

# **Appendix A**

---

Air Quality Worksheets

**MEMORANDUM**

**To:** Brent Schleck, Michael Baker International

**From:** Eddie Torres, Michael Baker International  
Tina Yuan, Michael Baker International

**Date:** May 25, 2022

**Subject:** Bouquet Canyon EIR Addendum – Air Quality Technical Memorandum

**Addendum Revision**

The addendum proposes a new construction schedule starting in 2022 and increasing grading activities to 2,800,000 cubic yards. The details of the update are listed in Table 1, Addendum Update Compared to Adopted EIR. The mitigation measures applied to the addendum would be the same as the adopted Environmental Impact Report (EIR).

**Table 1  
Addendum Update Compared to Adopted EIR**

Categories	Adopted EIR	Addendum	Possible Outcome
Grading Activities	2,069,664 Cubic Yards	2,800,000 Cubic Yards	Increase in exhaust emissions as there would be more transporting trips.
Construction Phase – Site Prep	3.5 months	-	Increase in emissions as the phase is shorter
Construction Phase – Demolition	-	One month	
Construction Phase – Grading	8.5 months	12 months	Decrease in emissions as the phase is longer
Construction Phase – Trenching	Six months	-	Increase in emissions as the phase is shorter
Construction Phase – Paving	Six months	One month	
Construction Phase – Building Construction	36 months	36 months	Decrease in emissions as the emission factor improved
Construction Phase – Architectural Coating	18 months	36 months (intermittent)	Decrease in emissions as the phase is longer
Residential Units	366 units	371 units	Increase in emissions
Modeling Software	California Emissions Estimator Model (CalEEMod), version 2020.4.0	CalEEMod 2016.3.2	Decrease in emissions as the emission factors improved

“-“ indicates the information cannot be found.



## Mitigation Measures

MM 3.2 a All off-road diesel-powered construction equipment greater than 50 horsepower shall meet the EPA-certified Tier 4 emission standards. In addition, all construction equipment shall be outfitted with best available control technologies (BACT) devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 4 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.

A copy of each unit's certified tier specification, BACT documentation, and CARB or SCAQMD operating permit shall be provided at the time of mobilization of each applicable unit of equipment.

*Timing/Implementation:* Site preparation and grading phases of construction

*Enforcement/Monitoring:* City of Santa Clarita Building & Safety Division

MM3.2-b The contractor shall utilize hauling trucks no larger than Medium Heavy Duty Trucks (MHDT) (i.e., gross vehicle weight rating [GVWR] 14,001 – 33,000 pounds) during the site preparation and grading phases of construction.

*Timing/Implementation:* Site preparation and grading phases of construction

*Enforcement/Monitoring:* City of Santa Clarita Building & Safety Division

## Addendum Revision Emissions Change

The new grading activities and construction schedule would cause emissions to change due to improved emissions factors, extended grading phase, and reduced demolition and paving phases. The following are the emissions change due to the update. Exhaust emission factors for typical diesel-powered heavy equipment are based on the program defaults of the most recent version of the CalEEMod, version 2020.4.0. Variables factored into estimating the total construction emissions include the level of activity, length of the construction period, number of pieces and types of equipment in use, site characteristics, weather conditions, number of construction personnel, and the number of materials to be transported on- or off-site. The exhaust emission factors for construction equipment have improved since 2019 when using CalEEMod version 2016.3.2. As indicated in [Table 1](#), besides increasing the grading activities, the addendum also proposes to have shorter site preparation/demolition and paving periods but a longer grading phase. [Table 2, \*Maximum Daily Emissions Change Due to Update\*](#), presents the anticipated change in daily short-term construction emissions. [Table 3, \*Localized Significance of Construction Emissions Change due to update\*](#), presents the anticipated change in the localized significance of construction emissions.

**Table 2**  
**Maximum Daily Emissions Change Due to Update**

Emissions Source	Maximum Daily Emissions (pounds/day)					
	ROG	NO <sub>x</sub>	CO	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Unmitigated Emissions</b>						
Unmitigated Maximum Daily Emissions from Adopted EIR <sup>1</sup>	10.25	185.02	57.19	0.22	20.47	12.01
Unmitigated Maximum Daily Emissions for Addendum <sup>2</sup>	9.23	128.49	91.42	0.22	1.79	4.57
<b>Net Change</b>	<b>-1.02</b>	<b>-56.53</b>	<b>34.23</b>	<b>0.00</b>	<b>-18.68</b>	<b>-7.44</b>
<b>Mitigated Emissions</b>						
Mitigated Maximum Daily Emissions from Adopted EIR <sup>1</sup>	9.25	39.19	59.85	0.09	6.91	3.76
Mitigated Maximum Daily Emissions for Addendum <sup>2</sup>	5.72	21.51	70.59	0.14	5.28	2.16
<b>Net Change</b>	<b>-3.53</b>	<b>-17.68</b>	<b>10.74</b>	<b>0.05</b>	<b>-1.63</b>	<b>-1.60</b>
1. the City of Santa Clarita, <i>Bouquet Canyon Project Draft EIR</i> , April 2020.						
2. Data from <u>Appendix A, Air Quality Data</u> .						

**Table 3**  
**Localized Significance of Construction Emissions Change due to update**

Maximum Emissions	Maximum Daily Emissions (pounds/day)			
	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Unmitigated On-site construction emissions</b>				
Unmitigated Maximum On-site Construction from Adopted EIR <sup>1</sup>	184.95	56.38	20.26	11.95
Unmitigated Maximum On-site Construction Emissions for Addendum <sup>2</sup>	38.84	29.04	4.76	2.87
<b>Net Change</b>	<b>-146.11</b>	<b>-27.34</b>	<b>-15.5</b>	<b>-9.08</b>
<b>Mitigated On-site construction emissions</b>				
Mitigated Maximum On-site Construction from Adopted EIR <sup>1</sup>	34.52	28.05	4.55	2.67
Mitigated Maximum On-site Construction Emissions for Addendum <sup>2</sup>	16.13	33.00	3.23	1.46
<b>Net Change</b>	<b>-18.39</b>	<b>4.95</b>	<b>-1.32</b>	<b>-1.21</b>
1. the City of Santa Clarita, <i>Bouquet Canyon Project Draft EIR</i> , April 2020.				
2. Data from <u>Appendix A, Air Quality Data</u> .				

**Long-Term (Operational) Emissions**

Long-term air quality impacts would consist of mobile source emissions generated from project-related traffic and emissions from stationary areas and energy sources. The addendum would propose to increase the housing units by 5 units, resulting in a slight increase in operational emissions. In the meantime, the CalEEMod Version 2020.4.0 uses an updated version of emissions factors than CalEEMod Version 2016.3.2. With the development of technology and regulations, the emissions factors are cleaner than at the time when adopting EIR. As such, the project would not have significant impacts related to air quality during operation.

## Websites / Programs

1. South Coast Air Quality Management District, California Emissions Estimator Model (CalEEMod), version 2020.4.0.

**Appendix A**  
Air Quality Emissions Data

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**Bouquet Canyon Project Addendum\_Mitigated**

**Los Angeles-South Coast County, Winter**

**1.0 Project Characteristics**

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	10.52	1000sqft	0.24	10,522.00	0
City Park	2.65	Acre	2.65	115,434.00	0
Health Club	10.75	1000sqft	0.25	10,750.00	0
Recreational Swimming Pool	9.68	1000sqft	0.22	9,676.00	0
Condo/Townhouse High Rise	175.00	Dwelling Unit	2.73	175,000.00	501
Single Family Housing	196.00	Dwelling Unit	63.64	352,800.00	561

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	33
<b>Climate Zone</b>	9			<b>Operational Year</b>	2026
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MWhr)</b>	390.98	<b>CH4 Intensity (lb/MWhr)</b>	0.033	<b>N2O Intensity (lb/MWhr)</b>	0.004

**1.3 User Entered Comments & Non-Default Data**

Project Characteristics -

Land Use - per project description

Construction Phase - per construction questionnaire

Trips and VMT - Earthwork would be balanced on-site.

Demolition - per CalEEMod formula and data in AQ construction questionnaire

Grading - per email communication

Vehicle Trips - as conservative analysis, this run uses the same trip generation rate as the adopted EIR.



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	75.00	792.00
tblConstructionPhase	NumDays	1,110.00	783.00
tblConstructionPhase	NumDays	70.00	22.00
tblConstructionPhase	NumDays	110.00	262.00
tblConstructionPhase	NumDays	75.00	22.00
tblGrading	AcresOfGrading	786.00	0.00
tblGrading	MaterialExported	0.00	2,800,000.00
tblGrading	MaterialImported	0.00	2,800,000.00
tblLandUse	LandUseSquareFeet	10,520.00	10,522.00
tblLandUse	LandUseSquareFeet	9,680.00	9,676.00
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingVehicleClass	HHDT	MHDT
tblTripsAndVMT	HaulingVehicleClass	HHDT	MHDT
tblTripsAndVMT	HaulingVehicleClass	HHDT	MHDT
tblTripsAndVMT	HaulingVehicleClass	HHDT	MHDT
tblTripsAndVMT	HaulingVehicleClass	HHDT	MHDT
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	ST_TR	4.91	10.77
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	9.10	0.00
tblVehicleTrips	ST_TR	9.54	10.77

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	4.09	10.77
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	13.60	0.00
tblVehicleTrips	SU_TR	8.55	10.77
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	5.44	10.77
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	28.82	0.00
tblVehicleTrips	WD_TR	9.44	10.77

**2.0 Emissions Summary**

---



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

**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					
2022	7.4285	80.7691	63.9423	0.1449	11.3226	3.0013	14.3239	4.3727	2.7776	7.1503	0.0000	14,352.57 96	14,352.57 96	3.1240	0.5769	14,602.59 24
2023	4.2152	49.8041	40.6949	0.1031	10.0490	1.4505	11.4995	4.1603	1.3354	5.4957	0.0000	10,292.57 39	10,292.57 39	2.0558	0.5509	10,508.14 12
2024	7.0180	26.1466	40.2250	0.0864	3.8750	1.1120	4.5818	1.0370	1.0362	1.9635	0.0000	8,592.921 7	8,592.921 7	1.4245	0.2532	8,701.469 9
2025	6.8404	16.7935	27.8094	0.0687	3.8750	0.6107	4.4858	1.0370	0.5774	1.6144	0.0000	6,921.570 4	6,921.570 4	0.7243	0.2454	7,012.799 0
2026	6.7861	16.7184	27.2572	0.0677	3.8750	0.6097	4.4848	1.0370	0.5764	1.6134	0.0000	6,834.827 0	6,834.827 0	0.7187	0.2383	6,923.810 0
2027	6.7366	16.6520	26.7896	0.0667	3.8750	0.6086	4.4836	1.0370	0.5754	1.6124	0.0000	6,754.718 8	6,754.718 8	0.7137	0.2318	6,841.631 0
<b>Maximum</b>	<b>7.4285</b>	<b>80.7691</b>	<b>63.9423</b>	<b>0.1449</b>	<b>11.3226</b>	<b>3.0013</b>	<b>14.3239</b>	<b>4.3727</b>	<b>2.7776</b>	<b>7.1503</b>	<b>0.0000</b>	<b>14,352.57 96</b>	<b>14,352.57 96</b>	<b>3.1240</b>	<b>0.5769</b>	<b>14,602.59 24</b>



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

**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	109.7397	8.0499	219.2551	0.4829		28.5098	28.5098		28.5098	28.5098	3,475.1267	6,733.1203	10,208.2470	10.4163	0.2359	10,538.9427
Energy	0.2209	1.8907	0.8261	0.0121		0.1526	0.1526		0.1526	0.1526		2,409.7247	2,409.7247	0.0462	0.0442	2,424.0445
Mobile	11.1911	12.0019	112.3391	0.2478	28.7504	0.1822	28.9325	7.6589	0.1692	7.8281		26,095.6368	26,095.6368	1.7659	1.0970	26,466.6777
<b>Total</b>	<b>121.1517</b>	<b>21.9425</b>	<b>332.4203</b>	<b>0.7428</b>	<b>28.7504</b>	<b>28.8445</b>	<b>57.5949</b>	<b>7.6589</b>	<b>28.8315</b>	<b>36.4904</b>	<b>3,475.1267</b>	<b>35,238.4818</b>	<b>38,713.6085</b>	<b>12.2284</b>	<b>1.3770</b>	<b>39,429.6649</b>

**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	13.1725	5.8911	32.9393	0.0370		0.6175	0.6175		0.6175	0.6175	0.0000	7,125.9438	7,125.9438	0.1883	0.1296	7,169.2821
Energy	0.2209	1.8907	0.8261	0.0121		0.1526	0.1526		0.1526	0.1526		2,409.7247	2,409.7247	0.0462	0.0442	2,424.0445
Mobile	11.1911	12.0019	112.3391	0.2478	28.7504	0.1822	28.9325	7.6589	0.1692	7.8281		26,095.6368	26,095.6368	1.7659	1.0970	26,466.6777
<b>Total</b>	<b>24.5845</b>	<b>19.7837</b>	<b>146.1045</b>	<b>0.2969</b>	<b>28.7504</b>	<b>0.9523</b>	<b>29.7026</b>	<b>7.6589</b>	<b>0.9393</b>	<b>8.5982</b>	<b>0.0000</b>	<b>35,631.3053</b>	<b>35,631.3053</b>	<b>2.0004</b>	<b>1.2708</b>	<b>36,060.0042</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

**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	N2O	CO2e
Percent Reduction	79.71	9.84	56.05	60.04	0.00	96.70	48.43	0.00	96.74	76.44	100.00	-1.11	7.96	83.64	7.72	8.55

**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	9/1/2022	9/1/2023	5	262	
2	Demolition	Demolition	10/3/2022	11/1/2022	5	22	
3	Paving	Paving	2/1/2024	3/1/2024	5	22	
4	Building Construction	Building Construction	2/15/2024	2/15/2027	5	783	
5	Architectural Coating	Architectural Coating	8/1/2024	8/13/2027	5	792	

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.24**

**Residential Indoor: 1,068,795; Residential Outdoor: 356,265; Non-Residential Indoor: 16,125; Non-Residential Outdoor: 5,375; Striped Parking Area: 631 (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
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48

**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	700,000.00	14.70	6.90	0.50	LD_Mix	HDT_Mix	MHDT
Demolition	6	15.00	0.00	112.00	14.70	6.90	0.50	LD_Mix	HDT_Mix	MHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	MHDT
Building Construction	9	258.00	64.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	MHDT
Architectural Coating	1	52.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	MHDT

**3.1 Mitigation Measures Construction**

Use Cleaner Engines for Construction Equipment

Replace Ground Cover

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**3.2 Grading - 2022**

**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					8.4393	0.0000	8.4393	3.6763	0.0000	3.6763			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
<b>Total</b>	<b>3.6248</b>	<b>38.8435</b>	<b>29.0415</b>	<b>0.0621</b>	<b>8.4393</b>	<b>1.6349</b>	<b>10.0742</b>	<b>3.6763</b>	<b>1.5041</b>	<b>5.1804</b>		<b>6,011.4105</b>	<b>6,011.4105</b>	<b>1.9442</b>		<b>6,060.0158</b>

**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	1.0329	16.0778	13.0154	0.0406	1.3861	0.1210	1.5072	0.4248	0.1157	0.5405		4,241.5093	4,241.5093	0.1172	0.5665	4,413.2406
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	0.0741	0.0558	0.7237	1.9400e-003	0.2236	1.4300e-003	0.2250	0.0593	1.3200e-003	0.0606		197.0266	197.0266	5.7000e-003	5.3500e-003	198.7627
<b>Total</b>	<b>1.1070</b>	<b>16.1337</b>	<b>13.7391</b>	<b>0.0425</b>	<b>1.6097</b>	<b>0.1225</b>	<b>1.7322</b>	<b>0.4841</b>	<b>0.1171</b>	<b>0.6011</b>		<b>4,438.5359</b>	<b>4,438.5359</b>	<b>0.1229</b>	<b>0.5718</b>	<b>4,612.0033</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**3.2 Grading - 2022**

**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					3.1268	0.0000	3.1268	1.3621	0.0000	1.3621			0.0000			0.0000
Off-Road	0.7616	3.3000	32.9991	0.0621		0.1015	0.1015		0.1015	0.1015	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
<b>Total</b>	<b>0.7616</b>	<b>3.3000</b>	<b>32.9991</b>	<b>0.0621</b>	<b>3.1268</b>	<b>0.1015</b>	<b>3.2283</b>	<b>1.3621</b>	<b>0.1015</b>	<b>1.4636</b>	<b>0.0000</b>	<b>6,011.4105</b>	<b>6,011.4105</b>	<b>1.9442</b>		<b>6,060.0158</b>

**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	1.0329	16.0778	13.0154	0.0406	1.1565	0.1210	1.2776	0.3684	0.1157	0.4842		4,241.5093	4,241.5093	0.1172	0.5665	4,413.2406
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	0.0741	0.0558	0.7237	1.9400e-003	0.1730	1.4300e-003	0.1745	0.0469	1.3200e-003	0.0482		197.0266	197.0266	5.7000e-003	5.3500e-003	198.7627
<b>Total</b>	<b>1.1070</b>	<b>16.1337</b>	<b>13.7391</b>	<b>0.0425</b>	<b>1.3296</b>	<b>0.1225</b>	<b>1.4520</b>	<b>0.4153</b>	<b>0.1171</b>	<b>0.5324</b>		<b>4,438.5359</b>	<b>4,438.5359</b>	<b>0.1229</b>	<b>0.5718</b>	<b>4,612.0033</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**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					8.4393	0.0000	8.4393	3.6763	0.0000	3.6763			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
<b>Total</b>	<b>3.3217</b>	<b>34.5156</b>	<b>28.0512</b>	<b>0.0621</b>	<b>8.4393</b>	<b>1.4245</b>	<b>9.8638</b>	<b>3.6763</b>	<b>1.3105</b>	<b>4.9868</b>		<b>6,011.4777</b>	<b>6,011.4777</b>	<b>1.9442</b>		<b>6,060.0836</b>

**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	0.8247	15.2392	11.9776	0.0391	1.3861	0.0247	1.4108	0.4248	0.0236	0.4484		4,089.2508	4,089.2508	0.1065	0.5460	4,254.6152
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
<b>Total</b>	<b>0.8935</b>	<b>15.2885</b>	<b>12.6437</b>	<b>0.0410</b>	<b>1.6097</b>	<b>0.0261</b>	<b>1.6357</b>	<b>0.4841</b>	<b>0.0248</b>	<b>0.5089</b>		<b>4,281.0962</b>	<b>4,281.0962</b>	<b>0.1116</b>	<b>0.5509</b>	<b>4,448.0576</b>



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**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	lb/day										lb/day					
Fugitive Dust					3.1268	0.0000	3.1268	1.3621	0.0000	1.3621			0.0000			0.0000
Off-Road	0.7616	3.3000	32.9991	0.0621		0.1015	0.1015		0.1015	0.1015	0.0000	6,011.4777	6,011.4777	1.9442		6,060.0836
<b>Total</b>	<b>0.7616</b>	<b>3.3000</b>	<b>32.9991</b>	<b>0.0621</b>	<b>3.1268</b>	<b>0.1015</b>	<b>3.2283</b>	<b>1.3621</b>	<b>0.1015</b>	<b>1.4636</b>	<b>0.0000</b>	<b>6,011.4777</b>	<b>6,011.4777</b>	<b>1.9442</b>		<b>6,060.0836</b>

**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	0.8247	15.2392	11.9776	0.0391	1.1565	0.0247	1.1812	0.3684	0.0236	0.3920		4,089.2508	4,089.2508	0.1065	0.5460	4,254.6152
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	0.1730	1.3500e-003	0.1744	0.0469	1.2400e-003	0.0481		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
<b>Total</b>	<b>0.8935</b>	<b>15.2885</b>	<b>12.6437</b>	<b>0.0410</b>	<b>1.3296</b>	<b>0.0261</b>	<b>1.3556</b>	<b>0.4153</b>	<b>0.0248</b>	<b>0.4401</b>		<b>4,281.0962</b>	<b>4,281.0962</b>	<b>0.1116</b>	<b>0.5509</b>	<b>4,448.0576</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**3.3 Demolition - 2022**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.1033	0.0000	1.1033	0.1671	0.0000	0.1671			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.7812	3,746.7812	1.0524		3,773.0920
<b>Total</b>	<b>2.6392</b>	<b>25.7194</b>	<b>20.5941</b>	<b>0.0388</b>	<b>1.1033</b>	<b>1.2427</b>	<b>2.3460</b>	<b>0.1671</b>	<b>1.1553</b>	<b>1.3223</b>		<b>3,746.7812</b>	<b>3,746.7812</b>	<b>1.0524</b>		<b>3,773.0920</b>

**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	1.9700e-003	0.0306	0.0248	8.0000e-005	2.6400e-003	2.3000e-004	2.8700e-003	8.1000e-004	2.2000e-004	1.0300e-003		8.0820	8.0820	2.2000e-004	1.0800e-003	8.4092
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	0.0556	0.0419	0.5428	1.4500e-003	0.1677	1.0700e-003	0.1687	0.0445	9.9000e-004	0.0455		147.7700	147.7700	4.2700e-003	4.0100e-003	149.0720
<b>Total</b>	<b>0.0576</b>	<b>0.0725</b>	<b>0.5676</b>	<b>1.5300e-003</b>	<b>0.1703</b>	<b>1.3000e-003</b>	<b>0.1716</b>	<b>0.0453</b>	<b>1.2100e-003</b>	<b>0.0465</b>		<b>155.8520</b>	<b>155.8520</b>	<b>4.4900e-003</b>	<b>5.0900e-003</b>	<b>157.4812</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**3.3 Demolition - 2022**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4088	0.0000	0.4088	0.0619	0.0000	0.0619			0.0000			0.0000
Off-Road	0.4623	2.0032	23.2798	0.0388		0.0616	0.0616		0.0616	0.0616	0.0000	3,746.7812	3,746.7812	1.0524		3,773.0920
<b>Total</b>	<b>0.4623</b>	<b>2.0032</b>	<b>23.2798</b>	<b>0.0388</b>	<b>0.4088</b>	<b>0.0616</b>	<b>0.4704</b>	<b>0.0619</b>	<b>0.0616</b>	<b>0.1235</b>	<b>0.0000</b>	<b>3,746.7812</b>	<b>3,746.7812</b>	<b>1.0524</b>		<b>3,773.0920</b>

**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	1.9700e-003	0.0306	0.0248	8.0000e-005	2.2000e-003	2.3000e-004	2.4300e-003	7.0000e-004	2.2000e-004	9.2000e-004		8.0820	8.0820	2.2000e-004	1.0800e-003	8.4092
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	0.0556	0.0419	0.5428	1.4500e-003	0.1298	1.0700e-003	0.1308	0.0352	9.9000e-004	0.0362		147.7700	147.7700	4.2700e-003	4.0100e-003	149.0720
<b>Total</b>	<b>0.0576</b>	<b>0.0725</b>	<b>0.5676</b>	<b>1.5300e-003</b>	<b>0.1320</b>	<b>1.3000e-003</b>	<b>0.1333</b>	<b>0.0359</b>	<b>1.2100e-003</b>	<b>0.0371</b>		<b>155.8520</b>	<b>155.8520</b>	<b>4.4900e-003</b>	<b>5.0900e-003</b>	<b>157.4812</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**3.4 Paving - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.547 2	2,207.547 2	0.7140		2,225.396 3
Paving	0.0286					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>1.0167</b>	<b>9.5246</b>	<b>14.6258</b>	<b>0.0228</b>		<b>0.4685</b>	<b>0.4685</b>		<b>0.4310</b>	<b>0.4310</b>		<b>2,207.547 2</b>	<b>2,207.547 2</b>	<b>0.7140</b>		<b>2,225.396 3</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0483	0.0330	0.4655	1.3700e-003	0.1677	9.7000e-004	0.1686	0.0445	8.9000e-004	0.0454		140.9310	140.9310	3.4700e-003	3.4400e-003	142.0422
<b>Total</b>	<b>0.0483</b>	<b>0.0330</b>	<b>0.4655</b>	<b>1.3700e-003</b>	<b>0.1677</b>	<b>9.7000e-004</b>	<b>0.1686</b>	<b>0.0445</b>	<b>8.9000e-004</b>	<b>0.0454</b>		<b>140.9310</b>	<b>140.9310</b>	<b>3.4700e-003</b>	<b>3.4400e-003</b>	<b>142.0422</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**3.4 Paving - 2024**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2805	1.2154	17.2957	0.0228		0.0374	0.0374		0.0374	0.0374	0.0000	2,207.547 2	2,207.547 2	0.7140		2,225.396 3
Paving	0.0286					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.3091</b>	<b>1.2154</b>	<b>17.2957</b>	<b>0.0228</b>		<b>0.0374</b>	<b>0.0374</b>		<b>0.0374</b>	<b>0.0374</b>	<b>0.0000</b>	<b>2,207.547 2</b>	<b>2,207.547 2</b>	<b>0.7140</b>		<b>2,225.396 3</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0483	0.0330	0.4655	1.3700e-003	0.1298	9.7000e-004	0.1307	0.0352	8.9000e-004	0.0361		140.9310	140.9310	3.4700e-003	3.4400e-003	142.0422
<b>Total</b>	<b>0.0483</b>	<b>0.0330</b>	<b>0.4655</b>	<b>1.3700e-003</b>	<b>0.1298</b>	<b>9.7000e-004</b>	<b>0.1307</b>	<b>0.0352</b>	<b>8.9000e-004</b>	<b>0.0361</b>		<b>140.9310</b>	<b>140.9310</b>	<b>3.4700e-003</b>	<b>3.4400e-003</b>	<b>142.0422</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**3.5 Building Construction - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
<b>Total</b>	<b>1.4716</b>	<b>13.4438</b>	<b>16.1668</b>	<b>0.0270</b>		<b>0.6133</b>	<b>0.6133</b>		<b>0.5769</b>	<b>0.5769</b>		<b>2,555.6989</b>	<b>2,555.6989</b>	<b>0.6044</b>		<b>2,570.8077</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0688	2.5772	0.9610	0.0117	0.4100	0.0125	0.4225	0.1180	0.0120	0.1300		1,264.7317	1,264.7317	0.0429	0.1822	1,320.0975
Worker	0.8301	0.5680	8.0059	0.0235	2.8838	0.0167	2.9005	0.7648	0.0154	0.7802		2,424.0129	2,424.0129	0.0597	0.0591	2,443.1262
<b>Total</b>	<b>0.8989</b>	<b>3.1453</b>	<b>8.9669</b>	<b>0.0352</b>	<b>3.2938</b>	<b>0.0292</b>	<b>3.3230</b>	<b>0.8829</b>	<b>0.0273</b>	<b>0.9102</b>		<b>3,688.7446</b>	<b>3,688.7446</b>	<b>0.1027</b>	<b>0.2413</b>	<b>3,763.2237</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**3.5 Building Construction - 2024**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3278	2.2347	17.4603	0.0270		0.0408	0.0408		0.0408	0.0408	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
<b>Total</b>	<b>0.3278</b>	<b>2.2347</b>	<b>17.4603</b>	<b>0.0270</b>		<b>0.0408</b>	<b>0.0408</b>		<b>0.0408</b>	<b>0.0408</b>	<b>0.0000</b>	<b>2,555.6989</b>	<b>2,555.6989</b>	<b>0.6044</b>		<b>2,570.8077</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0688	2.5772	0.9610	0.0117	0.3341	0.0125	0.3466	0.0994	0.0120	0.1114		1,264.7317	1,264.7317	0.0429	0.1822	1,320.0975
Worker	0.8301	0.5680	8.0059	0.0235	2.2320	0.0167	2.2487	0.6048	0.0154	0.6202		2,424.0129	2,424.0129	0.0597	0.0591	2,443.1262
<b>Total</b>	<b>0.8989</b>	<b>3.1453</b>	<b>8.9669</b>	<b>0.0352</b>	<b>2.5660</b>	<b>0.0292</b>	<b>2.5952</b>	<b>0.7042</b>	<b>0.0273</b>	<b>0.7315</b>		<b>3,688.7446</b>	<b>3,688.7446</b>	<b>0.1027</b>	<b>0.2413</b>	<b>3,763.2237</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**3.5 Building Construction - 2025**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>1.3674</b>	<b>12.4697</b>	<b>16.0847</b>	<b>0.0270</b>		<b>0.5276</b>	<b>0.5276</b>		<b>0.4963</b>	<b>0.4963</b>		<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0667	2.5652	0.9436	0.0115	0.4100	0.0125	0.4225	0.1180	0.0120	0.1300		1,241.999 9	1,241.999 9	0.0432	0.1790	1,296.432 3
Worker	0.7790	0.5103	7.4671	0.0227	2.8838	0.0159	2.8998	0.7648	0.0147	0.7795		2,364.984 6	2,364.984 6	0.0539	0.0552	2,382.785 5
<b>Total</b>	<b>0.8457</b>	<b>3.0755</b>	<b>8.4106</b>	<b>0.0342</b>	<b>3.2938</b>	<b>0.0285</b>	<b>3.3223</b>	<b>0.8829</b>	<b>0.0266</b>	<b>0.9095</b>		<b>3,606.984 5</b>	<b>3,606.984 5</b>	<b>0.0972</b>	<b>0.2342</b>	<b>3,679.217 7</b>



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**3.5 Building Construction - 2025**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3278	2.2347	17.4603	0.0270		0.0408	0.0408		0.0408	0.0408	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>0.3278</b>	<b>2.2347</b>	<b>17.4603</b>	<b>0.0270</b>		<b>0.0408</b>	<b>0.0408</b>		<b>0.0408</b>	<b>0.0408</b>	<b>0.0000</b>	<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0667	2.5652	0.9436	0.0115	0.3341	0.0125	0.3466	0.0994	0.0120	0.1114		1,241.999 9	1,241.999 9	0.0432	0.1790	1,296.432 3
Worker	0.7790	0.5103	7.4671	0.0227	2.2320	0.0159	2.2479	0.6048	0.0147	0.6195		2,364.984 6	2,364.984 6	0.0539	0.0552	2,382.785 5
<b>Total</b>	<b>0.8457</b>	<b>3.0755</b>	<b>8.4106</b>	<b>0.0342</b>	<b>2.5660</b>	<b>0.0285</b>	<b>2.5945</b>	<b>0.7042</b>	<b>0.0266</b>	<b>0.7309</b>		<b>3,606.984 5</b>	<b>3,606.984 5</b>	<b>0.0972</b>	<b>0.2342</b>	<b>3,679.217 7</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**3.5 Building Construction - 2026**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>1.3674</b>	<b>12.4697</b>	<b>16.0847</b>	<b>0.0270</b>		<b>0.5276</b>	<b>0.5276</b>		<b>0.4963</b>	<b>0.4963</b>		<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0649	2.5467	0.9302	0.0113	0.4100	0.0125	0.4225	0.1180	0.0120	0.1300		1,218.982 7	1,218.982 7	0.0435	0.1758	1,272.460 0
Worker	0.7354	0.4632	7.0186	0.0220	2.8838	0.0151	2.8990	0.7648	0.0139	0.7787		2,311.947 9	2,311.947 9	0.0490	0.0520	2,328.674 8
<b>Total</b>	<b>0.8002</b>	<b>3.0099</b>	<b>7.9488</b>	<b>0.0333</b>	<b>3.2938</b>	<b>0.0276</b>	<b>3.3214</b>	<b>0.8829</b>	<b>0.0259</b>	<b>0.9087</b>		<b>3,530.930 6</b>	<b>3,530.930 6</b>	<b>0.0925</b>	<b>0.2278</b>	<b>3,601.134 8</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**3.5 Building Construction - 2026**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3278	2.2347	17.4603	0.0270		0.0408	0.0408		0.0408	0.0408	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>0.3278</b>	<b>2.2347</b>	<b>17.4603</b>	<b>0.0270</b>		<b>0.0408</b>	<b>0.0408</b>		<b>0.0408</b>	<b>0.0408</b>	<b>0.0000</b>	<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0649	2.5467	0.9302	0.0113	0.3341	0.0125	0.3466	0.0994	0.0120	0.1114		1,218.982 7	1,218.982 7	0.0435	0.1758	1,272.460 0
Worker	0.7354	0.4632	7.0186	0.0220	2.2320	0.0151	2.2471	0.6048	0.0139	0.6187		2,311.947 9	2,311.947 9	0.0490	0.0520	2,328.674 8
<b>Total</b>	<b>0.8002</b>	<b>3.0099</b>	<b>7.9488</b>	<b>0.0333</b>	<b>2.5660</b>	<b>0.0276</b>	<b>2.5937</b>	<b>0.7042</b>	<b>0.0259</b>	<b>0.7301</b>		<b>3,530.930 6</b>	<b>3,530.930 6</b>	<b>0.0925</b>	<b>0.2278</b>	<b>3,601.134 8</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**3.5 Building Construction - 2027**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>1.3674</b>	<b>12.4697</b>	<b>16.0847</b>	<b>0.0270</b>		<b>0.5276</b>	<b>0.5276</b>		<b>0.4963</b>	<b>0.4963</b>		<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0633	2.5281	0.9193	0.0111	0.4100	0.0124	0.4224	0.1181	0.0119	0.1299		1,195.025 6	1,195.025 6	0.0436	0.1725	1,247.514 0
Worker	0.6954	0.4234	6.6385	0.0214	2.8838	0.0142	2.8980	0.7648	0.0131	0.7779		2,265.215 7	2,265.215 7	0.0448	0.0494	2,281.042 1
<b>Total</b>	<b>0.7587</b>	<b>2.9515</b>	<b>7.5578</b>	<b>0.0325</b>	<b>3.2938</b>	<b>0.0267</b>	<b>3.3204</b>	<b>0.8829</b>	<b>0.0250</b>	<b>0.9078</b>		<b>3,460.241 3</b>	<b>3,460.241 3</b>	<b>0.0884</b>	<b>0.2218</b>	<b>3,528.556 1</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**3.5 Building Construction - 2027**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3278	2.2347	17.4603	0.0270		0.0408	0.0408		0.0408	0.0408	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>0.3278</b>	<b>2.2347</b>	<b>17.4603</b>	<b>0.0270</b>		<b>0.0408</b>	<b>0.0408</b>		<b>0.0408</b>	<b>0.0408</b>	<b>0.0000</b>	<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0633	2.5281	0.9193	0.0111	0.3341	0.0124	0.3465	0.0994	0.0119	0.1113		1,195.025 6	1,195.025 6	0.0436	0.1725	1,247.514 0
Worker	0.6954	0.4234	6.6385	0.0214	2.2320	0.0142	2.2462	0.6048	0.0131	0.6179		2,265.215 7	2,265.215 7	0.0448	0.0494	2,281.042 1
<b>Total</b>	<b>0.7587</b>	<b>2.9515</b>	<b>7.5578</b>	<b>0.0325</b>	<b>2.5661</b>	<b>0.0267</b>	<b>2.5927</b>	<b>0.7042</b>	<b>0.0250</b>	<b>0.7292</b>		<b>3,460.241 3</b>	<b>3,460.241 3</b>	<b>0.0884</b>	<b>0.2218</b>	<b>3,528.556 1</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**3.6 Architectural Coating - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
<b>Total</b>	<b>4.4802</b>	<b>1.2188</b>	<b>1.8101</b>	<b>2.9700e-003</b>		<b>0.0609</b>	<b>0.0609</b>		<b>0.0609</b>	<b>0.0609</b>		<b>281.4481</b>	<b>281.4481</b>	<b>0.0159</b>		<b>281.8443</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1673	0.1145	1.6136	4.7400e-003	0.5812	3.3600e-003	0.5846	0.1542	3.1000e-003	0.1572		488.5607	488.5607	0.0120	0.0119	492.4130
<b>Total</b>	<b>0.1673</b>	<b>0.1145</b>	<b>1.6136</b>	<b>4.7400e-003</b>	<b>0.5812</b>	<b>3.3600e-003</b>	<b>0.5846</b>	<b>0.1542</b>	<b>3.1000e-003</b>	<b>0.1572</b>		<b>488.5607</b>	<b>488.5607</b>	<b>0.0120</b>	<b>0.0119</b>	<b>492.4130</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**3.6 Architectural Coating - 2024**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0159		281.8443
<b>Total</b>	<b>4.3292</b>	<b>0.1288</b>	<b>1.8324</b>	<b>2.9700e-003</b>		<b>3.9600e-003</b>	<b>3.9600e-003</b>		<b>3.9600e-003</b>	<b>3.9600e-003</b>	<b>0.0000</b>	<b>281.4481</b>	<b>281.4481</b>	<b>0.0159</b>		<b>281.8443</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1673	0.1145	1.6136	4.7400e-003	0.4499	3.3600e-003	0.4532	0.1219	3.1000e-003	0.1250		488.5607	488.5607	0.0120	0.0119	492.4130
<b>Total</b>	<b>0.1673</b>	<b>0.1145</b>	<b>1.6136</b>	<b>4.7400e-003</b>	<b>0.4499</b>	<b>3.3600e-003</b>	<b>0.4532</b>	<b>0.1219</b>	<b>3.1000e-003</b>	<b>0.1250</b>		<b>488.5607</b>	<b>488.5607</b>	<b>0.0120</b>	<b>0.0119</b>	<b>492.4130</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**3.6 Architectural Coating - 2025**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.4703</b>	<b>1.1455</b>	<b>1.8091</b>	<b>2.9700e-003</b>		<b>0.0515</b>	<b>0.0515</b>		<b>0.0515</b>	<b>0.0515</b>		<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1570	0.1029	1.5050	4.5800e-003	0.5812	3.2100e-003	0.5845	0.1542	2.9500e-003	0.1571		476.6636	476.6636	0.0109	0.0111	480.2513
<b>Total</b>	<b>0.1570</b>	<b>0.1029</b>	<b>1.5050</b>	<b>4.5800e-003</b>	<b>0.5812</b>	<b>3.2100e-003</b>	<b>0.5845</b>	<b>0.1542</b>	<b>2.9500e-003</b>	<b>0.1571</b>		<b>476.6636</b>	<b>476.6636</b>	<b>0.0109</b>	<b>0.0111</b>	<b>480.2513</b>



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**3.6 Architectural Coating - 2025**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.3292</b>	<b>0.1288</b>	<b>1.8324</b>	<b>2.9700e-003</b>		<b>3.9600e-003</b>	<b>3.9600e-003</b>		<b>3.9600e-003</b>	<b>3.9600e-003</b>	<b>0.0000</b>	<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1570	0.1029	1.5050	4.5800e-003	0.4499	3.2100e-003	0.4531	0.1219	2.9500e-003	0.1249		476.6636	476.6636	0.0109	0.0111	480.2513
<b>Total</b>	<b>0.1570</b>	<b>0.1029</b>	<b>1.5050</b>	<b>4.5800e-003</b>	<b>0.4499</b>	<b>3.2100e-003</b>	<b>0.4531</b>	<b>0.1219</b>	<b>2.9500e-003</b>	<b>0.1249</b>		<b>476.6636</b>	<b>476.6636</b>	<b>0.0109</b>	<b>0.0111</b>	<b>480.2513</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**3.6 Architectural Coating - 2026**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.4703</b>	<b>1.1455</b>	<b>1.8091</b>	<b>2.9700e-003</b>		<b>0.0515</b>	<b>0.0515</b>		<b>0.0515</b>	<b>0.0515</b>		<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1482	0.0934	1.4146	4.4400e-003	0.5812	3.0500e-003	0.5843	0.1542	2.8000e-003	0.1570		465.9740	465.9740	9.8800e-003	0.0105	469.3453
<b>Total</b>	<b>0.1482</b>	<b>0.0934</b>	<b>1.4146</b>	<b>4.4400e-003</b>	<b>0.5812</b>	<b>3.0500e-003</b>	<b>0.5843</b>	<b>0.1542</b>	<b>2.8000e-003</b>	<b>0.1570</b>		<b>465.9740</b>	<b>465.9740</b>	<b>9.8800e-003</b>	<b>0.0105</b>	<b>469.3453</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**3.6 Architectural Coating - 2026**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.3292</b>	<b>0.1288</b>	<b>1.8324</b>	<b>2.9700e-003</b>		<b>3.9600e-003</b>	<b>3.9600e-003</b>		<b>3.9600e-003</b>	<b>3.9600e-003</b>	<b>0.0000</b>	<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1482	0.0934	1.4146	4.4400e-003	0.4499	3.0500e-003	0.4529	0.1219	2.8000e-003	0.1247		465.9740	465.9740	9.8800e-003	0.0105	469.3453
<b>Total</b>	<b>0.1482</b>	<b>0.0934</b>	<b>1.4146</b>	<b>4.4400e-003</b>	<b>0.4499</b>	<b>3.0500e-003</b>	<b>0.4529</b>	<b>0.1219</b>	<b>2.8000e-003</b>	<b>0.1247</b>		<b>465.9740</b>	<b>465.9740</b>	<b>9.8800e-003</b>	<b>0.0105</b>	<b>469.3453</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**3.6 Architectural Coating - 2027**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.4703</b>	<b>1.1455</b>	<b>1.8091</b>	<b>2.9700e-003</b>		<b>0.0515</b>	<b>0.0515</b>		<b>0.0515</b>	<b>0.0515</b>		<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1402	0.0853	1.3380	4.3100e-003	0.5812	2.8600e-003	0.5841	0.1542	2.6300e-003	0.1568		456.5551	456.5551	9.0300e-003	9.9500e-003	459.7449
<b>Total</b>	<b>0.1402</b>	<b>0.0853</b>	<b>1.3380</b>	<b>4.3100e-003</b>	<b>0.5812</b>	<b>2.8600e-003</b>	<b>0.5841</b>	<b>0.1542</b>	<b>2.6300e-003</b>	<b>0.1568</b>		<b>456.5551</b>	<b>456.5551</b>	<b>9.0300e-003</b>	<b>9.9500e-003</b>	<b>459.7449</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

**3.6 Architectural Coating - 2027**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.3292</b>	<b>0.1288</b>	<b>1.8324</b>	<b>2.9700e-003</b>		<b>3.9600e-003</b>	<b>3.9600e-003</b>		<b>3.9600e-003</b>	<b>3.9600e-003</b>	<b>0.0000</b>	<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1402	0.0853	1.3380	4.3100e-003	0.4499	2.8600e-003	0.4527	0.1219	2.6300e-003	0.1245		456.5551	456.5551	9.0300e-003	9.9500e-003	459.7449
<b>Total</b>	<b>0.1402</b>	<b>0.0853</b>	<b>1.3380</b>	<b>4.3100e-003</b>	<b>0.4499</b>	<b>2.8600e-003</b>	<b>0.4527</b>	<b>0.1219</b>	<b>2.6300e-003</b>	<b>0.1245</b>		<b>456.5551</b>	<b>456.5551</b>	<b>9.0300e-003</b>	<b>9.9500e-003</b>	<b>459.7449</b>

Bouquet Canyon Project Addendum\_Mitigated - 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	11.1911	12.0019	112.3391	0.2478	28.7504	0.1822	28.9325	7.6589	0.1692	7.8281		26,095.63 68	26,095.63 68	1.7659	1.0970	26,466.67 77
Unmitigated	11.1911	12.0019	112.3391	0.2478	28.7504	0.1822	28.9325	7.6589	0.1692	7.8281		26,095.63 68	26,095.63 68	1.7659	1.0970	26,466.67 77

**4.2 Trip Summary Information**

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Condo/Townhouse High Rise	1,884.75	1,884.75	1,884.75	6,440,477	6,440,477
Health Club	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Recreational Swimming Pool	0.00	0.00	0.00		
Single Family Housing	2,110.92	2,110.92	2,110.92	7,213,334	7,213,334
<b>Total</b>	<b>3,995.67</b>	<b>3,995.67</b>	<b>3,995.67</b>	<b>13,653,811</b>	<b>13,653,811</b>

**4.3 Trip Type Information**

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

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

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Condo/Townhouse High Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	52	39	9
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Recreational Swimming Pool	16.60	8.40	6.90	33.00	48.00	19.00	52	39	9
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
City Park	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Condo/Townhouse High Rise	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Health Club	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Parking Lot	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Recreational Swimming Pool	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Single Family Housing	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318

**5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

**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	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.2209	1.8907	0.8261	0.0121		0.1526	0.1526		0.1526	0.1526		2,409.7247	2,409.7247	0.0462	0.0442	2,424.0445
NaturalGas Unmitigated	0.2209	1.8907	0.8261	0.0121		0.1526	0.1526		0.1526	0.1526		2,409.7247	2,409.7247	0.0462	0.0442	2,424.0445



Bouquet Canyon Project Addendum\_Mitigated - 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**

**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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	6264.8	0.0676	0.5773	0.2457	3.6900e-003		0.0467	0.0467		0.0467	0.0467		737.0357	737.0357	0.0141	0.0135	741.4155
Health Club	528.959	5.7000e-003	0.0519	0.0436	3.1000e-004		3.9400e-003	3.9400e-003		3.9400e-003	3.9400e-003		62.2305	62.2305	1.1900e-003	1.1400e-003	62.6003
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	13688.9	0.1476	1.2615	0.5368	8.0500e-003		0.1020	0.1020		0.1020	0.1020		1,610.4586	1,610.4586	0.0309	0.0295	1,620.0287
<b>Total</b>		<b>0.2209</b>	<b>1.8907</b>	<b>0.8261</b>	<b>0.0121</b>		<b>0.1526</b>	<b>0.1526</b>		<b>0.1526</b>	<b>0.1526</b>		<b>2,409.7247</b>	<b>2,409.7247</b>	<b>0.0462</b>	<b>0.0442</b>	<b>2,424.0445</b>

Bouquet Canyon Project Addendum\_Mitigated - 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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	6.2648	0.0676	0.5773	0.2457	3.6900e-003		0.0467	0.0467		0.0467	0.0467		737.0357	737.0357	0.0141	0.0135	741.4155
Health Club	0.528959	5.7000e-003	0.0519	0.0436	3.1000e-004		3.9400e-003	3.9400e-003		3.9400e-003	3.9400e-003		62.2305	62.2305	1.1900e-003	1.1400e-003	62.6003
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	13.6889	0.1476	1.2615	0.5368	8.0500e-003		0.1020	0.1020		0.1020	0.1020		1,610.4586	1,610.4586	0.0309	0.0295	1,620.0287
<b>Total</b>		<b>0.2209</b>	<b>1.8907</b>	<b>0.8261</b>	<b>0.0121</b>		<b>0.1526</b>	<b>0.1526</b>		<b>0.1526</b>	<b>0.1526</b>		<b>2,409.7247</b>	<b>2,409.7247</b>	<b>0.0462</b>	<b>0.0442</b>	<b>2,424.0445</b>

**6.0 Area Detail**

**6.1 Mitigation Measures Area**

Use only Natural Gas Hearths

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Winter

**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	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	13.1725	5.8911	32.9393	0.0370		0.6175	0.6175		0.6175	0.6175	0.0000	7,125.9438	7,125.9438	0.1883	0.1296	7,169.2821
Unmitigated	109.7397	8.0499	219.2551	0.4829		28.5098	28.5098		28.5098	28.5098	3,475.1267	6,733.1203	10,208.2470	10.4163	0.2359	10,538.9427

**6.2 Area by SubCategory**

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.9329					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	10.6730					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	97.2154	7.6976	188.6727	0.4813		28.3401	28.3401		28.3401	28.3401	3,475.1267	6,678.0000	10,153.1267	10.3635	0.2359	10,482.5026
Landscaping	0.9184	0.3523	30.5824	1.6200e-003		0.1697	0.1697		0.1697	0.1697		55.1203	55.1203	0.0528		56.4402
<b>Total</b>	<b>109.7397</b>	<b>8.0499</b>	<b>219.2551</b>	<b>0.4829</b>		<b>28.5098</b>	<b>28.5098</b>		<b>28.5098</b>	<b>28.5098</b>	<b>3,475.1267</b>	<b>6,733.1203</b>	<b>10,208.2470</b>	<b>10.4163</b>	<b>0.2359</b>	<b>10,538.9427</b>

Bouquet Canyon Project Addendum\_Mitigated - 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	0.9329					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	10.6730					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.6482	5.5388	2.3569	0.0354		0.4478	0.4478		0.4478	0.4478	0.0000	7,070.8235	7,070.8235	0.1355	0.1296	7,112.8419
Landscaping	0.9184	0.3523	30.5824	1.6200e-003		0.1697	0.1697		0.1697	0.1697		55.1203	55.1203	0.0528		56.4402
<b>Total</b>	<b>13.1725</b>	<b>5.8911</b>	<b>32.9393</b>	<b>0.0370</b>		<b>0.6175</b>	<b>0.6175</b>		<b>0.6175</b>	<b>0.6175</b>	<b>0.0000</b>	<b>7,125.9438</b>	<b>7,125.9438</b>	<b>0.1883</b>	<b>0.1296</b>	<b>7,169.2821</b>

**7.0 Water Detail**

**7.1 Mitigation Measures Water**

Bouquet Canyon Project Addendum\_Mitigated - 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**

Institute Recycling and Composting Services

**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**

---

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**Bouquet Canyon Project Addendum\_Mitigated**

**Los Angeles-South Coast County, Summer**

**1.0 Project Characteristics**

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	10.52	1000sqft	0.24	10,522.00	0
City Park	2.65	Acre	2.65	115,434.00	0
Health Club	10.75	1000sqft	0.25	10,750.00	0
Recreational Swimming Pool	9.68	1000sqft	0.22	9,676.00	0
Condo/Townhouse High Rise	175.00	Dwelling Unit	2.73	175,000.00	501
Single Family Housing	196.00	Dwelling Unit	63.64	352,800.00	561

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	33
<b>Climate Zone</b>	9			<b>Operational Year</b>	2026
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MWhr)</b>	390.98	<b>CH4 Intensity (lb/MWhr)</b>	0.033	<b>N2O Intensity (lb/MWhr)</b>	0.004

**1.3 User Entered Comments & Non-Default Data**

Project Characteristics -

Land Use - per project description

Construction Phase - per construction questionnaire

Trips and VMT - Earthwork would be balanced on-site.

Demolition - per CalEEMod formula and data in AQ construction questionnaire

Grading - per email communication

Vehicle Trips - as conservative analysis, this run uses the same trip generation rate as the adopted EIR.



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	75.00	792.00
tblConstructionPhase	NumDays	1,110.00	783.00
tblConstructionPhase	NumDays	70.00	22.00
tblConstructionPhase	NumDays	110.00	262.00
tblConstructionPhase	NumDays	75.00	22.00
tblGrading	AcresOfGrading	786.00	0.00
tblGrading	MaterialExported	0.00	2,800,000.00
tblGrading	MaterialImported	0.00	2,800,000.00
tblLandUse	LandUseSquareFeet	10,520.00	10,522.00
tblLandUse	LandUseSquareFeet	9,680.00	9,676.00
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingVehicleClass	HHDT	MHDT
tblTripsAndVMT	HaulingVehicleClass	HHDT	MHDT
tblTripsAndVMT	HaulingVehicleClass	HHDT	MHDT
tblTripsAndVMT	HaulingVehicleClass	HHDT	MHDT
tblTripsAndVMT	HaulingVehicleClass	HHDT	MHDT
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	ST_TR	4.91	10.77
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	9.10	0.00
tblVehicleTrips	ST_TR	9.54	10.77



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	4.09	10.77
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	13.60	0.00
tblVehicleTrips	SU_TR	8.55	10.77
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	5.44	10.77
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	28.82	0.00
tblVehicleTrips	WD_TR	9.44	10.77

**2.0 Emissions Summary**

---

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

**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					
2022	7.3716	80.4982	62.5726	0.1452	11.3226	2.9990	14.3216	4.3727	2.7754	7.1480	0.0000	14,382.52 15	14,382.52 15	3.1177	0.5748	14,631.75 19
2023	4.1668	49.5017	39.3693	0.1032	10.0490	1.4499	11.4988	4.1603	1.3347	5.4950	0.0000	10,303.41 60	10,303.41 60	2.0497	0.5476	10,517.82 97
2024	6.9484	25.9741	40.9323	0.0877	3.8750	1.1119	4.5817	1.0370	1.0361	1.9634	0.0000	8,733.251 0	8,733.251 0	1.4237	0.2482	8,840.455 2
2025	6.7725	16.6204	28.5531	0.0702	3.8750	0.6107	4.4857	1.0370	0.5773	1.6143	0.0000	7,076.913 8	7,076.913 8	0.7235	0.2407	7,166.733 4
2026	6.7195	16.5513	27.9496	0.0691	3.8750	0.6097	4.4847	1.0370	0.5764	1.6134	0.0000	6,986.383 4	6,986.383 4	0.7179	0.2339	7,074.038 2
2027	6.6714	16.4901	27.4390	0.0681	3.8750	0.6085	4.4836	1.0370	0.5753	1.6123	0.0000	6,902.999 7	6,902.999 7	0.7129	0.2276	6,988.651 6
<b>Maximum</b>	<b>7.3716</b>	<b>80.4982</b>	<b>62.5726</b>	<b>0.1452</b>	<b>11.3226</b>	<b>2.9990</b>	<b>14.3216</b>	<b>4.3727</b>	<b>2.7754</b>	<b>7.1480</b>	<b>0.0000</b>	<b>14,382.52 15</b>	<b>14,382.52 15</b>	<b>3.1177</b>	<b>0.5748</b>	<b>14,631.75 19</b>



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

**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	109.7397	8.0499	219.2551	0.4829		28.5098	28.5098		28.5098	28.5098	3,475.1267	6,733.1203	10,208.2470	10.4163	0.2359	10,538.9427
Energy	0.2209	1.8907	0.8261	0.0121		0.1526	0.1526		0.1526	0.1526		2,409.7247	2,409.7247	0.0462	0.0442	2,424.0445
Mobile	11.3944	11.1241	114.4817	0.2587	28.7504	0.1821	28.9325	7.6589	0.1691	7.8280		27,241.0403	27,241.0403	1.7202	1.0522	27,597.6104
<b>Total</b>	<b>121.3550</b>	<b>21.0648</b>	<b>334.5629</b>	<b>0.7537</b>	<b>28.7504</b>	<b>28.8445</b>	<b>57.5948</b>	<b>7.6589</b>	<b>28.8315</b>	<b>36.4904</b>	<b>3,475.1267</b>	<b>36,383.8853</b>	<b>39,859.0120</b>	<b>12.1827</b>	<b>1.3323</b>	<b>40,560.5976</b>

**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	13.1725	5.8911	32.9393	0.0370		0.6175	0.6175		0.6175	0.6175	0.0000	7,125.9438	7,125.9438	0.1883	0.1296	7,169.2821
Energy	0.2209	1.8907	0.8261	0.0121		0.1526	0.1526		0.1526	0.1526		2,409.7247	2,409.7247	0.0462	0.0442	2,424.0445
Mobile	11.3944	11.1241	114.4817	0.2587	28.7504	0.1821	28.9325	7.6589	0.1691	7.8280		27,241.0403	27,241.0403	1.7202	1.0522	27,597.6104
<b>Total</b>	<b>24.7878</b>	<b>18.9059</b>	<b>148.2471</b>	<b>0.3077</b>	<b>28.7504</b>	<b>0.9522</b>	<b>29.7026</b>	<b>7.6589</b>	<b>0.9392</b>	<b>8.5981</b>	<b>0.0000</b>	<b>36,776.7088</b>	<b>36,776.7088</b>	<b>1.9547</b>	<b>1.2260</b>	<b>37,190.9369</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

**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	N2O	CO2e
Percent Reduction	79.57	10.25	55.69	59.17	0.00	96.70	48.43	0.00	96.74	76.44	100.00	-1.08	7.73	83.96	7.97	8.31

**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	9/1/2022	9/1/2023	5	262	
2	Demolition	Demolition	10/3/2022	11/1/2022	5	22	
3	Paving	Paving	2/1/2024	3/1/2024	5	22	
4	Building Construction	Building Construction	2/15/2024	2/15/2027	5	783	
5	Architectural Coating	Architectural Coating	8/1/2024	8/13/2027	5	792	

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.24**

**Residential Indoor: 1,068,795; Residential Outdoor: 356,265; Non-Residential Indoor: 16,125; Non-Residential Outdoor: 5,375; Striped Parking Area: 631 (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
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48

**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	700,000.00	14.70	6.90	0.50	LD_Mix	HDT_Mix	MHDT
Demolition	6	15.00	0.00	112.00	14.70	6.90	0.50	LD_Mix	HDT_Mix	MHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	MHDT
Building Construction	9	258.00	64.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	MHDT
Architectural Coating	1	52.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	MHDT

**3.1 Mitigation Measures Construction**

- Use Cleaner Engines for Construction Equipment
- Replace Ground Cover
- Water Exposed Area
- Water Unpaved Roads
- Reduce Vehicle Speed on Unpaved Roads
- Clean Paved Roads

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**3.2 Grading - 2022**

**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					8.4393	0.0000	8.4393	3.6763	0.0000	3.6763			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
<b>Total</b>	<b>3.6248</b>	<b>38.8435</b>	<b>29.0415</b>	<b>0.0621</b>	<b>8.4393</b>	<b>1.6349</b>	<b>10.0742</b>	<b>3.6763</b>	<b>1.5041</b>	<b>5.1804</b>		<b>6,011.4105</b>	<b>6,011.4105</b>	<b>1.9442</b>		<b>6,060.0158</b>

**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	0.9846	15.8167	11.5356	0.0407	1.3861	0.1187	1.5048	0.4248	0.1135	0.5383		4,252.1829	4,252.1829	0.1110	0.5650	4,423.3148
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	0.0692	0.0505	0.7883	2.0400e-003	0.2236	1.4300e-003	0.2250	0.0593	1.3200e-003	0.0606		208.0254	208.0254	5.6300e-003	5.0000e-003	209.6576
<b>Total</b>	<b>1.0538</b>	<b>15.8672</b>	<b>12.3238</b>	<b>0.0427</b>	<b>1.6097</b>	<b>0.1201</b>	<b>1.7298</b>	<b>0.4841</b>	<b>0.1148</b>	<b>0.5989</b>		<b>4,460.2084</b>	<b>4,460.2084</b>	<b>0.1166</b>	<b>0.5700</b>	<b>4,632.9724</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**3.2 Grading - 2022**

**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					3.1268	0.0000	3.1268	1.3621	0.0000	1.3621			0.0000			0.0000
Off-Road	0.7616	3.3000	32.9991	0.0621		0.1015	0.1015		0.1015	0.1015	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
<b>Total</b>	<b>0.7616</b>	<b>3.3000</b>	<b>32.9991</b>	<b>0.0621</b>	<b>3.1268</b>	<b>0.1015</b>	<b>3.2283</b>	<b>1.3621</b>	<b>0.1015</b>	<b>1.4636</b>	<b>0.0000</b>	<b>6,011.4105</b>	<b>6,011.4105</b>	<b>1.9442</b>		<b>6,060.0158</b>

**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	0.9846	15.8167	11.5356	0.0407	1.1565	0.1187	1.2752	0.3684	0.1135	0.4819		4,252.1829	4,252.1829	0.1110	0.5650	4,423.3148
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	0.0692	0.0505	0.7883	2.0400e-003	0.1730	1.4300e-003	0.1745	0.0469	1.3200e-003	0.0482		208.0254	208.0254	5.6300e-003	5.0000e-003	209.6576
<b>Total</b>	<b>1.0538</b>	<b>15.8672</b>	<b>12.3238</b>	<b>0.0427</b>	<b>1.3296</b>	<b>0.1201</b>	<b>1.4497</b>	<b>0.4153</b>	<b>0.1148</b>	<b>0.5301</b>		<b>4,460.2084</b>	<b>4,460.2084</b>	<b>0.1166</b>	<b>0.5700</b>	<b>4,632.9724</b>



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**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					8.4393	0.0000	8.4393	3.6763	0.0000	3.6763			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
<b>Total</b>	<b>3.3217</b>	<b>34.5156</b>	<b>28.0512</b>	<b>0.0621</b>	<b>8.4393</b>	<b>1.4245</b>	<b>9.8638</b>	<b>3.6763</b>	<b>1.3105</b>	<b>4.9868</b>		<b>6,011.4777</b>	<b>6,011.4777</b>	<b>1.9442</b>		<b>6,060.0836</b>

**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	0.7811	14.9415	10.5934	0.0391	1.3861	0.0240	1.4102	0.4248	0.0229	0.4477		4,089.4158	4,089.4158	0.1005	0.5429	4,253.7220
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
<b>Total</b>	<b>0.8451</b>	<b>14.9861</b>	<b>11.3181</b>	<b>0.0411</b>	<b>1.6097</b>	<b>0.0254</b>	<b>1.6351</b>	<b>0.4841</b>	<b>0.0242</b>	<b>0.5082</b>		<b>4,291.9383</b>	<b>4,291.9383</b>	<b>0.1055</b>	<b>0.5476</b>	<b>4,457.7461</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**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	lb/day										lb/day					
Fugitive Dust					3.1268	0.0000	3.1268	1.3621	0.0000	1.3621			0.0000			0.0000
Off-Road	0.7616	3.3000	32.9991	0.0621		0.1015	0.1015		0.1015	0.1015	0.0000	6,011.4777	6,011.4777	1.9442		6,060.0836
<b>Total</b>	<b>0.7616</b>	<b>3.3000</b>	<b>32.9991</b>	<b>0.0621</b>	<b>3.1268</b>	<b>0.1015</b>	<b>3.2283</b>	<b>1.3621</b>	<b>0.1015</b>	<b>1.4636</b>	<b>0.0000</b>	<b>6,011.4777</b>	<b>6,011.4777</b>	<b>1.9442</b>		<b>6,060.0836</b>

**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	0.7811	14.9415	10.5934	0.0391	1.1565	0.0240	1.1806	0.3684	0.0229	0.3914		4,089.4158	4,089.4158	0.1005	0.5429	4,253.7220
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	0.1730	1.3500e-003	0.1744	0.0469	1.2400e-003	0.0481		202.5226	202.5226	5.0400e-003	4.6200e-003	204.0242
<b>Total</b>	<b>0.8451</b>	<b>14.9861</b>	<b>11.3181</b>	<b>0.0411</b>	<b>1.3296</b>	<b>0.0254</b>	<b>1.3549</b>	<b>0.4153</b>	<b>0.0242</b>	<b>0.4395</b>		<b>4,291.9383</b>	<b>4,291.9383</b>	<b>0.1055</b>	<b>0.5476</b>	<b>4,457.7461</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**3.3 Demolition - 2022**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.1033	0.0000	1.1033	0.1671	0.0000	0.1671			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.781 2	3,746.781 2	1.0524		3,773.092 0
<b>Total</b>	<b>2.6392</b>	<b>25.7194</b>	<b>20.5941</b>	<b>0.0388</b>	<b>1.1033</b>	<b>1.2427</b>	<b>2.3460</b>	<b>0.1671</b>	<b>1.1553</b>	<b>1.3223</b>		<b>3,746.781 2</b>	<b>3,746.781 2</b>	<b>1.0524</b>		<b>3,773.092 0</b>

**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	1.8800e-003	0.0301	0.0220	8.0000e-005	2.6400e-003	2.3000e-004	2.8700e-003	8.1000e-004	2.2000e-004	1.0300e-003		8.1023	8.1023	2.1000e-004	1.0800e-003	8.4284
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	0.0519	0.0379	0.5912	1.5300e-003	0.1677	1.0700e-003	0.1687	0.0445	9.9000e-004	0.0455		156.0191	156.0191	4.2200e-003	3.7500e-003	157.2432
<b>Total</b>	<b>0.0538</b>	<b>0.0680</b>	<b>0.6132</b>	<b>1.6100e-003</b>	<b>0.1703</b>	<b>1.3000e-003</b>	<b>0.1716</b>	<b>0.0453</b>	<b>1.2100e-003</b>	<b>0.0465</b>		<b>164.1214</b>	<b>164.1214</b>	<b>4.4300e-003</b>	<b>4.8300e-003</b>	<b>165.6716</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**3.3 Demolition - 2022**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4088	0.0000	0.4088	0.0619	0.0000	0.0619			0.0000			0.0000
Off-Road	0.4623	2.0032	23.2798	0.0388		0.0616	0.0616		0.0616	0.0616	0.0000	3,746.781 2	3,746.781 2	1.0524		3,773.092 0
<b>Total</b>	<b>0.4623</b>	<b>2.0032</b>	<b>23.2798</b>	<b>0.0388</b>	<b>0.4088</b>	<b>0.0616</b>	<b>0.4704</b>	<b>0.0619</b>	<b>0.0616</b>	<b>0.1235</b>	<b>0.0000</b>	<b>3,746.781 2</b>	<b>3,746.781 2</b>	<b>1.0524</b>		<b>3,773.092 0</b>

**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	1.8800e-003	0.0301	0.0220	8.0000e-005	2.2000e-003	2.3000e-004	2.4300e-003	7.0000e-004	2.2000e-004	9.2000e-004		8.1023	8.1023	2.1000e-004	1.0800e-003	8.4284
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	0.0519	0.0379	0.5912	1.5300e-003	0.1298	1.0700e-003	0.1308	0.0352	9.9000e-004	0.0362		156.0191	156.0191	4.2200e-003	3.7500e-003	157.2432
<b>Total</b>	<b>0.0538</b>	<b>0.0680</b>	<b>0.6132</b>	<b>1.6100e-003</b>	<b>0.1320</b>	<b>1.3000e-003</b>	<b>0.1333</b>	<b>0.0359</b>	<b>1.2100e-003</b>	<b>0.0371</b>		<b>164.1214</b>	<b>164.1214</b>	<b>4.4300e-003</b>	<b>4.8300e-003</b>	<b>165.6716</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**3.4 Paving - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.547 2	2,207.547 2	0.7140		2,225.396 3
Paving	0.0286					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>1.0167</b>	<b>9.5246</b>	<b>14.6258</b>	<b>0.0228</b>		<b>0.4685</b>	<b>0.4685</b>		<b>0.4310</b>	<b>0.4310</b>		<b>2,207.547 2</b>	<b>2,207.547 2</b>	<b>0.7140</b>		<b>2,225.396 3</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0448	0.0299	0.5060	1.4400e-003	0.1677	9.7000e-004	0.1686	0.0445	8.9000e-004	0.0454		148.7609	148.7609	3.4200e-003	3.2200e-003	149.8058
<b>Total</b>	<b>0.0448</b>	<b>0.0299</b>	<b>0.5060</b>	<b>1.4400e-003</b>	<b>0.1677</b>	<b>9.7000e-004</b>	<b>0.1686</b>	<b>0.0445</b>	<b>8.9000e-004</b>	<b>0.0454</b>		<b>148.7609</b>	<b>148.7609</b>	<b>3.4200e-003</b>	<b>3.2200e-003</b>	<b>149.8058</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**3.4 Paving - 2024**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2805	1.2154	17.2957	0.0228		0.0374	0.0374		0.0374	0.0374	0.0000	2,207.547 2	2,207.547 2	0.7140		2,225.396 3
Paving	0.0286					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.3091</b>	<b>1.2154</b>	<b>17.2957</b>	<b>0.0228</b>		<b>0.0374</b>	<b>0.0374</b>		<b>0.0374</b>	<b>0.0374</b>	<b>0.0000</b>	<b>2,207.547 2</b>	<b>2,207.547 2</b>	<b>0.7140</b>		<b>2,225.396 3</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0448	0.0299	0.5060	1.4400e-003	0.1298	9.7000e-004	0.1307	0.0352	8.9000e-004	0.0361		148.7609	148.7609	3.4200e-003	3.2200e-003	149.8058
<b>Total</b>	<b>0.0448</b>	<b>0.0299</b>	<b>0.5060</b>	<b>1.4400e-003</b>	<b>0.1298</b>	<b>9.7000e-004</b>	<b>0.1307</b>	<b>0.0352</b>	<b>8.9000e-004</b>	<b>0.0361</b>		<b>148.7609</b>	<b>148.7609</b>	<b>3.4200e-003</b>	<b>3.2200e-003</b>	<b>149.8058</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**3.5 Building Construction - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
<b>Total</b>	<b>1.4716</b>	<b>13.4438</b>	<b>16.1668</b>	<b>0.0270</b>		<b>0.6133</b>	<b>0.6133</b>		<b>0.5769</b>	<b>0.5769</b>		<b>2,555.6989</b>	<b>2,555.6989</b>	<b>0.6044</b>		<b>2,570.8077</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0714	2.4615	0.9314	0.0117	0.4100	0.0124	0.4224	0.1180	0.0119	0.1299		1,262.5575	1,262.5575	0.0431	0.1817	1,317.7856
Worker	0.7700	0.5144	8.7023	0.0248	2.8838	0.0167	2.9005	0.7648	0.0154	0.7802		2,558.6866	2,558.6866	0.0589	0.0554	2,576.6598
<b>Total</b>	<b>0.8415</b>	<b>2.9759</b>	<b>9.6337</b>	<b>0.0365</b>	<b>3.2938</b>	<b>0.0291</b>	<b>3.3229</b>	<b>0.8829</b>	<b>0.0273</b>	<b>0.9101</b>		<b>3,821.2440</b>	<b>3,821.2440</b>	<b>0.1020</b>	<b>0.2371</b>	<b>3,894.4454</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**3.5 Building Construction - 2024**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3278	2.2347	17.4603	0.0270		0.0408	0.0408		0.0408	0.0408	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
<b>Total</b>	<b>0.3278</b>	<b>2.2347</b>	<b>17.4603</b>	<b>0.0270</b>		<b>0.0408</b>	<b>0.0408</b>		<b>0.0408</b>	<b>0.0408</b>	<b>0.0000</b>	<b>2,555.6989</b>	<b>2,555.6989</b>	<b>0.6044</b>		<b>2,570.8077</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0714	2.4615	0.9314	0.0117	0.3341	0.0124	0.3465	0.0994	0.0119	0.1113		1,262.5575	1,262.5575	0.0431	0.1817	1,317.7856
Worker	0.7700	0.5144	8.7023	0.0248	2.2320	0.0167	2.2487	0.6048	0.0154	0.6202		2,558.6866	2,558.6866	0.0589	0.0554	2,576.6598
<b>Total</b>	<b>0.8415</b>	<b>2.9759</b>	<b>9.6337</b>	<b>0.0365</b>	<b>2.5660</b>	<b>0.0291</b>	<b>2.5952</b>	<b>0.7042</b>	<b>0.0273</b>	<b>0.7315</b>		<b>3,821.2440</b>	<b>3,821.2440</b>	<b>0.1020</b>	<b>0.2371</b>	<b>3,894.4454</b>



