax plant community

The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil

Sand or loamy sand.

Cobble (or cobblestone)

A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material

Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility)

See Linear extensibility.

Colluvium

Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

Complex slope

Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil

A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions

See Redoximorphic features.

Conglomerate

A coarse grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system

Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage

A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil

Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the “Soil Survey Manual.”

Contour stripcropping

Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section

The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat)

A type of limnic layer composed predominantly of fecal material derived from aquatic animals.

Corrosion (geomorphology)

A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations)

Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop

A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management

Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system

Growing crops according to a planned system of rotation and management practices.

Cross-slope farming

Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown

The upper part of a tree or shrub, including the living branches and their foliage.

Cryoturbate

A mass of soil or other unconsolidated earthy material moved or disturbed by frost action. It is typically coarser than the underlying material.

Cuesta

An asymmetric ridge capped by resistant rock layers of slight or moderate dip (commonly less than 15 percent slopes); a type of homocline produced by differential erosion of interbedded resistant and weak rocks. A cuesta has a long, gentle slope on one side (dip slope) that roughly parallels the inclined beds; on the other side, it has a relatively short and steep or clifflike slope (scarp) that cuts through the tilted rocks.

Culmination of the mean annual increment (CMAI)

The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave

The walls of excavations tend to cave in or slough.

Decreasers

The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing

Postponing grazing or resting grazing land for a prescribed period.

Delta

A body of alluvium having a surface that is fan shaped and nearly flat; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

Dense layer

A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depression, closed (map symbol)

A shallow, saucer-shaped area that is slightly lower on the landscape than the surrounding area and that does not have a natural outlet for surface drainage.

Depth, soil

Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Desert pavement

A natural, residual concentration or layer of wind-polished, closely packed gravel, boulders, and other rock fragments mantling a desert surface. It forms where wind action and sheetwash have removed all smaller particles or where rock fragments have migrated upward through sediments to the surface. It typically protects the finer grained underlying material from further erosion.

Diatomaceous earth

A geologic deposit of fine, grayish siliceous material composed chiefly or entirely of the remains of diatoms.

Dip slope

A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace)

A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming

A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Drainage class (natural)

Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the “Soil Survey Manual.”

Drainage, surface

Runoff, or surface flow of water, from an area.

Drainageway

A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Draw

A small stream valley that generally is shallower and more open than a ravine or gulch and that has a broader bottom. The present stream channel may appear inadequate to have cut the drainageway that it occupies.

Drift

A general term applied to all mineral material (clay, silt, sand, gravel, and boulders) transported by a glacier and deposited directly by or from the ice or transported by running water emanating from a glacier. Drift includes unstratified material (till) that forms moraines and stratified deposits that form outwash plains, eskers, kames, varves, and glaciofluvial sediments. The term is generally applied to Pleistocene glacial deposits in areas that no longer contain glaciers.

Drumlin

A low, smooth, elongated oval hill, mound, or ridge of compact till that has a core of bedrock or drift. It commonly has a blunt nose facing the direction from which the ice approached and a gentler slope tapering in the other direction. The longer axis is parallel to the general direction of glacier flow. Drumlins are products of streamline (laminar) flow of glaciers, which molded the subglacial floor through a combination of erosion and deposition.

Duff

A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Dune

A low mound, ridge, bank, or hill of loose, windblown granular material (generally sand), either barren and capable of movement from place to place or covered and stabilized with vegetation but retaining its characteristic shape.

Earthy fill

See Mine spoil.

Ecological site

An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Eluviation

The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation

A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian deposit

Sand-, silt-, or clay-sized clastic material transported and deposited primarily by wind, commonly in the form of a dune or a sheet of sand or loess.

Ephemeral stream

A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation

A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion

The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (accelerated)

Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion (geologic)

Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion pavement

A surficial lag concentration or layer of gravel and other rock fragments that remains on the soil surface after sheet or rill erosion or wind has removed the finer soil particles and that tends to protect the underlying soil from further erosion.

Erosion surface

A land surface shaped by the action of erosion, especially by running water.

Escarpment

A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

Escarpment, bedrock (map symbol)

A relatively continuous and steep slope or cliff, produced by erosion or faulting, that breaks the general continuity of more gently sloping land surfaces. Exposed material is hard or soft bedrock.

Escarpment, nonbedrock (map symbol)

A relatively continuous and steep slope or cliff, generally produced by erosion but in some places produced by faulting, that breaks the continuity of more gently sloping land surfaces. Exposed earthy material is nonsoil or very shallow soil.

Esker

A long, narrow, sinuous, steep-sided ridge of stratified sand and gravel deposited as the bed of a stream flowing in an ice tunnel within or below the ice (subglacial) or between ice walls on top of the ice of a wasting glacier and left

behind as high ground when the ice melted. Eskers range in length from less than a kilometer to more than 160 kilometers and in height from 3 to 30 meters.

Extrusive rock

Igneous rock derived from deep-seated molten matter (magma) deposited and cooled on the earth's surface.

Fallow

Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan remnant

A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, that have been either dissected or partially buried.

Fertility, soil

The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat)

The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity

The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fill slope

A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil

Sandy clay, silty clay, or clay.

Firebreak

An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom

An obsolete, informal term loosely applied to the lowest flood-plain steps that are subject to regular flooding.

Flaggy soil material

Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone

A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain

The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Flood-plain landforms

A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

Flood-plain splay

A fan-shaped deposit or other outspread deposit formed where an overloaded stream breaks through a levee (natural or artificial) and deposits its material (commonly coarse grained) on the flood plain.

Flood-plain step

An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.

Fluvial

Of or pertaining to rivers or streams; produced by stream or river action.

Foothills

A region of steeply sloping hills that fringes a mountain range or high-plateau escarpment. The hills have relief of as much as 1,000 feet (300 meters).

Footslope

The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb

Any herbaceous plant not a grass or a sedge.

Forest cover

All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type

A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan

A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil

The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gilgai

Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.

Glaciofluvial deposits

Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur in the form of outwash plains, valley trains, deltas, kames, eskers, and kame terraces.

Glaciolacustrine deposits

Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are bedded or laminated.

Gleyed soil

Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping

Growing crops in strips that grade toward a protected waterway.

Grassed waterway

A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel

Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravel pit (map symbol)

An open excavation from which soil and underlying material have been removed and used, without crushing, as a source of sand or gravel.

Gravelly soil material

Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Gravelly spot (map symbol)

A spot where the surface layer has more than 35 percent, by volume, rock fragments that are mostly less than 3 inches in diameter in an area that has less than 15 percent rock fragments.

Green manure crop (agronomy)

A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water

Water filling all the unblocked pores of the material below the water table.

Gully (map symbol)

A small, steep-sided channel caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage whereas a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock

Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim

Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hardpan

A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head slope (geomorphology)

A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat)

Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops

Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill

A generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

Hillslope

A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

Horizon, soil

A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon: An organic layer of fresh and decaying plant residue.

L horizon: A layer of organic and mineral limnic materials, including coprogenous earth (sedimentary peat), diatomaceous earth, and marl.

A horizon: The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon: The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon: The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon: The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon: Soft, consolidated bedrock beneath the soil.

R layer: Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

M layer: A root-limiting subsoil layer consisting of nearly continuous, horizontally oriented, human-manufactured materials.

W layer: A layer of water within or beneath the soil.

Humus

The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups

Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties include depth to a seasonal high water table, the infiltration rate, and depth to a layer that significantly restricts the downward movement of water. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock

Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

Illuviation

The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil

A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers

Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration

The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity

The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate

The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate

The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Very low: Less than 0.2
Low: 0.2 to 0.4
Moderately low: 0.4 to 0.75
Moderate: 0.75 to 1.25
Moderately high: 1.25 to 1.75
High: 1.75 to 2.5
Very high: More than 2.5

Interfluve

A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology)

A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream

A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders

On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions

See Redoximorphic features.

Irrigation

Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin: Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border: Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding: Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation: Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle): Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow: Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler: Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation: Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding: Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame

A low mound, knob, hummock, or short irregular ridge composed of stratified sand and gravel deposited by a subglacial stream as a fan or delta at the margin of a melting glacier; by a supraglacial stream in a low place or hole on the surface of the glacier; or as a ponded deposit on the surface or at the margin of stagnant ice.

Karst (topography)

A kind of topography that formed in limestone, gypsum, or other soluble rocks by dissolution and that is characterized by closed depressions, sinkholes, caves, and underground drainage.

Knoll

A small, low, rounded hill rising above adjacent landforms.

Ksat

See Saturated hydraulic conductivity.

Lacustrine deposit

Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain

A nearly level surface marking the floor of an extinct lake filled by well sorted, generally fine textured, stratified deposits, commonly containing varves.

Lake terrace

A narrow shelf, partly cut and partly built, produced along a lakeshore in front of a scarp line of low cliffs and later exposed when the water level falls.

Landfill (map symbol)

An area of accumulated waste products of human habitation, either above or below natural ground level.

Landslide

A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones

Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Lava flow (map symbol)

A solidified, commonly lobate body of rock formed through lateral, surface outpouring of molten lava from a vent or fissure.

Leaching

The removal of soluble material from soil or other material by percolating water.

Levee (map symbol)

An embankment that confines or controls water, especially one built along the banks of a river to prevent overflow onto lowlands.

Linear extensibility

Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^{1}/_{3}$- or $^{1}/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit

The moisture content at which the soil passes from a plastic to a liquid state.

Loam

Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess

Material transported and deposited by wind and consisting dominantly of silt-sized particles.

Low strength

The soil is not strong enough to support loads.

Low-residue crops

Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Marl

An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions; formed primarily under freshwater lacustrine conditions but also formed in more saline environments.

Marsh or swamp (map symbol)

A water-saturated, very poorly drained area that is intermittently or permanently covered by water. Sedges, cattails, and rushes are the dominant vegetation in marshes, and trees or shrubs are the dominant vegetation in swamps. Not used in map units where the named soils are poorly drained or very poorly drained.

Mass movement

A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.

Masses

See Redoximorphic features.

Meander belt

The zone within which migration of a meandering channel occurs; the flood-plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.

Meander scar

A crescent-shaped, concave or linear mark on the face of a bluff or valley wall, produced by the lateral erosion of a meandering stream that impinged upon and undercut the bluff.

Meander scroll

One of a series of long, parallel, close-fitting, crescent-shaped ridges and troughs formed along the inner bank of a stream meander as the channel migrated laterally down-valley and toward the outer bank.

Mechanical treatment

Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil

Very fine sandy loam, loam, silt loam, or silt.

Mesa

A broad, nearly flat topped and commonly isolated landmass bounded by steep slopes or precipitous cliffs and capped by layers of resistant, nearly horizontal rocky material. The summit width is characteristically greater than the height of the bounding escarpments.

Metamorphic rock

Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement at depth in the earth’s crust. Nearly all such rocks are crystalline.

Mine or quarry (map symbol)

An open excavation from which soil and underlying material have been removed and in which bedrock is exposed. Also denotes surface openings to underground mines.

Mine spoil

An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

Mineral soil

Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage

Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area

A kind of map unit that has little or no natural soil and supports little or no vegetation.

Miscellaneous water (map symbol)

Small, constructed bodies of water that are used for industrial, sanitary, or mining applications and that contain water most of the year.

Moderately coarse textured soil

Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil

Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon

A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Moraine

In terms of glacial geology, a mound, ridge, or other topographically distinct accumulation of unsorted, unstratified drift, predominantly till, deposited primarily by the direct action of glacial ice in a variety of landforms. Also, a general term for a landform composed mainly of till (except for kame moraines, which are composed mainly of stratified outwash) that has been deposited by a glacier. Some types of moraines are disintegration, end, ground, kame, lateral, recessional, and terminal.

Morphology, soil

The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil

Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mountain

A generic term for an elevated area of the land surface, rising more than 1,000 feet (300 meters) above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can

occur as a single, isolated mass or in a group forming a chain or range. Mountains are formed primarily by tectonic activity and/or volcanic action but can also be formed by differential erosion.

Muck

Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mucky peat

See Hemic soil material.

Mudstone

A blocky or massive, fine grained sedimentary rock in which the proportions of clay and silt are approximately equal. Also, a general term for such material as clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.

Munsell notation

A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon

A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil

A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules

See Redoximorphic features.

Nose slope (geomorphology)

A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).

Nutrient, plant

Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter

Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low: Less than 0.5 percent
Low: 0.5 to 1.0 percent
Moderately low: 1.0 to 2.0 percent
Moderate: 2.0 to 4.0 percent
High: 4.0 to 8.0 percent
Very high: More than 8.0 percent

Outwash

Stratified and sorted sediments (chiefly sand and gravel) removed or “washed out” from a glacier by meltwater streams and deposited in front of or beyond the end moraine or the margin of a glacier. The coarser material is deposited nearer to the ice.

Outwash plain

An extensive lowland area of coarse textured glaciofluvial material. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Paleoterrace

An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.

Pan

A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material

The unconsolidated organic and mineral material in which soil forms.

Peat

Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped

An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment

A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on and is being (or was) transported across a gently sloping erosional surface at the foot of a receding hill or mountain slope.

Pedon

The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation

The movement of water through the soil.

Perennial water (map symbol)

Small, natural or constructed lakes, ponds, or pits that contain water most of the year.

Permafrost

Ground, soil, or rock that remains at or below 0 degrees C for at least 2 years. It is defined on the basis of temperature and is not necessarily frozen.

pH value

A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil

A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping

Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting

Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plastic limit

The moisture content at which a soil changes from semisolid to plastic.

Plasticity index

The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plateau (geomorphology)

A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.

Playa

The generally dry and nearly level lake plain that occupies the lowest parts of closed depressions, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff. Playa deposits are fine grained and may or may not have a high water table and saline conditions.

Plinthite

The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan

A compacted layer formed in the soil directly below the plowed layer.

Ponding

Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded

Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Pore linings

See Redoximorphic features.

Potential native plant community

See Climax plant community.

Potential rooting depth (effective rooting depth)

Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning

Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil

The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil

A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use

Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and

promotes the accumulation of litter and mulch necessary to conserve soil and water.

Rangeland

Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Reaction, soil

A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid: Less than 3.5
Extremely acid: 3.5 to 4.4
Very strongly acid: 4.5 to 5.0
Strongly acid: 5.1 to 5.5
Moderately acid: 5.6 to 6.0
Slightly acid: 6.1 to 6.5
Neutral: 6.6 to 7.3
Slightly alkaline: 7.4 to 7.8
Moderately alkaline: 7.9 to 8.4
Strongly alkaline: 8.5 to 9.0
Very strongly alkaline: 9.1 and higher

Red beds

Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations

See Redoximorphic features.

Redoximorphic depletions

See Redoximorphic features.

Redoximorphic features

Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:
   A. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; *and*
   B. Masses, which are noncemented concentrations of substances within the soil matrix; *and*
   C. Pore linings, i.e., zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.
2. Redoximorphic depletions.—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:
   A. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix; *and*
   B. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).
3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix

See Redoximorphic features.

Regolith

All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief

The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material)

Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Rill

A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riser

The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

Road cut

A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments

Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop (map symbol)

An exposure of bedrock at the surface of the earth. Not used where the named soils of the surrounding map unit are shallow over bedrock or where “Rock outcrop” is a named component of the map unit.

Root zone

The part of the soil that can be penetrated by plant roots.

Runoff

The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil

A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Saline spot (map symbol)

An area where the surface layer has an electrical conductivity of 8 mmhos/cm more than the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has an electrical conductivity of 2 mmhos/cm or less.

Sand

As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone

Sedimentary rock containing dominantly sand-sized particles.

Sandy spot (map symbol)

A spot where the surface layer is loamy fine sand or coarser in areas where the surface layer of the named soils in the surrounding map unit is very fine sandy loam or finer.

Sapric soil material (muck)

The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturated hydraulic conductivity (Ksat)

The ease with which pores of a saturated soil transmit water. Formally, the proportionality coefficient that expresses the relationship of the rate of water movement to hydraulic gradient in Darcy's Law, a law that describes the rate of water movement through porous media. Commonly abbreviated as "Ksat." Terms describing saturated hydraulic conductivity are:

Very high: 100 or more micrometers per second (14.17 or more inches per hour)

High: 10 to 100 micrometers per second (1.417 to 14.17 inches per hour)

Moderately high: 1 to 10 micrometers per second (0.1417 inch to 1.417 inches per hour)

Moderately low: 0.1 to 1 micrometer per second (0.01417 to 0.1417 inch per hour)

Low: 0.01 to 0.1 micrometer per second (0.001417 to 0.01417 inch per hour)

Very low: Less than 0.01 micrometer per second (less than 0.001417 inch per hour).

To convert inches per hour to micrometers per second, multiply inches per hour by 7.0572. To convert micrometers per second to inches per hour, multiply micrometers per second by 0.1417.

Saturation

Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification

The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Sedimentary rock

A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

Sequum

A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil

A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Severely eroded spot (map symbol)

An area where, on the average, 75 percent or more of the original surface layer has been lost because of accelerated erosion. Not used in map units in which “severely eroded,” “very severely eroded,” or “gullied” is part of the map unit name.

Shale

Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.

Sheet erosion

The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Short, steep slope (map symbol)

A narrow area of soil having slopes that are at least two slope classes steeper than the slope class of the surrounding map unit.

Shoulder

The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.

Shrink-swell

The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Shrub-coppice dune

A small, streamlined dune that forms around brush and clump vegetation.

Side slope (geomorphology)

A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

Silica

A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio

The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt

As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone

An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.

Similar soils

Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole (map symbol)

A closed, circular or elliptical depression, commonly funnel shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock (e.g., limestone, gypsum, or salt) or by collapse of underlying caves within bedrock. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.

Site index

A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides (pedogenic)

Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

Slide or slip (map symbol)

A prominent landform scar or ridge caused by fairly recent mass movement or descent of earthy material resulting from failure of earth or rock under shear stress along one or several surfaces.

Slope

The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope alluvium

Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Slow refill

The slow filling of ponds, resulting from restricted water transmission in the soil.

Slow water movement

Restricted downward movement of water through the soil. See Saturated hydraulic conductivity.

Sodic (alkali) soil

A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodic spot (map symbol)

An area where the surface layer has a sodium adsorption ratio that is at least 10 more than that of the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has a sodium adsorption ratio of 5 or less.

Sodicity

The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^{+} to $Ca^{++} + Mg^{++}$. The degrees of sodicity and their respective ratios are:

Slight: Less than 13:1
Moderate: 13-30:1
Strong: More than 30:1

Sodium adsorption ratio (SAR)

A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

Soft bedrock

Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil

A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil separates

Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand: 2.0 to 1.0
Coarse sand: 1.0 to 0.5
Medium sand: 0.5 to 0.25
Fine sand: 0.25 to 0.10
Very fine sand: 0.10 to 0.05
Silt: 0.05 to 0.002
Clay: Less than 0.002

Solum

The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Spoil area (map symbol)

A pile of earthy materials, either smoothed or uneven, resulting from human activity.

Stone line

In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

Stones

Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony

Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stony spot (map symbol)

A spot where 0.01 to 0.1 percent of the soil surface is covered by rock fragments that are more than 10 inches in diameter in areas where the surrounding soil has no surface stones.

Strath terrace

A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).

Stream terrace

One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

Stripcropping

Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil

The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are:

Platy: Flat and laminated

Prismatic: Vertically elongated and having flat tops

Columnar: Vertically elongated and having rounded tops

Angular blocky: Having faces that intersect at sharp angles (planes)

Subangular blocky: Having subrounded and planar faces (no sharp angles)

Granular: Small structural units with curved or very irregular faces

Structureless soil horizons are defined as follows:

Single grained: Entirely noncoherent (each grain by itself), as in loose sand

Massive: Occurring as a coherent mass

Stubble mulch

Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil

Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling

Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum

The part of the soil below the solum.

Subsurface layer

Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow

The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit

The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer

The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Surface soil

The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Talus

Rock fragments of any size or shape (commonly coarse and angular) derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose broken rock formed chiefly by falling, rolling, or sliding.

Taxadjuncts

Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terminal moraine

An end moraine that marks the farthest advance of a glacier. It typically has the form of a massive arcuate or concentric ridge, or complex of ridges, and is underlain by till and other types of drift.

Terrace (conservation)

An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field

generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geomorphology)

A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.

Terracettes

Small, irregular steplike forms on steep hillslopes, especially in pasture, formed by creep or erosion of surficial materials that may be induced or enhanced by trampling of livestock, such as sheep or cattle.

Texture, soil

The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.”

Thin layer

Otherwise suitable soil material that is too thin for the specified use.

Till

Dominantly unsorted and nonstratified drift, generally unconsolidated and deposited directly by a glacier without subsequent reworking by meltwater, and consisting of a heterogeneous mixture of clay, silt, sand, gravel, stones, and boulders; rock fragments of various lithologies are embedded within a finer matrix that can range from clay to sandy loam.

Till plain

An extensive area of level to gently undulating soils underlain predominantly by till and bounded at the distal end by subordinate recessional or end moraines.

Tilth, soil

The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope

The gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil

The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements

Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread

The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Tuff

A generic term for any consolidated or cemented deposit that is 50 percent or more volcanic ash.

Upland

An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.

Valley fill

The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.

Variegation

Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve

A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Very stony spot (map symbol)

A spot where 0.1 to 3.0 percent of the soil surface is covered by rock fragments that are more than 10 inches in diameter in areas where the surface of the surrounding soil is covered by less than 0.01 percent stones.

Water bars

Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering

All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded

Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wet spot (map symbol)

A somewhat poorly drained to very poorly drained area that is at least two drainage classes wetter than the named soils in the surrounding map unit.

Wilting point (or permanent wilting point)

The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow

The uprooting and tipping over of trees by the wind.

APPENDIX D

PLANT AND WILDLIFE SPECIES OBSERVED DURING SURVEYS

Table 1 contains the list of vascular plant taxa recorded during the biological field survey conducted within the BSA. Plant nomenclature and taxonomic order is based on *The Jepson Manual: Vascular Plants of California, s*econd Edition (Baldwin et al., 2012), and/or the Calflora website (Calflora, 2022).

Table 1
Plant Species Observed during the Field Surveys

Scientific Name	Common Name	
EUDICOTS		
Adoxaceae	**Muskroot Family**	**Status**
Sambucus nigra ssp. *caerulea*	blue elderberry	
Amaranthaceae	**Amaranth Family**	
*Amaranthus albus**	pigweed amaranth	
Anacardiaceae	**Sumac or Cashew Family**	
*Schinus molle**	Peruvian pepper tree (=California pepper tree)	Cal-IPC: limited
Toxicodendron diversilobum	poison oak	
Apocynaceae	**Dogbane Family**	
Funastrum cynanchoides ssp. *hartwegii* (=*Sarcostemma cynanchoides*)	climbing milkweed	
Asparagaceae	**Asparagus Family**	
Hesperoyucca	Newberry's yucca	
Asteraceae (=Compositae)	**Sunflower Family**	
*Erigeron canadensis** (=*Conyza canadensis*)	horseweed (=mare's tail)	
Baccharis pilularis	coyote brush	
Baccharis salicifolia ssp. *salicifolia* (=*Baccharis salicifolia*)	mule fat (=seep willow)	
Carduus pycnocephalus ssp. *pycnocephalus*	Italian thistle	
Gutierrezia microcephala	threadleaf snakeweed	
Pseudognaphalium biolettii (=*Gnaphalium bicolor*)	two-toned everlasting (=bicolored cudweed)	
Malacothrix saxatilis	cliff aster (=cliff malacothrix)	
*Silybum marianum**	milk thistle	Cal-IPC: limited
cirsium occidentale	western thistle	
Centuarea militensis	maltese star-thistle	
Artemisia californica	California sagebrush	

Scientific Name	Common Name	
Boraginaceae	**Borage or Waterleaf Family**	
Cryptantha sp.	cryptantha	
Brassicaceae	**Mustard Family**	
*Brassica nigra**	black mustard	Cal-IPC: moderate
*Hirschfeldia incana**	short-pod mustard	
Cactaceae	**Cactus Family**	
Opuntia littoralis	coastal prickly pear	
*Opuntia ficus-indica**	mission prickly pear (=tuna cactus, =mission fig)	
Caprifoliaceae	**Honeysuckle Family**	
*Lonicera japonica**	Japanese honeysuckle	
Chenopodiaceae	**Goosefoot Family**	
*Chenopodium album**	lamb's quarters (=white goosefoot)	
*Salsola tragus**	Russian thistle (=tumbleweed)	Cal-IPC: limited
*Atriplex semibaccata**	Australian saltbush	Cal-IPC: moderate
Convolvulaceae	**Morning-Glory Family**	
Cuscuta sp.	dodder	
Cucurbitaceae	**Gourd Family**	
Cucurbita foetidissima	stinking gourd	
Marah macrocarpa (=*Marah macrocarpus*)	wild cucumber (=man-root)	
Euphorbiaceae	**Spurge Family**	
Euphorbia albomarginata	rattlesnake sandmat	
*Ricinus communis**	castor bean	Cal-IPC: limited
Fabaceae (=Leguminosae)	**Legume Family**	
Lupinus succulentus	arroyo lupine (=foothill lupine)	
Fagaceae	**Oak Family**	
Quercus agrifolia var. *agrifolia*	coast live oak	
Lamiaceae (=Labiatae)	**Mint Family**	
Trichostema lanceolatum	vinegar weed	

Scientific Name	Common Name	
*Marrubium vulgare**	horehound	Cal-IPC: limited
Salvia mellifera	black sage	
Juglandaceae	**Walnut Family**	
Juglans californica (=*Juglans californica* var. *californica*)	southern California black walnut	
Myrtaceae	**Eucalyptus Family**	
Eucalyptus spp.	eucalyptus (ornamental)	Cal-IPC: limited
Plantaginaceae	**Plantain Family**	
Penstemon heterophyllus	foothill penstemon	
Rosaceae	**Rose Family**	
Heteromeles arbutifolia	toyon (=Christmas-berry, =California holly)	
Polygonaceae	**Buckwheat Family**	
Eriogonum fasciculatum	California buckwheat	
*Polygonum aviculare**	prostrate knotweed	
Pinaceae	**Pine Family**	
Pinus spp.	ornamental pine(s)	
Rhamnaceae	**Buckthorn Family**	
Rhamnus ilicifolia	holly-leaf redberry	
Salicaceae	**Willow Family**	
Salix lasiolepis	arroyo willow	
Simaroubaceae	**Simaroubaceae Family**	
*Ailanthus altissima**	tree of heaven	Cal-IPC: moderate
Solanaceae	**Nightshade Family**	
*Nicotiana glauca**	tree tobacco	Cal-IPC: moderate
Datura wrightii	desert thorn apple (=desert thornapple)	
Tamaricaceae	**Tamarisk Family**	
*Tamarix ramosissima**	saltcedar	Cal-IPC: high
MONOCOTS		
Poaceae	**Grass Family**	

Scientific Name	Common Name	
*Bromus diandrus**	ripgut grass	Cal-IPC: moderate
*Avena spp.**	wild oat	
*Bromus rubens**	red brome	Cal-IPC: high
Stipa coronata	crested needle grass	

*Non-native species

Table 2 contains the list of wildlife species observed and/or detected during the biological field surveys. Wildlife nomenclature and taxonomic order is based on the following treatments according to class of species:

- **Birds.** *Check-list of North American Birds. S*eventh Edition and Supplements (Chesser et al., 2022)
- **Mammals**. *Complete List of Amphibian, Reptile, Bird and Mammal Species in California* (CDFW, 2016).
- **Native Wildlife.** *California's Life History Accounts and Range Maps* (accessed, 9/30/2022), CDFW 2022)

Table 2
Wildlife Species Observed/Detected during the Field Surveys

Scientific Name	Common Name	Status
Arthropods		
Nymphalidae	**Brush-Footed Butterfly Family**	
Danaus plexippus	monarch butterfly	Federal candidate for listing: overwintering population
Birds		
Accipitridae	**Accipiter Family**	
Buteo lineatus	red-shouldered hawk	
Accipiter cooperii	Cooper's hawk	CDFW Watch List, season of concern: nesting
Buteo jamaicensis	red-tailed hawk	
Gallus domesticus	domestic rooster	
Aegithalidae	**Bushtit Family**	
Psaltriparus minimus	bushtit	
Columbidae	**Dove/Pigeon Family**	
*Streptopelia decaocto**	Eurasian collared-dove	
Corvidae	**Crow Family**	
Aphelocoma californica	California scrub jay	
Corvus brachyrhynchos	American crow	
Fringillidae	**Finch Family**	
Spinus psaltria	lesser goldfinch	
Spinus tristis	American goldfinch	

Scientific Name	Common Name	Status
Haemorhous mexicanus	house finch	
Hirundinidae	**Swallow Family**	
Petrochelidon pyrrhonota	cliff swallow	
Mimidae	**Mimid Family**	
Mimus polyglottos	northern mockingbird	
Passeridae	**Old World Sparrow Family**	
Passer domesticus	house sparrow	
Passerellidae	**New World Sparrow Family**	
Pipilo maculatus	spotted towhee	
Melozone crissalis	California towhee	
Picidae	**Woodpecker Family**	
Melanerpes formicivorus	acorn woodpecker	
Dryobates nuttallii	Nuttall's woodpecker	BCC
Trochilidae	**Hummingbird Family**	
Calypte anna	Anna's hummingbird	
Troglodytidae	**Wren Family**	
Thryomanes bewickii	Bewick's wren	
Troglodytes aedon	house wren	
Tyrannidae	**Tyrant Flycatcher Family**	
Tyrannus vociferans	Cassin's kingbird	
Tyrannus verticalis	western kingbird	
Mammals		
Canidae	**Canine Family**	

Scientific Name	Common Name	Status
Canis latrans	coyote	
Canis lupus familiaris	domestic dog	
Cricetidae	**Woodrat Family**	
Neotoma fuscipes	dusky-footed woodrat	
Geomyidae	**Pocket Gopher Family**	
*Thomomys bottae**	Botta's pocket gopher	
Leporidae	**Rabbit/Hare Family**	
Sylvilagus audubonii	cottontail rabbit	
Sciuridae	**Squirrel Family**	
Otospermophilus beecheyi	California ground squirrel	
*Sciurus niger**	eastern fox squirrel	
Sciurus griseus	western gray squirrel	
Reptiles		
Phrynosomatidae	**North American Spiny Lizard Family**	
Sceloporus occidentalis longipes	Great Basin fence lizard	
Uta stansburiana elegans	western side-blotched lizard	

APPENDIX E

REPRESENTATIVE SITE PHOTOGRAPHS

PHOTO 1: Areas 4a, 4g, and 4f from southwest of Area 3c. California buckwheat scrub, walnut woodland, and coast live oak woodland visible midground; water tank to the west (8/5/2022).

PHOTO 2: Areas 3b and 3c from southwest. Ribbon drain from water tank visible in middle foreground. Also shown: walnut woodland, upland mustards/star thistle fields, California buckwheat scrub, and developed areas (8/5/2022).

PHOTO 3: Area 1c, coast prickly pear scrub (7/1/2022).

PHOTO 4: Area 5f; coastal cactus scrub with buckwheat in foreground, and coast live oak woodland in left background. View is southwest (8/4/2022).

PHOTO 5: Area 2c, coyote on ridge. View is north (6/30/2022).

PHOTO 6: Area 5f, dust bath area (8/4/2022).

PHOTO 7: Area 5f, small woodrat midden (8/4/2022).

PHOTO 8: Area 5f, large woodrat midden (8/4/2022).

PHOTO 9: Area 5f, California sage brush intergrading to walnut woodlands. View is northwest (8/4/2022).

PHOTO10: Area 5f, pepper tree grove and upland mustard/star thistle in background. View is east to Area A1 (8/4/2022).

PHOTO 11: Pepper tree groves along East Covina Hills Road. View is to the east (2/7/2022).

PHOTO 12: Area 3, open space. View is south, with Areas 3c, 3b, 3a, and 3 in the background (8/5/2022).