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**3.5 Building Construction - 2025**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>1.3674</b>	<b>12.4697</b>	<b>16.0847</b>	<b>0.0270</b>		<b>0.5276</b>	<b>0.5276</b>		<b>0.4963</b>	<b>0.4963</b>		<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0694	2.4499	0.9143	0.0115	0.4100	0.0125	0.4224	0.1180	0.0119	0.1300		1,239.826 5	1,239.826 5	0.0434	0.1786	1,294.125 1
Worker	0.7202	0.4622	8.1104	0.0240	2.8838	0.0159	2.8998	0.7648	0.0147	0.7795		2,496.079 2	2,496.079 2	0.0531	0.0517	2,512.818 8
<b>Total</b>	<b>0.7896</b>	<b>2.9121</b>	<b>9.0247</b>	<b>0.0355</b>	<b>3.2938</b>	<b>0.0284</b>	<b>3.3222</b>	<b>0.8829</b>	<b>0.0266</b>	<b>0.9094</b>		<b>3,735.905 7</b>	<b>3,735.905 7</b>	<b>0.0965</b>	<b>0.2303</b>	<b>3,806.943 9</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**3.5 Building Construction - 2025**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3278	2.2347	17.4603	0.0270		0.0408	0.0408		0.0408	0.0408	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>0.3278</b>	<b>2.2347</b>	<b>17.4603</b>	<b>0.0270</b>		<b>0.0408</b>	<b>0.0408</b>		<b>0.0408</b>	<b>0.0408</b>	<b>0.0000</b>	<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0694	2.4499	0.9143	0.0115	0.3341	0.0125	0.3465	0.0994	0.0119	0.1113		1,239.826 5	1,239.826 5	0.0434	0.1786	1,294.125 1
Worker	0.7202	0.4622	8.1104	0.0240	2.2320	0.0159	2.2479	0.6048	0.0147	0.6195		2,496.079 2	2,496.079 2	0.0531	0.0517	2,512.818 8
<b>Total</b>	<b>0.7896</b>	<b>2.9121</b>	<b>9.0247</b>	<b>0.0355</b>	<b>2.5660</b>	<b>0.0284</b>	<b>2.5944</b>	<b>0.7042</b>	<b>0.0266</b>	<b>0.7308</b>		<b>3,735.905 7</b>	<b>3,735.905 7</b>	<b>0.0965</b>	<b>0.2303</b>	<b>3,806.943 9</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**3.5 Building Construction - 2026**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>1.3674</b>	<b>12.4697</b>	<b>16.0847</b>	<b>0.0270</b>		<b>0.5276</b>	<b>0.5276</b>		<b>0.4963</b>	<b>0.4963</b>		<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0677	2.4319	0.9013	0.0113	0.4100	0.0124	0.4224	0.1180	0.0119	0.1299		1,216.815 5	1,216.815 5	0.0437	0.1754	1,270.162 4
Worker	0.6775	0.4196	7.6189	0.0232	2.8838	0.0151	2.8990	0.7648	0.0139	0.7787		2,439.885 6	2,439.885 6	0.0482	0.0488	2,455.615 7
<b>Total</b>	<b>0.7452</b>	<b>2.8516</b>	<b>8.5202</b>	<b>0.0345</b>	<b>3.2938</b>	<b>0.0276</b>	<b>3.3214</b>	<b>0.8829</b>	<b>0.0258</b>	<b>0.9087</b>		<b>3,656.701 1</b>	<b>3,656.701 1</b>	<b>0.0919</b>	<b>0.2241</b>	<b>3,725.778 0</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**3.5 Building Construction - 2026**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3278	2.2347	17.4603	0.0270		0.0408	0.0408		0.0408	0.0408	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>0.3278</b>	<b>2.2347</b>	<b>17.4603</b>	<b>0.0270</b>		<b>0.0408</b>	<b>0.0408</b>		<b>0.0408</b>	<b>0.0408</b>	<b>0.0000</b>	<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0677	2.4319	0.9013	0.0113	0.3341	0.0124	0.3465	0.0994	0.0119	0.1113		1,216.815 5	1,216.815 5	0.0437	0.1754	1,270.162 4
Worker	0.6775	0.4196	7.6189	0.0232	2.2320	0.0151	2.2471	0.6048	0.0139	0.6187		2,439.885 6	2,439.885 6	0.0482	0.0488	2,455.615 7
<b>Total</b>	<b>0.7452</b>	<b>2.8516</b>	<b>8.5202</b>	<b>0.0345</b>	<b>2.5660</b>	<b>0.0276</b>	<b>2.5936</b>	<b>0.7042</b>	<b>0.0258</b>	<b>0.7300</b>		<b>3,656.701 1</b>	<b>3,656.701 1</b>	<b>0.0919</b>	<b>0.2241</b>	<b>3,725.778 0</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**3.5 Building Construction - 2027**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>1.3674</b>	<b>12.4697</b>	<b>16.0847</b>	<b>0.0270</b>		<b>0.5276</b>	<b>0.5276</b>		<b>0.4963</b>	<b>0.4963</b>		<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0662	2.4140	0.8907	0.0111	0.4100	0.0124	0.4223	0.1181	0.0118	0.1299		1,192.868 2	1,192.868 2	0.0438	0.1720	1,245.229 1
Worker	0.6388	0.3837	7.2028	0.0226	2.8838	0.0142	2.8980	0.7648	0.0131	0.7779		2,390.419 2	2,390.419 2	0.0440	0.0463	2,405.302 9
<b>Total</b>	<b>0.7050</b>	<b>2.7976</b>	<b>8.0935</b>	<b>0.0336</b>	<b>3.2938</b>	<b>0.0266</b>	<b>3.3204</b>	<b>0.8829</b>	<b>0.0249</b>	<b>0.9078</b>		<b>3,583.287 3</b>	<b>3,583.287 3</b>	<b>0.0878</b>	<b>0.2183</b>	<b>3,650.532 0</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**3.5 Building Construction - 2027**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3278	2.2347	17.4603	0.0270		0.0408	0.0408		0.0408	0.0408	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>0.3278</b>	<b>2.2347</b>	<b>17.4603</b>	<b>0.0270</b>		<b>0.0408</b>	<b>0.0408</b>		<b>0.0408</b>	<b>0.0408</b>	<b>0.0000</b>	<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0662	2.4140	0.8907	0.0111	0.3341	0.0124	0.3464	0.0994	0.0118	0.1113		1,192.868 2	1,192.868 2	0.0438	0.1720	1,245.229 1
Worker	0.6388	0.3837	7.2028	0.0226	2.2320	0.0142	2.2462	0.6048	0.0131	0.6179		2,390.419 2	2,390.419 2	0.0440	0.0463	2,405.302 9
<b>Total</b>	<b>0.7050</b>	<b>2.7976</b>	<b>8.0935</b>	<b>0.0336</b>	<b>2.5661</b>	<b>0.0266</b>	<b>2.5926</b>	<b>0.7042</b>	<b>0.0249</b>	<b>0.7291</b>		<b>3,583.287 3</b>	<b>3,583.287 3</b>	<b>0.0878</b>	<b>0.2183</b>	<b>3,650.532 0</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**3.6 Architectural Coating - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
<b>Total</b>	<b>4.4802</b>	<b>1.2188</b>	<b>1.8101</b>	<b>2.9700e-003</b>		<b>0.0609</b>	<b>0.0609</b>		<b>0.0609</b>	<b>0.0609</b>		<b>281.4481</b>	<b>281.4481</b>	<b>0.0159</b>		<b>281.8443</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1552	0.1037	1.7540	5.0000e-003	0.5812	3.3600e-003	0.5846	0.1542	3.1000e-003	0.1572		515.7043	515.7043	0.0119	0.0112	519.3268
<b>Total</b>	<b>0.1552</b>	<b>0.1037</b>	<b>1.7540</b>	<b>5.0000e-003</b>	<b>0.5812</b>	<b>3.3600e-003</b>	<b>0.5846</b>	<b>0.1542</b>	<b>3.1000e-003</b>	<b>0.1572</b>		<b>515.7043</b>	<b>515.7043</b>	<b>0.0119</b>	<b>0.0112</b>	<b>519.3268</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**3.6 Architectural Coating - 2024**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0159		281.8443
<b>Total</b>	<b>4.3292</b>	<b>0.1288</b>	<b>1.8324</b>	<b>2.9700e-003</b>		<b>3.9600e-003</b>	<b>3.9600e-003</b>		<b>3.9600e-003</b>	<b>3.9600e-003</b>	<b>0.0000</b>	<b>281.4481</b>	<b>281.4481</b>	<b>0.0159</b>		<b>281.8443</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1552	0.1037	1.7540	5.0000e-003	0.4499	3.3600e-003	0.4532	0.1219	3.1000e-003	0.1250		515.7043	515.7043	0.0119	0.0112	519.3268
<b>Total</b>	<b>0.1552</b>	<b>0.1037</b>	<b>1.7540</b>	<b>5.0000e-003</b>	<b>0.4499</b>	<b>3.3600e-003</b>	<b>0.4532</b>	<b>0.1219</b>	<b>3.1000e-003</b>	<b>0.1250</b>		<b>515.7043</b>	<b>515.7043</b>	<b>0.0119</b>	<b>0.0112</b>	<b>519.3268</b>



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**3.6 Architectural Coating - 2025**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.4703</b>	<b>1.1455</b>	<b>1.8091</b>	<b>2.9700e-003</b>		<b>0.0515</b>	<b>0.0515</b>		<b>0.0515</b>	<b>0.0515</b>		<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1452	0.0932	1.6347	4.8300e-003	0.5812	3.2100e-003	0.5845	0.1542	2.9500e-003	0.1571		503.0857	503.0857	0.0107	0.0104	506.4596
<b>Total</b>	<b>0.1452</b>	<b>0.0932</b>	<b>1.6347</b>	<b>4.8300e-003</b>	<b>0.5812</b>	<b>3.2100e-003</b>	<b>0.5845</b>	<b>0.1542</b>	<b>2.9500e-003</b>	<b>0.1571</b>		<b>503.0857</b>	<b>503.0857</b>	<b>0.0107</b>	<b>0.0104</b>	<b>506.4596</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**3.6 Architectural Coating - 2025**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.3292</b>	<b>0.1288</b>	<b>1.8324</b>	<b>2.9700e-003</b>		<b>3.9600e-003</b>	<b>3.9600e-003</b>		<b>3.9600e-003</b>	<b>3.9600e-003</b>	<b>0.0000</b>	<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1452	0.0932	1.6347	4.8300e-003	0.4499	3.2100e-003	0.4531	0.1219	2.9500e-003	0.1249		503.0857	503.0857	0.0107	0.0104	506.4596
<b>Total</b>	<b>0.1452</b>	<b>0.0932</b>	<b>1.6347</b>	<b>4.8300e-003</b>	<b>0.4499</b>	<b>3.2100e-003</b>	<b>0.4531</b>	<b>0.1219</b>	<b>2.9500e-003</b>	<b>0.1249</b>		<b>503.0857</b>	<b>503.0857</b>	<b>0.0107</b>	<b>0.0104</b>	<b>506.4596</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**3.6 Architectural Coating - 2026**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.4703</b>	<b>1.1455</b>	<b>1.8091</b>	<b>2.9700e-003</b>		<b>0.0515</b>	<b>0.0515</b>		<b>0.0515</b>	<b>0.0515</b>		<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1366	0.0846	1.5356	4.6800e-003	0.5812	3.0500e-003	0.5843	0.1542	2.8000e-003	0.1570		491.7599	491.7599	9.7100e-003	9.8200e-003	494.9303
<b>Total</b>	<b>0.1366</b>	<b>0.0846</b>	<b>1.5356</b>	<b>4.6800e-003</b>	<b>0.5812</b>	<b>3.0500e-003</b>	<b>0.5843</b>	<b>0.1542</b>	<b>2.8000e-003</b>	<b>0.1570</b>		<b>491.7599</b>	<b>491.7599</b>	<b>9.7100e-003</b>	<b>9.8200e-003</b>	<b>494.9303</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**3.6 Architectural Coating - 2026**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.3292</b>	<b>0.1288</b>	<b>1.8324</b>	<b>2.9700e-003</b>		<b>3.9600e-003</b>	<b>3.9600e-003</b>		<b>3.9600e-003</b>	<b>3.9600e-003</b>	<b>0.0000</b>	<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1366	0.0846	1.5356	4.6800e-003	0.4499	3.0500e-003	0.4529	0.1219	2.8000e-003	0.1247		491.7599	491.7599	9.7100e-003	9.8200e-003	494.9303
<b>Total</b>	<b>0.1366</b>	<b>0.0846</b>	<b>1.5356</b>	<b>4.6800e-003</b>	<b>0.4499</b>	<b>3.0500e-003</b>	<b>0.4529</b>	<b>0.1219</b>	<b>2.8000e-003</b>	<b>0.1247</b>		<b>491.7599</b>	<b>491.7599</b>	<b>9.7100e-003</b>	<b>9.8200e-003</b>	<b>494.9303</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**3.6 Architectural Coating - 2027**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.4703</b>	<b>1.1455</b>	<b>1.8091</b>	<b>2.9700e-003</b>		<b>0.0515</b>	<b>0.0515</b>		<b>0.0515</b>	<b>0.0515</b>		<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1287	0.0773	1.4517	4.5500e-003	0.5812	2.8600e-003	0.5841	0.1542	2.6300e-003	0.1568		481.7899	481.7899	8.8600e-003	9.3200e-003	484.7897
<b>Total</b>	<b>0.1287</b>	<b>0.0773</b>	<b>1.4517</b>	<b>4.5500e-003</b>	<b>0.5812</b>	<b>2.8600e-003</b>	<b>0.5841</b>	<b>0.1542</b>	<b>2.6300e-003</b>	<b>0.1568</b>		<b>481.7899</b>	<b>481.7899</b>	<b>8.8600e-003</b>	<b>9.3200e-003</b>	<b>484.7897</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

**3.6 Architectural Coating - 2027**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.3292</b>	<b>0.1288</b>	<b>1.8324</b>	<b>2.9700e-003</b>		<b>3.9600e-003</b>	<b>3.9600e-003</b>		<b>3.9600e-003</b>	<b>3.9600e-003</b>	<b>0.0000</b>	<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1287	0.0773	1.4517	4.5500e-003	0.4499	2.8600e-003	0.4527	0.1219	2.6300e-003	0.1245		481.7899	481.7899	8.8600e-003	9.3200e-003	484.7897
<b>Total</b>	<b>0.1287</b>	<b>0.0773</b>	<b>1.4517</b>	<b>4.5500e-003</b>	<b>0.4499</b>	<b>2.8600e-003</b>	<b>0.4527</b>	<b>0.1219</b>	<b>2.6300e-003</b>	<b>0.1245</b>		<b>481.7899</b>	<b>481.7899</b>	<b>8.8600e-003</b>	<b>9.3200e-003</b>	<b>484.7897</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

**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	11.3944	11.1241	114.4817	0.2587	28.7504	0.1821	28.9325	7.6589	0.1691	7.8280		27,241.04 03	27,241.04 03	1.7202	1.0522	27,597.61 04
Unmitigated	11.3944	11.1241	114.4817	0.2587	28.7504	0.1821	28.9325	7.6589	0.1691	7.8280		27,241.04 03	27,241.04 03	1.7202	1.0522	27,597.61 04

**4.2 Trip Summary Information**

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Condo/Townhouse High Rise	1,884.75	1,884.75	1,884.75	6,440,477	6,440,477
Health Club	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Recreational Swimming Pool	0.00	0.00	0.00		
Single Family Housing	2,110.92	2,110.92	2,110.92	7,213,334	7,213,334
<b>Total</b>	<b>3,995.67</b>	<b>3,995.67</b>	<b>3,995.67</b>	<b>13,653,811</b>	<b>13,653,811</b>

**4.3 Trip Type Information**

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

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

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Condo/Townhouse High Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	52	39	9
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Recreational Swimming Pool	16.60	8.40	6.90	33.00	48.00	19.00	52	39	9
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
City Park	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Condo/Townhouse High Rise	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Health Club	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Parking Lot	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Recreational Swimming Pool	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Single Family Housing	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318

**5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

**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	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.2209	1.8907	0.8261	0.0121		0.1526	0.1526		0.1526	0.1526		2,409.7247	2,409.7247	0.0462	0.0442	2,424.0445
NaturalGas Unmitigated	0.2209	1.8907	0.8261	0.0121		0.1526	0.1526		0.1526	0.1526		2,409.7247	2,409.7247	0.0462	0.0442	2,424.0445

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

**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**

**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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	6264.8	0.0676	0.5773	0.2457	3.6900e-003		0.0467	0.0467		0.0467	0.0467		737.0357	737.0357	0.0141	0.0135	741.4155
Health Club	528.959	5.7000e-003	0.0519	0.0436	3.1000e-004		3.9400e-003	3.9400e-003		3.9400e-003	3.9400e-003		62.2305	62.2305	1.1900e-003	1.1400e-003	62.6003
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	13688.9	0.1476	1.2615	0.5368	8.0500e-003		0.1020	0.1020		0.1020	0.1020		1,610.4586	1,610.4586	0.0309	0.0295	1,620.0287
<b>Total</b>		<b>0.2209</b>	<b>1.8907</b>	<b>0.8261</b>	<b>0.0121</b>		<b>0.1526</b>	<b>0.1526</b>		<b>0.1526</b>	<b>0.1526</b>		<b>2,409.7247</b>	<b>2,409.7247</b>	<b>0.0462</b>	<b>0.0442</b>	<b>2,424.0445</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

**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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	6.2648	0.0676	0.5773	0.2457	3.6900e-003		0.0467	0.0467		0.0467	0.0467		737.0357	737.0357	0.0141	0.0135	741.4155
Health Club	0.528959	5.7000e-003	0.0519	0.0436	3.1000e-004		3.9400e-003	3.9400e-003		3.9400e-003	3.9400e-003		62.2305	62.2305	1.1900e-003	1.1400e-003	62.6003
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	13.6889	0.1476	1.2615	0.5368	8.0500e-003		0.1020	0.1020		0.1020	0.1020		1,610.4586	1,610.4586	0.0309	0.0295	1,620.0287
<b>Total</b>		<b>0.2209</b>	<b>1.8907</b>	<b>0.8261</b>	<b>0.0121</b>		<b>0.1526</b>	<b>0.1526</b>		<b>0.1526</b>	<b>0.1526</b>		<b>2,409.7247</b>	<b>2,409.7247</b>	<b>0.0462</b>	<b>0.0442</b>	<b>2,424.0445</b>

**6.0 Area Detail**

**6.1 Mitigation Measures Area**

Use only Natural Gas Hearths

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

**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	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	13.1725	5.8911	32.9393	0.0370		0.6175	0.6175		0.6175	0.6175	0.0000	7,125.9438	7,125.9438	0.1883	0.1296	7,169.2821
Unmitigated	109.7397	8.0499	219.2551	0.4829		28.5098	28.5098		28.5098	28.5098	3,475.1267	6,733.1203	10,208.2470	10.4163	0.2359	10,538.9427

**6.2 Area by SubCategory**

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.9329					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	10.6730					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	97.2154	7.6976	188.6727	0.4813		28.3401	28.3401		28.3401	28.3401	3,475.1267	6,678.0000	10,153.1267	10.3635	0.2359	10,482.5026
Landscaping	0.9184	0.3523	30.5824	1.6200e-003		0.1697	0.1697		0.1697	0.1697		55.1203	55.1203	0.0528		56.4402
<b>Total</b>	<b>109.7397</b>	<b>8.0499</b>	<b>219.2551</b>	<b>0.4829</b>		<b>28.5098</b>	<b>28.5098</b>		<b>28.5098</b>	<b>28.5098</b>	<b>3,475.1267</b>	<b>6,733.1203</b>	<b>10,208.2470</b>	<b>10.4163</b>	<b>0.2359</b>	<b>10,538.9427</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

**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	0.9329					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	10.6730					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.6482	5.5388	2.3569	0.0354		0.4478	0.4478		0.4478	0.4478	0.0000	7,070.8235	7,070.8235	0.1355	0.1296	7,112.8419
Landscaping	0.9184	0.3523	30.5824	1.6200e-003		0.1697	0.1697		0.1697	0.1697		55.1203	55.1203	0.0528		56.4402
<b>Total</b>	<b>13.1725</b>	<b>5.8911</b>	<b>32.9393</b>	<b>0.0370</b>		<b>0.6175</b>	<b>0.6175</b>		<b>0.6175</b>	<b>0.6175</b>	<b>0.0000</b>	<b>7,125.9438</b>	<b>7,125.9438</b>	<b>0.1883</b>	<b>0.1296</b>	<b>7,169.2821</b>

**7.0 Water Detail**

**7.1 Mitigation Measures Water**

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Summer

**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**

Institute Recycling and Composting Services

**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**

---

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**Bouquet Canyon Project Addendum\_Mitigated**

**Los Angeles-South Coast County, Annual**

**1.0 Project Characteristics**

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	10.52	1000sqft	0.24	10,522.00	0
City Park	2.65	Acre	2.65	115,434.00	0
Health Club	10.75	1000sqft	0.25	10,750.00	0
Recreational Swimming Pool	9.68	1000sqft	0.22	9,676.00	0
Condo/Townhouse High Rise	175.00	Dwelling Unit	2.73	175,000.00	501
Single Family Housing	196.00	Dwelling Unit	63.64	352,800.00	561

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	33
<b>Climate Zone</b>	9			<b>Operational Year</b>	2026
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MWhr)</b>	390.98	<b>CH4 Intensity (lb/MWhr)</b>	0.033	<b>N2O Intensity (lb/MWhr)</b>	0.004

**1.3 User Entered Comments & Non-Default Data**

Project Characteristics -

Land Use - per project description

Construction Phase - per construction questionnaire

Trips and VMT - Earthwork would be balanced on-site.

Demolition - per CalEEMod formula and data in AQ construction questionnaire

Grading - per email communication

Vehicle Trips - as conservative analysis, this run uses the same trip generation rate as the adopted EIR.





Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	75.00	792.00
tblConstructionPhase	NumDays	1,110.00	783.00
tblConstructionPhase	NumDays	70.00	22.00
tblConstructionPhase	NumDays	110.00	262.00
tblConstructionPhase	NumDays	75.00	22.00
tblGrading	AcresOfGrading	786.00	0.00
tblGrading	MaterialExported	0.00	2,800,000.00
tblGrading	MaterialImported	0.00	2,800,000.00
tblLandUse	LandUseSquareFeet	10,520.00	10,522.00
tblLandUse	LandUseSquareFeet	9,680.00	9,676.00
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingVehicleClass	HHDT	MHDT
tblTripsAndVMT	HaulingVehicleClass	HHDT	MHDT
tblTripsAndVMT	HaulingVehicleClass	HHDT	MHDT
tblTripsAndVMT	HaulingVehicleClass	HHDT	MHDT
tblTripsAndVMT	HaulingVehicleClass	HHDT	MHDT
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	ST_TR	4.91	10.77
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	9.10	0.00
tblVehicleTrips	ST_TR	9.54	10.77

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	4.09	10.77
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	13.60	0.00
tblVehicleTrips	SU_TR	8.55	10.77
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	5.44	10.77
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	28.82	0.00
tblVehicleTrips	WD_TR	9.44	10.77

**2.0 Emissions Summary**

---

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

**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					
2022	0.2338	2.6799	2.0661	5.0000e-003	0.6616	0.0901	0.7516	0.2151	0.0832	0.2983	0.0000	451.7230	451.7230	0.0920	0.0226	460.7665
2023	0.3658	4.3583	3.5089	9.0200e-003	0.9823	0.1269	1.1092	0.3794	0.1168	0.4962	0.0000	817.2733	817.2733	0.1630	0.0437	834.3632
2024	0.5283	2.0796	3.2543	7.8500e-003	0.4028	0.0822	0.4850	0.1080	0.0774	0.1855	0.0000	714.1327	714.1327	0.0820	0.0258	723.8628
2025	0.8829	2.1942	3.6567	9.0200e-003	0.4959	0.0797	0.5756	0.1329	0.0753	0.2083	0.0000	824.2778	824.2778	0.0858	0.0291	835.1070
2026	0.8762	2.1841	3.5827	8.8800e-003	0.4959	0.0796	0.5755	0.1329	0.0752	0.2082	0.0000	813.8884	813.8884	0.0851	0.0283	824.4494
2027	0.4033	0.3462	0.6367	1.5500e-003	0.0976	0.0132	0.1108	0.0261	0.0127	0.0388	0.0000	142.1905	142.1905	0.0118	3.9600e-003	143.6667
<b>Maximum</b>	<b>0.8829</b>	<b>4.3583</b>	<b>3.6567</b>	<b>9.0200e-003</b>	<b>0.9823</b>	<b>0.1269</b>	<b>1.1092</b>	<b>0.3794</b>	<b>0.1168</b>	<b>0.4962</b>	<b>0.0000</b>	<b>824.2778</b>	<b>824.2778</b>	<b>0.1630</b>	<b>0.0437</b>	<b>835.1070</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**2.1 Overall Construction**

**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					
2022	0.0853	0.8728	2.2678	5.0000e-003	0.2774	0.0104	0.2877	0.0901	0.0101	0.1002	0.0000	451.7227	451.7227	0.0920	0.0226	460.7662
2023	0.1418	1.6269	3.9419	9.0200e-003	0.4273	0.0111	0.4384	0.1610	0.0110	0.1721	0.0000	817.2727	817.2727	0.1630	0.0437	834.3627
2024	0.3813	0.6454	3.4330	7.8500e-003	0.3139	8.8300e-003	0.3227	0.0862	8.6000e-003	0.0948	0.0000	714.1324	714.1324	0.0820	0.0258	723.8625
2025	0.7289	0.7258	3.8392	9.0200e-003	0.3864	9.9700e-003	0.3963	0.1060	9.7000e-003	0.1157	0.0000	824.2774	824.2774	0.0858	0.0291	835.1066
2026	0.7221	0.7158	3.7653	8.8800e-003	0.3864	9.8400e-003	0.3962	0.1060	9.5800e-003	0.1156	0.0000	813.8880	813.8880	0.0851	0.0283	824.4490
2027	0.3753	0.1006	0.6606	1.5500e-003	0.0758	1.6300e-003	0.0775	0.0207	1.5800e-003	0.0223	0.0000	142.1904	142.1904	0.0118	3.9600e-003	143.6666
<b>Maximum</b>	<b>0.7289</b>	<b>1.6269</b>	<b>3.9419</b>	<b>9.0200e-003</b>	<b>0.4273</b>	<b>0.0111</b>	<b>0.4384</b>	<b>0.1610</b>	<b>0.0110</b>	<b>0.1721</b>	<b>0.0000</b>	<b>824.2774</b>	<b>824.2774</b>	<b>0.1630</b>	<b>0.0437</b>	<b>835.1066</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>26.01</b>	<b>66.14</b>	<b>-7.20</b>	<b>0.00</b>	<b>40.46</b>	<b>89.02</b>	<b>46.81</b>	<b>42.67</b>	<b>88.51</b>	<b>56.75</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	10-3-2022	1-2-2023	2.2630	0.7270
2	1-3-2023	4-2-2023	1.7361	0.6504
3	4-3-2023	7-2-2023	1.7442	0.6465
4	7-3-2023	10-2-2023	1.1692	0.4334
6	1-3-2024	4-2-2024	0.4387	0.1303

## Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

7	4-3-2024	7-2-2024	0.6088	0.2073
8	7-3-2024	10-2-2024	0.7497	0.3159
9	10-3-2024	1-2-2025	0.8185	0.3727
10	1-3-2025	4-2-2025	0.7595	0.3599
11	4-3-2025	7-2-2025	0.7603	0.3562
12	7-3-2025	10-2-2025	0.7688	0.3603
13	10-3-2025	1-2-2026	0.7764	0.3680
14	1-3-2026	4-2-2026	0.7553	0.3557
15	4-3-2026	7-2-2026	0.7563	0.3522
16	7-3-2026	10-2-2026	0.7648	0.3563
17	10-3-2026	1-2-2027	0.7722	0.3637
18	1-3-2027	4-2-2027	0.4635	0.2491
19	4-3-2027	7-2-2027	0.1892	0.1516
20	7-3-2027	9-30-2027	0.0873	0.0700
		Highest	2.2630	0.7270

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

**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	tons/yr										MT/yr					
Area	3.4481	0.1403	6.1812	6.2200e-003		0.3755	0.3755		0.3755	0.3755	39.4073	81.9778	121.3851	0.1235	2.6700e-003	125.2698
Energy	0.0403	0.3451	0.1508	2.2000e-003		0.0279	0.0279		0.0279	0.0279	0.0000	820.9792	820.9792	0.0433	0.0116	825.5271
Mobile	2.0043	2.2145	20.6124	0.0456	5.1306	0.0331	5.1637	1.3689	0.0307	1.3996	0.0000	4,354.0687	4,354.0687	0.2902	0.1822	4,415.6131
Waste						0.0000	0.0000		0.0000	0.0000	86.7157	0.0000	86.7157	5.1248	0.0000	214.8345
Water						0.0000	0.0000		0.0000	0.0000	8.0520	96.3146	104.3667	0.8352	0.0205	131.3584
<b>Total</b>	<b>5.4926</b>	<b>2.6998</b>	<b>26.9443</b>	<b>0.0540</b>	<b>5.1306</b>	<b>0.4364</b>	<b>5.5670</b>	<b>1.3689</b>	<b>0.4341</b>	<b>1.8029</b>	<b>134.1750</b>	<b>5,353.3403</b>	<b>5,487.5153</b>	<b>6.4168</b>	<b>0.2170</b>	<b>5,712.6029</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**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	2.2410	0.1133	3.8523	6.4000e-004		0.0268	0.0268		0.0268	0.0268	0.0000	86.4323	86.4323	7.5200e-003	1.4700e-003	87.0585
Energy	0.0403	0.3451	0.1508	2.2000e-003		0.0279	0.0279		0.0279	0.0279	0.0000	820.9792	820.9792	0.0433	0.0116	825.5271
Mobile	2.0043	2.2145	20.6124	0.0456	5.1306	0.0331	5.1637	1.3689	0.0307	1.3996	0.0000	4,354.0687	4,354.0687	0.2902	0.1822	4,415.6131
Waste						0.0000	0.0000		0.0000	0.0000	43.3579	0.0000	43.3579	2.5624	0.0000	107.4173
Water						0.0000	0.0000		0.0000	0.0000	8.0520	96.3146	104.3667	0.8352	0.0205	131.3584
<b>Total</b>	<b>4.2855</b>	<b>2.6728</b>	<b>24.6154</b>	<b>0.0484</b>	<b>5.1306</b>	<b>0.0878</b>	<b>5.2183</b>	<b>1.3689</b>	<b>0.0854</b>	<b>1.4543</b>	<b>51.4099</b>	<b>5,357.7948</b>	<b>5,409.2047</b>	<b>3.7385</b>	<b>0.2158</b>	<b>5,566.9743</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>21.98</b>	<b>1.00</b>	<b>8.64</b>	<b>10.33</b>	<b>0.00</b>	<b>79.89</b>	<b>6.26</b>	<b>0.00</b>	<b>80.32</b>	<b>19.34</b>	<b>61.68</b>	<b>-0.08</b>	<b>1.43</b>	<b>41.74</b>	<b>0.55</b>	<b>2.55</b>

**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	9/1/2022	9/1/2023	5	262	
2	Demolition	Demolition	10/3/2022	11/1/2022	5	22	
3	Paving	Paving	2/1/2024	3/1/2024	5	22	

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

4	Building Construction	Building Construction	2/15/2024	2/15/2027	5	783
5	Architectural Coating	Architectural Coating	8/1/2024	8/13/2027	5	792

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.24**

**Residential Indoor: 1,068,795; Residential Outdoor: 356,265; Non-Residential Indoor: 16,125; Non-Residential Outdoor: 5,375; Striped Parking Area: 631 (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
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**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	700,000.00	14.70	6.90	0.50	LD_Mix	HDT_Mix	MHDT
Demolition	6	15.00	0.00	112.00	14.70	6.90	0.50	LD_Mix	HDT_Mix	MHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	MHDT
Building Construction	9	258.00	64.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	MHDT
Architectural Coating	1	52.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	MHDT

**3.1 Mitigation Measures Construction**

Use Cleaner Engines for Construction Equipment

Replace Ground Cover

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.2 Grading - 2022**

**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					0.5786	0.0000	0.5786	0.1919	0.0000	0.1919	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1577	1.6897	1.2633	2.7000e-003		0.0711	0.0711		0.0654	0.0654	0.0000	237.2255	237.2255	0.0767	0.0000	239.1436
<b>Total</b>	<b>0.1577</b>	<b>1.6897</b>	<b>1.2633</b>	<b>2.7000e-003</b>	<b>0.5786</b>	<b>0.0711</b>	<b>0.6497</b>	<b>0.1919</b>	<b>0.0654</b>	<b>0.2574</b>	<b>0.0000</b>	<b>237.2255</b>	<b>237.2255</b>	<b>0.0767</b>	<b>0.0000</b>	<b>239.1436</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0435	0.7040	0.5375	1.7700e-003	0.0594	5.2100e-003	0.0646	0.0183	4.9800e-003	0.0232	0.0000	167.6393	167.6393	4.5300e-003	0.0224	174.4163
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	2.9800e-003	2.4800e-003	0.0323	9.0000e-005	9.5300e-003	6.0000e-005	9.6000e-003	2.5300e-003	6.0000e-005	2.5900e-003	0.0000	7.8915	7.8915	2.3000e-004	2.1000e-004	7.9610
<b>Total</b>	<b>0.0465</b>	<b>0.7064</b>	<b>0.5698</b>	<b>1.8600e-003</b>	<b>0.0690</b>	<b>5.2700e-003</b>	<b>0.0742</b>	<b>0.0208</b>	<b>5.0400e-003</b>	<b>0.0258</b>	<b>0.0000</b>	<b>175.5308</b>	<b>175.5308</b>	<b>4.7600e-003</b>	<b>0.0226</b>	<b>182.3772</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.2 Grading - 2022**

**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					0.2144	0.0000	0.2144	0.0711	0.0000	0.0711	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0331	0.1436	1.4355	2.7000e-003		4.4200e-003	4.4200e-003		4.4200e-003	4.4200e-003	0.0000	237.2252	237.2252	0.0767	0.0000	239.1433
<b>Total</b>	<b>0.0331</b>	<b>0.1436</b>	<b>1.4355</b>	<b>2.7000e-003</b>	<b>0.2144</b>	<b>4.4200e-003</b>	<b>0.2188</b>	<b>0.0711</b>	<b>4.4200e-003</b>	<b>0.0755</b>	<b>0.0000</b>	<b>237.2252</b>	<b>237.2252</b>	<b>0.0767</b>	<b>0.0000</b>	<b>239.1433</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0435	0.7040	0.5375	1.7700e-003	0.0497	5.2100e-003	0.0549	0.0159	4.9800e-003	0.0209	0.0000	167.6393	167.6393	4.5300e-003	0.0224	174.4163
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	2.9800e-003	2.4800e-003	0.0323	9.0000e-005	7.3900e-003	6.0000e-005	7.4500e-003	2.0000e-003	6.0000e-005	2.0600e-003	0.0000	7.8915	7.8915	2.3000e-004	2.1000e-004	7.9610
<b>Total</b>	<b>0.0465</b>	<b>0.7064</b>	<b>0.5698</b>	<b>1.8600e-003</b>	<b>0.0571</b>	<b>5.2700e-003</b>	<b>0.0623</b>	<b>0.0179</b>	<b>5.0400e-003</b>	<b>0.0229</b>	<b>0.0000</b>	<b>175.5308</b>	<b>175.5308</b>	<b>4.7600e-003</b>	<b>0.0226</b>	<b>182.3772</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**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					0.8436	0.0000	0.8436	0.3376	0.0000	0.3376	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2907	3.0201	2.4545	5.4300e-003		0.1246	0.1246		0.1147	0.1147	0.0000	477.1831	477.1831	0.1543	0.0000	481.0413
<b>Total</b>	<b>0.2907</b>	<b>3.0201</b>	<b>2.4545</b>	<b>5.4300e-003</b>	<b>0.8436</b>	<b>0.1246</b>	<b>0.9682</b>	<b>0.3376</b>	<b>0.1147</b>	<b>0.4523</b>	<b>0.0000</b>	<b>477.1831</b>	<b>477.1831</b>	<b>0.1543</b>	<b>0.0000</b>	<b>481.0413</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0696	1.3338	0.9947	3.4200e-003	0.1195	2.1300e-003	0.1217	0.0367	2.0300e-003	0.0388	0.0000	324.6346	324.6346	8.2700e-003	0.0433	337.7378
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	5.5600e-003	4.4100e-003	0.0598	1.7000e-004	0.0192	1.2000e-004	0.0193	5.0900e-003	1.1000e-004	5.2000e-003	0.0000	15.4556	15.4556	4.1000e-004	4.0000e-004	15.5841
<b>Total</b>	<b>0.0751</b>	<b>1.3382</b>	<b>1.0545</b>	<b>3.5900e-003</b>	<b>0.1387</b>	<b>2.2500e-003</b>	<b>0.1410</b>	<b>0.0418</b>	<b>2.1400e-003</b>	<b>0.0440</b>	<b>0.0000</b>	<b>340.0902</b>	<b>340.0902</b>	<b>8.6800e-003</b>	<b>0.0437</b>	<b>353.3219</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**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					0.3126	0.0000	0.3126	0.1251	0.0000	0.1251	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0666	0.2888	2.8874	5.4300e-003		8.8800e-003	8.8800e-003		8.8800e-003	8.8800e-003	0.0000	477.1825	477.1825	0.1543	0.0000	481.0408
<b>Total</b>	<b>0.0666</b>	<b>0.2888</b>	<b>2.8874</b>	<b>5.4300e-003</b>	<b>0.3126</b>	<b>8.8800e-003</b>	<b>0.3214</b>	<b>0.1251</b>	<b>8.8800e-003</b>	<b>0.1340</b>	<b>0.0000</b>	<b>477.1825</b>	<b>477.1825</b>	<b>0.1543</b>	<b>0.0000</b>	<b>481.0408</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0696	1.3338	0.9947	3.4200e-003	0.0999	2.1300e-003	0.1020	0.0319	2.0300e-003	0.0340	0.0000	324.6346	324.6346	8.2700e-003	0.0433	337.7378
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	5.5600e-003	4.4100e-003	0.0598	1.7000e-004	0.0149	1.2000e-004	0.0150	4.0300e-003	1.1000e-004	4.1400e-003	0.0000	15.4556	15.4556	4.1000e-004	4.0000e-004	15.5841
<b>Total</b>	<b>0.0751</b>	<b>1.3382</b>	<b>1.0545</b>	<b>3.5900e-003</b>	<b>0.1148</b>	<b>2.2500e-003</b>	<b>0.1170</b>	<b>0.0360</b>	<b>2.1400e-003</b>	<b>0.0381</b>	<b>0.0000</b>	<b>340.0902</b>	<b>340.0902</b>	<b>8.6800e-003</b>	<b>0.0437</b>	<b>353.3219</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.3 Demolition - 2022**

**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					0.0121	0.0000	0.0121	1.8400e-003	0.0000	1.8400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0290	0.2829	0.2265	4.3000e-004		0.0137	0.0137		0.0127	0.0127	0.0000	37.3893	37.3893	0.0105	0.0000	37.6518
<b>Total</b>	<b>0.0290</b>	<b>0.2829</b>	<b>0.2265</b>	<b>4.3000e-004</b>	<b>0.0121</b>	<b>0.0137</b>	<b>0.0258</b>	<b>1.8400e-003</b>	<b>0.0127</b>	<b>0.0146</b>	<b>0.0000</b>	<b>37.3893</b>	<b>37.3893</b>	<b>0.0105</b>	<b>0.0000</b>	<b>37.6518</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	3.4000e-004	2.6000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0808	0.0808	0.0000	1.0000e-005	0.0840
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	5.7000e-004	4.7000e-004	6.1300e-003	2.0000e-005	1.8100e-003	1.0000e-005	1.8200e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.4967	1.4967	4.0000e-005	4.0000e-005	1.5098
<b>Total</b>	<b>5.9000e-004</b>	<b>8.1000e-004</b>	<b>6.3900e-003</b>	<b>2.0000e-005</b>	<b>1.8400e-003</b>	<b>1.0000e-005</b>	<b>1.8500e-003</b>	<b>4.9000e-004</b>	<b>1.0000e-005</b>	<b>5.0000e-004</b>	<b>0.0000</b>	<b>1.5775</b>	<b>1.5775</b>	<b>4.0000e-005</b>	<b>5.0000e-005</b>	<b>1.5939</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.3 Demolition - 2022**

**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					4.5000e-003	0.0000	4.5000e-003	6.8000e-004	0.0000	6.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.0900e-003	0.0220	0.2561	4.3000e-004		6.8000e-004	6.8000e-004		6.8000e-004	6.8000e-004	0.0000	37.3892	37.3892	0.0105	0.0000	37.6518
<b>Total</b>	<b>5.0900e-003</b>	<b>0.0220</b>	<b>0.2561</b>	<b>4.3000e-004</b>	<b>4.5000e-003</b>	<b>6.8000e-004</b>	<b>5.1800e-003</b>	<b>6.8000e-004</b>	<b>6.8000e-004</b>	<b>1.3600e-003</b>	<b>0.0000</b>	<b>37.3892</b>	<b>37.3892</b>	<b>0.0105</b>	<b>0.0000</b>	<b>37.6518</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	3.4000e-004	2.6000e-004	0.0000	2.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0808	0.0808	0.0000	1.0000e-005	0.0840
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	5.7000e-004	4.7000e-004	6.1300e-003	2.0000e-005	1.4000e-003	1.0000e-005	1.4100e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.4967	1.4967	4.0000e-005	4.0000e-005	1.5098
<b>Total</b>	<b>5.9000e-004</b>	<b>8.1000e-004</b>	<b>6.3900e-003</b>	<b>2.0000e-005</b>	<b>1.4200e-003</b>	<b>1.0000e-005</b>	<b>1.4400e-003</b>	<b>3.9000e-004</b>	<b>1.0000e-005</b>	<b>4.0000e-004</b>	<b>0.0000</b>	<b>1.5775</b>	<b>1.5775</b>	<b>4.0000e-005</b>	<b>5.0000e-005</b>	<b>1.5939</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.4 Paving - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0109	0.1048	0.1609	2.5000e-004		5.1500e-003	5.1500e-003		4.7400e-003	4.7400e-003	0.0000	22.0292	22.0292	7.1200e-003	0.0000	22.2073
Paving	3.1000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0112</b>	<b>0.1048</b>	<b>0.1609</b>	<b>2.5000e-004</b>		<b>5.1500e-003</b>	<b>5.1500e-003</b>		<b>4.7400e-003</b>	<b>4.7400e-003</b>	<b>0.0000</b>	<b>22.0292</b>	<b>22.0292</b>	<b>7.1200e-003</b>	<b>0.0000</b>	<b>22.2073</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.9000e-004	3.7000e-004	5.2500e-003	2.0000e-005	1.8100e-003	1.0000e-005	1.8200e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.4273	1.4273	3.0000e-005	3.0000e-005	1.4385
<b>Total</b>	<b>4.9000e-004</b>	<b>3.7000e-004</b>	<b>5.2500e-003</b>	<b>2.0000e-005</b>	<b>1.8100e-003</b>	<b>1.0000e-005</b>	<b>1.8200e-003</b>	<b>4.8000e-004</b>	<b>1.0000e-005</b>	<b>4.9000e-004</b>	<b>0.0000</b>	<b>1.4273</b>	<b>1.4273</b>	<b>3.0000e-005</b>	<b>3.0000e-005</b>	<b>1.4385</b>



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.4 Paving - 2024**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.0900e-003	0.0134	0.1903	2.5000e-004		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	22.0292	22.0292	7.1200e-003	0.0000	22.2073
Paving	3.1000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>3.4000e-003</b>	<b>0.0134</b>	<b>0.1903</b>	<b>2.5000e-004</b>		<b>4.1000e-004</b>	<b>4.1000e-004</b>		<b>4.1000e-004</b>	<b>4.1000e-004</b>	<b>0.0000</b>	<b>22.0292</b>	<b>22.0292</b>	<b>7.1200e-003</b>	<b>0.0000</b>	<b>22.2073</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.9000e-004	3.7000e-004	5.2500e-003	2.0000e-005	1.4000e-003	1.0000e-005	1.4100e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.4273	1.4273	3.0000e-005	3.0000e-005	1.4385
<b>Total</b>	<b>4.9000e-004</b>	<b>3.7000e-004</b>	<b>5.2500e-003</b>	<b>2.0000e-005</b>	<b>1.4000e-003</b>	<b>1.0000e-005</b>	<b>1.4100e-003</b>	<b>3.8000e-004</b>	<b>1.0000e-005</b>	<b>3.9000e-004</b>	<b>0.0000</b>	<b>1.4273</b>	<b>1.4273</b>	<b>3.0000e-005</b>	<b>3.0000e-005</b>	<b>1.4385</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1685	1.5393	1.8511	3.0900e-003		0.0702	0.0702		0.0661	0.0661	0.0000	265.4672	265.4672	0.0628	0.0000	267.0366
<b>Total</b>	<b>0.1685</b>	<b>1.5393</b>	<b>1.8511</b>	<b>3.0900e-003</b>		<b>0.0702</b>	<b>0.0702</b>		<b>0.0661</b>	<b>0.0661</b>	<b>0.0000</b>	<b>265.4672</b>	<b>265.4672</b>	<b>0.0628</b>	<b>0.0000</b>	<b>267.0366</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0200e-003	0.2959	0.1082	1.3400e-003	0.0462	1.4300e-003	0.0476	0.0133	1.3600e-003	0.0147	0.0000	131.2403	131.2403	4.4700e-003	0.0189	136.9860
Worker	0.0875	0.0665	0.9400	2.7300e-003	0.3237	1.9100e-003	0.3256	0.0860	1.7600e-003	0.0877	0.0000	255.5385	255.5385	6.2100e-003	6.2300e-003	257.5515
<b>Total</b>	<b>0.0956</b>	<b>0.3624</b>	<b>1.0482</b>	<b>4.0700e-003</b>	<b>0.3699</b>	<b>3.3400e-003</b>	<b>0.3732</b>	<b>0.0993</b>	<b>3.1200e-003</b>	<b>0.1024</b>	<b>0.0000</b>	<b>386.7788</b>	<b>386.7788</b>	<b>0.0107</b>	<b>0.0251</b>	<b>394.5375</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2024**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0375	0.2559	1.9992	3.0900e-003		4.6700e-003	4.6700e-003		4.6700e-003	4.6700e-003	0.0000	265.4669	265.4669	0.0628	0.0000	267.0363
<b>Total</b>	<b>0.0375</b>	<b>0.2559</b>	<b>1.9992</b>	<b>3.0900e-003</b>		<b>4.6700e-003</b>	<b>4.6700e-003</b>		<b>4.6700e-003</b>	<b>4.6700e-003</b>	<b>0.0000</b>	<b>265.4669</b>	<b>265.4669</b>	<b>0.0628</b>	<b>0.0000</b>	<b>267.0363</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0200e-003	0.2959	0.1082	1.3400e-003	0.0377	1.4300e-003	0.0391	0.0113	1.3600e-003	0.0126	0.0000	131.2403	131.2403	4.4700e-003	0.0189	136.9860
Worker	0.0875	0.0665	0.9400	2.7300e-003	0.2508	1.9100e-003	0.2527	0.0681	1.7600e-003	0.0698	0.0000	255.5385	255.5385	6.2100e-003	6.2300e-003	257.5515
<b>Total</b>	<b>0.0956</b>	<b>0.3624</b>	<b>1.0482</b>	<b>4.0700e-003</b>	<b>0.2885</b>	<b>3.3400e-003</b>	<b>0.2918</b>	<b>0.0793</b>	<b>3.1200e-003</b>	<b>0.0824</b>	<b>0.0000</b>	<b>386.7788</b>	<b>386.7788</b>	<b>0.0107</b>	<b>0.0251</b>	<b>394.5375</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2025**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
<b>Total</b>	<b>0.1785</b>	<b>1.6273</b>	<b>2.0991</b>	<b>3.5200e-003</b>		<b>0.0689</b>	<b>0.0689</b>		<b>0.0648</b>	<b>0.0648</b>	<b>0.0000</b>	<b>302.6549</b>	<b>302.6549</b>	<b>0.0711</b>	<b>0.0000</b>	<b>304.4335</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.8800e-003	0.3357	0.1211	1.5000e-003	0.0526	1.6300e-003	0.0543	0.0152	1.5600e-003	0.0168	0.0000	146.8884	146.8884	5.1300e-003	0.0212	153.3264
Worker	0.0934	0.0680	0.9991	3.0100e-003	0.3689	2.0800e-003	0.3710	0.0980	1.9100e-003	0.0999	0.0000	284.1450	284.1450	6.3800e-003	6.6300e-003	286.2815
<b>Total</b>	<b>0.1023</b>	<b>0.4037</b>	<b>1.1202</b>	<b>4.5100e-003</b>	<b>0.4216</b>	<b>3.7100e-003</b>	<b>0.4253</b>	<b>0.1132</b>	<b>3.4700e-003</b>	<b>0.1167</b>	<b>0.0000</b>	<b>431.0334</b>	<b>431.0334</b>	<b>0.0115</b>	<b>0.0278</b>	<b>439.6079</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2025**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0428	0.2916	2.2786	3.5200e-003		5.3200e-003	5.3200e-003		5.3200e-003	5.3200e-003	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
<b>Total</b>	<b>0.0428</b>	<b>0.2916</b>	<b>2.2786</b>	<b>3.5200e-003</b>		<b>5.3200e-003</b>	<b>5.3200e-003</b>		<b>5.3200e-003</b>	<b>5.3200e-003</b>	<b>0.0000</b>	<b>302.6545</b>	<b>302.6545</b>	<b>0.0711</b>	<b>0.0000</b>	<b>304.4331</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.8800e-003	0.3357	0.1211	1.5000e-003	0.0430	1.6300e-003	0.0446	0.0128	1.5600e-003	0.0144	0.0000	146.8884	146.8884	5.1300e-003	0.0212	153.3264
Worker	0.0934	0.0680	0.9991	3.0100e-003	0.2858	2.0800e-003	0.2879	0.0776	1.9100e-003	0.0795	0.0000	284.1450	284.1450	6.3800e-003	6.6300e-003	286.2815
<b>Total</b>	<b>0.1023</b>	<b>0.4037</b>	<b>1.1202</b>	<b>4.5100e-003</b>	<b>0.3288</b>	<b>3.7100e-003</b>	<b>0.3325</b>	<b>0.0904</b>	<b>3.4700e-003</b>	<b>0.0939</b>	<b>0.0000</b>	<b>431.0334</b>	<b>431.0334</b>	<b>0.0115</b>	<b>0.0278</b>	<b>439.6079</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2026**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
<b>Total</b>	<b>0.1785</b>	<b>1.6273</b>	<b>2.0991</b>	<b>3.5200e-003</b>		<b>0.0689</b>	<b>0.0689</b>		<b>0.0648</b>	<b>0.0648</b>	<b>0.0000</b>	<b>302.6549</b>	<b>302.6549</b>	<b>0.0711</b>	<b>0.0000</b>	<b>304.4335</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.6500e-003	0.3332	0.1194	1.4700e-003	0.0526	1.6300e-003	0.0543	0.0152	1.5600e-003	0.0168	0.0000	144.1639	144.1639	5.1600e-003	0.0208	150.4888
Worker	0.0880	0.0617	0.9390	2.9100e-003	0.3689	1.9700e-003	0.3709	0.0980	1.8200e-003	0.0998	0.0000	277.7658	277.7658	5.8000e-003	6.2500e-003	279.7733
<b>Total</b>	<b>0.0966</b>	<b>0.3949</b>	<b>1.0584</b>	<b>4.3800e-003</b>	<b>0.4216</b>	<b>3.6000e-003</b>	<b>0.4252</b>	<b>0.1132</b>	<b>3.3800e-003</b>	<b>0.1166</b>	<b>0.0000</b>	<b>421.9297</b>	<b>421.9297</b>	<b>0.0110</b>	<b>0.0270</b>	<b>430.2621</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2026**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0428	0.2916	2.2786	3.5200e-003		5.3200e-003	5.3200e-003		5.3200e-003	5.3200e-003	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
<b>Total</b>	<b>0.0428</b>	<b>0.2916</b>	<b>2.2786</b>	<b>3.5200e-003</b>		<b>5.3200e-003</b>	<b>5.3200e-003</b>		<b>5.3200e-003</b>	<b>5.3200e-003</b>	<b>0.0000</b>	<b>302.6545</b>	<b>302.6545</b>	<b>0.0711</b>	<b>0.0000</b>	<b>304.4331</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.6500e-003	0.3332	0.1194	1.4700e-003	0.0430	1.6300e-003	0.0446	0.0128	1.5600e-003	0.0144	0.0000	144.1639	144.1639	5.1600e-003	0.0208	150.4888
Worker	0.0880	0.0617	0.9390	2.9100e-003	0.2858	1.9700e-003	0.2878	0.0776	1.8200e-003	0.0794	0.0000	277.7658	277.7658	5.8000e-003	6.2500e-003	279.7733
<b>Total</b>	<b>0.0966</b>	<b>0.3949</b>	<b>1.0584</b>	<b>4.3800e-003</b>	<b>0.3288</b>	<b>3.6000e-003</b>	<b>0.3324</b>	<b>0.0904</b>	<b>3.3800e-003</b>	<b>0.0938</b>	<b>0.0000</b>	<b>421.9297</b>	<b>421.9297</b>	<b>0.0110</b>	<b>0.0270</b>	<b>430.2621</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2027**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0219	0.1995	0.2574	4.3000e-004		8.4400e-003	8.4400e-003		7.9400e-003	7.9400e-003	0.0000	37.1071	37.1071	8.7200e-003	0.0000	37.3252
<b>Total</b>	<b>0.0219</b>	<b>0.1995</b>	<b>0.2574</b>	<b>4.3000e-004</b>		<b>8.4400e-003</b>	<b>8.4400e-003</b>		<b>7.9400e-003</b>	<b>7.9400e-003</b>	<b>0.0000</b>	<b>37.1071</b>	<b>37.1071</b>	<b>8.7200e-003</b>	<b>0.0000</b>	<b>37.3252</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0400e-003	0.0405	0.0145	1.8000e-004	6.4500e-003	2.0000e-004	6.6500e-003	1.8600e-003	1.9000e-004	2.0500e-003	0.0000	17.3276	17.3276	6.3000e-004	2.5000e-003	18.0887
Worker	0.0102	6.9200e-003	0.1089	3.5000e-004	0.0452	2.3000e-004	0.0455	0.0120	2.1000e-004	0.0122	0.0000	33.3666	33.3666	6.5000e-004	7.3000e-004	33.5995
<b>Total</b>	<b>0.0112</b>	<b>0.0475</b>	<b>0.1233</b>	<b>5.3000e-004</b>	<b>0.0517</b>	<b>4.3000e-004</b>	<b>0.0521</b>	<b>0.0139</b>	<b>4.0000e-004</b>	<b>0.0143</b>	<b>0.0000</b>	<b>50.6942</b>	<b>50.6942</b>	<b>1.2800e-003</b>	<b>3.2300e-003</b>	<b>51.6882</b>



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2027**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.2500e-003	0.0358	0.2794	4.3000e-004		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004	0.0000	37.1071	37.1071	8.7200e-003	0.0000	37.3251
<b>Total</b>	<b>5.2500e-003</b>	<b>0.0358</b>	<b>0.2794</b>	<b>4.3000e-004</b>		<b>6.5000e-004</b>	<b>6.5000e-004</b>		<b>6.5000e-004</b>	<b>6.5000e-004</b>	<b>0.0000</b>	<b>37.1071</b>	<b>37.1071</b>	<b>8.7200e-003</b>	<b>0.0000</b>	<b>37.3251</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0400e-003	0.0405	0.0145	1.8000e-004	5.2700e-003	2.0000e-004	5.4700e-003	1.5700e-003	1.9000e-004	1.7600e-003	0.0000	17.3276	17.3276	6.3000e-004	2.5000e-003	18.0887
Worker	0.0102	6.9200e-003	0.1089	3.5000e-004	0.0350	2.3000e-004	0.0353	9.5100e-003	2.1000e-004	9.7200e-003	0.0000	33.3666	33.3666	6.5000e-004	7.3000e-004	33.5995
<b>Total</b>	<b>0.0112</b>	<b>0.0475</b>	<b>0.1233</b>	<b>5.3000e-004</b>	<b>0.0403</b>	<b>4.3000e-004</b>	<b>0.0407</b>	<b>0.0111</b>	<b>4.0000e-004</b>	<b>0.0115</b>	<b>0.0000</b>	<b>50.6942</b>	<b>50.6942</b>	<b>1.2800e-003</b>	<b>3.2300e-003</b>	<b>51.6882</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2343					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.8500e-003	0.0664	0.0987	1.6000e-004		3.3200e-003	3.3200e-003		3.3200e-003	3.3200e-003	0.0000	13.9152	13.9152	7.8000e-004	0.0000	13.9348
<b>Total</b>	<b>0.2442</b>	<b>0.0664</b>	<b>0.0987</b>	<b>1.6000e-004</b>		<b>3.3200e-003</b>	<b>3.3200e-003</b>		<b>3.3200e-003</b>	<b>3.3200e-003</b>	<b>0.0000</b>	<b>13.9152</b>	<b>13.9152</b>	<b>7.8000e-004</b>	<b>0.0000</b>	<b>13.9348</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.4000e-003	6.3800e-003	0.0902	2.6000e-004	0.0311	1.8000e-004	0.0312	8.2500e-003	1.7000e-004	8.4200e-003	0.0000	24.5150	24.5150	6.0000e-004	6.0000e-004	24.7081
<b>Total</b>	<b>8.4000e-003</b>	<b>6.3800e-003</b>	<b>0.0902</b>	<b>2.6000e-004</b>	<b>0.0311</b>	<b>1.8000e-004</b>	<b>0.0312</b>	<b>8.2500e-003</b>	<b>1.7000e-004</b>	<b>8.4200e-003</b>	<b>0.0000</b>	<b>24.5150</b>	<b>24.5150</b>	<b>6.0000e-004</b>	<b>6.0000e-004</b>	<b>24.7081</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2024**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2343					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.6200e-003	7.0200e-003	0.0999	1.6000e-004		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	13.9152	13.9152	7.8000e-004	0.0000	13.9348
<b>Total</b>	<b>0.2359</b>	<b>7.0200e-003</b>	<b>0.0999</b>	<b>1.6000e-004</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>	<b>0.0000</b>	<b>13.9152</b>	<b>13.9152</b>	<b>7.8000e-004</b>	<b>0.0000</b>	<b>13.9348</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.4000e-003	6.3800e-003	0.0902	2.6000e-004	0.0241	1.8000e-004	0.0242	6.5300e-003	1.7000e-004	6.7000e-003	0.0000	24.5150	24.5150	6.0000e-004	6.0000e-004	24.7081
<b>Total</b>	<b>8.4000e-003</b>	<b>6.3800e-003</b>	<b>0.0902</b>	<b>2.6000e-004</b>	<b>0.0241</b>	<b>1.8000e-004</b>	<b>0.0242</b>	<b>6.5300e-003</b>	<b>1.7000e-004</b>	<b>6.7000e-003</b>	<b>0.0000</b>	<b>24.5150</b>	<b>24.5150</b>	<b>6.0000e-004</b>	<b>6.0000e-004</b>	<b>24.7081</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2025**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5611					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3200	33.3200	1.8200e-003	0.0000	33.3654
<b>Total</b>	<b>0.5834</b>	<b>0.1495</b>	<b>0.2361</b>	<b>3.9000e-004</b>		<b>6.7200e-003</b>	<b>6.7200e-003</b>		<b>6.7200e-003</b>	<b>6.7200e-003</b>	<b>0.0000</b>	<b>33.3200</b>	<b>33.3200</b>	<b>1.8200e-003</b>	<b>0.0000</b>	<b>33.3654</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0188	0.0137	0.2014	6.1000e-004	0.0744	4.2000e-004	0.0748	0.0198	3.9000e-004	0.0201	0.0000	57.2695	57.2695	1.2900e-003	1.3400e-003	57.7002
<b>Total</b>	<b>0.0188</b>	<b>0.0137</b>	<b>0.2014</b>	<b>6.1000e-004</b>	<b>0.0744</b>	<b>4.2000e-004</b>	<b>0.0748</b>	<b>0.0198</b>	<b>3.9000e-004</b>	<b>0.0201</b>	<b>0.0000</b>	<b>57.2695</b>	<b>57.2695</b>	<b>1.2900e-003</b>	<b>1.3400e-003</b>	<b>57.7002</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2025**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5611					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.8800e-003	0.0168	0.2391	3.9000e-004		5.2000e-004	5.2000e-004		5.2000e-004	5.2000e-004	0.0000	33.3199	33.3199	1.8200e-003	0.0000	33.3654
<b>Total</b>	<b>0.5650</b>	<b>0.0168</b>	<b>0.2391</b>	<b>3.9000e-004</b>		<b>5.2000e-004</b>	<b>5.2000e-004</b>		<b>5.2000e-004</b>	<b>5.2000e-004</b>	<b>0.0000</b>	<b>33.3199</b>	<b>33.3199</b>	<b>1.8200e-003</b>	<b>0.0000</b>	<b>33.3654</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0188	0.0137	0.2014	6.1000e-004	0.0576	4.2000e-004	0.0580	0.0156	3.9000e-004	0.0160	0.0000	57.2695	57.2695	1.2900e-003	1.3400e-003	57.7002
<b>Total</b>	<b>0.0188</b>	<b>0.0137</b>	<b>0.2014</b>	<b>6.1000e-004</b>	<b>0.0576</b>	<b>4.2000e-004</b>	<b>0.0580</b>	<b>0.0156</b>	<b>3.9000e-004</b>	<b>0.0160</b>	<b>0.0000</b>	<b>57.2695</b>	<b>57.2695</b>	<b>1.2900e-003</b>	<b>1.3400e-003</b>	<b>57.7002</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2026**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5611					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3200	33.3200	1.8200e-003	0.0000	33.3654
<b>Total</b>	<b>0.5834</b>	<b>0.1495</b>	<b>0.2361</b>	<b>3.9000e-004</b>		<b>6.7200e-003</b>	<b>6.7200e-003</b>		<b>6.7200e-003</b>	<b>6.7200e-003</b>	<b>0.0000</b>	<b>33.3200</b>	<b>33.3200</b>	<b>1.8200e-003</b>	<b>0.0000</b>	<b>33.3654</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0177	0.0124	0.1893	5.9000e-004	0.0744	4.0000e-004	0.0748	0.0198	3.7000e-004	0.0201	0.0000	55.9838	55.9838	1.1700e-003	1.2600e-003	56.3884
<b>Total</b>	<b>0.0177</b>	<b>0.0124</b>	<b>0.1893</b>	<b>5.9000e-004</b>	<b>0.0744</b>	<b>4.0000e-004</b>	<b>0.0748</b>	<b>0.0198</b>	<b>3.7000e-004</b>	<b>0.0201</b>	<b>0.0000</b>	<b>55.9838</b>	<b>55.9838</b>	<b>1.1700e-003</b>	<b>1.2600e-003</b>	<b>56.3884</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2026**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5611					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.8800e-003	0.0168	0.2391	3.9000e-004		5.2000e-004	5.2000e-004		5.2000e-004	5.2000e-004	0.0000	33.3199	33.3199	1.8200e-003	0.0000	33.3654
<b>Total</b>	<b>0.5650</b>	<b>0.0168</b>	<b>0.2391</b>	<b>3.9000e-004</b>		<b>5.2000e-004</b>	<b>5.2000e-004</b>		<b>5.2000e-004</b>	<b>5.2000e-004</b>	<b>0.0000</b>	<b>33.3199</b>	<b>33.3199</b>	<b>1.8200e-003</b>	<b>0.0000</b>	<b>33.3654</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0177	0.0124	0.1893	5.9000e-004	0.0576	4.0000e-004	0.0580	0.0156	3.7000e-004	0.0160	0.0000	55.9838	55.9838	1.1700e-003	1.2600e-003	56.3884
<b>Total</b>	<b>0.0177</b>	<b>0.0124</b>	<b>0.1893</b>	<b>5.9000e-004</b>	<b>0.0576</b>	<b>4.0000e-004</b>	<b>0.0580</b>	<b>0.0156</b>	<b>3.7000e-004</b>	<b>0.0160</b>	<b>0.0000</b>	<b>55.9838</b>	<b>55.9838</b>	<b>1.1700e-003</b>	<b>1.2600e-003</b>	<b>56.3884</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2027**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3461					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0138	0.0922	0.1456	2.4000e-004		4.1500e-003	4.1500e-003		4.1500e-003	4.1500e-003	0.0000	20.5537	20.5537	1.1200e-003	0.0000	20.5817
<b>Total</b>	<b>0.3599</b>	<b>0.0922</b>	<b>0.1456</b>	<b>2.4000e-004</b>		<b>4.1500e-003</b>	<b>4.1500e-003</b>		<b>4.1500e-003</b>	<b>4.1500e-003</b>	<b>0.0000</b>	<b>20.5537</b>	<b>20.5537</b>	<b>1.1200e-003</b>	<b>0.0000</b>	<b>20.5817</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0103	7.0200e-003	0.1104	3.5000e-004	0.0459	2.3000e-004	0.0461	0.0122	2.1000e-004	0.0124	0.0000	33.8354	33.8354	6.6000e-004	7.4000e-004	34.0716
<b>Total</b>	<b>0.0103</b>	<b>7.0200e-003</b>	<b>0.1104</b>	<b>3.5000e-004</b>	<b>0.0459</b>	<b>2.3000e-004</b>	<b>0.0461</b>	<b>0.0122</b>	<b>2.1000e-004</b>	<b>0.0124</b>	<b>0.0000</b>	<b>33.8354</b>	<b>33.8354</b>	<b>6.6000e-004</b>	<b>7.4000e-004</b>	<b>34.0716</b>



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2027**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3461					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.3900e-003	0.0104	0.1475	2.4000e-004		3.2000e-004	3.2000e-004		3.2000e-004	3.2000e-004	0.0000	20.5537	20.5537	1.1200e-003	0.0000	20.5817
<b>Total</b>	<b>0.3485</b>	<b>0.0104</b>	<b>0.1475</b>	<b>2.4000e-004</b>		<b>3.2000e-004</b>	<b>3.2000e-004</b>		<b>3.2000e-004</b>	<b>3.2000e-004</b>	<b>0.0000</b>	<b>20.5537</b>	<b>20.5537</b>	<b>1.1200e-003</b>	<b>0.0000</b>	<b>20.5817</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0103	7.0200e-003	0.1104	3.5000e-004	0.0355	2.3000e-004	0.0358	9.6500e-003	2.1000e-004	9.8600e-003	0.0000	33.8354	33.8354	6.6000e-004	7.4000e-004	34.0716
<b>Total</b>	<b>0.0103</b>	<b>7.0200e-003</b>	<b>0.1104</b>	<b>3.5000e-004</b>	<b>0.0355</b>	<b>2.3000e-004</b>	<b>0.0358</b>	<b>9.6500e-003</b>	<b>2.1000e-004</b>	<b>9.8600e-003</b>	<b>0.0000</b>	<b>33.8354</b>	<b>33.8354</b>	<b>6.6000e-004</b>	<b>7.4000e-004</b>	<b>34.0716</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

**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	tons/yr										MT/yr					
Mitigated	2.0043	2.2145	20.6124	0.0456	5.1306	0.0331	5.1637	1.3689	0.0307	1.3996	0.0000	4,354.0687	4,354.0687	0.2902	0.1822	4,415.6131
Unmitigated	2.0043	2.2145	20.6124	0.0456	5.1306	0.0331	5.1637	1.3689	0.0307	1.3996	0.0000	4,354.0687	4,354.0687	0.2902	0.1822	4,415.6131

**4.2 Trip Summary Information**

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Condo/Townhouse High Rise	1,884.75	1,884.75	1,884.75	6,440,477	6,440,477
Health Club	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Recreational Swimming Pool	0.00	0.00	0.00		
Single Family Housing	2,110.92	2,110.92	2,110.92	7,213,334	7,213,334
<b>Total</b>	<b>3,995.67</b>	<b>3,995.67</b>	<b>3,995.67</b>	<b>13,653,811</b>	<b>13,653,811</b>

**4.3 Trip Type Information**

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Condo/Townhouse High Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	52	39	9
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Recreational Swimming Pool	16.60	8.40	6.90	33.00	48.00	19.00	52	39	9
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
City Park	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Condo/Townhouse High Rise	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Health Club	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Parking Lot	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Recreational Swimming Pool	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Single Family Housing	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318

**5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

**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	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	422.0222	422.0222	0.0356	4.3200e-003	424.1994
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	422.0222	422.0222	0.0356	4.3200e-003	424.1994
Natural Gas Mitigated	0.0403	0.3451	0.1508	2.2000e-003		0.0279	0.0279		0.0279	0.0279	0.0000	398.9570	398.9570	7.6500e-003	7.3100e-003	401.3278
Natural Gas Unmitigated	0.0403	0.3451	0.1508	2.2000e-003		0.0279	0.0279		0.0279	0.0279	0.0000	398.9570	398.9570	7.6500e-003	7.3100e-003	401.3278

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

**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**

**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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	2.28665e+006	0.0123	0.1054	0.0448	6.7000e-004		8.5200e-003	8.5200e-003		8.5200e-003	8.5200e-003	0.0000	122.0245	122.0245	2.3400e-003	2.2400e-003	122.7497
Health Club	193070	1.0400e-003	9.4600e-003	7.9500e-003	6.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004	0.0000	10.3030	10.3030	2.0000e-004	1.9000e-004	10.3642
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.99645e+006	0.0269	0.2302	0.0980	1.4700e-003		0.0186	0.0186		0.0186	0.0186	0.0000	266.6295	266.6295	5.1100e-003	4.8900e-003	268.2139
<b>Total</b>		<b>0.0403</b>	<b>0.3451</b>	<b>0.1508</b>	<b>2.2000e-003</b>		<b>0.0279</b>	<b>0.0279</b>		<b>0.0279</b>	<b>0.0279</b>	<b>0.0000</b>	<b>398.9570</b>	<b>398.9570</b>	<b>7.6500e-003</b>	<b>7.3200e-003</b>	<b>401.3278</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

**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	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	2.28665e+006	0.0123	0.1054	0.0448	6.7000e-004		8.5200e-003	8.5200e-003		8.5200e-003	8.5200e-003	0.0000	122.0245	122.0245	2.3400e-003	2.2400e-003	122.7497
Health Club	193070	1.0400e-003	9.4600e-003	7.9500e-003	6.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004	0.0000	10.3030	10.3030	2.0000e-004	1.9000e-004	10.3642
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.99645e+006	0.0269	0.2302	0.0980	1.4700e-003		0.0186	0.0186		0.0186	0.0186	0.0000	266.6295	266.6295	5.1100e-003	4.8900e-003	268.2139
<b>Total</b>		<b>0.0403</b>	<b>0.3451</b>	<b>0.1508</b>	<b>2.2000e-003</b>		<b>0.0279</b>	<b>0.0279</b>		<b>0.0279</b>	<b>0.0279</b>	<b>0.0000</b>	<b>398.9570</b>	<b>398.9570</b>	<b>7.6500e-003</b>	<b>7.3200e-003</b>	<b>401.3278</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**5.3 Energy by Land Use - Electricity**

**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	719077	127.5251	0.0108	1.3000e-003	128.1829
Health Club	116745	20.7042	1.7500e-003	2.1000e-004	20.8110
Parking Lot	3682.7	0.6531	6.0000e-005	1.0000e-005	0.6565
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.54016e+006	273.1399	0.0231	2.7900e-003	274.5489
<b>Total</b>		<b>422.0222</b>	<b>0.0356</b>	<b>4.3100e-003</b>	<b>424.1994</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**5.3 Energy by Land Use - Electricity**

**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	719077	127.5251	0.0108	1.3000e-003	128.1829
Health Club	116745	20.7042	1.7500e-003	2.1000e-004	20.8110
Parking Lot	3682.7	0.6531	6.0000e-005	1.0000e-005	0.6565
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.54016e+006	273.1399	0.0231	2.7900e-003	274.5489
<b>Total</b>		<b>422.0222</b>	<b>0.0356</b>	<b>4.3100e-003</b>	<b>424.1994</b>

**6.0 Area Detail**

**6.1 Mitigation Measures Area**

Use only Natural Gas Hearths



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

**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	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.2410	0.1133	3.8523	6.4000e-004		0.0268	0.0268		0.0268	0.0268	0.0000	86.4323	86.4323	7.5200e-003	1.4700e-003	87.0585
Unmitigated	3.4481	0.1403	6.1812	6.2200e-003		0.3755	0.3755		0.3755	0.3755	39.4073	81.9778	121.3851	0.1235	2.6700e-003	125.2698

**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	0.1703					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.9478					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.2152	0.0962	2.3584	6.0200e-003		0.3543	0.3543		0.3543	0.3543	39.4073	75.7273	115.1345	0.1175	2.6700e-003	118.8696
Landscaping	0.1148	0.0440	3.8228	2.0000e-004		0.0212	0.0212		0.0212	0.0212	0.0000	6.2505	6.2505	5.9900e-003	0.0000	6.4002
<b>Total</b>	<b>3.4481</b>	<b>0.1403</b>	<b>6.1812</b>	<b>6.2200e-003</b>		<b>0.3755</b>	<b>0.3755</b>		<b>0.3755</b>	<b>0.3755</b>	<b>39.4073</b>	<b>81.9778</b>	<b>121.3851</b>	<b>0.1235</b>	<b>2.6700e-003</b>	<b>125.2698</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

**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	0.1703					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.9478					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	8.1000e-003	0.0692	0.0295	4.4000e-004		5.6000e-003	5.6000e-003		5.6000e-003	5.6000e-003	0.0000	80.1818	80.1818	1.5400e-003	1.4700e-003	80.6583
Landscaping	0.1148	0.0440	3.8228	2.0000e-004		0.0212	0.0212		0.0212	0.0212	0.0000	6.2505	6.2505	5.9900e-003	0.0000	6.4002
<b>Total</b>	<b>2.2410</b>	<b>0.1133</b>	<b>3.8523</b>	<b>6.4000e-004</b>		<b>0.0268</b>	<b>0.0268</b>		<b>0.0268</b>	<b>0.0268</b>	<b>0.0000</b>	<b>86.4323</b>	<b>86.4323</b>	<b>7.5300e-003</b>	<b>1.4700e-003</b>	<b>87.0585</b>

**7.0 Water Detail**

**7.1 Mitigation Measures Water**

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

**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	104.3667	0.8352	0.0205	131.3584
Unmitigated	104.3667	0.8352	0.0205	131.3584

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**7.2 Water by Land Use**

**Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 3.15743	6.2211	5.3000e-004	6.0000e-005	6.2532
Condo/Townhouse High Rise	11.402 / 7.18819	44.1099	0.3750	9.1900e-003	56.2213
Health Club	0.635789 / 0.389677	2.4377	0.0209	5.1000e-004	3.1129
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0.572506 / 0.350891	2.1950	0.0188	4.6000e-004	2.8031
Single Family Housing	12.7702 / 8.05077	49.4030	0.4199	0.0103	62.9679
<b>Total</b>		<b>104.3667</b>	<b>0.8352</b>	<b>0.0205</b>	<b>131.3584</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

**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			
City Park	0 / 3.15743	6.2211	5.3000e-004	6.0000e-005	6.2532
Condo/Townhouse High Rise	11.402 / 7.18819	44.1099	0.3750	9.1900e-003	56.2213
Health Club	0.635789 / 0.389677	2.4377	0.0209	5.1000e-004	3.1129
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0.572506 / 0.350891	2.1950	0.0188	4.6000e-004	2.8031
Single Family Housing	12.7702 / 8.05077	49.4030	0.4199	0.0103	62.9679
<b>Total</b>		<b>104.3667</b>	<b>0.8352</b>	<b>0.0205</b>	<b>131.3584</b>

**8.0 Waste Detail**

---

**8.1 Mitigation Measures Waste**

Institute Recycling and Composting Services

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	43.3579	2.5624	0.0000	107.4173
Unmitigated	86.7157	5.1248	0.0000	214.8345

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

**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			
City Park	0.23	0.0467	2.7600e-003	0.0000	0.1157
Condo/Townhouse High Rise	80.5	16.3408	0.9657	0.0000	40.4836
Health Club	61.27	12.4373	0.7350	0.0000	30.8128
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	55.18	11.2010	0.6620	0.0000	27.7501
Single Family Housing	230.01	46.6900	2.7593	0.0000	115.6724
<b>Total</b>		<b>86.7157</b>	<b>5.1248</b>	<b>0.0000</b>	<b>214.8345</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**8.2 Waste by Land Use**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.115	0.0233	1.3800e-003	0.0000	0.0578
Condo/Townhouse High Rise	40.25	8.1704	0.4829	0.0000	20.2418
Health Club	30.635	6.2186	0.3675	0.0000	15.4064
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	27.59	5.6005	0.3310	0.0000	13.8751
Single Family Housing	115.005	23.3450	1.3797	0.0000	57.8362
<b>Total</b>		<b>43.3579</b>	<b>2.5624</b>	<b>0.0000</b>	<b>107.4173</b>

**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



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

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

**User Defined Equipment**

Equipment Type	Number
----------------	--------

**11.0 Vegetation**

---

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**Bouquet Canyon Project Addendum\_Unmitigated**

**Los Angeles-South Coast County, Winter**

**1.0 Project Characteristics**

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	10.52	1000sqft	0.24	10,522.00	0
City Park	2.65	Acre	2.65	115,434.00	0
Health Club	10.75	1000sqft	0.25	10,750.00	0
Recreational Swimming Pool	9.68	1000sqft	0.22	9,676.00	0
Condo/Townhouse High Rise	175.00	Dwelling Unit	2.73	175,000.00	501
Single Family Housing	196.00	Dwelling Unit	63.64	352,800.00	561

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	33
<b>Climate Zone</b>	9			<b>Operational Year</b>	2026
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MWhr)</b>	390.98	<b>CH4 Intensity (lb/MWhr)</b>	0.033	<b>N2O Intensity (lb/MWhr)</b>	0.004

**1.3 User Entered Comments & Non-Default Data**

Project Characteristics -

Land Use - per project description

Construction Phase - per construction questionnaire

Trips and VMT - Earthwork would be balanced on-site.

Demolition - per CalEEMod formula and data in AQ construction questionnaire

Grading - per email communication

Vehicle Trips - per traffic study

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

Construction Off-road Equipment Mitigation - Per SCAQMD standards and regulations

Area Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	26
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	75.00	792.00
tblConstructionPhase	NumDays	1,110.00	783.00
tblConstructionPhase	NumDays	70.00	22.00
tblConstructionPhase	NumDays	110.00	262.00
tblConstructionPhase	NumDays	75.00	22.00
tblGrading	AcresOfGrading	786.00	0.00
tblGrading	MaterialExported	0.00	2,800,000.00
tblGrading	MaterialImported	0.00	2,800,000.00
tblLandUse	LandUseSquareFeet	10,520.00	10,522.00
tblLandUse	LandUseSquareFeet	9,680.00	9,676.00
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	ST_TR	4.91	10.77
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	9.10	0.00
tblVehicleTrips	ST_TR	9.54	10.77
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	4.09	10.77
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	13.60	0.00

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

tblVehicleTrips	SU_TR	8.55	10.77
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	5.44	10.77
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	28.82	0.00
tblVehicleTrips	WD_TR	9.44	10.77

**2.0 Emissions Summary**

**2.1 Overall Construction (Maximum Daily Emission)**

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	9.2254	128.4919	91.4226	0.2175	11.1608	3.0064	14.1671	4.2884	2.7825	7.0709	0.0000	22,369.2904	22,369.2904	3.4409	1.9504	23,036.5310
2023	5.9710	94.0982	71.2332	0.1722	9.8875	1.5131	11.4006	4.0762	1.3953	5.4715	0.0000	17,949.5360	17,949.5360	2.3757	1.8646	18,564.5748
2024	7.0180	26.1466	40.2250	0.0864	3.8750	1.1120	4.5818	1.0370	1.0362	1.9635	0.0000	8,592.9217	8,592.9217	1.4245	0.2532	8,701.4699
2025	6.8404	16.7935	27.8094	0.0687	3.8750	0.6107	4.4858	1.0370	0.5774	1.6144	0.0000	6,921.5704	6,921.5704	0.7243	0.2454	7,012.7990
2026	6.7861	16.7184	27.2572	0.0677	3.8750	0.6097	4.4848	1.0370	0.5764	1.6134	0.0000	6,834.8270	6,834.8270	0.7187	0.2383	6,923.8100
2027	6.7366	16.6520	26.7896	0.0667	3.8750	0.6086	4.4836	1.0370	0.5754	1.6124	0.0000	6,754.7188	6,754.7188	0.7137	0.2318	6,841.6310
<b>Maximum</b>	<b>9.2254</b>	<b>128.4919</b>	<b>91.4226</b>	<b>0.2175</b>	<b>11.1608</b>	<b>3.0064</b>	<b>14.1671</b>	<b>4.2884</b>	<b>2.7825</b>	<b>7.0709</b>	<b>0.0000</b>	<b>22,369.2904</b>	<b>22,369.2904</b>	<b>3.4409</b>	<b>1.9504</b>	<b>23,036.5310</b>



Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

**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	109.7397	8.0499	219.2551	0.4829		28.5098	28.5098		28.5098	28.5098	3,475.1267	6,733.1203	10,208.2470	10.4163	0.2359	10,538.9427
Energy	0.2209	1.8907	0.8261	0.0121		0.1526	0.1526		0.1526	0.1526		2,409.7247	2,409.7247	0.0462	0.0442	2,424.0445
Mobile	11.1911	12.0019	112.3391	0.2478	28.7504	0.1822	28.9325	7.6589	0.1692	7.8281		26,095.6368	26,095.6368	1.7659	1.0970	26,466.6777
<b>Total</b>	<b>121.1517</b>	<b>21.9425</b>	<b>332.4203</b>	<b>0.7428</b>	<b>28.7504</b>	<b>28.8445</b>	<b>57.5949</b>	<b>7.6589</b>	<b>28.8315</b>	<b>36.4904</b>	<b>3,475.1267</b>	<b>35,238.4818</b>	<b>38,713.6085</b>	<b>12.2284</b>	<b>1.3770</b>	<b>39,429.6649</b>

**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	13.1725	5.8911	32.9393	0.0370		0.6175	0.6175		0.6175	0.6175	0.0000	7,125.9438	7,125.9438	0.1883	0.1296	7,169.2821
Energy	0.2209	1.8907	0.8261	0.0121		0.1526	0.1526		0.1526	0.1526		2,409.7247	2,409.7247	0.0462	0.0442	2,424.0445
Mobile	11.1911	12.0019	112.3391	0.2478	28.7504	0.1822	28.9325	7.6589	0.1692	7.8281		26,095.6368	26,095.6368	1.7659	1.0970	26,466.6777
<b>Total</b>	<b>24.5845</b>	<b>19.7837</b>	<b>146.1045</b>	<b>0.2969</b>	<b>28.7504</b>	<b>0.9523</b>	<b>29.7026</b>	<b>7.6589</b>	<b>0.9393</b>	<b>8.5982</b>	<b>0.0000</b>	<b>35,631.3053</b>	<b>35,631.3053</b>	<b>2.0004</b>	<b>1.2708</b>	<b>36,060.0042</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

**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	N2O	CO2e
Percent Reduction	79.71	9.84	56.05	60.04	0.00	96.70	48.43	0.00	96.74	76.44	100.00	-1.11	7.96	83.64	7.72	8.55

**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	9/1/2022	9/1/2023	5	262	
2	Demolition	Demolition	10/3/2022	11/1/2022	5	22	
3	Paving	Paving	2/1/2024	3/1/2024	5	22	
4	Building Construction	Building Construction	2/15/2024	2/15/2027	5	783	
5	Architectural Coating	Architectural Coating	8/1/2024	8/13/2027	5	792	

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.24**

**Residential Indoor: 1,068,795; Residential Outdoor: 356,265; Non-Residential Indoor: 16,125; Non-Residential Outdoor: 5,375; Striped Parking Area: 631 (Architectural Coating – sqft)**

**OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
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

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

**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
Demolition	6	15.00	0.00	112.00	14.70	6.90	0.50	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	700,000.00	14.70	6.90	0.50	LD_Mix	HDT_Mix	HHDT
Building Construction	9	258.00	64.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	52.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

Replace Ground Cover

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads



Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**3.2 Grading - 2022**

**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					8.4393	0.0000	8.4393	3.6763	0.0000	3.6763			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
<b>Total</b>	<b>3.6248</b>	<b>38.8435</b>	<b>29.0415</b>	<b>0.0621</b>	<b>8.4393</b>	<b>1.6349</b>	<b>10.0742</b>	<b>3.6763</b>	<b>1.5041</b>	<b>5.1804</b>		<b>6,011.4105</b>	<b>6,011.4105</b>	<b>1.9442</b>		<b>6,060.0158</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.8263	63.7099	40.4434	0.1130	1.2246	0.1261	1.3507	0.3407	0.1206	0.4613		12,242.9737	12,242.9737	0.4335	1.9374	12,831.1393
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	0.0741	0.0558	0.7237	1.9400e-003	0.2236	1.4300e-003	0.2250	0.0593	1.3200e-003	0.0606		197.0266	197.0266	5.7000e-003	5.3500e-003	198.7627
<b>Total</b>	<b>2.9004</b>	<b>63.7658</b>	<b>41.1672</b>	<b>0.1149</b>	<b>1.4482</b>	<b>0.1275</b>	<b>1.5757</b>	<b>0.4000</b>	<b>0.1219</b>	<b>0.5219</b>		<b>12,440.0003</b>	<b>12,440.0003</b>	<b>0.4392</b>	<b>1.9427</b>	<b>13,029.9020</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**3.2 Grading - 2022**

**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					3.1268	0.0000	3.1268	1.3621	0.0000	1.3621			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
<b>Total</b>	<b>3.6248</b>	<b>38.8435</b>	<b>29.0415</b>	<b>0.0621</b>	<b>3.1268</b>	<b>1.6349</b>	<b>4.7616</b>	<b>1.3621</b>	<b>1.5041</b>	<b>2.8662</b>	<b>0.0000</b>	<b>6,011.4105</b>	<b>6,011.4105</b>	<b>1.9442</b>		<b>6,060.0158</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.8263	63.7099	40.4434	0.1130	0.9950	0.1261	1.1211	0.2843	0.1206	0.4049		12,242.9737	12,242.9737	0.4335	1.9374	12,831.1393
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	0.0741	0.0558	0.7237	1.9400e-003	0.1730	1.4300e-003	0.1745	0.0469	1.3200e-003	0.0482		197.0266	197.0266	5.7000e-003	5.3500e-003	198.7627
<b>Total</b>	<b>2.9004</b>	<b>63.7658</b>	<b>41.1672</b>	<b>0.1149</b>	<b>1.1681</b>	<b>0.1275</b>	<b>1.2956</b>	<b>0.3312</b>	<b>0.1219</b>	<b>0.4531</b>		<b>12,440.0003</b>	<b>12,440.0003</b>	<b>0.4392</b>	<b>1.9427</b>	<b>13,029.9020</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**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					8.4393	0.0000	8.4393	3.6763	0.0000	3.6763			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
<b>Total</b>	<b>3.3217</b>	<b>34.5156</b>	<b>28.0512</b>	<b>0.0621</b>	<b>8.4393</b>	<b>1.4245</b>	<b>9.8638</b>	<b>3.6763</b>	<b>1.3105</b>	<b>4.9868</b>		<b>6,011.4777</b>	<b>6,011.4777</b>	<b>1.9442</b>		<b>6,060.0836</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.5805	59.5333	42.5159	0.1082	1.2247	0.0873	1.3120	0.3407	0.0835	0.4242		11,746.2130	11,746.2130	0.4263	1.8597	12,311.0488
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
<b>Total</b>	<b>2.6493</b>	<b>59.5826</b>	<b>43.1820</b>	<b>0.1101</b>	<b>1.4482</b>	<b>0.0886</b>	<b>1.5369</b>	<b>0.4000</b>	<b>0.0847</b>	<b>0.4847</b>		<b>11,938.0583</b>	<b>11,938.0583</b>	<b>0.4314</b>	<b>1.8646</b>	<b>12,504.4912</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**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	lb/day										lb/day					
Fugitive Dust					3.1268	0.0000	3.1268	1.3621	0.0000	1.3621			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
<b>Total</b>	<b>3.3217</b>	<b>34.5156</b>	<b>28.0512</b>	<b>0.0621</b>	<b>3.1268</b>	<b>1.4245</b>	<b>4.5512</b>	<b>1.3621</b>	<b>1.3105</b>	<b>2.6726</b>	<b>0.0000</b>	<b>6,011.4777</b>	<b>6,011.4777</b>	<b>1.9442</b>		<b>6,060.0836</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.5805	59.5333	42.5159	0.1082	0.9951	0.0873	1.0824	0.2843	0.0835	0.3678		11,746.2130	11,746.2130	0.4263	1.8597	12,311.0488
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	0.1730	1.3500e-003	0.1744	0.0469	1.2400e-003	0.0481		191.8453	191.8453	5.1100e-003	4.9300e-003	193.4424
<b>Total</b>	<b>2.6493</b>	<b>59.5826</b>	<b>43.1820</b>	<b>0.1101</b>	<b>1.1681</b>	<b>0.0886</b>	<b>1.2567</b>	<b>0.3312</b>	<b>0.0847</b>	<b>0.4160</b>		<b>11,938.0583</b>	<b>11,938.0583</b>	<b>0.4314</b>	<b>1.8646</b>	<b>12,504.4912</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**3.3 Demolition - 2022**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.1033	0.0000	1.1033	0.1671	0.0000	0.1671			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.7812	3,746.7812	1.0524		3,773.0920
<b>Total</b>	<b>2.6392</b>	<b>25.7194</b>	<b>20.5941</b>	<b>0.0388</b>	<b>1.1033</b>	<b>1.2427</b>	<b>2.3460</b>	<b>0.1671</b>	<b>1.1553</b>	<b>1.3223</b>		<b>3,746.7812</b>	<b>3,746.7812</b>	<b>1.0524</b>		<b>3,773.0920</b>

**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	5.3900e-003	0.1214	0.0771	2.2000e-004	2.3300e-003	2.4000e-004	2.5700e-003	6.5000e-004	2.3000e-004	8.8000e-004		23.3284	23.3284	8.3000e-004	3.6900e-003	24.4492
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	0.0556	0.0419	0.5428	1.4500e-003	0.1677	1.0700e-003	0.1687	0.0445	9.9000e-004	0.0455		147.7700	147.7700	4.2700e-003	4.0100e-003	149.0720
<b>Total</b>	<b>0.0610</b>	<b>0.1633</b>	<b>0.6199</b>	<b>1.6700e-003</b>	<b>0.1700</b>	<b>1.3100e-003</b>	<b>0.1713</b>	<b>0.0451</b>	<b>1.2200e-003</b>	<b>0.0463</b>		<b>171.0984</b>	<b>171.0984</b>	<b>5.1000e-003</b>	<b>7.7000e-003</b>	<b>173.5212</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**3.3 Demolition - 2022**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4088	0.0000	0.4088	0.0619	0.0000	0.0619			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553	0.0000	3,746.781 2	3,746.781 2	1.0524		3,773.092 0
<b>Total</b>	<b>2.6392</b>	<b>25.7194</b>	<b>20.5941</b>	<b>0.0388</b>	<b>0.4088</b>	<b>1.2427</b>	<b>1.6514</b>	<b>0.0619</b>	<b>1.1553</b>	<b>1.2172</b>	<b>0.0000</b>	<b>3,746.781 2</b>	<b>3,746.781 2</b>	<b>1.0524</b>		<b>3,773.092 0</b>

**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	5.3900e-003	0.1214	0.0771	2.2000e-004	1.9000e-003	2.4000e-004	2.1400e-003	5.4000e-004	2.3000e-004	7.7000e-004		23.3284	23.3284	8.3000e-004	3.6900e-003	24.4492
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	0.0556	0.0419	0.5428	1.4500e-003	0.1298	1.0700e-003	0.1308	0.0352	9.9000e-004	0.0362		147.7700	147.7700	4.2700e-003	4.0100e-003	149.0720
<b>Total</b>	<b>0.0610</b>	<b>0.1633</b>	<b>0.6199</b>	<b>1.6700e-003</b>	<b>0.1317</b>	<b>1.3100e-003</b>	<b>0.1330</b>	<b>0.0357</b>	<b>1.2200e-003</b>	<b>0.0369</b>		<b>171.0984</b>	<b>171.0984</b>	<b>5.1000e-003</b>	<b>7.7000e-003</b>	<b>173.5212</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**3.4 Paving - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.547 2	2,207.547 2	0.7140		2,225.396 3
Paving	0.0286					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>1.0167</b>	<b>9.5246</b>	<b>14.6258</b>	<b>0.0228</b>		<b>0.4685</b>	<b>0.4685</b>		<b>0.4310</b>	<b>0.4310</b>		<b>2,207.547 2</b>	<b>2,207.547 2</b>	<b>0.7140</b>		<b>2,225.396 3</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0483	0.0330	0.4655	1.3700e-003	0.1677	9.7000e-004	0.1686	0.0445	8.9000e-004	0.0454		140.9310	140.9310	3.4700e-003	3.4400e-003	142.0422
<b>Total</b>	<b>0.0483</b>	<b>0.0330</b>	<b>0.4655</b>	<b>1.3700e-003</b>	<b>0.1677</b>	<b>9.7000e-004</b>	<b>0.1686</b>	<b>0.0445</b>	<b>8.9000e-004</b>	<b>0.0454</b>		<b>140.9310</b>	<b>140.9310</b>	<b>3.4700e-003</b>	<b>3.4400e-003</b>	<b>142.0422</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**3.4 Paving - 2024**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310	0.0000	2,207.547 2	2,207.547 2	0.7140		2,225.396 3
Paving	0.0286					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>1.0167</b>	<b>9.5246</b>	<b>14.6258</b>	<b>0.0228</b>		<b>0.4685</b>	<b>0.4685</b>		<b>0.4310</b>	<b>0.4310</b>	<b>0.0000</b>	<b>2,207.547 2</b>	<b>2,207.547 2</b>	<b>0.7140</b>		<b>2,225.396 3</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0483	0.0330	0.4655	1.3700e-003	0.1298	9.7000e-004	0.1307	0.0352	8.9000e-004	0.0361		140.9310	140.9310	3.4700e-003	3.4400e-003	142.0422
<b>Total</b>	<b>0.0483</b>	<b>0.0330</b>	<b>0.4655</b>	<b>1.3700e-003</b>	<b>0.1298</b>	<b>9.7000e-004</b>	<b>0.1307</b>	<b>0.0352</b>	<b>8.9000e-004</b>	<b>0.0361</b>		<b>140.9310</b>	<b>140.9310</b>	<b>3.4700e-003</b>	<b>3.4400e-003</b>	<b>142.0422</b>



Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**3.5 Building Construction - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
<b>Total</b>	<b>1.4716</b>	<b>13.4438</b>	<b>16.1668</b>	<b>0.0270</b>		<b>0.6133</b>	<b>0.6133</b>		<b>0.5769</b>	<b>0.5769</b>		<b>2,555.6989</b>	<b>2,555.6989</b>	<b>0.6044</b>		<b>2,570.8077</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0688	2.5772	0.9610	0.0117	0.4100	0.0125	0.4225	0.1180	0.0120	0.1300		1,264.7317	1,264.7317	0.0429	0.1822	1,320.0975
Worker	0.8301	0.5680	8.0059	0.0235	2.8838	0.0167	2.9005	0.7648	0.0154	0.7802		2,424.0129	2,424.0129	0.0597	0.0591	2,443.1262
<b>Total</b>	<b>0.8989</b>	<b>3.1453</b>	<b>8.9669</b>	<b>0.0352</b>	<b>3.2938</b>	<b>0.0292</b>	<b>3.3230</b>	<b>0.8829</b>	<b>0.0273</b>	<b>0.9102</b>		<b>3,688.7446</b>	<b>3,688.7446</b>	<b>0.1027</b>	<b>0.2413</b>	<b>3,763.2237</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**3.5 Building Construction - 2024**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
<b>Total</b>	<b>1.4716</b>	<b>13.4438</b>	<b>16.1668</b>	<b>0.0270</b>		<b>0.6133</b>	<b>0.6133</b>		<b>0.5769</b>	<b>0.5769</b>	<b>0.0000</b>	<b>2,555.6989</b>	<b>2,555.6989</b>	<b>0.6044</b>		<b>2,570.8077</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0688	2.5772	0.9610	0.0117	0.3341	0.0125	0.3466	0.0994	0.0120	0.1114		1,264.7317	1,264.7317	0.0429	0.1822	1,320.0975
Worker	0.8301	0.5680	8.0059	0.0235	2.2320	0.0167	2.2487	0.6048	0.0154	0.6202		2,424.0129	2,424.0129	0.0597	0.0591	2,443.1262
<b>Total</b>	<b>0.8989</b>	<b>3.1453</b>	<b>8.9669</b>	<b>0.0352</b>	<b>2.5660</b>	<b>0.0292</b>	<b>2.5952</b>	<b>0.7042</b>	<b>0.0273</b>	<b>0.7315</b>		<b>3,688.7446</b>	<b>3,688.7446</b>	<b>0.1027</b>	<b>0.2413</b>	<b>3,763.2237</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**3.5 Building Construction - 2025**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>1.3674</b>	<b>12.4697</b>	<b>16.0847</b>	<b>0.0270</b>		<b>0.5276</b>	<b>0.5276</b>		<b>0.4963</b>	<b>0.4963</b>		<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0667	2.5652	0.9436	0.0115	0.4100	0.0125	0.4225	0.1180	0.0120	0.1300		1,241.999 9	1,241.999 9	0.0432	0.1790	1,296.432 3
Worker	0.7790	0.5103	7.4671	0.0227	2.8838	0.0159	2.8998	0.7648	0.0147	0.7795		2,364.984 6	2,364.984 6	0.0539	0.0552	2,382.785 5
<b>Total</b>	<b>0.8457</b>	<b>3.0755</b>	<b>8.4106</b>	<b>0.0342</b>	<b>3.2938</b>	<b>0.0285</b>	<b>3.3223</b>	<b>0.8829</b>	<b>0.0266</b>	<b>0.9095</b>		<b>3,606.984 5</b>	<b>3,606.984 5</b>	<b>0.0972</b>	<b>0.2342</b>	<b>3,679.217 7</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**3.5 Building Construction - 2025**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>1.3674</b>	<b>12.4697</b>	<b>16.0847</b>	<b>0.0270</b>		<b>0.5276</b>	<b>0.5276</b>		<b>0.4963</b>	<b>0.4963</b>	<b>0.0000</b>	<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0667	2.5652	0.9436	0.0115	0.3341	0.0125	0.3466	0.0994	0.0120	0.1114		1,241.999 9	1,241.999 9	0.0432	0.1790	1,296.432 3
Worker	0.7790	0.5103	7.4671	0.0227	2.2320	0.0159	2.2479	0.6048	0.0147	0.6195		2,364.984 6	2,364.984 6	0.0539	0.0552	2,382.785 5
<b>Total</b>	<b>0.8457</b>	<b>3.0755</b>	<b>8.4106</b>	<b>0.0342</b>	<b>2.5660</b>	<b>0.0285</b>	<b>2.5945</b>	<b>0.7042</b>	<b>0.0266</b>	<b>0.7309</b>		<b>3,606.984 5</b>	<b>3,606.984 5</b>	<b>0.0972</b>	<b>0.2342</b>	<b>3,679.217 7</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**3.5 Building Construction - 2026**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>1.3674</b>	<b>12.4697</b>	<b>16.0847</b>	<b>0.0270</b>		<b>0.5276</b>	<b>0.5276</b>		<b>0.4963</b>	<b>0.4963</b>		<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0649	2.5467	0.9302	0.0113	0.4100	0.0125	0.4225	0.1180	0.0120	0.1300		1,218.982 7	1,218.982 7	0.0435	0.1758	1,272.460 0
Worker	0.7354	0.4632	7.0186	0.0220	2.8838	0.0151	2.8990	0.7648	0.0139	0.7787		2,311.947 9	2,311.947 9	0.0490	0.0520	2,328.674 8
<b>Total</b>	<b>0.8002</b>	<b>3.0099</b>	<b>7.9488</b>	<b>0.0333</b>	<b>3.2938</b>	<b>0.0276</b>	<b>3.3214</b>	<b>0.8829</b>	<b>0.0259</b>	<b>0.9087</b>		<b>3,530.930 6</b>	<b>3,530.930 6</b>	<b>0.0925</b>	<b>0.2278</b>	<b>3,601.134 8</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**3.5 Building Construction - 2026**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>1.3674</b>	<b>12.4697</b>	<b>16.0847</b>	<b>0.0270</b>		<b>0.5276</b>	<b>0.5276</b>		<b>0.4963</b>	<b>0.4963</b>	<b>0.0000</b>	<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0649	2.5467	0.9302	0.0113	0.3341	0.0125	0.3466	0.0994	0.0120	0.1114		1,218.982 7	1,218.982 7	0.0435	0.1758	1,272.460 0
Worker	0.7354	0.4632	7.0186	0.0220	2.2320	0.0151	2.2471	0.6048	0.0139	0.6187		2,311.947 9	2,311.947 9	0.0490	0.0520	2,328.674 8
<b>Total</b>	<b>0.8002</b>	<b>3.0099</b>	<b>7.9488</b>	<b>0.0333</b>	<b>2.5660</b>	<b>0.0276</b>	<b>2.5937</b>	<b>0.7042</b>	<b>0.0259</b>	<b>0.7301</b>		<b>3,530.930 6</b>	<b>3,530.930 6</b>	<b>0.0925</b>	<b>0.2278</b>	<b>3,601.134 8</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**3.5 Building Construction - 2027**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>1.3674</b>	<b>12.4697</b>	<b>16.0847</b>	<b>0.0270</b>		<b>0.5276</b>	<b>0.5276</b>		<b>0.4963</b>	<b>0.4963</b>		<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0633	2.5281	0.9193	0.0111	0.4100	0.0124	0.4224	0.1181	0.0119	0.1299		1,195.025 6	1,195.025 6	0.0436	0.1725	1,247.514 0
Worker	0.6954	0.4234	6.6385	0.0214	2.8838	0.0142	2.8980	0.7648	0.0131	0.7779		2,265.215 7	2,265.215 7	0.0448	0.0494	2,281.042 1
<b>Total</b>	<b>0.7587</b>	<b>2.9515</b>	<b>7.5578</b>	<b>0.0325</b>	<b>3.2938</b>	<b>0.0267</b>	<b>3.3204</b>	<b>0.8829</b>	<b>0.0250</b>	<b>0.9078</b>		<b>3,460.241 3</b>	<b>3,460.241 3</b>	<b>0.0884</b>	<b>0.2218</b>	<b>3,528.556 1</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**3.5 Building Construction - 2027**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>1.3674</b>	<b>12.4697</b>	<b>16.0847</b>	<b>0.0270</b>		<b>0.5276</b>	<b>0.5276</b>		<b>0.4963</b>	<b>0.4963</b>	<b>0.0000</b>	<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0633	2.5281	0.9193	0.0111	0.3341	0.0124	0.3465	0.0994	0.0119	0.1113		1,195.025 6	1,195.025 6	0.0436	0.1725	1,247.514 0
Worker	0.6954	0.4234	6.6385	0.0214	2.2320	0.0142	2.2462	0.6048	0.0131	0.6179		2,265.215 7	2,265.215 7	0.0448	0.0494	2,281.042 1
<b>Total</b>	<b>0.7587</b>	<b>2.9515</b>	<b>7.5578</b>	<b>0.0325</b>	<b>2.5661</b>	<b>0.0267</b>	<b>2.5927</b>	<b>0.7042</b>	<b>0.0250</b>	<b>0.7292</b>		<b>3,460.241 3</b>	<b>3,460.241 3</b>	<b>0.0884</b>	<b>0.2218</b>	<b>3,528.556 1</b>



Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**3.6 Architectural Coating - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
<b>Total</b>	<b>4.4802</b>	<b>1.2188</b>	<b>1.8101</b>	<b>2.9700e-003</b>		<b>0.0609</b>	<b>0.0609</b>		<b>0.0609</b>	<b>0.0609</b>		<b>281.4481</b>	<b>281.4481</b>	<b>0.0159</b>		<b>281.8443</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1673	0.1145	1.6136	4.7400e-003	0.5812	3.3600e-003	0.5846	0.1542	3.1000e-003	0.1572		488.5607	488.5607	0.0120	0.0119	492.4130
<b>Total</b>	<b>0.1673</b>	<b>0.1145</b>	<b>1.6136</b>	<b>4.7400e-003</b>	<b>0.5812</b>	<b>3.3600e-003</b>	<b>0.5846</b>	<b>0.1542</b>	<b>3.1000e-003</b>	<b>0.1572</b>		<b>488.5607</b>	<b>488.5607</b>	<b>0.0120</b>	<b>0.0119</b>	<b>492.4130</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**3.6 Architectural Coating - 2024**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
<b>Total</b>	<b>4.4802</b>	<b>1.2188</b>	<b>1.8101</b>	<b>2.9700e-003</b>		<b>0.0609</b>	<b>0.0609</b>		<b>0.0609</b>	<b>0.0609</b>	<b>0.0000</b>	<b>281.4481</b>	<b>281.4481</b>	<b>0.0159</b>		<b>281.8443</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1673	0.1145	1.6136	4.7400e-003	0.4499	3.3600e-003	0.4532	0.1219	3.1000e-003	0.1250		488.5607	488.5607	0.0120	0.0119	492.4130
<b>Total</b>	<b>0.1673</b>	<b>0.1145</b>	<b>1.6136</b>	<b>4.7400e-003</b>	<b>0.4499</b>	<b>3.3600e-003</b>	<b>0.4532</b>	<b>0.1219</b>	<b>3.1000e-003</b>	<b>0.1250</b>		<b>488.5607</b>	<b>488.5607</b>	<b>0.0120</b>	<b>0.0119</b>	<b>492.4130</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**3.6 Architectural Coating - 2025**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.4703</b>	<b>1.1455</b>	<b>1.8091</b>	<b>2.9700e-003</b>		<b>0.0515</b>	<b>0.0515</b>		<b>0.0515</b>	<b>0.0515</b>		<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1570	0.1029	1.5050	4.5800e-003	0.5812	3.2100e-003	0.5845	0.1542	2.9500e-003	0.1571		476.6636	476.6636	0.0109	0.0111	480.2513
<b>Total</b>	<b>0.1570</b>	<b>0.1029</b>	<b>1.5050</b>	<b>4.5800e-003</b>	<b>0.5812</b>	<b>3.2100e-003</b>	<b>0.5845</b>	<b>0.1542</b>	<b>2.9500e-003</b>	<b>0.1571</b>		<b>476.6636</b>	<b>476.6636</b>	<b>0.0109</b>	<b>0.0111</b>	<b>480.2513</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**3.6 Architectural Coating - 2025**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.4703</b>	<b>1.1455</b>	<b>1.8091</b>	<b>2.9700e-003</b>		<b>0.0515</b>	<b>0.0515</b>		<b>0.0515</b>	<b>0.0515</b>	<b>0.0000</b>	<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1570	0.1029	1.5050	4.5800e-003	0.4499	3.2100e-003	0.4531	0.1219	2.9500e-003	0.1249		476.6636	476.6636	0.0109	0.0111	480.2513
<b>Total</b>	<b>0.1570</b>	<b>0.1029</b>	<b>1.5050</b>	<b>4.5800e-003</b>	<b>0.4499</b>	<b>3.2100e-003</b>	<b>0.4531</b>	<b>0.1219</b>	<b>2.9500e-003</b>	<b>0.1249</b>		<b>476.6636</b>	<b>476.6636</b>	<b>0.0109</b>	<b>0.0111</b>	<b>480.2513</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**3.6 Architectural Coating - 2026**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.4703</b>	<b>1.1455</b>	<b>1.8091</b>	<b>2.9700e-003</b>		<b>0.0515</b>	<b>0.0515</b>		<b>0.0515</b>	<b>0.0515</b>		<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1482	0.0934	1.4146	4.4400e-003	0.5812	3.0500e-003	0.5843	0.1542	2.8000e-003	0.1570		465.9740	465.9740	9.8800e-003	0.0105	469.3453
<b>Total</b>	<b>0.1482</b>	<b>0.0934</b>	<b>1.4146</b>	<b>4.4400e-003</b>	<b>0.5812</b>	<b>3.0500e-003</b>	<b>0.5843</b>	<b>0.1542</b>	<b>2.8000e-003</b>	<b>0.1570</b>		<b>465.9740</b>	<b>465.9740</b>	<b>9.8800e-003</b>	<b>0.0105</b>	<b>469.3453</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**3.6 Architectural Coating - 2026**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.4703</b>	<b>1.1455</b>	<b>1.8091</b>	<b>2.9700e-003</b>		<b>0.0515</b>	<b>0.0515</b>		<b>0.0515</b>	<b>0.0515</b>	<b>0.0000</b>	<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1482	0.0934	1.4146	4.4400e-003	0.4499	3.0500e-003	0.4529	0.1219	2.8000e-003	0.1247		465.9740	465.9740	9.8800e-003	0.0105	469.3453
<b>Total</b>	<b>0.1482</b>	<b>0.0934</b>	<b>1.4146</b>	<b>4.4400e-003</b>	<b>0.4499</b>	<b>3.0500e-003</b>	<b>0.4529</b>	<b>0.1219</b>	<b>2.8000e-003</b>	<b>0.1247</b>		<b>465.9740</b>	<b>465.9740</b>	<b>9.8800e-003</b>	<b>0.0105</b>	<b>469.3453</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**3.6 Architectural Coating - 2027**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.4703</b>	<b>1.1455</b>	<b>1.8091</b>	<b>2.9700e-003</b>		<b>0.0515</b>	<b>0.0515</b>		<b>0.0515</b>	<b>0.0515</b>		<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1402	0.0853	1.3380	4.3100e-003	0.5812	2.8600e-003	0.5841	0.1542	2.6300e-003	0.1568		456.5551	456.5551	9.0300e-003	9.9500e-003	459.7449
<b>Total</b>	<b>0.1402</b>	<b>0.0853</b>	<b>1.3380</b>	<b>4.3100e-003</b>	<b>0.5812</b>	<b>2.8600e-003</b>	<b>0.5841</b>	<b>0.1542</b>	<b>2.6300e-003</b>	<b>0.1568</b>		<b>456.5551</b>	<b>456.5551</b>	<b>9.0300e-003</b>	<b>9.9500e-003</b>	<b>459.7449</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

**3.6 Architectural Coating - 2027**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.4703</b>	<b>1.1455</b>	<b>1.8091</b>	<b>2.9700e-003</b>		<b>0.0515</b>	<b>0.0515</b>		<b>0.0515</b>	<b>0.0515</b>	<b>0.0000</b>	<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1402	0.0853	1.3380	4.3100e-003	0.4499	2.8600e-003	0.4527	0.1219	2.6300e-003	0.1245		456.5551	456.5551	9.0300e-003	9.9500e-003	459.7449
<b>Total</b>	<b>0.1402</b>	<b>0.0853</b>	<b>1.3380</b>	<b>4.3100e-003</b>	<b>0.4499</b>	<b>2.8600e-003</b>	<b>0.4527</b>	<b>0.1219</b>	<b>2.6300e-003</b>	<b>0.1245</b>		<b>456.5551</b>	<b>456.5551</b>	<b>9.0300e-003</b>	<b>9.9500e-003</b>	<b>459.7449</b>



Bouquet Canyon Project Addendum\_Unmitigated - 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	11.1911	12.0019	112.3391	0.2478	28.7504	0.1822	28.9325	7.6589	0.1692	7.8281		26,095.6368	26,095.6368	1.7659	1.0970	26,466.6777
Unmitigated	11.1911	12.0019	112.3391	0.2478	28.7504	0.1822	28.9325	7.6589	0.1692	7.8281		26,095.6368	26,095.6368	1.7659	1.0970	26,466.6777

**4.2 Trip Summary Information**

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Condo/Townhouse High Rise	1,884.75	1,884.75	1,884.75	6,440,477	6,440,477
Health Club	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Recreational Swimming Pool	0.00	0.00	0.00		
Single Family Housing	2,110.92	2,110.92	2,110.92	7,213,334	7,213,334
<b>Total</b>	<b>3,995.67</b>	<b>3,995.67</b>	<b>3,995.67</b>	<b>13,653,811</b>	<b>13,653,811</b>

**4.3 Trip Type Information**

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

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

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Condo/Townhouse High Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	52	39	9
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Recreational Swimming Pool	16.60	8.40	6.90	33.00	48.00	19.00	52	39	9
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
City Park	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Condo/Townhouse High Rise	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Health Club	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Parking Lot	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Recreational Swimming Pool	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Single Family Housing	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318

**5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

**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	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.2209	1.8907	0.8261	0.0121		0.1526	0.1526		0.1526	0.1526		2,409.7247	2,409.7247	0.0462	0.0442	2,424.0445
NaturalGas Unmitigated	0.2209	1.8907	0.8261	0.0121		0.1526	0.1526		0.1526	0.1526		2,409.7247	2,409.7247	0.0462	0.0442	2,424.0445

Bouquet Canyon Project Addendum\_Unmitigated - 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**

**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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	6264.8	0.0676	0.5773	0.2457	3.6900e-003		0.0467	0.0467		0.0467	0.0467		737.0357	737.0357	0.0141	0.0135	741.4155
Health Club	528.959	5.7000e-003	0.0519	0.0436	3.1000e-004		3.9400e-003	3.9400e-003		3.9400e-003	3.9400e-003		62.2305	62.2305	1.1900e-003	1.1400e-003	62.6003
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	13688.9	0.1476	1.2615	0.5368	8.0500e-003		0.1020	0.1020		0.1020	0.1020		1,610.4586	1,610.4586	0.0309	0.0295	1,620.0287
<b>Total</b>		<b>0.2209</b>	<b>1.8907</b>	<b>0.8261</b>	<b>0.0121</b>		<b>0.1526</b>	<b>0.1526</b>		<b>0.1526</b>	<b>0.1526</b>		<b>2,409.7247</b>	<b>2,409.7247</b>	<b>0.0462</b>	<b>0.0442</b>	<b>2,424.0445</b>

Bouquet Canyon Project Addendum\_Unmitigated - 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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	6.2648	0.0676	0.5773	0.2457	3.6900e-003		0.0467	0.0467		0.0467	0.0467		737.0357	737.0357	0.0141	0.0135	741.4155
Health Club	0.528959	5.7000e-003	0.0519	0.0436	3.1000e-004		3.9400e-003	3.9400e-003		3.9400e-003	3.9400e-003		62.2305	62.2305	1.1900e-003	1.1400e-003	62.6003
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	13.6889	0.1476	1.2615	0.5368	8.0500e-003		0.1020	0.1020		0.1020	0.1020		1,610.4586	1,610.4586	0.0309	0.0295	1,620.0287
<b>Total</b>		<b>0.2209</b>	<b>1.8907</b>	<b>0.8261</b>	<b>0.0121</b>		<b>0.1526</b>	<b>0.1526</b>		<b>0.1526</b>	<b>0.1526</b>		<b>2,409.7247</b>	<b>2,409.7247</b>	<b>0.0462</b>	<b>0.0442</b>	<b>2,424.0445</b>

**6.0 Area Detail**

**6.1 Mitigation Measures Area**

Use only Natural Gas Hearths

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Winter

**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	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	13.1725	5.8911	32.9393	0.0370		0.6175	0.6175		0.6175	0.6175	0.0000	7,125.9438	7,125.9438	0.1883	0.1296	7,169.2821
Unmitigated	109.7397	8.0499	219.2551	0.4829		28.5098	28.5098		28.5098	28.5098	3,475.1267	6,733.1203	10,208.2470	10.4163	0.2359	10,538.9427

**6.2 Area by SubCategory**

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.9329					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	10.6730					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	97.2154	7.6976	188.6727	0.4813		28.3401	28.3401		28.3401	28.3401	3,475.1267	6,678.0000	10,153.1267	10.3635	0.2359	10,482.5026
Landscaping	0.9184	0.3523	30.5824	1.6200e-003		0.1697	0.1697		0.1697	0.1697		55.1203	55.1203	0.0528		56.4402
<b>Total</b>	<b>109.7397</b>	<b>8.0499</b>	<b>219.2551</b>	<b>0.4829</b>		<b>28.5098</b>	<b>28.5098</b>		<b>28.5098</b>	<b>28.5098</b>	<b>3,475.1267</b>	<b>6,733.1203</b>	<b>10,208.2470</b>	<b>10.4163</b>	<b>0.2359</b>	<b>10,538.9427</b>

Bouquet Canyon Project Addendum\_Unmitigated - 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	0.9329					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	10.6730					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.6482	5.5388	2.3569	0.0354		0.4478	0.4478		0.4478	0.4478	0.0000	7,070.8235	7,070.8235	0.1355	0.1296	7,112.8419
Landscaping	0.9184	0.3523	30.5824	1.6200e-003		0.1697	0.1697		0.1697	0.1697		55.1203	55.1203	0.0528		56.4402
<b>Total</b>	<b>13.1725</b>	<b>5.8911</b>	<b>32.9393</b>	<b>0.0370</b>		<b>0.6175</b>	<b>0.6175</b>		<b>0.6175</b>	<b>0.6175</b>	<b>0.0000</b>	<b>7,125.9438</b>	<b>7,125.9438</b>	<b>0.1883</b>	<b>0.1296</b>	<b>7,169.2821</b>

**7.0 Water Detail**

**7.1 Mitigation Measures Water**

Bouquet Canyon Project Addendum\_Unmitigated - 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**

Institute Recycling and Composting Services

**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**

---



Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**Bouquet Canyon Project Addendum\_Unmitigated**

**Los Angeles-South Coast County, Summer**

**1.0 Project Characteristics**

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	10.52	1000sqft	0.24	10,522.00	0
City Park	2.65	Acre	2.65	115,434.00	0
Health Club	10.75	1000sqft	0.25	10,750.00	0
Recreational Swimming Pool	9.68	1000sqft	0.22	9,676.00	0
Condo/Townhouse High Rise	175.00	Dwelling Unit	2.73	175,000.00	501
Single Family Housing	196.00	Dwelling Unit	63.64	352,800.00	561

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	33
<b>Climate Zone</b>	9			<b>Operational Year</b>	2026
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MWhr)</b>	390.98	<b>CH4 Intensity (lb/MWhr)</b>	0.033	<b>N2O Intensity (lb/MWhr)</b>	0.004

**1.3 User Entered Comments & Non-Default Data**

- Project Characteristics -
- Land Use - per project description
- Construction Phase - per construction questionnaire
- Trips and VMT - Earthwork would be balanced on-site.
- Demolition - per CalEEMod formula and data in AQ construction questionnaire
- Grading - per email communication
- Vehicle Trips - per traffic study

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

Construction Off-road Equipment Mitigation - Per SCAQMD standards and regulations

Area Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	26
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	75.00	792.00
tblConstructionPhase	NumDays	1,110.00	783.00
tblConstructionPhase	NumDays	70.00	22.00
tblConstructionPhase	NumDays	110.00	262.00
tblConstructionPhase	NumDays	75.00	22.00
tblGrading	AcresOfGrading	786.00	0.00
tblGrading	MaterialExported	0.00	2,800,000.00
tblGrading	MaterialImported	0.00	2,800,000.00
tblLandUse	LandUseSquareFeet	10,520.00	10,522.00
tblLandUse	LandUseSquareFeet	9,680.00	9,676.00
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	ST_TR	4.91	10.77
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	9.10	0.00
tblVehicleTrips	ST_TR	9.54	10.77
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	4.09	10.77
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	13.60	0.00

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

tblVehicleTrips	SU_TR	8.55	10.77
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	5.44	10.77
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	28.82	0.00
tblVehicleTrips	WD_TR	9.44	10.77

**2.0 Emissions Summary**

**2.1 Overall Construction (Maximum Daily Emission)**

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	9.5157	125.3518	89.5924	0.2171	11.1608	2.9995	14.1602	4.2884	2.7759	7.0643	0.0000	22,334.9535	22,334.9535	3.4568	1.9414	22,999.9046
2023	6.3390	90.1643	69.9224	0.1705	9.8875	1.5074	11.3949	4.0762	1.3898	5.4660	0.0000	17,779.0793	17,779.0793	2.3954	1.8358	18,386.0308
2024	6.9484	25.9741	40.9323	0.0877	3.8750	1.1119	4.5817	1.0370	1.0361	1.9634	0.0000	8,733.2510	8,733.2510	1.4237	0.2482	8,840.4552
2025	6.7725	16.6204	28.5531	0.0702	3.8750	0.6107	4.4857	1.0370	0.5773	1.6143	0.0000	7,076.9138	7,076.9138	0.7235	0.2407	7,166.7334
2026	6.7195	16.5513	27.9496	0.0691	3.8750	0.6097	4.4847	1.0370	0.5764	1.6134	0.0000	6,986.3834	6,986.3834	0.7179	0.2339	7,074.0382
2027	6.6714	16.4901	27.4390	0.0681	3.8750	0.6085	4.4836	1.0370	0.5753	1.6123	0.0000	6,902.9997	6,902.9997	0.7129	0.2276	6,988.6516
<b>Maximum</b>	<b>9.5157</b>	<b>125.3518</b>	<b>89.5924</b>	<b>0.2171</b>	<b>11.1608</b>	<b>2.9995</b>	<b>14.1602</b>	<b>4.2884</b>	<b>2.7759</b>	<b>7.0643</b>	<b>0.0000</b>	<b>22,334.9535</b>	<b>22,334.9535</b>	<b>3.4568</b>	<b>1.9414</b>	<b>22,999.9046</b>



Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

**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	109.7397	8.0499	219.2551	0.4829		28.5098	28.5098		28.5098	28.5098	3,475.1267	6,733.1203	10,208.2470	10.4163	0.2359	10,538.9427
Energy	0.2209	1.8907	0.8261	0.0121		0.1526	0.1526		0.1526	0.1526		2,409.7247	2,409.7247	0.0462	0.0442	2,424.0445
Mobile	11.3944	11.1241	114.4817	0.2587	28.7504	0.1821	28.9325	7.6589	0.1691	7.8280		27,241.0403	27,241.0403	1.7202	1.0522	27,597.6104
<b>Total</b>	<b>121.3550</b>	<b>21.0648</b>	<b>334.5629</b>	<b>0.7537</b>	<b>28.7504</b>	<b>28.8445</b>	<b>57.5948</b>	<b>7.6589</b>	<b>28.8315</b>	<b>36.4904</b>	<b>3,475.1267</b>	<b>36,383.8853</b>	<b>39,859.0120</b>	<b>12.1827</b>	<b>1.3323</b>	<b>40,560.5976</b>

**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	13.1725	5.8911	32.9393	0.0370		0.6175	0.6175		0.6175	0.6175	0.0000	7,125.9438	7,125.9438	0.1883	0.1296	7,169.2821
Energy	0.2209	1.8907	0.8261	0.0121		0.1526	0.1526		0.1526	0.1526		2,409.7247	2,409.7247	0.0462	0.0442	2,424.0445
Mobile	11.3944	11.1241	114.4817	0.2587	28.7504	0.1821	28.9325	7.6589	0.1691	7.8280		27,241.0403	27,241.0403	1.7202	1.0522	27,597.6104
<b>Total</b>	<b>24.7878</b>	<b>18.9059</b>	<b>148.2471</b>	<b>0.3077</b>	<b>28.7504</b>	<b>0.9522</b>	<b>29.7026</b>	<b>7.6589</b>	<b>0.9392</b>	<b>8.5981</b>	<b>0.0000</b>	<b>36,776.7088</b>	<b>36,776.7088</b>	<b>1.9547</b>	<b>1.2260</b>	<b>37,190.9369</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

**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	N2O	CO2e
Percent Reduction	79.57	10.25	55.69	59.17	0.00	96.70	48.43	0.00	96.74	76.44	100.00	-1.08	7.73	83.96	7.97	8.31

**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	9/1/2022	9/1/2023	5	262	
2	Demolition	Demolition	10/3/2022	11/1/2022	5	22	
3	Paving	Paving	2/1/2024	3/1/2024	5	22	
4	Building Construction	Building Construction	2/15/2024	2/15/2027	5	783	
5	Architectural Coating	Architectural Coating	8/1/2024	8/13/2027	5	792	

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.24**

**Residential Indoor: 1,068,795; Residential Outdoor: 356,265; Non-Residential Indoor: 16,125; Non-Residential Outdoor: 5,375; Striped Parking Area: 631 (Architectural Coating – sqft)**

**OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
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

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

**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
Demolition	6	15.00	0.00	112.00	14.70	6.90	0.50	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	700,000.00	14.70	6.90	0.50	LD_Mix	HDT_Mix	HHDT
Building Construction	9	258.00	64.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	52.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

Replace Ground Cover

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**3.2 Grading - 2022**

**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					8.4393	0.0000	8.4393	3.6763	0.0000	3.6763			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
<b>Total</b>	<b>3.6248</b>	<b>38.8435</b>	<b>29.0415</b>	<b>0.0621</b>	<b>8.4393</b>	<b>1.6349</b>	<b>10.0742</b>	<b>3.6763</b>	<b>1.5041</b>	<b>5.1804</b>		<b>6,011.4105</b>	<b>6,011.4105</b>	<b>1.9442</b>		<b>6,060.0158</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.1246	60.5850	38.5040	0.1125	1.2246	0.1192	1.3438	0.3407	0.1140	0.4547		12,189.4908	12,189.4908	0.4494	1.9290	12,775.5527
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	0.0692	0.0505	0.7883	2.0400e-003	0.2236	1.4300e-003	0.2250	0.0593	1.3200e-003	0.0606		208.0254	208.0254	5.6300e-003	5.0000e-003	209.6576
<b>Total</b>	<b>3.1938</b>	<b>60.6356</b>	<b>39.2923</b>	<b>0.1145</b>	<b>1.4482</b>	<b>0.1206</b>	<b>1.5688</b>	<b>0.4000</b>	<b>0.1153</b>	<b>0.5153</b>		<b>12,397.5162</b>	<b>12,397.5162</b>	<b>0.4550</b>	<b>1.9340</b>	<b>12,985.2103</b>



Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**3.2 Grading - 2022**

**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					3.1268	0.0000	3.1268	1.3621	0.0000	1.3621			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
<b>Total</b>	<b>3.6248</b>	<b>38.8435</b>	<b>29.0415</b>	<b>0.0621</b>	<b>3.1268</b>	<b>1.6349</b>	<b>4.7616</b>	<b>1.3621</b>	<b>1.5041</b>	<b>2.8662</b>	<b>0.0000</b>	<b>6,011.4105</b>	<b>6,011.4105</b>	<b>1.9442</b>		<b>6,060.0158</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	lb/day										lb/day						
Hauling	3.1246	60.5850	38.5040	0.1125	0.9950	0.1192	1.1142	0.2843	0.1140	0.3983			12,189.4908	12,189.4908	0.4494	1.9290	12,775.5527
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	0.0692	0.0505	0.7883	2.0400e-003	0.1730	1.4300e-003	0.1745	0.0469	1.3200e-003	0.0482			208.0254	208.0254	5.6300e-003	5.0000e-003	209.6576
<b>Total</b>	<b>3.1938</b>	<b>60.6356</b>	<b>39.2923</b>	<b>0.1145</b>	<b>1.1681</b>	<b>0.1206</b>	<b>1.2887</b>	<b>0.3312</b>	<b>0.1153</b>	<b>0.4465</b>			<b>12,397.5162</b>	<b>12,397.5162</b>	<b>0.4550</b>	<b>1.9340</b>	<b>12,985.2103</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**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					8.4393	0.0000	8.4393	3.6763	0.0000	3.6763			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
<b>Total</b>	<b>3.3217</b>	<b>34.5156</b>	<b>28.0512</b>	<b>0.0621</b>	<b>8.4393</b>	<b>1.4245</b>	<b>9.8638</b>	<b>3.6763</b>	<b>1.3105</b>	<b>4.9868</b>		<b>6,011.4777</b>	<b>6,011.4777</b>	<b>1.9442</b>		<b>6,060.0836</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.9532	55.6041	41.1465	0.1065	1.2247	0.0815	1.3062	0.3407	0.0780	0.4187		11,565.0790	11,565.0790	0.4461	1.8312	12,121.9230
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
<b>Total</b>	<b>3.0173</b>	<b>55.6487</b>	<b>41.8713</b>	<b>0.1085</b>	<b>1.4482</b>	<b>0.0829</b>	<b>1.5311</b>	<b>0.4000</b>	<b>0.0792</b>	<b>0.4792</b>		<b>11,767.6016</b>	<b>11,767.6016</b>	<b>0.4512</b>	<b>1.8358</b>	<b>12,325.9472</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**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	lb/day										lb/day					
Fugitive Dust					3.1268	0.0000	3.1268	1.3621	0.0000	1.3621			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
<b>Total</b>	<b>3.3217</b>	<b>34.5156</b>	<b>28.0512</b>	<b>0.0621</b>	<b>3.1268</b>	<b>1.4245</b>	<b>4.5512</b>	<b>1.3621</b>	<b>1.3105</b>	<b>2.6726</b>	<b>0.0000</b>	<b>6,011.4777</b>	<b>6,011.4777</b>	<b>1.9442</b>		<b>6,060.0836</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.9532	55.6041	41.1465	0.1065	0.9951	0.0815	1.0766	0.2843	0.0780	0.3623		11,565.0790	11,565.0790	0.4461	1.8312	12,121.9230
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	0.1730	1.3500e-003	0.1744	0.0469	1.2400e-003	0.0481		202.5226	202.5226	5.0400e-003	4.6200e-003	204.0242
<b>Total</b>	<b>3.0173</b>	<b>55.6487</b>	<b>41.8713</b>	<b>0.1085</b>	<b>1.1681</b>	<b>0.0829</b>	<b>1.2510</b>	<b>0.3312</b>	<b>0.0792</b>	<b>0.4105</b>		<b>11,767.6016</b>	<b>11,767.6016</b>	<b>0.4512</b>	<b>1.8358</b>	<b>12,325.9472</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**3.3 Demolition - 2022**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.1033	0.0000	1.1033	0.1671	0.0000	0.1671			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.7812	3,746.7812	1.0524		3,773.0920
<b>Total</b>	<b>2.6392</b>	<b>25.7194</b>	<b>20.5941</b>	<b>0.0388</b>	<b>1.1033</b>	<b>1.2427</b>	<b>2.3460</b>	<b>0.1671</b>	<b>1.1553</b>	<b>1.3223</b>		<b>3,746.7812</b>	<b>3,746.7812</b>	<b>1.0524</b>		<b>3,773.0920</b>

**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	5.9500e-003	0.1154	0.0734	2.1000e-004	2.3300e-003	2.3000e-004	2.5600e-003	6.5000e-004	2.2000e-004	8.7000e-004		23.2265	23.2265	8.6000e-004	3.6800e-003	24.3432
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	0.0519	0.0379	0.5912	1.5300e-003	0.1677	1.0700e-003	0.1687	0.0445	9.9000e-004	0.0455		156.0191	156.0191	4.2200e-003	3.7500e-003	157.2432
<b>Total</b>	<b>0.0579</b>	<b>0.1533</b>	<b>0.6646</b>	<b>1.7400e-003</b>	<b>0.1700</b>	<b>1.3000e-003</b>	<b>0.1713</b>	<b>0.0451</b>	<b>1.2100e-003</b>	<b>0.0463</b>		<b>179.2456</b>	<b>179.2456</b>	<b>5.0800e-003</b>	<b>7.4300e-003</b>	<b>181.5864</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**3.3 Demolition - 2022**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4088	0.0000	0.4088	0.0619	0.0000	0.0619			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553	0.0000	3,746.781 2	3,746.781 2	1.0524		3,773.092 0
<b>Total</b>	<b>2.6392</b>	<b>25.7194</b>	<b>20.5941</b>	<b>0.0388</b>	<b>0.4088</b>	<b>1.2427</b>	<b>1.6514</b>	<b>0.0619</b>	<b>1.1553</b>	<b>1.2172</b>	<b>0.0000</b>	<b>3,746.781 2</b>	<b>3,746.781 2</b>	<b>1.0524</b>		<b>3,773.092 0</b>

**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	5.9500e-003	0.1154	0.0734	2.1000e-004	1.9000e-003	2.3000e-004	2.1200e-003	5.4000e-004	2.2000e-004	7.6000e-004		23.2265	23.2265	8.6000e-004	3.6800e-003	24.3432
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	0.0519	0.0379	0.5912	1.5300e-003	0.1298	1.0700e-003	0.1308	0.0352	9.9000e-004	0.0362		156.0191	156.0191	4.2200e-003	3.7500e-003	157.2432
<b>Total</b>	<b>0.0579</b>	<b>0.1533</b>	<b>0.6646</b>	<b>1.7400e-003</b>	<b>0.1317</b>	<b>1.3000e-003</b>	<b>0.1330</b>	<b>0.0357</b>	<b>1.2100e-003</b>	<b>0.0369</b>		<b>179.2456</b>	<b>179.2456</b>	<b>5.0800e-003</b>	<b>7.4300e-003</b>	<b>181.5864</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**3.4 Paving - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.547 2	2,207.547 2	0.7140		2,225.396 3
Paving	0.0286					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>1.0167</b>	<b>9.5246</b>	<b>14.6258</b>	<b>0.0228</b>		<b>0.4685</b>	<b>0.4685</b>		<b>0.4310</b>	<b>0.4310</b>		<b>2,207.547 2</b>	<b>2,207.547 2</b>	<b>0.7140</b>		<b>2,225.396 3</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0448	0.0299	0.5060	1.4400e-003	0.1677	9.7000e-004	0.1686	0.0445	8.9000e-004	0.0454		148.7609	148.7609	3.4200e-003	3.2200e-003	149.8058
<b>Total</b>	<b>0.0448</b>	<b>0.0299</b>	<b>0.5060</b>	<b>1.4400e-003</b>	<b>0.1677</b>	<b>9.7000e-004</b>	<b>0.1686</b>	<b>0.0445</b>	<b>8.9000e-004</b>	<b>0.0454</b>		<b>148.7609</b>	<b>148.7609</b>	<b>3.4200e-003</b>	<b>3.2200e-003</b>	<b>149.8058</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**3.4 Paving - 2024**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310	0.0000	2,207.547 2	2,207.547 2	0.7140		2,225.396 3
Paving	0.0286					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>1.0167</b>	<b>9.5246</b>	<b>14.6258</b>	<b>0.0228</b>		<b>0.4685</b>	<b>0.4685</b>		<b>0.4310</b>	<b>0.4310</b>	<b>0.0000</b>	<b>2,207.547 2</b>	<b>2,207.547 2</b>	<b>0.7140</b>		<b>2,225.396 3</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0448	0.0299	0.5060	1.4400e-003	0.1298	9.7000e-004	0.1307	0.0352	8.9000e-004	0.0361		148.7609	148.7609	3.4200e-003	3.2200e-003	149.8058
<b>Total</b>	<b>0.0448</b>	<b>0.0299</b>	<b>0.5060</b>	<b>1.4400e-003</b>	<b>0.1298</b>	<b>9.7000e-004</b>	<b>0.1307</b>	<b>0.0352</b>	<b>8.9000e-004</b>	<b>0.0361</b>		<b>148.7609</b>	<b>148.7609</b>	<b>3.4200e-003</b>	<b>3.2200e-003</b>	<b>149.8058</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**3.5 Building Construction - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
<b>Total</b>	<b>1.4716</b>	<b>13.4438</b>	<b>16.1668</b>	<b>0.0270</b>		<b>0.6133</b>	<b>0.6133</b>		<b>0.5769</b>	<b>0.5769</b>		<b>2,555.6989</b>	<b>2,555.6989</b>	<b>0.6044</b>		<b>2,570.8077</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0714	2.4615	0.9314	0.0117	0.4100	0.0124	0.4224	0.1180	0.0119	0.1299		1,262.5575	1,262.5575	0.0431	0.1817	1,317.7856
Worker	0.7700	0.5144	8.7023	0.0248	2.8838	0.0167	2.9005	0.7648	0.0154	0.7802		2,558.6866	2,558.6866	0.0589	0.0554	2,576.6598
<b>Total</b>	<b>0.8415</b>	<b>2.9759</b>	<b>9.6337</b>	<b>0.0365</b>	<b>3.2938</b>	<b>0.0291</b>	<b>3.3229</b>	<b>0.8829</b>	<b>0.0273</b>	<b>0.9101</b>		<b>3,821.2440</b>	<b>3,821.2440</b>	<b>0.1020</b>	<b>0.2371</b>	<b>3,894.4454</b>



Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**3.5 Building Construction - 2024**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
<b>Total</b>	<b>1.4716</b>	<b>13.4438</b>	<b>16.1668</b>	<b>0.0270</b>		<b>0.6133</b>	<b>0.6133</b>		<b>0.5769</b>	<b>0.5769</b>	<b>0.0000</b>	<b>2,555.6989</b>	<b>2,555.6989</b>	<b>0.6044</b>		<b>2,570.8077</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0714	2.4615	0.9314	0.0117	0.3341	0.0124	0.3465	0.0994	0.0119	0.1113		1,262.5575	1,262.5575	0.0431	0.1817	1,317.7856
Worker	0.7700	0.5144	8.7023	0.0248	2.2320	0.0167	2.2487	0.6048	0.0154	0.6202		2,558.6866	2,558.6866	0.0589	0.0554	2,576.6598
<b>Total</b>	<b>0.8415</b>	<b>2.9759</b>	<b>9.6337</b>	<b>0.0365</b>	<b>2.5660</b>	<b>0.0291</b>	<b>2.5952</b>	<b>0.7042</b>	<b>0.0273</b>	<b>0.7315</b>		<b>3,821.2440</b>	<b>3,821.2440</b>	<b>0.1020</b>	<b>0.2371</b>	<b>3,894.4454</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**3.5 Building Construction - 2025**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>1.3674</b>	<b>12.4697</b>	<b>16.0847</b>	<b>0.0270</b>		<b>0.5276</b>	<b>0.5276</b>		<b>0.4963</b>	<b>0.4963</b>		<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0694	2.4499	0.9143	0.0115	0.4100	0.0125	0.4224	0.1180	0.0119	0.1300		1,239.826 5	1,239.826 5	0.0434	0.1786	1,294.125 1
Worker	0.7202	0.4622	8.1104	0.0240	2.8838	0.0159	2.8998	0.7648	0.0147	0.7795		2,496.079 2	2,496.079 2	0.0531	0.0517	2,512.818 8
<b>Total</b>	<b>0.7896</b>	<b>2.9121</b>	<b>9.0247</b>	<b>0.0355</b>	<b>3.2938</b>	<b>0.0284</b>	<b>3.3222</b>	<b>0.8829</b>	<b>0.0266</b>	<b>0.9094</b>		<b>3,735.905 7</b>	<b>3,735.905 7</b>	<b>0.0965</b>	<b>0.2303</b>	<b>3,806.943 9</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**3.5 Building Construction - 2025**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>1.3674</b>	<b>12.4697</b>	<b>16.0847</b>	<b>0.0270</b>		<b>0.5276</b>	<b>0.5276</b>		<b>0.4963</b>	<b>0.4963</b>	<b>0.0000</b>	<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0694	2.4499	0.9143	0.0115	0.3341	0.0125	0.3465	0.0994	0.0119	0.1113		1,239.826 5	1,239.826 5	0.0434	0.1786	1,294.125 1
Worker	0.7202	0.4622	8.1104	0.0240	2.2320	0.0159	2.2479	0.6048	0.0147	0.6195		2,496.079 2	2,496.079 2	0.0531	0.0517	2,512.818 8
<b>Total</b>	<b>0.7896</b>	<b>2.9121</b>	<b>9.0247</b>	<b>0.0355</b>	<b>2.5660</b>	<b>0.0284</b>	<b>2.5944</b>	<b>0.7042</b>	<b>0.0266</b>	<b>0.7308</b>		<b>3,735.905 7</b>	<b>3,735.905 7</b>	<b>0.0965</b>	<b>0.2303</b>	<b>3,806.943 9</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**3.5 Building Construction - 2026**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>1.3674</b>	<b>12.4697</b>	<b>16.0847</b>	<b>0.0270</b>		<b>0.5276</b>	<b>0.5276</b>		<b>0.4963</b>	<b>0.4963</b>		<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0677	2.4319	0.9013	0.0113	0.4100	0.0124	0.4224	0.1180	0.0119	0.1299		1,216.815 5	1,216.815 5	0.0437	0.1754	1,270.162 4
Worker	0.6775	0.4196	7.6189	0.0232	2.8838	0.0151	2.8990	0.7648	0.0139	0.7787		2,439.885 6	2,439.885 6	0.0482	0.0488	2,455.615 7
<b>Total</b>	<b>0.7452</b>	<b>2.8516</b>	<b>8.5202</b>	<b>0.0345</b>	<b>3.2938</b>	<b>0.0276</b>	<b>3.3214</b>	<b>0.8829</b>	<b>0.0258</b>	<b>0.9087</b>		<b>3,656.701 1</b>	<b>3,656.701 1</b>	<b>0.0919</b>	<b>0.2241</b>	<b>3,725.778 0</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**3.5 Building Construction - 2026**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>1.3674</b>	<b>12.4697</b>	<b>16.0847</b>	<b>0.0270</b>		<b>0.5276</b>	<b>0.5276</b>		<b>0.4963</b>	<b>0.4963</b>	<b>0.0000</b>	<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0677	2.4319	0.9013	0.0113	0.3341	0.0124	0.3465	0.0994	0.0119	0.1113		1,216.815 5	1,216.815 5	0.0437	0.1754	1,270.162 4
Worker	0.6775	0.4196	7.6189	0.0232	2.2320	0.0151	2.2471	0.6048	0.0139	0.6187		2,439.885 6	2,439.885 6	0.0482	0.0488	2,455.615 7
<b>Total</b>	<b>0.7452</b>	<b>2.8516</b>	<b>8.5202</b>	<b>0.0345</b>	<b>2.5660</b>	<b>0.0276</b>	<b>2.5936</b>	<b>0.7042</b>	<b>0.0258</b>	<b>0.7300</b>		<b>3,656.701 1</b>	<b>3,656.701 1</b>	<b>0.0919</b>	<b>0.2241</b>	<b>3,725.778 0</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**3.5 Building Construction - 2027**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>1.3674</b>	<b>12.4697</b>	<b>16.0847</b>	<b>0.0270</b>		<b>0.5276</b>	<b>0.5276</b>		<b>0.4963</b>	<b>0.4963</b>		<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0662	2.4140	0.8907	0.0111	0.4100	0.0124	0.4223	0.1181	0.0118	0.1299		1,192.868 2	1,192.868 2	0.0438	0.1720	1,245.229 1
Worker	0.6388	0.3837	7.2028	0.0226	2.8838	0.0142	2.8980	0.7648	0.0131	0.7779		2,390.419 2	2,390.419 2	0.0440	0.0463	2,405.302 9
<b>Total</b>	<b>0.7050</b>	<b>2.7976</b>	<b>8.0935</b>	<b>0.0336</b>	<b>3.2938</b>	<b>0.0266</b>	<b>3.3204</b>	<b>0.8829</b>	<b>0.0249</b>	<b>0.9078</b>		<b>3,583.287 3</b>	<b>3,583.287 3</b>	<b>0.0878</b>	<b>0.2183</b>	<b>3,650.532 0</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**3.5 Building Construction - 2027**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
<b>Total</b>	<b>1.3674</b>	<b>12.4697</b>	<b>16.0847</b>	<b>0.0270</b>		<b>0.5276</b>	<b>0.5276</b>		<b>0.4963</b>	<b>0.4963</b>	<b>0.0000</b>	<b>2,556.474 4</b>	<b>2,556.474 4</b>	<b>0.6010</b>		<b>2,571.498 1</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0662	2.4140	0.8907	0.0111	0.3341	0.0124	0.3464	0.0994	0.0118	0.1113		1,192.868 2	1,192.868 2	0.0438	0.1720	1,245.229 1
Worker	0.6388	0.3837	7.2028	0.0226	2.2320	0.0142	2.2462	0.6048	0.0131	0.6179		2,390.419 2	2,390.419 2	0.0440	0.0463	2,405.302 9
<b>Total</b>	<b>0.7050</b>	<b>2.7976</b>	<b>8.0935</b>	<b>0.0336</b>	<b>2.5661</b>	<b>0.0266</b>	<b>2.5926</b>	<b>0.7042</b>	<b>0.0249</b>	<b>0.7291</b>		<b>3,583.287 3</b>	<b>3,583.287 3</b>	<b>0.0878</b>	<b>0.2183</b>	<b>3,650.532 0</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**3.6 Architectural Coating - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
<b>Total</b>	<b>4.4802</b>	<b>1.2188</b>	<b>1.8101</b>	<b>2.9700e-003</b>		<b>0.0609</b>	<b>0.0609</b>		<b>0.0609</b>	<b>0.0609</b>		<b>281.4481</b>	<b>281.4481</b>	<b>0.0159</b>		<b>281.8443</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1552	0.1037	1.7540	5.0000e-003	0.5812	3.3600e-003	0.5846	0.1542	3.1000e-003	0.1572		515.7043	515.7043	0.0119	0.0112	519.3268
<b>Total</b>	<b>0.1552</b>	<b>0.1037</b>	<b>1.7540</b>	<b>5.0000e-003</b>	<b>0.5812</b>	<b>3.3600e-003</b>	<b>0.5846</b>	<b>0.1542</b>	<b>3.1000e-003</b>	<b>0.1572</b>		<b>515.7043</b>	<b>515.7043</b>	<b>0.0119</b>	<b>0.0112</b>	<b>519.3268</b>



Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**3.6 Architectural Coating - 2024**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
<b>Total</b>	<b>4.4802</b>	<b>1.2188</b>	<b>1.8101</b>	<b>2.9700e-003</b>		<b>0.0609</b>	<b>0.0609</b>		<b>0.0609</b>	<b>0.0609</b>	<b>0.0000</b>	<b>281.4481</b>	<b>281.4481</b>	<b>0.0159</b>		<b>281.8443</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1552	0.1037	1.7540	5.0000e-003	0.4499	3.3600e-003	0.4532	0.1219	3.1000e-003	0.1250		515.7043	515.7043	0.0119	0.0112	519.3268
<b>Total</b>	<b>0.1552</b>	<b>0.1037</b>	<b>1.7540</b>	<b>5.0000e-003</b>	<b>0.4499</b>	<b>3.3600e-003</b>	<b>0.4532</b>	<b>0.1219</b>	<b>3.1000e-003</b>	<b>0.1250</b>		<b>515.7043</b>	<b>515.7043</b>	<b>0.0119</b>	<b>0.0112</b>	<b>519.3268</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**3.6 Architectural Coating - 2025**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.4703</b>	<b>1.1455</b>	<b>1.8091</b>	<b>2.9700e-003</b>		<b>0.0515</b>	<b>0.0515</b>		<b>0.0515</b>	<b>0.0515</b>		<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1452	0.0932	1.6347	4.8300e-003	0.5812	3.2100e-003	0.5845	0.1542	2.9500e-003	0.1571		503.0857	503.0857	0.0107	0.0104	506.4596
<b>Total</b>	<b>0.1452</b>	<b>0.0932</b>	<b>1.6347</b>	<b>4.8300e-003</b>	<b>0.5812</b>	<b>3.2100e-003</b>	<b>0.5845</b>	<b>0.1542</b>	<b>2.9500e-003</b>	<b>0.1571</b>		<b>503.0857</b>	<b>503.0857</b>	<b>0.0107</b>	<b>0.0104</b>	<b>506.4596</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**3.6 Architectural Coating - 2025**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.4703</b>	<b>1.1455</b>	<b>1.8091</b>	<b>2.9700e-003</b>		<b>0.0515</b>	<b>0.0515</b>		<b>0.0515</b>	<b>0.0515</b>	<b>0.0000</b>	<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1452	0.0932	1.6347	4.8300e-003	0.4499	3.2100e-003	0.4531	0.1219	2.9500e-003	0.1249		503.0857	503.0857	0.0107	0.0104	506.4596
<b>Total</b>	<b>0.1452</b>	<b>0.0932</b>	<b>1.6347</b>	<b>4.8300e-003</b>	<b>0.4499</b>	<b>3.2100e-003</b>	<b>0.4531</b>	<b>0.1219</b>	<b>2.9500e-003</b>	<b>0.1249</b>		<b>503.0857</b>	<b>503.0857</b>	<b>0.0107</b>	<b>0.0104</b>	<b>506.4596</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**3.6 Architectural Coating - 2026**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.4703</b>	<b>1.1455</b>	<b>1.8091</b>	<b>2.9700e-003</b>		<b>0.0515</b>	<b>0.0515</b>		<b>0.0515</b>	<b>0.0515</b>		<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1366	0.0846	1.5356	4.6800e-003	0.5812	3.0500e-003	0.5843	0.1542	2.8000e-003	0.1570		491.7599	491.7599	9.7100e-003	9.8200e-003	494.9303
<b>Total</b>	<b>0.1366</b>	<b>0.0846</b>	<b>1.5356</b>	<b>4.6800e-003</b>	<b>0.5812</b>	<b>3.0500e-003</b>	<b>0.5843</b>	<b>0.1542</b>	<b>2.8000e-003</b>	<b>0.1570</b>		<b>491.7599</b>	<b>491.7599</b>	<b>9.7100e-003</b>	<b>9.8200e-003</b>	<b>494.9303</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**3.6 Architectural Coating - 2026**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.4703</b>	<b>1.1455</b>	<b>1.8091</b>	<b>2.9700e-003</b>		<b>0.0515</b>	<b>0.0515</b>		<b>0.0515</b>	<b>0.0515</b>	<b>0.0000</b>	<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1366	0.0846	1.5356	4.6800e-003	0.4499	3.0500e-003	0.4529	0.1219	2.8000e-003	0.1247		491.7599	491.7599	9.7100e-003	9.8200e-003	494.9303
<b>Total</b>	<b>0.1366</b>	<b>0.0846</b>	<b>1.5356</b>	<b>4.6800e-003</b>	<b>0.4499</b>	<b>3.0500e-003</b>	<b>0.4529</b>	<b>0.1219</b>	<b>2.8000e-003</b>	<b>0.1247</b>		<b>491.7599</b>	<b>491.7599</b>	<b>9.7100e-003</b>	<b>9.8200e-003</b>	<b>494.9303</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**3.6 Architectural Coating - 2027**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.4703</b>	<b>1.1455</b>	<b>1.8091</b>	<b>2.9700e-003</b>		<b>0.0515</b>	<b>0.0515</b>		<b>0.0515</b>	<b>0.0515</b>		<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1287	0.0773	1.4517	4.5500e-003	0.5812	2.8600e-003	0.5841	0.1542	2.6300e-003	0.1568		481.7899	481.7899	8.8600e-003	9.3200e-003	484.7897
<b>Total</b>	<b>0.1287</b>	<b>0.0773</b>	<b>1.4517</b>	<b>4.5500e-003</b>	<b>0.5812</b>	<b>2.8600e-003</b>	<b>0.5841</b>	<b>0.1542</b>	<b>2.6300e-003</b>	<b>0.1568</b>		<b>481.7899</b>	<b>481.7899</b>	<b>8.8600e-003</b>	<b>9.3200e-003</b>	<b>484.7897</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

**3.6 Architectural Coating - 2027**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	4.2994					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
<b>Total</b>	<b>4.4703</b>	<b>1.1455</b>	<b>1.8091</b>	<b>2.9700e-003</b>		<b>0.0515</b>	<b>0.0515</b>		<b>0.0515</b>	<b>0.0515</b>	<b>0.0000</b>	<b>281.4481</b>	<b>281.4481</b>	<b>0.0154</b>		<b>281.8319</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1287	0.0773	1.4517	4.5500e-003	0.4499	2.8600e-003	0.4527	0.1219	2.6300e-003	0.1245		481.7899	481.7899	8.8600e-003	9.3200e-003	484.7897
<b>Total</b>	<b>0.1287</b>	<b>0.0773</b>	<b>1.4517</b>	<b>4.5500e-003</b>	<b>0.4499</b>	<b>2.8600e-003</b>	<b>0.4527</b>	<b>0.1219</b>	<b>2.6300e-003</b>	<b>0.1245</b>		<b>481.7899</b>	<b>481.7899</b>	<b>8.8600e-003</b>	<b>9.3200e-003</b>	<b>484.7897</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

**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	11.3944	11.1241	114.4817	0.2587	28.7504	0.1821	28.9325	7.6589	0.1691	7.8280		27,241.04 03	27,241.04 03	1.7202	1.0522	27,597.61 04
Unmitigated	11.3944	11.1241	114.4817	0.2587	28.7504	0.1821	28.9325	7.6589	0.1691	7.8280		27,241.04 03	27,241.04 03	1.7202	1.0522	27,597.61 04

**4.2 Trip Summary Information**

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Condo/Townhouse High Rise	1,884.75	1,884.75	1884.75	6,440,477	6,440,477
Health Club	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Recreational Swimming Pool	0.00	0.00	0.00		
Single Family Housing	2,110.92	2,110.92	2110.92	7,213,334	7,213,334
<b>Total</b>	<b>3,995.67</b>	<b>3,995.67</b>	<b>3,995.67</b>	<b>13,653,811</b>	<b>13,653,811</b>

**4.3 Trip Type Information**

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6



Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

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

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Condo/Townhouse High Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	52	39	9
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Recreational Swimming Pool	16.60	8.40	6.90	33.00	48.00	19.00	52	39	9
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
City Park	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Condo/Townhouse High Rise	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Health Club	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Parking Lot	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Recreational Swimming Pool	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Single Family Housing	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318

**5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

**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	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.2209	1.8907	0.8261	0.0121		0.1526	0.1526		0.1526	0.1526		2,409.7247	2,409.7247	0.0462	0.0442	2,424.0445
NaturalGas Unmitigated	0.2209	1.8907	0.8261	0.0121		0.1526	0.1526		0.1526	0.1526		2,409.7247	2,409.7247	0.0462	0.0442	2,424.0445

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

**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**

**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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	6264.8	0.0676	0.5773	0.2457	3.6900e-003		0.0467	0.0467		0.0467	0.0467		737.0357	737.0357	0.0141	0.0135	741.4155
Health Club	528.959	5.7000e-003	0.0519	0.0436	3.1000e-004		3.9400e-003	3.9400e-003		3.9400e-003	3.9400e-003		62.2305	62.2305	1.1900e-003	1.1400e-003	62.6003
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	13688.9	0.1476	1.2615	0.5368	8.0500e-003		0.1020	0.1020		0.1020	0.1020		1,610.4586	1,610.4586	0.0309	0.0295	1,620.0287
<b>Total</b>		<b>0.2209</b>	<b>1.8907</b>	<b>0.8261</b>	<b>0.0121</b>		<b>0.1526</b>	<b>0.1526</b>		<b>0.1526</b>	<b>0.1526</b>		<b>2,409.7247</b>	<b>2,409.7247</b>	<b>0.0462</b>	<b>0.0442</b>	<b>2,424.0445</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

**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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	6.2648	0.0676	0.5773	0.2457	3.6900e-003		0.0467	0.0467		0.0467	0.0467		737.0357	737.0357	0.0141	0.0135	741.4155
Health Club	0.528959	5.7000e-003	0.0519	0.0436	3.1000e-004		3.9400e-003	3.9400e-003		3.9400e-003	3.9400e-003		62.2305	62.2305	1.1900e-003	1.1400e-003	62.6003
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	13.6889	0.1476	1.2615	0.5368	8.0500e-003		0.1020	0.1020		0.1020	0.1020		1,610.4586	1,610.4586	0.0309	0.0295	1,620.0287
<b>Total</b>		<b>0.2209</b>	<b>1.8907</b>	<b>0.8261</b>	<b>0.0121</b>		<b>0.1526</b>	<b>0.1526</b>		<b>0.1526</b>	<b>0.1526</b>		<b>2,409.7247</b>	<b>2,409.7247</b>	<b>0.0462</b>	<b>0.0442</b>	<b>2,424.0445</b>

**6.0 Area Detail**

**6.1 Mitigation Measures Area**

Use only Natural Gas Hearths

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

**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	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	13.1725	5.8911	32.9393	0.0370		0.6175	0.6175		0.6175	0.6175	0.0000	7,125.9438	7,125.9438	0.1883	0.1296	7,169.2821
Unmitigated	109.7397	8.0499	219.2551	0.4829		28.5098	28.5098		28.5098	28.5098	3,475.1267	6,733.1203	10,208.2470	10.4163	0.2359	10,538.9427

**6.2 Area by SubCategory**

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.9329					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	10.6730					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	97.2154	7.6976	188.6727	0.4813		28.3401	28.3401		28.3401	28.3401	3,475.1267	6,678.0000	10,153.1267	10.3635	0.2359	10,482.5026
Landscaping	0.9184	0.3523	30.5824	1.6200e-003		0.1697	0.1697		0.1697	0.1697		55.1203	55.1203	0.0528		56.4402
<b>Total</b>	<b>109.7397</b>	<b>8.0499</b>	<b>219.2551</b>	<b>0.4829</b>		<b>28.5098</b>	<b>28.5098</b>		<b>28.5098</b>	<b>28.5098</b>	<b>3,475.1267</b>	<b>6,733.1203</b>	<b>10,208.2470</b>	<b>10.4163</b>	<b>0.2359</b>	<b>10,538.9427</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

**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	0.9329					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	10.6730					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.6482	5.5388	2.3569	0.0354		0.4478	0.4478		0.4478	0.4478	0.0000	7,070.8235	7,070.8235	0.1355	0.1296	7,112.8419
Landscaping	0.9184	0.3523	30.5824	1.6200e-003		0.1697	0.1697		0.1697	0.1697		55.1203	55.1203	0.0528		56.4402
<b>Total</b>	<b>13.1725</b>	<b>5.8911</b>	<b>32.9393</b>	<b>0.0370</b>		<b>0.6175</b>	<b>0.6175</b>		<b>0.6175</b>	<b>0.6175</b>	<b>0.0000</b>	<b>7,125.9438</b>	<b>7,125.9438</b>	<b>0.1883</b>	<b>0.1296</b>	<b>7,169.2821</b>

**7.0 Water Detail**

**7.1 Mitigation Measures Water**

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Summer

**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**

Institute Recycling and Composting Services

**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**

---

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**Bouquet Canyon Project Addendum\_Unmitigated**

**Los Angeles-South Coast County, Annual**

**1.0 Project Characteristics**

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	10.52	1000sqft	0.24	10,522.00	0
City Park	2.65	Acre	2.65	115,434.00	0
Health Club	10.75	1000sqft	0.25	10,750.00	0
Recreational Swimming Pool	9.68	1000sqft	0.22	9,676.00	0
Condo/Townhouse High Rise	175.00	Dwelling Unit	2.73	175,000.00	501
Single Family Housing	196.00	Dwelling Unit	63.64	352,800.00	561

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	33
<b>Climate Zone</b>	9			<b>Operational Year</b>	2026
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MWhr)</b>	390.98	<b>CH4 Intensity (lb/MWhr)</b>	0.033	<b>N2O Intensity (lb/MWhr)</b>	0.004

**1.3 User Entered Comments & Non-Default Data**

- Project Characteristics -
- Land Use - per project description
- Construction Phase - per construction questionnaire
- Trips and VMT - Earthwork would be balanced on-site.
- Demolition - per CalEEMod formula and data in AQ construction questionnaire
- Grading - per email communication
- Vehicle Trips - per traffic study



Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

Construction Off-road Equipment Mitigation - Per SCAQMD standards and regulations

Area Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	26
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	75.00	792.00
tblConstructionPhase	NumDays	1,110.00	783.00
tblConstructionPhase	NumDays	70.00	22.00
tblConstructionPhase	NumDays	110.00	262.00
tblConstructionPhase	NumDays	75.00	22.00
tblGrading	AcresOfGrading	786.00	0.00
tblGrading	MaterialExported	0.00	2,800,000.00
tblGrading	MaterialImported	0.00	2,800,000.00
tblLandUse	LandUseSquareFeet	10,520.00	10,522.00
tblLandUse	LandUseSquareFeet	9,680.00	9,676.00
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	ST_TR	4.91	10.77
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	9.10	0.00
tblVehicleTrips	ST_TR	9.54	10.77
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	4.09	10.77
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	13.60	0.00

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

tblVehicleTrips	SU_TR	8.55	10.77
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	5.44	10.77
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	28.82	0.00
tblVehicleTrips	WD_TR	9.44	10.77

**2.0 Emissions Summary**

**2.1 Overall Construction**

**Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.3208	4.6905	3.2395	8.1300e-003	0.6545	0.0902	0.7447	0.2114	0.0833	0.2947	0.0000	766.1498	766.1498	0.1050	0.0766	791.5870
2023	0.5409	8.0664	6.1649	0.0150	0.9682	0.1321	1.1003	0.3721	0.1218	0.4939	0.0000	1,416.6981	1,416.6981	0.1895	0.1467	1,465.1535
2024	0.5283	2.0796	3.2543	7.8500e-003	0.4028	0.0822	0.4850	0.1080	0.0774	0.1855	0.0000	714.1327	714.1327	0.0820	0.0258	723.8628
2025	0.8829	2.1942	3.6567	9.0200e-003	0.4959	0.0797	0.5756	0.1329	0.0753	0.2083	0.0000	824.2778	824.2778	0.0858	0.0291	835.1070
2026	0.8762	2.1841	3.5827	8.8800e-003	0.4959	0.0796	0.5755	0.1329	0.0752	0.2082	0.0000	813.8884	813.8884	0.0851	0.0283	824.4494
2027	0.4033	0.3462	0.6367	1.5500e-003	0.0976	0.0132	0.1108	0.0261	0.0127	0.0388	0.0000	142.1905	142.1905	0.0118	3.9600e-003	143.6667
<b>Maximum</b>	<b>0.8829</b>	<b>8.0664</b>	<b>6.1649</b>	<b>0.0150</b>	<b>0.9682</b>	<b>0.1321</b>	<b>1.1003</b>	<b>0.3721</b>	<b>0.1218</b>	<b>0.4939</b>	<b>0.0000</b>	<b>1,416.6981</b>	<b>1,416.6981</b>	<b>0.1895</b>	<b>0.1467</b>	<b>1,465.1535</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**2.1 Overall Construction**

**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					
2022	0.3208	4.6905	3.2395	8.1300e-003	0.2703	0.0902	0.3605	0.0864	0.0833	0.1697	0.0000	766.1495	766.1495	0.1050	0.0766	791.5866
2023	0.5409	8.0664	6.1649	0.0150	0.4132	0.1321	0.5453	0.1537	0.1218	0.2755	0.0000	1,416.6975	1,416.6975	0.1895	0.1467	1,465.1529
2024	0.5283	2.0796	3.2543	7.8500e-003	0.3139	0.0822	0.3961	0.0862	0.0774	0.1637	0.0000	714.1324	714.1324	0.0820	0.0258	723.8625
2025	0.8829	2.1942	3.6567	9.0200e-003	0.3864	0.0797	0.4661	0.1060	0.0753	0.1814	0.0000	824.2774	824.2774	0.0858	0.0291	835.1066
2026	0.8762	2.1841	3.5827	8.8800e-003	0.3864	0.0796	0.4659	0.1060	0.0752	0.1813	0.0000	813.8880	813.8880	0.0851	0.0283	824.4490
2027	0.4033	0.3462	0.6367	1.5500e-003	0.0758	0.0132	0.0891	0.0207	0.0127	0.0334	0.0000	142.1904	142.1904	0.0118	3.9600e-003	143.6666
<b>Maximum</b>	<b>0.8829</b>	<b>8.0664</b>	<b>6.1649</b>	<b>0.0150</b>	<b>0.4132</b>	<b>0.1321</b>	<b>0.5453</b>	<b>0.1537</b>	<b>0.1218</b>	<b>0.2755</b>	<b>0.0000</b>	<b>1,416.6975</b>	<b>1,416.6975</b>	<b>0.1895</b>	<b>0.1467</b>	<b>1,465.1529</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>40.74</b>	<b>0.00</b>	<b>35.33</b>	<b>43.15</b>	<b>0.00</b>	<b>29.69</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	10-3-2022	1-2-2023	3.8856	3.8856
2	1-3-2023	4-2-2023	3.2140	3.2140
3	4-3-2023	7-2-2023	3.1364	3.1364
4	7-3-2023	10-2-2023	2.1024	2.1024
6	1-3-2024	4-2-2024	0.4387	0.4387

## Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

7	4-3-2024	7-2-2024	0.6088	0.6088
8	7-3-2024	10-2-2024	0.7497	0.7497
9	10-3-2024	1-2-2025	0.8185	0.8185
10	1-3-2025	4-2-2025	0.7595	0.7595
11	4-3-2025	7-2-2025	0.7603	0.7603
12	7-3-2025	10-2-2025	0.7688	0.7688
13	10-3-2025	1-2-2026	0.7764	0.7764
14	1-3-2026	4-2-2026	0.7553	0.7553
15	4-3-2026	7-2-2026	0.7563	0.7563
16	7-3-2026	10-2-2026	0.7648	0.7648
17	10-3-2026	1-2-2027	0.7722	0.7722
18	1-3-2027	4-2-2027	0.4635	0.4635
19	4-3-2027	7-2-2027	0.1892	0.1892
20	7-3-2027	9-30-2027	0.0873	0.0873
		Highest	3.8856	3.8856

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

**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	tons/yr										MT/yr					
Area	3.4481	0.1403	6.1812	6.2200e-003		0.3755	0.3755		0.3755	0.3755	39.4073	81.9778	121.3851	0.1235	2.6700e-003	125.2698
Energy	0.0403	0.3451	0.1508	2.2000e-003		0.0279	0.0279		0.0279	0.0279	0.0000	820.9792	820.9792	0.0433	0.0116	825.5271
Mobile	2.0043	2.2145	20.6124	0.0456	5.1306	0.0331	5.1637	1.3689	0.0307	1.3996	0.0000	4,354.0687	4,354.0687	0.2902	0.1822	4,415.6131
Waste						0.0000	0.0000		0.0000	0.0000	86.7157	0.0000	86.7157	5.1248	0.0000	214.8345
Water						0.0000	0.0000		0.0000	0.0000	8.0520	96.3146	104.3667	0.8352	0.0205	131.3584
<b>Total</b>	<b>5.4926</b>	<b>2.6998</b>	<b>26.9443</b>	<b>0.0540</b>	<b>5.1306</b>	<b>0.4364</b>	<b>5.5670</b>	<b>1.3689</b>	<b>0.4341</b>	<b>1.8029</b>	<b>134.1750</b>	<b>5,353.3403</b>	<b>5,487.5153</b>	<b>6.4168</b>	<b>0.2170</b>	<b>5,712.6029</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**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	2.2410	0.1133	3.8523	6.4000e-004		0.0268	0.0268		0.0268	0.0268	0.0000	86.4323	86.4323	7.5200e-003	1.4700e-003	87.0585
Energy	0.0403	0.3451	0.1508	2.2000e-003		0.0279	0.0279		0.0279	0.0279	0.0000	820.9792	820.9792	0.0433	0.0116	825.5271
Mobile	2.0043	2.2145	20.6124	0.0456	5.1306	0.0331	5.1637	1.3689	0.0307	1.3996	0.0000	4,354.0687	4,354.0687	0.2902	0.1822	4,415.6131
Waste						0.0000	0.0000		0.0000	0.0000	43.3579	0.0000	43.3579	2.5624	0.0000	107.4173
Water						0.0000	0.0000		0.0000	0.0000	8.0520	96.3146	104.3667	0.8352	0.0205	131.3584
<b>Total</b>	<b>4.2855</b>	<b>2.6728</b>	<b>24.6154</b>	<b>0.0484</b>	<b>5.1306</b>	<b>0.0878</b>	<b>5.2183</b>	<b>1.3689</b>	<b>0.0854</b>	<b>1.4543</b>	<b>51.4099</b>	<b>5,357.7948</b>	<b>5,409.2047</b>	<b>3.7385</b>	<b>0.2158</b>	<b>5,566.9743</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>21.98</b>	<b>1.00</b>	<b>8.64</b>	<b>10.33</b>	<b>0.00</b>	<b>79.89</b>	<b>6.26</b>	<b>0.00</b>	<b>80.32</b>	<b>19.34</b>	<b>61.68</b>	<b>-0.08</b>	<b>1.43</b>	<b>41.74</b>	<b>0.55</b>	<b>2.55</b>

**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	9/1/2022	9/1/2023	5	262	
2	Demolition	Demolition	10/3/2022	11/1/2022	5	22	
3	Paving	Paving	2/1/2024	3/1/2024	5	22	

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

4	Building Construction	Building Construction	2/15/2024	2/15/2027	5	783
5	Architectural Coating	Architectural Coating	8/1/2024	8/13/2027	5	792

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.24**

**Residential Indoor: 1,068,795; Residential Outdoor: 356,265; Non-Residential Indoor: 16,125; Non-Residential Outdoor: 5,375; Striped Parking Area: 631 (Architectural Coating – sqft)**

**OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
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
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**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
Demolition	6	15.00	0.00	112.00	14.70	6.90	0.50	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	700,000.00	14.70	6.90	0.50	LD_Mix	HDT_Mix	HHDT
Building Construction	9	258.00	64.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	52.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

- Replace Ground Cover
- Water Exposed Area
- Water Unpaved Roads
- Reduce Vehicle Speed on Unpaved Roads
- Clean Paved Roads

**3.2 Grading - 2022**

**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					0.5786	0.0000	0.5786	0.1919	0.0000	0.1919	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1577	1.6897	1.2633	2.7000e-003		0.0711	0.0711		0.0654	0.0654	0.0000	237.2255	237.2255	0.0767	0.0000	239.1436
<b>Total</b>	<b>0.1577</b>	<b>1.6897</b>	<b>1.2633</b>	<b>2.7000e-003</b>	<b>0.5786</b>	<b>0.0711</b>	<b>0.6497</b>	<b>0.1919</b>	<b>0.0654</b>	<b>0.2574</b>	<b>0.0000</b>	<b>237.2255</b>	<b>237.2255</b>	<b>0.0767</b>	<b>0.0000</b>	<b>239.1436</b>



Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**3.2 Grading - 2022**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.1305	2.7136	1.7104	4.9000e-003	0.0524	5.3100e-003	0.0577	0.0146	5.0800e-003	0.0197	0.0000	481.9147	481.9147	0.0175	0.0763	505.0774
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	2.9800e-003	2.4800e-003	0.0323	9.0000e-005	9.5300e-003	6.0000e-005	9.6000e-003	2.5300e-003	6.0000e-005	2.5900e-003	0.0000	7.8915	7.8915	2.3000e-004	2.1000e-004	7.9610
<b>Total</b>	<b>0.1334</b>	<b>2.7161</b>	<b>1.7427</b>	<b>4.9900e-003</b>	<b>0.0619</b>	<b>5.3700e-003</b>	<b>0.0673</b>	<b>0.0171</b>	<b>5.1400e-003</b>	<b>0.0223</b>	<b>0.0000</b>	<b>489.8062</b>	<b>489.8062</b>	<b>0.0177</b>	<b>0.0765</b>	<b>513.0384</b>

**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					0.2144	0.0000	0.2144	0.0711	0.0000	0.0711	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1577	1.6897	1.2633	2.7000e-003		0.0711	0.0711		0.0654	0.0654	0.0000	237.2252	237.2252	0.0767	0.0000	239.1433
<b>Total</b>	<b>0.1577</b>	<b>1.6897</b>	<b>1.2633</b>	<b>2.7000e-003</b>	<b>0.2144</b>	<b>0.0711</b>	<b>0.2855</b>	<b>0.0711</b>	<b>0.0654</b>	<b>0.1366</b>	<b>0.0000</b>	<b>237.2252</b>	<b>237.2252</b>	<b>0.0767</b>	<b>0.0000</b>	<b>239.1433</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**3.2 Grading - 2022**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.1305	2.7136	1.7104	4.9000e-003	0.0426	5.3100e-003	0.0480	0.0122	5.0800e-003	0.0173	0.0000	481.9147	481.9147	0.0175	0.0763	505.0774
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	2.9800e-003	2.4800e-003	0.0323	9.0000e-005	7.3900e-003	6.0000e-005	7.4500e-003	2.0000e-003	6.0000e-005	2.0600e-003	0.0000	7.8915	7.8915	2.3000e-004	2.1000e-004	7.9610
<b>Total</b>	<b>0.1334</b>	<b>2.7161</b>	<b>1.7427</b>	<b>4.9900e-003</b>	<b>0.0500</b>	<b>5.3700e-003</b>	<b>0.0554</b>	<b>0.0142</b>	<b>5.1400e-003</b>	<b>0.0194</b>	<b>0.0000</b>	<b>489.8062</b>	<b>489.8062</b>	<b>0.0177</b>	<b>0.0765</b>	<b>513.0384</b>

**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					0.8436	0.0000	0.8436	0.3376	0.0000	0.3376	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2907	3.0201	2.4545	5.4300e-003		0.1246	0.1246		0.1147	0.1147	0.0000	477.1831	477.1831	0.1543	0.0000	481.0413
<b>Total</b>	<b>0.2907</b>	<b>3.0201</b>	<b>2.4545</b>	<b>5.4300e-003</b>	<b>0.8436</b>	<b>0.1246</b>	<b>0.9682</b>	<b>0.3376</b>	<b>0.1147</b>	<b>0.4523</b>	<b>0.0000</b>	<b>477.1831</b>	<b>477.1831</b>	<b>0.1543</b>	<b>0.0000</b>	<b>481.0413</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

**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	tons/yr										MT/yr					
Hauling	0.2447	5.0419	3.6507	9.3800e-003	0.1054	7.3400e-003	0.1128	0.0294	7.0300e-003	0.0364	0.0000	924.0594	924.0594	0.0348	0.1463	968.5280
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	5.5600e-003	4.4100e-003	0.0598	1.7000e-004	0.0192	1.2000e-004	0.0193	5.0900e-003	1.1000e-004	5.2000e-003	0.0000	15.4556	15.4556	4.1000e-004	4.0000e-004	15.5841
<b>Total</b>	<b>0.2503</b>	<b>5.0463</b>	<b>3.7105</b>	<b>9.5500e-003</b>	<b>0.1246</b>	<b>7.4600e-003</b>	<b>0.1321</b>	<b>0.0345</b>	<b>7.1400e-003</b>	<b>0.0416</b>	<b>0.0000</b>	<b>939.5150</b>	<b>939.5150</b>	<b>0.0352</b>	<b>0.1467</b>	<b>984.1121</b>

**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					0.3126	0.0000	0.3126	0.1251	0.0000	0.1251	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2907	3.0201	2.4545	5.4300e-003		0.1246	0.1246		0.1147	0.1147	0.0000	477.1825	477.1825	0.1543	0.0000	481.0408
<b>Total</b>	<b>0.2907</b>	<b>3.0201</b>	<b>2.4545</b>	<b>5.4300e-003</b>	<b>0.3126</b>	<b>0.1246</b>	<b>0.4372</b>	<b>0.1251</b>	<b>0.1147</b>	<b>0.2398</b>	<b>0.0000</b>	<b>477.1825</b>	<b>477.1825</b>	<b>0.1543</b>	<b>0.0000</b>	<b>481.0408</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

**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	tons/yr										MT/yr					
Hauling	0.2447	5.0419	3.6507	9.3800e-003	0.0858	7.3400e-003	0.0931	0.0246	7.0300e-003	0.0316	0.0000	924.0594	924.0594	0.0348	0.1463	968.5280
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	5.5600e-003	4.4100e-003	0.0598	1.7000e-004	0.0149	1.2000e-004	0.0150	4.0300e-003	1.1000e-004	4.1400e-003	0.0000	15.4556	15.4556	4.1000e-004	4.0000e-004	15.5841
<b>Total</b>	<b>0.2503</b>	<b>5.0463</b>	<b>3.7105</b>	<b>9.5500e-003</b>	<b>0.1006</b>	<b>7.4600e-003</b>	<b>0.1081</b>	<b>0.0286</b>	<b>7.1400e-003</b>	<b>0.0357</b>	<b>0.0000</b>	<b>939.5150</b>	<b>939.5150</b>	<b>0.0352</b>	<b>0.1467</b>	<b>984.1121</b>

**3.3 Demolition - 2022**

**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					0.0121	0.0000	0.0121	1.8400e-003	0.0000	1.8400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0290	0.2829	0.2265	4.3000e-004		0.0137	0.0137		0.0127	0.0127	0.0000	37.3893	37.3893	0.0105	0.0000	37.6518
<b>Total</b>	<b>0.0290</b>	<b>0.2829</b>	<b>0.2265</b>	<b>4.3000e-004</b>	<b>0.0121</b>	<b>0.0137</b>	<b>0.0258</b>	<b>1.8400e-003</b>	<b>0.0127</b>	<b>0.0146</b>	<b>0.0000</b>	<b>37.3893</b>	<b>37.3893</b>	<b>0.0105</b>	<b>0.0000</b>	<b>37.6518</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**3.3 Demolition - 2022**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.0000e-005	1.3100e-003	8.2000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.2322	0.2322	1.0000e-005	4.0000e-005	0.2434
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	5.7000e-004	4.7000e-004	6.1300e-003	2.0000e-005	1.8100e-003	1.0000e-005	1.8200e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.4967	1.4967	4.0000e-005	4.0000e-005	1.5098
<b>Total</b>	<b>6.3000e-004</b>	<b>1.7800e-003</b>	<b>6.9500e-003</b>	<b>2.0000e-005</b>	<b>1.8400e-003</b>	<b>1.0000e-005</b>	<b>1.8500e-003</b>	<b>4.9000e-004</b>	<b>1.0000e-005</b>	<b>5.0000e-004</b>	<b>0.0000</b>	<b>1.7289</b>	<b>1.7289</b>	<b>5.0000e-005</b>	<b>8.0000e-005</b>	<b>1.7532</b>

**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					4.5000e-003	0.0000	4.5000e-003	6.8000e-004	0.0000	6.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0290	0.2829	0.2265	4.3000e-004		0.0137	0.0137		0.0127	0.0127	0.0000	37.3892	37.3892	0.0105	0.0000	37.6518
<b>Total</b>	<b>0.0290</b>	<b>0.2829</b>	<b>0.2265</b>	<b>4.3000e-004</b>	<b>4.5000e-003</b>	<b>0.0137</b>	<b>0.0182</b>	<b>6.8000e-004</b>	<b>0.0127</b>	<b>0.0134</b>	<b>0.0000</b>	<b>37.3892</b>	<b>37.3892</b>	<b>0.0105</b>	<b>0.0000</b>	<b>37.6518</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**3.3 Demolition - 2022**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.0000e-005	1.3100e-003	8.2000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.2322	0.2322	1.0000e-005	4.0000e-005	0.2434
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	5.7000e-004	4.7000e-004	6.1300e-003	2.0000e-005	1.4000e-003	1.0000e-005	1.4100e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.4967	1.4967	4.0000e-005	4.0000e-005	1.5098
<b>Total</b>	<b>6.3000e-004</b>	<b>1.7800e-003</b>	<b>6.9500e-003</b>	<b>2.0000e-005</b>	<b>1.4200e-003</b>	<b>1.0000e-005</b>	<b>1.4300e-003</b>	<b>3.9000e-004</b>	<b>1.0000e-005</b>	<b>4.0000e-004</b>	<b>0.0000</b>	<b>1.7289</b>	<b>1.7289</b>	<b>5.0000e-005</b>	<b>8.0000e-005</b>	<b>1.7532</b>

**3.4 Paving - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0109	0.1048	0.1609	2.5000e-004		5.1500e-003	5.1500e-003		4.7400e-003	4.7400e-003	0.0000	22.0292	22.0292	7.1200e-003	0.0000	22.2073
Paving	3.1000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0112</b>	<b>0.1048</b>	<b>0.1609</b>	<b>2.5000e-004</b>		<b>5.1500e-003</b>	<b>5.1500e-003</b>		<b>4.7400e-003</b>	<b>4.7400e-003</b>	<b>0.0000</b>	<b>22.0292</b>	<b>22.0292</b>	<b>7.1200e-003</b>	<b>0.0000</b>	<b>22.2073</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**3.4 Paving - 2024**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.9000e-004	3.7000e-004	5.2500e-003	2.0000e-005	1.8100e-003	1.0000e-005	1.8200e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.4273	1.4273	3.0000e-005	3.0000e-005	1.4385
<b>Total</b>	<b>4.9000e-004</b>	<b>3.7000e-004</b>	<b>5.2500e-003</b>	<b>2.0000e-005</b>	<b>1.8100e-003</b>	<b>1.0000e-005</b>	<b>1.8200e-003</b>	<b>4.8000e-004</b>	<b>1.0000e-005</b>	<b>4.9000e-004</b>	<b>0.0000</b>	<b>1.4273</b>	<b>1.4273</b>	<b>3.0000e-005</b>	<b>3.0000e-005</b>	<b>1.4385</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0109	0.1048	0.1609	2.5000e-004		5.1500e-003	5.1500e-003		4.7400e-003	4.7400e-003	0.0000	22.0292	22.0292	7.1200e-003	0.0000	22.2073
Paving	3.1000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0112</b>	<b>0.1048</b>	<b>0.1609</b>	<b>2.5000e-004</b>		<b>5.1500e-003</b>	<b>5.1500e-003</b>		<b>4.7400e-003</b>	<b>4.7400e-003</b>	<b>0.0000</b>	<b>22.0292</b>	<b>22.0292</b>	<b>7.1200e-003</b>	<b>0.0000</b>	<b>22.2073</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**3.4 Paving - 2024**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.9000e-004	3.7000e-004	5.2500e-003	2.0000e-005	1.4000e-003	1.0000e-005	1.4100e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.4273	1.4273	3.0000e-005	3.0000e-005	1.4385
<b>Total</b>	<b>4.9000e-004</b>	<b>3.7000e-004</b>	<b>5.2500e-003</b>	<b>2.0000e-005</b>	<b>1.4000e-003</b>	<b>1.0000e-005</b>	<b>1.4100e-003</b>	<b>3.8000e-004</b>	<b>1.0000e-005</b>	<b>3.9000e-004</b>	<b>0.0000</b>	<b>1.4273</b>	<b>1.4273</b>	<b>3.0000e-005</b>	<b>3.0000e-005</b>	<b>1.4385</b>

**3.5 Building Construction - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1685	1.5393	1.8511	3.0900e-003		0.0702	0.0702		0.0661	0.0661	0.0000	265.4672	265.4672	0.0628	0.0000	267.0366
<b>Total</b>	<b>0.1685</b>	<b>1.5393</b>	<b>1.8511</b>	<b>3.0900e-003</b>		<b>0.0702</b>	<b>0.0702</b>		<b>0.0661</b>	<b>0.0661</b>	<b>0.0000</b>	<b>265.4672</b>	<b>265.4672</b>	<b>0.0628</b>	<b>0.0000</b>	<b>267.0366</b>



Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2024**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0200e-003	0.2959	0.1082	1.3400e-003	0.0462	1.4300e-003	0.0476	0.0133	1.3600e-003	0.0147	0.0000	131.2403	131.2403	4.4700e-003	0.0189	136.9860
Worker	0.0875	0.0665	0.9400	2.7300e-003	0.3237	1.9100e-003	0.3256	0.0860	1.7600e-003	0.0877	0.0000	255.5385	255.5385	6.2100e-003	6.2300e-003	257.5515
<b>Total</b>	<b>0.0956</b>	<b>0.3624</b>	<b>1.0482</b>	<b>4.0700e-003</b>	<b>0.3699</b>	<b>3.3400e-003</b>	<b>0.3732</b>	<b>0.0993</b>	<b>3.1200e-003</b>	<b>0.1024</b>	<b>0.0000</b>	<b>386.7788</b>	<b>386.7788</b>	<b>0.0107</b>	<b>0.0251</b>	<b>394.5375</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1685	1.5393	1.8511	3.0900e-003		0.0702	0.0702		0.0661	0.0661	0.0000	265.4669	265.4669	0.0628	0.0000	267.0363
<b>Total</b>	<b>0.1685</b>	<b>1.5393</b>	<b>1.8511</b>	<b>3.0900e-003</b>		<b>0.0702</b>	<b>0.0702</b>		<b>0.0661</b>	<b>0.0661</b>	<b>0.0000</b>	<b>265.4669</b>	<b>265.4669</b>	<b>0.0628</b>	<b>0.0000</b>	<b>267.0363</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2024**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0200e-003	0.2959	0.1082	1.3400e-003	0.0377	1.4300e-003	0.0391	0.0113	1.3600e-003	0.0126	0.0000	131.2403	131.2403	4.4700e-003	0.0189	136.9860
Worker	0.0875	0.0665	0.9400	2.7300e-003	0.2508	1.9100e-003	0.2527	0.0681	1.7600e-003	0.0698	0.0000	255.5385	255.5385	6.2100e-003	6.2300e-003	257.5515
<b>Total</b>	<b>0.0956</b>	<b>0.3624</b>	<b>1.0482</b>	<b>4.0700e-003</b>	<b>0.2885</b>	<b>3.3400e-003</b>	<b>0.2918</b>	<b>0.0793</b>	<b>3.1200e-003</b>	<b>0.0824</b>	<b>0.0000</b>	<b>386.7788</b>	<b>386.7788</b>	<b>0.0107</b>	<b>0.0251</b>	<b>394.5375</b>

**3.5 Building Construction - 2025**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
<b>Total</b>	<b>0.1785</b>	<b>1.6273</b>	<b>2.0991</b>	<b>3.5200e-003</b>		<b>0.0689</b>	<b>0.0689</b>		<b>0.0648</b>	<b>0.0648</b>	<b>0.0000</b>	<b>302.6549</b>	<b>302.6549</b>	<b>0.0711</b>	<b>0.0000</b>	<b>304.4335</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2025**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.8800e-003	0.3357	0.1211	1.5000e-003	0.0526	1.6300e-003	0.0543	0.0152	1.5600e-003	0.0168	0.0000	146.8884	146.8884	5.1300e-003	0.0212	153.3264
Worker	0.0934	0.0680	0.9991	3.0100e-003	0.3689	2.0800e-003	0.3710	0.0980	1.9100e-003	0.0999	0.0000	284.1450	284.1450	6.3800e-003	6.6300e-003	286.2815
<b>Total</b>	<b>0.1023</b>	<b>0.4037</b>	<b>1.1202</b>	<b>4.5100e-003</b>	<b>0.4216</b>	<b>3.7100e-003</b>	<b>0.4253</b>	<b>0.1132</b>	<b>3.4700e-003</b>	<b>0.1167</b>	<b>0.0000</b>	<b>431.0334</b>	<b>431.0334</b>	<b>0.0115</b>	<b>0.0278</b>	<b>439.6079</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
<b>Total</b>	<b>0.1784</b>	<b>1.6273</b>	<b>2.0991</b>	<b>3.5200e-003</b>		<b>0.0689</b>	<b>0.0689</b>		<b>0.0648</b>	<b>0.0648</b>	<b>0.0000</b>	<b>302.6545</b>	<b>302.6545</b>	<b>0.0711</b>	<b>0.0000</b>	<b>304.4331</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2025**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.8800e-003	0.3357	0.1211	1.5000e-003	0.0430	1.6300e-003	0.0446	0.0128	1.5600e-003	0.0144	0.0000	146.8884	146.8884	5.1300e-003	0.0212	153.3264
Worker	0.0934	0.0680	0.9991	3.0100e-003	0.2858	2.0800e-003	0.2879	0.0776	1.9100e-003	0.0795	0.0000	284.1450	284.1450	6.3800e-003	6.6300e-003	286.2815
<b>Total</b>	<b>0.1023</b>	<b>0.4037</b>	<b>1.1202</b>	<b>4.5100e-003</b>	<b>0.3288</b>	<b>3.7100e-003</b>	<b>0.3325</b>	<b>0.0904</b>	<b>3.4700e-003</b>	<b>0.0939</b>	<b>0.0000</b>	<b>431.0334</b>	<b>431.0334</b>	<b>0.0115</b>	<b>0.0278</b>	<b>439.6079</b>

**3.5 Building Construction - 2026**

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
<b>Total</b>	<b>0.1785</b>	<b>1.6273</b>	<b>2.0991</b>	<b>3.5200e-003</b>		<b>0.0689</b>	<b>0.0689</b>		<b>0.0648</b>	<b>0.0648</b>	<b>0.0000</b>	<b>302.6549</b>	<b>302.6549</b>	<b>0.0711</b>	<b>0.0000</b>	<b>304.4335</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2026**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.6500e-003	0.3332	0.1194	1.4700e-003	0.0526	1.6300e-003	0.0543	0.0152	1.5600e-003	0.0168	0.0000	144.1639	144.1639	5.1600e-003	0.0208	150.4888
Worker	0.0880	0.0617	0.9390	2.9100e-003	0.3689	1.9700e-003	0.3709	0.0980	1.8200e-003	0.0998	0.0000	277.7658	277.7658	5.8000e-003	6.2500e-003	279.7733
<b>Total</b>	<b>0.0966</b>	<b>0.3949</b>	<b>1.0584</b>	<b>4.3800e-003</b>	<b>0.4216</b>	<b>3.6000e-003</b>	<b>0.4252</b>	<b>0.1132</b>	<b>3.3800e-003</b>	<b>0.1166</b>	<b>0.0000</b>	<b>421.9297</b>	<b>421.9297</b>	<b>0.0110</b>	<b>0.0270</b>	<b>430.2621</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
<b>Total</b>	<b>0.1784</b>	<b>1.6273</b>	<b>2.0991</b>	<b>3.5200e-003</b>		<b>0.0689</b>	<b>0.0689</b>		<b>0.0648</b>	<b>0.0648</b>	<b>0.0000</b>	<b>302.6545</b>	<b>302.6545</b>	<b>0.0711</b>	<b>0.0000</b>	<b>304.4331</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2026**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.6500e-003	0.3332	0.1194	1.4700e-003	0.0430	1.6300e-003	0.0446	0.0128	1.5600e-003	0.0144	0.0000	144.1639	144.1639	5.1600e-003	0.0208	150.4888
Worker	0.0880	0.0617	0.9390	2.9100e-003	0.2858	1.9700e-003	0.2878	0.0776	1.8200e-003	0.0794	0.0000	277.7658	277.7658	5.8000e-003	6.2500e-003	279.7733
<b>Total</b>	<b>0.0966</b>	<b>0.3949</b>	<b>1.0584</b>	<b>4.3800e-003</b>	<b>0.3288</b>	<b>3.6000e-003</b>	<b>0.3324</b>	<b>0.0904</b>	<b>3.3800e-003</b>	<b>0.0938</b>	<b>0.0000</b>	<b>421.9297</b>	<b>421.9297</b>	<b>0.0110</b>	<b>0.0270</b>	<b>430.2621</b>

**3.5 Building Construction - 2027**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0219	0.1995	0.2574	4.3000e-004		8.4400e-003	8.4400e-003		7.9400e-003	7.9400e-003	0.0000	37.1071	37.1071	8.7200e-003	0.0000	37.3252
<b>Total</b>	<b>0.0219</b>	<b>0.1995</b>	<b>0.2574</b>	<b>4.3000e-004</b>		<b>8.4400e-003</b>	<b>8.4400e-003</b>		<b>7.9400e-003</b>	<b>7.9400e-003</b>	<b>0.0000</b>	<b>37.1071</b>	<b>37.1071</b>	<b>8.7200e-003</b>	<b>0.0000</b>	<b>37.3252</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2027**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0400e-003	0.0405	0.0145	1.8000e-004	6.4500e-003	2.0000e-004	6.6500e-003	1.8600e-003	1.9000e-004	2.0500e-003	0.0000	17.3276	17.3276	6.3000e-004	2.5000e-003	18.0887
Worker	0.0102	6.9200e-003	0.1089	3.5000e-004	0.0452	2.3000e-004	0.0455	0.0120	2.1000e-004	0.0122	0.0000	33.3666	33.3666	6.5000e-004	7.3000e-004	33.5995
<b>Total</b>	<b>0.0112</b>	<b>0.0475</b>	<b>0.1233</b>	<b>5.3000e-004</b>	<b>0.0517</b>	<b>4.3000e-004</b>	<b>0.0521</b>	<b>0.0139</b>	<b>4.0000e-004</b>	<b>0.0143</b>	<b>0.0000</b>	<b>50.6942</b>	<b>50.6942</b>	<b>1.2800e-003</b>	<b>3.2300e-003</b>	<b>51.6882</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0219	0.1995	0.2574	4.3000e-004		8.4400e-003	8.4400e-003		7.9400e-003	7.9400e-003	0.0000	37.1071	37.1071	8.7200e-003	0.0000	37.3251
<b>Total</b>	<b>0.0219</b>	<b>0.1995</b>	<b>0.2574</b>	<b>4.3000e-004</b>		<b>8.4400e-003</b>	<b>8.4400e-003</b>		<b>7.9400e-003</b>	<b>7.9400e-003</b>	<b>0.0000</b>	<b>37.1071</b>	<b>37.1071</b>	<b>8.7200e-003</b>	<b>0.0000</b>	<b>37.3251</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2027**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0400e-003	0.0405	0.0145	1.8000e-004	5.2700e-003	2.0000e-004	5.4700e-003	1.5700e-003	1.9000e-004	1.7600e-003	0.0000	17.3276	17.3276	6.3000e-004	2.5000e-003	18.0887
Worker	0.0102	6.9200e-003	0.1089	3.5000e-004	0.0350	2.3000e-004	0.0353	9.5100e-003	2.1000e-004	9.7200e-003	0.0000	33.3666	33.3666	6.5000e-004	7.3000e-004	33.5995
<b>Total</b>	<b>0.0112</b>	<b>0.0475</b>	<b>0.1233</b>	<b>5.3000e-004</b>	<b>0.0403</b>	<b>4.3000e-004</b>	<b>0.0407</b>	<b>0.0111</b>	<b>4.0000e-004</b>	<b>0.0115</b>	<b>0.0000</b>	<b>50.6942</b>	<b>50.6942</b>	<b>1.2800e-003</b>	<b>3.2300e-003</b>	<b>51.6882</b>

**3.6 Architectural Coating - 2024**

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2343					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.8500e-003	0.0664	0.0987	1.6000e-004		3.3200e-003	3.3200e-003		3.3200e-003	3.3200e-003	0.0000	13.9152	13.9152	7.8000e-004	0.0000	13.9348
<b>Total</b>	<b>0.2442</b>	<b>0.0664</b>	<b>0.0987</b>	<b>1.6000e-004</b>		<b>3.3200e-003</b>	<b>3.3200e-003</b>		<b>3.3200e-003</b>	<b>3.3200e-003</b>	<b>0.0000</b>	<b>13.9152</b>	<b>13.9152</b>	<b>7.8000e-004</b>	<b>0.0000</b>	<b>13.9348</b>



Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2024**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.4000e-003	6.3800e-003	0.0902	2.6000e-004	0.0311	1.8000e-004	0.0312	8.2500e-003	1.7000e-004	8.4200e-003	0.0000	24.5150	24.5150	6.0000e-004	6.0000e-004	24.7081
<b>Total</b>	<b>8.4000e-003</b>	<b>6.3800e-003</b>	<b>0.0902</b>	<b>2.6000e-004</b>	<b>0.0311</b>	<b>1.8000e-004</b>	<b>0.0312</b>	<b>8.2500e-003</b>	<b>1.7000e-004</b>	<b>8.4200e-003</b>	<b>0.0000</b>	<b>24.5150</b>	<b>24.5150</b>	<b>6.0000e-004</b>	<b>6.0000e-004</b>	<b>24.7081</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2343					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.8500e-003	0.0664	0.0987	1.6000e-004		3.3200e-003	3.3200e-003		3.3200e-003	3.3200e-003	0.0000	13.9152	13.9152	7.8000e-004	0.0000	13.9348
<b>Total</b>	<b>0.2442</b>	<b>0.0664</b>	<b>0.0987</b>	<b>1.6000e-004</b>		<b>3.3200e-003</b>	<b>3.3200e-003</b>		<b>3.3200e-003</b>	<b>3.3200e-003</b>	<b>0.0000</b>	<b>13.9152</b>	<b>13.9152</b>	<b>7.8000e-004</b>	<b>0.0000</b>	<b>13.9348</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2024**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.4000e-003	6.3800e-003	0.0902	2.6000e-004	0.0241	1.8000e-004	0.0242	6.5300e-003	1.7000e-004	6.7000e-003	0.0000	24.5150	24.5150	6.0000e-004	6.0000e-004	24.7081
<b>Total</b>	<b>8.4000e-003</b>	<b>6.3800e-003</b>	<b>0.0902</b>	<b>2.6000e-004</b>	<b>0.0241</b>	<b>1.8000e-004</b>	<b>0.0242</b>	<b>6.5300e-003</b>	<b>1.7000e-004</b>	<b>6.7000e-003</b>	<b>0.0000</b>	<b>24.5150</b>	<b>24.5150</b>	<b>6.0000e-004</b>	<b>6.0000e-004</b>	<b>24.7081</b>

**3.6 Architectural Coating - 2025**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5611					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3200	33.3200	1.8200e-003	0.0000	33.3654
<b>Total</b>	<b>0.5834</b>	<b>0.1495</b>	<b>0.2361</b>	<b>3.9000e-004</b>		<b>6.7200e-003</b>	<b>6.7200e-003</b>		<b>6.7200e-003</b>	<b>6.7200e-003</b>	<b>0.0000</b>	<b>33.3200</b>	<b>33.3200</b>	<b>1.8200e-003</b>	<b>0.0000</b>	<b>33.3654</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2025**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0188	0.0137	0.2014	6.1000e-004	0.0744	4.2000e-004	0.0748	0.0198	3.9000e-004	0.0201	0.0000	57.2695	57.2695	1.2900e-003	1.3400e-003	57.7002
<b>Total</b>	<b>0.0188</b>	<b>0.0137</b>	<b>0.2014</b>	<b>6.1000e-004</b>	<b>0.0744</b>	<b>4.2000e-004</b>	<b>0.0748</b>	<b>0.0198</b>	<b>3.9000e-004</b>	<b>0.0201</b>	<b>0.0000</b>	<b>57.2695</b>	<b>57.2695</b>	<b>1.2900e-003</b>	<b>1.3400e-003</b>	<b>57.7002</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5611					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3199	33.3199	1.8200e-003	0.0000	33.3654
<b>Total</b>	<b>0.5834</b>	<b>0.1495</b>	<b>0.2361</b>	<b>3.9000e-004</b>		<b>6.7200e-003</b>	<b>6.7200e-003</b>		<b>6.7200e-003</b>	<b>6.7200e-003</b>	<b>0.0000</b>	<b>33.3199</b>	<b>33.3199</b>	<b>1.8200e-003</b>	<b>0.0000</b>	<b>33.3654</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2025**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0188	0.0137	0.2014	6.1000e-004	0.0576	4.2000e-004	0.0580	0.0156	3.9000e-004	0.0160	0.0000	57.2695	57.2695	1.2900e-003	1.3400e-003	57.7002
<b>Total</b>	<b>0.0188</b>	<b>0.0137</b>	<b>0.2014</b>	<b>6.1000e-004</b>	<b>0.0576</b>	<b>4.2000e-004</b>	<b>0.0580</b>	<b>0.0156</b>	<b>3.9000e-004</b>	<b>0.0160</b>	<b>0.0000</b>	<b>57.2695</b>	<b>57.2695</b>	<b>1.2900e-003</b>	<b>1.3400e-003</b>	<b>57.7002</b>

**3.6 Architectural Coating - 2026**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5611					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3200	33.3200	1.8200e-003	0.0000	33.3654
<b>Total</b>	<b>0.5834</b>	<b>0.1495</b>	<b>0.2361</b>	<b>3.9000e-004</b>		<b>6.7200e-003</b>	<b>6.7200e-003</b>		<b>6.7200e-003</b>	<b>6.7200e-003</b>	<b>0.0000</b>	<b>33.3200</b>	<b>33.3200</b>	<b>1.8200e-003</b>	<b>0.0000</b>	<b>33.3654</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2026**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0177	0.0124	0.1893	5.9000e-004	0.0744	4.0000e-004	0.0748	0.0198	3.7000e-004	0.0201	0.0000	55.9838	55.9838	1.1700e-003	1.2600e-003	56.3884
<b>Total</b>	<b>0.0177</b>	<b>0.0124</b>	<b>0.1893</b>	<b>5.9000e-004</b>	<b>0.0744</b>	<b>4.0000e-004</b>	<b>0.0748</b>	<b>0.0198</b>	<b>3.7000e-004</b>	<b>0.0201</b>	<b>0.0000</b>	<b>55.9838</b>	<b>55.9838</b>	<b>1.1700e-003</b>	<b>1.2600e-003</b>	<b>56.3884</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5611					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3199	33.3199	1.8200e-003	0.0000	33.3654
<b>Total</b>	<b>0.5834</b>	<b>0.1495</b>	<b>0.2361</b>	<b>3.9000e-004</b>		<b>6.7200e-003</b>	<b>6.7200e-003</b>		<b>6.7200e-003</b>	<b>6.7200e-003</b>	<b>0.0000</b>	<b>33.3199</b>	<b>33.3199</b>	<b>1.8200e-003</b>	<b>0.0000</b>	<b>33.3654</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2026**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0177	0.0124	0.1893	5.9000e-004	0.0576	4.0000e-004	0.0580	0.0156	3.7000e-004	0.0160	0.0000	55.9838	55.9838	1.1700e-003	1.2600e-003	56.3884
<b>Total</b>	<b>0.0177</b>	<b>0.0124</b>	<b>0.1893</b>	<b>5.9000e-004</b>	<b>0.0576</b>	<b>4.0000e-004</b>	<b>0.0580</b>	<b>0.0156</b>	<b>3.7000e-004</b>	<b>0.0160</b>	<b>0.0000</b>	<b>55.9838</b>	<b>55.9838</b>	<b>1.1700e-003</b>	<b>1.2600e-003</b>	<b>56.3884</b>

**3.6 Architectural Coating - 2027**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3461					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0138	0.0922	0.1456	2.4000e-004		4.1500e-003	4.1500e-003		4.1500e-003	4.1500e-003	0.0000	20.5537	20.5537	1.1200e-003	0.0000	20.5817
<b>Total</b>	<b>0.3599</b>	<b>0.0922</b>	<b>0.1456</b>	<b>2.4000e-004</b>		<b>4.1500e-003</b>	<b>4.1500e-003</b>		<b>4.1500e-003</b>	<b>4.1500e-003</b>	<b>0.0000</b>	<b>20.5537</b>	<b>20.5537</b>	<b>1.1200e-003</b>	<b>0.0000</b>	<b>20.5817</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2027**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0103	7.0200e-003	0.1104	3.5000e-004	0.0459	2.3000e-004	0.0461	0.0122	2.1000e-004	0.0124	0.0000	33.8354	33.8354	6.6000e-004	7.4000e-004	34.0716
<b>Total</b>	<b>0.0103</b>	<b>7.0200e-003</b>	<b>0.1104</b>	<b>3.5000e-004</b>	<b>0.0459</b>	<b>2.3000e-004</b>	<b>0.0461</b>	<b>0.0122</b>	<b>2.1000e-004</b>	<b>0.0124</b>	<b>0.0000</b>	<b>33.8354</b>	<b>33.8354</b>	<b>6.6000e-004</b>	<b>7.4000e-004</b>	<b>34.0716</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3461					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0138	0.0922	0.1456	2.4000e-004		4.1500e-003	4.1500e-003		4.1500e-003	4.1500e-003	0.0000	20.5537	20.5537	1.1200e-003	0.0000	20.5817
<b>Total</b>	<b>0.3599</b>	<b>0.0922</b>	<b>0.1456</b>	<b>2.4000e-004</b>		<b>4.1500e-003</b>	<b>4.1500e-003</b>		<b>4.1500e-003</b>	<b>4.1500e-003</b>	<b>0.0000</b>	<b>20.5537</b>	<b>20.5537</b>	<b>1.1200e-003</b>	<b>0.0000</b>	<b>20.5817</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2027**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0103	7.0200e-003	0.1104	3.5000e-004	0.0355	2.3000e-004	0.0358	9.6500e-003	2.1000e-004	9.8600e-003	0.0000	33.8354	33.8354	6.6000e-004	7.4000e-004	34.0716
<b>Total</b>	<b>0.0103</b>	<b>7.0200e-003</b>	<b>0.1104</b>	<b>3.5000e-004</b>	<b>0.0355</b>	<b>2.3000e-004</b>	<b>0.0358</b>	<b>9.6500e-003</b>	<b>2.1000e-004</b>	<b>9.8600e-003</b>	<b>0.0000</b>	<b>33.8354</b>	<b>33.8354</b>	<b>6.6000e-004</b>	<b>7.4000e-004</b>	<b>34.0716</b>

**4.0 Operational Detail - Mobile**

---

**4.1 Mitigation Measures Mobile**



Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

**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	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.0043	2.2145	20.6124	0.0456	5.1306	0.0331	5.1637	1.3689	0.0307	1.3996	0.0000	4,354.0687	4,354.0687	0.2902	0.1822	4,415.6131
Unmitigated	2.0043	2.2145	20.6124	0.0456	5.1306	0.0331	5.1637	1.3689	0.0307	1.3996	0.0000	4,354.0687	4,354.0687	0.2902	0.1822	4,415.6131

**4.2 Trip Summary Information**

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Condo/Townhouse High Rise	1,884.75	1,884.75	1884.75	6,440,477	6,440,477
Health Club	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Recreational Swimming Pool	0.00	0.00	0.00		
Single Family Housing	2,110.92	2,110.92	2110.92	7,213,334	7,213,334
<b>Total</b>	<b>3,995.67</b>	<b>3,995.67</b>	<b>3,995.67</b>	<b>13,653,811</b>	<b>13,653,811</b>

**4.3 Trip Type Information**

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Condo/Townhouse High Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	52	39	9
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Recreational Swimming Pool	16.60	8.40	6.90	33.00	48.00	19.00	52	39	9
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**4.4 Fleet Mix**

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Condo/Townhouse High Rise	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Health Club	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Parking Lot	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Recreational Swimming Pool	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Single Family Housing	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318

**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	422.0222	422.0222	0.0356	4.3200e-003	424.1994
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	422.0222	422.0222	0.0356	4.3200e-003	424.1994
NaturalGas Mitigated	0.0403	0.3451	0.1508	2.2000e-003		0.0279	0.0279		0.0279	0.0279	0.0000	398.9570	398.9570	7.6500e-003	7.3100e-003	401.3278
NaturalGas Unmitigated	0.0403	0.3451	0.1508	2.2000e-003		0.0279	0.0279		0.0279	0.0279	0.0000	398.9570	398.9570	7.6500e-003	7.3100e-003	401.3278

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

**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**

**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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	2.28665e+006	0.0123	0.1054	0.0448	6.7000e-004		8.5200e-003	8.5200e-003		8.5200e-003	8.5200e-003	0.0000	122.0245	122.0245	2.3400e-003	2.2400e-003	122.7497
Health Club	193070	1.0400e-003	9.4600e-003	7.9500e-003	6.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004	0.0000	10.3030	10.3030	2.0000e-004	1.9000e-004	10.3642
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.99645e+006	0.0269	0.2302	0.0980	1.4700e-003		0.0186	0.0186		0.0186	0.0186	0.0000	266.6295	266.6295	5.1100e-003	4.8900e-003	268.2139
<b>Total</b>		<b>0.0403</b>	<b>0.3451</b>	<b>0.1508</b>	<b>2.2000e-003</b>		<b>0.0279</b>	<b>0.0279</b>		<b>0.0279</b>	<b>0.0279</b>	<b>0.0000</b>	<b>398.9570</b>	<b>398.9570</b>	<b>7.6500e-003</b>	<b>7.3200e-003</b>	<b>401.3278</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

**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	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	2.28665e+006	0.0123	0.1054	0.0448	6.7000e-004		8.5200e-003	8.5200e-003		8.5200e-003	8.5200e-003	0.0000	122.0245	122.0245	2.3400e-003	2.2400e-003	122.7497
Health Club	193070	1.0400e-003	9.4600e-003	7.9500e-003	6.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004	0.0000	10.3030	10.3030	2.0000e-004	1.9000e-004	10.3642
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.99645e+006	0.0269	0.2302	0.0980	1.4700e-003		0.0186	0.0186		0.0186	0.0186	0.0000	266.6295	266.6295	5.1100e-003	4.8900e-003	268.2139
<b>Total</b>		<b>0.0403</b>	<b>0.3451</b>	<b>0.1508</b>	<b>2.2000e-003</b>		<b>0.0279</b>	<b>0.0279</b>		<b>0.0279</b>	<b>0.0279</b>	<b>0.0000</b>	<b>398.9570</b>	<b>398.9570</b>	<b>7.6500e-003</b>	<b>7.3200e-003</b>	<b>401.3278</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**5.3 Energy by Land Use - Electricity**

**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	719077	127.5251	0.0108	1.3000e-003	128.1829
Health Club	116745	20.7042	1.7500e-003	2.1000e-004	20.8110
Parking Lot	3682.7	0.6531	6.0000e-005	1.0000e-005	0.6565
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.54016e+006	273.1399	0.0231	2.7900e-003	274.5489
<b>Total</b>		<b>422.0222</b>	<b>0.0356</b>	<b>4.3100e-003</b>	<b>424.1994</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**5.3 Energy by Land Use - Electricity**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	719077	127.5251	0.0108	1.3000e-003	128.1829
Health Club	116745	20.7042	1.7500e-003	2.1000e-004	20.8110
Parking Lot	3682.7	0.6531	6.0000e-005	1.0000e-005	0.6565
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.54016e+006	273.1399	0.0231	2.7900e-003	274.5489
<b>Total</b>		<b>422.0222</b>	<b>0.0356</b>	<b>4.3100e-003</b>	<b>424.1994</b>

**6.0 Area Detail**

**6.1 Mitigation Measures Area**

Use only Natural Gas Hearths

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

**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	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.2410	0.1133	3.8523	6.4000e-004		0.0268	0.0268		0.0268	0.0268	0.0000	86.4323	86.4323	7.5200e-003	1.4700e-003	87.0585
Unmitigated	3.4481	0.1403	6.1812	6.2200e-003		0.3755	0.3755		0.3755	0.3755	39.4073	81.9778	121.3851	0.1235	2.6700e-003	125.2698

**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	0.1703					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.9478					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.2152	0.0962	2.3584	6.0200e-003		0.3543	0.3543		0.3543	0.3543	39.4073	75.7273	115.1345	0.1175	2.6700e-003	118.8696
Landscaping	0.1148	0.0440	3.8228	2.0000e-004		0.0212	0.0212		0.0212	0.0212	0.0000	6.2505	6.2505	5.9900e-003	0.0000	6.4002
<b>Total</b>	<b>3.4481</b>	<b>0.1403</b>	<b>6.1812</b>	<b>6.2200e-003</b>		<b>0.3755</b>	<b>0.3755</b>		<b>0.3755</b>	<b>0.3755</b>	<b>39.4073</b>	<b>81.9778</b>	<b>121.3851</b>	<b>0.1235</b>	<b>2.6700e-003</b>	<b>125.2698</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

**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	0.1703					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.9478					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	8.1000e-003	0.0692	0.0295	4.4000e-004		5.6000e-003	5.6000e-003		5.6000e-003	5.6000e-003	0.0000	80.1818	80.1818	1.5400e-003	1.4700e-003	80.6583
Landscaping	0.1148	0.0440	3.8228	2.0000e-004		0.0212	0.0212		0.0212	0.0212	0.0000	6.2505	6.2505	5.9900e-003	0.0000	6.4002
<b>Total</b>	<b>2.2410</b>	<b>0.1133</b>	<b>3.8523</b>	<b>6.4000e-004</b>		<b>0.0268</b>	<b>0.0268</b>		<b>0.0268</b>	<b>0.0268</b>	<b>0.0000</b>	<b>86.4323</b>	<b>86.4323</b>	<b>7.5300e-003</b>	<b>1.4700e-003</b>	<b>87.0585</b>

**7.0 Water Detail**

**7.1 Mitigation Measures Water**



Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

**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	104.3667	0.8352	0.0205	131.3584
Unmitigated	104.3667	0.8352	0.0205	131.3584

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**7.2 Water by Land Use**

**Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 3.15743	6.2211	5.3000e-004	6.0000e-005	6.2532
Condo/Townhouse High Rise	11.402 / 7.18819	44.1099	0.3750	9.1900e-003	56.2213
Health Club	0.635789 / 0.389677	2.4377	0.0209	5.1000e-004	3.1129
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0.572506 / 0.350891	2.1950	0.0188	4.6000e-004	2.8031
Single Family Housing	12.7702 / 8.05077	49.4030	0.4199	0.0103	62.9679
<b>Total</b>		<b>104.3667</b>	<b>0.8352</b>	<b>0.0205</b>	<b>131.3584</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

**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			
City Park	0 / 3.15743	6.2211	5.3000e-004	6.0000e-005	6.2532
Condo/Townhouse High Rise	11.402 / 7.18819	44.1099	0.3750	9.1900e-003	56.2213
Health Club	0.635789 / 0.389677	2.4377	0.0209	5.1000e-004	3.1129
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0.572506 / 0.350891	2.1950	0.0188	4.6000e-004	2.8031
Single Family Housing	12.7702 / 8.05077	49.4030	0.4199	0.0103	62.9679
<b>Total</b>		<b>104.3667</b>	<b>0.8352</b>	<b>0.0205</b>	<b>131.3584</b>

**8.0 Waste Detail**

---

**8.1 Mitigation Measures Waste**

Institute Recycling and Composting Services

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	43.3579	2.5624	0.0000	107.4173
Unmitigated	86.7157	5.1248	0.0000	214.8345

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

**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			
City Park	0.23	0.0467	2.7600e-003	0.0000	0.1157
Condo/Townhouse High Rise	80.5	16.3408	0.9657	0.0000	40.4836
Health Club	61.27	12.4373	0.7350	0.0000	30.8128
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	55.18	11.2010	0.6620	0.0000	27.7501
Single Family Housing	230.01	46.6900	2.7593	0.0000	115.6724
<b>Total</b>		<b>86.7157</b>	<b>5.1248</b>	<b>0.0000</b>	<b>214.8345</b>

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

**8.2 Waste by Land Use**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.115	0.0233	1.3800e-003	0.0000	0.0578
Condo/Townhouse High Rise	40.25	8.1704	0.4829	0.0000	20.2418
Health Club	30.635	6.2186	0.3675	0.0000	15.4064
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	27.59	5.6005	0.3310	0.0000	13.8751
Single Family Housing	115.005	23.3450	1.3797	0.0000	57.8362
<b>Total</b>		<b>43.3579</b>	<b>2.5624</b>	<b>0.0000</b>	<b>107.4173</b>

**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

Bouquet Canyon Project Addendum\_Unmitigated - Los Angeles-South Coast County, Annual

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

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

**User Defined Equipment**

Equipment Type	Number
----------------	--------

**11.0 Vegetation**

---

# **Appendix B**

---

## Biological Resources



# **Appendix B.1**

---

Addendum to the Biological Technical Report

HELIX Environmental Planning, Inc.  
16485 Laguna Canyon Road  
Suite 150  
Irvine, CA 92618  
949.234.8770 tel  
619.462.0552 fax  
[www.helixepi.com](http://www.helixepi.com)



February 16, 2022

00357.00025.001

Evan Knapp  
Integral Communities  
888 San Clemente Drive, Suite 100  
Newport Beach, CA 92660

Subject: Addendum to the Biological Technical Report for the Bouquet Canyon Project (Tentative Tract No. 82126)

Dear Mr. Knapp:

This letter report is intended to serve as an Addendum to the Biological Technical Report (BTR) for the Bouquet Canyon Project (project) that HELIX Environmental Planning, Inc. (HELIX) prepared in October 2019 (Attachment A, *Bouquet Canyon Biological Technical Report*). The Bouquet Canyon Project Final Environmental Impact Report (Final EIR) was prepared by Michael Baker International, Inc. and certified by the City of Santa Clarita (California Environmental Quality Act [CEQA] lead agency) on November 10, 2020. Following certification of the Final EIR, some revisions were made to the project design (revised project) and the project study area (revised study area), resulting in minor changes to the original study area evaluated under the attached 2019 BTR for the project.

The purpose of this addendum is to demonstrate that the revised project remains consistent with the findings documented in the "Biological Resources" section of the Final EIR. This letter report describes and existing biological resources within the revised project areas; provides an updated analysis of potential project effects associated with the revised study area; and demonstrates that no new significant impacts to biological resources would result from the implementation of the revised project.

## STUDY AREA LOCATION

The revised project is located within an approximately 89.73-acre revised study area (the original study area described in the 2019 BTR is 93.47 acres) in the Saugus Community in the northern portion of the City of Santa Clarita. The study area includes approximately 56.91 acres of on-site areas within the project boundary and approximately 32.82 acres of off-site areas outside of the project boundary, where project disturbance may be required. The study area is generally located 5.5 miles to the northeast of Interstate 5 and 3.8 miles to the northwest of California State Route 14 (Figure 1, *Regional Location*). The study area is within Section 6 of Township 4 North, Range 15 West of the Mint Canyon U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 2, *USGS Topography*).

Specifically, the study area is located directly south of the intersection of David Way and Bouquet Canyon Road (Figure 3, *Aerial Photograph*).

## REVISED PROJECT AREAS

As described in the BTR, the proposed project is a residential development that would consist of a gated community comprising several neighborhoods and common area amenities. The proposed project also includes the construction of a flood control channel adjacent, and parallel to, the proposed Bouquet Canyon Creek low-flow channel and the new proposed alignment of Bouquet Canyon Road along the southerly boundary of the project site. The approximately 7.50 acres of revised project areas summarized below are included within the approximately 89.73-acre revised study area for the project as described below and depicted on Figure 4, *Revised Project Areas*.

### Revised Project Areas (7.50 Acres)

1. Off-Site Flood Control Channel Outlet - Additional temporary impacts to the concrete banks of the off-site concrete flood control channel required for the revisions related to the alignment of the outlet.
2. Copper Hill Road Improvements – Additional grading/paving for Copper Hill Road.
3. Davenport Trailhead – Addition of the Davenport parcel (APN 2812-008-008) for the construction of a city-required trailhead.
4. Bouquet Canyon Road Improvements North – Additional off-site repaving and improvements to existing Bouquet Canyon Road near the northeast corner of the project.
5. Flood Control Channel Inlet & Diversion Structure – Construction of a slightly larger concrete flow diversion structure intended to convey low flows into the low-flow channel and divert high flows into the proposed concrete-lined flood control channel.
6. Sewer Line - Installation of a sewer line in the northeast portion of the site.
7. Slope Grading – Additional slope grading for the new alignment of Bouquet Canyon Road along the southerly border of the study area.
8. Bouquet Canyon Road Improvements South – Minor additional off-site road repaving and improvements to Bouquet Canyon Road located in the southwesterly portion of the project site.
9. Residential Addition – Addition of the “donut hole” parcel (APN 2812-008-002) in the easterly portion of the project site. Note that this area was evaluated for impacts to biological resources in the 2019 BTR yet was not evaluated as part of the project in the Final EIR. Additional residential uses have been proposed in the donut hole area since the Final EIR was certified. As such, the donut hole parcel has been included in this addendum.
10. Residential Reduction - Removal of Planning Area 1a, which was previously proposed to be constructed within the southern portion of the study area per the project BTR and Final EIR.

This planning area presented in the Final EIR for the project will not be constructed as part of the revised project.

## UPDATED GENERAL BIOLOGICAL SURVEY AND JURISDICTIONAL DELINEATION

On December 10 and December 21, 2021, HELIX biologist and ISA-certified arborist Daniel Torres performed a general biological survey, jurisdictional assessment, burrowing habitat assessment, and oak tree assessment over Revised Project Areas 1-8 described above. Mr. Torres performed an initial oak tree survey within Project Area 3 on February 26, 2021. Carlsberg and Associates performed a follow-up oak tree health assessment on Project Area 3 (Davenport Trailhead) on August 12, 2021. Area 9 (the donut hole parcel) was previously assessed as part of the 2019 BTR although that area had not been included as part of the project in the Final EIR for the original project. An oak tree assessment was performed in Area 9 on August 16, 2021. Area 10 is a reduction in the project footprint, and is, therefore, not included in the December 2021 field assessments. The oak tree survey report addendum including addenda covering all surveys mentioned above is included as Attachment B, *Oak Tree Survey Report Addendum*.

## SUMMARY OF EXISTING CONDITIONS

The revised approximately 85.86-acre study area is located in the foothills of the Sierra Pelona Mountains, and portions were historically used as a school, ranch, and hog farm from the early 1900s through the 1970s (Historic Aerials 1948). The topography in the southern and western portions of the revised study area is predominantly steep hillsides, while the northern portion is primarily flat. The steep hills throughout the southern and western portions of the site are predominated by Riversidean upland sage scrub, while the flatter portions of the study area are dominated by non-native grassland due to historic disturbance from ranching activities (Figure 5, *Vegetation and Land Uses*). Bouquet Canyon Creek flows from east to west in the northern portion of the revised study area and supports U.S. Army Corps of Engineers (USACE)/Regional Water Quality Control Board (RWQCB) waters of the U.S. and California Department of Fish and Wildlife (CDFW) jurisdictional streambed and associated vegetation (Figure 6, *Jurisdictional Features*). Elevations associated with the revised study area range from approximately 1,365 feet above mean sea level (AMSL) near the western boundary of the study area to approximately 1,600 feet above AMSL near the southeastern corner. Eight soil types are mapped on the revised study area, including Castaic-Balcom silty clay loams (CmF2), Hanford sandy loam (HcC), Metz loam sandy (MfA), Mocho loam (MpA), Ojai loam (3f), Saugus loam (ScF2), Sorrento loam (SsA), and Yolo loam (YoC; NRCS 2017).