APPENDIX F

LOT-SPECIFIC IMPACTS

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
1	Developed/Ornamental	0.80	0.07	0.71	0.15	**1.72**
	Upland mustards or star-thistle fields (mowed)			0.12	0.44	**0.55**
1 Total		0.80	0.07	0.83	0.58	**2.28**
2	Coast live oak woodland and forest (disturbed)			0.11	0.31	**0.42**
	Coast prickly pear scrub				0.03	**0.03**
	Developed/Ornamental				0.25	**0.25**
	Upland mustards or star-thistle fields (mowed)	0.79	0.09	0.36	0.34	**1.57**
2 Total		0.79	0.09	0.47	0.92	**2.27**
3	Coast live oak woodland and forest (disturbed)	0.12	0.01	0.07	0.20	**0.40**
	Coast prickly pear scrub				0.11	**0.11**
	Developed/Ornamental	0.37		0.08		**0.44**
	Upland mustards or star-thistle fields (mowed)	0.06	0.02	0.10	0.43	**0.61**
3 Total		0.54	0.03	0.25	0.74	**1.56**
4	California buckwheat scrub				0.11	**0.11**
	California walnut groves				0.00	**0.00**
	Coast live oak woodland and forest (disturbed)	0.03	0.00	0.02	0.03	**0.09**
	Developed/Ornamental	0.33		0.10	0.01	**0.43**
	Upland mustards or star-thistle fields (mowed)	0.13	0.06	0.15	0.41	**0.76**
4 Total		0.49	0.07	0.27	0.56	**1.40**
5	California buckwheat scrub				0.16	**0.16**
	California walnut groves				0.01	**0.01**
	Developed/Ornamental	0.30		0.10		**0.40**
	Upland mustards or star-thistle fields (mowed)	0.18	0.06	0.19	0.35	**0.79**
5 Total		0.47	0.06	0.29	0.53	**1.36**

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
6	California buckwheat scrub (disturbed)				0.34	**0.34**
	Developed/Ornamental	0.28		0.08		**0.36**
	Upland mustards or star-thistle fields (mowed)	0.40	0.05	0.18	0.62	**1.25**
6 Total		0.67	0.05	0.27	0.96	**1.95**
7	California buckwheat scrub (disturbed)				0.33	**0.33**
	California walnut groves	0.08	0.02	0.12	0.13	**0.35**
	Developed/Ornamental	0.47		0.11		**0.58**
	Upland mustards or star-thistle fields (mowed)	0.09	0.04	0.25	0.24	**0.61**
7 Total		0.65	0.06	0.47	0.70	**1.88**
8	California buckwheat scrub (disturbed)				0.06	**0.06**
	California walnut groves	0.13	0.01	0.03	0.87	**1.04**
	California walnut groves (disturbed)	0.31	0.02	0.03	0.00	**0.36**
	Developed/Ornamental	0.30		0.11	0.01	**0.41**
	Upland mustards or star-thistle fields	0.00	0.00	0.03	0.21	**0.25**
8 Total		0.75	0.03	0.20	1.15	**2.13**
9	California walnut groves	0.04		0.01	0.02	**0.07**
	California walnut groves (disturbed)	0.01		0.01		**0.02**
	Coast live oak woodland and forest (disturbed)	0.09		0.04	0.77	**0.90**
	Developed/Ornamental	1.13	0.03	0.12		**1.28**
	Upland mustards or star-thistle fields	0.12	0.06	0.11	1.45	**1.74**
9 Total		1.38	0.09	0.30	2.23	**4.00**
10	California buckwheat scrub	0.04		0.05		**0.09**
	California buckwheat scrub (disturbed)				0.17	**0.17**
	California walnut groves	0.03		0.01	0.17	**0.21**

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
	Coast live oak woodland and forest (disturbed)	0.27		0.02	0.40	**0.68**
	Developed/Ornamental	0.05		0.02	0.00	**0.07**
	Upland mustards or star-thistle fields	0.60	0.04	0.13	1.03	**1.80**
10 Total		0.99	0.04	0.22	1.77	**3.03**
11	California buckwheat scrub	0.79		0.02	0.53	**1.33**
	California buckwheat scrub (disturbed)				0.64	**0.64**
	California sagebrush - black sage scrub	0.98		0.61	3.27	**4.86**
	California walnut groves	0.83		0.36	7.25	**8.45**
	Coast prickly pear scrub	0.00		0.33	3.38	**3.71**
	Developed/Ornamental	1.08		0.16	0.01	**1.25**
	Pepper tree groves				0.66	**0.66**
	Upland mustards or star-thistle fields	0.01			0.49	**0.50**
11 Total		3.70		1.48	16.22	**21.40**
12	California walnut groves	0.00	0.01	0.07	1.11	**1.20**
	Developed/Ornamental	0.69	0.06	0.14	0.00	**0.88**
12 Total		0.69	0.07	0.21	1.11	**2.08**
13	California walnut groves			0.08	0.05	**0.13**
	Developed/Ornamental	0.31	0.00	0.10		**0.42**
	Upland mustards or star-thistle fields			0.07	0.00	**0.07**
	Upland mustards or star-thistle fields (mowed)	0.01	0.05	0.26		**0.33**
13 Total		0.33	0.06	0.51	0.05	**0.95**

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
14	California walnut groves			0.21	0.53	**0.74**
	Developed/Ornamental	1.36	0.13	0.40		**1.88**
	Upland mustards or star-thistle fields			0.42	0.56	**0.98**
14 Total		1.36	0.13	1.02	1.09	**3.60**
15	California walnut groves	0.03		0.02	0.92	**0.98**
	Developed/Ornamental	0.34		0.09		**0.44**
	Upland mustards or star-thistle fields				0.49	**0.49**
	Upland mustards or star-thistle fields (mowed)	0.21		0.03	0.05	**0.29**
15 Total		0.58		0.14	1.46	**2.19**
16	California walnut groves	0.08		0.01	0.50	**0.59**
	Developed/Ornamental	0.50		0.11		**0.61**
	Upland mustards or star-thistle fields	0.00	0.01	0.07	1.20	**1.28**
	Upland mustards or star-thistle fields (mowed)	0.43	0.05	0.16		**0.64**
16 Total		1.01	0.06	0.35	1.69	**3.11**
17	California walnut groves	0.05	0.04	0.47		**0.56**
	Coast live oak woodland and forest (disturbed)	0.01	0.00	0.17		**0.19**
	Developed/Ornamental	0.48	0.02	0.14		**0.65**
	Upland mustards or star-thistle fields (mowed)			0.16		**0.16**
17 Total		0.54	0.07	0.94		**1.55**
18	California walnut groves	0.12	0.04	0.21		**0.37**
	Coast live oak woodland and forest (disturbed)	0.02	0.03	0.38		**0.42**

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
	Developed/Ornamental	0.24		0.06		**0.31**
	Upland mustards or star-thistle fields (mowed)			0.00		**0.00**
18 Total		0.38	0.06	0.66		**1.11**
19	California walnut groves	0.23	0.06	0.54		**0.82**
	Developed/Ornamental	0.04		0.04		**0.08**
	Pepper tree groves	0.08		0.01		**0.09**
19 Total		0.35	0.06	0.58		**0.99**
20	California walnut groves		0.00	0.22		**0.23**
	Developed/Ornamental	0.24	0.05	0.11		**0.41**
	Pepper tree groves		0.00	0.06		**0.06**
20 Total		0.24	0.06	0.39		**0.70**
21	California walnut groves	0.05	0.04	0.44		**0.53**
	Developed/Ornamental	0.27	0.03	0.10		**0.40**
21 Total		0.32	0.07	0.53		**0.93**
22	California walnut groves	0.01	0.00	0.30		**0.31**
	Coast live oak woodland and forest (disturbed)			0.10		**0.10**
	Developed/Ornamental	0.36	0.05	0.23		**0.64**
	Upland mustards or star-thistle fields (mowed)			0.00		**0.00**
22 Total		0.37	0.05	0.63		**1.05**
23	California buckwheat scrub			0.00		**0.00**

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
	California walnut groves	0.22	0.07	0.37		**0.67**
	Coast live oak woodland and forest (disturbed)			0.00		**0.00**
	Developed/Ornamental	0.27	0.00	0.11		**0.39**
	Upland mustards or star-thistle fields (mowed)			0.38		**0.38**
23 Total		0.50	0.07	0.88		**1.44**
24	California buckwheat scrub	0.00		0.02		**0.02**
	California walnut groves (disturbed)	0.63		0.04	2.16	**2.83**
	Developed/Ornamental	0.39		0.07		**0.46**
	Upland mustards or star-thistle fields (mowed)	0.03		0.04	0.46	**0.52**
24 Total		1.05		0.17	2.62	**3.83**
25	California walnut groves	0.66	0.02	0.14	1.05	**1.86**
	California walnut groves (disturbed)				0.13	**0.13**
	Developed/Ornamental	0.19		0.04		**0.23**
	Upland mustards or star-thistle fields (mowed)	0.30	0.06	0.07	0.96	**1.39**
25 Total		1.15	0.08	0.25	2.14	**3.61**
26	California walnut groves	0.05	0.01	0.13	0.94	**1.13**
	Developed/Ornamental	0.45	0.02	0.09		**0.56**
	Upland mustards or star-thistle fields (mowed)	0.52	0.07	0.23	0.40	**1.21**
26 Total		1.02	0.09	0.45	1.34	**2.91**
27	California walnut groves	0.28	0.09	0.43	0.44	**1.25**
	Developed/Ornamental	0.30		0.11	0.00	**0.42**

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
27 Total		0.59	0.09	0.55	0.44	**1.67**
28	California buckwheat scrub			0.02		**0.02**
	California walnut groves	0.18	0.06	0.45	0.68	**1.37**
	Developed/Ornamental	0.66		0.15		**0.81**
	Upland mustards or star-thistle fields (mowed)				0.22	**0.22**
28 Total		0.84	0.06	0.62	0.90	**2.42**
29	California buckwheat scrub		0.00	0.43	0.22	**0.64**
	California walnut groves			0.14	0.25	**0.39**
	Coast live oak woodland and forest (disturbed)			0.07	0.06	**0.12**
	Developed/Ornamental	0.59	0.02	0.13		**0.75**
	Upland mustards or star-thistle fields (mowed)	0.25	0.04	0.15	0.06	**0.51**
29 Total		0.84	0.07	0.92	0.58	**2.42**
30	California walnut groves			0.03		**0.03**
	Upland mustards or star-thistle fields (mowed)	0.37	0.08	0.56		**1.01**
30 Total		0.37	0.08	0.59		**1.04**
31	California buckwheat scrub				0.01	**0.01**
	California walnut groves	0.19	0.03	0.04	0.94	**1.21**
	Upland mustards or star-thistle fields (mowed)	0.40		0.11		**0.52**
31 Total		0.60	0.03	0.16	0.96	**1.74**
32	California walnut groves	0.30	0.01	0.06	1.03	**1.40**

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
	Upland mustards or star-thistle fields (mowed)	0.29		0.08		**0.37**
32 Total		0.59	0.01	0.15	1.03	**1.77**
33	California walnut groves	0.13	0.01	0.05	0.71	**0.91**
	Developed/Ornamental	0.02	0.00	0.06		**0.08**
	Upland mustards or star-thistle fields (mowed)	0.42	0.04	0.16	0.03	**0.65**
33 Total		0.58	0.05	0.28	0.74	**1.65**
34	California walnut groves			0.00	0.47	**0.47**
	Coast live oak woodland and forest (disturbed)				0.05	**0.05**
	Developed/Ornamental	0.51	0.05	0.34	0.02	**0.92**
	Upland mustards or star-thistle fields (mowed)			0.01	0.02	**0.02**
34 Total		0.51	0.05	0.34	0.56	**1.46**
35	California walnut groves			0.10	0.16	**0.27**
	Coast live oak woodland and forest (disturbed)				0.17	**0.17**
	Developed/Ornamental	0.44	0.06	0.24	0.07	**0.81**
35 Total		0.44	0.06	0.34	0.40	**1.24**
36	California walnut groves				0.19	**0.19**
	Coast live oak woodland and forest (disturbed)				0.01	**0.01**
	Developed/Ornamental	0.49	0.08	0.22	0.41	**1.20**
36 Total		0.49	0.08	0.22	0.60	**1.40**

APPENDIX C-1

LOT-SPECIFIC IMPACTS

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
1	Developed/Ornamental	0.80	0.07	0.71	0.15	**1.72**
	Upland mustards or star-thistle fields (mowed)			0.12	0.44	**0.55**
1 Total		0.80	0.07	0.83	0.58	**2.28**
2	Coast live oak woodland and forest (disturbed)			0.11	0.31	**0.42**
	Coast prickly pear scrub				0.03	**0.03**
	Developed/Ornamental				0.25	**0.25**
	Upland mustards or star-thistle fields (mowed)	0.79	0.09	0.36	0.34	**1.57**
2 Total		0.79	0.09	0.47	0.92	**2.27**
3	Coast live oak woodland and forest (disturbed)	0.12	0.01	0.07	0.20	**0.40**
	Coast prickly pear scrub				0.11	**0.11**
	Developed/Ornamental	0.37		0.08		**0.44**
	Upland mustards or star-thistle fields (mowed)	0.06	0.02	0.10	0.43	**0.61**
3 Total		0.54	0.03	0.25	0.74	**1.56**
4	California buckwheat scrub				0.11	**0.11**
	California walnut groves				0.00	**0.00**
	Coast live oak woodland and forest (disturbed)	0.03	0.00	0.02	0.03	**0.09**
	Developed/Ornamental	0.33		0.10	0.01	**0.43**
	Upland mustards or star-thistle fields (mowed)	0.13	0.06	0.15	0.41	**0.76**
4 Total		0.49	0.07	0.27	0.56	**1.40**
5	California buckwheat scrub				0.16	**0.16**
	California walnut groves				0.01	**0.01**
	Developed/Ornamental	0.30		0.10		**0.40**
	Upland mustards or star-thistle fields (mowed)	0.18	0.06	0.19	0.35	**0.79**
5 Total		0.47	0.06	0.29	0.53	**1.36**

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
6	California buckwheat scrub (disturbed)				0.34	**0.34**
	Developed/Ornamental	0.28		0.08		**0.36**
	Upland mustards or star-thistle fields (mowed)	0.40	0.05	0.18	0.62	**1.25**
6 Total		0.67	0.05	0.27	0.96	**1.95**
7	California buckwheat scrub (disturbed)				0.33	**0.33**
	California walnut groves	0.08	0.02	0.12	0.13	**0.35**
	Developed/Ornamental	0.47		0.11		**0.58**
	Upland mustards or star-thistle fields (mowed)	0.09	0.04	0.25	0.24	**0.61**
7 Total		0.65	0.06	0.47	0.70	**1.88**
8	California buckwheat scrub (disturbed)				0.06	**0.06**
	California walnut groves	0.13	0.01	0.03	0.87	**1.04**
	California walnut groves (disturbed)	0.31	0.02	0.03	0.00	**0.36**
	Developed/Ornamental	0.30		0.11	0.01	**0.41**
	Upland mustards or star-thistle fields	0.00	0.00	0.03	0.21	**0.25**
8 Total		0.75	0.03	0.20	1.15	**2.13**
9	California walnut groves	0.04		0.01	0.02	**0.07**
	California walnut groves (disturbed)	0.01		0.01		**0.02**
	Coast live oak woodland and forest (disturbed)	0.09		0.04	0.77	**0.90**
	Developed/Ornamental	1.13	0.03	0.12		**1.28**
	Upland mustards or star-thistle fields	0.12	0.06	0.11	1.45	**1.74**
9 Total		1.38	0.09	0.30	2.23	**4.00**
10	California buckwheat scrub	0.04		0.05		**0.09**
	California buckwheat scrub (disturbed)				0.17	**0.17**
	California walnut groves	0.03		0.01	0.17	**0.21**

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
	Coast live oak woodland and forest (disturbed)	0.27		0.02	0.40	**0.68**
	Developed/Ornamental	0.05		0.02	0.00	**0.07**
	Upland mustards or star-thistle fields	0.60	0.04	0.13	1.03	**1.80**
10 Total		0.99	0.04	0.22	1.77	**3.03**
11	California buckwheat scrub	0.79		0.02	0.53	**1.33**
	California buckwheat scrub (disturbed)				0.64	**0.64**
	California sagebrush - black sage scrub	0.98		0.61	3.27	**4.86**
	California walnut groves	0.83		0.36	7.25	**8.45**
	Coast prickly pear scrub	0.00		0.33	3.38	**3.71**
	Developed/Ornamental	1.08		0.16	0.01	**1.25**
	Pepper tree groves				0.66	**0.66**
	Upland mustards or star-thistle fields	0.01			0.49	**0.50**
11 Total		3.70		1.48	16.22	**21.40**
12	California walnut groves	0.00	0.01	0.07	1.11	**1.20**
	Developed/Ornamental	0.69	0.06	0.14	0.00	**0.88**
12 Total		0.69	0.07	0.21	1.11	**2.08**
13	California walnut groves			0.08	0.05	**0.13**
	Developed/Ornamental	0.31	0.00	0.10		**0.42**
	Upland mustards or star-thistle fields			0.07	0.00	**0.07**
	Upland mustards or star-thistle fields (mowed)	0.01	0.05	0.26		**0.33**
13 Total		0.33	0.06	0.51	0.05	**0.95**

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
14	California walnut groves			0.21	0.53	**0.74**
	Developed/Ornamental	1.36	0.13	0.40		**1.88**
	Upland mustards or star-thistle fields			0.42	0.56	**0.98**
14 Total		1.36	0.13	1.02	1.09	**3.60**
15	California walnut groves	0.03		0.02	0.92	**0.98**
	Developed/Ornamental	0.34		0.09		**0.44**
	Upland mustards or star-thistle fields				0.49	**0.49**
	Upland mustards or star-thistle fields (mowed)	0.21		0.03	0.05	**0.29**
15 Total		0.58		0.14	1.46	**2.19**
16	California walnut groves	0.08		0.01	0.50	**0.59**
	Developed/Ornamental	0.50		0.11		**0.61**
	Upland mustards or star-thistle fields	0.00	0.01	0.07	1.20	**1.28**
	Upland mustards or star-thistle fields (mowed)	0.43	0.05	0.16		**0.64**
16 Total		1.01	0.06	0.35	1.69	**3.11**
17	California walnut groves	0.05	0.04	0.47		**0.56**
	Coast live oak woodland and forest (disturbed)	0.01	0.00	0.17		**0.19**
	Developed/Ornamental	0.48	0.02	0.14		**0.65**
	Upland mustards or star-thistle fields (mowed)			0.16		**0.16**
17 Total		0.54	0.07	0.94		**1.55**
18	California walnut groves	0.12	0.04	0.21		**0.37**
	Coast live oak woodland and forest (disturbed)	0.02	0.03	0.38		**0.42**

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
	Developed/Ornamental	0.24		0.06		**0.31**
	Upland mustards or star-thistle fields (mowed)			0.00		**0.00**
18 Total		0.38	0.06	0.66		**1.11**
19	California walnut groves	0.23	0.06	0.54		**0.82**
	Developed/Ornamental	0.04		0.04		**0.08**
	Pepper tree groves	0.08		0.01		**0.09**
19 Total		0.35	0.06	0.58		**0.99**
20	California walnut groves		0.00	0.22		**0.23**
	Developed/Ornamental	0.24	0.05	0.11		**0.41**
	Pepper tree groves		0.00	0.06		**0.06**
20 Total		0.24	0.06	0.39		**0.70**
21	California walnut groves	0.05	0.04	0.44		**0.53**
	Developed/Ornamental	0.27	0.03	0.10		**0.40**
21 Total		0.32	0.07	0.53		**0.93**
22	California walnut groves	0.01	0.00	0.30		**0.31**
	Coast live oak woodland and forest (disturbed)			0.10		**0.10**
	Developed/Ornamental	0.36	0.05	0.23		**0.64**
	Upland mustards or star-thistle fields (mowed)			0.00		**0.00**
22 Total		0.37	0.05	0.63		**1.05**
23	California buckwheat scrub			0.00		**0.00**

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
	California walnut groves	0.22	0.07	0.37		**0.67**
	Coast live oak woodland and forest (disturbed)			0.00		**0.00**
	Developed/Ornamental	0.27	0.00	0.11		**0.39**
	Upland mustards or star-thistle fields (mowed)			0.38		**0.38**
23 Total		0.50	0.07	0.88		**1.44**
24	California buckwheat scrub	0.00		0.02		**0.02**
	California walnut groves (disturbed)	0.63		0.04	2.16	**2.83**
	Developed/Ornamental	0.39		0.07		**0.46**
	Upland mustards or star-thistle fields (mowed)	0.03		0.04	0.46	**0.52**
24 Total		1.05		0.17	2.62	**3.83**
25	California walnut groves	0.66	0.02	0.14	1.05	**1.86**
	California walnut groves (disturbed)				0.13	**0.13**
	Developed/Ornamental	0.19		0.04		**0.23**
	Upland mustards or star-thistle fields (mowed)	0.30	0.06	0.07	0.96	**1.39**
25 Total		1.15	0.08	0.25	2.14	**3.61**
26	California walnut groves	0.05	0.01	0.13	0.94	**1.13**
	Developed/Ornamental	0.45	0.02	0.09		**0.56**
	Upland mustards or star-thistle fields (mowed)	0.52	0.07	0.23	0.40	**1.21**
26 Total		1.02	0.09	0.45	1.34	**2.91**
27	California walnut groves	0.28	0.09	0.43	0.44	**1.25**
	Developed/Ornamental	0.30		0.11	0.00	**0.42**

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
27 Total		0.59	0.09	0.55	0.44	**1.67**
28	California buckwheat scrub			0.02		**0.02**
	California walnut groves	0.18	0.06	0.45	0.68	**1.37**
	Developed/Ornamental	0.66		0.15		**0.81**
	Upland mustards or star-thistle fields (mowed)				0.22	**0.22**
28 Total		0.84	0.06	0.62	0.90	**2.42**
29	California buckwheat scrub		0.00	0.43	0.22	**0.64**
	California walnut groves			0.14	0.25	**0.39**
	Coast live oak woodland and forest (disturbed)			0.07	0.06	**0.12**
	Developed/Ornamental	0.59	0.02	0.13		**0.75**
	Upland mustards or star-thistle fields (mowed)	0.25	0.04	0.15	0.06	**0.51**
29 Total		0.84	0.07	0.92	0.58	**2.42**
30	California walnut groves			0.03		**0.03**
	Upland mustards or star-thistle fields (mowed)	0.37	0.08	0.56		**1.01**
30 Total		0.37	0.08	0.59		**1.04**
31	California buckwheat scrub				0.01	**0.01**
	California walnut groves	0.19	0.03	0.04	0.94	**1.21**
	Upland mustards or star-thistle fields (mowed)	0.40		0.11		**0.52**
31 Total		0.60	0.03	0.16	0.96	**1.74**
32	California walnut groves	0.30	0.01	0.06	1.03	**1.40**

Lot No.	Land Cover Types	35% (acres)	20ft. Extention MCTA (acres)	20 ft. to Conservation Easement (acres)	Conservation Easement Area to end of parcel (acres)	TOTAL PARCEL
	Upland mustards or star-thistle fields (mowed)	0.29		0.08		**0.37**
32 Total		0.59	0.01	0.15	1.03	**1.77**
33	California walnut groves	0.13	0.01	0.05	0.71	**0.91**
	Developed/Ornamental	0.02	0.00	0.06		**0.08**
	Upland mustards or star-thistle fields (mowed)	0.42	0.04	0.16	0.03	**0.65**
33 Total		0.58	0.05	0.28	0.74	**1.65**
34	California walnut groves			0.00	0.47	**0.47**
	Coast live oak woodland and forest (disturbed)				0.05	**0.05**
	Developed/Ornamental	0.51	0.05	0.34	0.02	**0.92**
	Upland mustards or star-thistle fields (mowed)			0.01	0.02	**0.02**
34 Total		0.51	0.05	0.34	0.56	**1.46**
35	California walnut groves			0.10	0.16	**0.27**
	Coast live oak woodland and forest (disturbed)				0.17	**0.17**
	Developed/Ornamental	0.44	0.06	0.24	0.07	**0.81**
35 Total		0.44	0.06	0.34	0.40	**1.24**
36	California walnut groves				0.19	**0.19**
	Coast live oak woodland and forest (disturbed)				0.01	**0.01**
	Developed/Ornamental	0.49	0.08	0.22	0.41	**1.20**
36 Total		0.49	0.08	0.22	0.60	**1.40**

APPENDIX D

CULTURAL PHASE I REPORT

PHASE I
CULTURAL RESOURCES INVENTORY
FOR THE
SAN DIMAS MUNICIPAL CODE TEXT AMENDMENT 20-0005 PROJECT
CITY OF SAN DIMAS
LOS ANGELES COUNTY, CALIFORNIA

Prepared for:

Luis Torrico, Planning Manager
Community Development
City of San Dimas
Community Development Department
245 East Bonita Avenue
San Dimas, CA 91773

Prepared by:

Stephen O'Neil, M.A., RPA
Megan Black Doukakis, M.A.
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August 18, 2022

Key Words: City of San Dimas; Los Angeles County; *San Dimas, Calif*. USGS Quad.; Negative

PHASE I
CULTURAL RESOURCES INVENTORY

FOR THE

SAN DIMAS MUNICIPAL CODE TEXT AMENDMENT 20-0005 PROJECT
CITY OF SAN DIMAS
LOS ANGELES COUNTY, CALIFORNIA

City of San Dimas Community Development Division
Attention: Luis Torrico, Planning Manager
2435 East Bonita
San Dimas, CA 91773

August 18, 2022

Reviewed by: _____ Date: August 18, 2022

Stephen O'Neil, M.A., RPA
UltraSystems Environmental Inc.

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1.0 INTRODUCTION

1.1 Overview

This Phase I Cultural Resource Inventory report was prepared by UltraSystems Environmental (UEI) at the request of the City of San Dimas' (City) Planning Department. This study is for the San Dimas Municipal Code Text Amendment (MCTA) 20-0005 Project. The project consists of amendments and selected deletions within the Specific Plan-11 Planning Area 1 document. UEI conducted this cultural resources study to evaluate the potential presence of prehistoric and historic resources within the project boundary.

The proposed MCTA would allow for up to one thousand (1,000) cubic yards of grading, cut and fill, beyond that grading necessary for the primary residence, driveway and garage for properties located within Specific Plan (SP)-11 Planning Area 1 (36 residential lots), increasing from 35,000 cubic yards (CY) to 36,000 CY. The current grading quantity permitted onsite is insufficient for grading backyards, and owners must use decking the rear portions of their lots. The increase in allowable grading it to permit owners to9 grade back yards. The increase in allowable grading does not include what is necessary for the primary residence, driveway, and garage and would or expand the allowable lot coverages of primary residences. Per the previous Development Plan Review Board policy, a swimming pool and five (5) feet of decking surrounding the pool were exempted from the additional grading calculations. The proposed MCTA also includes development standards for the grading, landscaping and any retaining walls that the additional grading would require. Additional clean-up items are proposed by removing sections which dealt with the initial development of the area and codifying previous policies regarding Conditional Uses within the specific plan. The project area occupies 92-acres.

The project is located in the southwest portion of the City of San Dimas (see **Attachment A, Figure 1** and **Figure 3**), and can be seen on the *San Dimas, Calif.*, USGS topographical quadrangle, Range 09 West, Township 01 South, in the S ½ of the SE ¼ of Section 17, and the E ½ of the NW ¼ and the N ½ of the NE ¼ of Section 20 (see **Attachment A, Figure 2)**. The background research and archival study included a one-half mile buffer surrounding the project site (see **Attachment A, Figure 3)**.

Currently the project site is occupied by two residential streets (Paseo Lucinda and Calle Cristina) with approximately 25 single family residences as well as undeveloped space in adjacent canyons. The project site is surrounded by low-density single family residences on all four sides. The site is bounded by East Covina Hills Road to the south; single-family residential uses and vacant land in the city of Covina and unincorporated Los Angeles County to the west; single-family residences opposite Puente Street to the north; and single-family residences and vacant land to the east. The project site is situated on and near a hillcrest in the San Jose Hills.

Area of Potential Effect

The Area of Potential Effect (APE) for the undertaking encompasses the maximum extent of ground disturbance required by the project design (see **Attachment A**, **Figure 2**). The surface area of the APE is approximately 92 acres. All of this area is subject to direct ground disturbances during construction.

1.2 Methods

A cultural resources records search was completed at the South Central Coastal Information Center (SCCIC) at California State University, Fullerton, which is the local California Historic Resources Information System (CHRIS) facility. The records search was conducted to identify previously recorded cultural resources (prehistoric and historic archaeological sites/isolates, historic buildings, structures, objects, or districts) within the project area and to also determine previous cultural resource surveys. The project site and a one-half-mile buffer zone are included in the search radius for archival studies. These records included a review of previously recorded prehistoric and historic archaeological resources and a review of listed cultural resource survey reports within that same geographical area. The cultural resources record search was conducted by SCCIC staff.

Stephen O'Neil, M.A., RPA, who qualifies as a Principal Prehistoric Archaeologist and Historic Archaeologist per United States Secretary of the Interior Standards (see **Attachment B**) is the Principal Investigator for this study. Archaeological Technician Megan B. Doukakis contacted the Native American Heritage Commission (NAHC) requesting a Sacred Lands File (SLF) search and assisted with the preparation of this report. Archaeological Technician Raquel Sperling, B.A., RPA assisted on the historical background research.

A search of the Built Environmental Resource Directory provided by the Office of Historic Preservation (2021) for potential historic properties listed in the National Register of Historic Places (NRHP). was conducted for this project on August 12, 2022.

Disposition of Data

This report will be filed with the SCCIC, California State University, Fullerton; the City of San Dimas Planning Department; and UltraSystems Environmental, Inc., Irvine, California. All field notes and other documentation related to the study will remain on file at the Irvine office of UltraSystems.

2.0 SETTINGS

2.1 Natural Setting

The City of San Dimas is set in the eastern San Gabriel Valley, between the San Gabriel Mountains and the La Puente Hills to the southwest. Prior to urbanization creeks flowed through the Valley from the mountains west to the San Gabriel River and east to the Santa Ana River and on to the ocean. A major tributary, San Dimas Creek, now channelized, runs just north of the Project site parallel to the I-210 Freeway.

San Dimas is situated 30 miles northeast of the Pacific Ocean in the eastern San Gabriel Valley. This is a portion of the Los Angeles Basin, a flat plain that extends in all directions, north and south from the ocean to the San Gabriel Mountains east to the Chino Hills and west to the Santa Monica Mountains. Prior to urbanization, creeks flowed across the Los Angeles Basin (a plain) from the San Gabriel Mountains to the ocean with little hindrance. San Dimas lies between the San Gabriel River to the west and the Pomona Creek to the east, though these water courses often meandered across the plain to different physical locations over time with multiple exits to the ocean. The plain was primarily grassland and costal scrub brush. The rivers and creeks contained riparian habitat as well as estuaries at their ocean exits. The general climate is typical of southern California with mild, rainy winters, and warm, dry summers. Summer temperatures can exceed 80° Fahrenheit in the afternoon, though this is moderated by ocean breezes.

The Project site is located in the City of San Dimas, on the east-central edge of Los Angeles County, and is fully within the San Jose Hills with Puente Road bordering the north side and East Covina Hills Road bordering the south edge, with steep sided slopes throughout and elevations ranging from approximately 750 feet in the southwest corner to a central peak of 1034 feet. San Dimas is bordered by the cities of Glendora to the northwest, Covina to the west, Walnut to the south, Pomona to the southeast, Claremont to the east, unincorporated County of Los Angeles land to the southwest, La Verne to the northeast, and the Angeles National Forest (San Gabriel Mountains) to the north. According to the United States Census Bureau (2022), the city of San Dimas had a population of 34,939 in 2020, and covers an area of 15.43 square miles (40 square kilometers). The city is served by State Route 210/Foothill Freeway along its northern flank, which connects with State Route 57/Orange Freeway a half mile west of the project site, while Interstate 10/San Bernardino Freeway runs a half mile south of the project boundary.

The project site is mostly underlain by the Monterey (Puente) Foundation La Vida Shale Member (Tmlv) (Dibblee 2002). The soil is white in color, weathered; with thin bedded, platy, siliceous shale, clay shale, and siltstone, and some strata of tan dolomite and sandstone. Small areas of the northern and southern portion project site are underlaine by alluvial gravel and sand of valley areas (Qa) dating to the Holocene (11,650 years before present [ybp]) (Dibblee 2002).

2.2 Cultural Setting

2.2.1 Prehistoric Context

In the history of the Americas, the term "prehistoric period" refers to the time prior to the arrival of non-Indians, when native life ways and traditions remained intact and viable. In the case of Alta and Baja California, it is widely acknowledged that human occupation began 12,000 or more years ago. In order to describe and understand the cultural processes that occurred in the ensuing years,

archaeologists have developed a number of chronological frameworks that endeavor to correlate technological and cultural changes observable in the archaeological record to distinct archaeological horizons, traditions, complexes, and phases.