Immediate surrounding land uses include existing residential development to the north and west, a mixture of undeveloped land and residential development to the south, and a juvenile camp (Los Angeles County Camp Joseph Scott) to the east. The revised study area is located approximately 0.20 mile to the southeast of Haskell Canyon Open Space and 1.40 miles to the south of Angeles National Forest.

## REVISED PROJECT EFFECTS TO BIOLOGICAL RESOURCES

The following provides a summary of revised project effects to biological resources:

### Vegetation Communities

The revised project falls within, and adjacent to, the original study area and consists of approximately 80.83 acres of permanent impacts and 0.53 acre of temporary impacts to vegetation and land uses. Additional impacts to vegetation and land uses occur on the edges of the prior study area and would mostly affect existing disturbed/developed areas and non-native vegetation (See Areas 2, 3, 4, 7, 8, and 9 on Figure 4). The removal of Planning Area 1a (Revised Project Area 10 on Figure 4) alone results in the reduction of 6.95 acres of impacts to vegetation and land uses as compared to the previous study area evaluated in the project BTR.

### Jurisdictional Waters

In summary, the project has reduced permanent impacts to California Department of Fish and Wildlife (CDFW) jurisdictional streambeds and U.S. Army Corps of Engineers (USACE) waters of the U.S. evaluated in the Final EIR. However, due to State-level procedural changes implemented in May 2020 during the processing of the Los Angeles Regional Water Quality Control Board (RWQCB) Section 401 Water Quality Certification for the project issued the Los Angeles RWQCB on March 8, 2021 (File No. 20-089), the limits of RWQCB waters of the State were expanded on the site based on hydrologic modeling of the 25-year flood event within Bouquet Canyon Creek, rather than being based on jurisdictional field indicators associated with the ordinary high water mark (OHWM), as had been the long-standing method. Consequently, the extent of permanent impacts to RWQCB jurisdictional waters of the U.S. have increased compared to the Final EIR. It should be noted that areas of expanded jurisdiction by the Los Angeles RWQCB are located within the limits of areas previously evaluated in the project BTR and the Final EIR as supporting CDFW jurisdictional resources. Given that project impacts to expanded RWQCB jurisdictional areas (and compensatory mitigation for RWQCB impacts) were evaluated as waters of the State regulated by CDFW in the Final EIR for the project, impacts to expanded RWQCB waters regulated under the project Section 401 Water Quality Certification are considered less than significant.

Although jurisdictional resources were identified within areas added to the project (See Revised Project Areas #5 and #6 on Figure 4), no additional impacts to jurisdictional streambeds will occur within the Revised Project Areas depicted on Figure 4. The sewer line proposed within Area 6 will be installed with directional drilling and will not result in additional impacts to jurisdictional streambeds regulated by the CDFW, USACE, or RWQCB. Therefore, no new significant impacts to biological resources will result from the implementation of the revised project plan when compared to the findings of the Final EIR for the project. A more detailed discussion of revised project effects on biological resources is provided below.

## Sensitive Species

### Rare Plants

Rare plant surveys were conducted within the prior study area in 2018 and 2019. A total of 496 slender mariposa lilies (*Calochortus clavatus* var. *gracilis*) were observed throughout the north-facing slopes in

the eastern and southern portions of the original study area. Of those 496 individuals, 462 individual lilies were determined to be permanently impacted by the original project as part of the project BTR and the Final EIR. The new impact areas associated with New Bouquet Canyon Road improvement slope grading revisions (Area 7 on Figure 4) in the southern portion of the revised study area are located within the vicinity of these individuals. Area 7 was surveyed as part of the 2018 and 2019 rare plant surveys. However, with the removal of Area 10 from the revised study area and the minor slope revisions proposed within Revised Project Area 7 (slope grading), impacts to slender mariposa lilies will be reduced by nine (9) individuals, reducing the total impacts to this species from 462 individual lilies within the original project study area, to 453 individual lilies within the revised study area. Area 3 supports a suitable vegetation community (non-native vegetation/Riversidean upland sage scrub) for slender mariposa lily; however, the vegetation is located on a steep and highly disturbed south-facing slope, which is not suitable geomorphology for this species. Revised Project Areas 5 and 6 were not surveyed during the rare plant surveys; however, these areas support riverwash and non-native vegetation, which are not suitable habitat for the rare plant species analyzed in the BTR. The additional areas do not support habitat for slender mariposa lilies or other rare plants described in the BTR (Figure 7, *Impacts to Vegetation and Land Uses*). Therefore, the implementation of the revised project would not result in increased impacts to rare plant species.

Based on HELIX's assessment, the revised project results in a minor reduction of impacts to rare plants and therefore remains consistent with the findings described in the BTR and Final EIR. Compliance with Mitigation Measure [MM] 3.3-1 of the original project EIR provides appropriate mitigation for impacts to rare plants for the revised project.

### Sensitive Wildlife Species

The revised project plan proposes additional permanent impacts to vegetation communities within mapped non-native grassland/Riversidean upland sage scrub, non-native vegetation/Riversidean upland sage scrub, riverwash, non-native vegetation, mulefat scrub, riverwash, developed areas, and ornamental vegetation (Figure 7). These vegetation communities and land uses do not provide suitable habitat for sensitive wildlife species previously identified in the BTR to have a potential to occur on the previous study area. The Revised Project Areas were included as part of the 2018 burrowing owl (*Athene cunicularia*), and the 2018 coastal California gnatcatcher (*Polioptila californica californica*) focused surveys. These species were not detected during the surveys. No suitable habitat for burrowing owl was detected during the 2021 general biological survey performed in the Revised Project Areas. Therefore, the implementation of the revised project plan would not result in additional direct impacts to sensitive animal species.

As described in the BTR, potential significant indirect impacts were identified for burrowing owl. Mitigation Measure 3.3-2 in the Final EIR includes measures to avoid and/or minimize potential indirect impacts to this sensitive animal species, which the revised project would also comply with. No additional measures to avoid or minimize significant impacts to sensitive wildlife species are warranted and the revised project is consistent with the findings described in the BTR and Final EIR.

## Sensitive Vegetation Communities

### California Department of Fish and Wildlife Sensitive Vegetation Communities/Habitats

The revised project would result in 80.83 acres of permanent impacts and 0.53 acre of temporary impacts to vegetation and land uses (Figure 7; Table 1, *Revised Permanent Impacts to Vegetation and Land Uses*). The revised project plan proposes the reduction of permanent impacts to 5.62 acres of vegetation and land uses, including the reduction of permanent impacts to: 0.24 acres of chamise chaparral/non-native grassland, 0.02 acres of giant reed stand, 1.37 acres of non-native grassland, 0.08 acre of non-native grassland/Riversidean upland sage scrub, 0.16 acre of non-native vegetation, 0.53 acre of Riversidean upland sage scrub, 1.17 acres of Riversidean upland sage scrub/non-native grassland, 0.05 acre of southern north slope chaparral, and 0.01 acre of southern willow scrub/giant reed stand). The Revised Project includes new permanent impacts to developed areas (1.3 acres), disturbed areas (0.42 acre), mulefat scrub (0.09 acre), ornamental vegetation (0.30 acre), and riverwash (0.02 acre). The revised project area also includes new temporary impacts to 0.53 acre (0.08 acre of disturbed areas, 0.02 acre of non-native grassland, 0.18 acre of non-native vegetation, 0.24 acre of ornamental vegetation, and 0.01 acre of riverwash). None of these communities are considered sensitive by CDFW.

With the removal of Planning Area 1a, the revised study area no longer includes the following vegetation and land uses: disturbed-Riversidean upland sage scrub, scrub oak chaparral, and scrub oak chaparral/non-native grassland. The revised study area includes two vegetation communities (non-native vegetation/upland Riversidean sage scrub and Tucker oak chaparral) not described in the BTR. These vegetation communities were recorded within Revised Project Area 3 (Davenport Parcel) and are described below. Neither vegetation community is considered sensitive by CDFW.

Based on the above analysis, impacts to CDFW Sensitive Vegetation Communities from the revised project remain consistent with the findings described in the BTR and Final EIR. Therefore, impacts to CDFW Sensitive Vegetation Communities remain less than significant consistent with the Final EIR.

### Non-native Vegetation/Riversidean Upland Sage Scrub

This plant community is dominated by non-native vegetation with a subdominant component of Riversidean upland sage scrub. Non-native vegetation community is typically associated with land that has been heavily influenced by human activities, including areas adjacent to roads, manufactured slopes, and abandoned lots. Non-native vegetation areas are dominated by ornamental and non-native species that take advantage of previously cleared or abandoned landscaping or land showing signs of past or present animal usage that removes any capability of providing viable habitat. Riversidean sage scrub is the most xeric expression of coastal sage scrub south of Point Conception, California. This community occupies xeric sites, such as steep slopes, severely drained soils, or clays that slowly release stored soil moisture. This community is dominated by subshrubs, with leaves that are deciduous during drought, an adaptation that allows the habitat to withstand the prolonged drought period in the summer and fall. Sage scrub species have relatively shallow root systems and open canopies that allow for the occurrence of a substantial herbaceous (annual plant) component. Typical stands are fairly open and dominated by species such as California sagebrush, brittlebush (*Encelia farinosa*), and California buckwheat.

Non-native vegetation/Riversidean upland sage scrub was mapped in one area totaling 0.67 acre within the southern portion of Revised Project Area 3 (Davenport parcel). This vegetation community was dominated by shortpod mustard (*Hirschfeldia incana*). Component species of Riversidean upland sage scrub were observed in scattered amounts. These species included California sagebrush (*Artemisia californica*), purple sage (*Salvia leucophylla*), fourwing saltbush (*Atriplex canescens*), and California buckwheat (*Eriogonum fasciculatum*). The revised project plan includes impacts to 0.53 acre of this vegetation community.

#### Tucker Oak Chaparral

Tucker oak chaparral is dominated by an open to a continuous canopy of Tucker oak (*Quercus john-tuckeri*). This vegetation community is found on upper slopes and ridges, from approximately 980 to 4,920 feet in elevation. Other shrubs present may include chamise (*Adenostoma fasciculatum*), bigberry manzanita (*Arctostaphylos glauca*), California buckwheat, California juniper (*Juniperus californica*), and interior live oak (*Quercus wislizeni*).

One small area of Tucker oak chaparral totaling 0.24 acre was mapped in the northern portion of Revised Project Area 3 (Davenport Parcel). This vegetation community was dominated by Tucker oak with an understory of red brome (*Bromus madritensis*) and leaf litter. Other shrub species observed included California juniper, hollyleaf cherry (*Prunus ilicifolia*), purple sage, and chaparral yucca (*Hesperoyucca whipplei*). There were also two large interior live oaks within this vegetation community. The revised project plan does not propose impacts to Tucker oak chaparral.



**Table 1**  
**REVISED PERMANENT IMPACTS TO VEGETATION COMMUNITIES AND LAND USES**

Habitat Type (Holland/Oberbauer)	Revised Study Area Existing (acres)	Prior Permanent Impacts (acres)	Revised Study Area Permanent Impacts (acres)	Revised Study Area Temporary Impacts (acres)
Big Sagebrush Scrub	1.91	1.91	1.91	0.00
Chamise Chaparral/Non-native Grassland	2.99	2.77	2.53	0.00
Developed	6.61	4.70	6.00	0.08
Disturbed	5.30	3.83	4.25	0.00
Disturbed-Riversidean Upland Sage Scrub	0.58	0.54	-	-
Elderberry Savanna <sup>1</sup>	0.56	0.56	0.56	0.00
Giant Reed Stand	7.06	7.08	7.06	0.00
Mule Fat Scrub	0.42	0.27	0.36	0.00
Non-native Grassland	21.77	21.75	20.38	0.02
Non-native Grassland/Riversidean Upland Sage Scrub	7.49	7.41	7.33	0.00
Non-native Vegetation	8.08	7.16	7.00	0.18
Non-native Vegetation/Elderberry Savanna	0.97	0.97	0.97	0.00
Non-native Vegetation/Riversidean Upland Sage Scrub <sup>2</sup>	0.67	-	0.53	0.00
Ornamental	2.95	2.13	2.43	0.24
Riversidean Upland Sage Scrub	7.01	6.90	6.37	0.00
Riversidean Upland Sage Scrub/Non-native Grassland	13.01	12.96	11.79	0.00
River Wash	0.42	0.36	0.38	0.01
Scrub Oak Chaparral	-	0.26	-	-
Scrub Oak Chaparral/Non-native Grassland	0.67	2.01	-	-
Southern North Slope Chaparral	0.34	0.34	0.29	0.00
Southern Willow Scrub/Giant Reed Stand <sup>1</sup>	0.70	0.70	0.69	0.00
Tucker Oak Chaparral <sup>2</sup>	0.24	-	0.00	0.00
	<b>89.75</b>	<b>84.61</b>	<b>80.83</b>	<b>0.53</b>

<sup>1</sup> Sensitive habitats pursuant to the California Department of Fish and Wildlife (CDFW) Natural Communities List (2018b).

<sup>2</sup> Indicates a plant community added during the 2021 survey.

### California Department of Fish and Wildlife Riparian Habitat and Streambed

The revised project plan includes a reduction of permanent impacts to CDFW jurisdictional areas within Bouquet Canyon Creek associated with Revised Project Areas 1, 5, and 6 compared to the Final EIR for the project. Permanent impacts to CDFW jurisdictional streambeds from the revised project were decreased from 9.33 acres to 8.36 acres, and temporary impacts increased by 1.27 acres (Table 2, *Revised Impacts to California Department of Fish and Wildlife Jurisdiction*; Figure 8, *Impacts to Jurisdictional Features*). The decrease in permanent impacts and the corresponding decrease in temporary impacts to CDFW jurisdiction is due primarily to the recharacterization of the on-site low flow channel invert as a temporary impact. No new CDFW jurisdictional areas will be impacted by the revised project. The Final EIR for the project assumed all permanent impacts to CDFW jurisdiction within the low-flow channel, in order to avoid using the channel as compensatory mitigation for impacts to CDFW jurisdictional waters.

**Table 2**  
**REVISED IMPACTS TO CDFW JURISDICTION**

Drainage	Permanent Impacts (acres)	Temporary Impacts (acres)
Bouquet Canyon Creek	8.32	1.74
Drainage A	0.01	0.00
Drainage B	0.01	0.00
Drainage C	0.01	0.00
Drainage D	0.01	0.00
<b>TOTAL</b>	<b>8.36</b>	<b>1.74</b>

The revised project is consistent with the findings described in the BTR and Final EIR and does not result in any new significant impacts to CDFW jurisdictional areas. Therefore, impacts to CDFW jurisdictional waters from the revised project are considered less than significant pursuant to CEQA.

U.S. Army Corps of Engineers Jurisdictional Waters of the U.S.

The revised project plan includes a total reduction of 0.01 acre of permanent impacts to USACE jurisdictional waters of the U.S. compared to the original project. Permanent impacts to USACE jurisdiction associated with the revised project have decreased from 0.19 acre to 0.18 acre (Table 3, *Revised Impacts to USACE Jurisdiction*; Figure 8).

**Table 3**  
**REVISED IMPACTS TO USACE JURISDICTION**

Drainage	Permanent Impacts (acres)	Temporary Impacts (acres)
Bouquet Canyon Creek	0.18	0.46

The revised project results in a reduction of impacts to USACE jurisdictional areas compared to the BTR and Final EIR for the project. Therefore, impacts to USACE jurisdictional waters from the revised project are considered less than significant pursuant to CEQA.

The Final EIR for the project estimated the same limits of jurisdiction for both the USACE and the RWQCB within the study area. Use of the OHWM was the standard for determining the limits of RWQCB waters of the State prior to the procedural changes to the Section 401 Water Quality Certification program implemented by the State Water Resources Control Board in May 2020. As such, the Los Angeles RWQCB expanded their jurisdiction on the site compared to areas previously delineated by HELIX in the project BTR, resulting in an increase from 0.19 acre to 1.32 acres of permanent impacts to RWQCB jurisdictional waters of the State compared to the BTR and Final EIR for the project (Table 4, *Revised Impacts to RWQCB Jurisdiction*; Figure 8). This larger extent of RWQCB jurisdiction is documented in the project Section 401 Water Quality Certification (File No. 20-089) issued on March 8, 2021, for the project). Consequently, the extent of permanent impacts to RWQCB jurisdictional waters of the U.S. have increased compared to the Final EIR. It should be noted that areas of expanded jurisdiction by the Los Angeles RWQCB are located within the limits of areas previously evaluated in the

project BTR and Final EIR as supporting CDFW jurisdictional resources. Given that project impacts to, and mitigation for, expanded RWQCB jurisdictional areas were already evaluated as waters of the State regulated by CDFW in the Final EIR for the project. Therefore, the increase in RWQCB jurisdiction as regulated under the project Section 401 Water Quality Certification is considered less than significant.

**Table 4**  
**REVISED IMPACTS TO RWQCB JURISDICTION**

<b>Drainage</b>	<b>Permanent Impacts (acres)</b>	<b>Temporary Impacts (acres)</b>
Bouquet Canyon Creek	1.32	1.39

The revised project does not result in any new significant impacts to RWQCB jurisdictional areas compared to the BTR and Final EIR for the project. Therefore, impacts to RWQCB jurisdictional waters from the revised project are considered less than significant pursuant to CEQA.

## **Wildlife Movement and Migratory Species**

### Wildlife Movement

Impacts associated with the Revised Project Areas are proposed within mapped developed areas, non-native vegetation, non-native grassland/Riversidean upland sage scrub, and riverwash. With the removal of Planning Area 1a from the project plan, the total revised permanent impacts to vegetation were reduced from 3.78 acres (Figure 7). As discussed in the BTR, the study area provides suitable habitat for some local wildlife movement but is not considered a regional wildlife movement corridor. Although the implementation of the project may result in some temporary disturbance to local wildlife movement from construction noise, the project would have a less than significant impact to wildlife movement, and no mitigation measures are recommended.

The revised project includes a reduction of impacts to vegetation and land uses. No additional impacts to wildlife movement are proposed; therefore, the revised project is consistent with the (1) vegetation and land use impact and (2) wildlife movement findings described in the BTR and Final EIR.

### Migratory Species

The revised project plan proposes permanent impacts to 80.83 acres and temporary impacts to 0.53 acre of vegetation communities and land uses. Some impacted areas may support vegetation suitable for nesting birds (Figure 7). In addition, adjacent areas may support suitable habitat for nesting birds. Construction activities could disturb or destroy active migratory bird nests, including eggs and young. The Final EIR includes Mitigation Measure 3.3-5 to avoid potential impacts to nesting bird species, which the revised project would also comply with these measures. No additional measures to avoid or minimize significant impacts to nesting birds are warranted.

The revised project plan includes a reduction of permanent impacts by 3.78 acres. Additionally, the revised project plan includes compliance with the MM 3.3-5 of the Final EIR. The findings described in the BTR and Final EIR are consistent with the revised project.

## Local Policies and Ordinances

The oak tree survey described in the BTR detected 64 City-protected oak trees (*Quercus* sp.) within the survey area. The project originally proposed to remove 26 oak trees, including four scrub oaks, two blue oaks, and 20 Tucker oaks. In addition, one Tucker oak would have been subjected to major encroachment, and two Tucker oaks would have been subjected to minor encroachment. The remaining 35 oak trees would have been completely avoided by the original proposed project. Impacts to oak trees within the revised study area have been evaluated by HELIX, resulting in a significant decrease in impacts to oak trees as further described below.

An oak tree survey was performed by Carlsberg and Associates within Revised Project Area 3 (Davenport Trailhead). This survey detected 20 City-protected oak trees, including 17 Tucker oak, one blue oak, two interior live oak on the Davenport Trailhead property. All the trees within Revised Project Area 3 will be avoided. No oak trees were detected during the December 2021 oak tree survey performed within Revised Project Areas 1, 2, and 4-10. The revised project includes a reduction of tree removals, from 26 removals proposed as part of the original project, to 12 removals proposed as part of the revised project. The revised impacts to oak trees are detailed in Table 5, below. The project oak tree survey report, including addenda addressing Revised Project Areas and including a revised tree appraisal, is included as Attachment B.

**Table 5**  
**REVISED IMPACTS TO OAK TREES**

Species Name	Common Name	Number of Trees			
		Removed	Major Encroachment	Minor Encroachment	Avoided
<i>Quercus agrifolia</i>	coast live oak	1	0	0	2
<i>Quercus berberidifolia</i>	scrub oak	0	1	1	4
<i>Quercus douglasii</i>	blue oak	1	0	0	2
<i>Quercus john-tuckeri</i>	Tucker oak	10	0	0	60
<i>Quercus lobata</i>	valley oak	0	0	0	1
<i>Quercus wislizeni</i>	interior live oak	0	0	0	2
<b>TOTAL</b>		<b>12</b>	<b>1</b>	<b>1</b>	<b>69</b>

The revised project would not conflict with the City’s Oak Tree Preservation ordinance. Furthermore, the revised project includes a reduction of impacts to oaks compared to oak impacts proposed in the Final EIR. As described in BIO-6 of the BTR, an oak tree removal permit will be obtained from the City prior to construction. Impacts to oak trees by the revised project therefore remain less than significant with the mitigation proposed in the Final EIR.

## Adopted Habitat Conservation Plans

The Revised Project Areas are not located within any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. As such, the implementation of the project would not conflict with any adopted habitat conservation plans.

The findings related to adopted Habitat Conservation Plan described in the BTR and Final EIR are therefore consistent with the revised project.

## MITIGATION MEASURES

Permanent impacts analyzed in this addendum are consistent with impacts evaluated under the BTR and Final EIR, and no additional significant impacts were identified. Implementation of the revised project would not trigger any additional avoidance/minimization measures. The revised project will still be required to comply with the avoidance/minimization measures 3.3-1 through 3.3-5 listed in Section Four of the Final EIR, which are provided below.

- 3.3-1** Mitigation for project impacts to the slender mariposa-lily (*Calochortus clavatus* var. *gracilis*) shall include one or more of the following, implemented in consultation with the City and CDFW prior to construction:
- Prior to construction, a mitigation plan shall be developed that describes methods to mitigate for impacts to slender mariposa lily at a 1:1 ratio. The mitigation plan shall include a description of the mitigation site, bulb collection and planting methods, maintenance and monitoring requirements, and performance standards to measure the success of the mitigation. Slender mariposa lily bulbs shall be collected at the end of the growing season and prior to ground disturbance, or bulbs shall be obtained from a native plant nursery if available. The bulbs shall be planted within an appropriate on-site or off-site mitigation area, which will be conserved as open space in perpetuity.
  - Payment into a mitigation bank and/or in-lieu fee program that has mitigation available for slender mariposa lily at a 1:1 ratio; and/or
  - Preservation of land that contains slender mariposa lily at a 1:1 ratio.
- 3.3-2** In compliance with the CDFW *Staff Report on Burrowing Owl Mitigation* (2012), a take avoidance survey shall be conducted on the study area within 14 days prior to ground disturbance to determine the presence of BUOW. If the take avoidance survey is negative and BUOW is confirmed absent, then ground-disturbing activities shall be allowed to commence, and no further mitigation would be required.
- If BUOW are observed during the take avoidance survey, active burrows shall be avoided by the project in accordance with the CDFW's Staff Report (2012). The CDFW shall be immediately informed of any BUOW observations. A Burrowing Owl Protection and Relocation Plan (plan) shall be prepared by a qualified biologist, which must be sent for approval by CDFW prior to initiating ground disturbance. The plan shall detail avoidance measures that shall be implemented during construction and passive or active relocation methodology. Relocation shall only occur outside of the nesting season (September 1 through January 31).
- 3.3-3** Prior to the City's issuance of a grading permit, the Project Applicant shall demonstrate that a Streambed Alteration Agreement has been issued by CDFW. Temporary impacts to CDFW jurisdiction shall be returned to pre-project topographic contours once the project has been completed. Permanent impacts to CDFW jurisdiction for southern willow scrub/giant reed stand (0.70 acre) shall be mitigated through on-site or off-site

enhancement, restoration, and/or creation of CDFW jurisdictional streambed at a ratio of no less than 1:1. Given that the remaining portion of Bouquet Canyon Creek is dominated by invasive giant reed stands, which is of extremely low biological function and value, and contributes to downstream infestation of giant reed, the remaining permanent impacts to CDFW jurisdiction (8.63 acres) shall be mitigated through on-site or off-site enhancement, restoration, and/or creation of CDFW jurisdictional streambed at a ratio of no less than 0.5:1. Best Management Practices (BMPs) to minimize and avoid impacts to CDFW jurisdiction during and after construction will be addressed as part of the Streambed Alteration Agreement. Minimization and avoidance measures may include, but are not limited to, the following:

- Construction-related equipment will be stored in developed areas, outside of drainages. No equipment maintenance will be done within or adjacent to the drainage.
- Mud, silt, spoil sites, raw cement, asphalt, or other pollutants from construction activities will not be placed within or adjacent to the drainage.
- Open trenches or other excavated areas will be properly secured at the end of the day to avoid entrapment of animals, or an escape ramp will be provided.
- To avoid attracting predators during construction, the project will be kept clean of debris to the extent possible. All food-related trash items will be enclosed in sealed containers and regularly removed from the site.
- Construction personnel will strictly limit their activities, vehicles, equipment, and construction material to the proposed project footprint, staging areas, and designated routes of travel.
- Exclusion fencing will be installed to demarcate the limits of disturbance. The exclusion fencing should be maintained until the completion of construction activities.
- To the extent feasible, construction will be conducted outside of the nesting bird season (see MM 3.3-5 below).

### 3.3-4

**USACE and RWQCB Jurisdiction:** Prior to the City's issuance of a grading permit, the Project Applicant shall demonstrate that the appropriate regulatory permits have been issued by USACE and RWQCB. Temporary impacts to waters of the U.S. shall be returned to pre-project topographic contours once the project has been completed. Compensatory mitigation for permanent impacts to waters of the U.S. shall be required as part of subsequent permitting requirements. Permanent impacts to WUS shall be mitigated through on-site or off-site enhancement, restoration, and/or creation of jurisdictional streambed at a ratio of no less than 1:1. BMPs to minimize and avoid impacts to waters of the U.S. during and after construction will be addressed as part of the USACE and RWQCB permitting process. Minimization and avoidance measures may include, but are not limited to, the following:

- Construction-related equipment will be stored in developed areas, outside of the drainage. No equipment maintenance will be done within or adjacent to the drainage.
- Source control and treatment control BMPs will be implemented to minimize the potential contaminants that are generated during and after construction. Water quality BMPs will be implemented throughout the project to capture and treat potential contaminants.
- Substances harmful to aquatic life will not be discharged into the drainage. All hazardous substances will be properly handled and stored.
- A Storm Water Pollution Prevention Plan will be prepared to prevent sediment from entering the drainage during construction.
- To avoid attracting predators during construction, the project will be kept clean of debris to the extent possible. All food-related trash items will be enclosed in sealed containers and regularly removed from the site.
- Construction personnel will strictly limit their activities, vehicles, equipment, and construction material to the proposed project footprint, staging areas, and designated routes of travel.
- Exclusion fencing will be installed to demarcate the limits of disturbance. The exclusion fencing should be maintained until the completion of construction activities.

**3.3-5** Construction activities (i.e., earthwork, clearing, and grubbing) shall occur outside of the general bird nesting season for migratory birds, which is February 15 through August 31 for songbirds and January 15 to August 31 for raptors.

If construction activities (i.e., earthwork, clearing, and grubbing) must occur during the general bird nesting season for migratory birds and raptors, a qualified biologist shall perform a pre-construction survey of potential nesting habitat to confirm the absence of active nests belonging to migratory birds and raptors afforded protection under the MBTA and CFG Code. The pre-construction survey shall be performed no more than seven days prior to the commencement of construction activities. The results of the pre-construction survey shall be documented by the qualified biologist. If construction is inactive for more than seven days, an additional survey shall be conducted.

If the qualified biologist determines that no active migratory bird or raptor nests occur, the activities shall be allowed to proceed without any further requirements. If the qualified biologist determines that an active migratory bird or raptor nest is present, no impacts within 300 feet (500 feet for raptors) of the active nest shall occur until the young have fledged the nest and the nest is confirmed to no longer be active, or as determined by the qualified biologist. The biological monitor may modify the buffer or propose other recommendations in order to minimize disturbance to nesting birds.



## CONCLUSIONS

The analysis provided above is intended to serve as an addendum to the BTR to document revisions to the proposed project comprised of ten revised areas. The revised project areas total 7.50 acres located adjacent to the project site (see Figure 4).

The revised project would result in a total of 80.83 acres of permanent impacts and 0.53 acre of temporary impacts to the same vegetation/land uses analyzed in the project BTR and Final EIR. The revised project includes a reduction of impacts to USACE and CDFW jurisdiction, slender mariposa lilies, and oak trees. The project would still be required to comply with mitigation measures disclosed in the Final EIR to avoid potential indirect impacts to sensitive wildlife species (burrowing owl), CDFW, and USACE/RWQCB jurisdiction, oak trees, slender mariposa lilies, and nesting birds. Therefore, no new significant impacts to biological resources would result from implementation of the revised project, and the revised project remains consistent with the findings of the Final EIR.

If you have any questions regarding the information presented in this letter report, please contact Daniel Torres ([DanielT@helixepi.com](mailto:DanielT@helixepi.com)) or Ezekiel Cooley ([EzekielC@helixepi.com](mailto:EzekielC@helixepi.com)).

Sincerely,



Daniel Torres  
Biologist

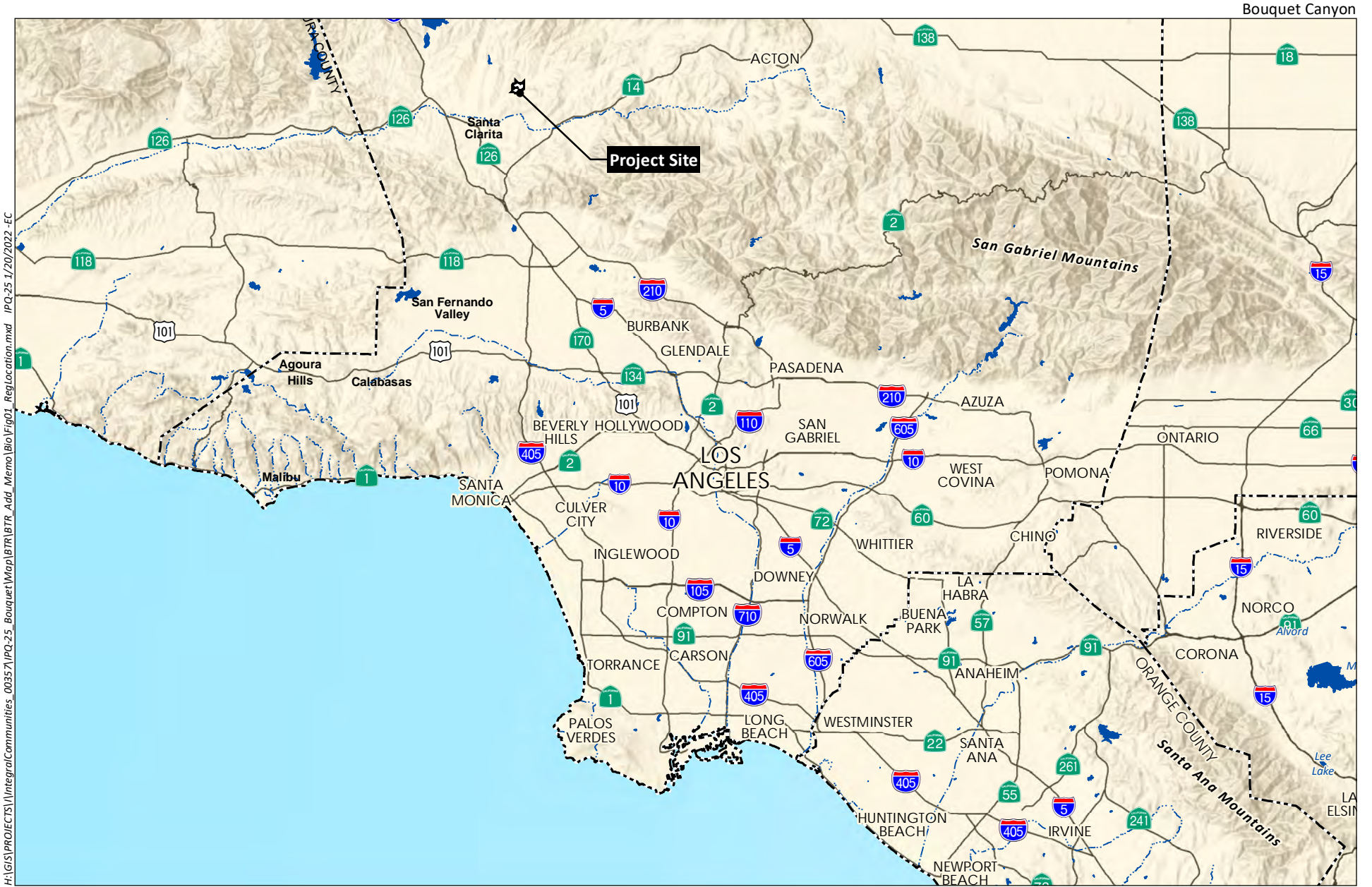


Ezekiel Cooley  
Senior Biology Project Manager

### Attachments:

- Figure 1: Regional Location
- Figure 2: USGS Topography
- Figure 3: Aerial Vicinity
- Figure 4: Revised Project Areas
- Figure 5: Vegetation and Land Uses
- Figure 6: Jurisdictional Features
- Figure 7: Impacts to Vegetation and Land Uses
- Figure 8: Impacts to Jurisdictional Features
- Attachment A: Biological Technical Report
- Attachment B: Oak Tree Survey Report Addendum

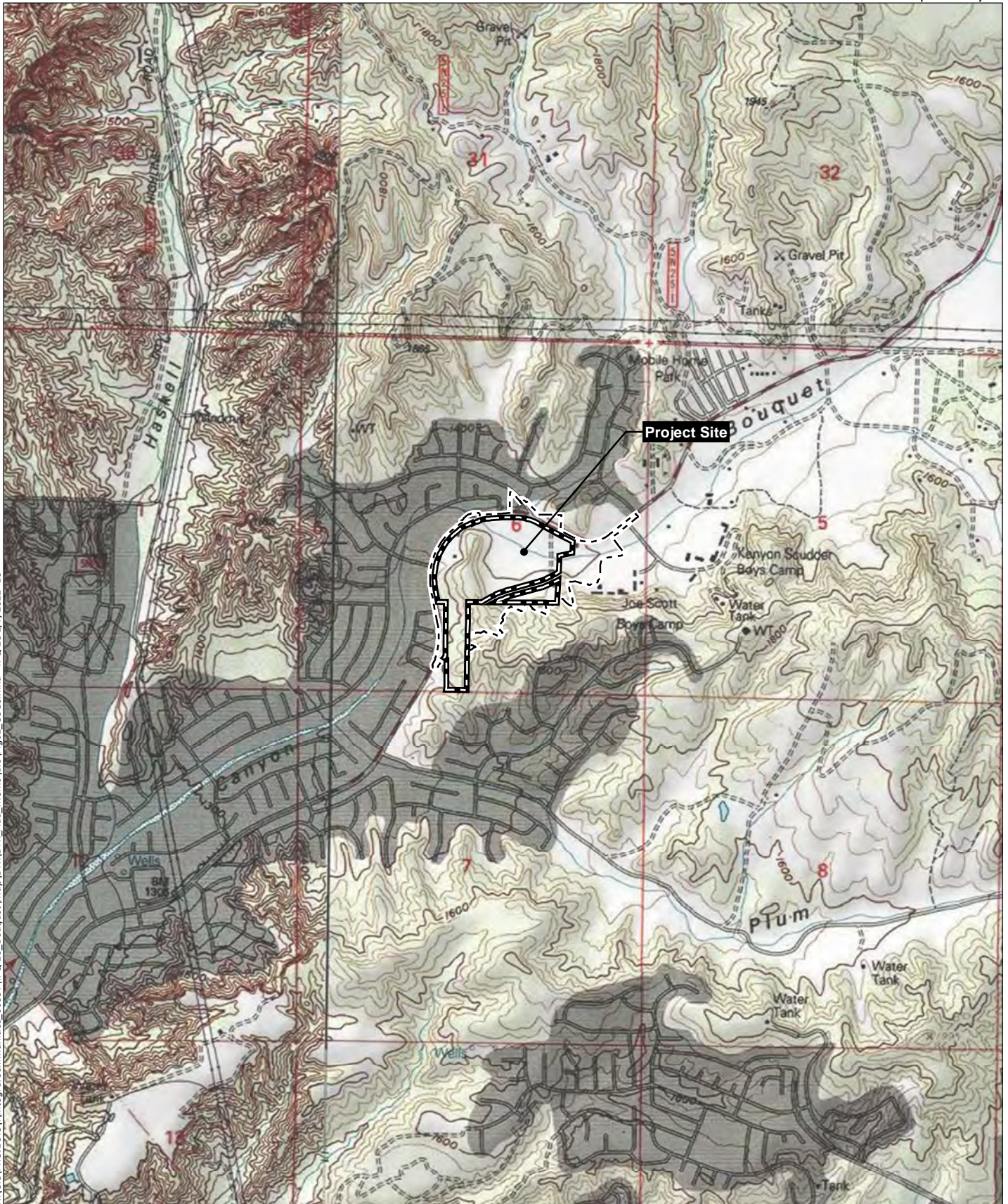




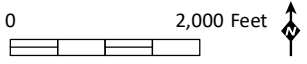
H:\GIS\PROJECTS\IntegralCommunities\_00357\IPQ-25\_Bouquet\Map\BTR\BTR\_Add\_Memo\Bio\Fig01\_RegLocation.mxd IPQ-25 1/20/2022 -EC

Source: Base Map Layers (ESRI, 2013)



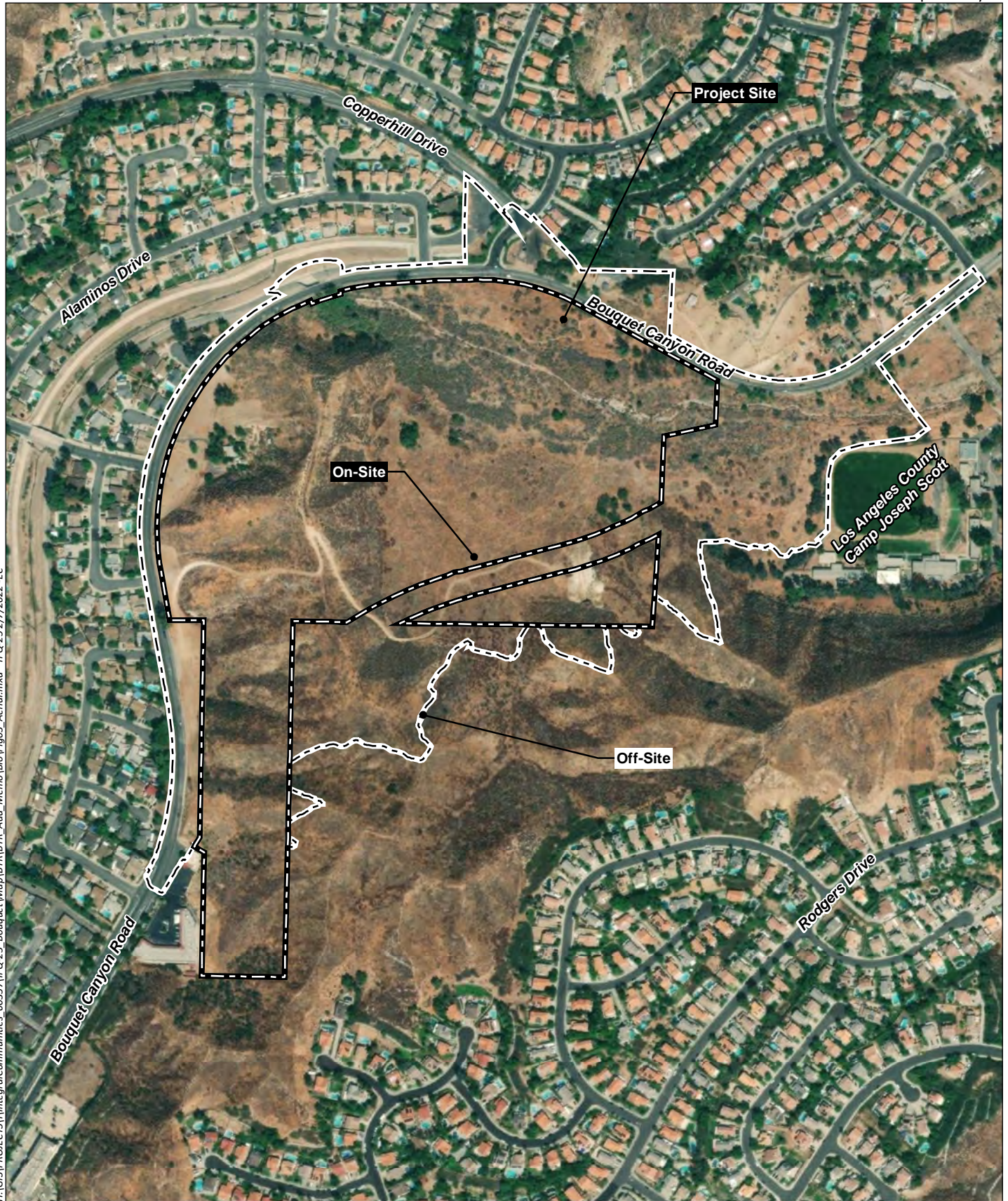


H:\GIS\PROJECTS\IntegralCommunities\_00357\IPQ-25\_Bouquet\Map\BTR\BTR\_Add\_Memo\Bio\Fig02\_USGS.mxd IPQ-25 2/7/2022 -EC



Source: Mint Canyon 7.5' Quad (USGS)



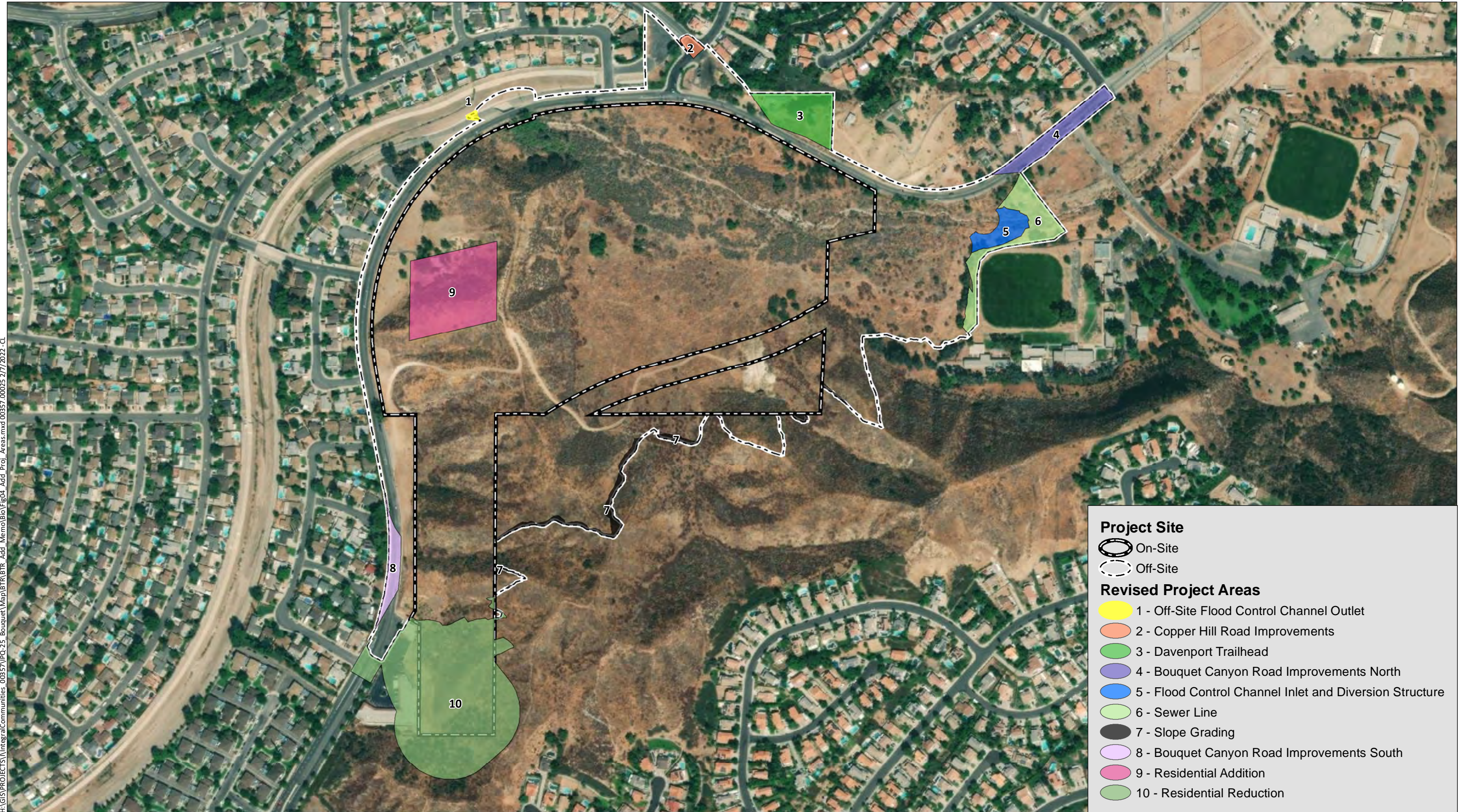


H:\GIS\PROJECTS\IntegralCommunities\_00357\IPQ-25\_Bouquet\Map\BTR\BTR\_Add\_Memo\Bio\Fig03\_Aerial.mxd IPQ-25 2/7/2022 - EC

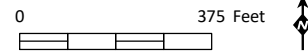


Source: Base Map Layers (NAIP, 2016)



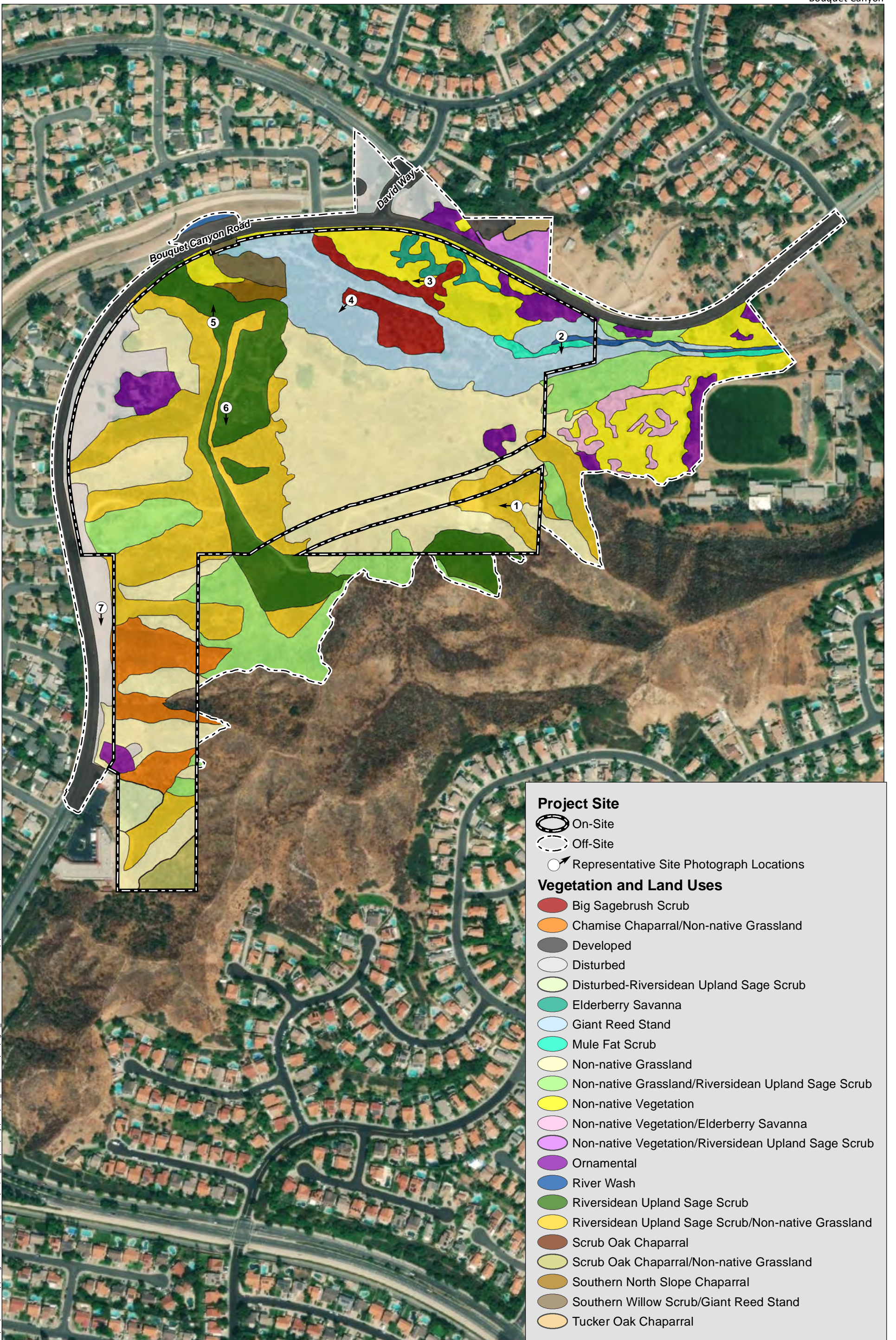


H:\GIS\PROJECTS\IntegralCommunities\_00357\IPQ-25\_Bouquet\Map\BTR\BTR\_Add\_Memo\Bto\Fig04\_Add\_Proj\_Areas.mxd 00357\_00025 2/7/2022 CL



Source: Site Plan (9-29-21)

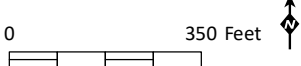




- Project Site**
- On-Site
  - Off-Site
  - Representative Site Photograph Locations
- Vegetation and Land Uses**
- Big Sagebrush Scrub
  - Chamise Chaparral/Non-native Grassland
  - Developed
  - Disturbed
  - Disturbed-Riversidean Upland Sage Scrub
  - Elderberry Savanna
  - Giant Reed Stand
  - Mule Fat Scrub
  - Non-native Grassland
  - Non-native Grassland/Riversidean Upland Sage Scrub
  - Non-native Vegetation
  - Non-native Vegetation/Elderberry Savanna
  - Non-native Vegetation/Riversidean Upland Sage Scrub
  - Ornamental
  - River Wash
  - Riversidean Upland Sage Scrub
  - Riversidean Upland Sage Scrub/Non-native Grassland
  - Scrub Oak Chaparral
  - Scrub Oak Chaparral/Non-native Grassland
  - Southern North Slope Chaparral
  - Southern Willow Scrub/Giant Reed Stand
  - Tucker Oak Chaparral

Source: Base Map Layers (NAIP, 2016)

F:\GIS\PROJECTS\IntegralCommunities\_00357\IPQ-25\_Bouquet\Map\BTR\_Add\_Memo\Bio\Fig05\_PlantCom.mxd IPQ-25-2/7/2022-EC



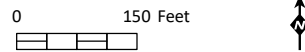




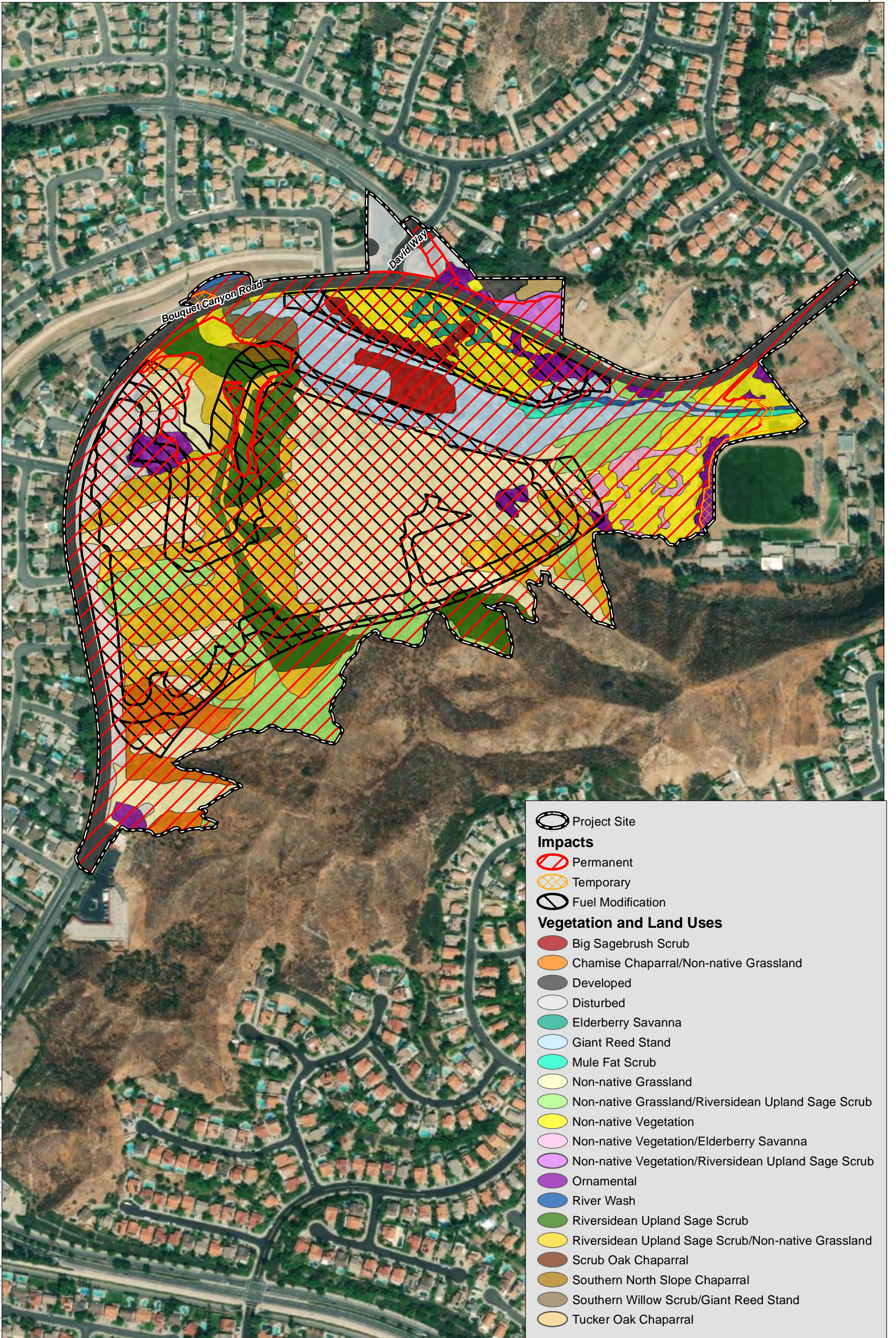
- Representative Drainage Photographs
- Project Site
- Jurisdiction**
- USACE Jurisdiction
- USACE Existing Concrete Structure
- RWQCB Jurisdiction
- RWQCB Existing Concrete Structure
- CDFW Jurisdiction
- CDFW Existing Concrete Structure

Source: Base Map Layers (NAIP, 2016; NearMap, 2017)

H:\GIS\PROJECTS\IntegralCommunities\_0357\IPQ-25\_Bouquet\Map\BTR\BTR\_Add\_Memo\BIO\Fig06\_ID.mxd IPQ-25 1/20/2022 - EC

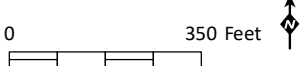




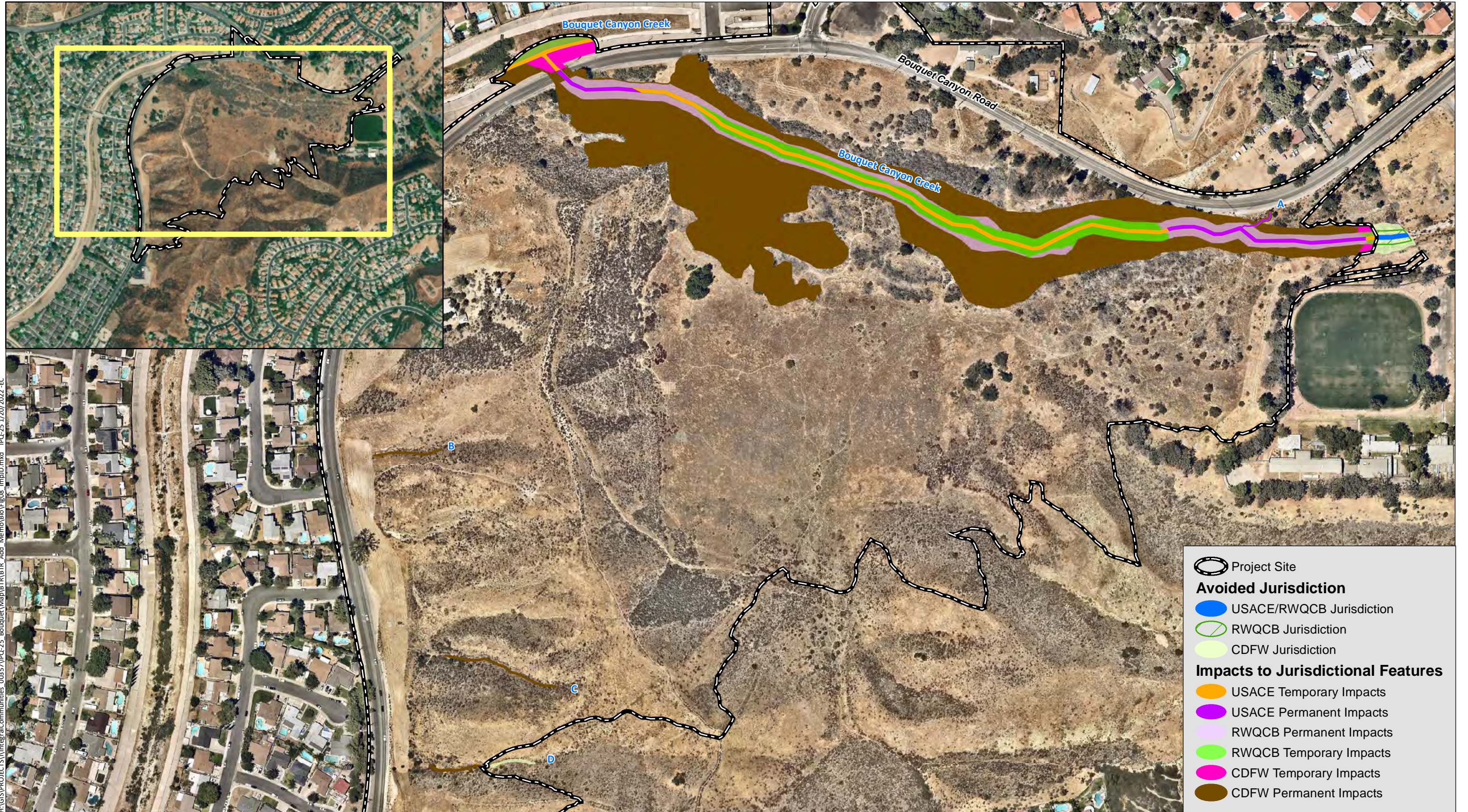


H:\GIS\PROJECTS\IntegratCommunities\_00357\IPQ-25\_Bouquet\Map\BTR\_Add\_Memo\Bio\Fig07\_IMP\_PlantCom.mxd IPQ-25-1/25/2022-EC

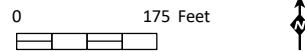
Source: Base Map Layers (NAIP, 2016)







H:\GIS\PROJECTS\IntegralCommunities\_00357\IPQ-25\_Bouquet\Map\BTR\BTR\_Add\_Memo\Bto\Fig08\_imp.D.mxd IPQ-25-1/20/2022-EC



Source: Base Map Layers (Near Map, 2017)



# Attachment A

---

Biological Technical Report

# Bouquet Canyon Project (Tentative Tract No. 82126)

## Biological Technical Report

October 17, 2019 | IPQ-25

*Prepared for:*

**Integral Communities**  
888 San Clemente Drive, Suite 100  
Newport Beach, CA 92660

*Prepared by:*

**HELIX Environmental Planning, Inc.**  
16485 Laguna Canyon Road, Suite 150  
Irvine, CA 92618

# Bouquet Canyon Project (Tentative Tract No. 82126)

## Biological Technical Report

*Prepared for:*

**Integral Communities**  
888 San Clemente Drive, Suite 100  
Newport Beach, CA 92660

*Prepared by:*

**HELIX Environmental Planning, Inc.**  
16485 Laguna Canyon Road, Suite 150  
Irvine, CA 92618

October 17, 2019 | IPQ-25



# TABLE OF CONTENTS

---

<b><u>Section</u></b>	<b><u>Page</u></b>
EXECUTIVE SUMMARY .....	1
1.0 INTRODUCTION.....	1
1.1 Purpose of the Report.....	1
1.2 Project Location .....	1
1.3 Project Description .....	1
2.0 METHODS.....	2
2.1 Nomenclature .....	2
2.2 Literature Review.....	2
2.3 Field Surveys .....	2
2.3.1 General Biological Survey .....	3
2.3.2 Rare Plant Species Surveys .....	3
2.3.3 Burrowing Owl .....	3
2.3.4 Coastal California Gnatcatcher .....	4
2.3.5 Jurisdictional Assessment .....	4
2.3.6 Oak Tree Survey .....	5
3.0 RESULTS .....	6
3.1 Environmental Setting .....	6
3.2 Vegetation Communities .....	7
3.2.1 Big Sagebrush Scrub.....	8
3.2.2 Chamise Chaparral/Non-native Grassland .....	8
3.2.3 Developed .....	9
3.2.4 Disturbed .....	9
3.2.5 Disturbed/Riversidean Upland Sage Scrub .....	9
3.2.6 Elderberry Savanna.....	9
3.2.7 Giant Reed Stand .....	9
3.2.8 Mule Fat Scrub .....	10
3.2.9 Non-native Grassland .....	10
3.2.10 Non-native Grassland/Riversidean Upland Sage Scrub .....	10
3.2.11 Non-native Vegetation.....	11
3.2.12 Non-native Vegetation/Elderberry Savanna.....	11
3.2.13 Ornamental.....	11
3.2.14 Riversidean Upland Sage Scrub .....	11
3.2.15 Riversidean Upland Sage Scrub/Non-native Grassland .....	12
3.2.16 River Wash .....	12
3.2.17 Scrub Oak Chaparral .....	12
3.2.18 Scrub Oak Chaparral/Non-native Grassland.....	12
3.2.19 Southern North Slope Chaparral.....	13
3.2.20 Southern Willow Scrub/Giant Reed Stand.....	13
3.3 Plants .....	13

# TABLE OF CONTENTS (cont.)

---

<b><u>Section</u></b>	<b><u>Page</u></b>
3.4	Animals ..... 13
3.5	Sensitive Biological Resources ..... 13
3.5.1	Rare Plant Species..... 13
3.5.2	Sensitive Animal Species..... 14
3.5.3	Sensitive Vegetation Communities/Habitats..... 16
3.5.4	Jurisdictional Waters and Wetlands ..... 17
3.5.5	Oak Tree Survey ..... 17
3.5.6	Habitat and Wildlife Corridor Evaluation..... 18
4.0	REGIONAL AND REGULATORY CONTEXT ..... 19
4.1	Federal Regulations ..... 19
4.1.1	Federal Endangered Species Act..... 19
4.1.2	Federal Clean Water Act ..... 19
4.1.3	Migratory Bird Treaty Act ..... 20
4.1.4	Critical Habitat ..... 20
4.2	State Regulations ..... 20
4.2.1	California Environmental Quality Act ..... 20
4.2.2	California Endangered Species Act ..... 20
4.2.3	California Fish and Game Code ..... 21
4.3	Local Regulations ..... 21
4.3.1	Oak Tree Protection ..... 21
4.3.2	Fuel Modification Zones ..... 22
5.0	PROJECT EFFECTS ..... 22
5.1	Sensitive Species ..... 23
5.1.1	Rare Plant Species..... 23
5.1.2	Sensitive Animal Species..... 23
5.2	Sensitive Vegetation Communities..... 25
5.2.1	California Department of Fish and Wildlife Sensitive Vegetation Communities/Habitats..... 25
5.2.2	California Department of Fish and Wildlife Riparian Habitat and Streambed .... 27
5.3	U.S. Army Corps of Engineers/Regional Water Quality Control Board Jurisdiction ..... 27
5.4	Wildlife Movement and Migratory Species ..... 28
5.4.1	Wildlife Movement ..... 28
5.4.2	Migratory Species ..... 29
5.5	Local Policies and Ordinances..... 29
5.6	Adopted Habitat Conservation Plans..... 30
6.0	MITIGATION MEASURES ..... 31
7.0	CERTIFICATION/QUALIFICATION..... 35
8.0	REFERENCES..... 36

# TABLE OF CONTENTS (cont.)

---

## LIST OF APPENDICES

A	Plant Species Observed
B	Animal Species Observed or Detected
C	Representative Site Photographs
D	Burrowing Owl Focused Survey Report
E	Coastal California Gnatcatcher Focused Survey Report
F	Representative Drainage Photographs
G	Jurisdictional Delineation Report
H	Oak Tree Survey Report
I	Rare Plant Species Potential to Occur
J	Sensitive Animal Species Potential to Occur

## LIST OF FIGURES

<u>No.</u>	<u>Title</u>	<u>Follows Page</u>
1	Regional Location .....	2
2	USGS Topography .....	2
3	Aerial Photograph .....	2
4	Proposed Project.....	2
5	Vegetation.....	8
6	Rare Plant Locations .....	14
7	Jurisdictional Features .....	18
8	Oak Tree Locations.....	18
9	Impacts to Rare Plants .....	24
10	Impacts to Vegetation.....	26
11	Impacts to Jurisdictional Features .....	28
12	Impacts to Oak Trees .....	30

## LIST OF TABLES

<u>No.</u>	<u>Title</u>	<u>Page</u>
1	Oak Tree Rating System .....	6
2	Vegetation Communities .....	7
3	Impacts to Vegetation Communities .....	26
4	Impacts to California Department of Fish and Wildlife Jurisdiction .....	27
5	Impacts to U.S. Army Corps of Engineers/Regional Water Quality Control Board Jurisdiction ....	28
6	Impacts to Oak Trees .....	29
7	Number of Replacement Trees .....	30
8	Oak Tree Mitigation .....	30

# ACRONYMS AND ABBREVIATIONS

---

AMSL	Above Mean Sea Level
BMPs	Best Management Practices
BUOW	Burrowing Owl
CAGN	Coastal California Gnatcatcher
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFG	California Fish and Game
City	City of Santa Clarita
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
County	County of Los Angeles
CRPR	California Rare Plant Rank
CWA	Clean Water Act
EPA	Environmental Protection Agency
FESA	Federal Endangered Species Act
G	Global
GPS	Global Positioning System
HELIX	HELIX Environmental Planning, Inc.
ISA	International Society of Arboriculture
MBTA	Migratory Bird Treaty Act
MCV	A Manual of California Vegetation
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
OHWM	Ordinary High Water Mark
Project	Bouquet Canyon
RPW	Relatively Permanent Water Body
RWQCB	Regional Water Quality Control Board
S	State
SFP	State Fully Protected
SMEA	San Marino Environmental Associates



SSC	Species of Special Concern
TNW	Traditional Navigable Waters
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UTS	Unarmored Threespine Stickleback
WUS	Waters of the U.S.

THIS PAGE INTENTIONALLY LEFT BLANK

## EXECUTIVE SUMMARY

HELIX Environmental Planning, Inc. (HELIX) completed this biological technical report for the Bouquet Canyon Project (project), which is proposed by Integral Communities in the City of Santa Clarita (City), Los Angeles County, California. Integral Communities is proposing a residential development and road improvements to Bouquet Canyon Road on an approximately 94-acre study area. The study area is generally located 5.5 miles to the northeast of Interstate 5 and 3.8 miles to the northwest of California State Route 14.

The study area is located in the foothills of the Sierra Pelona Mountains. The topography in the southern and western portions of the study area is predominantly steep hillsides, while the northern portion is primarily flat. Bouquet Canyon Creek flows from east to west in the northern portion of the study area. The steep hills throughout the southern and western portions of the site are predominated by Riversidean upland sage scrub while the flatter portions of the study area are dominated by non-native grassland. HELIX conducted a general biological survey (including vegetation mapping and a general habitat assessment) and a jurisdictional assessment in 2017. Focused surveys for rare plant species, burrowing owl (*Athene cunicularia*; BUOW), and coastal California gnatcatcher (*Polioptila californica californica*; CAGN) surveys and an oak tree survey were conducted in 2018.

A total of 20 vegetation communities were mapped on the study area. Native communities totaled 29.19 acres, which included big sagebrush scrub, chamise chaparral/non-native grassland, elderberry savanna, Riversidean upland sage scrub, Riversidean upland sage scrub/non-native grassland, scrub oak chaparral, scrub oak chaparral/non-native grassland, southern north slope chaparral, and southern willow scrub/giant reed stand. Elderberry savanna and southern riparian scrub/giant reed stand are considered sensitive communities pursuant to the California Department of Fish and Wildlife (CDFW). A total of 496 slender mariposa lilies (*Calochortus clavatus* var. *gracilis*) were observed throughout the north-facing slopes in the eastern and southern portions of the study area during the rare plant surveys. Eight sensitive animal species were determined to have a potential occur on the study area, including three species with a low potential (California glossy snake [*Arizona elegans occidentalis*], Townsend's big-eared bat [*Corynorhinus townsendii*; foraging only], and southern grasshopper mouse [*Onychomys torridus ramona*]), one species with a moderate potential (California legless lizard [*Anniella* sp.]), four species with a high potential (coastal whiptail [*Aspidoscelis tigris stejnegeri*], coast horned lizard [*Phrynosoma blainvillii*], loggerhead shrike [*Lanius ludovicianus*], and San Diego black-tailed jackrabbit [*Lepus californicus bennettii*]). Two sensitive animal species are presumed absent due to negative focused surveys (BUOW and CAGN). Bouquet Canyon Creek is an ephemeral stream that runs east to west through the northern portion of the study area and is dominated by the invasive grass species giant reed (*Arundo donax*). The study area supports a total of 0.65 acre of U.S. Army Corps of Engineers (USACE)/Regional Water Quality Control Board (RWQCB) waters of the U.S. (WUS) and 9.80 acres of CDFW jurisdictional streambed and associated vegetation. A total of 64 oak trees meet the City's definition of a protected tree, including two coast live oaks (*Quercus agrifolia*), six scrub oaks (*Quercus berberidifolia*), two blue oaks (*Quercus douglasii*), and 54 Tucker oaks (*Quercus john-tuckeri*). The study area is not considered a regional wildlife corridor.

Potential significant impacts were identified for rare plants, BUOW (if present during the take avoidance survey), jurisdictional resources, nesting bird species, and City-protected oak trees. Permanent impacts are proposed to approximately 462 slender mariposa lilies and 28.68 acres of native-dominated vegetation. The project would permanently impact 0.19 acre and temporarily impact 0.46 acre of non-

wetland USACE/RWQCB WUS. The project would also permanently impact 9.33 acres and temporarily impact 0.47 acre of CDFW jurisdictional streambed and associated vegetation (mostly invasive giant reed). Following construction, the majority of the central channel within CDFW jurisdiction will be returned to pre-project topographic contours. The project would permanently remove 26 City-protected oak trees. The proposed project would not impact wildlife corridors or conflict with regional conservation plans.

Measures related to the following topics are proposed herein to fully mitigate potential impacts of the project: rare plants, BUOW, jurisdictional resources, nesting birds, and City-protected oak trees. Successful implementation of these measures would mitigate potential impacts to below a level of significance.

# 1.0 INTRODUCTION

## 1.1 PURPOSE OF THE REPORT

This report provides the City of Santa Clarita (City; California Environmental Quality Act [CEQA] lead agency), resource agencies, and the public with current biological data to satisfy review of the proposed Bouquet Canyon Project (Tentative Tract No. 82126; project) located in the City of Santa Clarita, Los Angeles County, California. The purpose of this report is to document the existing biological conditions on and in the immediate vicinity of the project and provide an analysis of potential impacts to sensitive biological resources with respect to local, state, and federal policy. This report provides the biological resources technical documentation necessary for project review under CEQA by the lead agency.