Unfortunately, none of these chronological frameworks has been widely accepted, and none has been developed specifically for Los Angeles County, the nearest ones being for the Colorado Desert and Peninsular Ranges region (Warren 1984), the Mojave Desert (Warren and Crabtree 1986), and interior San Diego (Meighan 1954; True 1958, 1970). Since results from archaeological investigations in this area have yet to be organized into a subregional chronological framework, most archaeologists tend to follow the regional synthesis adapted from a scheme developed by William J. Wallace in 1955 and modified by others (Wallace 1978; Warren 1968; Chartkoff and Chartkoff 1984; Moratto 1984). Although the beginning and ending dates may vary, the general framework of prehistory in the area consists of the following four periods:

- Early Hunting Stage (ca. 10000 B.C.-6000 B.C.), which was characterized by highly mobile foraging strategies and a reliance on big game animals, as evidenced by large, archaic-style projectile points, spear and atl-atl weapons systems, and the relative absence of artifacts associated with plant-processing activities;
- Millingstone Horizon (ca. 6000 cal B.C. to cal A.D. 1000), during which time mobile hunter-gatherers became more sedentary and plant foods and small game animals came into more use. This prehistoric cultural expression is often characterized by a large number of millingstones (especially well-made, deep basin metates) and formalized, portable handstones (manos). Additionally, the cultural assemblage is dominated by an abundance of scraping tools (including scraper planes and pounding/pulping implements), and only a slight representation of dart-tipped projectile points (Pinto, Elko and Gypsum types).
- Late Prehistoric Period (ca. cal A.D. 1000 to 1500), during which a more complex social organization, more diversified subsistence base and an extensive use of the bow and arrow is evidenced. Small, light arrow points, expedient millingstones and, later, pottery mark this period along with the full development of regional Native cultures and tribal territories.
- Protohistoric Period (ca. cal A.D. 1500 to 1700s) ushered in long-distance contacts with Europeans, and thereby led to the Historic Period (ca. cal A.D. 1700 to contemporary times). Small arrow points are recognized as a hallmark of this time period.

Geospatial analyses of known prehistoric sites in inland Southern California suggest that longer-term residential settlements of the Native population were more likely to occur in sheltered areas. Such locations were near the base of hills and/or on elevated terraces, hills, and finger ridges. Further, these favored locations were near permanent or reliable sources of water. These were areas that were largely level encampments situated on the unprotected valley floor. The residential sites were used for resource procurement and travel. The use of such geographical settings is supported by the ethnographic literature. These reports identify the foothills as preferred areas for settlement (Bean and Smith, 1978a; 1978b). The project area is situated at the base of the Jurupa Hills, an ideal location for prehistoric seasonal habitation site.

2.2.2 Ethnohistoric Context

The project lies within the territory of the Gabrielino (Tongva) ethnolinguistic group (Bean and Smith, 1978a:538), who speak a language classified as a member of the Uto-Aztecan language family.

This language is further affiliated as an element of the Northern Takic Branch of that linguistic group (Golla, 2011).

The Gabrielino, with the Chumash, were considered the most populous, wealthiest, and therefore most powerful ethnic nationalities in aboriginal Southern California (Bean and Smith, 1978a:538). Unfortunately, most Gabrielino cultural practices had declined before systematic ethnographic studies were instituted. Today, the leading sources on Gabrielino culture are Bean and Smith (1978a), Johnson (1962), and McCawley (1996).

According to recent research, Takic language groups were not the first inhabitants of the region. Archeologists suggest that an in-migration of these peoples may have occurred as early as 2,000 years ago, replacing or intermarrying with a more ancient indigenous people represented by speakers of a Hokan language (Howard and Raab, 1993; Porcasi, 1998). By the time of European contact, the Gabrielino territory included the southern Channel Islands and the Los Angeles Basin. Their territory reached east into the present-day San Bernardino-Riverside area and south to the San Joaquin Hills in central Orange County.

Different groups of Gabrielino adopted several subsistence strategies, based on gathering, hunting, and fishing. Because of the similarities to other Southern California tribes in economic activities, inland Gabrielino groups' industrial arts, exemplified by basket weaving, exhibited an affinity with those of their neighbors (Kroeber, 1925). Coastal Gabrielino material culture, on the other hand, reflected an elaborately developed artisanship most recognized through the medium of steatite, which was rivaled by few other groups in Southern California.

The intricacies of Gabrielino social organization are not well known. There appeared to have been at least three hierarchically ordered social classes, topped with an elite consisting of the chiefs, their immediate families, and other ceremonial specialists (Bean and Smith, 1978a). Clans owned land, and property boundaries were marked by the clan's personalized symbol. Villages were politically autonomous, composed of non-localized lineages, each with its own leader. The dominant lineage's leader was usually the village chief, whose office was generally hereditary through the male line. Occasionally several villages were allied under the leadership of a single chief. The villages frequently engaged in warfare against one another, resulting in what some consider to be a state of constant enmity between coastal and inland groups.

Tongva territory was situated generally within the Los Angeles Basin, and the San Dimas region is situated within the eastern Tongva culture area. The Tongva's neighbors were the Serrano on the north in the San Gabriel and San Bernardino mountains. Here are the headwaters of Pomona Creek and San Dimas Creek and the San Gabriel River. With the numerous streams flowing out of the San Gabriel Mountains this area was well watered and so would have been a well populated region in the prehistoric and early contact period, if not quite so densely populated as the coastal territory.

The village of *Weniinga* was somewhat west of San Dima, in the Covina area, and *Ahwiinga* was farther to the southwest in the West Covina / La Puente area (McCawley, 1996: 42 [Map 6], 45). They were located on the Rancho La Puente (McCawley, 1996:45), which also forms a part of the City of San Dimas. Other Tongva place names, which may have been associated with habitations in the past, are *Momwahomomutnga* to the north between San Dimas and Glendora, and *Torojoatnga* to the east around Claremont (Chaffey College 2022).

The first Franciscan establishment in Gabrielino territory and the broader region was Mission San Gabriel, founded in A.D. 1772. Priests from the mission proselytized the Tongva throughout the

Los Angeles Basin. As early as 1542, however, the Gabrielino were in peripheral contact with the Spanish even during the historic expedition of Juan Rodríguez Cabrillo. However, it was not until 1769 that the Spaniards took steps to colonize the territory of aboriginal Californians. Within a few decades, most of the Gabrielino were incorporated into Mission San Gabriel and other missions in Southern California (Engelhardt, 1931). Due to introduced diseases, dietary deficiencies, and forceful *reducción* (removal of non-agrarian Native populations to the mission compound), Gabrielino population dwindled rapidly from these impacts. By 1900, the Gabrielino community had almost ceased to exist as a culturally identifiable group. In the late 20th century, however, a renaissance of Native American activism and cultural revitalization of Gabrielino descendants took place. Among the results of this movement has been a return to a traditional name for the tribe, the Tongva, which is employed by several of the bands and organizations representing tribal members. Many of the Tongva bands focus on maintaining and teaching traditional knowledge, with special focus on language, place names and natural resources.

2.2.3 Historic Context

2.2.3.1 Spanish/Mexican Era

Spanish occupation of California began in 1769, at San Diego. The first Europeans to explore the area that would become the state of California were members of the A.D. 1542 expedition of Juan Rodriguez Cabrillo. Cabrillo sailed along the coast of California, but did not explore the interior. Europeans did not attempt inland exploration until 1769, when Lieutenant Colonel Gaspar de Portolá led an overland expedition from San Diego to Monterey. This expedition of 62 people passed north of the current study area in August (Brown 2001), and may have encountered the Tongva village of *Weniinga* in the Covina region (McCawley 1996:45). Mission San Gabriel was established in the Los Angeles Basin in 1771, and the Los Angeles pueblo was established as a civilian settlement on September 4, 1781 (Engelhardt 1931). The project site falls within the far western edge of the communal lands granted to the Pueblo of *Nuestra Señora de a Reina de Los Angeles de Porciuncula* on September 4, 1781 by the Spanish government.

Mexico rebelled against Spain in 1810, and by 1821, Mexico, including California, achieved independence. The Mexican Republic began to grant private land to citizens to encourage emigration to California. Huge land grant ranchos took up large sections of land in California. Ranchos surrounding the mission lands in the San Gabriel Valley east of the Pueblo of Los Angeles included the San Francisquito to the west, San Jose to the east, Paseo de Bartola to the southwest and Rincon de Brea on the southern edge of Rancho La Puente. In 1833, Mexico also secularized the Franciscan missions and opened lands previously held in trust for the Indian population to ownership by ranchers (Engelhardt 1931).

In 1845, Governor Pio Pico granted the La Puente tract to John Rowland and William Workman, the maximum allowable size of approximately 49,000 acres. This grant contains much of what are now the cities of Covina and West Covina, as well as portions of nine other towns. The name goes back to the 1770s when the Portolá Expedition had to build a temporary "bridge" over wetlands at the edge of the Puente hills immediately southwest of West Covina.

The Mexican-American War of 1846 saw the invasion of California from both land and sea. Following several skirmishes in the San Diego and Los Angeles area, and the capture of the territorial capital in Monterey, United States rule was established. Following the rapid influx of population to the north because of the Gold Rush of 1849, California was made a state in 1850. The economic and social order was slow to change in the southern portion of the state, however, and rancheros were left in control

of their vast estates through the 1860s. Los Angeles was a part of the "Cow Counties" and had little representation in the state legislature because of the sparse population. This allowed the predominantly Anglo population of the north to pass laws aimed at breaking up the ranches for settlement by Eastern farmers and, coupled with devastating droughts that crippled many livestock raisers, their dismemberment soon came. This helped pave the way for the "Boom of the Eighties" which saw an influx of people from the rest of the United States and the beginning of many of the towns we see today (Dumke 1944). This was the first spurt of growth for Los Angeles, and satellite communities started around the city to the east, south and west, and much the plains between came to be filled with farms and orchards. The Rancho La Puente holdings, however, remained largely in cattle.

2.2.3.2 The American Period to Founding of San Dimas

Los Angeles County

Los Angeles County was formed in 1850 with the creation of the state of California. (Coy 1923:140). The early version of the county included parts of what are now Kern, San Bernardino, Riverside, Inyo, Tulare, Ventura, and Orange counties. Between 1851 and 1852, Los Angeles County stretched from the Pacific Ocean coast to the state line of Nevada. As the population increased in areas of the county, sections began to split off to form San Bernardino County in 1853, Kern County in 1866, and Orange County in 1889.

Prior to the 1870s, Los Angeles County was divided into townships, many of which were amalgamations of one or more of the ranchos. Those encompassing the project area include Azusa, which encompassed the foothill communities east of the San Gabriel River, including present-day Covina and Duarte, El Monte, encompassing communities in the Whittier Narrows area, as well as the nearby present-day El Monte, La Puente and Monterey Park (Spitzzeri 2007). Azusa and El Monte Townships were merged for the 1870 census.

City of San Dimas

The initial American Anglo settlers in the area of San Dimas was the Teague family in 1878. They leased large acreage upon which they raised grain until the citrus era dawned, and San Dimas became the "Queen of the citrus belt" in Southern California (San Dimas Chamber of Commerce 2007). The arrival of the Los Angeles and San Gabriel Valley Railroad in 1887, later purchased by the Santa Fe Railroad, led to development of the La Cienega Mud Springs resort, the birthplace of San Dimas (Guinn 1915; Hoyt 1951). In February of 1887, officials of the Los Angeles and San Gabriel Valley Railroad as well as many interested landowners met to grant rights-of-way for the railroad to run through this area (Ogden 1862).

What was to become the new town of San Dimas was launched with much success by the San Jose Land Company. The Company was run by I. L. Nicks, and forty other investors, among them a railway official whose inside knowledge about the area was valuable. The lands offered for sale by the company included not only the town of San Dimas, but all of the adjacent San Jose Addition. To get a chance at purchasing one of the 20-acre lots, people stood in line throughout the night, and some paid fifty dollars for a place in line (Hoyt 1951). With this land boom small businesses began to open, and the community took on a new name: San Dimas. Growth was rapid, and San Dimas soon became an agricultural community. Wheat and other Midwestern United States crops were planted first; then orange and lemon groves covered the town and the surrounding San Gabriel Valley. At one time, four citrus packing houses and a marmalade factory were located in San Dimas. The Sunkist name

originated here, first spelled "Sunkissed" (San Dimas Chamber of Commerce 2007). Oranges were the major crop and business in San Dimas until the mid-20th century.

San Dimas incorporated as a city in 1960, and is now known for its Western art, small-town feel, and equestrian qualities (Glauthier 1997). Ten years later, in 1970 the population was reported as 15,692. As of the 2020 census, the total population of San Dimas was 34,924.

2.2.3.3 Project Site Land Use History

United State Geological Survey topographic maps of San Dimas are available from 1897 through 2018. The topographic map for 1897 does not indicate any structures within or near the project area (USGS, 1897). No changes appear on the subsequent maps until the 1956 version. This map indicates that Covina Hills Road on the southern boundary of the project site and the highway to the south of the project area are present (USGS, 1956). The 1963 topographic map shows residential roads and structures to the west and southwest of the project area (USGS, 1963). More buildings appear to the distant south of the project area on the 1967 map (USGS, 1967), but within the project boundary itself is a single dirt road that would later become Calle Cristina (see **Figure 3**).

Historic aerial photographs are available for San Dimas from 1946 through 2018 (NETR Online 2022). The 1946 photo shows natural landscape with open space and trees (NETR Online 2022:1946). There is a road on the southern border of the project is present. The residential roads to the southeast of the project boundary are present and residences appear on the 1964 image (NETR Online 2022:1964). The 1965 image shows roads throughout the project area (NETR Online 2022:1965) and one dirt road through the project site running east-west. By the 1972 aerial image, residential communities are present to the west of the project area (NETR Online 2022:1972). Residences first appear to the northeast of the project boundary on the 1988 aerial image (NETR Online 2022:1988). A single residence appears in the southern portion of the project boundary along Calle Cristina Road. A total of eight residences appear on the 1992 image along Calle Cristina (NETR Online 2022:1988). A total of 12 residences appear in the southern portion of the project boundary along Calle Cristina on the 1995 image (NETR Online 2022:1995). The 2018 image shows a total of 23 single family residences located along Calle Cristina Road.

3.0 RESEARCH METHODS

The cultural resources inventory and related archival research included a background cultural resources records check (archival research) at the SCCIC, California State University, Fullerton. Additionally, a SLF search was requested from the NAHC.

3.1 Records Search

A cultural resource records search was requested from the SCCIC on February 15, 2022. The SCCIC is the local CHRIS facility for Los Angeles County. That research was completed to identify cultural resources on or near the project site. The literature was reviewed to identify resources that have been previously evaluated for historic significance, as well as to identify any previous completed cultural resources survey reports.

Also searched and reviewed were the official records and maps for cultural resources and surveys in San Dimas, National Register of Historic Places (NRHP); Listed Properties and Determined Eligible Properties (2012), and the California Register of Historical Resources (CRHR) (2012).

For the current study, the scope of the records search included a half-mile buffer zone from the project's footprint (see **Attachment A, Figure 3**). The research effort was completed to assess the sensitivity of the project site for both surface and subsurface cultural resources and to assist in determining the potential to encounter such resources, especially prehistoric—i.e., Native American—cultural remains, during earth-moving activities associated with construction of the proposed project.

The results of the records search was received March 9, 2022, and was conducted by SCCIC Assistant Coordinator Michelle Galaz Cornforth.

3.2 Field Survey

On August 9, 2022 archaeologists Stephen O'Neil and Miguel Anguiano visited the project site to conduct a pedestrian survey. During the survey, the project site was inspected for any indication of human activities dating to the prehistoric or historic periods (i.e., 50 years or older).

3.3 Native American Outreach

On February 28, 2022, Mr. O'Neil contacted the NAHC via email notifying them of the project activities, requesting a search of their SLF and requesting a list of local tribal organizations and individuals to contact for project outreach. The NAHC replied on April 15, 2022 with a letter dated the same day reporting on the SLF search findings and a list of nine tribal organizations and individuals to contact. Letters to local tribes were sent on April 17, 2022 to all nine of the tribal organizations and their representatives listed in the NAHC April 15, 2022 letter (**Attachment C**).

3.4 National Register of Historic Places

A search of the Built Environmental Resource Directory listing NRHP properties was reviewed to determine if there are any buildings on the project site or in the immediate area had been evaluated for the Register and listed. This was conducted by Megan Doukakis on August 12, 2022.

4.0 FINDINGS

4.1 Records Search

4.1.1 Recorded Archaeological Sites

Based on the cultural resources records search, it was determined that no cultural resources have been previously recorded within the project site boundary. Within the one-half-mile buffer zone, there is one recorded prehistoric cultural resource and no historic-era cultural resources. **Table 4.1-1** summarizes these resources.

The prehistoric site (CA-LAN-230, 19-000230), consisted of both surface and subsurface components with a range and number of artifacts that suggested either a village or at least seasonal occupation (Eberhardt 1961). Artifacts recovered from the site consisted of 11 metates, 20 manos, seven scrappers, four hammerstones, one rubbing stone, four cores, six used flakes, one blade fragment – 40 artifacts recovered from the surface, and 14 from the excavation. The site's area covered 250 feet north/south and 350 feet east/west; and reached a depth of approximately 18 inches. The site was located near the intersection of Cloverland Drive and Woodhurst Drive (Eberhardt 1961:1) in what was then unincorporated Los Angeles County land, approximately 1,500 feet to the northwest of the project boundary.

Table 4.1-1
KNOWN CULTURAL RESOURCE WITHIN A HALF-MILE RADIUS OF THE PROJECT BOUNDARY

Site Number	Author(s)	Date	Type	Description
P-19-000230, CA-LAN-230	Eberhardt, Hall	1961	Prehistoric	Possible village or seasonal occupation; primarily surface artifacts consisting of 11 metates, 20 manos, seven scrappers, four hammerstones, one rubbing stone, four cores, six used flakes, one blade fragment – 40 artifacts from surface, 14 from excavation. Located in ridgeline.

4.1.1 Previous Cultural Resource Investigations

The records at the SCCIC indicated there have been two previous cultural resource studies conducted within the project boundary within portions of the one-half-mile buffer of the project (**Table 4.1-2**). These are LA-00214, "An Archeological Survey in the San Jose Hills, Los Angeles County" by Glen Rice (1976) consisted of a general review of the large region which included the project site and area.; Also LA-01137, an assessment of a single tract in the adjacent city of Covina, and not actually within the current project boundary (Dillon 1982). Neither of these surveys located cultural resources within the project site.

There have been an additional 21 cultural resource studies conducted with portions of the one-half mile buffer of the project (**Table 4.1-2**). These investigations consisted of seven related to telecommunications stations and Edison power poles (KA-04147, 07854, 10653, 10807, 12253 and 12491); another three were surveys related to nearby freeway improvements (LA-03306, 04961 and

10190). A further six surveys concerned development of parcels or additional structures (LA-00636, 03575, 12617 and 12620), including two at the Forest Lawn Memorial Park (LA-05648 and 10043). The remining four investigations were either unidentifiable as to the nature of the work (LA-00298 and 00836), or deal with water resources and natural habitat/open space (LA-02665, 03508 and 11007). These surveys did not identify any sites within the half mile buffer zone of the project area or within the project site boundary. (See **Attachment D.**)

Table 4.1-2
KNOWN CULTURAL RESOURCE STUDIES WITHIN A HALF-MILE RADIUS OF THE PROJECT BOUNDARY

Report Number	Author(s)	Date	Title	Resources
LA-00214	Rice, Glen E.	1976	An Archaeological Survey in the San Jose Hills, Los Angeles County	NA
LA-00298	Van Horn, David M.	1978	UltraSystems Project #4352: Archaeological Report	NA
LA-00636	Zahniser, Jack L.	1979	Archaeological Element, Preliminary EIR for a Portion of the Pacific Coast Baptist Bible College--Voorhis Campus San Dimas, Los Angeles County, California	NA
LA-00836	Cottrell, Marie G.	1977	Letter Report to Ronald Martin & Assoc. Inc.	NA
LA-01137	Dillon, Brian D.	1982	An Archaeological Resource Survey and Impact Assessment of Tract No. 40519 in the City of Covina, Los Angeles County, California	NA
LA-02665	Cottrell, Marie G., James N. Hill, Stephen Van Wormer, and John Cooper	1985	Cultural Resource Overview and Survey for the Los Angeles County Drainage Area Review Study	19-000026, 19-000075, 19-000163, 19-000164, 19-000166, 19-000167, 19-000173, 19-000182, 19-000208, 19-000221, 19-000230, 19-000240, 19-000241, 19-000300, 19-000339, 19-000347, 19-000348, 19-000397, 19-000522, 19-000524, 19-000657, 19-000693, 19-000694, 19-000695, 19-000697, 19-000858, 19-001009, 19-001014, 19-001044, 19-001045, 19-001046, 19-001109
LA-03306	Whitney-Desautels, Nancy A.	1993	Historic Property Survey Report Interstate 10 Hov Widening Los Angeles County, California	NA

Report Number	Author(s)	Date	Title	Resources
LA-03508	Van Wormer, Stephen R.	1985	Historical Resource Overview and Survey for the Los Angeles County Drainage Area Review Study	NA
LA-03575	Anonymous	1997	Cultural Resource Assessment for the Bridlewood Estates Development Walnut West Covina Area, Los Angeles County	NA
LA-04147	Mason, Roger D. and Brant A. Brechbiel	1998	Cultural Resources Records Search and Literature Review Report for a Pacific Bell Mobile Services Telecommunications Facility: La 082-01 City of Covina, California	NA
LA-04961	Sylvia, Barbara	2001	Negative Archaeological Survey Report:07-la- 10-61.8/65.3-174-3n4301, Wheel Chair Ramps on Existing Sidewalks at Three Sidewalks Located Near Route 10 in West Covina	NA
LA-05648	Strudwick, Ivan	2000	Results of a Cultural Resource Survey of the 315 Acre Forest Lawn Memorial Park, Covina Hills, Los Angeles County, California	NA
LA-07854	Jordan, Stacy C.	2006	Archaeological Survey Report for the Southern California Edison Company Replacement of Two Deteriorated Poles on the Maybell 12 Kv, Valley-nelson 115kv Amd Valley-Mayberry-Moreno-Vista 115 Kv Circuits, Los Angeles and Riverside Counties, California	NA
LA-10043	Strudwick, Ivan H.	2000	Results of a Cultural Resource Survey of the 315 Acre Forest Lawn Memorial Park, Covina Hills, Los Angeles County, California	NA

LA-10190	Harbert, Claudia	2002	Supplemental Historic Property Survey Report for the I-10 HOV Lane Between I-605 and the SR-57/SR-71/I-210 Interchange in the Cities of Los Angeles, Baldwin Park, West Covina, Covina, San Dimas, and Pomona in Los Angeles County, California	19-188913, 19-188914, 19-188915, 19-188916, 19-188917, 19-188918, 19-188919, 19-188920, 19-188921, 19-188922, 19-188923, 19-188924, 19-188925, 19-188926, 19-188927, 19-188928, 19-188929, 19-188930, 19-188931, 19-188932, 19-188933, 19-188934, 19-188935, 19-188936, 19-188937, 19-188938, 19-188939, 19-188940, 19-188941, 19-188942, 19-188943, 19-188944, 19-188945, 19-188946, 19-188947, 19-188948, 19-188949, 19-188950, 19-188951, 19-188952, 19-188953, 19-188954, 19-188955, 19-188956, 19-188957, 19-188958, 19-188959, 19-188960, 19-188961, 19-188962, 19-188963, 19-188964, 19-188965, 19-188966, 19-188967, 19-188968, 19-188969, 19-188970, 19-188971, 19-188972, 19-188973, 19-188974, 19-188975, 19-188976, 19-188977, 19-188978, 19-188979, 19-188980,

Report Number	Author(s)	Date	Title	Resources
				19-188981, 19-188982
LA-10653	Schmidt, June	2010	Maybell 12 kV Deteriorated Pole Replacement Project (WO 6026-4800; K-4805), near Covina, Los Angeles County, California	19-000230, 19-000329, 19-000399, 19-001014
LA-10807	Orfila, Rebecca	2010	Archaeological Survey for the Southern California Edison Company: Replacement of Twenty-One Deteriorated Power Poles on Circuits Near Carpinteria (Santa Barbara County), Santa Paula (Ventura County), Covina and Lancaster (Los Angeles County), California.	19-001793, 19-002082, 19-187595
LA-11007	Maxon, Patrick O.	2011	Phase I Cultural Resources Assessment, Opportunities and Constraints Report, Walnut Creek Habitat and Open Space Project, City of San Dimas and Los Angeles County, California	19-000230, 19-000347, 19-000348, 19-001014, 19-001098, 19-001836
LA-11235	Weatherford, Ginger	2011	Proposed Collocation Project 3043 North Roycove Drive, Covina, California. Roycove Water Tank/CA-LOS4760, EBI Project Number: 61107767	19-189475
LA-12253	Bonner, Wayne, Sarah Williams, and Kathleen Crawford	2012	Cultural Resources Records Search and Site Visit Results for T-Mobile West, LLC Candidate IE04082A (Via Verde) 3001 Roycove Drive, Covina, Los Angeles County, California	19-189475
LA-12491	Bonner, Wayne	2012	IE04082A (Via Verde) 3001-1/2 Roycove Drive, Covina, California 91724	19-189475
LA-12617	Bissell, Ronald M.	1984	Archaeological Report: J.M. Peters Co. Tract 23828 Via Verde and Puente Streets, San Dimas, California	NA
LA-12620	Bissell, Ronald M.	1986	Archaeological, Historical, and Paleontological Assessments of the Hidden Ridge Development, San Dimas, Los Angeles County, California	19-000230, 19-000347, 19-000348, 19-001014, 19-001098

4.2 Native American Outreach

On February 28, 2022, Mr. O'Neil contacted the NAHC via email notifying them of the project, requesting a search of their SLF and asking for a list of local tribal organizations and individuals to contact for project outreach. The results of the search request were received April 15, 2022, at the UEI office from Mr. Andrew Green, Cultural Resources Analyst. The NAHC letter stated that "The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was positive [emphasis in the original]. Please contact the Gabrieleno Band of Mission Indians – Kizh Nation on the attached list for information." (See **Attachment C.**)

UEI prepared letters to each of the ten tribal contacts describing the project and included a map showing the project's location, requesting a reply if they have knowledge of cultural resources in the area, and asked if they had any questions or concerns regarding the project (see **Attachment C**). On May 17, 2022, Mr. O'Neil mailed letters with accompanying maps to all nine tribal contacts, and also emailed identical letters and maps to each of the tribal contacts for which email addresses were known (nine). The letter to the Gabrielino-Kizh Nation noted that the NAHC reply stated to contact this tribal organization concerning the SLF traditional site, but there was no response from them

regarding this subject. An automatic delivery failure email was received on the same day from Charles Alvarez, Councilmember of the Gabrielino-Tongva Tribe.

Following up on the initial letter and email contacts, telephone calls were conducted by Archaeological Technician Megan B. Doukakis on July 22, 2022, to complete the outreach process following the 30-day period when replies could be made. These calls were to the nine tribal contacts who had not already responded to UEI's mailing and emails. Two telephone calls were placed with no answer and messages were left describing the project and requesting a response. These were to Andrew Salas, Chairperson of the Gabrieleno Band of Mission Indians-Kizh Nation; and Sandonne Goad, Chairperson of the Gabrielino /Tongva Nation. Two phone calls were made, not answered and there was no ability to leave a message. These were to Charles Alvarez, Councilmember of the Gabrielino Tongva Tribe; and to Lovina Redner, Tribal Chair of the Santa Rosa Band of Cahuilla Indians.

Chairperson Anthony Morales, of the Gabrieleno/Tongva San Gabriel Band of Mission Indians indicated by telephone on July 22, 2022 that the footprint of the SR-57 and I-10 Freeway are sensitive to the tribe. There are sites at nearby Cal-Poly Pomona to the east and Bonelli Park. They recommend tribal and archaeological monitoring using their tribe. Tribal Consultant and Administrator Christina Conley, of the Gabrielino Tongva Indians of California Tribal Council indicated by telephone on July 22, 2022 that the tribe has no comment on the project and will leave any comments to their sister tribes. Joseph Ontiveros, of the Cultural Resource Department for the Soboba Band of Luiseño Indians indicated by telephone on July 22, 2022 that there are resources in the area that have place names, including sites at Bonelli Park and Cal-Poly Pomona campus. The tribe would defer any comments to Chairman Anthony Morales of the San Gabriel Band of Mission Indians. No further responses have been received to date. (See **Attachment C**)

4.3 Pedestrian Survey Results

A pedestrian survey was conducted on August 9, 2022 by Mr. Stephen O'Neil and Mr. Miguel Anguiano. The survey consisted of walking over, visually inspecting, and photographing the accessible and exposed ground surface of the project site using standard archaeological procedures and techniques. Survey transects were conducted in an opportunistic manner due to the presence of roads along the ridgelines that occupied the project area, and the steepness of the slopes running off the ridgelines.

The project site consists of the single main ridgeline with Calle Cristina running along the to generally running from the northwest to the southeast. Steep slopes trend off to the northeast and the southwest with several secondary gentle slopes radiating out. The southern slope off the main ridgeline reaches down to East Covina Road which is serves as the southern project boundary. At the north end of the main ridgeline (where Calle Cristina ends) is a large secondary slope that reaches to Puente Street and the northern project boundary. The long northern slope off the main ridgeline reaches down to Avenida Monte Vista just beyond the project boundary. Calle Cristina is lined with approximately 22 single family residences with several unbuilt lots scattered among them; Paseo Lucina, a road off the northwest side of Calle Cristina that goes down-slope; it contains another seven single family residences that also has several un-built lots among them.

The survey was conducted along both sides of Calle Cristina (**Figure 4.3-1** and **Figure 4.3-2**) observing the landscaped areas in the front of the residences and along the open spaces between residences for any indication of cultural resources. All landscaped area had shrubbery and/or well maintained lawns that covered the surface. Most of the opens spaces between residences consisted

of narrow strips of land, approximately four feet wide that had been graded to an unknown depth below the original natural surface. In one location along Paseo Lucinda and two locations along Calle Cristina the slope allowed survey of the adjacent slope and these areas were surveyed (**Figure 4.3-3** and **Figure 4.3-4**). Among the other six or so spaces between residences along the three roads these spaces were observed and found to have extremely steep slope starting just four feet or so from the road edge – the steepness of the slope precluded survey of the slope sides,

The north side of East Covina Road was surveyed (**Figure 4.3-5**); the slope on the north side of the road was too steep to survey. The gentler slope going from the north end of Calle Cristina northward to Puente Road was accessed off of Puente Road and surveyed.

The steep slope of the ridgelines within the project boundary, excepting the few gentler secondary ridges, would not have been viable locations for Native Americans to make use of for use camps. Only the main ridgeline may have been flat enough for any use in the past, and this has been graded for roadways and residences. The several gentler slopes that could be accessed and surveyed were not observed to contain prehistoric or historic cultural resources.

Figure 4.3-1
CALLE CRISTINA FROM NOTH END; VIEW TO THE SOUTHWEST

Figure 4.3-2
CALLE CRISTINA AT CALLE FRANCESCA; VIEW TO THE WEST

Figure 4.3-3
SURVEYED SLOPE ON NORTH SIDE OF CALLE CRISTINA; VIEW TO THE EAST

Figure 4.3-4
SURVEYED SLOPE ON SOUTH SIDE OF CALLE CRISTINA; VIEW TO THE SOUTHEAST

Figure 4.3-5
EAST COVINA HILLS ROAD; VIEW TO THE EAST

4.4 National Register of Historic Places

A search of the Built Environmental Resource Directory provided by the Office of Historic Preservation (2022) was conducted for this project on August 12, 2022. It was determined that the project area and the half-mile radius does not have any resources present that have been evaluated under the National Register (Built Environmental Resource Directory).

5.0 MANAGEMENT CONSIDERATIONS

5.1 Site Evaluation Criteria

Evaluation of significance under CEQA uses criteria found in eligibility descriptions from the CRHR. Generally, a resource is to be considered historically significant if it meets the criteria for listing in the California Register [Public Resources Code § 5024.1; California Code of Regulations § 15064.5(a)(3)]. These criteria provide that a resource may be listed as potentially significant if it:

- Is associated with the events that have made a significant contribution to the broad patterns of California history and cultural heritage.
- Is associated with the lives of persons important in our past.
- 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 value.
- Has yielded, or may be likely to yield, information important in prehistory or history.

5.2 Potential Effects

No listed cultural resources will be adversely affected by the project. However, the presence of buried cultural (prehistoric and/or historic archaeological) resources cannot be ruled out. If prehistoric and/or historic artifacts are observed during subsurface excavation during future residential construction resulting from the MCTA amendment changes, work should be stopped in that area and a qualified archaeologist and Native American monitor should be on call to assess the finds.

6.0 CONCLUSIONS AND RECOMMENDATIONS

No prehistoric or historic archaeologic resources were identified in the SCCIC record literature search in the project site. One prehistoric era resource, a small village or at least seasonal occupation (19-000230) was identified within the half mile radius of the project area. The NAHC noted the presence of an SLF site in the project area, however the tribal organization contacted concerning this site did not provide information on its identity or location. No cultural resources were observed during the pedestrian survey.

There have been three Native American tribal group responses received to date. Both the Gabrieleno/ Tongva San Gabriel Band of Mission Indians and the Soboba Band of Luiseño Indians indicated that there are known sites near the project area, near Cal-Poly Pomona campus and Bonelli Park and expressed concerns about the project site. The Gabrieleno/Tongva San Gabriel Band of Mission Indians recommend tribal and archaeological monitoring. The Gabrielino Tongva Indians of California Tribal Council deferred comments to other tribes. (See **Section 4.2** and **Attachment C.**)

The cultural resources study findings suggest that there is a low potential for the presence of prehistoric cultural resources.

The project consists of approval of the MCTA that will expand the allowable grading (cut and fill) on each of the 36 residential lots in the project site – see **Section 1.1** for further details. As each resident decides to construct a new patio or other usable space in the expanded area, they are required to obtain approval from the City and have planning and design plan review and approval. These are also requirements for construction of new residences on the currently empty lots.

Given the presence of a prehistoric camp site within the project area, the concerns expressed by the local Native American tribes for the presence of cultural resources in the project area, and that lack of access prevented field survey of all the project site, the following recommendations are presented.

At a minimum, if prehistoric and/or historic items are observed during subsurface activities, work should be stopped in that area and a qualified archaeologist and Native American monitor should be called to assess the findings and retrieve the material. A Cultural Resources Work Plan would be prepared by the qualified archaeologist and implemented that may include archaeological and Native American monitoring as needed.

Also, prior to the commencement of grading or excavation, workers conducting construction activities and their foremen should receive Worker Environmental Awareness Program (WEAP) training from a qualified archaeologist regarding the potential for sensitive archaeological and paleontological resources to be unearthed during grading activities.

If human remains are encountered during excavations associated with future development resulting from the Specific Plan amendment, work will halt in that area and the Los Angeles County Coroner will be notified (§ 5097.98 of the Public Resources Code). The Coroner will determine whether the remains are of recent human origin or older Native American ancestry. If the coroner, with the aid of the supervising archaeologist, determines that the remains are prehistoric, they will contact the NAHC. The NAHC will be responsible for designating the most likely descendant (MLD), who will make recommendations as to the manner for handling these remains and further provide for the disposition of the remains, as required by § 7050.5 of the California Health and Safety Code. Following notification by the NAHC, the MLD will make these recommendations within 48 hours of having access to the project site following notification by the NAHC. These recommendations may

include scientific removal and nondestructive analysis of human remains and items associated with Native American burials (§ 7050.5 of the Health and Safety Code).

7.0 REFERENCES

Bean, Lowell John, and Charles R. Smith
1978a Gabrielino. In Handbook of North American Indians, William C. Sturtevant, general editor, vol. 8, *California*, edited by Robert F. Heizer, pp. 538-549. Smithsonian Institution, Washington, DC.

1978b Serrano. In Handbook of North American Indians, William C. Sturtevant, general editor, vol. 8, *California*, edited by Robert F. Heizer, pp. 570-574. Smithsonian Institution, Washington, DC.

Brown, Alan K. (editor)
2001 *A Description of Distant Roads: Original Journals of the First Expedition into California 1769-1770, by Juan Crespí*. San Diego State University Press, San Diego, California.

Chaffey College
2022 The Tongva People ESL-650-20256. https://canvas.chaffey.edu/courses/23123/pages/the-tongva-people. Accessed July 15, 2022.

Chartkoff, Joseph L., and Kerry Kona Chartkoff
1984 *The Archaeology of California*. Stanford University Press, Stanford, California.

Coy, Owen C.
1923 *California County Boundaries. Berkeley.* California Historical Commission. https://digitalcommons.csumb.edu/hornbeck_usa_3_d/77/. Accessed June 6, 2022.

Dibblee, Thomas W., Jr.
2002 *Geologic Map of the San Dimas and Ontario Quadrangles, Los Angeles and San Bernardino Counties.* Dibblee Geological Foundation Map #DF-91. The Dibblee Foundation, Santa Barbara, California.

Dillon, Brian D.
1982 An Archaeological Resource Survey and Impact Assessment of Tract No. 40519 in the City of Covina, Los Angeles County, California. (LA-001137.) On file, South Central Coastal Information Center, California State University, Fullerton.

Dumke, Glenn S.
1944 *The Boom of the Eighties*. Huntington Library, San Marino, California.

Eberhart, Hal
1961 Archaeological Survey Report; Lan-230. (19-000230.) On file, South Central Coastal Information Center, California State University, Fullerton.

Engelhardt, Zephyrin, O.F.M.
1931 *San Gabriel Mission and the Beginnings of Los Angeles*. Franciscan Herald Press, Chicago.

Glauthier, Martha.
1997 *The History of San Dimas, California*. The San Dimas Historical Society, San Dimas, California.

Golla, Victor
2011 *California Indian Languages*. University of California Press, Berkeley.

Guinn, James Miller.
1915 *A history of California and an extended history of Los Angeles and environs*. Historic Record Company, Los Angeles.

Howard, W. J., and L. M. Raab
1993 Olivella Grooved Rectangle Beads as Evidence of an Early Period Southern California Channel Island Interaction Sphere. *Pacific Coast Archaeological Society Quarterly* 29(3):1-11.

Hoyt, Franklyn.
1951 The Los Angeles and San Gabriel Valley Railroad. *Pacific Historical Review* 20 (August).

Kroeber, Alfred
1925 Handbook of the Indians of California. *Bureau of American Ethnology Bulletin* No. 78, Washington, D.C.

McCawley, William
1996 *The First Angelinos: The Gabrielino Indians of Los Angeles*. Malki Museum Press, Banning, California/Ballena Press, Novato, California.

Meighan, C. W.
1954 A Late Complex in Southern California Prehistory. *Southwest Journal of Anthropology* 10(2):215-227.

Moratto, Michael J.
1984 *California Archaeology*. Academic Press, Orlando, Florida.

NETR Online
2022 Aerial photographs of the project vicinity, taken in 1948, 1953, 1964, 1965,1966,1972, 1978, 1980, 1985, 1988, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2002, 2003, 2004,2005, 2009, 2010, 2012, 2014, 2016, and 2018. http://www.historicaerials.com. Accessed August 15, 2022.

Ogden, Hoffman.
1862 Reports of Land Cases Determined in the United States District Court for the Northern District of California, Numa Hubert, San Francisco.

Porcasi, Judith F.
1998 Middle Holocene Ceramic Technology on the Southern California Coast: New Evidence from Little Harbor, Santa Catalina Island. *Journal of California and Great Basin Anthropology* 20:270-284.

Rice, Glenn E.
1976 An Archaeological Survey in the San Jose Hills, Los Angeles County. (LA-00214.) On file, South Central Coastal Information Center, California State University, Fullerton.

San Dimas Chamber of Commerce

2007 *A Brief History of San Dimas*. California Historic Route 66 Association. Archived from the original on July 3, 2008.

Spitzzeri, Paul R.
2007 What a Difference a Decade Makes: Ethnic and Racial Demographic Change in Los Angeles County during the 1860s. *The Branding Iron*. Fall 2007.

True, Delbert L.
1958 An Early Complex in San Diego County, California. *American Antiquity* 23(3):255-263.

1970 Investigations of a Late Prehistoric Complex in Cuyamaca Rancho State Park, San Diego County, California. *Archaeological Survey Monographs* 1. University of California, Los Angeles.

United States Census Bureau
2022 Quick Facts, San Dimas city, California. https://www.census.gov/quickfacts/fact/table/sandimascitycalifornia/PST045221. Accessed June 6, 2022.

USGS (United States Geological Survey, U.S. Department of the Interior)
1897 *San Dimas, Calif*. 7.5', USGS Quadrangle map.

1956 *San Dimas, Calif.* 7.5', USGS Quadrangle map.

1965 *San Dimas, Calif.* 7.5', USGS Quadrangle map.

1963 *San Dimas, Calif.* 7.5', USGS Quadrangle map.

1967 *San Dimas, Calif.* 7.5', USGS Quadrangle map.

Wallace, William J.
1955 A Suggested Chronology for Southern California Coastal Archaeology. *Southwestern Journal of Archaeology* 11(3):214-230.

1978 Post-Pleistocene Archeology, 9,000 to 2,000 BC. In Robert F. Heizer (ed.), Handbook of North American Indians, Vol. 8: *California*; pp. 25-36. Smithsonian Institution, Washington, D.C.

Warren, Claude N.
1968 Cultural Traditions and Ecological Adaptations on the Southern California Coast. In Cynthia Irwin-Williams (ed.), Archaic Prehistory in Western United State, pp. 1-14. *Eastern New Mexico University Contributions in Anthropology* 1(3). Portales, New Mexico.

1984 The Desert Region. In Michael J. Moratto (ed.), *California Archaeology*, pp. 339-430. Academic Press, Orlando, Florida.

Warren, Claude N., and Robert H. Crabtree
1986 Prehistory of the Southwestern Area. In Warren L. D'Azevedo (ed.), Handbook of North American Indians, Vol. 11: *Great Basin*, pp. 183-193. Smithsonian Institution, Washington, D.C.

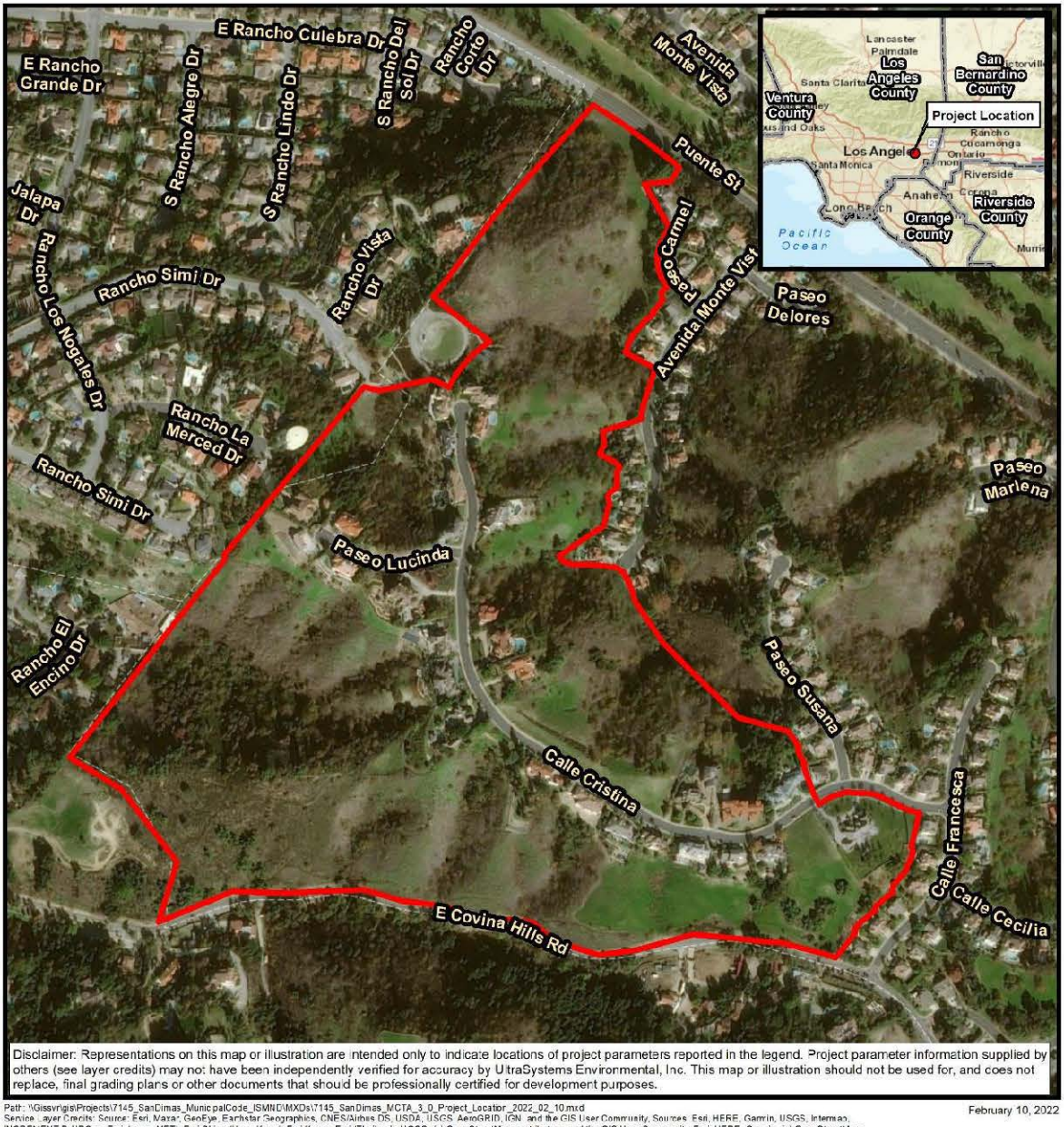
ATTACHMENTS

ATTACHMENT A

PROJECT MAPS

Figure 1
PROJECT REGIONAL LOCATION MAP

Figure 2
PROJECT STUDY AREA



Path: \\Gissvr\gis\Projects\7145_SanDimas_MunicipalCode_ISMND\MXDs\7145_SanDimas_MCTA_3_0_Project_Location_2022_02_10.mxd
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community UltraSystems Environmental, Inc. 2022

February 10, 2022

Scale: 1:6,000

N

0 250 500 Feet

0 70 140 Meters

Legend

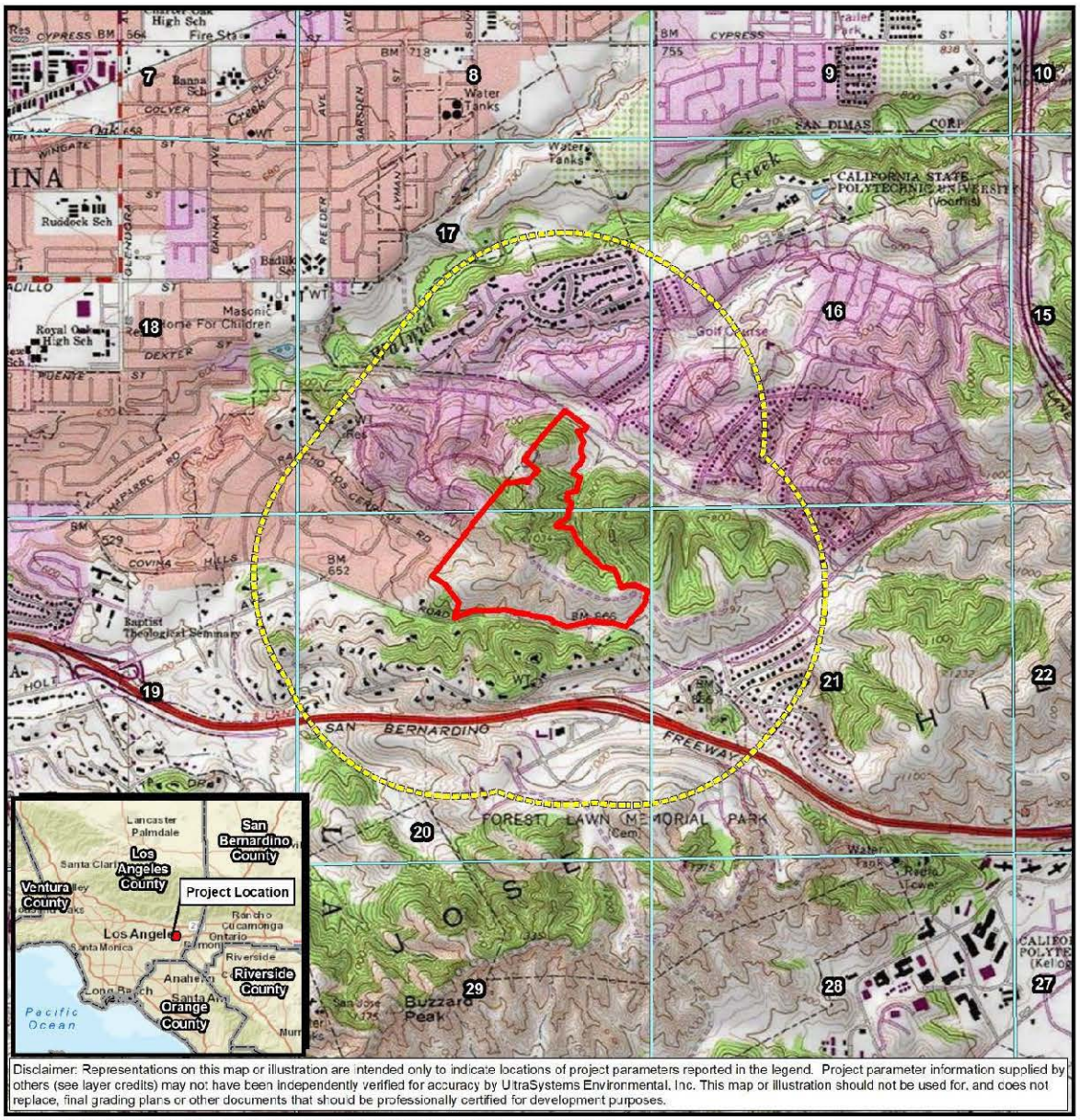
Project Boundary

San Dimas MCTA 20-0005

Project Location

UltraSystems

Figure 3
TOPOGRAPHIC MAP WITH APE SHOWN AND HALF-MILE BUFFER ZONE



ATTACHMENT B

PERSONNEL BACKGROUND

Stephen O'Neil, M.A., RPA

Cultural Resources Manager, Cultural Anthropology/Archaeology

Education

- M.A., Anthropology (Ethnography emphasis), California State University, Fullerton, CA, 2002
- B.A., Anthropology, California State University, Long Beach, CA, 1979

Professional and Institutional Affiliations

- California Mission Studies Association
- City of Laguna Beach Environmental Sustainability Committee, appointed 2012
- Orange County Natural History Museum; Board Member
- Pacific Coast Archaeological Society; Board Member and Past President
- Society for California Archaeology

Professional Registrations and Licenses

- Register of Professional Archaeologists (No. 16104) (current)
- Riverside County, CA, Cultural Resource Consultant (No. 259) (current)
- Cultural Resource Field Director, BLM Permit (CA-13-19) – California, 2013
- NEPA and CEQ Consultation for Environmental Professionals; course by the National Association of Environmental Professionals, 2013

Professional Experience

Mr. O'Neil has 30 years of experience as a cultural anthropologist in California. He has researched and written on archaeology, ethnography, and history. Mr. O'Neil has archaeological experience in excavation, survey, monitoring, and lab work. Most of this has been on Native American prehistoric sites, but also includes Spanish, Mexican, and American period adobe sites. His supervisory experience includes excavation and survey crew chief and project director of an adobe house excavation. He has a wide range of expertise in Phase I & II Environmental Site Assessments, archaeological resource assessment surveys, salvage operations, and cultural background studies for various EIR projects. Mr. O'Neil has worked for cultural resource management firms as well as government agencies and Native American entities. He has prepared technical reports as well as published journal articles.

Select project experience

Inglewood Avenue Corridor Widening Project, City of Lawndale, Los Angeles County, CA: 2013-2014

Mr. O'Neil directed and conducted archaeological field survey, cultural resource records search, Native American contacts and report writing for this project. The City of Lawndale is widening Inglewood Avenue from Marine Avenue north. The project uses Caltrans funds and the cultural resources report was prepared in Caltrans format. A separate historic properties report was prepared as well. Prepared for Huitt-Zollars Engineering.

Via Ballena Storm Drain Relocation, City of San Clemente, Orange County, CA: 2013

Mr. O'Neil directed and conducted archaeological field survey, cultural resource records search, Native American contacts and report writing for this project. This residential area has a damaged

storm drain under Via Ballena that was causing earth movement and erosion. The requirements for state funding, and cultural resources inventory report was required. Prepared for the City of San Clemente.

Pine Canyon Road – Three Points Road to Lake Hughes Road, Los Angeles County, CA: 2013
Mr. O'Neil directed and conducted archaeological field survey, cultural resource records search, Native American contacts and report writing for this project. This nine-mile portion of Pine Canyon Road lies partially within the Angeles National Forest. A series of widening and culvert repairs is planned by the Los Angeles County Department of Public Works (LACDPW). An assessment was made of possible cultural resources, historic and prehistoric that may be affected by the construction, and four historic sites were recorded. Prepared for LACDPW.

Alton Parkway Extension Project, Cities of Irvine and Lake Forest, Orange County, CA: 2012
Mr. O'Neil directed and conducted archaeological and paleontological monitoring, archaeological excavation, cultural resource records search, Native American contacts and report writing for this project. Alton Parkway was extended 2.1 miles between the cities of Irvine and Lake Forest. For the portion within the City of Irvine, UltraSystems conducted monitoring and excavation services. One prehistoric site was excavated and reported on; a series of living features were discovered and also reported. The final monitoring report described the paleontological and archaeological findings. A separate technical report on the archaeological excavations was also prepared. Mr. O'Neil directed research into historic and prehistoric background and prepared the final assessment of potential impacts. Prepared for the Orange County Department of Public Works.

NEPA and CEQA Documentation, Los Angeles Regional Interoperable Communications System (LA-RICS), Los Angeles County, CA: 2011-2014
Mr. O'Neil is part of the UltraSystems team currently preparing technical studies and NEPA and CEQA documentation toward the construction of LA-RICS, an $800-million emergency communications system due to be operational in 2016. LA-RICS will provide a highly-coordinated emergency communications system to all first responders to natural and man-made disasters throughout Los Angeles County. Mr. O'Neil is the cultural and historical resources studies team leader, directing five researchers. These studies include coordination of field visits to all 260-plus locations for an archaeologist and/or an architectural historian with agency escorts to observe and record any onsite prehistoric and historic features, performing records and literature searches at archaeology information centers and local archives, contacting local agencies for historically listed structures and districts, coordinate public notices of the project throughout Los Angeles County, consultation with the NAHC and all local tribal organizations, and direct consultation with the California State Historic Preservation Officer (SHPO). This information was compiled by Mr. O'Neil and is used to prepare FCC historical resource forms which were submitted to the SHPO for review.

Megan B. Doukakis, M.A.

Archaeological Technician

Education

- M.A. Public Archaeology, California State University, Northridge, 2012–2018
- B.A., Anthropology, California State University, Long Beach, 2011
- University of California, Los Angeles - Pimu Catalina Archaeological Field School, 2010
- International Scholar Laureate Program: Delegation on Anthropology and Archaeology in China, 2009
- Earthwatch Institute, "Unearthing Mallorca's Past" archaeological excavation, Mallorca, Spain, 2005

Professional and Institutional Affiliations

- Phi Kappa Phi National Honor Society, 2011
- Sigma Alpha Lambda, National Leadership and Honor Organization, 2010
- Society for California Archaeology Membership 2012–2015

Professional Experience

Mrs. Doukakis has worked in the field of cultural resource management for seven years at environmental firms. Before this Mrs. Doukakis had participated in multiple field schools in Southern California and abroad. She has experience in survey, excavation, laboratory work, and information searches. Mrs. Doukakis holds the title of Archaeological Technician at UltraSystems Environmental. Prior to this, she completed a CRM internship at UltraSystems. These positions have provided her with the opportunity to contribute to proposals, final reports, project scheduling, archaeological record searches and paleontological, archaeological and Native American monitor organizing for projects.

Select project experience

Results of the Condition Assessment, Site Monitoring, and Effects Treatment Plan (CASMET) Marine Corps Base Camp Pendleton, San Diego County, CA

Client: Marine Corps Base Camp Pendleton, Duration: 5/11 to 9/11

Mrs. Doukakis conducted survey and excavation for the USMC Base Camp Pendleton condition assessment project. Areas were tested around Camp Pendleton for the presence and condition of cultural material previously recorded. She also conducted laboratory work and curation for the material collected within excavations. Mrs. Doukakis contributed to the final report with background records searches and prehistoric and historic background writing for the report.

Archaeological Excavation Results Report for the Alton Parkway Extension Project, Orange County, CA

Client: Orange County Department of Public Works; Contract: $357,170, 10/10 to 6/12

Mrs. Doukakis participated in the Alton Parkway project, City of Irvine, Orange County, CA. She was responsible for cleaning and cataloging the artifacts recovered from the excavation and surface collections. She also contributed to the final report by compiling the historical background information.

Identification and Evaluation of Historic Properties ADA Wheelchair Access Ramp Improvement Project, City of Lake Forest, Orange County, CA

Client: City of Lake Forest/Penco, Contract: $2,981.62, Duration: 6/12 to 7/12

Mrs. Doukakis contributed to the cultural resource records search, field survey, Native American contacts and report writing for this project. This residential area required wheelchair access ramps on every corner in this neighborhood. An assessment of the possible cultural resources that may be affected with this construction was made for the City of Lake Forest. Mrs. Doukakis contributed the historic and prehistoric background, and the assessment of the possible resources in the area.

Tenaska Solar Projects Imperial Solar Energy Center–South; Imperial Solar Energy Center–West; and Wistaria Ranch, Imperial County, CA

Client: Tenaska/CSOLAR Development, Contract: $3,441,809, 10/13 to 8/15.

Mrs. Doukakis conducted Native American contacts for field monitoring, coordinated with subcontractors to initiate cultural and paleontological field surveys, for the several solar energy projects being handled by UltraSystems Environmental in the El Centro area, Imperial County, CA. She contributed different parts of the survey report and monitoring program documents, including historic and prehistoric background, editorial review. At ISEC- West, Mrs. Doukakis was responsible for contacting and organizing Tribal monitors for this project. She contacted tribal organizations and inquired about their interest in providing tribal monitors for this project. directly organized with Native American groups to sign agreements, and fill out tax paperwork. She was also responsible for organizing and keeping track of and gathering field log from monitors from six tribal groups. She also recovered previously recorded artifacts in the field before the start of the project.

NEPA and CEQA Documentation, Los Angeles Regional Interoperable Communications System -Long Term Evolution, Los Angeles County, CA

Client: LARICS Joint Powers Authority, Contract: $3,051,312, 1/12 to 1/15.

UltraSystems' team prepared technical studies and NEPA and CEQA documentation toward the construction of LA-RICS-LTE, an $800-million emergency communications system that will provide a highly coordinated emergency communications system to all first-responders to natural and man-made disasters throughout Los Angeles County. For this project Mrs. Doukakis conducted record searches at the South Central Coastal Information Center for the Department of Commerce on over 300 project sites throughout the County of Los Angeles. She helped prepare letters to the NAHC and tribal organizations associated with the project area. Mrs. Doukakis contributed to contacting, organizing, and scheduling architectural historians to conduct historical research around the project areas. Letters were written for contact to local agencies and cities. A public notice was constructed and published in three local newspapers. Mrs. Doukakis also constructed hundreds of Federal Communications Commission 620 and 621 forms for submission to California State Historic Preservation Office.

Newton Canyon Monitoring Project, CA

Client: County of Los Angeles Department of Public Works, Contract: $2,930.00, Duration: 7/13 to 12/13

Mrs. Doukakis was an archaeological monitor for this project. She monitored all ground disturbing activities as well as lightly surveying the area for cultural material. Mrs. Doukakis also conducted the records center research at the South Central Coastal Information Center at CSUF. Through email, letter, and telephone correspondence, Mrs. Doukakis contacted the NAHC and associated tribal groups.

ATTACHMENT C

NATIVE AMERICAN HERITAGE COMMISSION RECORDS SEARCH

UltraSystems
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February 28, 2022

Government Program Analyst
Native American Heritage Commission
1550 Harbor Blvd., Suite 100
West Sacramento, California 95691

Subject: Cultural Resources Inventory, San Dimas MCTA 20-0005 Project, City of San Dimas, Los Angeles County, California. UltraSystems Environmental Project No. 7145.

Dear NAHC Staff,

UltraSystems Environmental, Inc. (UEI) has been contracted by the City of San Dimas to conduct a Cultural Resources Inventory in support of the San Dimas Municipal Code Text Amendment (MCTA)-20-0005 Project. The Project consists of the preparation of CEQA compliance documentation for the consideration of an MCTA of Title 18-Zoning, Chapter 18.518: Specific Plan 11 of the San Dimas Municipal Code, to amend grading limits within Planning Area I and make various clean-up text amendments. UltraSystems will conduct a cultural resources study to evaluate the potential presence of prehistoric and historic resources within the project boundary. I am requesting a Native American Contact List of interested tribes, organizations and individuals in the general Project area, and a search of the Sacred Lands File for potential traditional cultural sites.

The proposed MCTA would allow for up to one thousand (1,000) cubic yards of grading, cut and fill, beyond that grading necessary for the primary residence, driveway and garage for properties located within SP-11 Planning Area 1 (36 residential lots, up to 36,000 CY grading). The proposed MCTA would also include development standards for the grading, landscaping and any retaining walls that the additional grading would require. Additional amendment clean-up items are proposed by removing sections which dealt with the initial development of the area and codifying previous policies regarding Conditional Uses within the specific plan.

The project site is approximately 90 acres. Currently the project site is occupied by two residential streets (Paseo Lucinda and Calle Cristina) with about 25 single family residences as well as undeveloped space in adjacent canyons. The project site is surrounded by low-density single family residences on all four sides.

The Project is located in southwestern San Dimas, in the County of Los Angeles. This may be seen on the *San Dimas, Calif.*, USGS topographical quadrangle, R 9 W, T 1 S, in the S ½ of the SE ¼ of Section 17, and the E ½ of the NW ¼ and the N ½ of the NE ¼ of Section 20. This is shown on the accompanying map and the Project boundary is depicted with a one-half mile buffer zone.

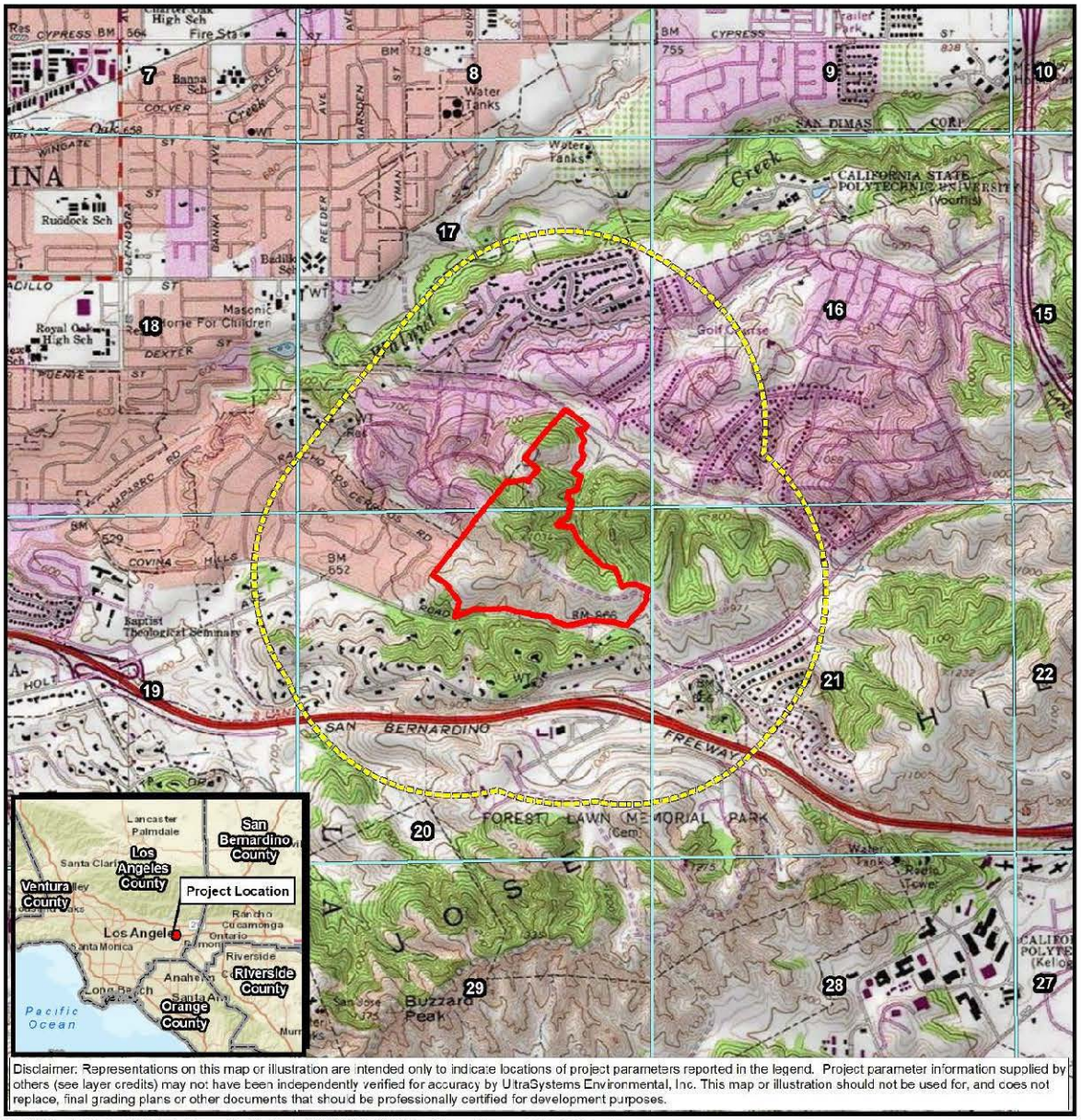
If you require additional information or have any questions, please contact me.

Thank you for your help.