## 1.2 PROJECT LOCATION

The proposed project is located within an approximately 93.47-acre study area in the Saugus Community in the northern portion of the City. The study area is generally located 5.5 miles to the northeast of Interstate 5 and 3.8 miles to the northwest of California State Route 14 (Figure 1, *Regional Location*). The study area is within Section 6 of Township 4 North, Range 15 West of the Mint Canyon U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 2, *USGS Topography*). Specifically, the study area is located directly south of the intersection of David Way and Bouquet Canyon Road (Figure 3, *Aerial Photograph*).

## 1.3 PROJECT DESCRIPTION

The proposed project is a residential development that would consist of a gated community comprising several neighborhoods and common area amenities (Figure 4, *Proposed Project*). The development would consist of private residences and would include a combination of detached single-family lots, auto court detached bungalow units, attached row townhomes, and attached motor court condominiums. The project would also require some slope stabilization in addition to implementing fuel modification zones in accordance with the County of Los Angeles (County) Fire Department regulations (County of Los Angeles 2017). A flood control channel would be constructed to south of existing Bouquet Canyon Creek. Downstream flows within Bouquet Canyon Creek would feed into the flood control channel, which would ultimately tie into the existing concrete-lined portion of Bouquet Canyon Creek to the northwest of the proposed project.

The project would construct a new alignment of Bouquet Canyon Road, which would improve a heavily-traveled route that connects to Copper Hill Drive and the northern portion of the City. The new road alignment would be constructed approximately 1,500 feet north of Plum Canyon Road on the south end to a connection point at the existing Bouquet Canyon Road approximately 700 feet south of Shadow Valley Lane. Construction of the new Bouquet Canyon alignment would implement a portion of the City's General Plan Circulation Element (City of Santa Clarita [City] 2011). The new alignment would include widened lane and shoulder areas, a full-width bridge over Bouquet Canyon Creek, pedestrian walkways, and a multi-use trail accessible to both existing neighborhoods and the proposed development.

## 2.0 METHODS

Project evaluation included a review of project plans; a literature review of biological resources occurring on the study area and surrounding vicinity; a general biological survey, including vegetation mapping and a general habitat assessment; focused surveys for rare plant species, burrowing owl (*Athene cunicularia*; BUOW), and coastal California gnatcatcher (*Polioptila californica californica*; CAGN); an oak tree (*Quercus* spp.) survey; and a jurisdictional assessment. The methods used to evaluate the biological resources present on the study area are discussed in this section.

### 2.1 NOMENCLATURE

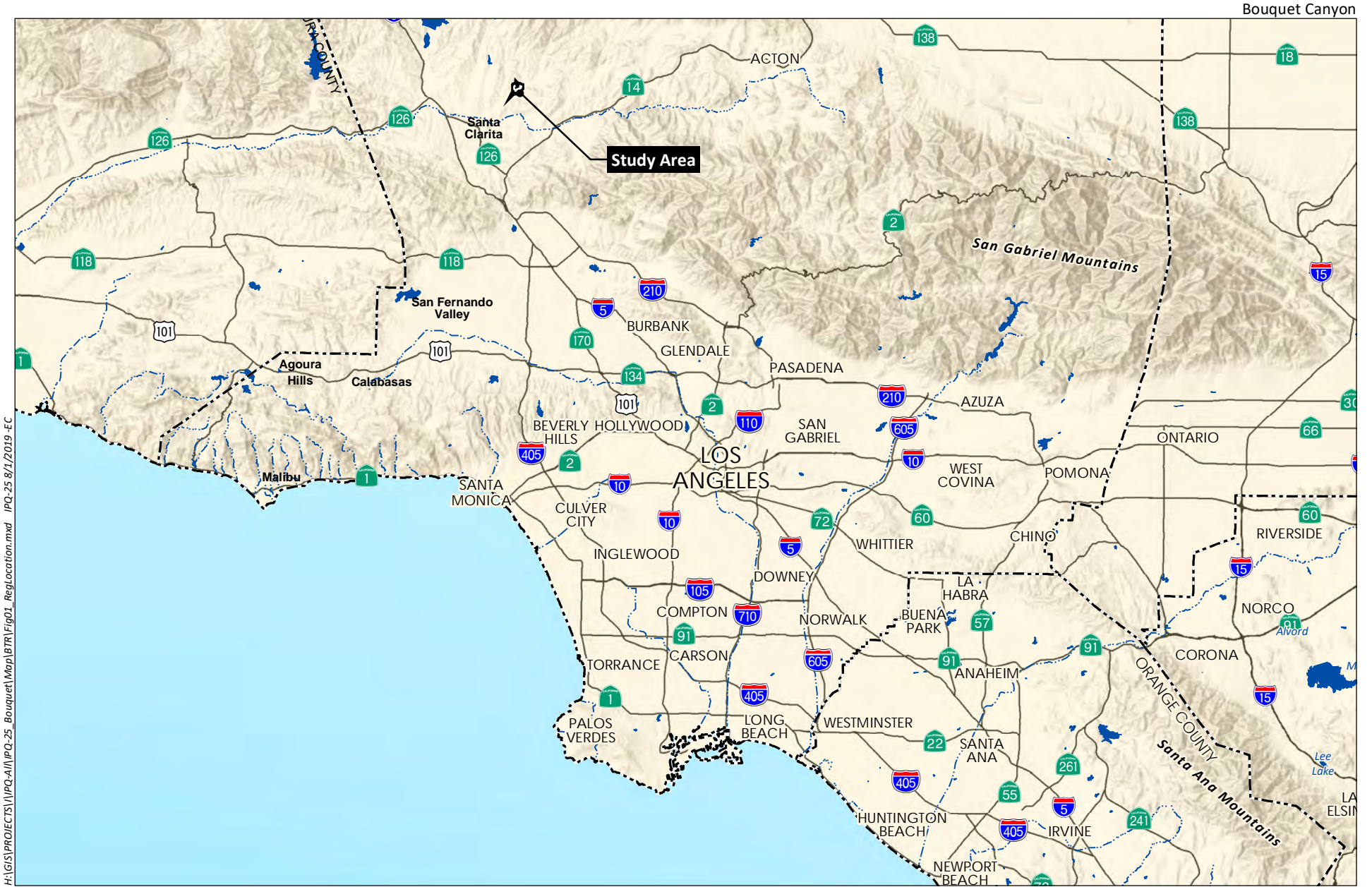
Nomenclature for this report follows Baldwin et al. (2012) for plants. Plant communities were classified in accordance with Holland (1986) and Oberbauer (1996), with additional vegetation community information taken from Manual of California Vegetation, Second Edition (MCV; Sawyer et al. 2009). Animal nomenclature follows Emmel and Emmel (1973) for butterflies, Center for North American Herpetology (Taggart 2016) for reptiles and amphibians, American Ornithologists' Union (2018) for birds, and Baker et al. (2003) for mammals. Rare plant and sensitive animal statuses are from the Inventory of Rare and Endangered Plants of California (California Native Plant Society [CNPS] 2017, 2018) and the California Natural Diversity Database (CNDDDB; California Department of Fish and Wildlife [CDFW] 2017, 2018a). Rare plant species' habitats and flowering periods are from the Jepson Manual (Baldwin et al. 2012), the Inventory of Rare and Endangered Plants of California (CNPS 2018), and California Natural Diversity Database (CDFW 2018a). Soil classifications were obtained from the Web Soil Survey (Natural Resources Conservation Service [NRCS] 2017).

### 2.2 LITERATURE REVIEW

Prior to conducting the site visit, HELIX Environmental Planning, Inc. (HELIX) reviewed regional planning documents, Google Earth aerials (2017), Web Soil Survey (NRCS 2017), and sensitive species database records, including the Inventory of Rare and Endangered Plants of California (CNPS 2017, 2018), CNDDDB (CDFW 2017, 2018a), and critical habitat maps for endangered and threatened species (U.S. Fish and Wildlife Service [USFWS] 2017a). A nine-quadrangle database search was conducted on CNDDDB and CNPS, which included the following quadrangles: Agua Dulce, Green Valley, Mint Canyon, Newhall, Oat Mountain, San Fernando, Sleepy Valley, Sunland, and Warm Springs Mountain.

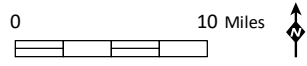
### 2.3 FIELD SURVEYS

Field surveys were conducted to document the existing condition of the study area and surrounding lands. A general biological survey and habitat assessment were conducted on the study area to map existing vegetation communities and to determine habitat suitability for sensitive plant and animal species. A list of plant and animal species observed and/or detected during the field surveys are provided as Appendix A, *Plant Species Observed* and Appendix B, *Animal Species Observed and/or Detected*. Noted animal species were identified by direct observation, vocalizations, or the observance of scat, tracks, or other signs. However, the list of animal species identified is not necessarily a comprehensive account of all species that use the study area as species that are nocturnal, secretive, or seasonally restricted may not have been observed. Focused surveys for rare plant species, oak trees, BUOW, and CAGN were conducted. A jurisdictional assessment was also conducted to determine the

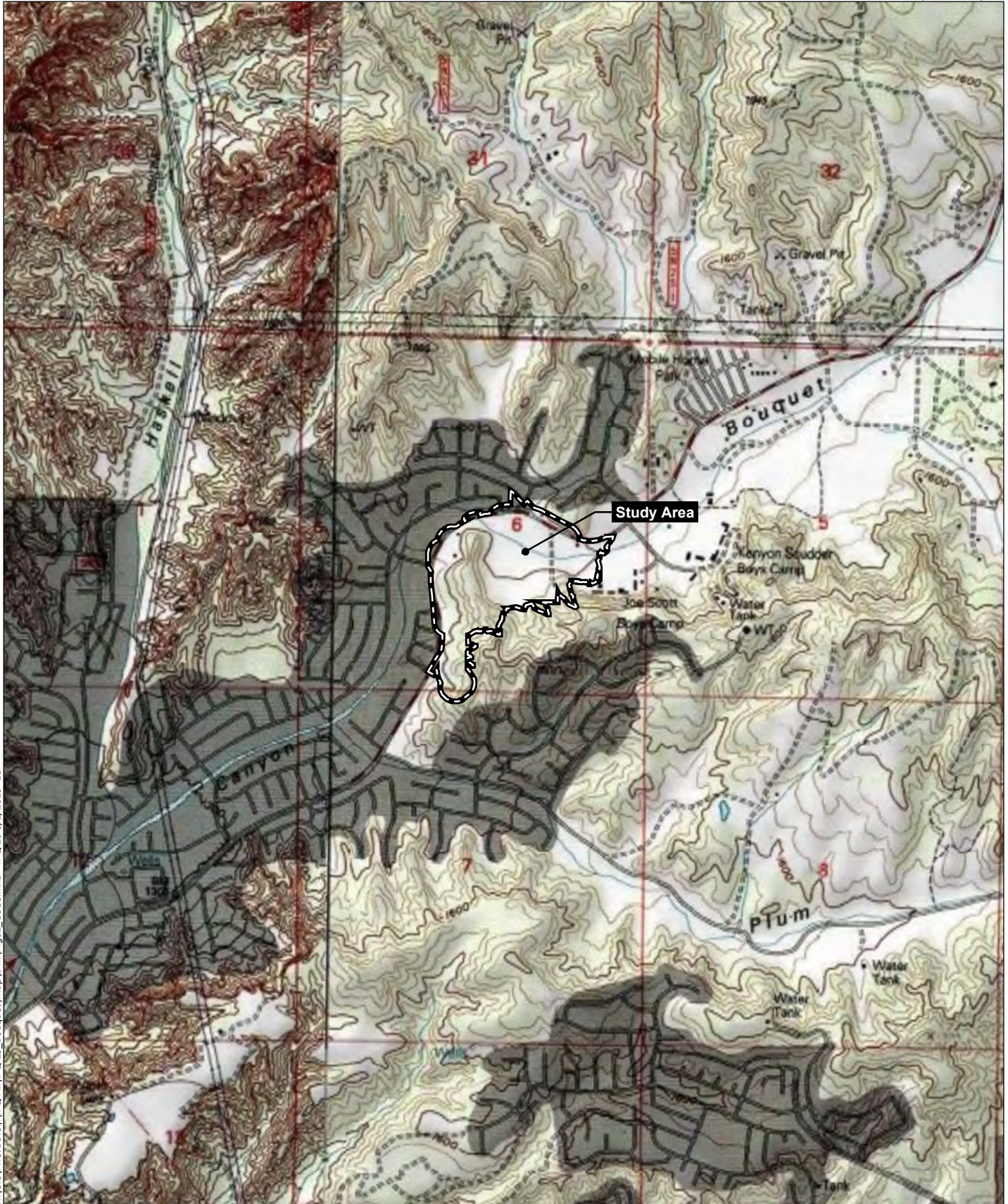


H:\GIS\PROJECTS\IPQ-A\IPQ-25\_Bouquet\Map\BTR\Fig01\_RegLocation.mxd IPQ-25 8/1/2019 -EC

Source: Base Map Layers (ESRI, 2013)







H:\GIS\PROJECTS\IPQ-All\IPQ-25 Bouquet\Map\BTR\Fig02 USGS.mxd IPQ-25 8/1/2019-EC

Source: Mint Canyon 7.5' Quad (USGS)





H:\GIS\PROJECTS\IPQ-All\IPQ-25\_Bouquet\Map\BTR\Fig03\_Aerial.mxd IPQ-25 8/1/2019 - EC



Source: Base Map Layers (NAIP, 2016)





**BOUQUET CANYON SITE CALCULATIONS**

PLANNED AREA	DCU (Subdiv)	DCU (P)
PA 1	114,264	37
PA 1A	10,004	7
PA 2	276,948	94
PA 3	282,016	91
PA 4	218,142	74
PA 1A	10,004	7
<b>Total</b>	<b>1,049,378</b>	<b>300</b>
DCU (Subdiv)	1,029	AC
DCU (P)	1,029	AC

DCU (PA) WITH COMMENTS	Area	DCU	DCU (P)	DCU (Subdiv)	DCU (P)	DCU (Subdiv)	DCU (P)	Total DCU (P)	Total DCU (Subdiv)
PA 1	114,264	37	37	37	37	37	37	37	37
PA 1A	10,004	7	7	7	7	7	7	7	7
PA 2	276,948	94	94	94	94	94	94	94	94
PA 3	282,016	91	91	91	91	91	91	91	91
PA 4	218,142	74	74	74	74	74	74	74	74
<b>Total</b>	<b>1,049,378</b>	<b>300</b>	<b>300</b>	<b>300</b>	<b>300</b>	<b>300</b>	<b>300</b>	<b>300</b>	<b>300</b>

DCU (PA) WITH COMMENTS	Area	DCU	DCU (P)	DCU (Subdiv)	DCU (P)	DCU (Subdiv)	DCU (P)	Total DCU (P)	Total DCU (Subdiv)
PA 1	114,264	37	37	37	37	37	37	37	37
PA 1A	10,004	7	7	7	7	7	7	7	7
PA 2	276,948	94	94	94	94	94	94	94	94
PA 3	282,016	91	91	91	91	91	91	91	91
PA 4	218,142	74	74	74	74	74	74	74	74
<b>Total</b>	<b>1,049,378</b>	<b>300</b>	<b>300</b>	<b>300</b>	<b>300</b>	<b>300</b>	<b>300</b>	<b>300</b>	<b>300</b>

DCU (PA) WITH COMMENTS	Area	DCU	DCU (P)	DCU (Subdiv)	DCU (P)	DCU (Subdiv)	DCU (P)	Total DCU (P)	Total DCU (Subdiv)
PA 1	114,264	37	37	37	37	37	37	37	37
PA 1A	10,004	7	7	7	7	7	7	7	7
PA 2	276,948	94	94	94	94	94	94	94	94
PA 3	282,016	91	91	91	91	91	91	91	91
PA 4	218,142	74	74	74	74	74	74	74	74
<b>Total</b>	<b>1,049,378</b>	<b>300</b>	<b>300</b>	<b>300</b>	<b>300</b>	<b>300</b>	<b>300</b>	<b>300</b>	<b>300</b>

**BOUQUET CANYON**  
 SANTA CLARITA | CALIFORNIA  
 DATE 01 | 29 | 19

**INTEGRAL Communities**  
 A DEVELOPER OF REAL ESTATE COMPANIES

1"=100', 0" SCALE NORTH  
 0 100 200

CONCEPTUAL SITE PLAN

Source:Urban Arena, 2019

H:\GIS\PROJECTS\I\POC\_Bouquet\Map\BTR\Fig4\_PropProject.incd. FEI-01 3/25/19 -EC



existing jurisdictional limits regulated by the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and CDFW.

### **2.3.1 General Biological Survey**

HELIX Biologist and Regulatory Specialist Ezekiel Cooley and Biologist Lauren Singleton conducted a general biological survey of the study area on June 13, 2017. Vegetation communities were classified and mapped in accordance with Holland (1986) and Oberbauer (1996). Vegetation was mapped on a 125-foot (1 inch = 125 feet) aerial photograph of the site. Vegetation communities were mapped by HELIX to one-hundredth of an acre (0.01 acre). The entire site was surveyed on foot with the aid of binoculars. Representative photographs of the site were taken, with select photographs included in this report as Appendix C, *Representative Site Photographs*. Plant and animal species observed or otherwise detected were recorded in field notebooks. Animal identifications were made in the field by direct, visual observation or indirectly by detection of calls, burrows, tracks, or scat. Plant identifications were made in the field or in the lab through comparison with voucher specimens or photographs.

### **2.3.2 Rare Plant Species Surveys**

Rare plants investigated include those that are listed as threatened or endangered by USFWS or CDFW and those afforded a California Rare Plant Rank (CRPR) of 1 through 3 by CNPS.

Mr. Cooley, Ms. Singleton, and HELIX Biologist Daniel Torres conducted spring rare plant surveys on May 15, 2018 and May 9, 2019, and a summer rare plant survey on August 8, 2018. The surveys were conducted in accordance with published agency guidelines (CDFW 2009, 2000; USFWS 2000) and during the appropriate flowering period to maximize the detection of those rare plant species with the potential occur on the study area. Survey methods incorporated a combination of meandering transects and focused searches in areas with the greatest potential to support rare plant species with the potential to occur on the study area. If observed, individual rare plants were mapped using a handheld Global Positioning System (GPS) unit. HELIX also recorded any rare plant species incidentally encountered during other field surveys.

### **2.3.3 Burrowing Owl**

A habitat assessment was conducted on the study area by Ms. Singleton and Mr. Torres on March 27, 2018, to identify areas with potential BUOW habitat and eliminate those that did not contain habitat suitable to support the species. A focused burrow survey was conducted concurrently with the habitat assessment. All suitable burrows (i.e., greater than approximately four inches [11 cm] in height and width and greater than approximately 59 inches [50 cm] in depth) and burrow surrogates were recorded using a handheld GPS unit. The assessment was conducted on the study area and included an approximately 500-foot (150-m) buffer zone around the periphery of the study area. The study area was determined to support suitable BUOW habitat and burrows; therefore, a focused survey was conducted as described below.

A focused survey for BUOW was conducted between April 13 and June 26, 2018, by Mr. Cooley. The survey consisted of four breeding season (February 1 through August 31) surveys that were performed in accordance with the current CDFW survey guidelines (California Department of Fish and Game [CDFG] 2012). The surveys were spaced at least three weeks apart, with at least one survey conducted between February 15 and April 15 and one survey conducted between June 15 and July 15. Biologists visually

searching for BUOW sign and individuals with the aid of binoculars by slowly walking meandering transects spaced no more than 65 feet (20 meters) apart through areas of potential habitat. Fence posts, rocks, and other possible perching locations as well as mammal burrows (especially those of California ground squirrel [*Otospermophilus beecheyi*]) potentially suitable for use by BUOW were inspected. Burrows were searched for sign of recent BUOW occupation, including pellets with regurgitated fur, bones, and insect parts; white wash (excrement); tracks; and feathers. If observed, BUOW sign and/or individuals were recorded with a handheld GPS unit. The findings for the BUOW survey are included as Appendix D, *Burrowing Owl Focused Survey Report*.

### 2.3.4 Coastal California Gnatcatcher

A focused survey for CAGN was conducted between March 15 and June 30 by HELIX Biologist Tara Baxter (TE 87004B-0) in accordance with the current USFWS protocols (USFWS 1997). The survey consisted of six breeding season (February 15 through August 30) surveys conducted at least one week apart between March 15 and June 30. The CAGN survey area encompassed suitable habitat and a 100-foot buffer area. The CAGN survey area totaled approximately 33 acres of potential CAGN habitat within the survey area, which comprised big sagebrush scrub, Riversidean upland sage scrub, Riversidean upland sage scrub/non-native grassland, and adjacent habitat.

The surveys were conducted by walking within and along the perimeter of suitable CAGN habitat. The survey route was arranged to ensure complete survey coverage of habitat with potential for occupancy by CAGN. Surveys were conducted with binoculars to aid in bird detection. Recorded CAGN vocalizations were played sparingly and only if other means of detection had failed. If a CAGN was detected before playing recorded vocalizations, the recordings were not played. Once CAGNs were initially detected in an area, use of playback was discontinued. The CAGN survey findings are documented in a separate letter report included as Appendix E, *Coastal California Gnatcatcher Focused Survey Report*.

### 2.3.5 Jurisdictional Assessment

Prior to beginning fieldwork, aerial photographs (1 inch = 75 feet), topographic maps (1 inch = 75 feet), USGS quadrangle maps, and National Wetlands Inventory maps (USFWS 2017b) were reviewed to assist in determining the location of potential jurisdictional waters on the study area. Mr. Cooley and HELIX Principal Regulatory Specialist Amir Morales conducted the jurisdictional assessment field work on July 6, 2017. The assessment was conducted to identify and jurisdictional waters potentially subject to USACE jurisdiction pursuant to Section 404 of the Clean Water Act (CWA), RWQCB jurisdiction pursuant to Section 401 of the CWA, and streambed habitats potentially subject to CDFW jurisdiction pursuant to Sections 1600 *et seq.* of the California Fish and Game (CFG) Code. Data collection was targeted in areas that were deemed to have the potential to support jurisdictional resources, such as the presence of an ordinary high water mark (OHWM), the presence of a bed/bank and streambed associated vegetation and/or other surface indications of streambed hydrology. Representative photographs were taken of the drainage features and are included as Appendix F, *Representative Drainage Photographs*. The findings of the jurisdictional assessment are included as Appendix G, *Jurisdictional Delineation Report*.

#### 2.3.5.1 U.S. Army Corps of Engineers and Regional Water Quality Control Board Jurisdiction

The USACE waters of the U.S. (WUS) were determined using current USACE guidelines (Environmental Laboratory 1987, USACE 2008a). Areas were determined to be WUS if there was evidence of regular

surface flow (e.g., bed and bank). Jurisdictional limits for these areas were measured according to the presence of a discernible OHWM, which is defined in 33 Code of Federal Regulations Section 329.11 as “that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation; the presence of litter or debris; or other appropriate means that consider the characteristics of the surrounding areas.” The USACE has issued further guidance on the OHWM (Riley 2005; USACE 2008b), which also was considered in this jurisdictional assessment.

The jurisdictional delineation was conducted in accordance with court decisions (i.e., *Rapanos v. United States*, *Carabell v. United States*, and *Solid Waste Agency of Northern Cook County v. USACE*), as outlined and applied by the USACE (USACE 2007; Grumbles and Woodley 2007); the USACE and U.S. Environmental Protection Agency (EPA; 2007), and the 2015 Clean Water Rule (USACE 2015). These publications explain that the EPA and USACE will assert jurisdiction over traditional navigable waters (TNW) and tributaries to TNWs that are a relatively permanent water body (RPW), which has year-round or continuous seasonal flow. For water bodies that are not RPWs, a significant nexus evaluation is used to determine if the non-RPW is jurisdictional. As an alternative to the significant nexus evaluation process, a preliminary jurisdictional delineation may be submitted to the USACE. The preliminary jurisdictional delineation treats all waters and wetlands on a site as if they are jurisdictional WUS (USACE 2008a). A significant nexus evaluation or preliminary jurisdictional delineation are typically only required for projects that propose impacts to potentially jurisdictional features and, therefore, require a Section 404 permit from the USACE.

The RWQCB asserts regulatory jurisdiction over activities affecting wetland and non-wetland waters of the State pursuant to Section 401 of the CWA and the State Porter-Cologne Water Quality Control Act. Potential RWQCB jurisdiction found within the study area follows the boundaries of potential USACE jurisdiction for WUS. There are no areas supporting isolated waters of the State subject to exclusive RWQCB jurisdiction pursuant to the State Porter-Cologne Water Quality Control Act.

### 2.3.5.2 California Department of Fish and Wildlife Jurisdiction

The CDFW jurisdictional boundaries were determined based on the presence of riparian vegetation or regular surface flow, if present. Streambeds within CDFW jurisdiction were delineated based on the definition of streambed as “a body of water that flows at least periodically or intermittently through a bed or channel having banks and supporting fish or other aquatic life. This includes watercourses with surface or subsurface flow that supports riparian vegetation” (Title 14, Section 1.72). This definition for CDFW jurisdictional habitat allows for a wide variety of habitat types to be jurisdictional, including some that do not include wetland species (e.g., oak woodland and alluvial fan sage scrub). Jurisdictional limits for CDFW streambeds were defined by the top of bank. Vegetated CDFW habitats were mapped at the limits of streambed-associated vegetation, if present.

### 2.3.6 Oak Tree Survey

An oak tree survey was conducted by Mr. Cooley and Mr. Torres (International Society of Arboriculture [ISA] WE-12249) on December 19 and 20, 2018 to identify oak trees that are protected under the City’s Oak Tree Preservation ordinance (Title 17, Chapter 51, Section 40; City of Santa Clarita [City] 1990). Under these guidelines, all oak trees in the genus *Quercus* at least six inches in circumference measured at 4.5 feet above the natural grade are protected by the City. Heritage oak trees are given special consideration and may be fully protected or subject to requirements stricter than those of a standard

protected oak tree. A heritage oak tree is defined as any oak tree measuring 108 inches in circumference measured at 4.5 feet above the tree’s natural grade. In the case of trees with multiple trunks, two or more trunks must measure 72 inches each or greater in circumference when measured at 4.5 feet above the tree’s natural grade.

All oak trees within the survey area that satisfied the previously mentioned criteria were identified to species. An aluminum tag with a unique number was affixed to the north side of each tree at approximately three feet above natural grade, with the exception of those trees located outside of the study area where the Applicant does not own the property. The location of each individual tree and the canopy extent were recorded with a GPS with sub-meter accuracy. Physical and horticultural evaluations were performed for each tree according to the City’s Oak Tree Preservation and Protection Guidelines (City 1990). The rating system is outlined below in Table 1, *Oak Tree Rating System*. The findings of the oak tree survey are included as Appendix H, *Oak Tree Survey Report*.

**Table 1**  
**OAK TREE RATING SYSTEM**

Rating	Description
A – Outstanding	A healthy and vigorous tree characteristic of its species and reasonably free of any visible signs of stress, disease, or pest infestation.
B – Above Average	A healthy and vigorous tree with minor visible signs of stress, disease, or pest infestation.
C – Average	Although healthy in overall appearance there is an abnormal amount of stress or disease and/or pest infestation.
D – Below Average/Poor	This tree is characterized by exhibiting a greater degree of stress, disease, and/or pest infestation than normal and appears to be in a state of rapid decline. The degree of decline may vary greatly in signs of dieback, disease, and pest infestation and appears to be in an advanced state of decline.
F – Dead	This tree exhibits no signs of life whatsoever.

Source: City of Santa Clarita (1990)

## 3.0 RESULTS

### 3.1 ENVIRONMENTAL SETTING

The study area is located in the foothills of the Sierra Pelona Mountains and portions were historically used as school, ranch, and hog farm from the early 1900s through the 1970s (Historic Aerials 1948). The

topography in the southern and western portions of the study area is predominantly steep hillsides, while the northern portion is primarily flat. The steep hills throughout the southern and western portions of the site are predominated by Riversidean upland sage scrub while the flatter portions of the study area are dominated by non-native grassland due to historic disturbance from ranching activities. Bouquet Canyon Creek flows from east to west in the northern portion of the study area. Elevations on the study area range from approximately 1,365 feet above mean sea level (AMSL) near the western boundary of the study area to approximately 1,600 feet above AMSL near the southeastern corner. Seven soil types are mapped on the study area, including Hanford sandy loam (HcC), Metz loam sandy (MfA), Mocho loam (MpA), Ojai loam (OgF), Saugus loam (ScF2), Sorrento loam (SsA), and Yolo loam (YoC; NRCS 2017).

Immediate surrounding land uses include existing residential development to the north and west, a mixture of undeveloped land and residential development to the south, and a juvenile camp (Los Angeles County Camp Joseph Scott) to the east. The study area is located approximately 0.20 mile to the southeast of Haskell Canyon Open Space and 1.40 miles to the south of Angeles National Forest.

### 3.2 VEGETATION COMMUNITIES

A total of 20 vegetation communities were mapped on the study area (Table 2, *Vegetation Communities*, Figure 5, *Vegetation*). The Holland/Oberbauer Element Codes and CDFW CaCodes are provided in parentheses next to each MCV community name in Table 2. Sensitive habitats pursuant to CDFW's Natural Communities List (2018b) are also identified in Table 2. A brief description of each vegetation community and land uses mapped on the study area is provided below.

**Table 2**  
**VEGETATION COMMUNITIES**

Habitat Type (Holland/Oberbauer)	Habitat Type (Manual of California Vegetation)	Acres
Big Sagebrush Scrub (H <sup>1</sup> 35210)	Big Sagebrush (35.110.02)	1.91
Chamise Chaparral (H 37200)/Non-native Grassland (H 42200)	Chamise Chaparral (37.101.16)/Red Brome Grasslands (42.024.02)	2.98
Developed (O <sup>2</sup> 12000)	Developed (N/A)	9.37
Disturbed (O 11300)	Disturbed (N/A)	5.32
Disturbed-Riversidean Upland Sage Scrub	Disturbed-California Buckwheat Scrub	0.62
Elderberry Savanna (H 63430)	Blue Elderberry Stands (63.410.00) <sup>3</sup>	0.56
Giant Reed Stand (O 65100)	Giant Reed Breaks (42.080.01)	7.08
Mule Fat Scrub (H 63310)	Mule Fat Thickets (63.510.01)	0.27
Non-native Grassland (H 42200)	Red Brome Grasslands (42.024.02)	22.06
Non-native Grassland (H 42200)/ Riversidean Upland Sage Scrub (H 32710)	Red Brome Grasslands (42.024.02)/California Sagebrush Scrub (32.010.01)	7.75
Non-native Vegetation (O 42210)	Upland Mustards (42.011.05)	8.06
Non-native Vegetation (O 42210)/ Elderberry Savanna (H 63430)	Red Brome Grasslands (42.024.02)/Blue Elderberry Stands (63.410.00)	0.97
Ornamental (N/A)	Ornamental (N/A)	2.69
Riversidean Upland Sage Scrub (H 32710)	California Sagebrush Scrub (32.010.01)	7.06
Riversidean Upland Sage Scrub (H 32710)/Non-native Grassland (H 42200)	California Sagebrush Scrub (32.010.01)/Non-native Grassland	13.10
River Wash (O 64140)	River Wash (N/A)	0.36
Scrub Oak Chaparral (H 37900)	Scrub Oak Chaparral (37.407.02)	0.26

**Table 2 (cont.)  
VEGETATION COMMUNITIES**

Habitat Type (Holland/Oberbauer)	Habitat Type (Manual of California Vegetation)	Acres
Scrub Oak Chaparral (H 37900)/Non-native Grassland (H 42200)	Scrub Oak Chaparral (37.407.02)/Red Brome Grasslands (42.024.02)	2.01
Southern North Slope Chaparral (H 37E20)	Tucker Oak Chaparral (37.418.04)	0.34
Southern Willow Scrub (H 63320)/Giant Reed Stand (O 65100)	Red Willow Thickets (61.205.01) <sup>3</sup>	0.70
<b>TOTAL</b>		<b>93.47</b>

<sup>1</sup> Holland Element Code

<sup>2</sup> Oberbauer Element Code

<sup>3</sup> Sensitive habitats pursuant to the California Department of Fish and Wildlife (CDFW) Natural Communities List (2018b).

### 3.2.1 Big Sagebrush Scrub

Big sagebrush scrub comprises mostly soft-woody shrubs usually with bare ground underneath and between the shrubs. This vegetation community occurs on a wide variety of soils and terrain, from rocky, well-drained slopes to fine-textured valley soils with high water tables. Big sagebrush scrub usually occurs between 4,000 feet and 9,000 feet in scattered localities within and along the margins of the Mojave and Sonoran deserts, on desert mountain ranges. Great Basin sagebrush (*Artemisia tridentata*) is the dominant plant species.

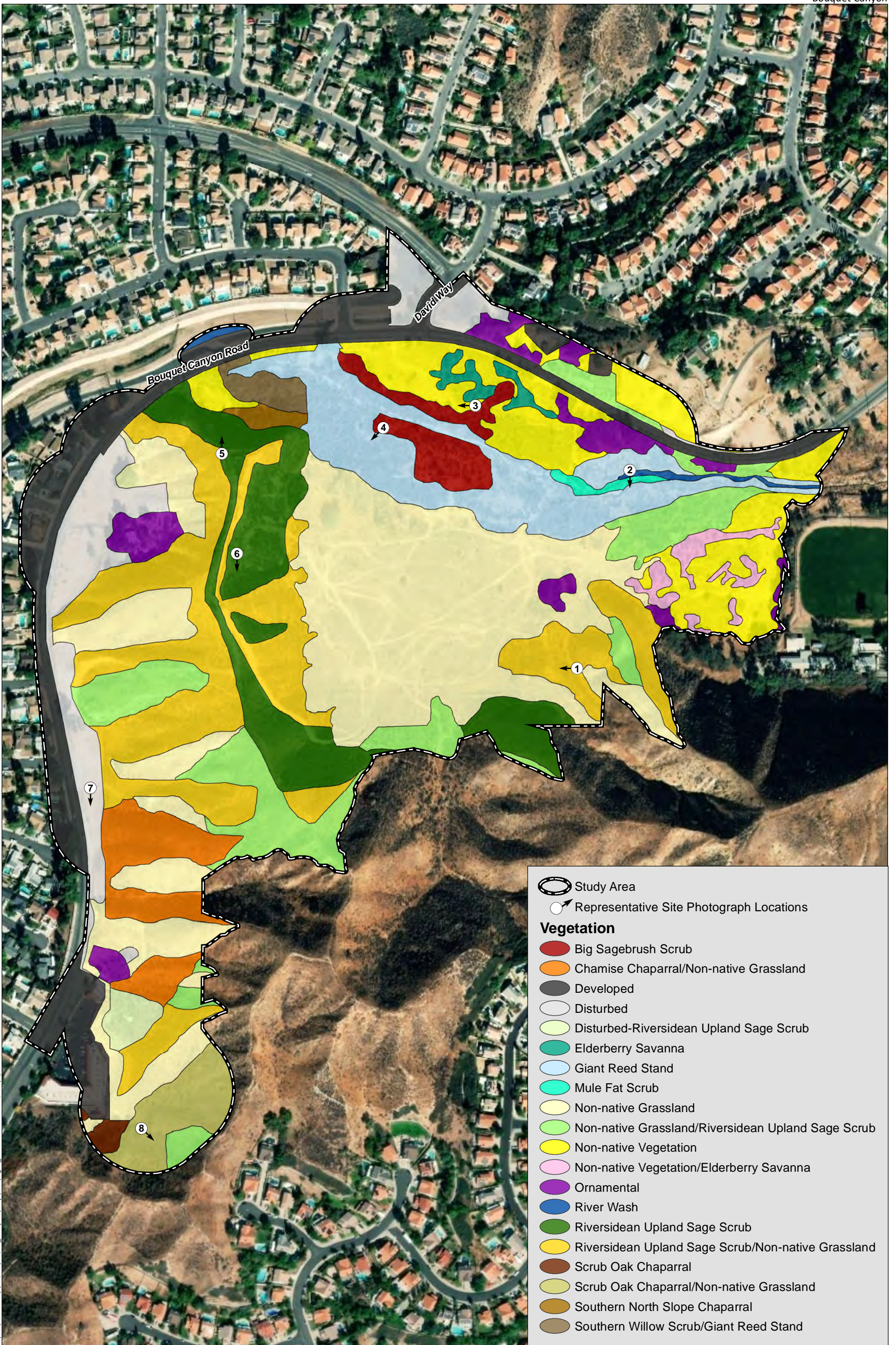
Big sagebrush scrub totaled 1.91 acres and was observed adjacent to portions of Bouquet Canyon Creek. This plant community was dominated by big sagebrush with scattered non-native species in the understory, including giant reed (*Arundo donax*), Mediterranean grass (*Schismus barbatus*), and short-pod mustard (*Hirschfeldia incana*).

### 3.2.2 Chamise Chaparral/Non-native Grassland

Chamise chaparral is the most widely distributed chaparral shrub and is dominated by the species chamise (*Adenostoma fasciculatum*). This vegetation community is found from Baja to northern California in pure or mixed stands. Chamise chaparral's ubiquitous distribution may be the result of chamise being the only chaparral species that regenerates from fire from both an underground root crown and the production of seeds. This community can be found on variable landforms, but soils are usually fairly shallow over bedrock. Chamise chaparral often dominates at low elevations and on xeric south facing slopes with 60 to 90 percent canopy cover. Along its lower elevation limit, chamise chaparral intergrades with coastal sage scrub. Mission manzanita (*Xylococcus bicolor*) and black sage (*Salvia mellifera*) are minor plant species associated within this vegetation community.

Chamise chaparral/non-native grassland was observed on some of the steep north-facing slopes in the southwestern portion of the study area, totaling 2.98 acres. Chamise was the dominant shrub observed in this community. The shrubs were fairly well-spaced with understory comprising many non-native grassland species (see Section 3.2.10 below). A few other native shrubs were observed in this community, including California buckwheat (*Eriogonum fasciculatum*), chaparral mallow (*Malacothamnus fasciculatus*), and Tucker oak (*Quercus john-tuckeri*).





H:\GIS\PROJECTS\1\PO-All\PO-25\_Bouquet\Map\TRM\Fig05\_PlantCom.mxd IPQ-25 8/1/2019 - EC



Source: Base Map Layers (NAIP, 2016)



### 3.2.3 Developed

Developed land is where permanent structures and/or pavement have been placed, which prevents the growth of vegetation, or where landscaping is clearly tended and maintained.

Developed areas were observed near the northern and western study area boundaries, totaling 9.37 acres. The developed areas consisted of the existing Bouquet Canyon Road right-of-way.

### 3.2.4 Disturbed

Disturbed habitat includes land cleared of vegetation (e.g., dirt roads) or actively maintained or heavily disturbed areas that are mostly unvegetated but may support scattered non-native plant species, such as ornamentals or ruderal exotic species that take advantage of disturbance. Disturbed habitat is similar to the non-native vegetation community described below (see Section 3.2.11), although disturbed areas generally support little to no vegetative cover.

Disturbed habitat was observed adjacent to Bouquet Canyon Road along the northern and western study area boundary, totaling 5.32 acre. The disturbed habitat mainly consisted of fuel modification areas for existing adjacent residential homes and were mostly void of vegetation.

### 3.2.5 Disturbed/Riversidean Upland Sage Scrub

This community is dominated by disturbed habitat described in Section 3.2.4 above and is intermixed with species associated with Riversidean upland sage scrub described in Section 3.2.14 below.

Disturbed/Riversidean upland sage scrub was observed in the southern portion of the study area, totaling 0.62 acre. This community consisted of widely-spaced California buckwheat shrubs. The interstitial spaces between the shrubs were mostly unvegetated due to fuel modification that was implemented for the adjacent shopping center.

### 3.2.6 Elderberry Savanna

Elderberry savanna is dominated by widely-spaced blue elderberry (*Sambucus nigra ssp. caerulea*) with a grassy understory. This plant community is associated with stream terraces and bottomlands, which may be intermittently flooded.

One small patch of elderberry savanna was observed adjacent to the northern study area boundary, totaling 0.56 acre. This plant community was dominated by blue elderberry trees in the overstory and California buckwheat and short-pod mustard (*Hirschfeldia incana*) in the understory.

### 3.2.7 Giant Reed Stand

Giant reed stand occurs within sandy or gravelly soils that are deposited near stream channels during flood events and are densely vegetated by giant reed. These dense stands generally exclude most other plant life. This community typically associated with riparian areas along low-gradient streams and in ditches.

The giant reed stands on the study area were densely vegetated by giant reed, and the community totaled 7.08 acres on the study area. Native species, such as thick-leaved yerba santa (*Eriodictyon*

*crassifolium*), fourwing saltbush (*Atriplex canescens*), and caterpillar phacelia (*Phacelia cicutaria*), were observed within the openings of this plant community. One Fremont cottonwood (*Populus fremontii* ssp. *fremontii*) was also observed in this community. Non-native species observed within these openings included prickly lettuce (*Lactuca serriola*), red brome (*Bromus madritensis* ssp. *rubens*), short-pod mustard, and tree tobacco (*Nicotiana glauca*).

### 3.2.8 Mule Fat Scrub

Mule fat scrub is a shrubby riparian scrub community dominated by mule fat (*Baccharis salicifolia*) interspersed with small willows. This early seral community is dominated by frequent flooding, the absence of which would lead to a cottonwood or sycamore dominated woodland or forest. In some environments, limited hydrology may favor the persistence of mule fat.

The study area supports one patch of mule fat scrub along Bouquet Canyon Creek in the northeastern corner of the study area, which totaled 0.27 acre. In addition to mule fat, other species observed included California sagebrush (*Artemisia californica*) with and understory of non-native species such as Jersey cudweed (*Pseudognaphalium luteo-album*), red brome (*Bromus madritensis* ssp. *rubens*), common ripgut grass (*Bromus diandrus*), and short-podded mustard.

### 3.2.9 Non-native Grassland

Non-native grassland is a dense to sparse cover of annual grasses, often associated with numerous species of showy-flowered native annual forbs. Characteristic species include oats (*Avena* spp.), brome grasses (*Bromus* spp.), and mustards (*Brassica* spp., *Hirschfeldia incana*). Most of the annual introduced species within the non-native grassland originated from the Mediterranean region, an area with a long history of agriculture and a climate similar to California. Intensive grazing and agricultural practices combined with severe droughts in California contributed to the successful invasion and establishment of these species and the replacement of native grasslands with annual-dominated non-native grasslands (Jackson 1985).

Non-native grassland is the predominant plant community observed on the study area, totaling 22.06 acres. This community was observed in the flatter portions of the study area, including the valleys in the center and western parts of the study area. This plant community consisted most of red brome. Other non-native grass species included common ripgut grass, Mediterranean grass, and oats. A few annual native species were also observed within these areas, including common sandaster (*Corethrogyne filaginifolia*), fascicled tarplant (*Deinandra fasciculata*), and Menzies' fiddleneck (*Amsinckia menziesii*) and.

### 3.2.10 Non-native Grassland/Riversidean Upland Sage Scrub

This community is dominated by non-native grassland described in Section 3.2.9 above and is intermixed with some species associated with Riversidean upland sage scrub described in Section 3.2.14 below.

Non-native grassland/Riversidean upland sage scrub was observed on some of the south- and southwest-facing slopes in the southern portion of the study area, totaling 7.75 acres. This community was dominated by non-native grasses with widely-spaced California buckwheat shrubs.

### 3.2.11 Non-native Vegetation

Non-native vegetation community is typically associated with land that has been heavily influenced by human activities, including areas adjacent to roads, manufactured slopes, and abandoned lots. Non-native vegetation areas are dominated by ornamental and non-native species that take advantage of previously cleared or abandoned landscaping or land showing signs of past or present animal usage that removes any capability of providing viable habitat.

Non-native vegetation was observed in several patches within the study area, totaling 8.06 acres. These areas were dominated by short-podded mustard with other scattered non-native species such as annual yellow sweetclover (*Melilotus indicus*), foxtail barely (*Hordeum murinum*), red brome, and redstem filaree (*Erodium cicutarium*).

### 3.2.12 Non-native Vegetation/Elderberry Savanna

This community is dominated by non-native herbaceous species described in Section 3.2.11 above and is intermixed with some species associated with elderberry savanna described in Section 3.2.6 above.

Non-native vegetation/elderberry savanna was observed as scattered patches in the eastern portion of the study area, totaling 0.97 acre. This community was dominated by mustard with widely-spaced blue elderberry shrubs.

### 3.2.13 Ornamental

Ornamental vegetation is characterized as stands of naturalized trees and shrubs, many of which are also used in landscaping.

Ornamental vegetation was observed in small patches throughout the study area, totaling 2.69 acres. Most of the ornamental vegetation was associated with existing development adjacent to the study area, such as Bouquet Canyon Road, residences, and commercial businesses. Ornamental species observed included black locust (*Robinia pseudoacacia*), chinaberry (*Melia azedarach*), blue gum (*Eucalyptus globulus*), Italian cypress (*Cupressus sempervirens*), river red gum (*Eucalyptus camaldulensis*), silver dollar gum (*Eucalyptus polyanthemus*), and tree of heaven (*Ailanthus altissima*).

### 3.2.14 Riversidean Upland Sage Scrub

Riversidean sage scrub is the most xeric expression of coastal sage scrub south of Point Conception, California. This community occupies xeric sites, such as steep slopes, severely drained soils, or clays that slowly release stored soil moisture. This community is dominated by subshrubs with leaves that are deciduous during drought, an adaptation that allows the habitat to withstand the prolonged drought period in the summer and fall. Sage scrub species have relatively shallow root systems and open canopies that allow for the occurrence of a substantial herbaceous (annual plant) component. Typical stands are fairly open and dominated by species such as California sagebrush, brittlebush (*Encelia farinosa*), and California buckwheat.

Several patches of Riversidean upland sage scrub were observed on the east- and north-facing hillsides in the western portion of the study area, totaling 7.06 acres. In addition to California sagebrush and California buckwheat, other native shrubs included black sage, basket-brush (*Rhus aromatica*), purple sage (*Salvia leucophylla*), chaparral mallow, and Our Lord's candle (*Hesperoyucca whipplei*). Native

annuals included common goldenstar (*Bloomeria crocea*), elegant clarkia (*Clarkia unguiculata*), gilia (*Gilia angelensis*), and Menzies' fiddleneck.

### **3.2.15 Riversidean Upland Sage Scrub/Non-native Grassland**

This community is dominated by species associated with the Riversidean upland sage scrub community described above in Section 3.2.7 above with a significant component of species associated with non-native grassland described in Section 3.2.9 above.

Riversidean upland sage scrub/non-native grassland was observed on the north-facing hillsides in the western portion of the study area, totaling 13.10 acres. This community mostly consisted of California sagebrush and California buckwheat shrubs, but contributed less cover than those observed in the Riversidean upland sage scrub community. The understory was made up mostly of non-native brome grasses, such as red brome and common rippgut grass.

### **3.2.16 River Wash**

River wash is mostly unvegetated streambed that typically consists of coarse-textured substrate, which ranges from sand to gravel. The coarse-textured substrate is transported and deposited by stream flows.

River wash was observed in the upstream portion of Bouquet Canyon, totaling 0.36 acre. The river wash consisted of mostly unvegetated sandy streambed. Some thick-leaved yerba santa and non-native grasses were scattered throughout this area.

### **3.2.17 Scrub Oak Chaparral**

Scrub oak chaparral is a dense, evergreen chaparral with shrubs up to 20 feet tall and is dominated by scrub oak (*Quercus berberidifolia*) with considerable mountain mahogany (*Cercocarpus betuloides*). Scrub oak chaparral occurs in somewhat more mesic areas than other chaparrals, such as north facing slopes, and recovers more rapidly from fires than other chaparrals due to resprouting capabilities of scrub oak (Holland 1986). This vegetation community often occurs at slightly higher elevations (to 5,000 feet) and substantial leaf litter accumulates.

Two small areas of scrub oak chaparral were observed on a steep north-facing slope in the southwestern corner of the study area, totaling 0.26 acre. Scrub oak was the dominant shrub species while the understory consisted of non-native brome grasses.

### **3.2.18 Scrub Oak Chaparral/Non-native Grassland**

This community is dominated by species associated with the scrub oak chaparral community described above in Section 3.2.17 above with a significant component of species associated with non-native grassland described in Section 3.2.9 above.

Scrub oak chaparral/non-native grassland was observed on the north-facing hillsides in the western portion of the study area, totaling 13.10 acres. This community mostly consisted of scrub oak, but contributed less cover than those observed in the scrub oak chaparral. The understory was made up mostly of non-native brome species, such as red brome and common rippgut grass. The study area supports one patch of scrub oak chaparral/non-native grassland totaling 2.01 acres adjacent to the southern corner of the study area.

### 3.2.19 Southern North Slope Chaparral

Southern north slope chaparral is generally a mixed chaparral community on more mesic, shady slopes with well-drained soil. Codominant species or minor components of this plant community may include chamise, manzanita (*Arcostaphylos* spp.), California lilac (*Ceanothus* spp.), and basket-bush.

One patch of southern north slope chaparral was observed on the upper portion of a north-facing slope near the northwestern corner of the study area, totaling 0.34 acre. Tucker oak was the dominant shrub in this plant community. Other species observed included basket-bush, California bee plant (*Scrophularia californica*), and chamise. The understory of this plant community comprised non-native grasses.

### 3.2.20 Southern Willow Scrub/Giant Reed Stand

Southern willow scrub consists of dense, broad-leaved, winter-deciduous stands of trees dominated by shrubby willows (*Salix* spp.) in association with mule fat and with scattered emergent Fremont cottonwood and western sycamores (*Platanus racemosa*). This vegetation community occurs on loose, sandy or fine gravelly alluvium deposited near stream channels during flood flows. Frequent flooding maintains this early seral community, preventing succession to a riparian woodland or forest (Holland 1986). In the absence of periodic flooding, this early seral type would be succeeded by southern cottonwood or western sycamore riparian forest.

The study area supports one patch of southern riparian scrub/giant reed stand located along in the downstream (western) portion of Bouquet Canyon Creek, totaling 0.70 acre. Red willow (*Salix laevigata*) dominated the canopy in this community with a strong presence of giant reed in the understory. The canopy also included a few dying Fremont cottonwoods and scattered patches of mule fat were observed in the shrub layer.

## 3.3 PLANTS

HELIX identified a total of 151 plant species within the study area during surveys to date, of which 53 (35 percent) are non-native species (Appendix A).

## 3.4 ANIMALS

A total of 45 animal species were identified on the study area during biological surveys, including one reptile species, 40 bird species, and four mammal species (Appendix B).

## 3.5 SENSITIVE BIOLOGICAL RESOURCES

### 3.5.1 Rare Plant Species

Rare plant species are uncommon or limited in that they: (1) are only found in the Santa Clarita region; (2) are a local representative of a species or association of species not otherwise found in the region; or (3) are severely depleted within their ranges or within the region. Rare plant species include those species listed by CNPS with a CRPR of 1, 2, or 3 or federally and state listed endangered and threatened species. Species with CRPR of 4 may be considered rare if a population is locally uncommon, at the periphery of the species' range, sustained heavy losses, shows unusual morphology, or occurs on

unusual substrates (CNPS 2019). Focused surveys concentrated on the identification of CRPR 1, 2, and 3 species.

A total of eight rare plant species were recorded within the Mint Canyon quadrangle database search conducted on CNDDDB (CDFW 2018a) and CNPS (2018). These species are included in Appendix I, *Rare Plant Species Potential to Occur*. Of the eight rare plant species recorded within the vicinity of the study area, four species were considered to have no potential to occur on the study area based on elevation range and/or lack of suitable habitat on the study area. The remaining four species were considered to have a potential to occur on the study area, primarily based on the presence of chaparral and coastal scrub habitats (see Appendix I). These species include Nevin's barberry (*Berberis nevinii*), slender mariposa lily (*Calochortus clavatus* var. *gracilis*), slender-horned spineflower (*Dodecahema leptoceras*), and Piute Mountains navarretia (*Navarretia setiloba*).

Spring rare plant surveys were conducted on May 15, 2018 and May 9, 2019, and a summer rare plant survey was conducted on August 8, 2018. Nevin's barberry, slender-horned spineflower, and Piute Mountains navarretia were not observed during the rare plant surveys and are therefore presumed absent from the study area. A total of 496 slender mariposa lilies were observed throughout the north-facing slopes in the eastern and southern portions of the study area during the spring rare plant survey (Figure 6, *Rare Plant Locations*).

### 3.5.2 Sensitive Animal Species

Sensitive animal species include federally and state listed endangered and threatened species, candidate species for listing by USFWS or CDFW, and/or are species of special concern (SSC) pursuant to CDFW.

A total of 15 sensitive animal species were recorded within the Mint Canyon database search conducted on CNDDDB (CDFW 2018a). These species are included in Appendix J, *Sensitive Animal Species Potential to Occur*. An evaluation of each sensitive animal species' potential to occur on the study area is also provided in Appendix J and discussed in further detail below.

#### No Potential to Occur

Of the 15 sensitive animal species recorded within the vicinity of the study area, five species (Quino checkerspot butterfly [*Euphydryas editha quino*], two-striped gartersnake [*Thamnophis hammondi*], unarmored threespine stickleback [*Gasterosteus aculeatus williamsoni*], vernal pool fairy shrimp [*Branchinecta lynchi*], and western spadefoot [*Spea hammondi*]) were considered to have no potential to occur on the study area due to lack of suitable habitat and/or the study area is located outside of the species' known geographical range. Due to historical documentation of unarmored threespine stickleback (UTS) in Bouquet Canyon Creek, this species is discussed in further detail below.

#### Unarmored Threespine Stickleback

Currently, there are three recognized subspecies of threespine stickleback (*Gasterosteus aculeatus*), which are differentiated by the number of plates on the sides of their bodies. The subspecies include: (1) fully plated threespine stickleback (*Gasterosteus aculeatus aculeatus*), which have up to 36 plates; (2) low-plated threespine stickleback (*Gasterosteus aculeatus microcephalus*), which have 3 to 7 plates; and (3) UTS, which lack plates (Richmond et al. 2015). The UTS adults prefer slow-moving streams with a constant flow of water, but will occupy faster moving water if algal mats or other forms of protection



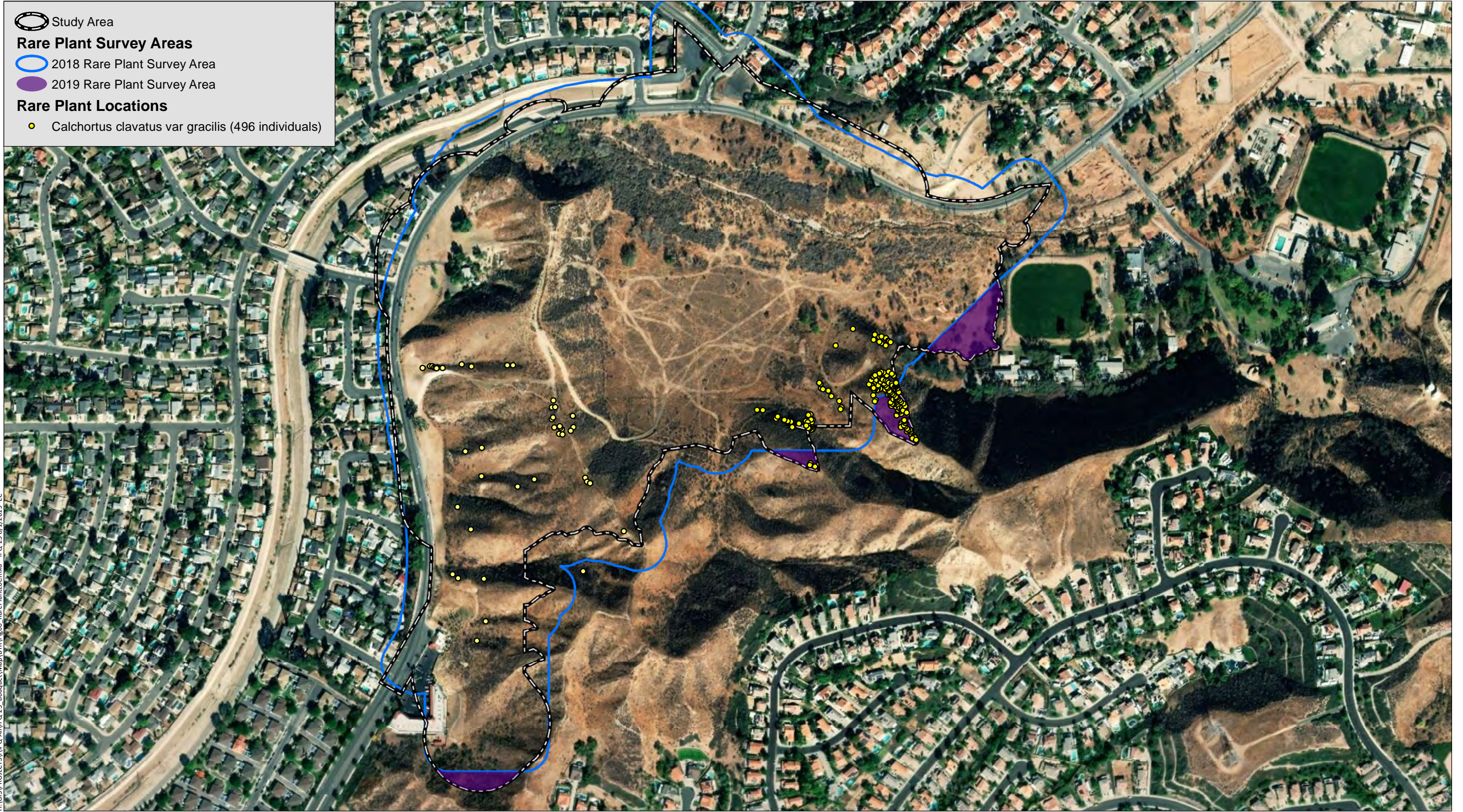
Study Area

Rare Plant Survey Areas

- 2018 Rare Plant Survey Area
- 2019 Rare Plant Survey Area

Rare Plant Locations

- Calchortus clavatus var gracilis (496 individuals)



H:\GIS\PROJECTS\IPC-AM\IPQ-25 Bouquet\Map\BTR\Fig06\_RarePlantLoc.mxd IPQ-25 8/1/2019 -EC

Source: Aerial (NAIP, 2016)





are available (USFWS 2009). The UTS require sheltered pools at least 15 inches in depth with dense aquatic vegetation for breeding.

The UTS has been historically documented in Bouquet Canyon Creek. Although there is no written record, low-plated threespine stickleback were believed to have been introduced from the Fillmore State Fish Hatchery on the lower Santa Clara River into Bouquet Canyon Creek during rainbow trout (*Oncorhynchus mykiss*) stocking in the 1970s. This resulted in intergrades between the low-plated threespine stickleback and the UTS (San Marino Environmental Associates [SMEA] 2008; Richmond et al. 2015). San Marino Environmental Associates (SMEA) conducted multiple surveys for stickleback in Bouquet Canyon Creek. They identified an intergrade zone just upstream of the U.S. Forest Service Texas Canyon Station near the end of Bouquet Canyon. SMEA also conducted a number of surveys downstream of this intergrade zone where Bouquet Canyon Creek crosses Vasquez Canyon Road, which is approximately 1.70 miles upstream of the study area. SMEA collected 27 UTS in 1998 and only 3 UTS in 2001. In 2005, three sticklebacks were captured and plates were counted on two of the individuals. One of the individuals was unarmored while the other individual had one plate. This reach of Bouquet Canyon Creek was also surveyed in 2000, but was entirely dry. SMEA notes that this stretch of UTS habitat has clearly become more ephemeral since the 1998 survey, which is reflected in the drop in stickleback individuals collected between 1998 and 2005. SMEA concluded that the population located near Vasquez Canyon Road has likely been extirpated and only the intergrade zone remains upstream at the U.S. Forest Service Texas Canyon Station.

Richmond et al. (2015) also conducted a genetic study of sticklebacks in Bouquet Canyon Creek. They determined that the genotype and phenotype of sticklebacks in Bouquet Canyon Creek resemble a low-plated threespine stickleback population as opposed to the unarmored populations they observed in adjacent streams (e.g., San Francisquito Canyon, Santa Ana River near Valencia, and Soledad Canyon). They also discovered that although sticklebacks sampled near the juncture of Bouquet Canyon Creek and Texas Canyon Creek were the most similar to the unarmored populations, plates have steadily increased since at least the 1980s. This is the near the same location SMEA (2008) identified an intergrade zone between UTS and the low-plated threespine stickleback.

Although UTS have historically been documented upstream of the study area, findings by SMEA (2008) and Richmond et al. (2015) indicate that many stickleback in Bouquet Canyon Creek have a low plate count due to introduction of partially armored stickleback upstream. Richmond et al. (2015) indicates that downstream movement of stickleback through Bouquet Canyon Creek into the Santa Clara River is not likely due to channel alteration at the base of Bouquet Canyon (i.e., approximately 3.2 miles upstream of the study area). Upstream movement of stickleback from the Santa Clara River to Bouquet Canyon Creek and into the study area is restricted as a result of the channelization of Bouquet Canyon Creek just downstream of the study area. Existing drop structures would prohibit stickleback movement upstream into the study area.

The reach of Bouquet Canyon Creek that occurs within the study area does not support suitable live-in habitat for stickleback. Bouquet Canyon Creek within the study area is characterized as an ephemeral drainage comprising somewhat excessively drained sandy loam soil of the Metz series. Due to its ephemeral nature, the drainage only supports flowing water for a brief period following rainfall. The drainage does not support dense vegetation or algal mats. No ponding or surface water was documented during any of the site visits conducted between 2017 and 2019. Since this portion of Bouquet Canyon Creek only supports water for a short period following rainfall, the study area does not support suitable live-in habitat for UTS.

## Potential to Occur

Of the 15 sensitive animal species recorded within the vicinity of the study area, eight species were considered to have potential occur. Three species were determined to have a low potential to occur on the study area based on the presence of low quality habitat, limited acreage of habitat, and lack of recent observations within the immediate vicinity of the study area, including California glossy snake (*Arizona elegans occidentalis*), Townsend's big-eared bat (*Corynorhinus townsendii*; foraging only), and southern grasshopper mouse (*Onychomys torridus ramona*). California glossy snake and southern grasshopper mouse are SSC. Townsend's big-eared bat is an SSC and state candidate threatened species; no suitable roosting habitat is present for this species, although this species may use the site as foraging habitat.

One species (California legless lizard [*Anniella* sp.]) was determined to have a moderate potential to occur on the study area based on the presence of low-quality habitat and recent observations within the immediate vicinity.

Four species were determined to have a high potential to occur on the study area based on the presence of suitable habitat and recent observations within the immediate vicinity of the study area, including coastal whiptail (*Aspidoscelis tigris stejnegeri*), coast horned lizard (*Phrynosoma blainvillii*), loggerhead shrike (*Lanius ludovicianus*), and San Diego black-tailed jackrabbit (*Lepus californicus bennettii*). All four species are SSC and were recorded within the last 15 years less than five miles from the study area.

## Presumed Absent

Focused surveys were conducted for two sensitive bird species with the potential to occur on the study area, including BUOW and CAGN. Focused surveys for both species were negative. Survey results are discussed further below.

### Burrowing Owl

The BUOW is an SSC. A focused survey for BUOW was conducted between March and June 2018. No BUOWs were observed during the surveys; therefore, this species is presumed absent from the study area. The detailed report findings for the BUOW surveys are included as Appendix D.

### Coastal California Gnatcatcher

The CAGN is a federally threatened species and a SSC. A focused survey for CAGN was conducted between March and May 2018. No CAGN were observed during the surveys; therefore, this species is presumed absent from the study area. The detailed report findings for the CAGN surveys are included as Appendix E.

## 3.5.3 Sensitive Vegetation Communities/Habitats

Sensitive vegetation communities/habitats are considered either rare within the region or sensitive by CDFW (2018b). Communities are given a Global (G) and State (S) ranking on a scale of 1 to 5. Communities afforded a rank of 5 are most common while communities with a rank of 1 are considered highly periled. The CDFW considers sensitive communities as those with a rank between S1 and S3.

The study area supports two sensitive plant communities. Elderberry savanna and southern willow scrub/giant reed stand are considered sensitive habitats pursuant to CDFW. Approximately 0.56 acre of elderberry savanna and 0.70 acre of southern riparian scrub/giant reed stand were mapped on the study area (Figure 5). Both communities are small, isolated habitat patches with a non-native understory.

### 3.5.4 Jurisdictional Waters and Wetlands

One major drainage feature, Bouquet Canyon Creek, occurs within the study area. The drainage features are described in detail below. The study area supports approximately 0.65 acre of USACE/RWQCB jurisdictional WUS and 9.80 acres of CDFW jurisdictional streambed and riparian vegetation (Figure 7, *Jurisdictional Features*).

#### 3.5.4.1 Bouquet Canyon Creek

Bouquet Canyon Creek, which is mapped by USGS as a blueline stream, is an ephemeral drainage that runs from east to west near the northern study area boundary. The headwaters of the Bouquet Canyon drainage feature originate approximately 10 miles to the northeast of the study area in the Sierra Pelona Mountains, and non-storm related flows through the wash are often controlled via regulated releases from Bouquet Reservoir. The Bouquet Canyon streambed enters the study area at the northeastern boundary and exits at the northwestern boundary. The drainage continues under Bouquet Canyon Road at the northwestern corner of the study area boundary where the drainage has been channelized. The Bouquet Canyon drainage is a tributary to the Santa Clara River, which ultimately drains into the Pacific Ocean approximately 35 miles to the southwest of the study area. The on-site floodplain of Bouquet Canyon Creek is infested with invasive giant reed. Historical imagery and evidence of grinded material observed on the study area suggest that giant reed removal has previously occurred on the study area. Bouquet Canyon Creek supports somewhat excessively drained sandy loam of the Metz soil series. Aside from Bouquet Canyon Creek, no other surface water features were observed and the study area is predominantly upland habitat. The jurisdictional delineation report is included as Appendix G, *Jurisdictional Delineation Report*.<sup>1</sup>

Within the study area, Bouquet Canyon Creek supports approximately 0.65 acre of USACE/RWQCB non-wetland WUS ephemeral streams. In addition, Bouquet Canyon Creek supports approximately 9.80 acres of CDFW jurisdictional streambed and riparian vegetation.

### 3.5.5 Oak Tree Survey

A total of 64 oak trees meet the City's definition of a protected tree (Figure 8, *Oak Tree Locations*). Of the 64 trees, two were coast live oaks (*Quercus agrifolia*), six were scrub oaks, two were blue oaks (*Quercus douglasii*), 53 were Tucker oaks, and one was a valley oak (*Quercus lobata*). Six trees (9 percent) were assigned an A rating, 22 trees (34 percent) were assigned a B rating, 25 trees (40 percent) were assigned a C rating, and 11 trees (17 percent) were assigned a D rating. No dead trees or heritage oak trees were observed during the survey. The detailed report findings are included as Appendix H.

---

<sup>1</sup> The study area evaluated in the Jurisdictional Delineation Report increased slightly following report completion. The jurisdictional resources were extended based on previous delineation results and confirmed in the field during subsequent site visits.

### 3.5.6 Habitat and Wildlife Corridor Evaluation

Wildlife corridors connect otherwise isolated pieces of habitat and allow movement or dispersal of plants and animals. Corridors can be local or regional in scale; their functions may vary temporally and spatially based on conditions and species presence. Local wildlife corridors allow access to resources such as food, water, and shelter within the framework of their daily routine. Animals use these corridors, which are often hillsides or tributary drainages, to move between different habitats. Regional corridors provide these functions over a larger scale and link two or more large habitat areas, allowing the dispersal of organisms and the consequent mixing of genes between populations.

Regionally, the study area is situated in the foothills of the Sierra Pelona Mountains and supports the lower portion of Bouquet Canyon Creek just upstream of where the creek becomes channelized. The study area is located approximately 0.20 mile to the southeast of Haskell Canyon Open Space and 1.40 miles to the south of Angeles National Forest, although existing development separates the study area from these open space areas. The study area is mostly surrounded by development with the exception of the eastern portion of the study area, which connects to undeveloped land located to the east. Bouquet Canyon Creek supports limited native habitat for wildlife, including small patches of mule fat and red willows. The majority of Bouquet Canyon Creek on the study area is vegetated with giant reed, which provides limited resources for wildlife. The remainder of the study area supports a number of native upland habitats that provide live-in resources for wildlife, such as big sagebrush scrub, elderberry savanna, Riversidean upland sage scrub, scrub oak chaparral, and southern north slope chaparral. The dominant habitat on the study area is non-native grassland, which also provides low-value foraging habitat for some bird species.

As previously described, corridors can be local or regional in scale. The study area is not considered a regional corridor since it does not directly connect two or more large blocks of habitat that would otherwise be fragmented or isolated from one another. The areas immediately adjacent to the study area are highly urbanized and support limited cover for wildlife moving through the area. Wildlife may access the study area via undeveloped land to the east. Access to the study area from the east is quite constrained, but could occur along Bouquet Canyon Creek or along the ridgeline to the south of the Camp Joseph Scott facility. Development of the project would not impede wildlife access to other undeveloped land in the region since the study area is located at the edge of existing development. Although wildlife likely use Bouquet Canyon Creek for local movement through the area, the lower portion of Bouquet Canyon would not be considered a regional corridor for wildlife since the creek becomes channelized and unvegetated just downstream of the study area. The study area is essentially a “dead end” for wildlife moving through the area since it does not directly connect two or more large blocks of habitat and the northern, southern, and western portions of the study area are confined by existing development. The study area is not within any wildlife corridors or linkages identified by the South Coast Missing Linkages Project (South Coast Wildlands 2008). The nearest wildlife movement corridor to the study area identified by the South Coast Missing Linkages Project is the San Gabriel – Castaic Connection located approximately 4.3 miles to the northeast of the study area.

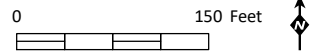
While the study area is not considered a regional wildlife movement corridor, the study area does support habitat suitable for local wildlife movement. Common mammals that are adapted to human disturbance (e.g., raccoon [*Procyon lotor*], skunk [*Mephitis* sp.], cottontail rabbits [*Sylvilagus* spp.], and coyote [*Canis latrans*]) may use the study area for local movement within the area. Birds species may fly over surrounding development to nest and/or forage within study area. Mountain lions (*Puma concolor*) are known to occur within the vicinity of the study area and one bobcat (*Lynx rufus*) was observed on





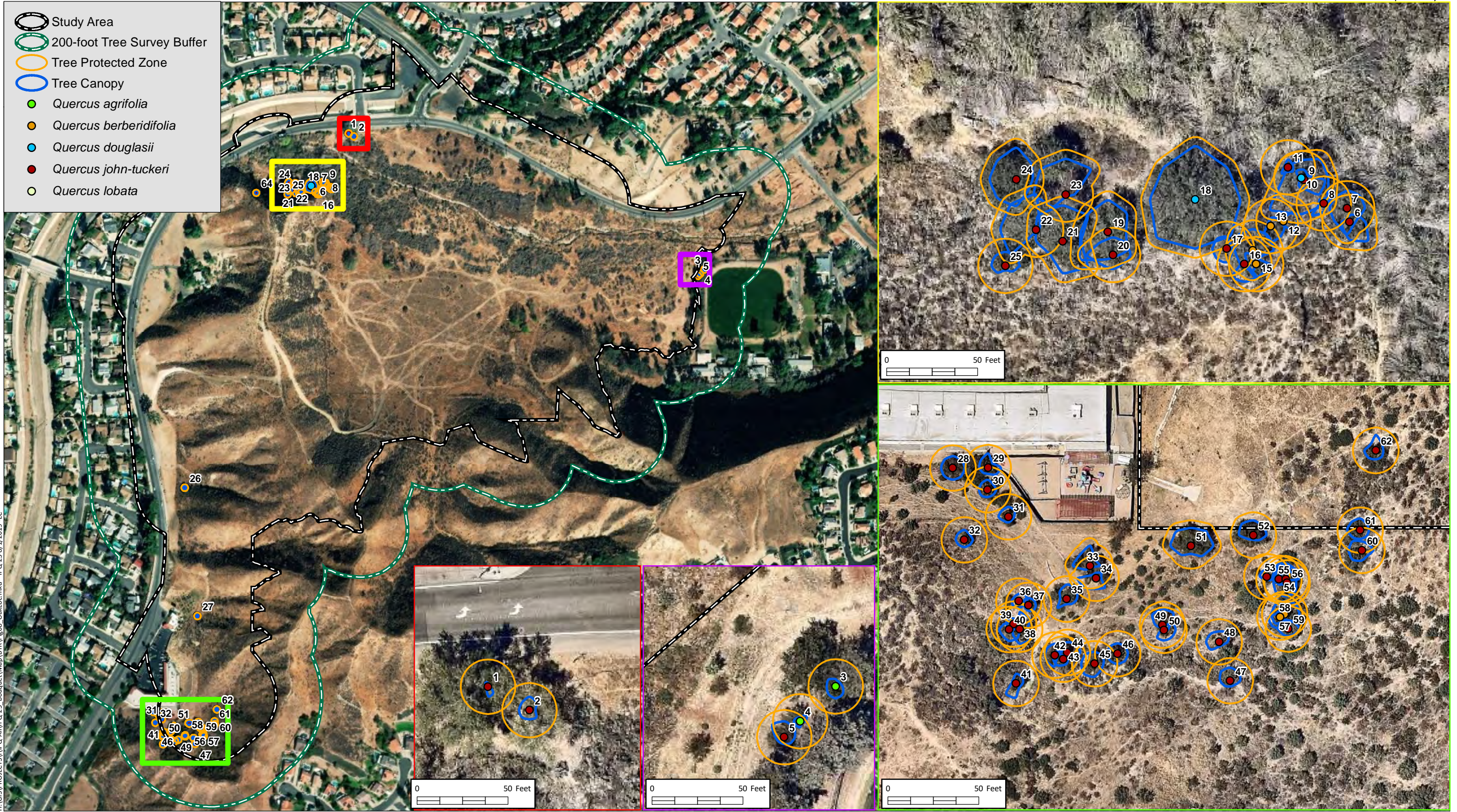
H:\GIS\PROJECTS\IPC-A\IPC\_25\_Bouquet\Map\BTR\Fig07\_ID.mxd IPQ\_25\_B/7/2019\_EC

- Study Area
- Representative Drainage Photographs
- Jurisdiction**
- USACE/RWQCB Jurisdiction
- CDFW Jurisdiction
- Existing Concrete Structure



Source: Base Map Layers (NAIP, 2016; NearMap, 2017)





H:\GIS\PROJECTS\IPC-AM\IPC-25 - Bouquet\Map\BTR\Fig08 - OakLoc.mxd IPC-25 8/17/2019 - EC

Source: Base Map Layers (Nearmap, 2017)



the study area during field surveys. These larger mammals require large expanses of undeveloped land for their territories, such as land to the east. Although the study area is not large enough to solely support live-in habitat for these larger mammals, the study area could be on the edge of their territories and they may occasionally wander onto the study area. As discussed above, the study area supports opportunities for local wildlife movement but does not function as a wildlife corridor since it does not directly connect to two or more blocks of large habitat.