Sincerely,

Stephen O'Neil, M.A., RPA
Cultural Resources Manager
soneil@ultrasystems.com

Corporate Office – Orange County
16431 Scientific Way
Irvine, CA 92618-7443
Telephone: 949.788.4900, ext. 276
Facsimile: 949.788.4901
Website: www.ultrasystems.com



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February 10, 2022

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community, Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community. Copyright © 2013 National Geographic Society, i-cubed; CA Dept. of Conservation, May 2019; UltraSystems Environmental, Inc., 2022

Scale: 1:24,000

N

0 1,000 2,000 Feet

0 250 500 Meters

Legend

- Project Boundary
- Half-Mile Radius
- Section Boundary

San Dimas
MCTA 20-0005

Topographic Map
USGS Quadrangle: San Dimas
Township: 1S Range: 9W
Sections: 17,20

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STATE OF CALIFORNIA Gavin Newsom, Governor

NATIVE AMERICAN HERITAGE COMMISSION

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

April 15, 2022

Stephen O'Neil
UltraSystems Environmental

Via Email to: soneil@ultrasystems.com

Re: Native American Tribal Consultation, Pursuant to the Assembly Bill 52 (AB 52), Amendments to the California Environmental Quality Act (CEQA) (Chapter 532, Statutes of 2014), Public Resources Code Sections 5097.94 (m), 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3, San Dimas MCTA 20-0005 Project, Los Angeles County

Dear Mr. O'Neil:

Pursuant to Public Resources Code section 21080.3.1 (c), attached is a consultation list of tribes that are traditionally and culturally affiliated with the geographic area of the above-listed project. Please note that the intent of the AB 52 amendments to CEQA is to avoid and/or mitigate impacts to tribal cultural resources, (Pub. Resources Code §21084.3 (a)) ("Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.")

Public Resources Code sections 21080.3.1 and 21084.3(c) require CEQA lead agencies to consult with California Native American tribes that have requested notice from such agencies of proposed projects in the geographic area that are traditionally and culturally affiliated with the tribes on projects for which a Notice of Preparation or Notice of Negative Declaration or Mitigated Negative Declaration has been filed on or after July 1, 2015. Specifically, Public Resources Code section 21080.3.1 (d) provides:

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

The AB 52 amendments to CEQA law does not preclude initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction prior to receiving requests for notification of projects in the tribe's areas of traditional and cultural affiliation. The Native American Heritage Commission (NAHC) recommends, but does not require, early consultation as a best practice to ensure that lead agencies receive sufficient information about cultural resources in a project area to avoid damaging effects to tribal cultural resources.

The NAHC also recommends, but does not require that agencies should also include with their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential effect (APE), such as:

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

- A listing of any and all known cultural resources that have already been recorded on or adjacent to the APE, such as known archaeological sites;
- Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
- Whether the records search indicates a low, moderate, or high probability that unrecorded cultural resources are located in the APE; and
- If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

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

   - Any report that may contain site forms, site significance, and suggested mitigation measures.

     All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code section 6254.10.

3. The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was positive. Please contact the Gabrieleno Band of Mission Indians – Kizh Nation on the attached list for more information.

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

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

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

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

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our consultation list remains current.

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

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Tribal Consultation List
Los Angeles County
4/15/2022

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

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

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

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

Gabrielino Tongva Indians of California Tribal Council
Christina Conley, Tribal Consultant and Administrator
P.O. Box 941078 — Gabrielino
Simi Valley, CA, 93094
Phone: (626) 407 - 8761
christina.marsden@alumni.usc.edu

Gabrielino-Tongva Tribe
Charles Alvarez,
23454 Vanowen Street — Gabrielino
West Hills, CA, 91307
Phone: (310) 403 - 6048
roadkingcharles@aol.com

Santa Rosa Band of Cahuilla Indians
Lovina Redner, Tribal Chair
P.O. Box 391820 — Cahuilla
Anza, CA, 92539
Phone: (951) 659 - 2700
Fax: (951) 659-2228
lsaul@santarosa-nsn.gov

Soboba Band of Luiseno Indians
Isaiah Vivanco, Chairperson
P. O. Box 487 — Cahuilla
San Jacinto, CA, 92581 — Luiseno
Phone: (951) 654 - 5544
Fax: (951) 654-4198
ivivanco@soboba-nsn.gov

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

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

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed San Dimas MCTA 20-0005 Project, Los Angeles County.

PROJ-2022-001969 — 04/15/2022 11:03 AM — 1 of 1

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May 17, 2022

Charles Alvarez
Gabrielino-Tongva Tribe
23454 Vanowen Street
West Hills, CA, 91307

Subject: Cultural Resources Inventory Report, San Dimas MCTA 20-0005 Project, City of San Dimas, Los Angeles County, California. UltraSystems Environmental Project No. 7145.

Dear Mr. Alvarez,

UltraSystems Environmental, Inc. (UEI) has been contracted by City of San Dimas to conduct a Cultural Resources Inventory in support of the San Dimas Municipal Code Text Amendment (MCTA)-20-0005 Project. The Project consists of the preparation of CEQA compliance documentation for the consideration of an MCTA of Title 18-Zoning, Chapter 18.518: Specific Plan 11 of the San Dimas Municipal Code, to amend grading limits within Planning Area I and make various clean-up text amendments. UltraSystems will conduct the cultural resources study to evaluate the potential presence of prehistoric and historic resources within the project boundary.

The proposed MCTA would allow for up to one thousand (1,000) cubic yards of grading, cut and fill, beyond that grading necessary for the primary residence, driveway and garage for properties located within SP-11 Planning Area 1 (36 residential lots, up to 36,000 CY grading). The proposed MCTA would also include development standards for the grading, landscaping and any retaining walls that the additional grading would require. The project site is approximately 90 acres in area. Additional amendment clean-up items are proposed by removing sections which dealt with the initial development of the area and codifying previous policies regarding Conditional Uses within the specific plan.

As part of the cultural resources study for the Project, I am writing to request your input on potential Native American resources in or near the Area of Potential Effect (APE). In a letter dated April 15, 2022, the Native American Heritage Commission stated: "The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was positive [emphasis in the original]." The Commission recommended that local Native American individuals and organizations be contacted for further information, including the Gabrielino-Tongva Tribe. Information on cultural resources in the project study area that the tribe is willing to share with us for the study would be appreciated.

The Project is located in southwestern San Dimas, in the County of Los Angeles. This may be seen on the *San Dimas, Calif.*, USGS topographical quadrangle, Range 9 West, Township 1 South, in the S ½ of the SE ¼ of Section 17, and the E ½ of the NW ¼ and the N ½ of the NE ¼ of Section 20. Currently the project site is occupied by two residential streets (Paseo Lucinda and Calle Cristina) with about 25 single family residences as well as undeveloped space in adjacent canyons. The project site is surrounded by low-density single family residences on all four sides. This is shown on the accompanying map and the Project boundary is depicted with a one-half mile buffer zone.

If you require additional information or have any questions, please contact me.

Thank you for your help.

Respectfully yours,

Stephen O'Neil, M.A., RPA
Cultural Resources Manager
soneil@ultrasystems.com
Corporate Office – Orange County
16431 Scientific Way
Irvine, CA 92618-7443
Telephone: 949.788.4900, ext. 276
Facsimile: 949.788.4901
Website: www.ultrasystems.com

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May 17, 2022

Christina Conley, Tribal Consultant and Administrator
Gabrielino Tongva Indians of California Tribal Council
P.O. Box 490
Bellflower, CA, 90707

Subject: Cultural Resources Inventory Report, San Dimas MCTA 20-0005 Project, City of San Dimas, Los Angeles County, California. UltraSystems Environmental Project No. 7145.

Dear Ms. Conley,

UltraSystems Environmental, Inc. (UEI) has been contracted by City of San Dimas to conduct a Cultural Resources Inventory in support of the San Dimas Municipal Code Text Amendment (MCTA)-20-0005 Project. The Project consists of the preparation of CEQA compliance documentation for the consideration of an MCTA of Title 18-Zoning, Chapter 18.518: Specific Plan 11 of the San Dimas Municipal Code, to amend grading limits within Planning Area I and make various clean-up text amendments. UltraSystems will conduct the cultural resources study to evaluate the potential presence of prehistoric and historic resources within the project boundary.

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As part of the cultural resources study for the Project, I am writing to request your input on potential Native American resources in or near the Area of Potential Effect (APE). In a letter dated April 15, 2022, the Native American Heritage Commission stated: "The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was positive [emphasis in the original]." The Commission recommended that local Native American individuals and organizations be contacted for further information, including the Gabrielino Tongva Indians of California Tribal Council. Information on cultural resources in the project study area that the tribe is willing to share with us for the study would be appreciated.

The Project is located in southwestern San Dimas, in the County of Los Angeles. This may be seen on the *San Dimas, Calif.*, USGS topographical quadrangle, Range 9 West, Township 1 South, in the S ½ of the SE ¼ of Section 17, and the E ½ of the NW ¼ and the N ½ of the NE ¼ of Section 20. Currently the project site is occupied by two residential streets (Paseo Lucinda and Calle Cristina) with about 25 single family residences as well as undeveloped space in adjacent canyons. The project site is surrounded by low-density single family residences on all four sides. This is shown on the accompanying map and the Project boundary is depicted with a one-half mile buffer zone.

If you require additional information or have any questions, please contact me.

Thank you for your help.

Respectfully yours,

Stephen O'Neil, M.A., RPA
Cultural Resources Manager
soneil@ultrasystems.com
Corporate Office – Orange County
16431 Scientific Way
Irvine, CA 92618-7443
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May 17, 2022

Robert Dorame, Chairperson
Gabrielino Tongva Indians of California Tribal Council
P.O. Box 490
Bellflower, CA, 90707

Subject: Cultural Resources Inventory Report, San Dimas MCTA 20-0005 Project, City of San Dimas, Los Angeles County, California. UltraSystems Environmental Project No. 7145.

Dear Chairperson Dorame,

UltraSystems Environmental, Inc. (UEI) has been contracted by City of San Dimas to conduct a Cultural Resources Inventory in support of the San Dimas Municipal Code Text Amendment (MCTA)-20-0005 Project. The Project consists of the preparation of CEQA compliance documentation for the consideration of an MCTA of Title 18-Zoning, Chapter 18.518: Specific Plan 11 of the San Dimas Municipal Code, to amend grading limits within Planning Area I and make various clean-up text amendments. UltraSystems will conduct the cultural resources study to evaluate the potential presence of prehistoric and historic resources within the project boundary.

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May 17, 2022

Sandonne Goad, Chairperson
Gabrielino /Tongva Nation
106 1/2 Judge John Aiso St., #231
Los Angeles, CA, 90012

Subject: Cultural Resources Inventory Report, San Dimas MCTA 20-0005 Project, City of San Dimas, Los Angeles County, California. UltraSystems Environmental Project No. 7145.

Dear Chairperson Goad,

UltraSystems Environmental, Inc. (UEI) has been contracted by City of San Dimas to conduct a Cultural Resources Inventory in support of the San Dimas Municipal Code Text Amendment (MCTA)-20-0005 Project. The Project consists of the preparation of CEQA compliance documentation for the consideration of an MCTA of Title 18-Zoning, Chapter 18.518: Specific Plan 11 of the San Dimas Municipal Code, to amend grading limits within Planning Area I and make various clean-up text amendments. UltraSystems will conduct the cultural resources study to evaluate the potential presence of prehistoric and historic resources within the project boundary.

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Thank you for your help.

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May 17, 2022

Anthony Morales, Chairperson
Gabrieleno/Tongva San Gabriel Band of Mission Indians
P.O. Box 693
San Gabriel, CA, 91778

Subject: Cultural Resources Inventory Report, San Dimas MCTA 20-0005 Project, City of San Dimas, Los Angeles County, California. UltraSystems Environmental Project No. 7145.

Dear Chairperson Morales,

UltraSystems Environmental, Inc. (UEI) has been contracted by City of San Dimas to conduct a Cultural Resources Inventory in support of the San Dimas Municipal Code Text Amendment (MCTA)-20-0005 Project. The Project consists of the preparation of CEQA compliance documentation for the consideration of an MCTA of Title 18-Zoning, Chapter 18.518: Specific Plan 11 of the San Dimas Municipal Code, to amend grading limits within Planning Area I and make various clean-up text amendments. UltraSystems will conduct the cultural resources study to evaluate the potential presence of prehistoric and historic resources within the project boundary.

The proposed MCTA would allow for up to one thousand (1,000) cubic yards of grading, cut and fill, beyond that grading necessary for the primary residence, driveway and garage for properties located within SP-11 Planning Area 1 (36 residential lots, up to 36,000 CY grading). The proposed MCTA would also include development standards for the grading, landscaping and any retaining walls that the additional grading would require. The project site is approximately 90 acres in area. Additional amendment clean-up items are proposed by removing sections which dealt with the initial development of the area and codifying previous policies regarding Conditional Uses within the specific plan.

As part of the cultural resources study for the Project, I am writing to request your input on potential Native American resources in or near the Area of Potential Effect (APE). In a letter dated April 15, 2022, the Native American Heritage Commission stated: "The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was positive [emphasis in the original]." The Commission recommended that local Native American individuals and organizations be contacted for further information, including the Gabrieleno/Tongva San Gabriel Band of Mission Indians. Information on cultural resources in the project study area that the tribe is willing to share with us for the study would be appreciated.

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May 17, 2022

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

Subject: Cultural Resources Inventory Report, San Dimas MCTA 20-0005 Project, City of San Dimas, Los Angeles County, California. UltraSystems Environmental Project No. 7145.

Dear Mr. Ontiveros

UltraSystems Environmental, Inc. (UEI) has been contracted by City of San Dimas to conduct a Cultural Resources Inventory in support of the San Dimas Municipal Code Text Amendment (MCTA)-20-0005 Project. The Project consists of the preparation of CEQA compliance documentation for the consideration of an MCTA of Title 18-Zoning, Chapter 18.518: Specific Plan 11 of the San Dimas Municipal Code, to amend grading limits within Planning Area I and make various clean-up text amendments. UltraSystems will conduct the cultural resources study to evaluate the potential presence of prehistoric and historic resources within the project boundary.

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May 17, 2022

Lovina Redner, Tribal Chair
Santa Rosa Band of Cahuilla Indians
P.O. Box 391820
Anza, CA, 92539

Subject: Cultural Resources Inventory Report, San Dimas MCTA 20-0005 Project, City of San Dimas, Los Angeles County, California. UltraSystems Environmental Project No. 7145.

Dear Tribal Chair Redner

UltraSystems Environmental, Inc. (UEI) has been contracted by City of San Dimas to conduct a Cultural Resources Inventory in support of the San Dimas Municipal Code Text Amendment (MCTA)-20-0005 Project. The Project consists of the preparation of CEQA compliance documentation for the consideration of an MCTA of Title 18-Zoning, Chapter 18.518: Specific Plan 11 of the San Dimas Municipal Code, to amend grading limits within Planning Area I and make various clean-up text amendments. UltraSystems will conduct the cultural resources study to evaluate the potential presence of prehistoric and historic resources within the project boundary.

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As part of the cultural resources study for the Project, I am writing to request your input on potential Native American resources in or near the Area of Potential Effect (APE). In a letter dated April 15, 2022, the Native American Heritage Commission stated: "The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was positive [emphasis in the original]." The Commission recommended that local Native American individuals and organizations be contacted for further information, including the Santa Rosa Band of Cahuilla Indians. Information on cultural resources in the project study area that the tribe is willing to share with us for the study would be appreciated.

The Project is located in southwestern San Dimas, in the County of Los Angeles. This may be seen on the *San Dimas, Calif.*, USGS topographical quadrangle, Range 9 West, Township 1 South, in the S ½ of the SE ¼ of Section 17, and the E ½ of the NW ¼ and the N ½ of the NE ¼ of Section 20. Currently the project site is occupied by two residential streets (Paseo Lucinda and Calle Cristina) with about 25 single family residences as well as undeveloped space in adjacent canyons. The project site is surrounded by low-density single family residences on all four sides. This is shown on the accompanying map and the Project boundary is depicted with a one-half mile buffer zone.

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May 17, 2022

Andrew Salas, Chairperson
Gabrieleno Band of Mission Indians - Kizh Nation
P.O. Box 393
Covina, CA, 91723

Subject: Cultural Resources Inventory Report, San Dimas MCTA 20-0005 Project, City of San Dimas, Los Angeles County, California. UltraSystems Environmental Project No. 7145.

Dear Chairperson Salas,

UltraSystems Environmental, Inc. (UEI) has been contracted by City of San Dimas to conduct a Cultural Resources Inventory in support of the San Dimas Municipal Code Text Amendment (MCTA)-20-0005 Project. The Project consists of the preparation of CEQA compliance documentation for the consideration of an MCTA of Title 18-Zoning, Chapter 18.518: Specific Plan 11 of the San Dimas Municipal Code, to amend grading limits within Planning Area I and make various clean-up text amendments. UltraSystems will conduct the cultural resources study to evaluate the potential presence of prehistoric and historic resources within the project boundary.

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As part of the cultural resources study for the Project, I am writing to request your input on potential Native American resources in or near the Area of Potential Effect (APE). In a letter dated April 15, 2022, the Native American Heritage Commission stated: "The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was positive. Please contact the Gabrieleno Band of Mission Indians – Kizh Nation on the attached list for more information [emphasis in the original]." Information on the SLF traditional site, and any other cultural resources in the project study area that the tribe is willing to share with us for the study would be appreciated.

The Project is located in southwestern San Dimas, in the County of Los Angeles. This may be seen on the *San Dimas, Calif.*, USGS topographical quadrangle, Range 9 West, Township 1 South, in the S ½ of the SE ¼ of Section 17, and the E ½ of the NW ¼ and the N ½ of the NE ¼ of Section 20. Currently the project site is occupied by two residential streets (Paseo Lucinda and Calle Cristina) with about 25 single family residences as well as undeveloped space in adjacent canyons. The project site is surrounded by low-density single family residences on all four sides. This is shown on the accompanying map and the Project boundary is depicted with a one-half mile buffer zone.

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May 17, 2022

Isaiah Vivanco, Chairperson
Soboba Band of Luiseno Indians
P. O. Box 487
San Jacinto, CA, 92581

Subject: Cultural Resources Inventory Report, San Dimas MCTA 20-0005 Project, City of San Dimas, Los Angeles County, California. UltraSystems Environmental Project No. 7145.

Dear Chairperson Vivanco

UltraSystems Environmental, Inc. (UEI) has been contracted by City of San Dimas to conduct a Cultural Resources Inventory in support of the San Dimas Municipal Code Text Amendment (MCTA)-20-0005 Project. The Project consists of the preparation of CEQA compliance documentation for the consideration of an MCTA of Title 18-Zoning, Chapter 18.518: Specific Plan 11 of the San Dimas Municipal Code, to amend grading limits within Planning Area I and make various clean-up text amendments. UltraSystems will conduct the cultural resources study to evaluate the potential presence of prehistoric and historic resources within the project boundary.

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San Dimas MCTA Project, San Dimas, Los Angeles County, California. [UEI # 7145]
Native American Contact Log

Name	Tribe/ Affiliation	Letter Contacts	E-mail Contacts	Telephone Contact	Comments
Andrew Green, Cultural Resource Analyst	Native American Heritage Commission		February 28 2021; April 15, 2022	N/A	Request for Sacred Lands File search and local Native American representatives contact information.
Andrew Salas, Chairperson	Gabrieleno Band of Mission Indians - Kizh Nation	May 17, 2021	May 17, 2021	July 22, 2022	Letter and email describing project and requesting input on concerns was sent May 17, 2022. Phone call was made July 22, 2022. There was no answer, and a message was left. There has been no response to date.
Anthony Morales, Chairperson	Gabrieleno/ Tongva San Gabriel Band of Mission Indians	May 17, 2021	May 17, 2021	July 22, 2022	Letter and email describing project and requesting input on concerns was sent May 17, 2022. Phone call was made July 22, 2022. Mr. Morales indicated that the footprint of the SR-57 and I-10 Freeway is sensitive to the tribe. There are sites at Cal-Poly Pomona and Bonelli Park. They recommend tribal and archaeological monitoring using their tribe.
Charles Alvarez, Councilmember	Gabrielino - Tongva Tribe	May 17, 2021	May 17, 2021	July 22, 2022	Letter and email describing project and requesting input on concerns was sent May 17, 2022. An automatic delivery failure email was received on the same day. Phone call was made July 22, 2022. There was no answer, and the mailbox was full. No message could be left. There has been no response to date.
Robert Dorame, Chairperson	Gabrielino Tongva Indians of California Tribal Council	May 17, 2021	May 17, 2021	July 22, 2022	Letter and email describing project and requesting input on concerns was sent May 17, 2022. Phone call was made July 22, 2022. There was no answer and a message was left. Ms. Conley called back and left a message indicating that the tribe has no comment on the project and will leave any comments to their sister tribes. .
Christina Conley, Tribal Consultant and Administrator	Gabrielino Tongva Indians of California Tribal Council	May 17, 2021	May 17, 2021	July 22, 2022	Letter and email describing project and requesting input on concerns was sent May 17, 2022. Phone call was made July 22, 2022. There was no answer and a message was left. Ms. Conley called back and left a message indicating that the tribe has no comment on the project

Name	Tribe/ Affiliation	Letter Contacts	E-mail Contacts	Telephone Contact	Comments
					and will leave any comments to their sister tribes. .
Sandonne Goad, Chairperson	Gabrielino /Tongva Nation	May 17, 2021	May 17, 2021	July 22, 2022	Letter and email describing project and requesting input on concerns was sent May 17, 2022. Phone call was made July 22, 2022. There was no answer, and a message was left. There has been no response to date.
Lovina Redner, Tribal Chair	Santa Rosa Band of Cahuilla Indians	May 17, 2021	May 17, 2021	July 22, 2022	Letter and email describing project and requesting input on concerns was sent May 17, 2022. Phone call was made July 22, 2022. There was no answer, and there was no voicemail available. No message could be left. There has been no response to date.
Isaiah Vivanco, Chairperson	Soboba Band of Luiseno Indians	May 17, 2021	May 17, 2021	July 22, 2022	Letter and email describing project and requesting input on concerns was sent May 17, 2022. Phone call was made July 22, 2022. Mr. Ontiveros indicated that there are resources in the area that have Place names, including sites at Bonelli Park and Cal Poly Pomona campus. The tribe would defer any comments to Chairman Anthony Morales of the San Gabriel Band of Mission Indians.
Joseph Ontiveros, Cultural Resource Department	Soboba Band of Luiseno Indians	May 17, 2021	May 17, 2021	July 22, 2022	Letter and email describing project and requesting input on concerns was sent May 17, 2022. Phone call was made July 22, 2022. Mr. Ontiveros indicated that there are resources in the area that have place names, including sites at Bonelli Park and Cal-Poly Pomona campus. The tribe would defer any comments to Chairman Anthony Morales of the San Gabriel Band of Mission Indians.

ATTACHMENT D

CHRIS RECORDS SEARCH BIBLIOGRAPHY

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-01138		1982	Dillon, Brian D.	An Archaeological Resource Survey and Impact Assessment of a Portion of Lots 16 and 18 of Addition San Jose, 325 Gladstone Ave. San Dimas, Los Angeles County, Ca.		
LA-04149	Cellular -	1998	Mason, Roger D. and Brechbiel, Brant A.	Cultural Resources Records Search and Literature Review Report for a Pacific Bell Mobile Services Telecommunications Facility: La 085-02 City of San Dimas, California	Chambers Group, Inc.	
LA-11202	Cellular -	2010	Loftus, Shannon	Cultural Zresource Records Search and Site Survey, Anthem Telecom Public Storage San Dimas, 211 West Allen Avenue San Dimas, Los Angeles County, California	ACE Environmental	
LA-12623		1999	Maxon, Patrick O.	Review of Cultural Resources for Draft and Final Environmental Impact Reports for the Northern Foothills Implementation Program, City of San Dimas, California	RMW Paleo Associates	19-000825, 19-002054
LA-12818		2016	Gorman, Jennifer, Jennifer M. Sanka, and Leslie Nay Irish	Historic Resource Evaluation Report for the Oak Valley Development Project in the City of San Dimas, Los Angeles County, California	L & L Environmental Corporation	19-192335, 19-192336

SCCIC 11/29/2021 11:55:04 AM

APPENDIX E

FUEL CONSUMPTION ANALYSIS

EMFAC2021 (v1.0.2) Emissions Inventory

Region Type:	**South Coast Air Basin**	
Region:	**Los Angeles County**	
Calendar Year:	**2024**	
Vehicle Classification:	**EMFAC2007 Categories**	
Los Angeles County value:	**93,671,496,157**	**VMT/Year**
Project value:	**1,147,401**	**VMT/Year**

Vehicle Class	Fuel Type	County Fuel Consumption		Project VMT	County VMT	Project Fuel Consumption (gal/yr)		
		1000 gallons/year	gallons/year			Total	Gasoline	Diesel
LDA	GAS	1611912.316	1611912315.84	622424.2785	46771340855	21,439	21,408	31
	DSL	2327.610374	2327610.37		93785850.82			
LDT1	GAS	166721.5247	166721524.68	7.31E+04	4038098956	3,020	3,019	1
	DSL	36.85643223	36856.43		850865.2138			
LDT2	GAS	963726.9986	963726998.61	215988.0999	22882364592	9,090	9,067	23
	DSL	2407.999965	2407999.97		75858778.92			
MDV	GAS	661802.2867	661802286.72	145604.1664	12790845644	7,518	7,445	73
	DSL	6476.740182	6476740.18		152691946.9			
LHDT1	GAS	121844.0485	121844048.51	26675.9491	1646057474	1,748	1,309	439
	DSL	40887.19811	40887198.11		836838983.6			
LHDT2	GAS	20050.57488	20050574.88	7158.641078	236565986.2	489	236	253
	DSL	21500.92132	21500921.32		370815358.5			
MHDT	GAS	51731.56744	51731567.44	12296.70723	266806703.8	1,628	591	1,037
	DSL	90738.73357	90738733.57		808797477.5			
HHDT	GAS	239.4037812	239403.78	9269.860758	970620.5334	1,533	1	1,532
	DSL	353542.7179	353542717.94		2138217940			
OBUS	GAS	9706.981815	9706981.82	1059.052046	48870040.79	181	104	77
	DSL	7208.978834	7208978.83		49722688.4			
UBUS	GAS	2208.412104	2208412.10	693.030808	10131910.28	144	126	18
	DSL	319.848708	319848.71		2043363.748			
MCY	GAS	8357.054605	8357054.61	28449.83259	344477993.3	650	650	0
SBUS	GAS	2395.942818	2395942.82	805.476204	21534384.51	97	56	41
	DSL	1785.746114	1785746.11		13158807.91			
MH	GAS	10594.77164	10594771.64	3846.091504	51318722.2	682	577	105
	DSL	1937.106336	1937106.34		19330213.56			
			Project Totals	**1,147,401**	**93,671,496,157**	**48,219**	**44,589**	**3,630**

Notes: Onroad Motor Vehicle Fuel Consumption calculated by UltraSystems using EMFAC2021(v1.0.2) emissions inventory web platform tool (ARB, 2022) and CalEEMod (2020.4.0) (CAPCOA, 2022).

Source: EMFAC2021 (v1.0.2) Emissions Inventory
Region Type: County
Region: Los Angeles
Calendar Year: 2024
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/year for CVMT and EVMT, trips/year for Trips, kWh/year for Energy Consumption, tons/year for Emissions,
1000 gallons/year for Fuel Consumption

Region	Calendar Y	Vehicle Cat	Model Year	Speed	Fuel	Population	Total VMT	Fuel Consumption
Los Angeles	2024	HHDT	Aggregate	Aggregate	Gasoline	43.6959	970620.5334	239.4037812
Los Angeles	2024	HHDT	Aggregate	Aggregate	Diesel	53754.41	2138217940	353542.7179
Los Angeles	2024	LDA	Aggregate	Aggregate	Gasoline	3388823	46771340855	1611912.316
Los Angeles	2024	LDA	Aggregate	Aggregate	Diesel	9079.361	93785850.82	2327.610374
Los Angeles	2024	LDT1	Aggregate	Aggregate	Gasoline	318252.8	4038098956	166721.5247
Los Angeles	2024	LDT1	Aggregate	Aggregate	Diesel	122.4469	850865.2138	36.85643223
Los Angeles	2024	LDT2	Aggregate	Aggregate	Gasoline	1590817	22882364592	963726.9986
Los Angeles	2024	LDT2	Aggregate	Aggregate	Diesel	5015.834	75858778.92	2407.999965
Los Angeles	2024	LHDT1	Aggregate	Aggregate	Gasoline	126446.9	1646057474	121844.0485
Los Angeles	2024	LHDT1	Aggregate	Aggregate	Diesel	57966.32	836838983.6	40887.19811
Los Angeles	2024	LHDT2	Aggregate	Aggregate	Gasoline	19310.4	236565986.2	20050.57488
Los Angeles	2024	LHDT2	Aggregate	Aggregate	Diesel	26105.21	370815358.5	21500.92132
Los Angeles	2024	MCY	Aggregate	Aggregate	Gasoline	150984	344477993.3	8357.054605
Los Angeles	2024	MDV	Aggregate	Aggregate	Gasoline	961865.5	12790845644	661802.2867
Los Angeles	2024	MDV	Aggregate	Aggregate	Diesel	11173.42	152691946.9	6476.740182
Los Angeles	2024	MH	Aggregate	Aggregate	Gasoline	15893.53	51318722.2	10594.77164
Los Angeles	2024	MH	Aggregate	Aggregate	Diesel	5642.202	19330213.56	1937.106336
Los Angeles	2024	MHDT	Aggregate	Aggregate	Gasoline	14868.36	266806703.8	51731.56744
Los Angeles	2024	MHDT	Aggregate	Aggregate	Diesel	60973.56	808797477.5	90738.73357
Los Angeles	2024	OBUS	Aggregate	Aggregate	Gasoline	3744.202	48870040.79	9706.981815
Los Angeles	2024	OBUS	Aggregate	Aggregate	Diesel	2141.033	49722688.4	7208.978834
Los Angeles	2024	SBUS	Aggregate	Aggregate	Gasoline	1423.941	21534384.51	2395.942818
Los Angeles	2024	SBUS	Aggregate	Aggregate	Diesel	1963.212	13158807.91	1785.746114
Los Angeles	2024	UBUS	Aggregate	Aggregate	Gasoline	437.5652	10131910.28	2208.412104
Los Angeles	2024	UBUS	Aggregate	Aggregate	Diesel	38.73107	2043363.748	319.848708
							93671496157	4160462.341

EMFAC

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Emissions Inventory

This tool provides emissions from onroad and offroad mobile sources in California. Please note that emissions extracted from this web tool are exactly the same as those provided by EMFAC2021 software.

Output

Onroad Emissions | Onroad Emission Rates | Offroad Emissions

Model Version

EMFAC2021 v1.0.2 | EMFAC2017 v1.0.3

Region Type

Sub-Area | County | Metropolitan Planning Organization | Air District | Air Basin | Statewide

Region

Please be mindful not to choose too many regions and calendar years at the same time. It can cause a download failure. See more info here:

Los Angeles ×

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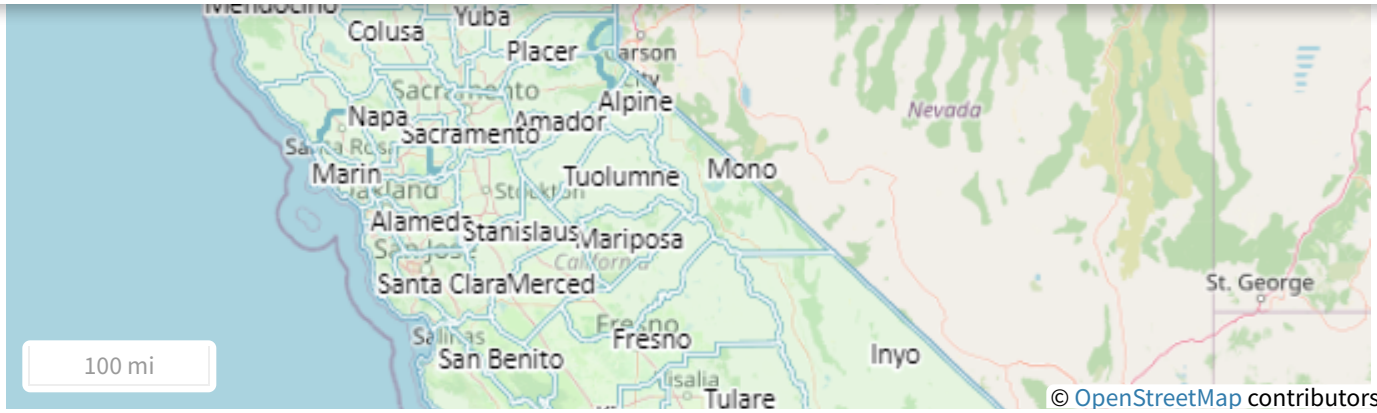

Calendar Year

Select | Range | Select All

2024 ×

Season

Annual | Summer | Winter

Vehicle Category

EMFAC202x | EMFAC2011 | EMFAC2007 | Deselect All

LDA × LDT1 × LDT2 × MDV × MH × MCY × LHDT1 × LHDT2 ×
MHDT × HHDT × SBUS × UBUS × OBUS ×

Model Year

Aggregate | Select | Range

Speed

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Select All

Gasoline × Diesel ×

Output Unit

tons / operation day | tons / year

Show Results | Download as CSV

Results

Shareable link: https://arb.ca.gov/emfac/emissions-inventory/4b31ec8d34d24fe633d0300c783ab16b0c0f7b6f

Request Summary

Source
EMFAC2021 (v1.0.2) Emissions Inventory

Region Type
County

Region
Los Angeles

Calendar Year
2024

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Vehicle Classification
EMFAC2007 Categories

Model Year
Aggregate

Speed
Aggregate

Units
miles/year for CVMT and EVMT, trips/year for Trips, kWh/year for Energy Consumption, tons/year for Emissions, 1000 gallons/year for Fuel Consumption

Output Table

Vehicle Population and Activities — All

- [x] Population
- [ ] Total Vehicle Miles Travelled (Total VMT)
- [x] Combusion Vehicle Miles Travelled (CVMT)
- [ ] Electric Vehicle Miles Travelled (EVMT)
- [ ] Trips
- [x] Fuel Consumption
- [ ] Energy Consumption for EVMT

Pollutants — All

- [ ] NOx
- [ ] PM2.5
- [x] PM10
- [ ] CO2
- [ ] CH4
- [ ] N2O
- [ ] ROG
- [ ] TOG
- [ ] CO
- [ ] SOx
- [ ] NH3

Emissions Processes — All

- [ ] RUNEX
- [ ] IDLEX
- [ ] STREX
- [ ] TOTEX
- [ ] DIURN
- [ ] HOTSOAK
- [ ] RUNLOSS
- [ ] PMTW
- [ ] PMBW
- [x] TOTAL

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CALIFORNIA AIR RESOURCES BOARD

2	HHDT	Diesel	5.38e+4	2.14e+9	3.32e+2
3	LDA	Gasoline	3.39e+6	4.68e+10	9.54e+2
4	LDA	Diesel	9.08e+3	9.38e+7	4.61e+0
5	LDT1	Gasoline	3.18e+5	4.04e+9	9.70e+1
6	LDT1	Diesel	1.22e+2	8.51e+5	2.69e-1
7	LDT2	Gasoline	1.59e+6	2.29e+10	5.08e+2
8	LDT2	Diesel	5.02e+3	7.59e+7	2.00e+0
9	LHDT1	Gasoline	1.26e+5	1.65e+9	1.58e+2
10	LHDT1	Diesel	5.80e+4	8.37e+8	1.03e+2
11	LHDT2	Gasoline	1.93e+4	2.37e+8	2.61e+1
12	LHDT2	Diesel	2.61e+4	3.71e+8	5.09e+1
13	MCY	Gasoline	1.51e+5	3.44e+8	7.35e+0
14	MDV	Gasoline	9.62e+5	1.28e+10	2.88e+2
15	MDV	Diesel	1.12e+4	1.53e+8	4.58e+0
16	MH	Gasoline	1.59e+4	5.13e+7	3.22e+0
17	MH	Diesel	5.64e+3	1.93e+7	3.18e+0
18	MHDT	Gasoline	1.49e+4	2.67e+8	1.67e+1
19	MHDT	Diesel	6.10e+4	8.09e+8	6.13e+1

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21	OBUS	Diesel	2.14e+3	4.97e+7	6.26e+0
22	SBUS	Gasoline	1.42e+3	2.15e+7	1.33e+0
23	SBUS	Diesel	1.96e+3	1.32e+7	1.58e+0
24	UBUS	Gasoline	4.38e+2	1.01e+7	1.31e+0
25	UBUS	Diesel	3.87e+1	2.04e+6	3.42e-1

Rows per page All 1-25 of 25

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APPENDIX F

PALEONTOLOGICAL RECORDS SEARCH

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

Research & Collections

e-mail: paleorecords@nhm.org

February 26, 2022

UltraSystems Environmental
Attn: Stephen O'Neil

re: Paleontological resources for the San Dimas MCTA 20-0005 Project. UltraSystems Environmental Project No. 7145

Dear Stephen:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for proposed development at the San Dimas MCTA 20-0005 project area as outlined on the portion of the San Dimas USGS topographic quadrangle map that you sent to me via e-mail on February 25, 2022. We do not have any fossil localities that lie directly within the proposed project area, but we do have fossil localities nearby from the same sedimentary deposits that occur in the proposed project area, either at the surface or at depth.

The following table shows the closest known localities in the collection of the Natural History Museum of Los Angeles County (NHMLA).

Locality Number	Location	Formation	Taxa	Depth
LACM VP 7471	Lot 14 off Calle Amapola Street in San Dimas	Puente Formation	Mola (Molidae)	Unknown
LACM VP 6172	Calle Andrea and S. San Dimas Avenue	Puente Formation(dense tan/yellow shale)	Fish (Osteichthyes)	Unknown
LACM VP 6166	First bike path diverging south from Via Verde Road in Bonelli Regional County Park	Puente Formation	Sturgeonfish (*Prionurus*)	Surface
LACM VP 6173	Ridge overlooking the southwestern bank of Puddingstone Reservoir	Puente Formation (shale)	Extinct bony fish (*Etringus*)	Surface
LACM VP 6167	Puddingstone Dam	Puente Formation	Mako shark (*Isurus planus*)	Unknown
LACM VP 3363	W of Monterey Pass Road in Coyote Pass; E of the Long Beach Freeway & S of the N boundary of Section 32; Monterey Park	Unknown Formation (Pleistocene; sand and silt)	Horse (*Equus*)	Unknown

LACM VP 7702	Intersection of 26th St and Atlantic Blvd, Bell Gardens	Unknown Formation (Pleistocene; silt)	Fish (*Gasterosteus*); Snake (Colubridae), Rodents (*Thomomys, Microtus, Reithrodontomys)*; Rabbit (*Sylvilagus*)	30 feet bgs

VP, Vertebrate Paleontology; IP, Invertebrate Paleontology; bgs, below ground surface

This records search covers only the records of the NHMLA. It is not intended as a paleontological assessment of the project area for the purposes of CEQA or NEPA. Potentially fossil-bearing units are present in the project area, either at the surface or in the subsurface. As such, NHMLA recommends that a full paleontological assessment of the project area be conducted by a paleontologist meeting Bureau of Land Management or Society of Vertebrate Paleontology standards.

Sincerely,

Alyssa Bell, Ph.D.
Natural History Museum of Los Angeles County

enclosure: invoice

APPENDIX G

HYDROLOGY/DRAINAGE REPORT

ENGEO
Expect Excellence

GEOTECHNICAL
ENVIRONMENTAL
WATER RESOURCES
CONSTRUCTION SERVICES
COASTAL/MARINE GEOTECHNICS

Project No.
20200.000.001

August 10, 2022

Billye Breckenridge
UltraSystems Environmental
16431 Scientific Way,
Irvine, CA 92618

Subject: Specific Plan 11, Planning Area 1
San Dimas, Los Angeles County, California

ISMD HYDROLOGY AND WATER QUALITY ANALYSIS
(HYDROLOGY AND WATER QUALITY TECHNICAL REPORT)

1.0 INTRODUCTION

This Hydrology and Water Quality Technical Report (HWQTR) assesses the potential impacts of implementation of the proposed Specific Plan 11, Planning Area 1 modifications described in the ISMD (referred to in this Technical Memorandum as the "Initial Study/Mitigated Negative Declaration") on hydrology and water quality. To evaluate potential impacts from a hydrologic perspective, hydrologic considerations including flood potential of any proposed modifications to existing land uses were evaluated. For water quality impacts, regulatory considerations consistent with the Los Angeles County Municipal Separate Storm Sewer System (MS4) and National Pollutant Discharge Elimination System (NPDES) Permit were considered. This document also summarizes mitigation measures designed specifically to reduce identified hydrologic and water quality impacts.

2.0 BACKGROUND

The City of San Dimas is located approximately 30 miles east of the City of Los Angeles within eastern Los Angeles County. Planning Area 1 (PA1) is located within the southwestern portion of the City and is located within Specific Plan 11. The majority of PA1 has been developed with single-family residences within hillside areas and is surrounded by existing hillside single-family residences. Local access to PA1 is provided by Via Verde and regional access is provided by the San Bernardino Interstate-10 (I-10) Freeway, approximately 1 mile to the south. PA1 generally drains into a storm drain system on Calle Cristina and connects via an underground storm drainage system to Walnut Creek Wash to the north. Walnut Creek Wash is a tributary of the San Gabriel River. Figure 1 shows the boundary of PA1 and its relation to Walnut Creek Wash.

According to available information through National Oceanic and Atmospheric Administration (NOAA), the area receives approximately 16 inches of annual precipitation per year (Reference 16). Soil mapping performed of PA1 by the National Resource Conservation Service indicates soil with either B or C hydrologic soil group type. Type B and C soil has low to moderate infiltration potential during rainfall events. On-site slopes range from 5 to 30 percent; and therefore, have a high proclivity for runoff during rainfall events (Reference 15). Soil mapping of the project is included in Appendix B.

According to the ISMD, the City of San Dimas is proposing to amend grading limits within PA1 and make various clean-up text amendments. Currently, Chapter 18.518: Specific Plan 11 of the San Dimas Municipal Code allows for unlimited grading (cut and fill) necessary for roadway access and excavation for retaining-type building foundations for the primary residence and garage. Additionally, the Municipal Code allows up to 35 percent building lot coverage for the subject residential lots. The proposed Municipal Code Text Amendment (MCTA) would allow for up to 1,000 cubic yards of grading (cut and fill), beyond that grading necessary for the primary residence, driveway, and garage for properties located within Specific Plan 11, Planning Area 1 (36 residential lots, up to 36,000 CY grading). Per the previous Development Plan Review Board policy, a swimming pool and 5 feet of decking surrounding the pool were exempted from the additional grading calculations. The proposed MCTA would also include development standards for the grading, landscaping, and any retaining walls that the additional grading would require. Additional text clean-up items are proposed by removing sections which dealt with the initial development of the area and codifying previous policies regarding Conditional Uses within the specific plan.

3.0 REGULATORY SETTING

This section provides the regulatory compliance framework related to hydrology and water quality.

3.1 FEDERAL

3.1.1 Federal Clean Water Act

In 1972, the Federal Water Pollution Control Act (later referred to as the Clean Water Act [CWA]) was amended to require National Pollutant Discharge Elimination System (NPDES) permits for the discharge of pollutants into "waters of the United States" from any point source. As defined in the CWA, "waters of the United States" are surface waters, including rivers, lakes, estuaries, coastal waters, and wetlands, that are interstate waters used in interstate and/or foreign commerce, their tributaries, territorial seas at the cyclical high tide mark, and adjacent wetlands. In 1987, Section 402 of the CWA was amended to require that the United States Environmental Protection Agency (USEPA) establish regulations for permitting of municipal and industrial stormwater discharges under the NPDES permit program. The USEPA published final regulations regarding stormwater discharges on November 16, 1990. (See 55 Fed. Reg. 47990 (Nov. 16, 1990)). The regulations require that Municipal Separate Storm Sewer System (MS4) discharges to surface waters be regulated by a NPDES permit. An MS4 is a publicly owned conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) that are designed or used for collecting or conveying stormwater separately from wastewater.

In addition, CWA Section 304(a) requires states to adopt water quality standards for receiving water bodies and to have those standards approved by the USEPA. These water quality standards consist of designated beneficial uses for a particular receiving water body (e.g., wildlife habitat, agricultural supply, fishing, etc.), along with water quality criteria necessary to support those uses. Water quality criteria consist of either prescribed concentrations or levels of constituents, such as lead, suspended sediment, fecal coliform bacteria, or narrative statements describing the quality of water that supports a particular beneficial use. Because California had not established a complete list of acceptable water quality criteria, USEPA established numeric water quality criteria for certain toxic constituents in surface waters with human health or aquatic

life designated uses in the form of the California Toxics Rule (CTR). (40 C.F.R. § 131.38.) The final rule establishes ambient water quality criteria for priority toxic pollutants in the State of California.

3.1.2 Section 303(d) of the Clean Water Act

When designated beneficial uses of a particular receiving water body are compromised by impaired water quality, CWA Section 303(d) requires identifying and listing that water body as "impaired." Once a water body has been deemed impaired, a Total Maximum Daily Load (TMDL) must be developed for the impairing pollutant(s). A TMDL is an estimate of the total load of pollutants from point, nonpoint, and natural sources that a water body may receive without exceeding applicable water quality standards (with a "factor of safety" included). Once established, the TMDL allocates the loads among current and future pollutant sources for the impaired water body. The California 303(d) Listing Policy sets the rules for identifying the waters that do not meet water quality standards. The Policy distinguishes between three categories of waters that do not meet water quality standards. The categories are: (1) requiring TMDLs; (2) water quality limited segments being addressed by a TMDL that has been developed and approved by USEPA and the approved implementation plan is expected to result in full attainment of the standard within a specified time frame; and (3) water quality limited segments being addressed by an existing regulatory program that is reasonably expected to result in the attainment of the water quality standard within a reasonable, specified time frame.

Runoff from the Project discharges to Walnut Creek Wash (State Waterbody ID: CAR405310001998091811243 3). This 303(d) impaired water body is part of the larger San Gabriel Watershed (USGS #18070106, HUC 8). Water quality impairments from Walnut Creek Wash near PA1 were considered when selecting the pollutants of concern for this water quality analysis. As shown on Table 3.1.2-1, CWA Section 303(d) Listings for the Walnut Creek Wash impairments include benthic-macroinvertebrate toxicity bioassesments, indicator bacteria, and pH.

TABLE 3.1.2-1: Walnut Creek Wash, TMDLs "List of Water Quality Limited Segments," Category 5, 2022

GEOGRAPHIC DESCRIPTION AND DISTANCE FROM PROJECT	ESTIMATED AREA ASSESSED	POLLUTANTS	TMDL COMPLETION	POTENTIAL SOURCES
Approximately ¾ mile	12 miles	• Benthic-Macroinvertebrate Bioassesments	TMDL Required 2012	Source Unknown
		• Indicator Bacteria	TMDL Required 2021	Source Unknown
		• pH	TMDL Required 2007	Source Unknown

Source: Final California 2020-2022 Integrated Report (303 (d) List/305(b) Report) Supporting Information. Regional Board 4- Los Angeles Region

Once established, the TMDL allocates the loads among current and future pollutant sources to the water body.

The Los Angeles Regional Water Quality Control Board (LARWQCB) has adopted TMDLs for nitrogen and phosphorus (Basin Plan), discussed below. These TMDLs have become effective as part of the adoption in March 2012 and fall under the following relevant permits (Reference 13).

- County of Los Angeles MS4: NPDES CAS004004 (Order R4-2021-0105)
- General Construction Stormwater: Order No. 2009-0009-DWQ, CAS000002, and amendments.

TMDLs have been assigned to Walnut Creek Wash watershed for benthic macroinvertebrate biaoassesments, indicator bacteria, and pH. The TMDLs for benthic macroinvertebrate surveys are assessed through an Index of Biological Integrity (IBI) score (Reference 9). The IBI score is a cumulative score that takes into account biological stressors of water quality parameters such as indicator bacteria, lead, zinc, copper, mercury, oil, grease, and other toxics on benthic macroinvertebrate community structure. IBI habitat scores are ranked as follows.

- Very good (80-56)
- Good (41-55)
- Fair (27-40)
- Poor (14-26)
- Very poor (0-13)

Sites with a score below 26 are considered to be impaired. IBI scores for Walnut Creek Wash were 7 (2003) and 6 (2004), placing Walnut Creek Wash on the TMDL list for this criteria (Reference 10). The criteria for pH is currently under review; however, Walnut Creek Wash is listed for pH, approved by the USEPA for listing as a TMDL. The current TMDL standard for E. Coli as the indicator bacteria is shown in Table 3.1.2-2.

TABLE 3.1.2-2: TMDL Final Annual Allowable Exceedances for Walnut Creek Wash, E Coli

CONSTITUENT	GEOMETRIC MEAN (MPN or cfu)	DAILY MAXIMUM (MPN or cfu)
E. Coli	126/100 mL	235/100mL

Reference: 2011 Water Quality Control Plan Los Angeles Region R4 Basin Plan

Per the MS4 permit, geometric mean values shall be calculated on each sample day based on a statistically sufficient number of samples (generally not less than five samples equally spaced over a 30-day period) consistent with the REC-1 Basin Plan bacteria objectives. Lastly, there is an additional TMDL for lead accounted for under the Los Angeles Regional MS4 permit applicable through September 30, 2026. For wet weather flows, an effluent limitation of 81.34 micrograms per liter, as total recoverable metals, must not be exceeded. Also, per the MS4 permit, this is applicable for San Gabriel River Reach 2 and all of its upstream reaches and tributaries including Walnut Creek Wash.

3.2 STATE

3.2.1 Fish and Game Code, Sections 1600 through 1617

The California Department of Fish and Wildlife (CDFW) is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility,

the Fish and Game Code, sections 1600-1605 require the proponent of a project that may impact a river, stream, or lake to notify the CDFW before beginning the project. This includes rivers or streams that flow at least periodically or permanently through a bed or channel with banks and that support fish or other aquatic life. It also includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation.

In addition, Fish and Game Code, section 1602 requires that any entity notify the CDFW of a project, prior to beginning construction, that will: (1) divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake; (2) use materials from a streambed; or (3) result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake. If the CDFW determines that the project may adversely affect existing fish and wildlife resources, a Lake and Streambed Alteration Agreement is required.

3.2.2 Porter-Cologne Water Quality Control Act (Wat. Code, § 13000 *et seq.*)

The federal CWA places the primary responsibility for the control of surface water pollution, and for planning the development anduse of water resources, with the states. However, the CWA establishes certain guidelines for the states to follow in developing their programs and allows the USEPA to withdraw control from states with inadequate implementation mechanisms.

California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Porter- Cologne Act). The Porter-Cologne Act grants the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs) authority to protect water quality. It is the primary vehicle for implementation of California's responsibilities under the federal Clean Water Act. The Porter-Cologne Act grants the SWRCB and the RWQCBs authority and responsibility to adopt plans and policies, to regulate discharges of waste to surface and groundwater, to regulate waste disposal sites and to require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substance, sewage, or oil or petroleum product.

Each RWQCB must formulate and adopt a water quality control plan (Basin Plan) for its region. The regional plan must conform to the policies set forth in the Porter-Cologne Act and established by the SWRCB in its state water policy. To implement state and federal law, the regional plan establishes beneficial uses for surface and groundwater in the region, and sets forth narrative and numeric water quality standards to protect those beneficial uses. The Porter-Cologne Act also provides that a RWQCB may include, within its regional plan, water discharge prohibitions applicable to particular conditions, areas, or types of waste.

3.2.3 Basin Plan

The Water Quality Control Plan for the Los Angeles Region (Basin Plan) (LARWQCB 1994, as amended) provides quantitative and narrative criteria for a range of water quality constituents applicable to certain receiving water bodies and groundwater basins within the Los Angeles region. Specific criteria are provided for the larger, designated water bodies within the region, as well as general criteria or guidelines for ocean waters, bays and estuaries, inland surface waters, and groundwater. In general, the narrative criteria require that degradation of water quality does not occur dueto increases in pollutant loads that will adversely impact the designated beneficial

uses of a water body. For example, the Basin Plan requires that "inland surface waters shall not contain suspended or settleable solids in amounts which cause a nuisance or adversely affect beneficial uses as a result of controllable water quality factors." Water quality criteria apply within receiving waters as opposed to applying directly to runoff; therefore, water quality criteria from the Basin Plan are utilized as benchmarks to evaluate the potential ecological impacts of PA1 runoff on the receiving waters of the proposed PA1.

The Basin Plan lists beneficial uses of major water bodies within this region. Walnut Creek Wash is listed and has specific beneficial uses assigned to it seen in Table 3.2.3-1 (Reference 17).

TABLE 3.2.3-1: Beneficial Uses of Walnut Creek Wash

BENEFICIAL USE CODE	CODE DESCRIPTION
WARM	Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
WET	Uses of water that support wetland ecosystems, including, but not limited to, preservation or enhancement of wetland habitats, vegetation, fish, shellfish, or wildlife, and other unique wetland functions which enhance water quality, such as providing flood and erosion control, stream bank stabilization, and filtration and purification of naturally occurring contaminants.
REC1	Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.
REC2	Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
GWR	Uses of water for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.
MUN	Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
WILD	Uses of water that support terrestrial ecosystems including but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

3.2.4 NPDES General Permit and Waste Discharge Requirements for Discharges of Stormwater Associated with Construction Activity

Pursuant to CWA Section 402(p), the SWRCB issued a statewide general permit for stormwater discharges from construction sites [Water Quality Order 2009-0009-DWQ as well as its subsequent amendments 2010-0014-DWQ and 2012-0006-DWQ, State Water Board NPDES General Permit for Stormwater Discharges Associated with Construction Activity (NPDES No. CAR000002; adopted by the State Water Board on September 2, 2009, and became effective on July 1, 2010)]. Under the Construction General Permit (CGP), discharges of stormwater from construction sites with a disturbed area of one or more acres are required to either obtain individual NPDES permits for stormwater discharges or be covered by the CGP.

The SWRCB is currently in the process of re-issuing an updated CGP, anticipated to become effective on July 1, 2023, and would likely be in-place prior to implementation of any future proposed projects within PA1. The re-issued permit is anticipated to contain additional reporting and sampling requirements for construction projects that disturb greater than 1 acre (Draft Order WQ 2022-XXXX-DWQ, NPDES CAS00002).

3.3 LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

3.3.1 Los Angeles County MS4 Permit

In 2012, the LARWQCB issued a revised NPDES Permit and WDRs (Order No. R4-2012-0175; NPDES Permit No. CAS004001) under the Clean Water Act and the Porter-Cologne Act for discharges of urban runoff in public storm drains in Los Angeles County (County). In addition, the Regional Board issued a revised permit in September 2021 (Order No. R4-2021-0105; NPDES Permit No. CAS004004 (the MS4 Permit)). The Permittees include the City of San Dimas. The MS4 Permit regulates stormwater discharges from MS4s in PA1, and details specific requirements for new development and significant redevelopment projects, including selection, sizing, and design criteria for Low Impact Development (LID), treatment control, and hydromodification control BMPs. These requirements apply to Projects equal to 1 acre or greater of disturbed area and adding more than 10,000 square feet or more of impervious surface area for operation purposes.

During construction activities, the Los Angeles County MS4 Permit specifies minimum construction BMPs for projects under 1 acre, which do not require a CGP from the SWRCB.

3.4 LOS ANGELES COUNTY

3.4.1 Los Angeles County Low Impact Development Standards

Los Angeles County developed a “LID Standards Manual” (LACDPW 2014) (the “LID Manual”) that outlines stormwater runoff quantity and quality control development principles, technologies, and design standards for achieving the LID standards of the MS4 permit. The LID Manual provides guidance for the implementation of stormwater quality control measures in new development and redevelopment projects in the County, including within the City of San Dimas, with the intention of improving water quality and mitigating potential water quality impacts from stormwater and non-stormwater discharges.

Pages 1-2 of the LID Manual addresses the following objectives and goals (LACDPW 2014).

- Lessen the adverse impacts of stormwater runoff from development and urban runoff on natural drainage systems, receiving waters, and other water bodies;
- Minimize pollutant loadings from impervious surfaces by requiring development projects to incorporate properly designed, technically appropriate BMPs and other LID strategies.
- Minimize erosion and other hydrologic impacts on natural drainage systems by requiring development projects to incorporate properly designed, technically appropriate hydromodification control development and technologies.

3.5 CITY OF SAN DIMAS

3.5.1 Model Efficient Landscape Ordinance

On January 17, 2014, Governor Jerry Brown proclaimed the State of Emergency in the State of California due to severe drought conditions, and on April 25, 2014, the Governor declared a continued State of Emergency to exist throughout the state due to the ongoing drought. Subsequently, on April 1, 2015, the Governor issued Executive Order B-29-15 to impose restrictions to achieve a statewide 25 percent reduction in potable urban water usage through February 28, 2016.

Also, the Executive Order directed the Department of Water Resources to update the State's Model Water Efficient Landscape Ordinance (MWELO) to be more efficient in water conservation.

As a result, the City of San Dimas revised its Water Efficient Landscapes Ordinance and its implementation Guidelines to comply with the State's revisions. The amended Ordinance and Guidelines implement the state's water conservation efforts but also include guidance in creating landscapes that will preserve the character of the City and continue to uphold an appealing community environment.

The primary purpose of these Guidelines is to provide procedural and design guidance for applicants proposing new landscape or landscape rehabilitation projects that are subject to Chapter 18.14 of the City of San Dimas Municipal Code. Beginning February 1, 2016, and consistent with Executive Order No. B-29-15, this ordinance applies to all new landscape projects with an aggregate landscape area equal to or greater than 500 square feet, requiring a building or landscape permit, plan check or design review landscape projects. Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 square feet are also subject to the Guidelines, if they require a building or landscape permit, plan check, or design review. (Reference 18).

4.0 THRESHOLDS OF SIGNIFICANCE, IMPACTS, AND MITIGATION

Based on Appendix G of The California Environmental Quality Act (CEQA) Guidelines and other relevant criteria, the City of San Dimas Planning Department has determined that a project would have a potentially significant impact related to water quality based on the following criteria.

- Would the project violate any water quality standards or waste discharge requirements?
- Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?
- Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would: (i) result in substantial erosion or siltation on- or off-site; (ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; (iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (iv) impede or redirect flood flows?

- Would the project have impacts in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?
- Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

It has been noted that additional stormwater regulatory requirements may be in order as the project develops.

4.1 IMPACT 1 - CONSTRUCTION WATER QUALITY ISSUES

The development of future proposed projects within PA1 could result in temporary disturbance of surface soil and removal of vegetative cover, potentially causing temporary sediment mobilization in a manner which would result in substantial erosion or siltation. In addition, during construction, other temporary potential pollutants, such as paint, asphalt, or other compounds could become mobilized by wind or rain events. If erosion, siltation, or other construction-related pollutants of concern entered downstream watercourses during construction operations, the project would potentially violate water quality standards. This impact is related to CEQA significance criteria 'A' and 'D'.

During any grading activities, BMPs would be implemented in compliance with the State's Construction General Permit and the 2021 Los Angeles County MS4 Permit. In accordance with these regulatory requirements, any potential project within the Planning Area would reduce or prevent erosion and sediment transport and the transport of other potential pollutants from the site through implementation of BMPs meeting BAT/BCT (Best Available Technology/Best Control Technology). BAT/BCT are Clean Water Act technology-based standards that are applicable to construction site stormwater discharges. If any potential project would impact more than 1 acre, the BMPs to be implemented would be documented in a Stormwater Pollution Prevention Plan (SWPPP), which will be filed with the State Water Resources Control Board and receive a Waste Discharge Identification (WDID) number before commencement of construction activities. Projects under 1 acre would be subject to the BMPs outlined in the 2021 Los Angeles County MS4 Permit.

The following types of BMPs would be included in the permit documents and implemented as-needed during construction.

- Erosion control. Vegetation and other materials (such as straw, fiber, stabilizing emulsion, etc.) placed to stabilize areas of disturbed soil, reduce loss of soil due to the action of water or wind, and prevent water pollution.
- Sediment control. Practices that trap soil particles on site after they have been eroded by rain, flowing water, or wind. They include those practices that intercept and slow or detain the flow of storm water to allow sediment to settle and be trapped (e.g., silt fence, sediment basin, fiber rolls, etc.).
- Waste and Materials Management. Measures include covered storage and secondary containment for material storage areas, secondary containment for portable toilets, covered dumpsters, dedicated and lined concrete washout/waste areas, proper application of chemicals, and proper disposal of all manner of waste products including solid, liquid, sanitary, concrete, hazardous, and equipment-related wastes.

- Non-Stormwater Management. Practices designed to reduce or eliminate the addition of pollutants to construction site runoff through analysis of pollutant sources, implementation of proper handling/disposal practices, employee education, water conservation practices, vehicle and equipment cleaning and fueling practices, street sweeping, and other actions.
- Training and Education. Training of individuals responsible for BMP implementation and permit compliance, including contractors and subcontractors, and include appropriate certification through the State Water Board for Qualified SWPPP Developers and Qualified SWPPP Practitioners.
- Inspection, Maintenance, Monitoring and Sampling. Includes site inspections before, during, and after storm events, construction site monitoring plans to address leaks and spills of non-visible pollutants, and water quality sampling for turbidity and pH.

Construction activities will be conducted in compliance with the State's Construction General Permit and the LA Regional Water Board's 2021 MS4 Permit. With incorporation of these regulatory compliance measures, the Project would not result in any new significant impacts related to construction waste discharge requirements, or obstruction of a water quality control plan, as described in the CEQA significance criteria 'A' and 'E'.

4.2 IMPACT 2 – POST- CONSTRUCTION OPERATIONAL IMPACTS (WATER QUALITY, ALTERATION OF DRAINAGE PATTERNS OR RESULT IN FLOODING OFF-SITE)

The development of future proposed projects within PA1 could result in operational water quality impacts to nearby water bodies by affecting storm runoff quality, which could violate water quality standards and otherwise substantially degrade water quality after construction is completed. The project could also increase runoff by adding additional impervious areas that would potentially impact downstream drainage conveyance structures and channels. These impacts are related to CEQA significance criteria 'A', 'C', and 'E'.

The proposed PA1 does not have enough specific information to conduct a complete analysis of hydrologic impacts at this time. However, we can assume that additional activities in the proposed project would create additional impervious areas as well as increase the size of on-lot drainage management areas, which would increase the amount of rainfall runoff directed into the on-site storm drain system as compared to the existing condition.

As shown in Figure 2, we have estimated the existing and potential proposed drainage areas (north and south sections) within the proposed PA1. The PA1 area was subdivided into these two sections based on the direction of existing storm drain systems within the PA1 area. Using Los Angeles County Flood Control Standards, we used a runoff coefficient of 0.1 for existing, undeveloped conditions and a runoff coefficient of 0.7 for areas where development may occur. We estimated the tributary watershed areas, corresponding slope, flow path length, and soil type (rating 089) for use in Los Angeles County approved HydroCalc software (Reference 19). Slope and flow path lengths were calculated from Figure 2 and the corresponding design storm depth was obtained from Reference 21.

HydroCalc provided estimates for the predicted pre- and post-development scenarios of peak flow runoff expected from an 85th percentile storm, 10-year recurrence interval storm, and 100-year recurrence interval storm. The recurrence interval is based on the probability that the given event

will be equaled or exceeded in any given year. For example, there is a 1 in 50 chance that a 50-year recurrence interval storm of rain will occur during any given year. An 85th percentile storm has an 85 percent chance in occurring in any given year. The peak stormwater flows for each assumed watershed are summarized in Table 4.2.1:

TABLE 4.2-1: Hydrocalc Pre and Post Project Peak Flow Estimates

	NORTH PRE-PROJECT SUBWATERSHED	NORTH POST-PROJECT SUBWATERSEHD	SOUTH PRE-PROJECT SUBWATERSHED	SOUTH POST-PROJECT SUBWATERSHED
Area (acres)	8.29	8.38	14.17	16.85
85th Percentile Peak Flow (cfs)	1.29	1.30	1.74	2.06
10-year Peak Flow (cfs)	14.80	14.96	19.37	23.04
100-year Peak Flow (cfs)	28.40	28.71	37.28	44.32

In summary, if PA1 were developed, we estimate a negligible (approximately 1 percent) increase in unmitigated post-project runoff from the northern subwatershed area and approximately a 16 percent increase in the southern subwatershed area based on our assumptions and per the results on Table 4.2-1. This is in direct proportion to the amount of developed land added in post-project conditions. For detailed results of the HydroCalc analysis, please see Appendix A.

Prior to issuing a grading permit for future proposed projects within PA1, a grading and drainage plan would be required for review and approval by the Building Official and City Engineer. The grading and drainage plan would evaluate the ability of existing downstream infrastructure to safely collect and convey any additional runoff created by future projects into the existing storm drainage system in accordance with San Dimas and LA County standards. Also, any future projects which intend to develop greater than 10,000 square feet of impervious area would be subject to water quality requirements outlined in the LA Regional Water Board's 2021 MS4 Permit, the Los Angeles County LID Manual, or future MS4 permits that would become effective in the future. Lastly, any new project would conform to the local ordinance from the City of San Dimas or local Water Agency to limit excess irrigation water into the PA1 storm drainage system.