## 4.0 REGIONAL AND REGULATORY CONTEXT

Biological resources located within the study area are subject to regulatory review by federal, state, and local agencies. Biological resources-related laws and regulations that apply to the project include the Federal Endangered Species Act (FESA), Migratory Bird Treaty Act (MBTA), CWA, California Endangered Species Act (CESA), and CFG Code.

### 4.1 FEDERAL REGULATIONS

#### 4.1.1 Federal Endangered Species Act

Administered by the USFWS, the FESA provides the legal framework for the listing and protection of species (and their habitats) identified as being endangered or threatened with extinction. Actions that jeopardize endangered or threatened species and the habitats upon which they rely are considered a “take” under the FESA. Section 9(a) of the FESA defines take as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” “Harm” and “harass” are further defined in federal regulations and case law to include actions that adversely impair or disrupt a listed species’ behavioral patterns.

Sections 4(d), 7, and 10(a) of the FESA regulate actions that could jeopardize endangered or threatened species. Section 7 describes a process of federal interagency consultation for use when federal actions may adversely affect listed species. A biological assessment is required for any major construction activity if it may affect listed species. In this case, take can be authorized via a letter of biological opinion issued by the USFWS for non-marine related listed species issues. A Section 7 consultation is required when there is a nexus between federally listed species’ use of the site and impacts to USACE jurisdictional areas. Section 10(a) allows issuance of permits for “incidental” take of endangered or threatened species. The term “incidental” applies if the taking of a listed species is incidental to and not the purpose of an otherwise lawful activity.

#### 4.1.2 Federal Clean Water Act

Federal wetland regulation (non-marine issues) is guided by the Rivers and Harbors Act of 1899 and the CWA. The Rivers and Harbors Act deals primarily with discharges into navigable waters, while the purpose of the CWA is to restore and maintain the chemical, physical, and biological integrity of all WUS. Permitting for projects filling WUS, including wetlands and vernal pools, is overseen by USACE under Section 404 of the CWA. Projects may be permitted on an individual basis or may be covered under one of several approved Nationwide Permits. Individual Permits are assessed individually based on the type of action, amount of fill, etc. Individual Permits typically require substantial time (often longer than six months) to review and approve, while Nationwide Permits are pre-approved if a project meets the

appropriate conditions. A CWA Section 401 Water Quality Certification, which is administered by the State Water Resources Control Board, must be issued prior to any 404 Permit.

### 4.1.3 Migratory Bird Treaty Act

All migratory bird species that are native to the United States or its territories are protected under the federal MBTA, as amended under the Migratory Bird Treaty Reform Act of 2004 (FR Doc. 05-5127). The MBTA is generally protective of migratory birds but does not actually stipulate the type of protection required. In common practice, the MBTA is used to place restrictions on disturbance of active bird nests during the nesting season, which is generally defined as February 15 to August 31 for songbirds. In addition, the USFWS commonly places restrictions on disturbances allowed near active raptor nests, which the nesting season is generally defined as January 15 to August 31.

### 4.1.4 Critical Habitat

As described by the FESA, critical habitat is the geographic area occupied by a threatened or endangered species essential to species conservation that may require special management considerations or protection. Critical habitat also may include specific areas not occupied by the species but that have been determined to be essential for species conservation.

Critical habitat does not occur on the study area. The nearest critical habitat to the study area is spreading navarretia (*Navarretia fossalis*) critical habitat, which is approximately 2.25 miles to the east (USFWS 2017a).

## 4.2 STATE REGULATIONS

### 4.2.1 California Environmental Quality Act

Primary environmental legislation in California is found in CEQA and its implementing guidelines (State CEQA Guidelines), which require that projects with potential adverse effects (i.e., impacts) on the environment undergo environmental review. Adverse environmental impacts are typically mitigated as a result of the environmental review process in accordance with existing laws and regulations.

### 4.2.2 California Endangered Species Act

The CESA is similar to the FESA in that it contains a process for listing of species and regulating potential impacts to listed species. Section 2081 of the CESA authorizes the CDFW to enter into a memorandum of agreement for take of listed species for scientific, educational, or management purposes. The golden eagle (*Aquila chrysaetos*) and white-tailed kite (*Elanus leucurus*) are considered State Fully Protected (SFP) species. A SFP species may not be taken or possessed at any time, and no state licenses or permits may be issued for their take except for collecting the species necessary for scientific research and relocation of the bird species for the protection of livestock (Fish and Game Code Sections 3511, 4700, 5050, and 5515).

The Native Plant Protection Act (NPPA) enacted a process by which plants are listed as rare or endangered. The NPPA regulates the collection, transport, and commerce of plants that are listed. The CESA followed the NPPA and covers both plants and animals that are determined to be endangered or



threatened with extinction. Plants listed as rare under NPPA were designated threatened under the CESA.

## **4.2.3 California Fish and Game Code**

### **4.2.3.1 Protection of Raptor Species**

Raptors (birds of prey) and owls and their active nests are protected by CFG Code Section 3503.5, which states that it is unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird unless authorized by the CDFW.

### **4.2.3.2 Streambed Alteration Agreement**

The CFG Code (Section 1600 et seq.) requires an agreement with the CDFW for projects affecting riparian and wetland habitats through the issuance of a Streambed Alteration Agreement.

## **4.3 LOCAL REGULATIONS**

### **4.3.1 Oak Tree Protection**

The City has implemented regulatory measures to protect and preserve oak trees that occur within the City's jurisdiction. The City's Oak Tree Preservation ordinance states, "No person shall cut, prune, remove, relocate, endanger, damage, or encroach into the protected zone of any oak tree on any public or private property within the City" (City 2013). The protected zone of the oak tree includes the area within five feet of the dripline (canopy extent), but no less than 15 feet from the trunk. Encroachment is defined as intrusion into the protected zone of an oak tree, which includes but is not limited to, intrusion by trenching, paving, pruning, dumping, parking of commercial vehicles. Major encroachment is defined by the City as "an area between the outer edge of the trunk and fifty percent of the diameter of the protected zone" and minor encroachment is defined as an area between the outermost edge of the protected zone and fifty percent of the diameter of the protected zone" (2013).

To remove any oak tree or to subject its protected zone to major encroachment, an Oak Tree Permit must be obtained. Trees subject to the permit include all oak trees in the genus *Quercus* that exceed six inches in circumference when measured at 4.5 feet above the tree's natural grade. Heritage oak trees are given special consideration and may be fully protected or subject to requirements stricter than those of a standard protected oak tree. A heritage oak tree is defined as any oak tree measuring 108 inches in circumference measured at 4.5 feet above the tree's natural grade. In the case of trees with multiple trunks, two or more trunks must measure 72 inches each or greater in circumference when measured at 4.5 feet above the tree's natural grade.

To obtain an Oak Tree Permit, an application must be submitted to the City Manager or designated representative ("Director") and a filing fee as established by the City Council must be paid. The conditions of the Oak Tree Permit will require native oak trees at a minimum of 24-inch box size to be planted for each protected oak tree removed and for each tree whose protected zone will be subject to major encroachment. Minor encroachment does not require mitigation, but a number of protection measures are required during construction as outlined in Section VII. Standards for Performance of Permitted Work of the Oak Tree Preservation Guidelines (City 1990). The number of replacement trees required is dependent upon the circumference of the tree to be impacted, which are described in

Subsection B of the Oak Tree Preservation Ordinance. For those trees with multiple stems, the average circumference was used to determine the number of replacement trees.

### 4.3.2 Fuel Modification Zones

The County Fire Department requires fuel modification zones to create a defensible space in the event a wildfire breaks out (County of Los Angeles N.D.). There are three difference zones, which are outlined below:

1. **Zone A (Setback Zone)** – This zone extends 20 feet beyond the edge of any structures. The only allowed vegetation within this zone is green lawns, ground cover not exceeding six inches in height, and well-spaced shrubs. The landscape must be irrigated to promote healthy vegetation and fire resistance.
2. **Zone B (Irrigated Zone)** – This zone extends from the outermost edge of Zone A to 100 feet from structures. Green lawn, ground cover not exceeding six inches in height, and well-spaced shrubs and trees are allowed in this zone. The landscape must be irrigated to promote healthy vegetation and fire resistance.
3. **Zone C (Native Brush Thinning Zone)** – This zone extends from the outermost edge of Zone B to 200 feet from the structures. Well-spaced native vegetation and ornamental shrubs and trees are allowed. Vegetation must be thinned and species that constitute a fire risk are not allowed (e.g., chamise, sages [*Salvia* spp.], California sagebrush, and California buckwheat). This zone does not require irrigation.

## 5.0 PROJECT EFFECTS

This section describes potential direct and indirect impacts associated with the proposed project. Direct impacts immediately alter the affected biological resources such that those resources are eliminated temporarily or permanently. Indirect impacts consist of secondary effects of a project, including noise, decreased water quality (e.g., through sedimentation, urban contaminants, or fuel release), fugitive dust, colonization of non-native plant species, animal behavioral changes, and night lighting. The magnitude of an indirect impact can be the same as a direct impact; however, the effect usually takes a longer time to become apparent.

The significance of impacts to biological resources present or those with potential to occur was determined based upon the sensitivity of the resource and the extent of the anticipated impacts. For certain highly sensitive resources (e.g., a federally listed species), any impact would be significant. Conversely, other resources that are of low sensitivity (e.g., species with a large, locally stable population in the region but declining elsewhere) could sustain some impact with a less than significant effect.

## 5.1 SENSITIVE SPECIES

### 5.1.1 Rare Plant Species

#### Less than Significant Impacts with Mitigation Incorporated

A total of four of the eight rare plant species recorded within the Mint Canyon quadrangle were not considered to have a potential to occur based on geographic range, elevation range, and/or lack of suitable habitat (see Appendix I). The remaining four species were considered to have a potential to occur on the study area primarily based on the presence of chaparral and coastal scrub habitats. Rare plant surveys were conducted in May and August 2018 and May 2019.

Nevin's barberry, Piute Mountains navarretia, and slender-horned spineflower were not observed on the study area during any of the rare plant surveys. Therefore, these species are presumed absent from the study area. Project grading and fuel modification associated with the residential development would impact approximately 142 slender mariposa lilies (Figure 9, *Impacts to Rare Plants*). Construction of the new alignment of Bouquet Canyon Road would impact approximately 320 slender mariposa lilies. The remaining 34 individuals would be avoided by the project.

Slender mariposa lily is a CRPR 1B.2 species, which are species considered rare throughout their range and have declined significantly over the last century. This species is not federally or state listed as endangered or threatened. Project impacts to this species would be significant and mitigation would be required to reduce impacts to less than significant. Required mitigation for potential impacts to slender mariposa lily is described in mitigation measure BIO-1 in Section 6.0 below.

### 5.1.2 Sensitive Animal Species

#### Less than Significant Impacts with Mitigation Incorporated

Of the 15 sensitive animal species recorded within the vicinity of the study area, five species (Quino checkerspot butterfly, two-striped gartersnake, UTS, vernal pool fairy shrimp, and western spadefoot) were considered to have no potential to occur on the study area due to lack of suitable habitat and/or the study area is located outside of the species' known geographical range (Appendix J). Although UTS was determined to have no potential to occur on the study area (see discussion in Section 3.5.2 above), populations of UTS do occur downstream in portions of the Santa Margarita River. The project would not indirectly affect downstream water quality or surface water flows. The project would prevent sedimentation and potential impacts to water quality downstream during construction and post-construction by preparing and implementing a project-specific Stormwater Pollution Prevention Plan (SWPPP) and Water Quality Management Plan (WQMP), respectively. Potential impacts to water quality due to pollutants from residential uses will be addressed through the use of infiltration basins where feasible and biofiltration basins where infiltration is not feasible due to low percolation rates in the underlying soil. The SWPPP and WQMP will also be provided to the resource agencies (USACE, RWQCB, and CDFW) during the regulatory permitting process. Most of the flow within the Bouquet Creek is from upstream waters. Per the project engineer, the water surface flows within the project reach will only contribute an additional 100 cubic feet per second, which represents approximately 0.5 percent of the overall flow within this reach of Bouquet Canyon Creek. Potential increases to surface flow rates due to project construction of impervious surfaces (e.g., roads, roofs, sidewalks, etc.) would be offset by the construction of desilting basins upstream of the realigned Bouquet Canyon Road. Since the project

would not indirectly affect downstream water quality or surface water flows, the project would not indirectly impact any UTS downstream of the study area.

As discussed above, the project would not impact Quino checkerspot butterfly, two-striped gartersnake, UTS, vernal pool fairy shrimp, or western spadefoot. Of the remaining 10 species, three species have a low potential to occur, one species has a moderate potential to occur, four species have a high potential to occur, and two species are presumed absent from the study area. These species are discussed in further detail below.

### Low Potential Species

Three species were determined to have a low potential to occur on the study area based on the presence of low quality habitat, limited acreage of habitat, and lack of recent observations within the immediate vicinity. These species include California glossy snake, Townsend's big-eared bat, and southern grasshopper mouse. California glossy snake and southern grasshopper mouse are SSC. Although suitable habitat is present on the study area, these species have not been recorded within the vicinity of the study area (five- to 10-mile radius) in over 50 years, indicating that regionally significant populations of these species are not present. Therefore, the study area is not expected to support large populations of California glossy snake or southern grasshopper mouse and a loss of a few individuals, if present, would not be expected to reduce regional population numbers. Townsend's big-eared bat is a State Candidate Threatened species and an SSC. There is no suitable roosting habitat on the study area. This species could use the study area for foraging habitat since it uses a variety of habitats, although it is a low potential since this species prefers mesic habitats. Impacts to these species would be less than significant and no mitigation measures are considered required.









### Moderate Potential Species

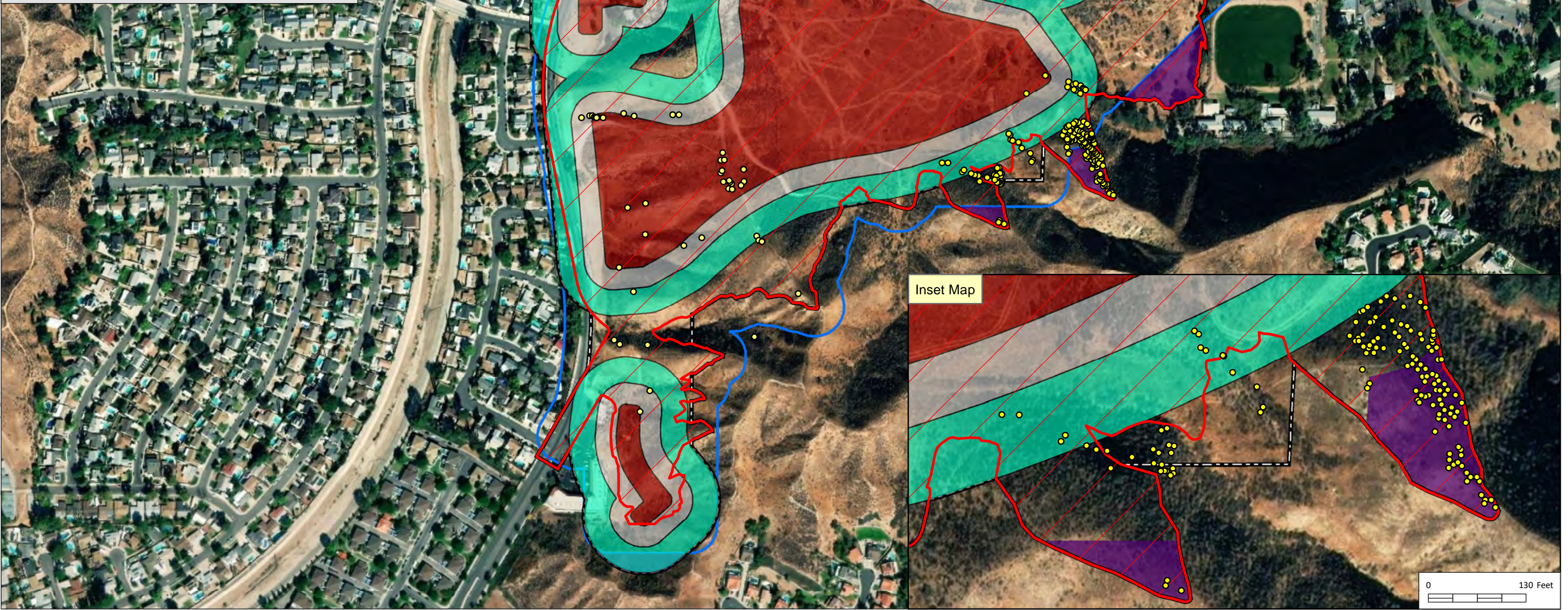
California legless lizard, which is an SSC, was determined to have a moderate potential to occur on the study area based on the presence of low quality habitat on the study area and recent observations within the immediate vicinity. Although the study area supports suitable sandy wash habitat within Bouquet Canyon Creek, the habitat is considered low quality since the banks are infested with giant reed, leaving little open areas for the lizard to burrow and no leaf litter for protection. Since the study area supports low quality habitat, the study area is not expected to support large populations of this species and a loss of a few individuals, if present, would not be expected to reduce regional population numbers. Impacts to these species would be less than significant and no mitigation measures are considered required.

### High Potential Species

Four species were determined to have a high potential to occur on the study area based on the presence of suitable habitat and recent observations within the immediate vicinity. These species include coastal whiptail, coast horned lizard, loggerhead shrike, and San Diego black-tailed jackrabbit, which are all SSC. None of these species were observed during any of the field surveys conducted on the study area. Coastal whiptail, coast horned lizard, loggerhead shrike, and San Diego black-tailed jackrabbit are highly mobile and the majority are expected to disperse to undeveloped land to the east of the proposed project. These species are not afforded a state or federal listing. Displacement or loss of a few individuals, if present, would not be expected to reduce regional population numbers. Impacts to these



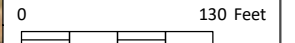
-  Study Area
-  Grading Limits
- Fuel Modification Zone**
-  Zone A
-  Zone B
-  Zone C
- Rare Plant Survey Areas**
-  2018 Rare Plant Survey Area
-  2019 Rare Plant Survey Area
- Rare Plant Locations**
-  *Calchortus clavatus* var *gracilis* (496 individuals)



H:\GIS\PROJECTS\IPC-AM\IPQ-25 Bouquet\Map\BTR\Fig09\_ImprRarePlant.mxd IPQ-25 8/1/2019 -EC



Inset Map



Source: Aerial (NAIP, 2016)



species would be less than significant and no mitigation measures are proposed. Loggerhead shrike eggs and young are protected under MBTA, which is discussed in Section 5.4.2 below.

## Presumed Absent Species

Focused surveys for BUOW (SSC) and CAGN (federally threatened and SSC) were conducted in 2018. Survey results were negative, and these species are presumed absent from the study area. Therefore, no direct or indirect impacts are anticipated to these species.

Since the study area supports suitable BUOW habitat, a take avoidance survey is required prior to ground disturbance in accordance with CDFW's *Staff Report on Burrowing Owl Mitigation* (CDFG 2012). An avoidance and minimization measure is included as BIO-2 in Section 6.0 below, which requires a take avoidance survey and avoidance of active nests and/or relocation of BUOW (if BUOWs are observed).

## 5.2 SENSITIVE VEGETATION COMMUNITIES

### 5.2.1 California Department of Fish and Wildlife Sensitive Vegetation Communities/Habitats

#### Less than Significant Impacts with Mitigation Incorporated

The study area supports native-dominated habitat totaling 29.19 acres, including big sagebrush scrub (1.91 acres), chamise chaparral/non-native grassland (2.98 acres), elderberry savanna (0.56 acre), mule fat scrub (0.27 acre), Riversidean upland sage scrub (7.06 acres), Riversidean upland sage scrub/non-native grassland (13.10 acres), scrub oak chaparral (0.26 acre), scrub oak chaparral/non-native grassland (2.01 acres), southern north slope chaparral (0.34 acre), and southern willow scrub/giant reed stand (0.70 acre). The remainder of the study area (64.28 acres) supports habitat dominated by non-native species and sparsely vegetated developed, disturbed, and river wash.

Permanent impacts to vegetation total 84.61 acres, which are proposed for project development and to implement County-required fuel modification (Figure 10, *Impacts to Vegetation*). Permanent impacts are proposed to 28.68 acres of native-dominated habitat and 55.93 acres of habitat dominated by non-native species, developed, disturbed, and river wash (Table 3, *Impacts to Vegetation Communities*). Although some native vegetation will be avoided in Zones B and C, such as protected oak trees, all fuel modification impacts were assessed as permanent impacts.

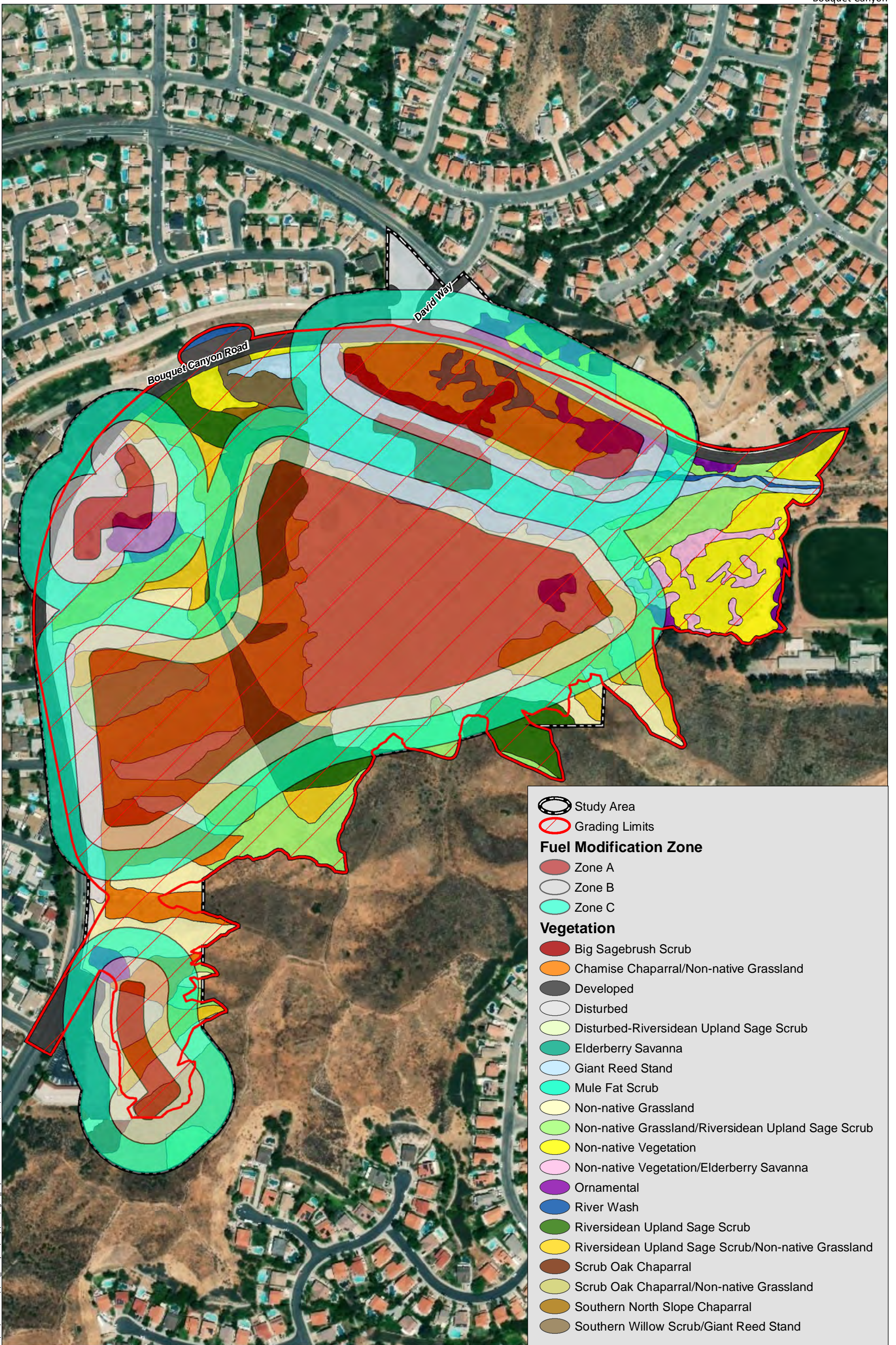
**Table 3**  
**IMPACTS TO VEGETATION COMMUNITIES**

Habitat Type (Holland/Oberbauer)	Existing (acres)	Permanent Impacts (acres)
Big Sagebrush Scrub	1.91	1.91
Chamise Chaparral/Non-native Grassland	2.98	2.77
Developed	9.37	4.70
Disturbed	5.32	3.83
Disturbed-Riversidean Upland Sage Scrub	0.62	0.54
Elderberry Savanna <sup>1</sup>	0.56	0.56
Giant Reed Stand	7.08	7.08
Mule Fat Scrub	0.27	0.27
Non-native Grassland	22.06	21.75
Non-native Grassland/Riversidean Upland Sage Scrub	7.75	7.41
Non-native Vegetation	8.06	7.16
Non-native Vegetation/Elderberry Savanna	0.97	0.97
Ornamental	2.69	2.13
Riversidean Upland Sage Scrub	7.06	6.90
Riversidean Upland Sage Scrub/Non-native Grassland	13.10	12.96
River Wash	0.36	0.36
Scrub Oak Chaparral	0.26	0.26
Scrub Oak Chaparral/Non-native Grassland	2.01	2.01
Southern North Slope Chaparral	0.34	0.34
Southern Willow Scrub/Giant Reed Stand <sup>1</sup>	0.70	0.70
	<b>93.47</b>	<b>84.61</b>

<sup>1</sup> Sensitive habitats pursuant to the California Department of Fish and Wildlife (CDFW) Natural Communities List (2018b).

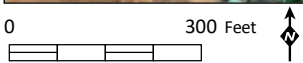
Two of the vegetation communities described above are considered sensitive pursuant to CDFW (2018b): elderberry savanna (0.56 acre) and southern willow scrub/giant reed stand (0.70 acre; Table 3; Figure 10). Both communities will be permanently impacted. The sensitive natural community designation is generally reserved for high-quality habitats, such as those that lack invasive species, do not show signs of human-caused disturbance, and show signs of reproduction (i.e., sprouts and seedlings present). Mitigation for impacts to elderberry savanna is not proposed since the habitat is considered low quality. The elderberry savanna is small and isolated from other native habitat, with the exception of a small patch of big sagebrush scrub. The understory is dominated by non-native short-pod mustard, which is likely due to historic disturbance from ranching activities, fuel modification over the years, and its proximity to Bouquet Canyon Road. No sprouts or seedlings were noted during field surveys. Based on the low-quality characteristics of the elderberry scrub, impacts to these species would be less than significant and no mitigation is proposed. The southern willow scrub/giant reed stand on the project appears to be associated with relict floodplain conditions that no longer exist on the site. However, for the purpose of this biological technical report, this habitat is presumed to be regulated as CDFW jurisdiction. Although southern willow scrub/giant reed stand is considered low-quality habitat due to the prevalence of giant reed, the project will provide mitigation for permanent impacts to 0.70 acre through compensatory mitigation for impacts to CDFW jurisdiction as outlined in BIO-3 included in Section 6.0 below.





F:\GIS\PROJECTS\1\PO\_Bouquet\Map\BTR\Fig10\_ImpPlanCom.mxd IPG\_25\_3/13/2019-EC

Source: Base Map Layers (NAIP, 2016)





## 5.2.2 California Department of Fish and Wildlife Riparian Habitat and Streambed

### Less than Significant Impacts with Mitigation Incorporated

Bouquet Canyon Creek flows through the northern portion of the study area, which is considered a jurisdictional streambed pursuant to Section 1602 of the CFG Code as regulated by CDFW. The project would result in permanent impacts to 9.33 acres and temporary impacts to 0.47 acre of CDFW jurisdictional streambed and associated vegetation (Table 4, *Impacts to California Department of Fish and Wildlife Jurisdiction*; Figure 11, *Impacts to Jurisdictional Features*). The streambed is characterized as an ephemeral floodplain with a central channel that conveys the majority of flows through the site. Permanent impacts are necessary to construct the development, complete slope grading, implement County-required fuel modification, and construct a new flood control channel to the south of Bouquet Canyon Creek. The majority of the central channel within CDFW jurisdiction will be returned to pre-project topographic contours following completion of construction. Most of the permanent impacts to streambed-associated vegetation would be to giant reed, which is rated highly invasive by the California Invasive Plant Council (2006, 2007). Only small areas of native-dominated habitat would be permanently impacted, including southern willow scrub/giant reed stand and mule fat scrub. The remaining permanent impacts would be to mostly invasive giant reed stands and unvegetated river wash. The project would remove approximately 7.08 acres of giant reed stand, eliminating it as possible seed source to downstream habitats. Temporary impacts include those proposed to existing concrete within Bouquet Canyon Creek at the downstream (west) end and disturbance for bridge installation at the upstream (east) end.

**Table 4**  
**IMPACTS TO CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE JURISDICTION**

Drainage	Existing (acres)	Permanent Impacts (acres)	Temporary Impacts (acres)
Bouquet Canyon Creek	9.80	9.33	0.47

Impacts to CDFW jurisdiction will require a Section 1602 Stream Alteration Agreement from the CDFW, as described in BIO-3 included in Section 6.0 below. Compensatory streambed mitigation for permanent impacts to CDFW jurisdiction will be required as part of subsequent Section 1602 permitting requirements.

## 5.3 U.S. ARMY CORPS OF ENGINEERS/REGIONAL WATER QUALITY CONTROL BOARD JURISDICTION

### Less than Significant Impacts with Mitigation Incorporated

Bouquet Canyon Creek is considered a jurisdictional streambed pursuant to Sections 404/401 of the CWA as regulated by USACE and RWQCB, respectively. The project would result in permanent impacts to 0.19 acre and temporary impacts to 0.46 acre of non-wetland WUS (Table 5, *Impacts to U.S. Army Corps of Engineers/Regional Water Quality Control Board Jurisdiction*; Figure 11). Permanent impacts are proposed within Bouquet Canyon Creek at the downstream (west) end for improvements to the outlet

for the proposed flood control channel and construction of a park as well as at the upstream (east) end to install a culvert associated within the new Bouquet Canyon Road alignment. The remainder of the Bouquet Canyon Creek central channel will be temporarily impacted to construct a new flood control channel to the south of Bouquet Canyon Creek. Temporary impact areas within Bouquet Canyon Creek will be returned to pre-project topographic contours following completion of construction.

**Table 5**  
**IMPACTS TO U.S. ARMY CORPS OF ENGINEERS/  
REGIONAL WATER QUALITY CONTROL BOARD JURISDICTION**

Drainage	Existing (acres)	Permanent Impacts (acres)	Temporary Impacts (acres)
Bouquet Canyon Creek	0.65	0.19	0.46

Impacts to USACE/RWQCB jurisdiction will require a Section 404 permit from USACE and a Section 401 permit from RWQCB, as described in BIO-4 included in Section 6.0 below. Compensatory streambed mitigation for permanent impacts to USACE/RWQCB jurisdiction will be required as part of subsequent Section 404/401 permitting requirements.

## 5.4 WILDLIFE MOVEMENT AND MIGRATORY SPECIES

### 5.4.1 Wildlife Movement

#### Less than Significant

The study area is not part of a regional corridor and does not serve as a nursery site. The study area is not identified as being part of a local or regional corridor or linkage by the South Coast Missing Linkages (South Coast Wildlands 2008). The study area currently has no direct connectivity to two or more large blocks of habitat and is constrained by existing development. The study area does support native upland vegetation and small patches of native riparian vegetation, which provide habitat for local wildlife movement and migratory birds passing through the study area. Some reptiles, small mammals, and occasionally larger mammals may access the study area from undeveloped land to the east via Bouquet Canyon Creek or the ridgeline to the south of the Camp Joseph Scott facility. Birds may fly over existing development to access the study area for foraging and/or nesting. Therefore, the study area provides habitat for local wildlife movement, but does not serve as a regional wildlife corridor.

The study area is confined by existing development to the north, south, and west. Wildlife movement through Bouquet Canyon Creek downstream of the study area is limited since the stream becomes channelized to the north of Bouquet Canyon Road, just downstream (west) of the study area. Although vegetation will be removed from Bouquet Canyon Creek due to fuel modification requirements, the majority of the stream will be recontoured to pre-project topographic contours following construction. Although implementation of the project may result in some temporary disturbance to local wildlife movement from construction noise, the project would have a less than significant impact to wildlife movement and no mitigation measures would be required.





H:\GIS\PROJECTS\IPC\_Bouquet\Map\BTR\Fig11\_Imagery.mxd IPD-253/18/2019-EC



Source: Base Map Layers (NAIP, 2016)



## 5.4.2 Migratory Species

### Less than Significant Impacts with Mitigation Incorporated

The study area has the potential to support songbird and raptor nests due to the presence of shrubs, ground cover, and trees on the study area. Project activities could disturb or destroy active migratory bird nests including eggs and young. Disturbance to or destruction of migratory bird eggs, young, or adults is in violation of the MBTA and is considered a potentially significant impact. The nesting season is generally defined as February 15 through August 31 for songbirds and January 15 to August 31 for raptors. An avoidance and minimization measure is provided as BIO-5 in Section 6.0 below, which would ensure the project is in compliance with MBTA regulations.

## 5.5 LOCAL POLICIES AND ORDINANCES

### Less than Significant with Mitigation Incorporated

The project would remove 26 oak trees, including four scrub oaks, two blue oaks, and 20 Tucker oaks (Table 6, *Impacts to Oak Trees*; Figure 12, *Impacts to Oak Trees*). In addition, one Tucker oak would be subjected to major encroachment and two Tucker oaks would be subjected to minor encroachment. The remaining 35 oak trees would be completely avoided by the project.

**Table 6**  
**IMPACTS TO OAK TREES**

Species Name	Common Name	Number of Trees			
		Removed	Major Encroachment	Minor Encroachment	Avoided
<i>Quercus agrifolia</i>	coast live oak	0	0	0	2
<i>Quercus berberidifolia</i>	scrub oak	4	0	0	2
<i>Quercus douglasii</i>	blue oak	2	0	0	0
<i>Quercus john-tuckeri</i>	Tucker oak	20	1	2	30
<i>Quercus lobata</i>	valley oak	0	0	0	1
<b>TOTAL</b>		<b>26</b>	<b>1</b>	<b>2</b>	<b>35</b>

Impacts to City-protected oak trees will require an Oak Tree Permit prior to project construction to mitigate for proposed impacts. The conditions of the Oak Tree Permit will require native oak trees at a minimum of 24-inch box size to be planted for each protected oak tree removed and for each tree whose protected zone will be subject to major encroachment. The number of replacement trees required is dependent upon the circumference of the tree to be impacted. These guidelines are described in Subsection B of the Oak Tree Preservation Ordinance, reproduced in Table 7, *Number of Replacement Trees*. Replacement trees must be placed on the same property. If there is no appropriate location on site, the replacement trees may be donated to the City or the monetary value of the required replacement trees may be paid to the City at the discretion of the Director.

**Table 7  
NUMBER OF REPLACEMENT TREES**

Circumference of Tree Destroyed (4 feet above ground level)	Number of Replacement Trees Required for Each Tree Destroyed
Under 12 inches	2
12 to 18 inches	3
18 to 24 inches	4
24 to 30 inches	5
30 to 36 inches	6
Over 36 inches	1 additional replacement tree per incremental increase of 6 inches

Source: City of Santa Clarita (2013)

For the purpose of this assessment, oak trees located within the grading footprint and/or Fuel Modification Zone A were considered impacted while oak trees located within Zones B or C were considered avoided. Based on the impacts to oak trees as quantified by the impact assessment, 27 oak trees will be removed or subjected to major encroachment and would require replacement trees (Table 8, *Oak Tree Mitigation*). In order to receive an Oak Tree Removal Permit for these impacts, it is anticipated the City will require 91 replacement trees to be planted or the equivalent monetary value of the replacement trees to be paid, as described in mitigation measure BIO-6 included in Section 6.0 below. Replacement trees must be approved by the City and consist of the following tree species: coast live oak, valley oak, canyon live oak (*Quercus chrysolepis*), or interior live oak (*Quercus wislizenii*).

**Table 8  
OAK TREE MITIGATION**

Species Name	Common Name	Number of Trees	
		Removed/Major Encroachment	Replacement Trees Required
<i>Quercus berberidifolia</i>	scrub oak	4	9
<i>Quercus douglasii</i>	blue oak	2	19
<i>Quercus john-tuckeri</i>	Tucker oak	21	63
<b>TOTAL</b>		<b>27</b>	<b>91</b>

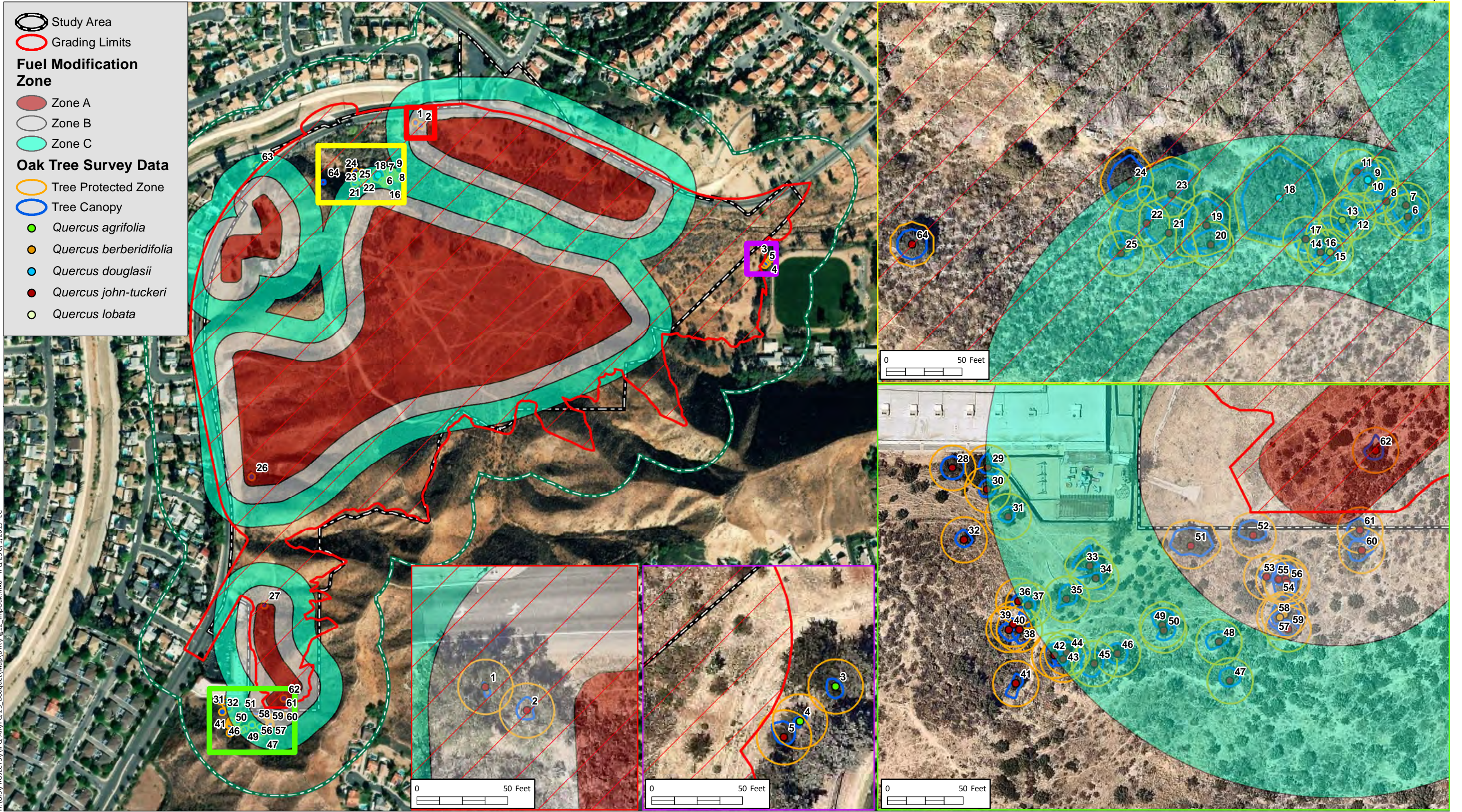
Thirty-seven oak trees will be completely avoided or subject to minor encroachment and would not require replacement trees. During construction, avoided trees and trees subject to encroachment will require protection measures, including but not limited to those outlined within Section VII. Standards for Performance of Permitted Work of the Oak Tree Preservation Guidelines (City 1990).

## 5.6 ADOPTED HABITAT CONSERVATION PLANS

### No Impacts

The study area is not located within any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. As such, implementation of the project would not conflict with any adopted habitat conservation plans.





H:\GIS\PROJECTS\IPC-AM\IPC-25\_Bouquet\Map\BTR\Fig12\_impOak.mxd IPC:25 8/1/2019 EC

Source: Base Map Layers (Nearmap, 2017)

0 375 Feet

0 50 Feet

0 50 Feet

0 50 Feet



## 6.0 MITIGATION MEASURES

The following provides recommended measures intended to minimize or avoid impacts to biological resources:

**BIO-1** Mitigation for project impacts to slender mariposa lily shall include one or more of the following:

- Prior to construction, a mitigation plan shall be developed that describes methods to mitigate for impacts to slender mariposa lily at a 1:1 ratio. The mitigation plan shall include a description of the mitigation site, bulb collection and planting methods, maintenance and monitoring requirements, and performance standards to measure the success of the mitigation. Slender mariposa lily bulbs shall be collected at the end of the growing season and prior to ground disturbance, or bulbs shall be obtained from a native plant nursery if available. The bulbs shall be planted within an appropriate on-site or off-site mitigation area, which will be conserved as open space in perpetuity.
- Payment into a mitigation bank and/or in-lieu fee program that has mitigation available for slender mariposa lily at a 1:1 ratio; and/or
- Preservation of land that contains slender mariposa lily at a 1:1 ratio.

Mitigation for significant impacts to slender mariposa lily shall be implemented in consultation with the City and CDFW prior to construction.

**BIO-2** **Burrowing Owl:** In compliance with the CDFW *Staff Report on Burrowing Owl Mitigation* (2012), a take avoidance survey shall be conducted on the study area within 14 days prior to ground disturbance to determine presence of BUOW. If the take avoidance survey is negative and BUOW is confirmed absent, then ground-disturbing activities shall be allowed to commence, and no further mitigation would be required.

If BUOW are observed during the take avoidance survey, active burrows shall be avoided by the project in accordance with the CDFW's Staff Report (2012). The CDFW shall be immediately informed of any BUOW observations. A Burrowing Owl Protection and Relocation Plan (plan) shall be prepared by a qualified biologist, which must be sent for approval by CDFW prior to initiating ground disturbance. The plan shall detail avoidance measures that shall be implemented during construction and passive or active relocation methodology. Relocation shall only occur outside of the nesting season (September 1 through January 31).

**BIO-3** **Southern Willow Scrub/Giant Reed Stand and CDFW Jurisdiction:** Prior to the City's issuance of a grading permit, the Project Applicant shall demonstrate that a Streambed Alteration Agreement has been issued by CDFW. Temporary impacts to CDFW jurisdiction shall be returned to pre-project topographic contours once the project has been completed. Permanent impacts to CDFW jurisdiction for southern willow scrub/giant reed stand (0.70 acre) shall be mitigated through on-site or off-site enhancement, restoration, and/or creation of CDFW jurisdictional streambed at ratio of

no less than 1:1. Given that the remaining portion of Bouquet Canyon Creek is dominated by invasive giant reed stands, which is of extremely low biological function and value and contributes to downstream infestation of giant reed, the remaining permanent impacts to CDFW jurisdiction (8.63 acres) shall be mitigated through on-site or off-site enhancement, restoration, and/or creation of CDFW jurisdictional streambed at a ratio of no less than 0.5:1. Best Management Practices (BMPs) to minimize and avoid impacts to CDFW jurisdiction during and after construction will be addressed as part in the Streambed Alteration Agreement. Minimization and avoidance measures may include, but are not limited to, the following:

- Construction-related equipment will be stored in developed areas, outside of drainages. No equipment maintenance will be done within or adjacent to the drainage.
- Mud, silt, spoil sites, raw cement, asphalt, or other pollutants from construction activities will not be placed within or adjacent to the drainage.
- Open trenches or other excavated areas will be properly secured at the end of the day to avoid entrapment of animals, or an escape ramp will be provided.
- To avoid attracting predators during construction, the project will be kept clean of debris to the extent possible. All food-related trash items will be enclosed in sealed containers and regularly removed from site.
- Construction personnel will strictly limit their activities, vehicles, equipment and construction material to the proposed project footprint, staging areas, and designated routes of travel.
- Exclusion fencing will be installed to demarcate the limits of disturbance. The exclusion fencing should be maintained until the completion of construction activities.
- To the extent feasible, construction will be conducted outside of the nesting bird season (see MM BIO-5 below).

#### **BIO-4**

**USACE and RWQCB Jurisdiction:** Prior to the City's issuance of a grading permit, the Project Applicant shall demonstrate that the appropriate regulatory permits have been issued by USACE and RWQCB. Temporary impacts to WUS shall be returned to pre-project topographic contours once the project has been completed. Compensatory mitigation for permanent impacts to WUS shall be required as part of subsequent permitting requirements. Permanent impacts to WUS shall be mitigated through on-site or off-site enhancement, restoration, and/or creation of jurisdictional streambed at a ratio of no less than 1:1. BMPs to minimize and avoid impacts to WUS during and after construction will be addressed as part of the USACE and RWQCB permitting process. Minimization and avoidance measures may include, but are not limited to, the following:



- Construction-related equipment will be stored in developed areas, outside of the drainage. No equipment maintenance will be done within or adjacent to the drainage.
- Source control and treatment control BMPs will be implemented to minimize the potential contaminants that are generated during and after construction. Water quality BMPs will be implemented throughout the project to capture and treat potential contaminants.
- Substances harmful to aquatic life will not be discharged into the drainage. All hazardous substances will be properly handled and stored.
- A Storm Water Pollution Prevention Plan will be prepared to prevent sediment from entering the drainage during construction.
- To avoid attracting predators during construction, the project will be kept clean of debris to the extent possible. All food-related trash items will be enclosed in sealed containers and regularly removed from site.
- Construction personnel will strictly limit their activities, vehicles, equipment and construction material to the proposed project footprint, staging areas, and designated routes of travel.
- Exclusion fencing will be installed to demarcate the limits of disturbance. The exclusion fencing should be maintained until the completion of construction activities.

**BIO-5**

**Nesting Birds:** Construction activities (i.e., earthwork, clearing, and grubbing) shall occur outside of the general bird nesting season for migratory birds, which is February 15 through August 31 for songbirds and January 15 to August 31 for raptors.

If construction activities (i.e., earthwork, clearing, and grubbing) must occur during the general bird nesting season for migratory birds and raptors, a qualified biologist shall perform a pre-construction survey of potential nesting habitat to confirm the absence of active nests belonging to migratory birds and raptors afforded protection under the MBTA and CFG Code. The pre-construction survey shall be performed no more than seven days prior to the commencement of construction activities. The results of the pre-construction survey shall be documented by the qualified biologist. If construction is inactive for more than seven days, an additional survey shall be conducted.

If the qualified biologist determines that no active migratory bird or raptor nests occur, the activities shall be allowed to proceed without any further requirements. If the qualified biologist determines that an active migratory bird or raptor nest is present, no impacts within 300 feet (500 feet for raptors) of the active nest shall occur until the young have fledged the nest and the nest is confirmed to no longer be active, or as determined by the qualified biologist. The biological monitor may modify the buffer or propose other recommendations in order to minimize disturbance to nesting birds.

**BIO-6**

**Protected Oak Trees:** Prior to construction, the Applicant shall obtain an Oak Tree Permit in accordance with the City's Oak Tree Preservation ordinance (City 2013) to impact protected oak trees. The following measures shall be required:

- **Impacted Trees:** All tree removals shall be conducted in the presence of a qualified arborist approved by the City. The Applicant shall replace impacted City-protected oak trees proposed for removal by planting replacement trees on-site, donating trees to the City, or to pay the City an equivalent monetary value of the replacement trees. Replacement ratios shall be determined based requirements described in Subsection B of the Oak Tree Preservation Ordinance (City 2013). Unless otherwise approved by the City, replacement trees shall be at a minimum of 24-inch box size and consist of the following tree species: coast live oak, valley oak, canyon live oak, or interior live oak. All replacement trees shall be approved by the City.
- **Encroached Trees:** The Applicant shall notify the City and qualified arborist 48 hours prior to beginning work within the protected zone of an oak tree. All work conducted within the protected zone shall be monitored by a qualified arborist and verified by the City. Work shall be done with hand tools only. Once work within the protected zones is complete, the qualified arborist shall submit a certification letter to the City within 10 working days demonstrating the work was conducted in accordance with project's permit. Other protection measures may be required by the City.
- **Encroached/Avoided Trees:** A minimum five-foot chain link fence in concrete footings with posts installed every eight feet and two feet deep shall be installed at the outermost edge of the protected zone of each oak or oak grove. Trees on steep slopes that will not be impacted by vegetation removal or graded may be exempt from fencing requirement. Fencing shall be inspected and approved by the City prior to construction initiation. Signs shall be placed on the fence in four locations around each tree or every 50 feet around oak groves. Signs shall be a minimum of two feet by two with the following language: "Warning: This fence is for the protection of this tree and shall not be removed or relocated without written authorization for the City of Santa Clarity Community Development Department." The fence shall remain in place for the duration of construction and shall not be removed until receiving written authorization from the City. Planting within the protected zone is discouraged. If planting within the protected zone, only drought tolerant species shall be permitted and no spray-type irrigation shall be used. A maintenance and care program shall be implemented to ensure continued health and care of oak trees on the proposed development. Other protection measures may be required by the City.

## 7.0 CERTIFICATION/QUALIFICATION

The following individuals contributed to the fieldwork and/or preparation of this report:

Tara Baxter	B.A., Ecology and Evolutionary Biology, University of Colorado at Boulder, 2009
Ezekiel Cooley	B.S., Natural Resources with an emphasis in Wildlife, Central Michigan University, 2004
Amir Morales	B.S., Hydrological Sciences, Minor Geographic Information Systems, University of California Santa Barbara, 2001
Aleksandra Richards	M.A., International Relations, University of San Diego, 2010  B.A., Communications with an emphasis in Print Journalism, California State University Fullerton, 2008
Lauren Singleton	M.S., Biology with an emphasis in Ecology and Entomology, California State University Long Beach, 2014  B.S., Biology with an emphasis in Ecology, Minor Chemistry, California State University Long Beach, 2010
Daniel Torres	B.S., Ecology and Natural Resources, Rutgers University, 2013

## 8.0 REFERENCES

- American Ornithologists' Union. 2018. AOU checklist of North and Middle America birds. Retrieved from: <http://checklist.aou.org/taxa/>.
- Baker, R.J., L.C. Bradley, R.D. Bradley, J.W. Dragoo, M.D. Engstrom, R.S. Hoffmann, C.A. Jones, F. Reid, D.W. Rice, and C. Jones. 2003. Revised checklist of North American mammals north of Mexico. Occasional Papers of the Museum, Texas Tech University 223.
- Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, editors. 2012. The Jepson manual: Vascular plants of California. 2nd ed. University of California Press, Berkeley.
- California Department of Fish and Game. 2012. Staff Report on Burrowing Owl Mitigation. State of California Natural Resource Agency. March 7.
- California Department of Fish and Wildlife. 2018a. California Natural Diversity Database and Rarefind. California Department of Fish and Wildlife: Sacramento, California. Retrieved from: <https://www.wildlife.ca.gov/Data/CNDDDB/Maps-and-Data>. Accessed October 17, 2018.
- 2018b. California natural community list. The Vegetation Classification and Mapping Program. Wildlife & Habitat Data Analysis Branch. January 2018. Retrieved from: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153398&inline>. Accessed August 31, 2018.
2017. California Natural Diversity Database and Rarefind. California Department of Fish and Wildlife: Sacramento, California. Retrieved from: <https://www.wildlife.ca.gov/Data/CNDDDB/Maps-and-Data>. Accessed June 12, 2017.
2009. Protocols for surveying and evaluating impacts to special status native plant populations and natural communities. State of California, California Natural Resources Agency. November 24, 2009.
2000. Guidelines for assessing the effects of proposed projects on rare, threatened, and endangered plants and natural communities. State of California, The Resources Agency. December 9, 1983 revised May 8, 2000.
- California Invasive Pest Council. 2007. February 2007 Inventory Update. Cal-IPC Publication 2006-02. California Invasive Plant Council: Berkeley, CA. February 2007.
2006. California invasive plant inventory. Cal-IPC Publication 2006-02. California Invasive Plant Council: Berkeley, CA. February 2006.

California Native Plant Society. 2019. CNPS rare plant ranks. Retrieved from: <https://www.cnps.org/rare-plants/cnps-rare-plant-ranks>. Accessed on March 14, 2019.

2018. Inventory of rare and endangered plants of California. California Native Plant Society. Retrieved from: <http://www.rareplants.cnps.org/>. Accessed October 18, 2018.

2017. Inventory of rare and endangered plants of California. California Native Plant Society. Retrieved from: <http://www.rareplants.cnps.org/>. Accessed June 12, 2017.

Emmel, T.C. and J.F. Emmel. 1973. The butterflies of Southern California. Natural History Museum of Los Angeles County, Science Series 26: 1-148.

Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Technical report Y-87-1. Vicksburg (MS): U.S. Army Engineer Waterways Experiment Station. 100 p. with Appendices.

Google Earth. 2017. Aerial Imagery of the Bouquet Canyon Study Area, 34.458298°, -118.492722°. Aerial Imagery from April 2017. Retrieved from: <http://www.google.com/earth/index.html>. Accessed June 12, 2017.

Grumbles, B.H. and J.P. Woodley, Jr. 2007. Memorandum: Clean Water Act jurisdiction following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States. June 5. 12 p.

Historic Aerials. 1948. Aerial Imagery of the Bouquet Canyon Project, 34.457185°, -118.492639°. Retrieved from: <https://www.historicaerials.com/viewer>. Accessed March 14, 2019.

Holland R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Nongame-Heritage Program, State of California, Department of Fish and Game, Sacramento, 156 pp.

Jackson, L. 1985. Ecological origins of California's Mediterranean grasses. *Journal of Biogeography* (1985) 12, 349-361.

Natural Resources Conservation Service. 2017. Web Soil Survey. United States Department of Agriculture (USDA). Retrieved from: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>. Accessed June 12, 2017.

Los Angeles Fire Department, County of. N.D. 2017. Fuel modification plan notes. Retrieved from: <https://www.fire.lacounty.gov/wp-content/uploads/2017/03/Fuel-ModificationPlanNotes.pdf>. Accessed March 14, 2019.

Oberbauer, T. 1996. Terrestrial vegetation communities in San Diego County based on Holland's Descriptions, San Diego Association of Governments, San Diego, CA.

Richmond, J. Q., Jacobs, D. K., Backlin, A. R., Swift, C. C., Dellith, C., and Fisher, R. N. 2014. Ephemeral stream reaches preserve the evolutionary and distortional history of threespine stickleback in the Santa Clara and Venture River watershed of southern California. *Conservation Genetics*. 16:85-101.

Riley, D.T. 2005. Ordinary High Water Mark. RGL No. 05-05. 4 p.

San Marino Environmental Associates. 2008. Memorandum, dated January 5, 2008, from Thomas R. Haglund and Jonathan N. Baskin for a progress report regarding Santa Clara River Stickleback Survey.

Santa Clarita, City of (City). 2013. Oak Tree Preservation. Ordinance No. 17.51.040. City of Santa Clarita Municipal Code. Adopted April 25, 1989, revised 2013. Retrieved from: <https://www.codepublishing.com/CA/SantaClarita>. Accessed November 19, 2018.

2011. General Plan. Circulation Element. June 2011.

1990. Oak Tree Preservation and Protection Guidelines. Adopted September 1990. Retrieved from: <https://www.santa-clarita.com/home/showdocument?id=10121>. Accessed November 19, 2018.

South Coast Wildlands. 2008. South Coast missing linkages: A wildland network for the South Coast ecoregion. Retrieved from: <http://www.scwildlands.org/reports/SCMLRegionalReport.pdf>. March 2008.

Sawyer, J.O., T. Keeler-Wolf, and J. Evens. 2009. A manual of California vegetation. 2nd Ed. Sacramento: California Native Plant Society.

Taggart, T.W. 2016. The Center for North American Herpetology: The Academic Portal to North American Herpetology. Retrieved from: <http://www.cnah.org/>.

U.S. Army Corps of Engineers (USACE). 2015. Federal Register: Clean Water Rule: Definition of "Waters of the United States." 80 FR 37053; 37053-37127

2008a. 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. ERCD/EL TR-06-16. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

2008b. A field guide to the identification of the ordinary high water mark (OHWM) in the Arid West region of the United States. Technical Report TR-08-12, Ed. R.W. Lichvar, S.M. McColley. Hanover, New Hampshire: Cold Regions Research and Engineering Laboratory.

2007. Questions and Answers for Rapanos and Carabell Decisions. June 5. 21 pp.

--- and EPA. 2007. Jurisdictional Determination Form Instructional Guidebook. May 30. 60 pp.

U.S. Fish and Wildlife Service (USFWS). 2017a. Critical habitat mapping. GIS files provided by USFWS. Retrieved from: <https://ecos.fws.gov/ecp/report/table/critical-habitat.html>. Accessed October 12, 2017.

2017b. National Wetlands Inventory. Retrieved from: <https://www.fws.gov/wetlands/data/google-earth.html>. Accessed June 12, 2017.

2000. Guidelines for conducting and reporting botanical inventories for federally listed, proposed and candidate plants. United States Fish and Wildlife Service. January 2000.

2009. Unarmored threespine stickleback 5-year review: summary and evaluation. U.S. Fish and Wildlife Service Ventura Fish and Wildlife Office Ventura, California. May 29, 2009.

1997. Coastal California Gnatcatcher (*Polioptila californica californica*) Presence/Absence Survey Protocol. 5pp.



# Appendix A

---

## Plant Species Observed

## Appendix A Plant Species Observed

Family	Scientific Name	Common Name
<b>GYMNOSPERMS</b>		
Cupressaceae	<i>Cupressus sempervirens*</i>	Italian cypress
<b>ANGIOSPERMS – EUDICOTS</b>		
Adoxaceae	<i>Sambucus nigra ssp. caerulea</i>	blue elderberry
Aizoaceae	<i>Carpobrotus edulis*</i>	hottentot-fig
Anacardiaceae	<i>Malosma laurina</i>	laurel sumac
	<i>Rhus aromatica</i>	basket-brush
	<i>Rhus ovata</i>	sugar bush
	<i>Schinus molle*</i>	Peruvian pepper tree
	<i>Toxicodendron diversilobum</i>	poison oak
Apocynaceae	<i>Nerium oleander*</i>	oleander
Asteraceae	<i>Acourtia microcephala</i>	sacapellote
	<i>Ambrosia acanthicarpa</i>	annual bur-sage
	<i>Artemisia californica</i>	California sagebrush
	<i>Artemisia douglasiana</i>	mugwort
	<i>Artemisia tridentata</i>	Great Basin sagebrush
	<i>Baccharis pilularis</i>	coyote brush
	<i>Baccharis salicifolia</i>	mule fat
	<i>Centaurea benedicta*</i>	blessed thistle
	<i>Centaurea melitensis*</i>	totalote
	<i>Corethrogyne filaginifolia</i>	common sand aster
	<i>Deinandra fasciculata</i>	fascicled tarplant
	<i>Encelia farinosa</i>	brittlebush
	<i>Ericameria pinifolia</i>	pine goldenbush
	<i>Erigeron canadensis</i>	horseweed
	<i>Eriophyllum confertiflorum</i>	golden-yarrow
	<i>Gutierrezia californica</i>	California matchweed
	<i>Hazardia squarrosa</i>	saw-toothed goldenbush
	<i>Helianthus annuus</i>	western sunflower
	<i>Heterotheca grandiflora</i>	telegraph weed
	<i>Isocoma menziesii</i>	goldenbush
	<i>Iva axillaris</i>	povertyweed
	<i>Lactuca serriola*</i>	wild lettuce
	<i>Lepidospartum squamatum</i>	scale-broom
	<i>Malacothrix saxatilis</i>	cliff aster
	<i>Osteospermum sp.*</i>	African daisy
	<i>Pseudognaphalium californicum</i>	California everlasting
	<i>Pseudognaphalium luteoalbum*</i>	everlasting cudweed
	<i>Silybum marianum*</i>	milk thistle
	<i>Sonchus asper*</i>	prickly sow thistle
	<i>Stephanomeria virgata</i>	virgate wreath-plant
	<i>Taraxacum officinale*</i>	dandelion
	<i>Uropappus lindleyi</i>	silver puffs
	Boraginaceae	<i>Amsinckia intermedia</i>
<i>Emmenanthe penduliflora</i>		whispering bells
<i>Eucrypta chrysanthemifolia</i>		common eucrypta
<i>Eriodictyon crassifolium</i>		felt-leaf yerba santa
<i>Heliotropium curassavicum var. oculatum</i>		salt heliotrope
	<i>Phacelia brachyloba</i>	short lobed phacelia

## Appendix A (cont.) Plant Species Observed

Family	Scientific Name	Common Name
<b>ANGIOSPERMS – EUDICOTS (cont.)</b>		
Boraginaceae (contin.)	<i>Phacelia cicutaria</i>	caterpillar phacelia
	<i>Phacelia distans</i>	wild heliotrope
Brassicaceae	<i>Hirschfeldia incana</i> *	short-pod mustard
	<i>Sisymbrium irio</i> *	London rocket
	<i>Sisymbrium orientale</i> *	hare's ear cabbage
Cactaceae	<i>Opuntia basilaris</i>	beavertail cactus
Chenopodiaceae	<i>Atriplex canescens</i>	fourwing saltbush
	<i>Atriplex semibaccata</i> *	Australian saltbush
	<i>Chenopodium californicum</i>	California pigweed
	<i>Chenopodium murale</i> *	nettle-leaf goosefoot
	<i>Salsola tragus</i> *	Russian thistle
Convolvulaceae	<i>Calystegia peirsonii</i> <sup>1</sup>	Peirson's morning-glory
	<i>Cuscuta</i> sp.	dodder
Crassulaceae	<i>Dudleya lanceolata</i>	coastal dudleya
Cucurbitaceae	<i>Cucurbita foetidissima</i>	calabazilla
	<i>Marah macrocarpa</i>	wild cucumber
Euphorbiaceae	<i>Euphorbia albomarginata</i>	rattlesnake weed
	<i>Croton setigerus</i>	dove weed
	<i>Euphorbia serpens</i> *	matted sandmat
	<i>Stillingia linearifolia</i>	linear leaf stillingia
Fabaceae	<i>Acmispon glaber</i>	deerweed
	<i>Astragalus pomonensis</i>	Pomona locoweed
	<i>Lupinus bicolor</i>	miniature lupine
	<i>Lupinus succulentus</i>	arroyo lupine
	<i>Melilotus indicus</i> *	Indian sweet clover
	<i>Robinia pseudoacacia</i> *	black locust
Fagaceae	<i>Quercus berberidifolia</i>	scrub oak
	<i>Quercus douglasii</i>	blue oak
	<i>Quercus john-tuckeri</i>	Tucker oak
	<i>Quercus lobata</i>	valley oak
Geraniaceae	<i>Erodium cicutarium</i> *	redstem filaree
Lamiaceae	<i>Marrubium vulgare</i> *	horehound
	<i>Salvia apiana</i>	white sage
	<i>Salvia columbariae</i>	chia
	<i>Salvia leucophylla</i>	purple sage
	<i>Salvia mellifera</i>	black sage
	<i>Trichostema lanatum</i>	woolly blue-curls
Malvaceae	<i>Malacothamnus fasciculatus</i>	chaparral mallow
	<i>Malva parviflora</i> *	cheeseweed
	<i>Malvella leprosa</i>	alkali-mallow
Meliaceae	<i>Melia azaderach</i> *	chinaberry
Mytaceae	<i>Eucalyptus camaldulensis</i> *	river red gum
	<i>Eucalyptus globulus</i> *	blue gum
	<i>Eucalyptus polyanthemus</i> *	silver dollar gum
Nyctaginaceae	<i>Mirabilis laevis</i> ssp. <i>crassifolia</i>	wishbone bush
Onagraceae	<i>Clarkia purpurea</i>	purple clarkia
	<i>Clarkia unguiculata</i>	elegant clarkia
	<i>Eulobus californicus</i>	California primrose

## Appendix A (cont.) Plant Species Observed

Family	Scientific Name	Common Name
<b>ANGIOSPERMS – EUDICOTS (cont.)</b>		
Orobanchaceae	<i>Castilleja exserta</i>	purple owl's clover
Papaveraceae	<i>Eschscholzia californica</i>	California poppy
Plantaginaceae	<i>Penstemon centranthifolius</i>	scarlet bugler
Polemoniaceae	<i>Allophyllum divaricatum</i>	purple false gilia
	<i>Eriastrum densifolium</i>	giant eriastrum
	<i>Gilia angelensis</i>	gilia
Polygonaceae	<i>Chorizanthe staticoides</i>	Turkish rugging
	<i>Eriogonum fasciculatum</i>	buckwheat
	<i>Polygonum aviculare</i> *	common knotweed
	<i>Rumex crispus</i> *	curly dock
Portulacaceae	<i>Portulaca oleracea</i> *	common purslane
Ranunculaceae	<i>Delphinium parryi</i>	San Bernardino larkspur
Rhamnaceae	<i>Rhamnus crocea</i>	spiny redberry
Rosaceae	<i>Adenostoma fasciculatum</i>	chamise
	<i>Heteromeles arbutifolia</i>	toyon
	<i>Prunus ilicifolia</i>	holly-leaved cherry
Rubiaceae	<i>Galium angustifolium</i>	narrow-leaved bedstraw
Salicaceae	<i>Populus fremontii</i> ssp. <i>fremontii</i>	Fremont cottonwood
	<i>Salix gooddingii</i>	Goodding's black willow
	<i>Salix laevigata</i>	red willow
Santalaceae	<i>Phoradendron</i> sp.	mistletoe
Sapindaceae	<i>Koelreuteria paniculata</i> *	goldenrain tree
Scrophulariaceae	<i>Scrophularia californica</i>	California figwort
	<i>Verbascum virgatum</i> *	wand mullein
Simaroubaceae	<i>Ailanthus altissima</i> *	tree-of-heaven
Solanaceae	<i>Datura wrightii</i>	jimson weed
	<i>Nicotiana glauca</i> *	tree tobacco
	<i>Nicotiana quadrivalvis</i>	Indian tobacco
	<i>Solanum xanti</i>	purple nightshade
Tamaricaceae	<i>Tamarix ramosissima</i> *	saltcedar
Ulmaceae	<i>Ulmus pumila</i> *	Siberian elm
Urticaceae	<i>Urtica dioica</i>	stinging nettle
Verbenaceae	<i>Verbena lasiostachys</i>	verbena
Vitaceae	<i>Vitis vinifera</i> *	cultivated grape
Zygophyllaceae	<i>Tribulus terrestris</i> *	puncture vine
<b>ANGIOSPERMS – MONOCOTS</b>		
Agavaceae	<i>Hesperoyucca whipplei</i>	Our Lord's candle
Arecaceae	<i>Washingtonia robusta</i> *	Mexican fan palm
Liliaceae	<i>Calochortus clavatus</i> var. <i>clavatus</i> <sup>2</sup>	club-haired mariposa lily
	<i>Calochortus clavatus</i> var. <i>gracilis</i> <sup>3</sup>	slender mariposa lily
	<i>Calochortus splendens</i>	lilac mariposa lily
	<i>Calochortus venustus</i>	butterfly mariposa lily

## Appendix A (cont.) Plant Species Observed

Family	Scientific Name	Common Name
<b>ANGIOSPERMS – MONOCOTS (cont.)</b>		
Poaceae	<i>Arundo donax</i> *	giant reed
	<i>Avena barbata</i> *	slender oat
	<i>Avena fatua</i> *	wild oats
	<i>Bromus diandrus</i> *	common ripgut grass
	<i>Bromus hordeaceus</i> *	soft brome
	<i>Bromus madritensis ssp. rubens</i> *	red brome
	<i>Bromus tectorum</i> *	cheatgrass
	<i>Cynodon dactylon</i> *	Bermuda grass
	<i>Distichlis spicata</i>	saltgrass
	<i>Elymus condensatus</i>	giant wild rye
	<i>Festuca myuros</i> *	fescue
	<i>Hordeum murinum</i> *	hare barley
	<i>Polypogon monspeliensis</i> *	annual beardgrass
	<i>Schismus barbatus</i> *	Mediterranean grass
Themidaceae	<i>Bloomeria crocea</i>	common goldenstar
	<i>Dichelostemma capitatum</i>	blue dicks

\* Non-native species

<sup>1</sup> California Rare Plant Rank (CRPR) 4.2

<sup>2</sup> CRPR 4.3

<sup>3</sup> CRPR 1B.2

# Appendix B

---

Animal Species Observed  
or Detected

## Appendix B Animal Species Observed or Detected

Order	Family	Scientific Name	Common Name
<b>Insects</b>			
Lepidoptera	Pieridae	<i>Anthocharis sara sara</i>	Sara orangetip
	Riodinidae	<i>Apodemia mormo virgulti</i>	Behr's metalmark
<b>Reptiles</b>			
Squamata	Phrynosomatidae	<i>Sceloporus occidentalis</i>	western fence lizard
<b>Birds</b>			
Accipitriformes	Accipitridae	<i>Accipiter cooperii</i>	Cooper's hawk
		<i>Buteo jamaicensis</i>	red-tailed hawk
	Cathartidae	<i>Cathartes aura</i>	turkey vulture
Apodiformes	Apodidae	<i>Aeronautes saxatalis</i>	white-throated swift
	Trochilidae	<i>Calypte anna</i>	Anna's hummingbird
		<i>Calypte costae</i>	Costa's hummingbird
		<i>Selasphorus</i> sp.	hummingbird sp.
Charadriiformes	Charadriidae	<i>Charadrius vociferus</i>	killdeer
Columbiformes	Columbidae	<i>Columba livia</i>	rock pigeon
		<i>Streptopelia decaocto</i>	Eurasian collared-dove
		<i>Zenaida macroura</i>	mourning dove
Cuculiformes	Cuculidae	<i>Geococcyx californianus</i>	greater roadrunner
Falconiformes	Falconidae	<i>Falco sparverius</i>	American kestrel
Galliformes	Odontophoridae	<i>Callipepla californica</i>	California quail
Passeriformes	Aegithalidae	<i>Psaltriparus minimus</i>	bushtit
	Alaudidae	<i>Eremophila alpestris</i>	horned lark
	Cardinalidae	<i>Passerina caerulea</i>	blue grosbeak
		<i>Pheucticus melanocephalus</i>	black-headed grosbeak
		<i>Piranga ludoviciana</i>	western tanager
	Corvidae	<i>Aphelocoma californica</i>	California scrub-jay
		<i>Corvus brachyrhynchos</i>	American crow
		<i>Corvus corax</i>	common raven
	Emberizidae	<i>Aimophila ruficeps</i>	rufous-crowned sparrow
		<i>Chondestes grammacus</i>	lark sparrow
		<i>Melospiza melodia</i>	song sparrow
		<i>Pipilo crissalis</i>	California towhee
		<i>Pipilo maculatus</i>	spotted towhee
		<i>Zonotrichia leucophrys</i>	white-crowned sparrow
	Fringillidae	<i>Haemorhous mexicanus</i>	house finch
		<i>Spinus psaltria</i>	lesser goldfinch
		<i>Spinus tristis</i>	American goldfinch
	Hirundinidae	<i>Hirundo rustica</i>	barn swallow
		<i>Petrochelidon pyrrhonota</i>	cliff swallow
		<i>Stelgidopteryx serripennis</i>	northern rough-winged swallow
	Icteridae	<i>Agelaius phoeniceus</i>	red-winged blackbird
		<i>Icterus cucullatus</i>	hooded oriole
		<i>Molothrus ater</i>	brown-headed cowbird
<i>Sturnella neglecta</i>		western meadowlark	
Mimidae	<i>Mimus polyglottos</i>	northern mockingbird	
	<i>Toxostoma redivivum</i>	California thrasher	
Paradoxornithidae		<i>Chamaea fasciata</i>	wrentit
Paridae		<i>Baeolophus inornatus</i>	oak titmouse



**Appendix B (cont.)  
Animal Species Observed or Detected**

Order	Family	Scientific Name	Common Name
<b>Birds (cont.)</b>			
Passeriformes (cont.)	Parulidae	<i>Cardellina pusilla</i>	Wilson's warbler
		<i>Geothlypis trichas</i>	common yellowthroat
		<i>Oreothlypis celata</i>	orange-crowned warbler
		<i>Setophaga coronate</i>	yellow-rumped warbler
	Passerellidae	<i>Aimophila ruficeps</i>	rufous-crowned sparrow
		<i>Melospiza melodia</i>	song sparrow
		<i>Melospiza crissalis</i>	California towhee
		<i>Pipilo maculatus</i>	spotted towhee
		<i>Zonotrichia leucophrys</i>	white-crowned sparrow
	Poliptilidae	<i>Poliptila caerulea</i>	blue-gray gnatcatcher
	Ptilonotidae	<i>Phainopepla nitens</i>	Phainopepla
	Sturnidae	<i>Sturnus vulgaris</i>	European starling
	Troglodytidae	<i>Thryomanes bewickii</i>	Bewick's wren
	Turdidae	<i>Sialia mexicana</i>	western bluebird
		<i>Turdus migratorius</i>	American robin
	Tyrannidae	<i>Contopus sordidulus</i>	western wood-pewee
		<i>Empidonax difficilis</i>	pacific-slope flycatcher
<i>Myiarchus cinerascens</i>		ash-throated flycatcher	
<i>Sayornis nigricans</i>		black phoebe	
<i>Sayornis saya</i>		Say's phoebe	
<i>Tyrannus verticalis</i>		western kingbird	
	<i>Tyrannus vociferans</i>	Cassin's kingbird	
Piciformes	Picidae	<i>Colaptes auratus</i>	northern flicker
		<i>Melanerpes formicivorus</i>	acorn woodpecker
		<i>Picoides nuttallii</i>	Nuttall's woodpecker
		<i>Picoides pubescens</i>	Downy woodpecker
<b>Mammals</b>			
Carnivora	Canidae	<i>Canis latrans</i>	coyote
	Felidae	<i>Lynx rufus</i>	bobcat
	Procyonidae	<i>Procyon lotor</i>	raccoon
Lagomorpha	Leporidae	<i>Sylvilagus audubonii</i>	desert cottontail
Rodentia	Sciuridae	<i>Otospermophilus beecheyi</i>	California ground squirrel

# Appendix C

---

## Representative Site Photographs



Photograph 1: Overview of the study area, facing west. Note the flatter portions of the study area support mostly non-native grass species due to historical ranching activities and the steeper hillsides support native Riversidean upland sage scrub.