Post-construction operational activities of any future projects within PA1 will be conducted in compliance with a City of San Dimas approved grading and drainage plan as well as the Los Angeles Regional Water Board's 2021 MS4 Permit, Los Angeles County LID Manual where applicable, and local drought-tolerant landscaping ordinances. With incorporation of these regulatory compliance measures, the project would not substantially violate any water quality standards or waste discharge requirements, not substantially alter the existing drainage pattern of the site that would result in substantial erosion, not substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site, nor create or contribute runoff that exceeds the capacity of existing or planned drainage systems, nor provide substantial additional sources of polluted runoff; nor impede or redirect flood flows, nor conflict with or obstruct implementation of a water quality control plan as described in the CEQA significance criteria 'A', 'C', and 'E'.

4.3 IMPACT 3 – (FLOOD HAZARD, TSUNAMI, OR SEICHE ZONES).

There are no oceans, lakes, reservoirs or other flood hazards near the project site; therefore, flooding or water quality impacts from seiche and tsunami, or seiche zones are not anticipated. Any proposed future project within PA1 would have no risk of release of pollutants because of project inundation due to a flood hazard, tsunami, or seiche zones as described in the CEQA significance criteria 'D'.

4.4 IMPACT 4 – (SUSTAINABLE GROUNDWATER MANAGEMENT PLAN).

The project site is developed with existing residential homes and additional residential development is proposed. Given the hillside nature of PA1, significant groundwater recharge from the area is unlikely. Therefore, any future project in PA1 would not interfere with implementation of a groundwater recharge of a groundwater management plan, as described in the CEQA significance criteria 'B' and 'E'.

5.0 SIGNIFICANCE OF IMPACT AFTER MITIGATION

It is our assessment that in review of the description of the modifications described to the area proposed by the City of San Dimas, proper mitigation and regulatory compliance would result in ***less than significant impacts*** related to hydrology and water quality. As summarized above, the Project would not result in any new significant impacts with respect to hydrology or water quality with implementation of stormwater BMPs, adherence to the mitigation measures already proposed for the Project, and compliance regulatory requirements.

Sincerely,

ENGEO Incorporated

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Attachments: List of Selected References
Figure 1 – Vicinity Map
Figure 2 – Hydrologic Analysis PA1
Appendix A1 - HydroCalc Summary
Appendix A2 – Los Angeles County Soil Map
Appendix B1 – USDA NRCS Regional Soil Map
Appendix B2 – USDA NRCS Soil Description of Zaca-Apollo Complex

SELECTED REFERENCES

1. Water Quality Control Plan for the Los Angeles Region, California Regional Water Quality Control Board, Los Angeles Region 4, February 23, 1995.

2. State of California, Regional Water Quality Control Board-Los Angeles Region, 2012, Order No. R4-2012-0175 (NPDES No. CAS 004001), Waste Discharge Requirements for Municipal Separate Storm Sewer Systems (MS4), Discharges Within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating from the Long Beach MS4.

3. State of California, Regional Water Quality Control Board-Los Angeles Region, September 2021, Order No. R4-2021-0105; NPDES Permit No. CAS004004. Waste Discharge Requirements for Municipal Separate Storm Sewer Systems (MS4), Discharges Within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating from the Long Beach MS4.

4. State of California, State Water Resources Control Board – Sacramento, 2022, Order WQ-2022-XXXX-DWQ; DRAFT NPDES Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (General Permit).

5. Los Angeles County Department of Public Works (LACDPW), 2000, Los Angeles County 1994-2000 Integrated Receiving Water Impacts Report.

6. Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture, Web Soil Survey. Available online at: http://websoilsurvey.sc.egov.usda.gov/.

7. Musgrave, G.W., 1955, “How Much Water Enters the Soils,” U.S.D.A. Yearbook, U.S. Department of Agriculture, Washington, DC, pp. 151-159.

8. Los Angeles County, 1994-2005 Integrated Receiving Water Impacts Report, Section 4, San Gabriel River Watershed Management Area, pp 4.1 - 4.36.

9. A Quantitative Tool for Assessing the Integrity of Southern Coastal California Streams, 2005. Appendix 7-B, Environmental Management Vo. 35, No. -4, pp 493 – 504.

10. State of California, State Water Resources Control Board, 2020-2022 Integrated Report Map (Clean Water Act Section 303 (d) List/305(b) Report, Available online at: https://gispublic.waterboards.ca.gov/portal/apps/webappviewer/index.html?id=6cca2a3a1815465599201266373cbb7b

11. State of California, Regional Water Quality Control Board-Los Angeles Region, 2011 Water Quality Control Plan, Los Angeles Region R4 Basin Plan.

12. 2006-2007 Monitoring Data (MS4) for Tributaries of the San Gabriel River Watershed-CI 6948 for order no. 01-182, NPDES No. CAS00401 Municipal Storm Water and Urban Runoff Discharges within County of Los Angeles & incorporated cities, except City of Long Beach.

13. U.S. Environmental Protection Agency, Region IX. Los Angeles Area Lakes Total Maximum Daily Loads for Nitrogen, Phosphorous, Mercury, Trash, Organochlorine Pesticides and PCBs. Alexis Strauss, March 2012. https://www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/Established/Lakes/LALakesTMDLsEntireDocument.pdf

14. U.S. Environmental Protection Agency, How’s My Waterway? Searchable Online Database of Impaired Waterbodies, https://mywaterway.epa.gov/

SELECTED REFERENCES (Continued)

15. United States Department of Agriculture, Natural Resources Conservation Service (NRCS). Custom Soil Resource Report for Los Angeles County, California, Southeastern Part. September 21, 2021.

16. NOWData-NOAA Online Weather Data. Pomona-Fairplex Historical Data. 1980-2022. https://www.weather.gov/wrh/Climate?wfo=lox

17. State of California, State Water Resources Control Board, California Basin Plan Beneficial Use Viewer. https://gispublic.waterboards.ca.gov/portal/apps/webappviewer/index.html?id=116f7daa9c4d4103afda1257be82eb16

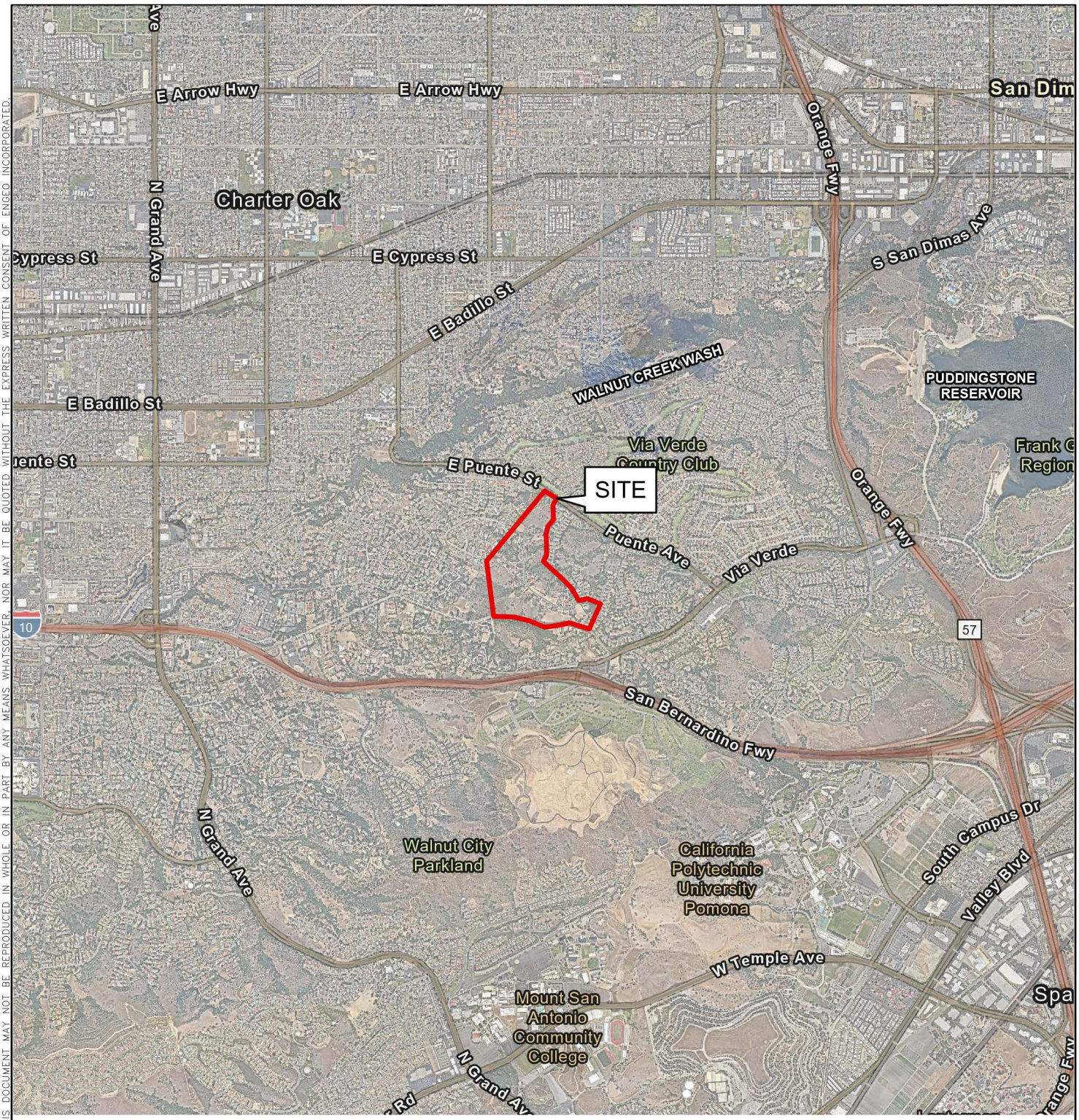
18. City of San Dimas; Guidelines for Implementation of the City of San Dimas Model Water Efficient Landscape Ordinance (MWELO), 2015.

19. Public Works Los Angeles County. Hydrologic Report, 2006 Hydrology Manual, Hydrology Map GIS, HydroCalc Software. http://ladpw.org/wrd/publication/. Current as of August 2022.

20. LA County Sanitary Sewer Network – Consolidated Sewer Maintenance District. Online GIS map tool available as of August 2022: https://pw.lacounty.gov/smd/sewernetwork/.

21. NOAA's National Weather Service, Hydrometeorological Design Studies Center. Precipitation Frequency Data Server (PFDS). https://hdsc.nws.noaa.gov/hdsc/pfds/. Current as of August 2022.

FIGURES



N

0 2,000 4,000

FEET

BASEMAP SOURCE: GOOGLE EARTH MAPPING SERVICE 2022

ENGEO Expect Excellence

VICINITY MAP

CITY OF SAN DIMAS - HWQTR

SAN DIMAS, CALIFORNIA

PROJECT NO. :	20200.000.001
SCALE:	AS SHOWN
DRAWN BY: NLK	CHECKED BY: JB

FIGURE NO. 1

PATH: G:\DRAFTING\PROJECTS_20000 TO 21999\20200\20200000001\WQTR\WQTR.APRX
LAYOUT: VICINITY USER: NLAMOTTEKERR

ORIGINAL FIGURE PRINTED IN COLOR

PROJECT SITE AREA	96.93 ACRES
NORTH DRAINAGE AREA (PRE PROJECT)	8.29 ACRES
NORTH DRAINAGE AREA (POST PROJECT)	8.38 ACRES
SOUTH DRAINAGE AREA (PRE PROJECT)	14.17 ACRES
SOUTH DRAINAGE AREA (POST PROJECT)	16.85 ACRES

N

0 350 700

FEET

EXPLANATION

ALL LOCATIONS ARE APPROXIMATE

- PROJECT SITE
- 25FT CONTOUR
- NORTH DRAINAGE AREA (PRE PROJECT)
- NORTH DRAINAGE AREA (POST PROJECT)
- SOUTH DRAINAGE AREA (PRE PROJECT)
- SOUTH DRAINAGE AREA (POST PROJECT)

BASEMAP SOURCE: GOOGLE EARTH MAPPING SERVICE 2022

ENGEO Expect Excellence

HYDROLOGIC ANALYSIS PA1

CITY OF SAN DIMAS - HWQTR

SAN DIMAS, CALIFORNIA

PROJECT NO. : 20200.000.001

SCALE: AS SHOWN

DRAWN BY: NLK | CHECKED BY: JB

FIGURE NO. 2

PATH: G:\DRAFTING\PROJECTS_20000 TO 21999\20200\20200000001\WQTR\WQTR.APRX
LAYOUT: LAYOUT USER: NLAMOTTEKERR

ORIGINAL FIGURE PRINTED IN COLOR

APPENDIX A1

HydroCalc Summary

Peak Flow Hydrologic Analysis

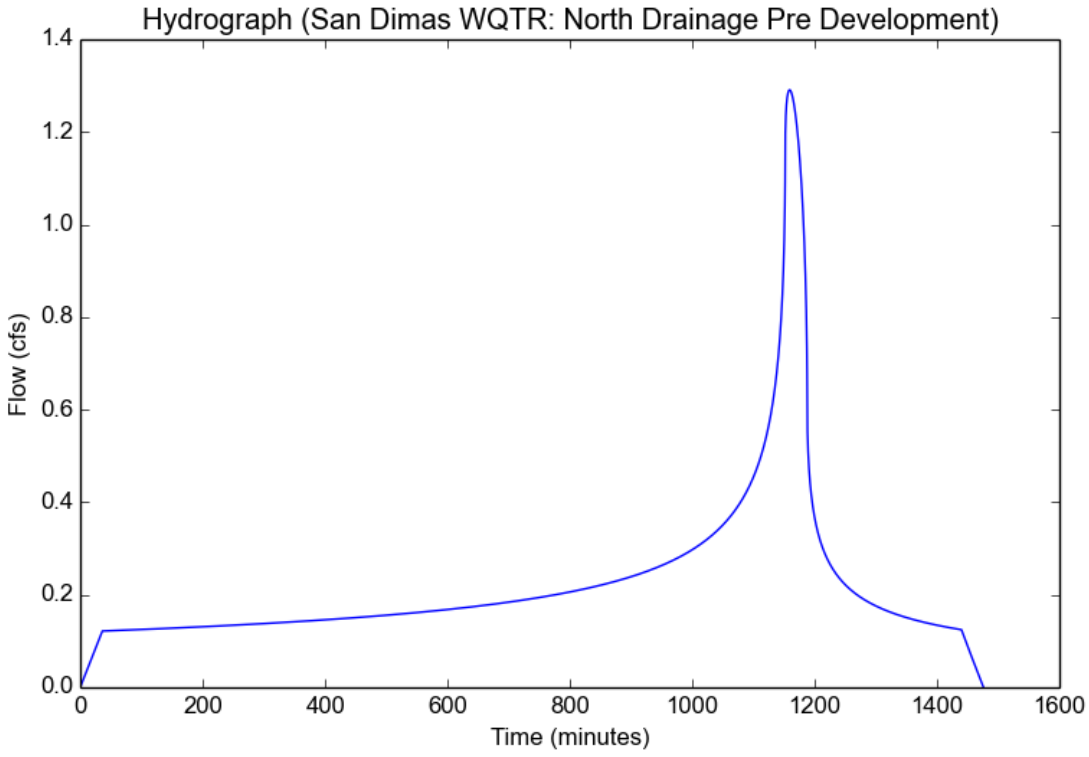
File location: //engeo.com/files/Active Projects/_20000 to 21999/20200/20200000001 - San Dimas Specific Plan Hydro Study/HydroCalc Data/San Dimas
Version: HydroCalc 1.0.3

Input Parameters

Project Name	San Dimas WQTR
Subarea ID	North Drainage Pre Development
Area (ac)	8.29
Flow Path Length (ft)	1178.73
Flow Path Slope (vft/hft)	0.0648
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.7
Soil Type	89
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.2359
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.66
Time of Concentration (min)	36.0
Clear Peak Flow Rate (cfs)	1.2908
Burned Peak Flow Rate (cfs)	1.2908
24-Hr Clear Runoff Volume (ac-ft)	0.4522
24-Hr Clear Runoff Volume (cu-ft)	19697.3669



Peak Flow Hydrologic Analysis

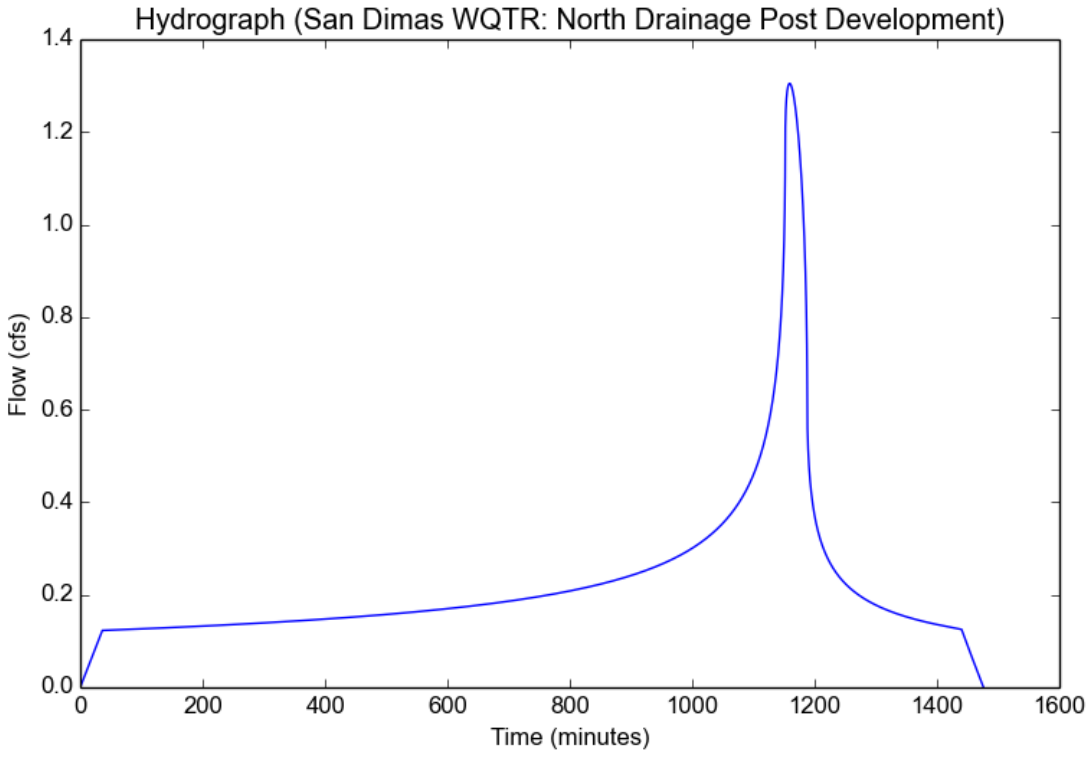
File location: //engeo.com/files/Active Projects/_20000 to 21999/20200/20200000001 - San Dimas Specific Plan Hydro Study/HydroCalc Data/San Dimas
Version: HydroCalc 1.0.3

Input Parameters

Project Name	San Dimas WQTR
Subarea ID	North Drainage Post Development
Area (ac)	8.38
Flow Path Length (ft)	1178.73
Flow Path Slope (vft/hft)	0.0648
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.7
Soil Type	89
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.2359
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.66
Time of Concentration (min)	36.0
Clear Peak Flow Rate (cfs)	1.3048
Burned Peak Flow Rate (cfs)	1.3048
24-Hr Clear Runoff Volume (ac-ft)	0.4571
24-Hr Clear Runoff Volume (cu-ft)	19911.2105



Peak Flow Hydrologic Analysis

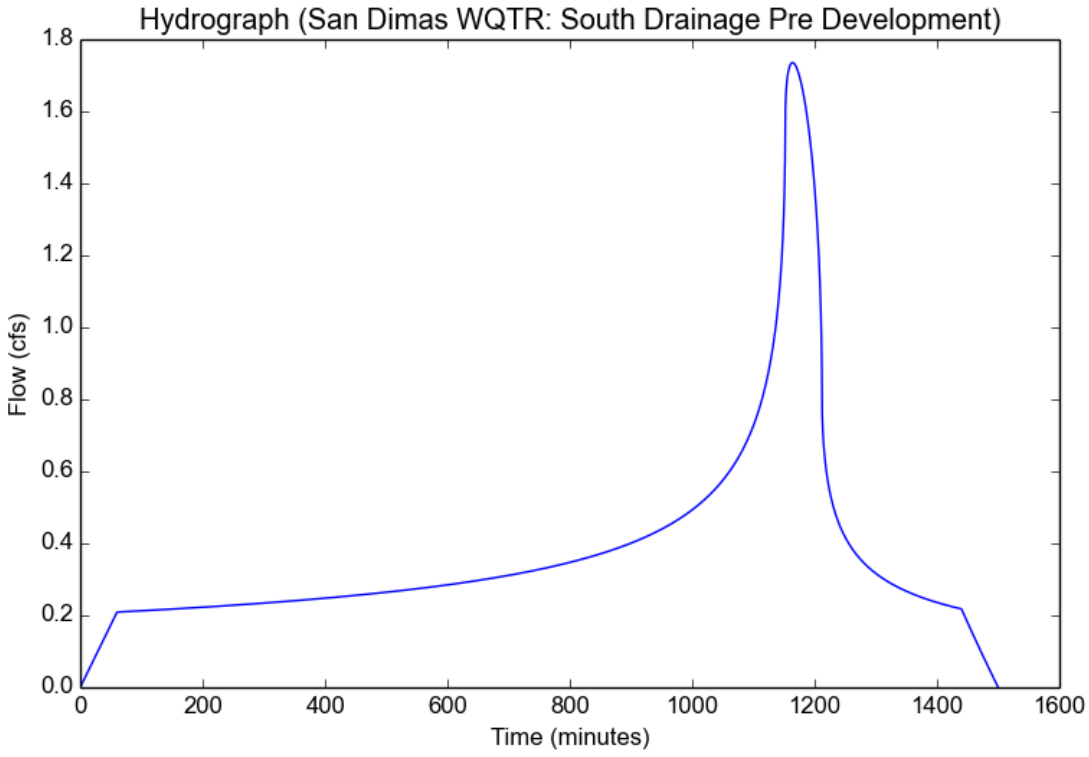
File location: //engeo.com/files/Active Projects/_20000 to 21999/20200/20200000001 - San Dimas Specific Plan Hydro Study/HydroCalc Data/San Dimas
Version: HydroCalc 1.0.3

Input Parameters

Project Name	San Dimas WQTR
Subarea ID	South Drainage Pre Development
Area (ac)	14.17
Flow Path Length (ft)	2081.3
Flow Path Slope (vft/hft)	0.0279
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.7
Soil Type	89
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.1856
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.66
Time of Concentration (min)	60.0
Clear Peak Flow Rate (cfs)	1.7354
Burned Peak Flow Rate (cfs)	1.7354
24-Hr Clear Runoff Volume (ac-ft)	0.7729
24-Hr Clear Runoff Volume (cu-ft)	33669.4971



Peak Flow Hydrologic Analysis

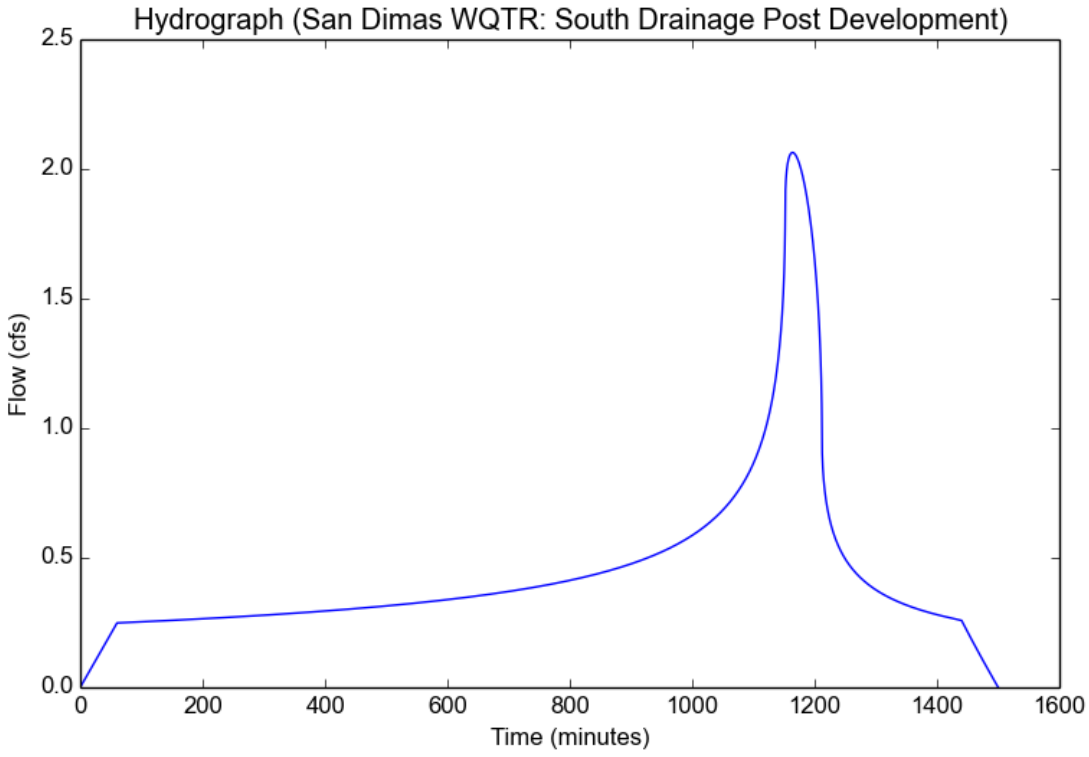
File location: //engeo.com/files/Active Projects/_20000 to 21999/20200/20200000001 - San Dimas Specific Plan Hydro Study/HydroCalc Data/San Dimas
Version: HydroCalc 1.0.3

Input Parameters

Project Name	San Dimas WQTR
Subarea ID	South Drainage Post Development
Area (ac)	16.85
Flow Path Length (ft)	2081.3
Flow Path Slope (vft/hft)	0.0279
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.7
Soil Type	89
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.1856
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.66
Time of Concentration (min)	60.0
Clear Peak Flow Rate (cfs)	2.0636
Burned Peak Flow Rate (cfs)	2.0636
24-Hr Clear Runoff Volume (ac-ft)	0.9191
24-Hr Clear Runoff Volume (cu-ft)	40037.4753



Peak Flow Hydrologic Analysis

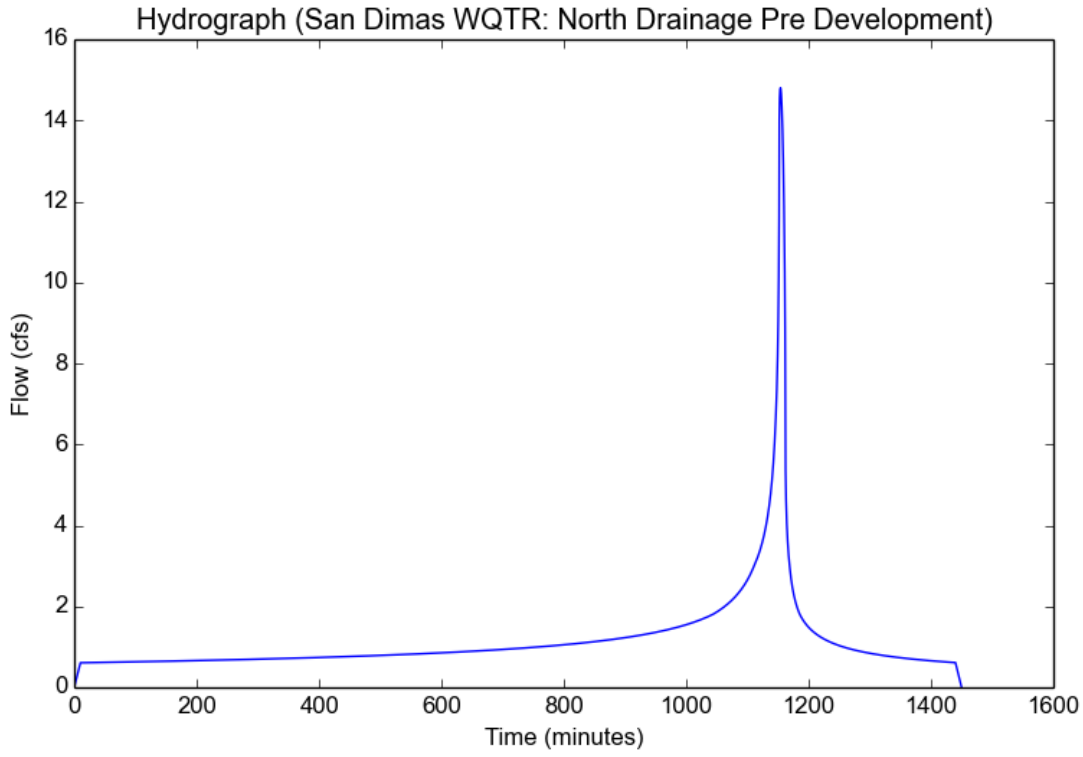
File location: //engeo.com/files/Active Projects/_20000 to 21999/20200/20200000001 - San Dimas Specific Plan Hydro Study/HydroCalc Data/San Dimas
Version: HydroCalc 1.0.3

Input Parameters

Project Name	San Dimas WQTR
Subarea ID	North Drainage Pre Development
Area (ac)	8.29
Flow Path Length (ft)	1178.73
Flow Path Slope (vft/hft)	0.0648
50-yr Rainfall Depth (in)	7.03
Percent Impervious	0.7
Soil Type	89
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.0194
Peak Intensity (in/hr)	2.1621
Undeveloped Runoff Coefficient (Cu)	0.6529
Developed Runoff Coefficient (Cd)	0.8259
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	14.8028
Burned Peak Flow Rate (cfs)	14.8028
24-Hr Clear Runoff Volume (ac-ft)	2.3515
24-Hr Clear Runoff Volume (cu-ft)	102429.6605



Peak Flow Hydrologic Analysis

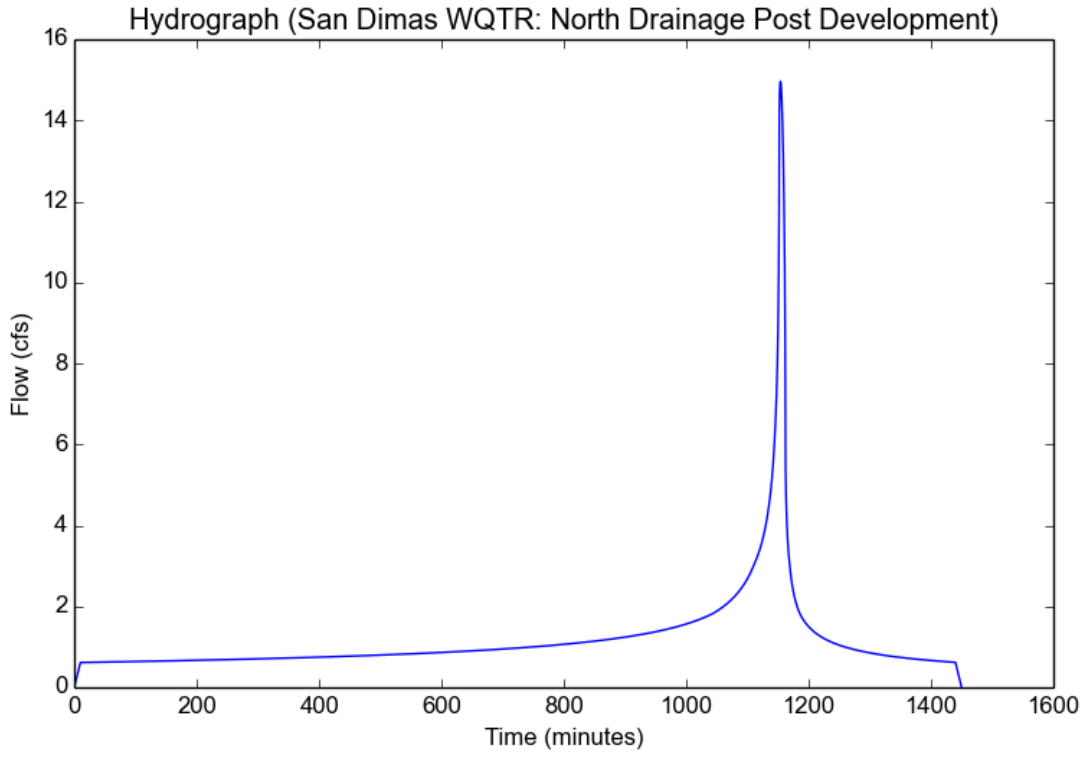
File location: //engeo.com/files/Active Projects/_20000 to 21999/20200/20200000001 - San Dimas Specific Plan Hydro Study/HydroCalc Data/San Dimas
Version: HydroCalc 1.0.3

Input Parameters

Project Name	San Dimas WQTR
Subarea ID	North Drainage Post Development
Area (ac)	8.38
Flow Path Length (ft)	1178.73
Flow Path Slope (vft/hft)	0.0648
50-yr Rainfall Depth (in)	7.03
Percent Impervious	0.7
Soil Type	89
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.0194
Peak Intensity (in/hr)	2.1621
Undeveloped Runoff Coefficient (Cu)	0.6529
Developed Runoff Coefficient (Cd)	0.8259
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	14.9635
Burned Peak Flow Rate (cfs)	14.9635
24-Hr Clear Runoff Volume (ac-ft)	2.377
24-Hr Clear Runoff Volume (cu-ft)	103541.6834



Peak Flow Hydrologic Analysis

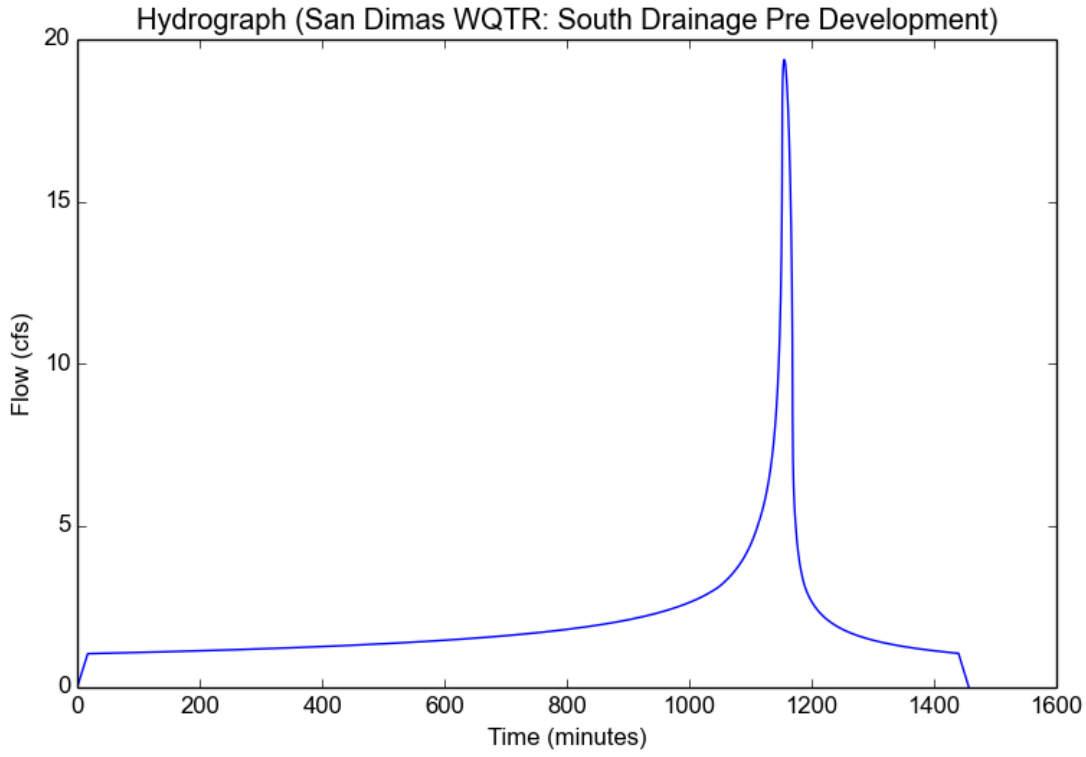
File location: //engeo.com/files/Active Projects/_20000 to 21999/20200/20200000001 - San Dimas Specific Plan Hydro Study/HydroCalc Data/San Dimas
Version: HydroCalc 1.0.3

Input Parameters

Project Name	San Dimas WQTR
Subarea ID	South Drainage Pre Development
Area (ac)	14.17
Flow Path Length (ft)	2081.3
Flow Path Slope (vft/hft)	0.0279
50-yr Rainfall Depth (in)	7.03
Percent Impervious	0.7
Soil Type	89
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.0194
Peak Intensity (in/hr)	1.6849
Undeveloped Runoff Coefficient (Cu)	0.605
Developed Runoff Coefficient (Cd)	0.8115
Time of Concentration (min)	17.0
Clear Peak Flow Rate (cfs)	19.3738
Burned Peak Flow Rate (cfs)	19.3738
24-Hr Clear Runoff Volume (ac-ft)	4.0176
24-Hr Clear Runoff Volume (cu-ft)	175008.6468



Peak Flow Hydrologic Analysis

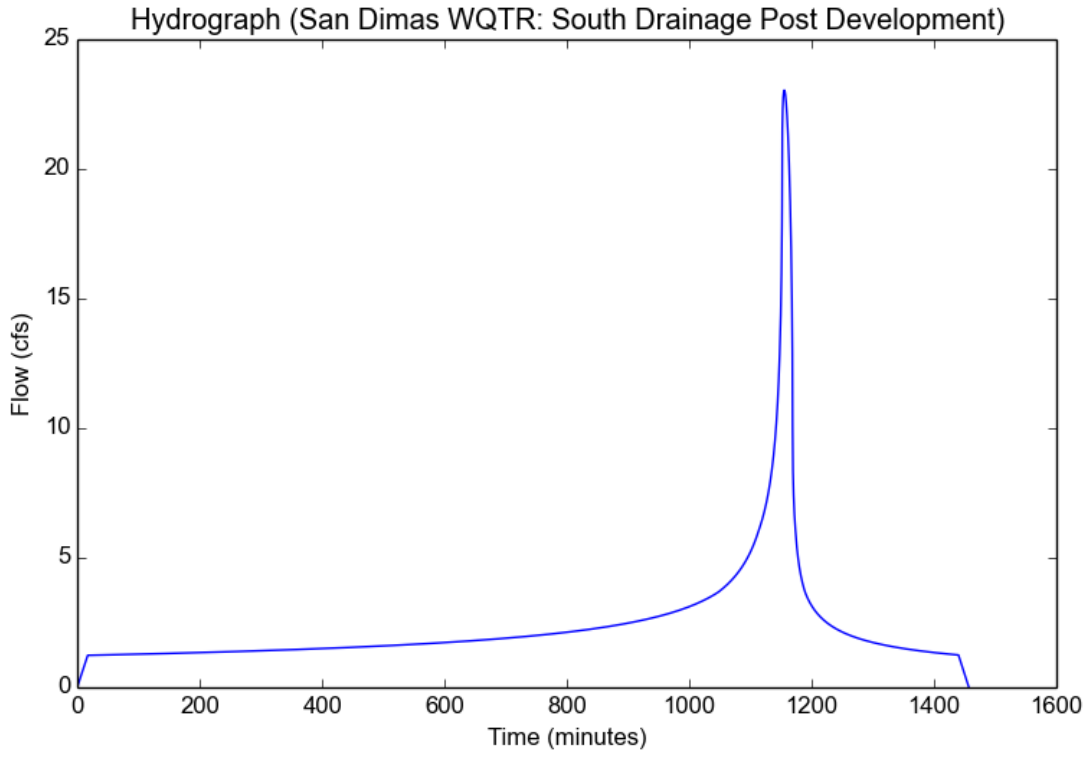
File location: //engeo.com/files/Active Projects/_20000 to 21999/20200/20200000001 - San Dimas Specific Plan Hydro Study/HydroCalc Data/San Dimas
Version: HydroCalc 1.0.3

Input Parameters

Project Name	San Dimas WQTR
Subarea ID	South Drainage Post Development
Area (ac)	16.85
Flow Path Length (ft)	2081.3
Flow Path Slope (vft/hft)	0.0279
50-yr Rainfall Depth (in)	7.03
Percent Impervious	0.7
Soil Type	89
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	5.0194
Peak Intensity (in/hr)	1.6849
Undeveloped Runoff Coefficient (Cu)	0.605
Developed Runoff Coefficient (Cd)	0.8115
Time of Concentration (min)	17.0
Clear Peak Flow Rate (cfs)	23.038
Burned Peak Flow Rate (cfs)	23.038
24-Hr Clear Runoff Volume (ac-ft)	4.7775
24-Hr Clear Runoff Volume (cu-ft)	208108.3767



Peak Flow Hydrologic Analysis

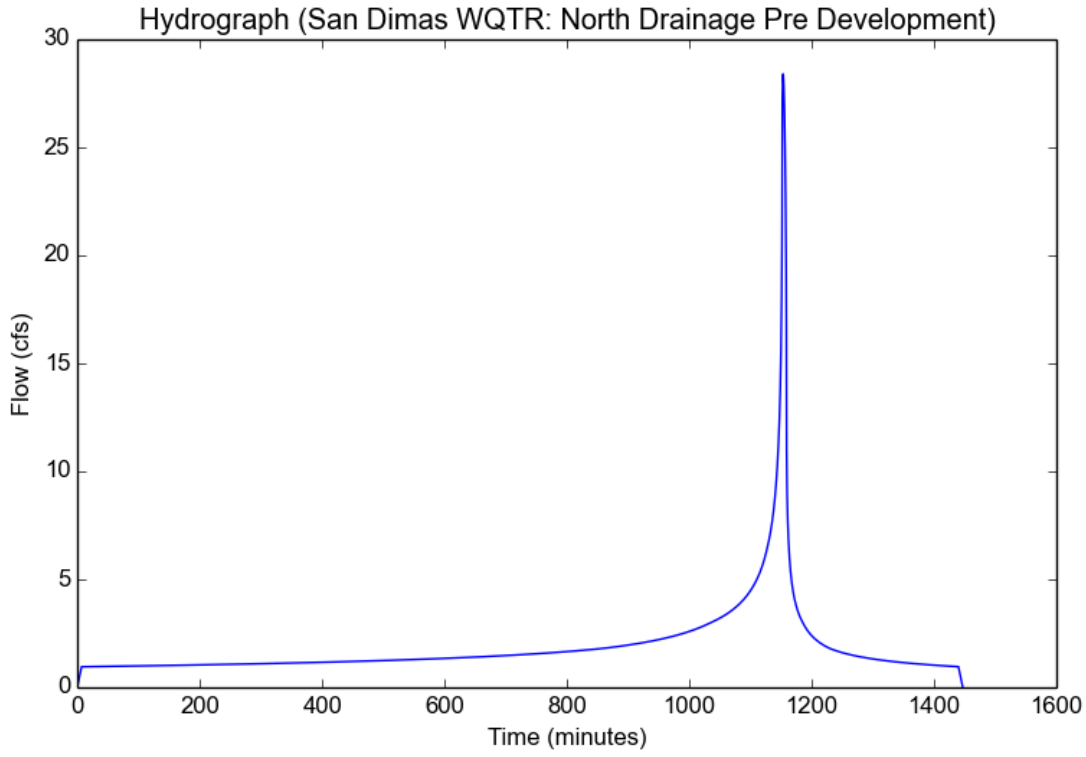
File location: //engeo.com/files/Active Projects/_20000 to 21999/20200/20200000001 - San Dimas Specific Plan Hydro Study/HydroCalc Data/San Dimas
Version: HydroCalc 1.0.3

Input Parameters

Project Name	San Dimas WQTR
Subarea ID	North Drainage Pre Development
Area (ac)	8.29
Flow Path Length (ft)	1178.73
Flow Path Slope (vft/hft)	0.0648
50-yr Rainfall Depth (in)	7.03
Percent Impervious	0.7
Soil Type	89
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	7.8877
Peak Intensity (in/hr)	4.0176
Undeveloped Runoff Coefficient (Cu)	0.7423
Developed Runoff Coefficient (Cd)	0.8527
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	28.4002
Burned Peak Flow Rate (cfs)	28.4002
24-Hr Clear Runoff Volume (ac-ft)	3.7833
24-Hr Clear Runoff Volume (cu-ft)	164801.8713



Peak Flow Hydrologic Analysis

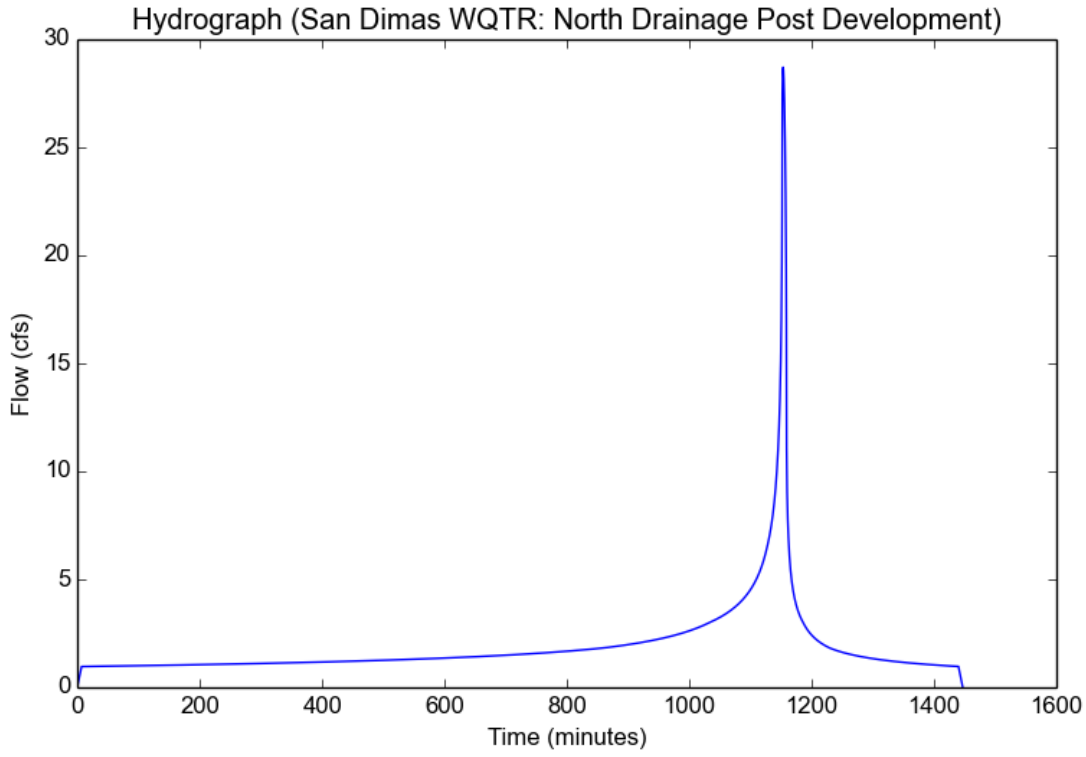
File location: //engeo.com/files/Active Projects/_20000 to 21999/20200/20200000001 - San Dimas Specific Plan Hydro Study/HydroCalc Data/San Dimas
Version: HydroCalc 1.0.3

Input Parameters

Project Name	San Dimas WQTR
Subarea ID	North Drainage Post Development
Area (ac)	8.38
Flow Path Length (ft)	1178.73
Flow Path Slope (vft/hft)	0.0648
50-yr Rainfall Depth (in)	7.03
Percent Impervious	0.7
Soil Type	89
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	7.8877
Peak Intensity (in/hr)	4.0176
Undeveloped Runoff Coefficient (Cu)	0.7423
Developed Runoff Coefficient (Cd)	0.8527
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	28.7085
Burned Peak Flow Rate (cfs)	28.7085
24-Hr Clear Runoff Volume (ac-ft)	3.8244
24-Hr Clear Runoff Volume (cu-ft)	166591.0351



Peak Flow Hydrologic Analysis

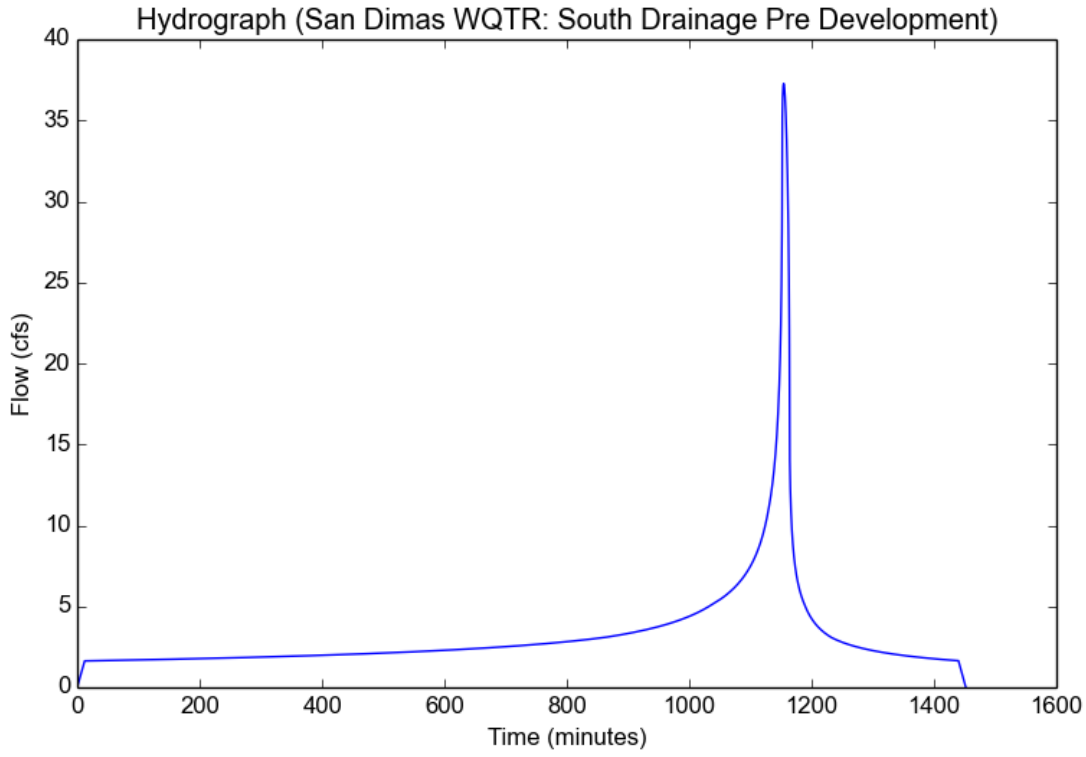
File location: //engeo.com/files/Active Projects/_20000 to 21999/20200/20200000001 - San Dimas Specific Plan Hydro Study/HydroCalc Data/San Dimas
Version: HydroCalc 1.0.3

Input Parameters

Project Name	San Dimas WQTR
Subarea ID	South Drainage Pre Development
Area (ac)	14.17
Flow Path Length (ft)	2081.3
Flow Path Slope (vft/hft)	0.0279
50-yr Rainfall Depth (in)	7.03
Percent Impervious	0.7
Soil Type	89
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	7.8877
Peak Intensity (in/hr)	3.1185
Undeveloped Runoff Coefficient (Cu)	0.7118
Developed Runoff Coefficient (Cd)	0.8435
Time of Concentration (min)	12.0
Clear Peak Flow Rate (cfs)	37.2755
Burned Peak Flow Rate (cfs)	37.2755
24-Hr Clear Runoff Volume (ac-ft)	6.4657
24-Hr Clear Runoff Volume (cu-ft)	281646.9164



Peak Flow Hydrologic Analysis

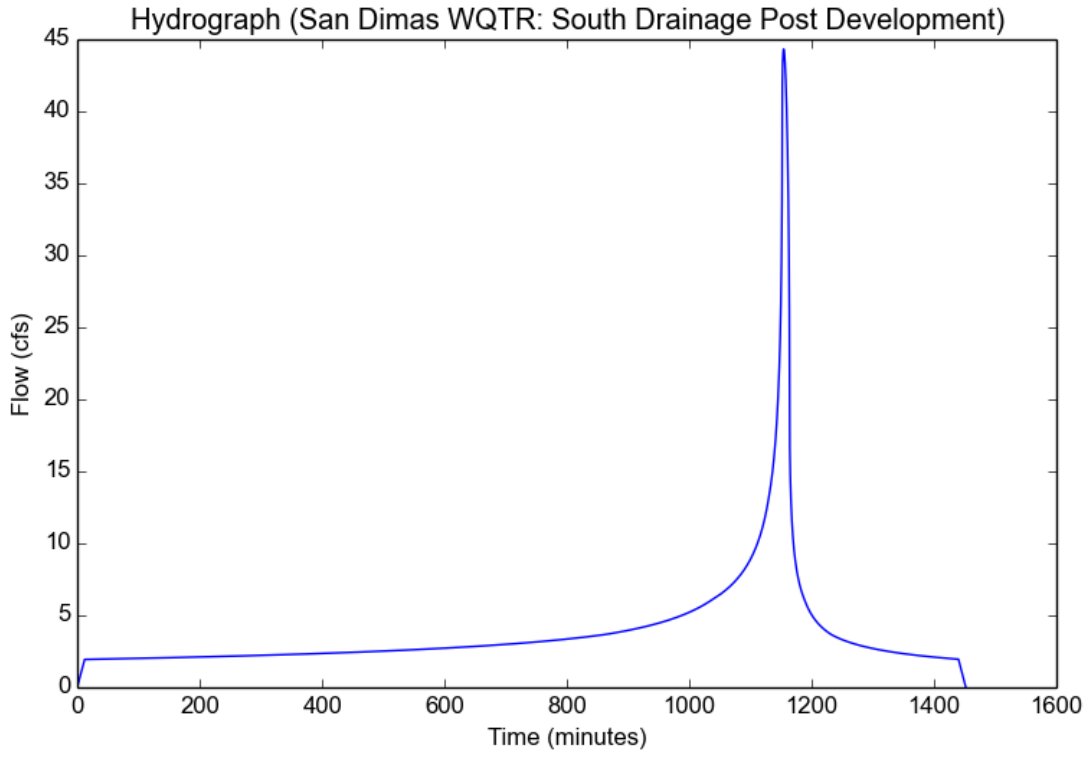
File location: //engeo.com/files/Active Projects/_20000 to 21999/20200/20200000001 - San Dimas Specific Plan Hydro Study/HydroCalc Data/San Dimas
Version: HydroCalc 1.0.3

Input Parameters

Project Name	San Dimas WQTR
Subarea ID	South Drainage Post Development
Area (ac)	16.85
Flow Path Length (ft)	2081.3
Flow Path Slope (vft/hft)	0.0279
50-yr Rainfall Depth (in)	7.03
Percent Impervious	0.7
Soil Type	89
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

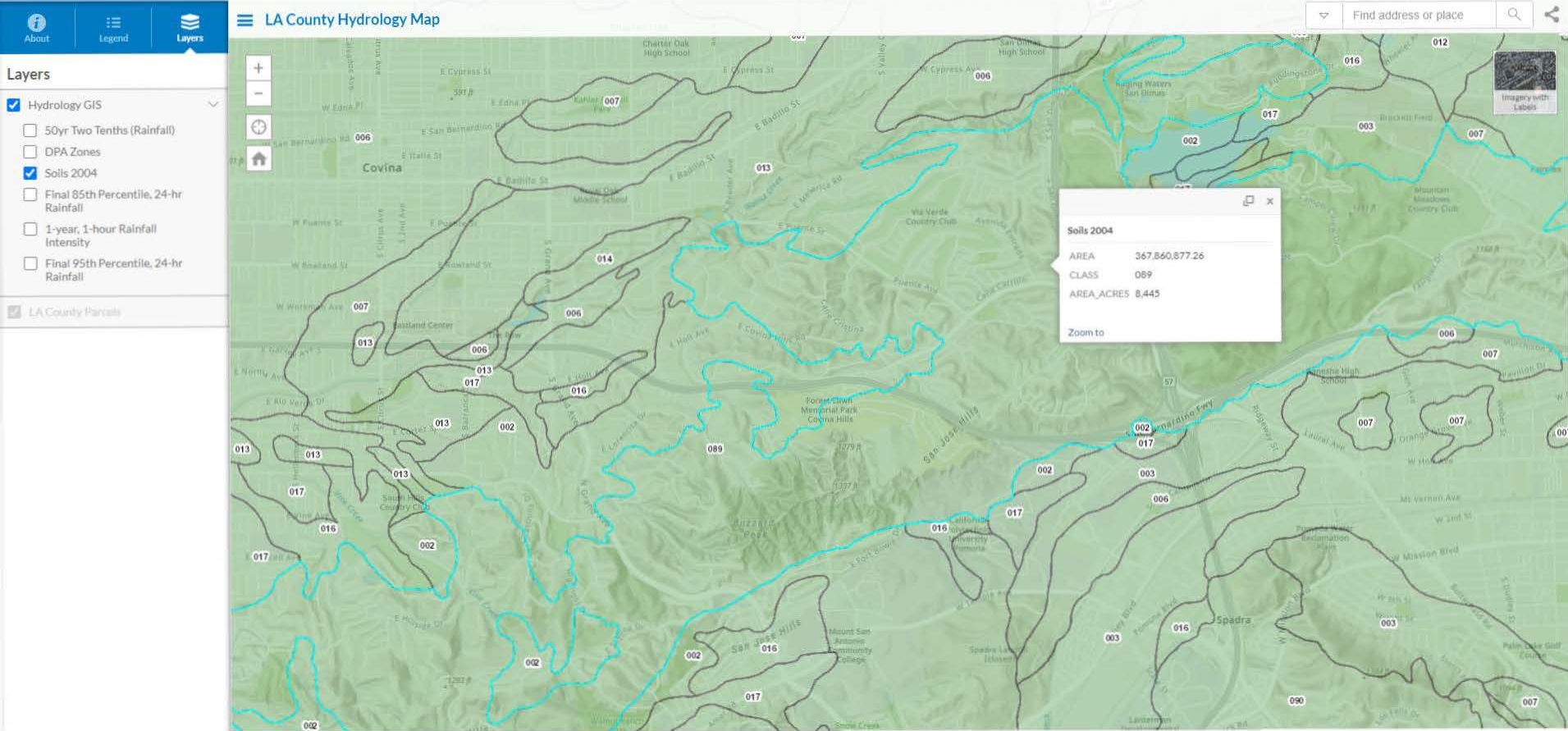
Output Results

Modeled (100-yr) Rainfall Depth (in)	7.8877
Peak Intensity (in/hr)	3.1185
Undeveloped Runoff Coefficient (Cu)	0.7118
Developed Runoff Coefficient (Cd)	0.8435
Time of Concentration (min)	12.0
Clear Peak Flow Rate (cfs)	44.3255
Burned Peak Flow Rate (cfs)	44.3255
24-Hr Clear Runoff Volume (ac-ft)	7.6886
24-Hr Clear Runoff Volume (cu-ft)	334915.3523



APPENDIX A2

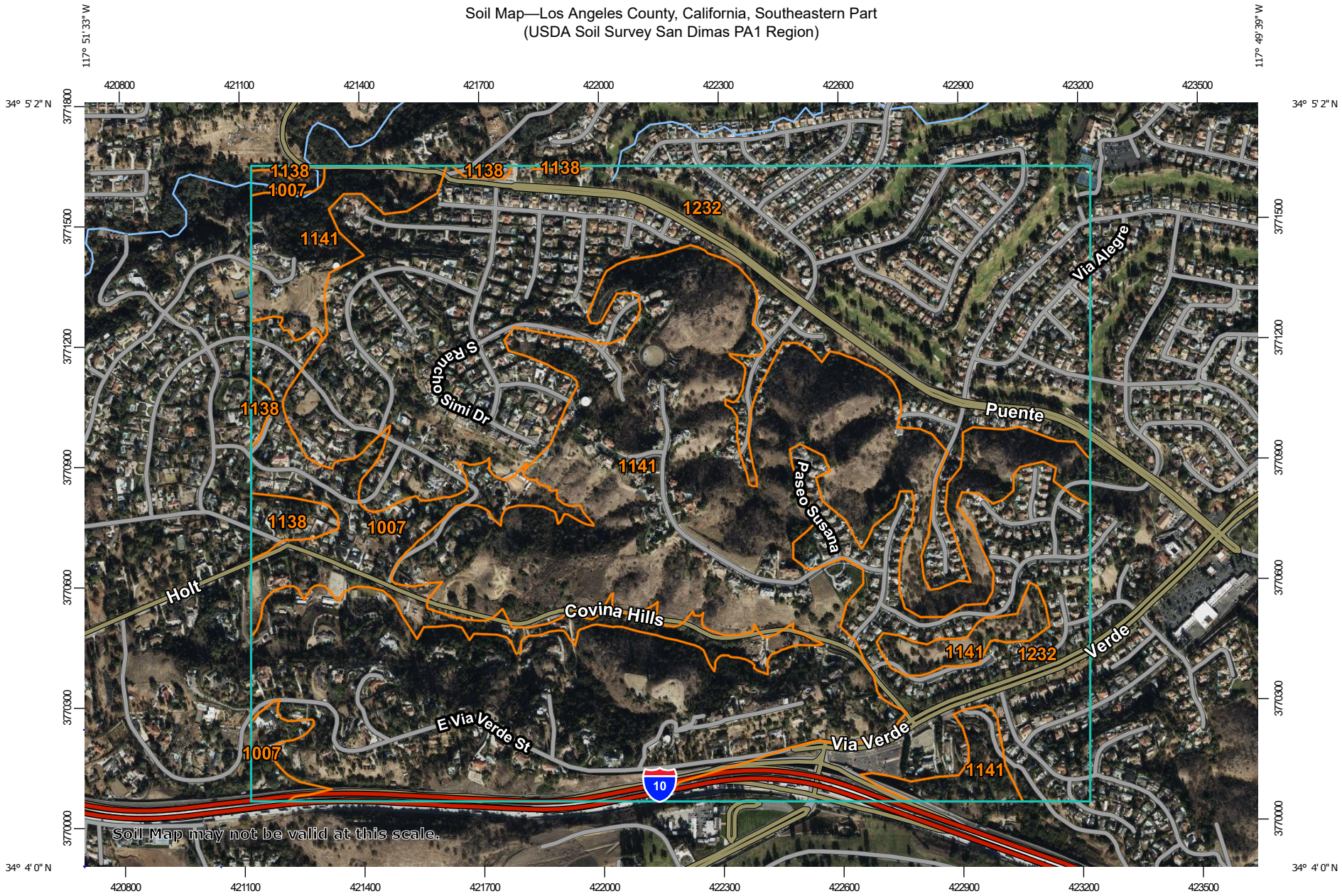
Los Angeles County Soil Map


About
Legend
Layers
LA County Hydrology Map
Find address or place
Layers
Hydrology GIS
50yr Two Tenths (Rainfall)
DPA Zones
Soils 2004
Final 85th Percentile, 24-hr Rainfall
1-year, 1-hour Rainfall Intensity
Final 95th Percentile, 24-hr Rainfall
LA County Parcels
Soils 2004
AREA 367,860,877.26
CLASS 089
AREA_ACRES 8,445
Zoom to
Imagery with Labels
Covina
Spadra

APPENDIX B1

USDA NRCS Regional Soil Map

Soil Map—Los Angeles County, California, Southeastern Part
(USDA Soil Survey San Dimas PA1 Region)



Map Scale: 1:13,400 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Los Angeles County, California, Southeastern Part
Survey Area Data: Version 8, Sep 13, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 5, 2020—Feb 6, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1007	Urban land-Biscailuz-Pico complex, 0 to 2 percent slopes	61.3	7.4%
1138	Urban land-Azuvina-Montebello complex, 0 to 5 percent slopes	9.1	1.1%
1141	Zaca-Apollo, warm complex, 20 to 55 percent slopes	387.5	46.9%
1232	Counterfeit-Urban land complex, 10 to 35 percent slopes, terraced	368.4	44.6%
Totals for Area of Interest		**826.3**	**100.0%**

APPENDIX B2

USDA NRCS Soil Description of Zaca-Apollo Complex

Map Unit Description

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named, soils that are similar to the named components, and some minor components that differ in use and management from the major soils.

Most of the soils similar to the major components have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Some minor components, however, have properties and behavior characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. All the soils of a series have major horizons that are similar in composition, thickness, and arrangement. Soils of a given series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Additional information about the map units described in this report is available in other soil reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the soil reports define some of the properties included in the map unit descriptions.

Los Angeles County, California, Southeastern Part

1141—Zaca-Apollo, warm complex, 20 to 55 percent slopes

Map Unit Setting

National map unit symbol: 2pt45
Elevation: 220 to 1,630 feet
Mean annual precipitation: 14 to 21 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 355 to 365 days

Farmland classification: Not prime farmland

Map Unit Composition

Zaca and similar soils: 50 percent
Apollo, warm, and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Zaca

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Colluvium and/or residuum weathered from sandstone and siltstone

Typical profile

A - 0 to 8 inches: clay
Bkss1 - 8 to 21 inches: clay
Bkss2 - 21 to 37 inches: clay
Bk - 37 to 53 inches: clay
Cr - 53 to 63 inches: bedrock

Properties and qualities

Slope: 20 to 55 percent
Depth to restrictive feature: 37 to 69 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Apollo, Warm

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope

Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Colluvium and/or residuum weathered from sandstone and siltstone

Typical profile

A - 0 to 4 inches: clay loam
Btk1 - 4 to 11 inches: clay loam
Btk2 - 11 to 26 inches: clay loam
Bk - 26 to 45 inches: clay loam
Cr - 45 to 55 inches: bedrock

Properties and qualities

Slope: 20 to 55 percent
Depth to restrictive feature: 31 to 55 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Boades

Percent of map unit: 8 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Balcom

Percent of map unit: 7 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex

Hydric soil rating: No

Data Source Information

Soil Survey Area: Los Angeles County, California, Southeastern Part
Survey Area Data: Version 8, Sep 13, 2021