Photograph 2: View of the mule fat scrub community, facing south.



Photograph 3: View of the non-native vegetation community (left) and elderberry savanna community (right), facing west.



Photograph 4: View of the big sagebrush scrub community (foreground) and giant reed stand community (background), facing southwest.

H:\GIS\PROJECTS\IPQ\_Bouquet\Map\BTR\App\_C\_SitePhotos1-4.indd IPQ-25 03/21/19-FC

Note: See Figure 5 for photograph locations.

Source: HELIX 2017





Photograph 5: View of the non-native vegetation community (left) and the southwestern willow scrub/giant reed stand community (right), facing north.



Photograph 6: View of non-native grassland community (left) and Riversidean upland sage scrub community (right), facing south. The non-native grassland/Riversidean upland sage scrub can be seen on the hillsides in the background.



Photograph 7: View of the Riversidean upland sage scrub/non-native grassland community (left) and disturbed habitat (right), facing south.



Photograph 8: View of the scrub oak chaparral community, facing southeast.

H:\GIS\PROJECTS\IPQ\_Bouquet\Map\BTR\App\_C\_SitePhotos\8.indd IPQ-25 03/21/19-FC

Note: See Figure 5 for photograph locations.

Source: HELIX 2017

## Appendix D

---

### Burrowing Owl Focused Survey Report

HELIX Environmental Planning, Inc.  
16485 Laguna Canyon Road  
Suite 150  
Irvine, CA 92618  
949.234.8792 tel.  
619.462.0552 fax  
www.helixepi.com



September 7, 2018

IPQ-25

Mr. Scott Covington  
Integral Communities  
888 San Clemente Drive, Suite 100  
Newport Beach, CA 92660

Subject: 2018 Burrowing Owl (*Athene cunicularia*) Survey Report for the Bouquet Canyon Road Project

Dear Mr. Covington:

This letter report presents the results of the 2018 focused burrowing owl (*Athene cunicularia*; BUOW) survey conducted by HELIX Environmental Planning, Inc. (HELIX) for the Bouquet Canyon Road Project (project) located in the City of Santa Clarita, Los Angeles County, California. The survey was conducted in accordance with the California Department of Fish and Wildlife (CDFW; previously California Department of Fish and Game [CDFG]) Staff Report on Burrowing Owl Mitigation (CDFG 2012). This letter report describes the methods used to perform the survey and the survey results.

## PROJECT SITE LOCATION

The 78.10-acre project site is generally located 6.9 miles to the east of Interstate 5 and 3.8 miles to the northwest of California State Route 14 in the City of Santa Clarita (Figure 1, *Regional Location*). The project site is within Section 6 of Township 4 North, Range 15 West of the Mint Canyon, California U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 2, *Vicinity Map*). Specifically, the project site is located directly south of the intersection of David Way and Bouquet Canyon Road (Figure 3, *Aerial Photograph*).

## PROJECT SITE DESCRIPTION

The project site is located in the foothills of the Sierra Pelona Mountains. The topography in the southern and western portions of the project site is predominantly steep hillsides, while the northern portion is primarily flat. Elevations on the project site range from approximately 1,365 feet above mean sea level (AMSL) near the northwest corner of the project to approximately 1,520 feet above AMSL near the southeastern corner. The steep hills throughout the southern and western portions of the site are predominated by Riversidean upland sage scrub while the flatter portions of the project site are dominated by non-native grassland. Seven soil types are mapped on the project site, including Hanford

sandy loam (HcC), Metz loam sandy (MfA), Mocho loam (MpA), Ojai loam (OgF), Saugus loam (ScF2), Sorrento loam (SsA), and Yolo loam (YoC).

Immediate surrounding land uses include existing residential development to the north and west, a mixture of undeveloped land and residential development to the south, and undeveloped land and juvenile detention schools to the east (Figure 3). The project site is located approximately 0.20 mile to the southeast of Haskell Canyon Open Space and 1.40 miles to the south of Angeles National Forest.

Representative photographs of the project site are shown on Attachment A, *Site Photographs*.

## METHODS

The focused BUOW survey was conducted according to the CDFW BUOW survey guidelines (CDFG 2012), which includes Part I Habitat Assessment and Focused Burrow Survey and Part II Focused BUOW Surveys. The CDFW BUOW survey guidelines are described in further detail below.

### Part I: Habitat Assessment and Focused Burrow Survey

Prior to conducting the habitat assessment, HELIX consulted the California Natural Diversity Database (CNDDDB) to determine the nearest BUOW occurrence(s). A habitat assessment was conducted by HELIX biologists Lauren Singleton and Daniel Torres on March 27, 2018, to determine whether the project site supports suitable BUOW habitat. A focused burrow survey was conducted concurrently with the habitat assessment. All suitable burrows (i.e., greater than 11 centimeters [cm] in height and width and greater than 150 cm in depth) and burrow surrogates were recorded using a handheld Global Positioning System (GPS) unit (Figure 4, *Suitable Burrow and Transect Locations*). The habitat assessment and focused burrow survey were conducted prior to commencement of the BUOW focused surveys. The assessment was conducted on the project site and within a 150-meter (approximately 500-foot) buffer zone around the periphery of the project site (survey area). The survey area was slowly walked and assessed for suitable BUOW habitat, including:

- disturbed low-growing vegetation within grassland and shrublands (less than 30 percent canopy cover);
- gently rolling or level terrain;
- areas with abundant small mammal burrows, especially California ground squirrel (*Otospermophilus beecheyi*) burrows;
- fence posts, rocks, or other low perching locations; and
- man-made structures, such as earthen berms, debris piles, and cement culverts.

All potential burrows were checked for signs of recent owl occupation. Signs of occupation include:

- pellets/casting (regurgitate fur, bones, and/or insect parts);
- white wash (excrement); and/or
- feathers.



## Part II: Locating Burrowing Owls

Since suitable habitat and burrows were observed within the survey area, focused BUOW surveys were conducted to determine whether the survey area supports BUOW. The focused surveys consisted of four breeding season surveys that were performed by HELIX biologist Ezekiel Cooley between April 13 and June 26, 2018. The surveys were spaced at least three weeks apart, with at least one survey conducted between February 15 and April 15 and three surveys conducted between April 15 and July 15 (Table 1, *Survey Information*)

The biologist walked transects spaced no greater than 20 meters apart (approximately 65 feet) to allow for 100 percent visual coverage of all suitable habitat within the survey area (Figure 4). The biologist walked slowly and methodically, closely checking suitable habitat within the survey area for BUOW diagnostic sign (e.g., molted feathers, pellets/castings, or whitewash at or near a burrow entrance) and individual BUOW. If observed, BUOW sign and BUOW observations were recorded with a GPS unit. Inaccessible areas of the survey area were visually assessed using binoculars.

**Table 1**  
**SURVEY INFORMATION**

Site Visit	Survey Date	Biologist	Start/Stop Time	Start/Stop Weather Conditions	Survey Results
HA <sup>1</sup>	03/27/18	Lauren Singleton Daniel Torres	0800-1300	54°F, wind 6-7 mph, 0% clouds 66°F, wind 6-7 mph, 0% clouds	Suitable habitat and burrows present.
1	04/13/18	Ezekiel Cooley	0630-1000	48°F, wind 2-3 mph, 100% clouds 63°F, wind 2-4 mph, 5% clouds	No BUOW detected.
2	05/11/18	Ezekiel Cooley	0625-1000	58°F, wind 2-3 mph, 100% clouds 61°F, wind 1-2 mph, 100% clouds	No BUOW detected.
3	06/08/18	Ezekiel Cooley	0600-1000	56°F, wind 2-3 mph, 0% clouds 73°F, wind 1-2 mph, 0% clouds	No BUOW detected.
4	06/26/18	Ezekiel Cooley	0630-0950	61°F, wind 0-1 mph, 0% clouds 70°F, wind 0-1 mph, 5% clouds	No BUOW detected.

<sup>1</sup> Part I Habitat Assessment and focused burrowing survey.

## RESULTS

No BUOW have been previously recorded on the project site. The nearest BUOW observation record in CNDDDB was observed in 2005, approximately three miles to the southeast of the survey area (California Department of Fish and Wildlife 2018).

Suitable BUOW habitat was observed within the survey area, including low-growing vegetation within disturbed areas and non-native grasslands (Attachment A). Several burrows that could potentially be used by BUOW were observed within the survey area and suitable foraging habitat was observed within and adjacent to the survey area. No BUOW or sign of BUOW occupation were observed within the survey area during the four focused surveys. Therefore, BUOW do not currently occupy the survey area. Observed burrow locations and transects walked are show on Figure 4.

## CONCLUSION

No BUOW were observed or detected within the survey area during the focused surveys. Burrows with potential to support BUOW were noted on the project site, but no sign of BUOW occupation was observed. A take avoidance (pre-construction) survey is required to be conducted within 14 days prior to ground disturbance in accordance with CDFW Staff Report on Burrowing Owl Mitigation (2012). If ground-disturbing activities are delayed more than 14 days after the pre-construction survey has been completed, the project site must be resurveyed.

If you have any questions regarding the information presented in this letter report, please contact Ezekiel Cooley (EzekielC@helixepi.com) at (949) 234-8770.

Sincerely,



Ezekiel Cooley  
Biologist

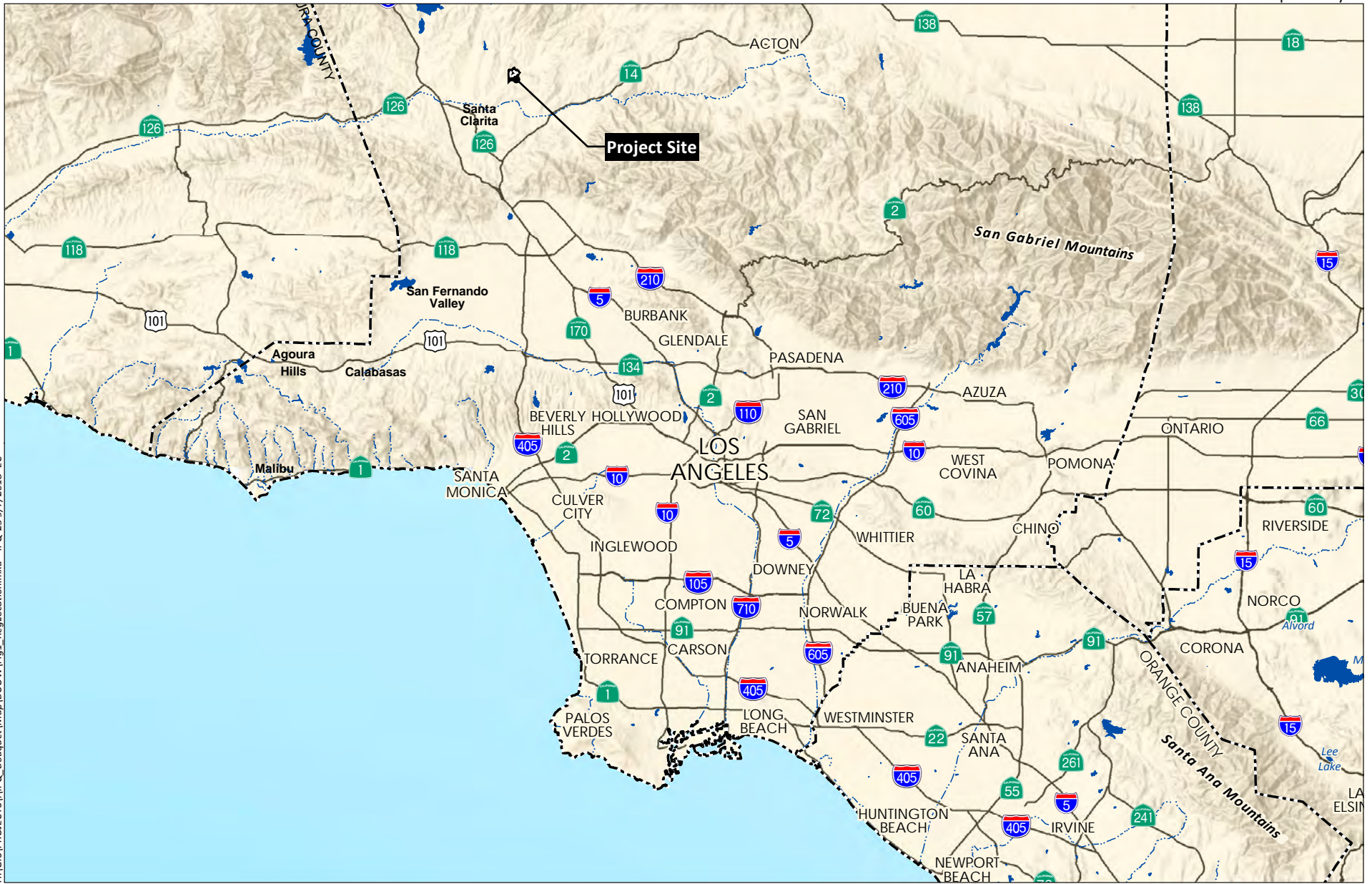
### Enclosures:

- Figure 1: Regional Location
- Figure 2: Vicinity Map
- Figure 3: Aerial Photograph
- Figure 4: Suitable Burrow and Transect Locations
- Attachment A: Site Photographs

## REFERENCES

California Department of Fish and Game. 2012. Staff Report on Burrowing Owl Mitigation. State of California Natural Resource Agency. March 7.

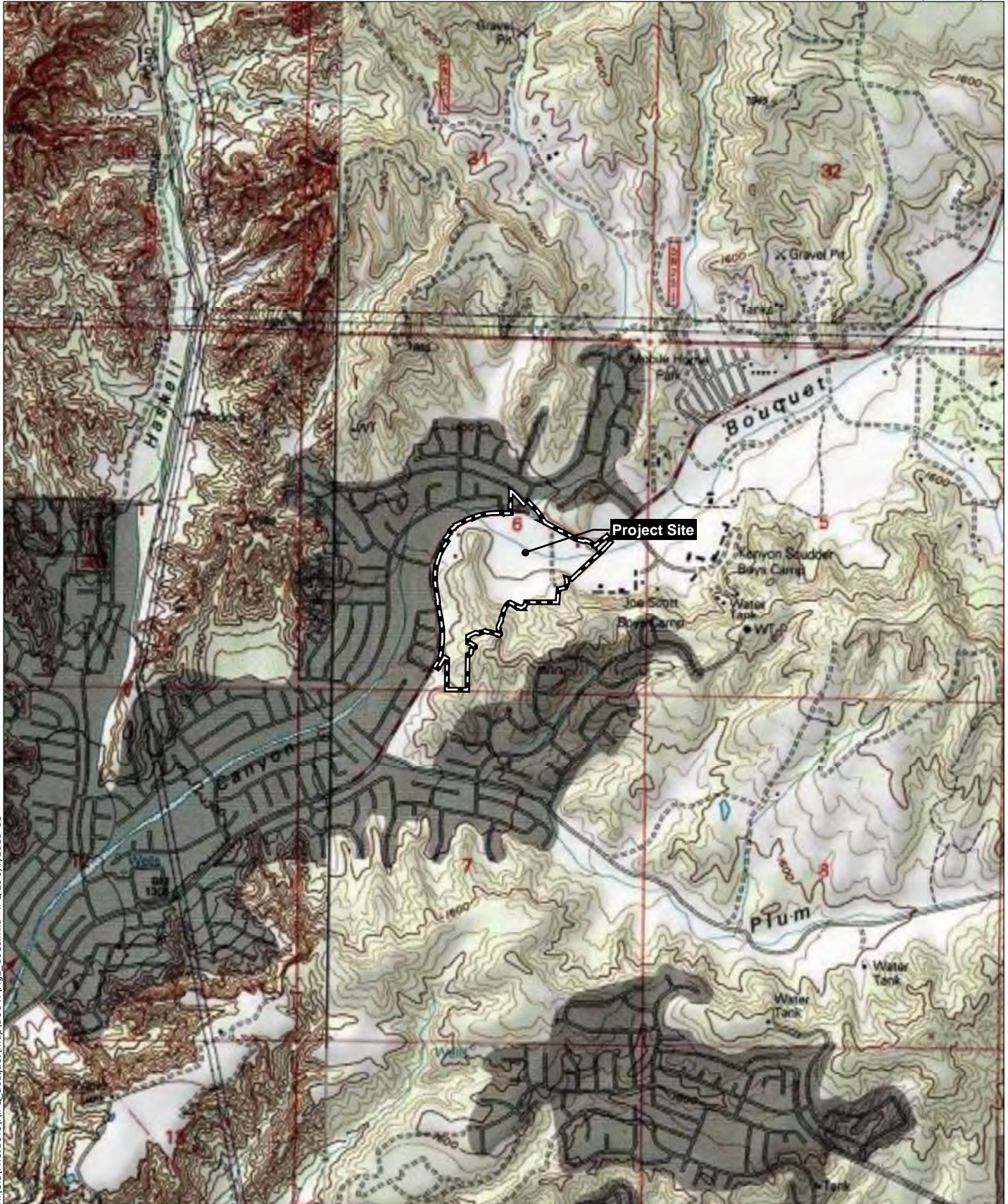
California Department of Fish and Wildlife. 2018. California Natural Diversity Database and Rarefind. California Department of Fish and Wildlife: Sacramento, California. Retrieved from: <https://www.wildlife.ca.gov/Data/CNDDDB/Maps-and-Data>. Accessed August 22, 2018.



H:\GIS\PROJECTS\IPQ\_Bouquet\Map\BUOW\Fig1\_RegLocation.mxd IPQ-25 9/7/2018 -EC

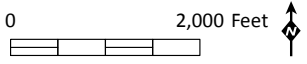
Source: Base Map Layers (ESRI, 2013)



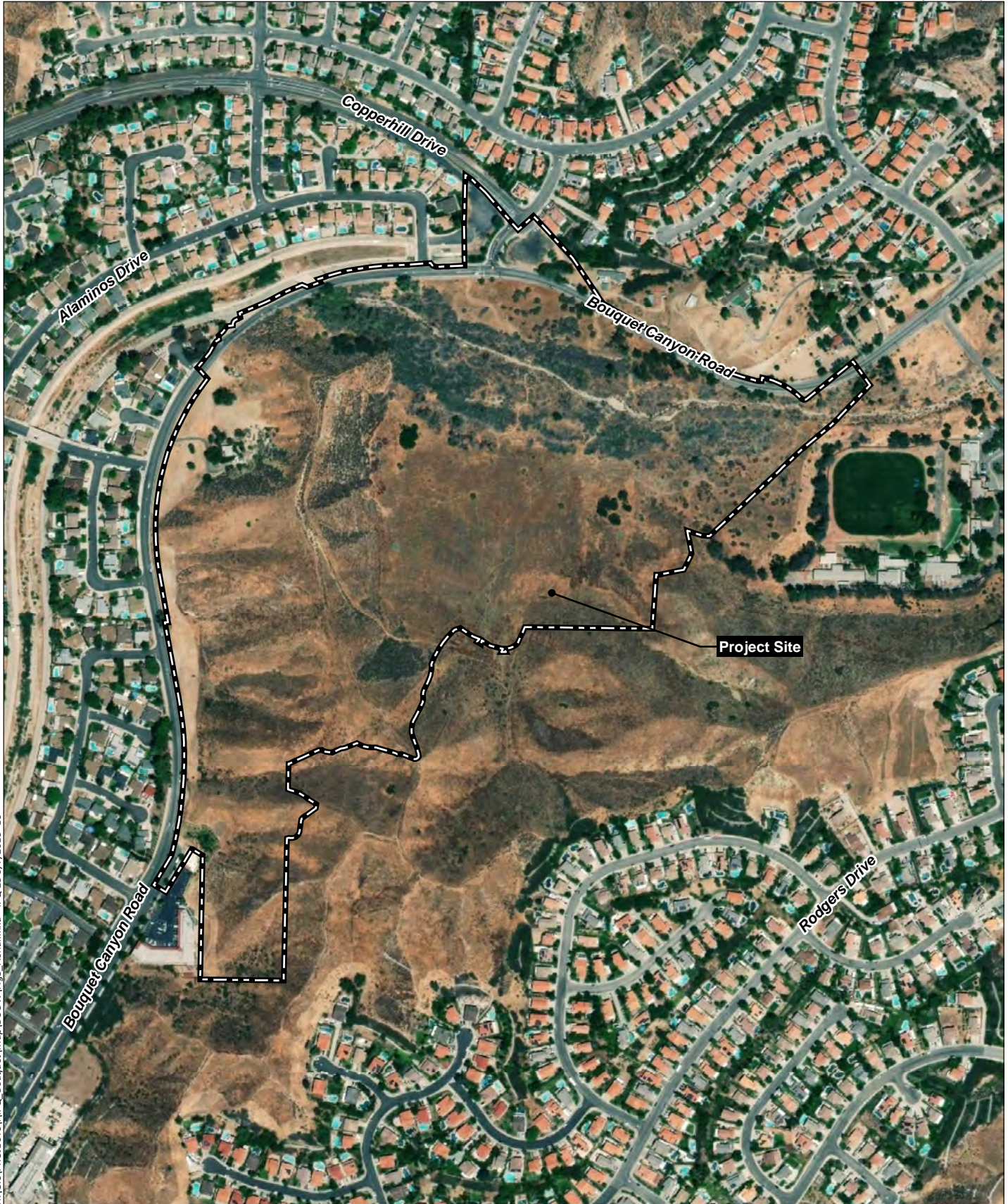


H:\GIS\PROJECTS\IPQ\_Bouquet\Map\BUOW\Fig2\_USGS.mxd IPQ-25 9/7/2018-EC

Source: Mint Canyon 7.5' Quad (USGS)





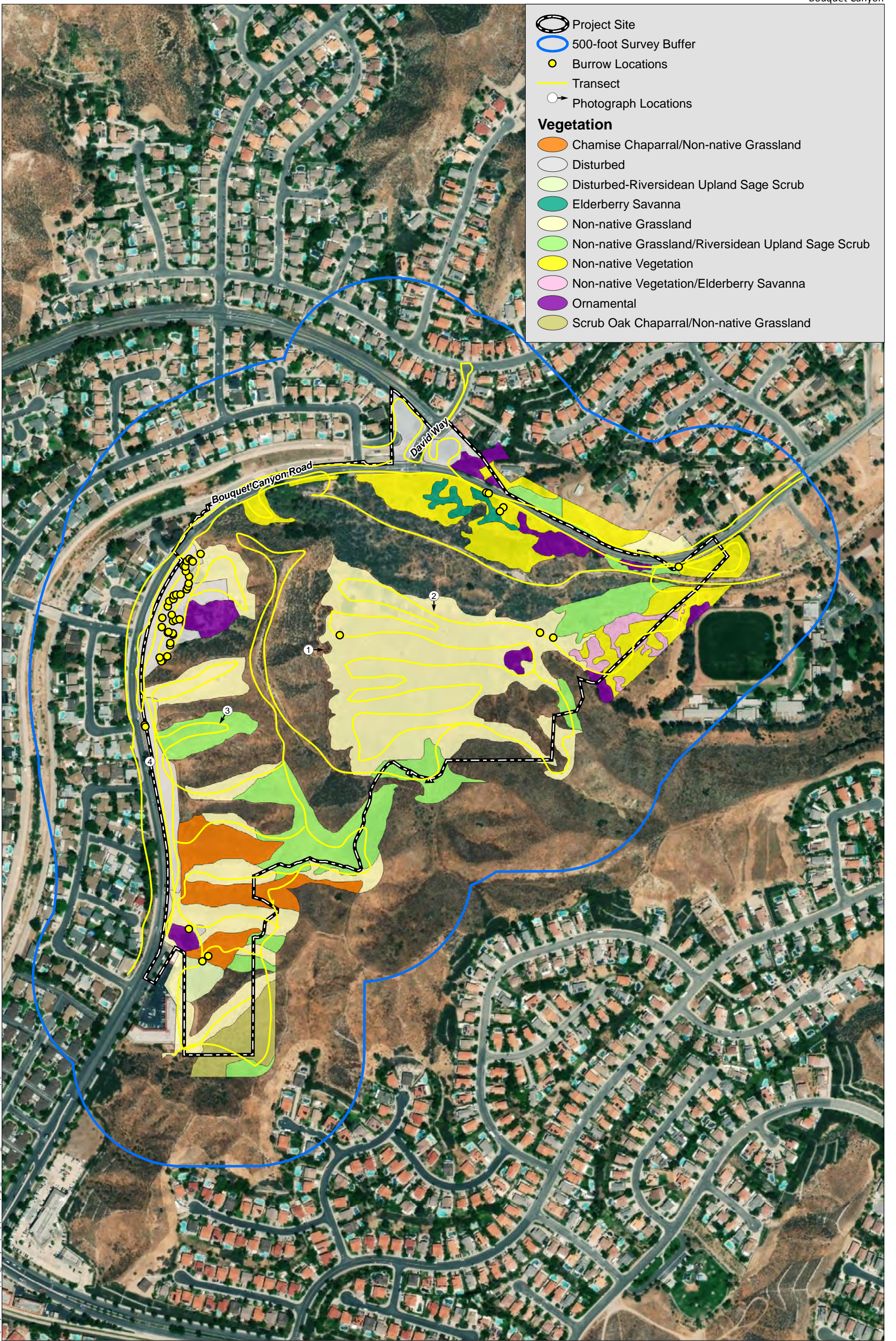


H:\GIS\PROJECTS\IPQ\_Bouquet\Map\BUQM\Fig3\_Aerial.mxd IPQ-25 9/7/2018-EC

Source: Base Map Layers (NAIP, 2016)







○ Project Site  
 ○ 500-foot Survey Buffer  
 ● Burrow Locations  
 — Transect  
 ○ Photograph Locations

**Vegetation**

- Chamise Chaparral/Non-native Grassland
- Disturbed
- Disturbed-Riversidean Upland Sage Scrub
- Elderberry Savanna
- Non-native Grassland
- Non-native Grassland/Riversidean Upland Sage Scrub
- Non-native Vegetation
- Non-native Vegetation/Elderberry Savanna
- Ornamental
- Scrub Oak Chaparral/Non-native Grassland

H:\GIS\PROJECTS\IPQ\_Bouquet\Map\BUOW\Fig4\_BurrowLoc\_Trans.mxd IPQ-25 9/7/2018 -EC

0 400 Feet

Source: Base Map Layers (NAIP, 2016)





Photograph 1: View of the non-native grassland located in the center of the study area, facing east.



Photograph 2: View of the non-native grassland located in the center of the study area, facing south.



Photograph 3: View of disturbed-riversidean upland sage scrub in foreground, chamise chaparral/non-native grassland, non-native grassland, and disturbed area in the background, facing southwest.



Photograph 4: View of disturbed areas located adjacent to Bouquet Canyon Road, facing south.

H:\GIS\PROJECTS\IPQ\_Bouquet\Map\BUOW\AppendixA\_SitePhotos.indd IPQ-25 09/07/18 -EC

Note: See Figure 4 for photograph locations.

Source: HELIX 2018

## Appendix E

---

### Coastal California Gnatcatcher Focused Survey Report

HELIX Environmental Planning, Inc.  
7578 El Cajon Boulevard  
La Mesa, CA 91942  
619.462.1515 tel  
619.462.0552 fax  
www.helixepi.com



June 22, 2018

IPQ-25

Mr. Chris Kofron  
US Fish & Wildlife Service  
2493 Portola Road, Suite B  
Ventura, California 93003

**Subject: 2018 Coastal California Gnatcatcher (*Polioptila californica californica*) Survey Report for the Bouquet Canyon Project**

Dear Mr. Kofron:

This letter presents the results of a US Fish and Wildlife Service (USFWS) protocol presence/absence survey of the federally listed threatened coastal California gnatcatcher (*Polioptila californica californica*; CAGN) conducted by HELIX Environmental Planning, Inc. (HELIX) for the Bouquet Canyon Project (project). The project site is comprised of four parcels with Assessor Parcel Numbers (APNs) 2812-008-03, -013, -022, and -031 located in the City of Santa Clarita, Los Angeles County, California. The project site also includes the northwest corner of the parcel with APN 2812-038-022, which may be considered for slope stabilization associated with the proposed development, and a road easement that extends through the southern portion of the parcel with APN 2812-008-022. In addition, a 100-foot buffer around the project site was evaluated. This report describes the methods used to perform the survey and the results, which is being submitted to the USFWS as a condition of HELIX's Threatened and Endangered Species Permit TE-778195-13.

## PROJECT LOCATION

The approximately 78-acre project site and 24-acre buffer is generally located 6.9 miles to the east of Interstate 5 and 3.8 miles to the northwest of California State Route 14 in the City of Santa Clarita (Figure 1). Specifically, the project site is located directly south of the intersection of David Way and Bouquet Canyon Road (Figure 2). The project site is within Section 6 of Township 4 North, Range 15 West of the Mint Canyon, California US Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 3).

Immediate surrounding land uses include existing residential development to the north and west, a mixture of undeveloped land and residential development to the south, and undeveloped land and juvenile detention schools to the east. The project site is located approximately 0.20 mile to the southeast of Haskell Canyon Open Space and 1.40 miles to the south of Angeles National Forest.

## METHODS

The survey consisted of six visits that were performed by HELIX biologist Tara Baxter (TE 87004B-0) in accordance with the current (1997) USFWS protocol. Approximately 32.83 acres of potential CAGN habitat occurs within the survey area, which consists of big sagebrush scrub, Riversidean upland sage scrub, disturbed-Riversidean upland sage scrub, Riversidean upland sage scrub/non-native grassland, and non-native grassland/Riversidean upland sage scrub mapped within the project site and 100-foot buffer (Figure 4). Table 1 details the survey dates, times, and conditions.

The surveys were conducted by walking within and along the perimeter of suitable CAGN habitat within the project site. Suitable habitat in areas adjacent to the project site were surveyed from the project site boundary. The survey route was arranged to ensure complete survey coverage of habitat with potential for occupancy by CAGN. Surveys were conducted with binoculars to aid in bird detection. Recorded CAGN vocalizations were played sparingly and only if other means of detection had failed. If a CAGN was detected before playing recorded vocalizations, the recordings were not played. Once CAGNs were initially detected in an area, use of playback was discontinued. The approximate survey route followed is depicted on Figure 4.

**Table 1  
GNATCATCHER SURVEY INFORMATION**

Site Visit	Survey Date	Biologist(s)	Start/Stop Time	Approx. Acres Surveyed/ Acres per Hour	Start/Stop Weather Conditions	Survey Results
1	03/24/18	Tara Baxter	0715/1045	32.83 ac/ 9.38 ac/hr	46°F, wind 2-4 mph, 20% cloud cover 64°F, wind 3-5 mph, 40% cloud cover	No CAGN detected
2	04/07/18	Tara Baxter	0630/0930	32.83 ac/ 9.38 ac/hr	56°F, wind 0-2 mph, 15% cloud cover 70°F, wind 1-3 mph, 20% cloud cover	No CAGN detected
3	04/14/18	Tara Baxter	0830/1130	32.83 ac/ 9.38 /hr	67°F, wind 0-2mph, 0% cloud cover 77°F, wind 0-2 mph, 0% cloud cover	No CAGN detected
4	04/21/18	Tara Baxter	0700/1000	32.83 ac/ 9.38 ac/hr	50°F, wind 0-2mph, 0% cloud cover 68°F, wind 1-3 mph, 0% cloud cover	No CAGN detected
5	05/05/18	Tara Baxter	0600/0900	32.83 ac/ 9.38 ac/hr	57°F, wind 0-2 mph, 5% cloud cover 74°F, wind 1-3 mph, 10% cloud cover	No CAGN detected
6	05/12/18	Tara Baxter	0645/0945	32.83 ac/ 9.38 ac/hr	59°F, wind 1-4 mph, 95% cloud cover 63°F, wind 1-4 mph, 100% cloud cover	No CAGN detected

## COASTAL CALIFORNIA GNATCATCHER HABITAT

### Big Sagebrush Scrub

Big sagebrush scrub comprises mostly soft-woody shrubs up to two meters tall, and usually has bare ground underneath and between the shrubs. This vegetation community is dominated by big sagebrush (*Artemisia tridentata*) and occurs on a wide variety of soils and terrain, from rocky, well-drained slopes to fine-textured valley soils with high water tables. Other species observed in this community included mostly non-native species, such as giant reed (*Arundo donax*), short-pod mustard (*Hirschfeldia incana*), and tree tobacco (*Nicotiana glauca*).

### Riversidean Upland Sage Scrub

Riversidean upland sage scrub (including disturbed-Riversidean sage scrub, Riversidean sage scrub/non-native grassland, and non-native grassland/Riversidean sage scrub) occupies xeric sites such as steep slopes, severely drained soils, or clays that slowly release stored soil moisture. This vegetation community is dominated by California sagebrush (*Artemisia californica*) and California buckwheat (*Eriogonum fasciculatum*). Other species observed in this community included basket-brush (*Rhus aromatica*), purple sage (*Salvia leucophylla*), and rancher's fiddleneck (*Amsinckia intermedia*).

Disturbed-Riversidean sage scrub has been subjected to human disturbance and has a lower percent cover of Riversidean sage scrub species and a higher percent cover of bare ground. Riversidean sage scrub/non-native grassland is dominated by California sagebrush and California buckwheat with several non-native grass species interspersed between shrubs, including red brome (*Bromus madritensis* ssp. *rubens*), ripgut (*Bromus diandrus*), and soft chess (*Bromus hordeaceus*). Non-native grassland/Riversidean sage scrub is dominated by non-native grass species with interspersed California sagebrush and California buckwheat shrubs.

## RESULTS

No coastal California gnatcatchers were detected during the survey (Figure 4). CAGN is assumed to be absent from the survey area.

## CERTIFICATION

I certify that the information in this survey report and enclosed exhibit fully and accurately represent our work.

Sincerely,



Tara Baxter

### Enclosures:

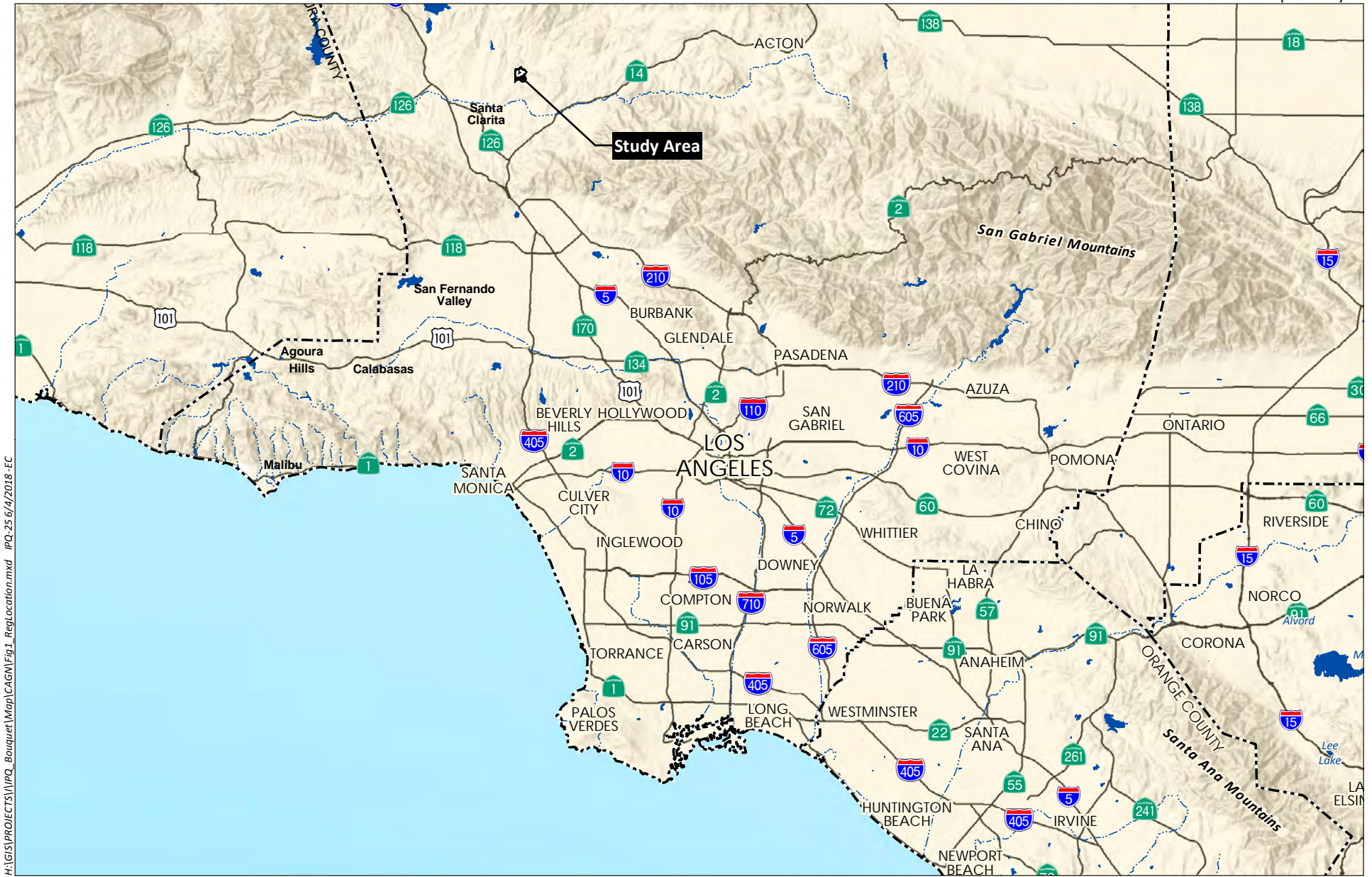
- Figure 1 Regional Location
- Figure 2 Project Vicinity (Aerial Photograph)
- Figure 3 Project Vicinity (USGS Topography)
- Figure 4 2018 Coastal California Gnatcatcher Survey Results



## REFERENCES

US Fish and Wildlife Service (USFWS). 1997. Coastal California Gnatcatcher (*Polioptila californica californica*) Presence/Absence Survey Protocol. 5pp.

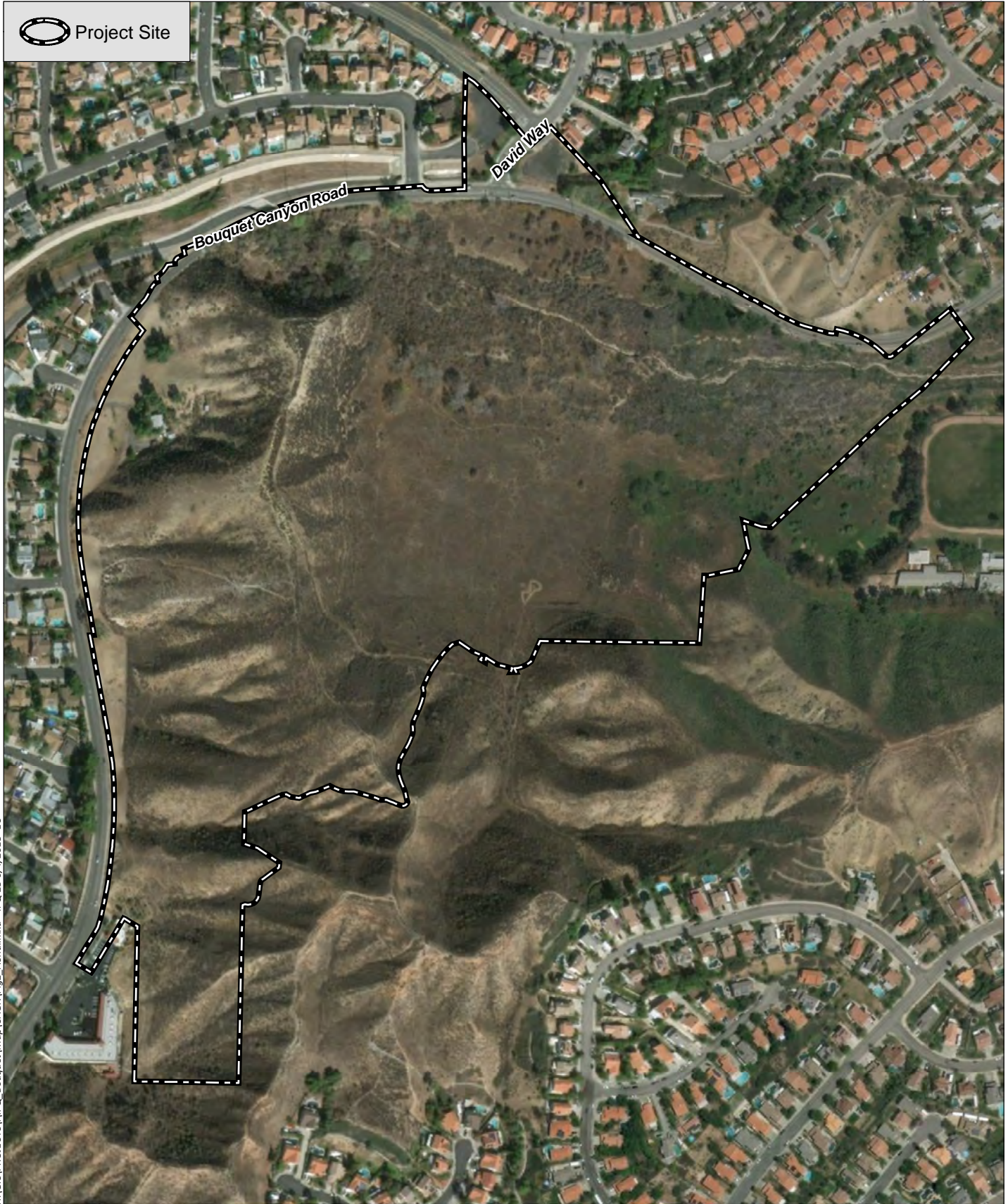




H:\GIS\PROJECTS\IPQ\_Bouquet\Map\CAGM\Fig1\_RegLocation.mxd IPQ-25 6/4/2018 -EC

Source: Base Map Layers (ESRI, 2013)

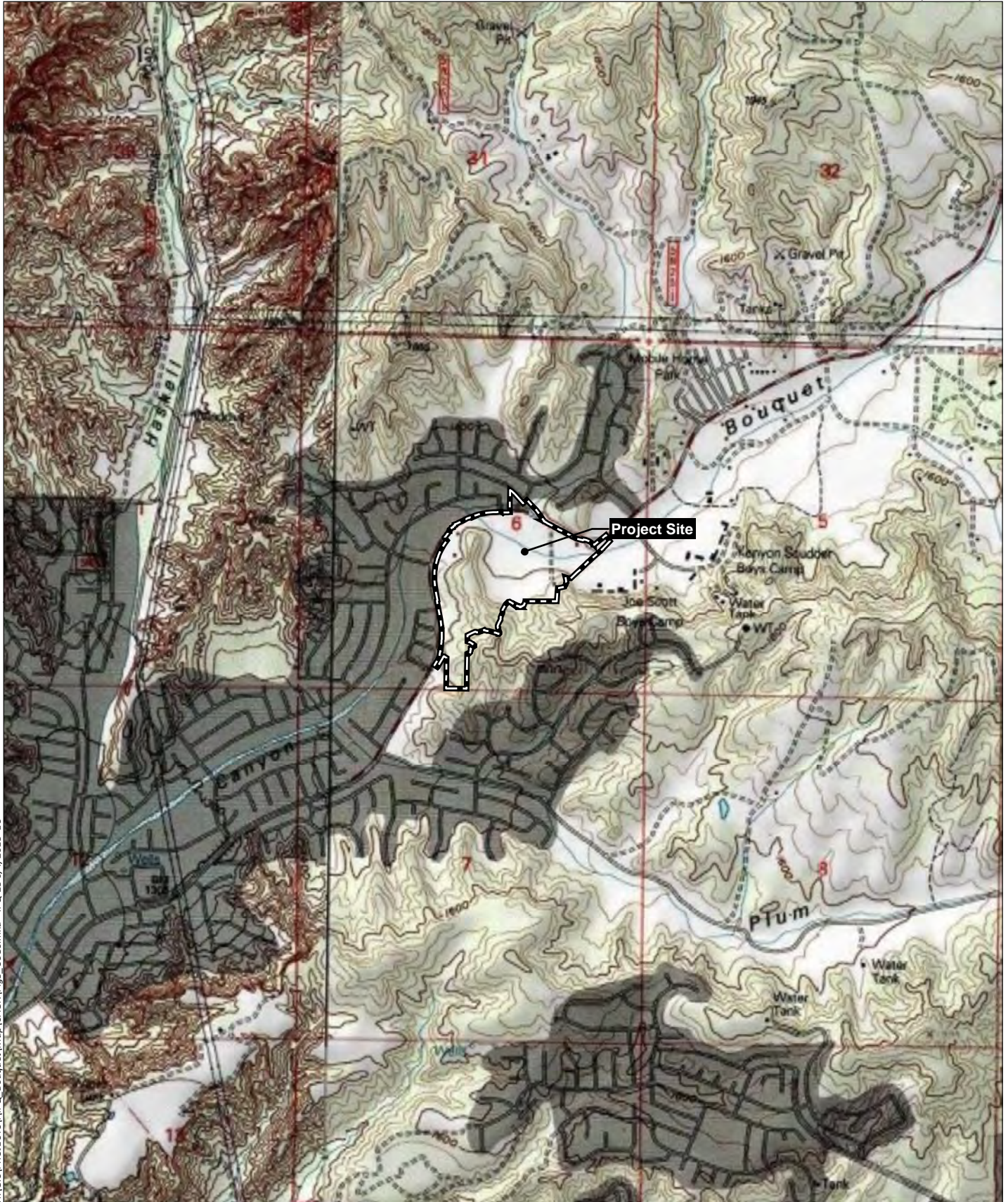




H:\GIS\PROJECTS\IPQ\_Bouquet\Map\CAGM\Fig2\_Aerial.mxd IPQ-25 6/4/2018 -EC

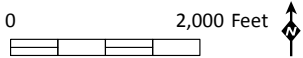
Source: Base Map Layers (NAIP, 2016)



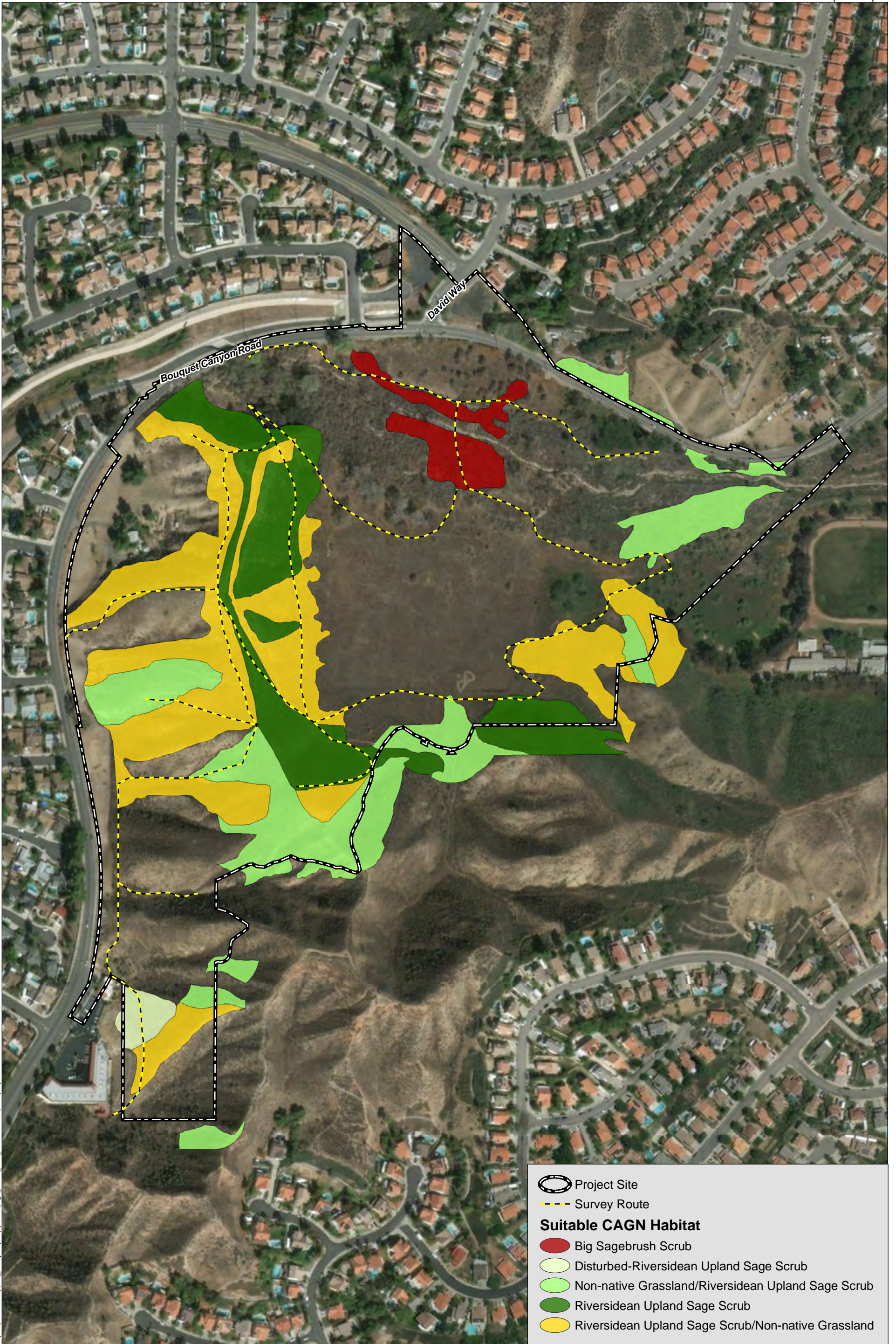


H:\GIS\PROJECTS\IPQ\_Bouquet\Map\CAGM\Fig3\_USGS.mxd IPQ-25 6/4/2018 -EC

Source: Mint Canyon 7.5' Quad (USGS)







H:\GIS\PROJECTS\I\PO\_Bouquet\Map\CAGN\Fig4\_CAGN\_Surv\_Reslt.mxd IPC-25 6/12/2018 -EC

- Project Site
- Survey Route
- Suitable CAGN Habitat**
- Big Sagebrush Scrub
- Disturbed-Riversidean Upland Sage Scrub
- Non-native Grassland/Riversidean Upland Sage Scrub
- Riversidean Upland Sage Scrub
- Riversidean Upland Sage Scrub/Non-native Grassland

Source: Base Map Layers (NAIP, 2016)



# Appendix F

---

## Representative Drainage Photographs



Photograph 1: View of the eastern portion of Bouquet Canyon Creek, facing downstream. The unvegetated river wash can be seen in the foreground and the mule fat scrub community can be seen in the distance.



Photograph 2: View of the central portion of Bouquet Canyon Creek within the study area, facing upstream. The unvegetated river wash can be seen in the foreground and the giant reed stand vegetation community can be seen along the banks.



Photograph 3: View of the western portion of Bouquet Canyon Creek within the study area, facing upstream. The giant reed stand vegetation community can be seen along the banks.



Photograph 4: View of the western most portion of Bouquet Canyon Creek within the study area, facing upstream. The giant reed stand vegetation community can be seen along the banks.

H:\GIS\PROJECTS\IPQ\_Bouquet\Map\BTR\App\_F\_DrainPhotos.indd IPQ-25 03/21/19 -EC

Note: See Figure 7 for photograph locations.

Source: HELIX 2017

# Appendix G

---

## Jurisdictional Delineation Report



# Bouquet Canyon Project

## Jurisdictional Delineation Report

September 20, 2017 | IPQ-25



---

**Ezekiel Cooley**  
Project Manager

*Prepared for:*

**Integral Communities**  
888 San Clemente Drive, Suite 100  
Newport Beach, CA 92660

*Prepared by:*

**HELIX Environmental Planning, Inc.**  
7578 El Cajon Boulevard  
La Mesa, CA 91942

# Bouquet Canyon Project

## Jurisdictional Delineation Report

*Prepared for:*

**Integral Communities**  
888 San Clemente Drive, Suite 100  
Newport Beach, CA 92660

*Prepared by:*

**HELIX Environmental Planning, Inc.**  
16485 Laguna Canyon Road, Suite 150  
Irvine, CA 92618

September 20, 2017 | IPQ-25



# TABLE OF CONTENTS

---

<b><u>Section</u></b>	<b><u>Page</u></b>
1.0 INTRODUCTION.....	1
1.1 Project Location .....	1
2.0 METHODS.....	2
2.1 U.S. Army Corps of Engineers and Regional Water Quality Control Board Jurisdiction .....	2
2.2 California Department of Fish and Wildlife Jurisdiction .....	3
3.0 RESULTS .....	4
3.1 Project Site Description .....	4
3.2 Drainage Feature Description .....	4
3.3 Vegetation communities.....	4
3.3.1 Description of Jurisdictional Habitats .....	5
3.4 Jurisdictional Summary.....	7
3.4.1 Federal Jurisdiction .....	7
3.4.2 State Jurisdiction.....	7
4.0 CONCLUSION.....	9
4.1 Federal Permitting .....	9
4.1.1 404 Permit .....	9
4.1.2 401 Certification .....	9
4.2 State Permitting .....	10
4.2.1 1602 Agreement .....	10
5.0 REFERENCES.....	11

## LIST OF APPENDICES

- A Federal Jurisdictional Information
- B State Jurisdictional Information
- C Representative Drainage Photographs

# TABLE OF CONTENTS (cont.)

---

## LIST OF FIGURES

<u>No.</u>	<u>Title</u>	<u>Follows Page</u>
1	Regional Location.....	2
2	Vicinity Map .....	2
3	Aerial Photograph .....	2
4	Soils .....	4
5	Vegetation.....	4
6	USACE Waters of the U.S. ....	8
7	CDFW Waters of the State .....	8

## LIST OF TABLES

<u>No.</u>	<u>Title</u>	<u>Page</u>
1	Vegetation Communities .....	5
2	Jurisdictional Habitats Occurring on the Study Area .....	8

## ACRONYMS AND ABBREVIATIONS

---

AMSL	Above mean sea level
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
EPA	Environmental Protection Agency
HELIX	HELIX Environmental Planning, Inc.
IP	Individual Permit
MCV	A Manual of California Vegetation
NWP	Nationwide Permit
OHWM	Ordinary high water mark
Project	Bouquet Canyon Residential Development Project
RPW	Relatively Permanent Waterbody
RWQCB	California Regional Water Quality Control Board
SAA	Stream Alteration Agreement
TNW	Traditional Navigable Waters
U.S.	United States
U.S.C.	United States Code
USGS	U.S. Geological Survey
USACE	U.S. Army Corps of Engineers
WUS	Waters of the U.S.



THIS PAGE INTENTIONALLY LEFT BLANK

# 1.0 INTRODUCTION

---

This report presents the results of a jurisdictional delineation for the proposed Bouquet Canyon Residential Development (Project), which is proposed on an approximately 56.77-acre undeveloped property located in the City of Santa Clarita, Los Angeles County, California (study area). The Project proposes a residential development, along with associated infrastructure improvements.

This delineation was conducted to identify and map existing areas within the study area that are Waters of the U.S. (WUS) under U.S. Army Corps of Engineers (USACE) jurisdiction pursuant to Section 404 of the Clean Water Act ([CWA] 33 United States Code [U.S.C.] 1344); and wetland and streambed habitats under California Department of Fish and Wildlife (CDFW) jurisdiction pursuant to Section 1600 of the California Fish and Game Code. This information is necessary to evaluate effects on jurisdictional areas and determine permit requirements for the proposed Project. This report presents HELIX Environmental Planning, Inc.'s (HELIX's) best efforts to quantify the amount of WUS and state jurisdictional habitats in the study area using the current regulations, written policies, and guidance from the agencies. The results presented here are subject to confirmation by the USACE and CDFW.

## 1.1 STUDY AREA LOCATION

The 56.77-acre study area is generally located 6.9 miles to the east of Interstate 5 and 3.8 miles to the northwest of California State Route 14 in the City of Santa Clarita (Figure 1, *Regional Location*). Specifically, the study area is located directly south of the intersection of David Way and Bouquet Canyon Road. The study area is within Section 6 of Township 4 North, Range 15 West of the Mint Canyon, California U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 2, *Vicinity Map*).

Immediate surrounding land uses include existing residential development to the north and west, a mixture of undeveloped land and residential development to the south, and undeveloped land and juvenile detention schools to the east (Figure 3, *Aerial Photograph*). The study area is located approximately 0.20 mile to the southeast of Haskell Canyon Open Space and 1.40 miles to the south of Angeles National Forest.

## 2.0 METHODS

---

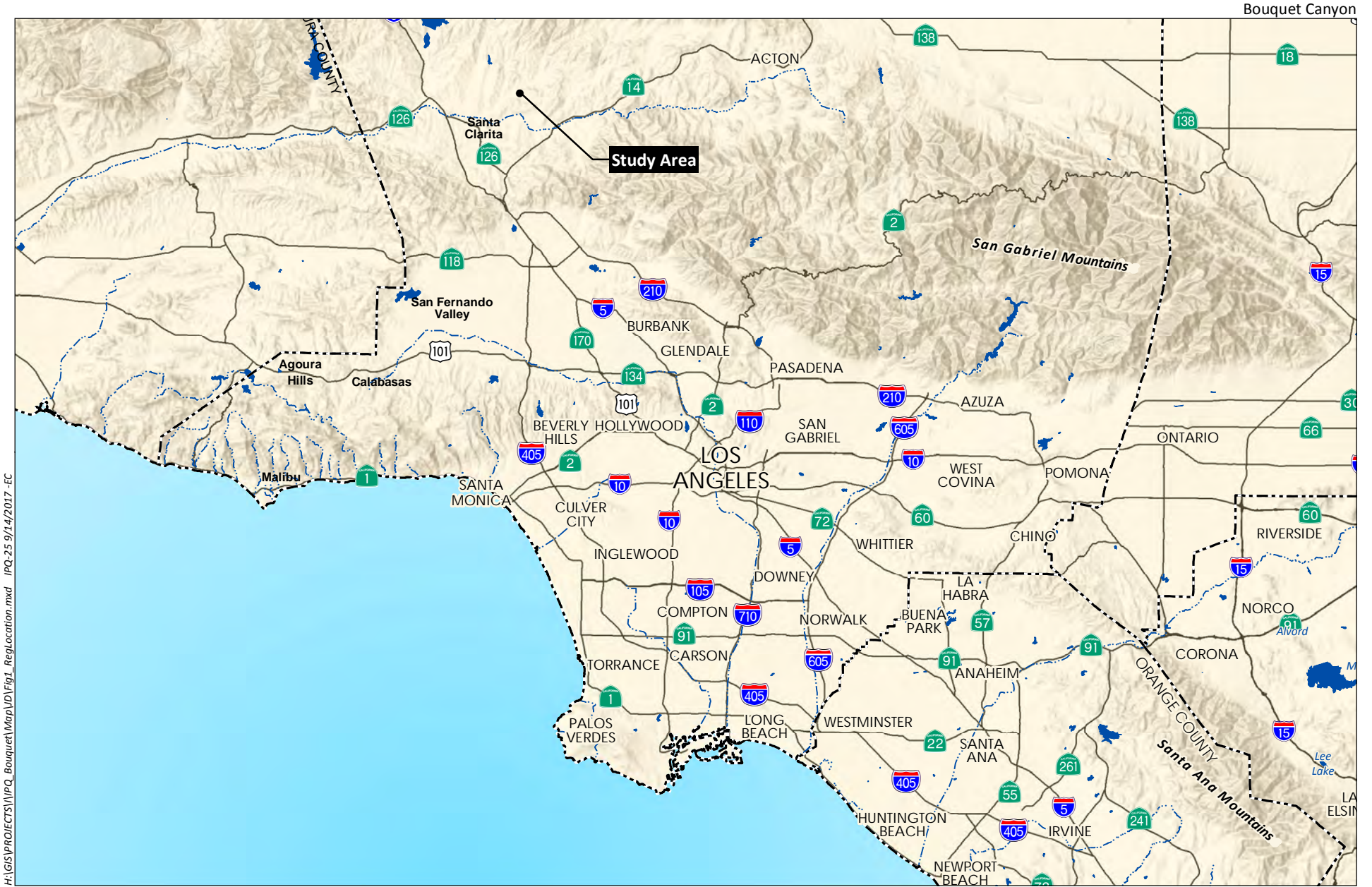
Prior to beginning fieldwork, aerial photographs (1"=75' scale), topographic maps (1"=125' scale), USGS quadrangle maps, and National Wetlands Inventory maps (U.S. Fish and Wildlife Service 2017) were reviewed to assist in determining the location of potential jurisdictional waters and wetlands in the study area. HELIX regulatory specialists Amir Morales and Ezekiel Cooley conducted the jurisdictional delineation field work on July 6, 2017. Data were collected in areas that were judged likely to support potential jurisdictional resources. Mapping of drainage features was performed in the field based on ordinary high water mark (OHWM) and other surface indications, as defined below.

### 2.1 U.S. ARMY CORPS OF ENGINEERS AND REGIONAL WATER QUALITY CONTROL BOARD JURISDICTION

Areas were determined to be potential USACE WUS wetland if the three criteria (vegetation, soils, and hydrology) established for wetland delineations, as described within the Wetlands Delineation Manual (Environmental Laboratory 1987) and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (U.S. Army Corps of Engineers [USACE] 2008a) were met. Plants were identified according to Baldwin et al. (2012), and Calflora (2017) was used to augment common names. Wetland affiliations of plant species follow the National Wetland Plant List (Lichvar et al. 2016). Soils information was taken from the Natural Resource Conservation Services' Web Soil Survey (2017). Areas were determined to be potential non-wetland WUS if there was evidence of regular surface flow (e.g., bed and bank) but either the vegetation or soils criterion was not met. Jurisdictional limits for these areas were measured according to the presence of a discernible OHWM, which is defined in 33 Code of Federal Regulations (CFR) Section 329.11 as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation; the presence of litter or debris; or other appropriate means that consider the characteristics of the surrounding areas." The USACE has issued further guidance on the OHWM (Riley 2005; USACE 2008b), which also was used for this delineation.

The results presented here are also discussed in light of court decisions (i.e., *Rapanos v. United States*, *Carabell v. United States*, and *Solid Waste Agency of Northern Cook County [SWANCC] v. USACE*), as outlined and applied by the USACE (USACE 2007; Grumbles and Woodley 2007), USACE and Environmental Protection Agency (EPA; 2007), and EPA and USACE (2007). These publications explain that the EPA and USACE will assert jurisdiction over traditional navigable waters (TNW) and tributaries to TNW that are relatively permanent water bodies (RPWs), which have year-round or continuous seasonal flow. For water bodies that are not RPWs, a significant nexus evaluation must be conducted to determine whether the non-RPW is jurisdictional. An overview of USACE wetlands and jurisdictional WUS definitions is presented in Appendix A, *Federal Jurisdictional Information*.

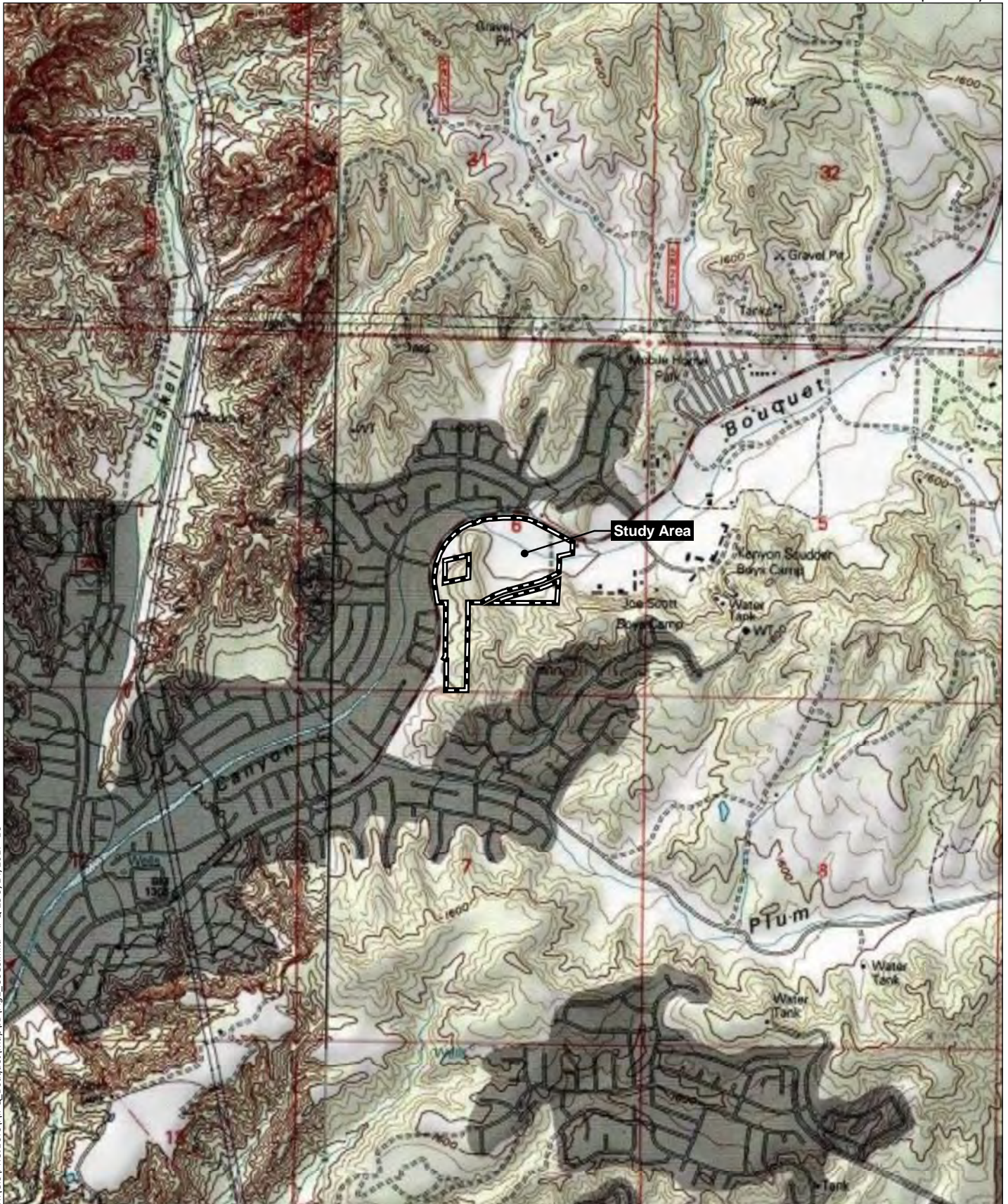
The California Regional Water Quality Control Board (RWQCB) asserts regulatory jurisdiction over activities affecting wetland and non-wetland Waters of the State pursuant to Section 401 of the CWA and the State Porter-Cologne Water Quality Control Act. Potential RWQCB jurisdiction found within the study area follows the boundaries of potential USACE jurisdiction for WUS. There are no areas supporting isolated Waters of the State subject to exclusive RWQCB jurisdiction pursuant to the State Porter-Cologne Water Quality Control Act.



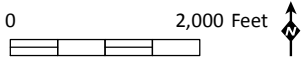
H:\GIS\PROJECTS\IPQ\_Bouquet\Map\UD\Fig1\_RegLocation.mxd IPQ-25 9/14/2017-EC

Source: Base Map Layers (ESRI, 2013)






H:\GIS\PROJECTS\IPQ\_Bouquet\Map\UD\Fig2\_USGS.mxd IPQ-25 9/14/2017-EC



Source: Mint Canyon 7.5' Quad (USGS)





 Study Area

Bouquet Canyon Road

David Way

H:\GIS\PROJECTS\IPQ\_Bouquet\Map\JD\Fig3\_Aerial.mxd IPQ-25 9/12/2017 -EC



Source: Base Map Layers (NAIP, 2016)



## 2.2 CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE JURISDICTION

The CDFW jurisdictional boundaries were determined based on the presence of riparian vegetation or regular surface flow. Streambeds within CDFW jurisdiction were delineated based on the definition of streambed as “a body of water that flows at least periodically or intermittently through a bed or channel having banks and supporting fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports riparian vegetation” (Title 14, Section 1.72). This definition for CDFW jurisdictional habitat allows for a wide variety of habitat types to be jurisdictional, including some that do not include wetland species (e.g., oak woodland and alluvial fan sage scrub). Streambed widths were measured to the nearest foot at various locations along the channel. The CDFW guidance on dryland watersheds (Vyverberg 2010) was also used to understand fluvial actions and map jurisdictional areas in the study area. Definitions of CDFW jurisdictional areas are presented in Appendix B, *State Jurisdictional Information*.

## 3.0 RESULTS

---

### 3.1 STUDY AREA DESCRIPTION

The study area is located in the foothills of the Sierra Pelona Mountains. The topography in the southern and western portions of the study area is predominantly steep hillsides, while the northern portion is primarily flat. Elevations on the study area range from approximately 1,365 feet above mean sea level (AMSL) near the northwest corner of the study area to approximately 1,520 feet above AMSL near the southeastern corner. The steep hills throughout the southern and western portions of the site are predominated by Riversidean upland sage scrub while the flatter portions of the study area are dominated by non-native grassland.

Seven soil types are mapped on the study area, including Hanford sandy loam (HcC), Metz loam sandy (MfA), Mocho loam (MpA), Ojai loam (OgF), Saugus loam (ScF2), Sorrento loam (SsA), and Yolo loam (YoC; Figure 4, *Soils*).

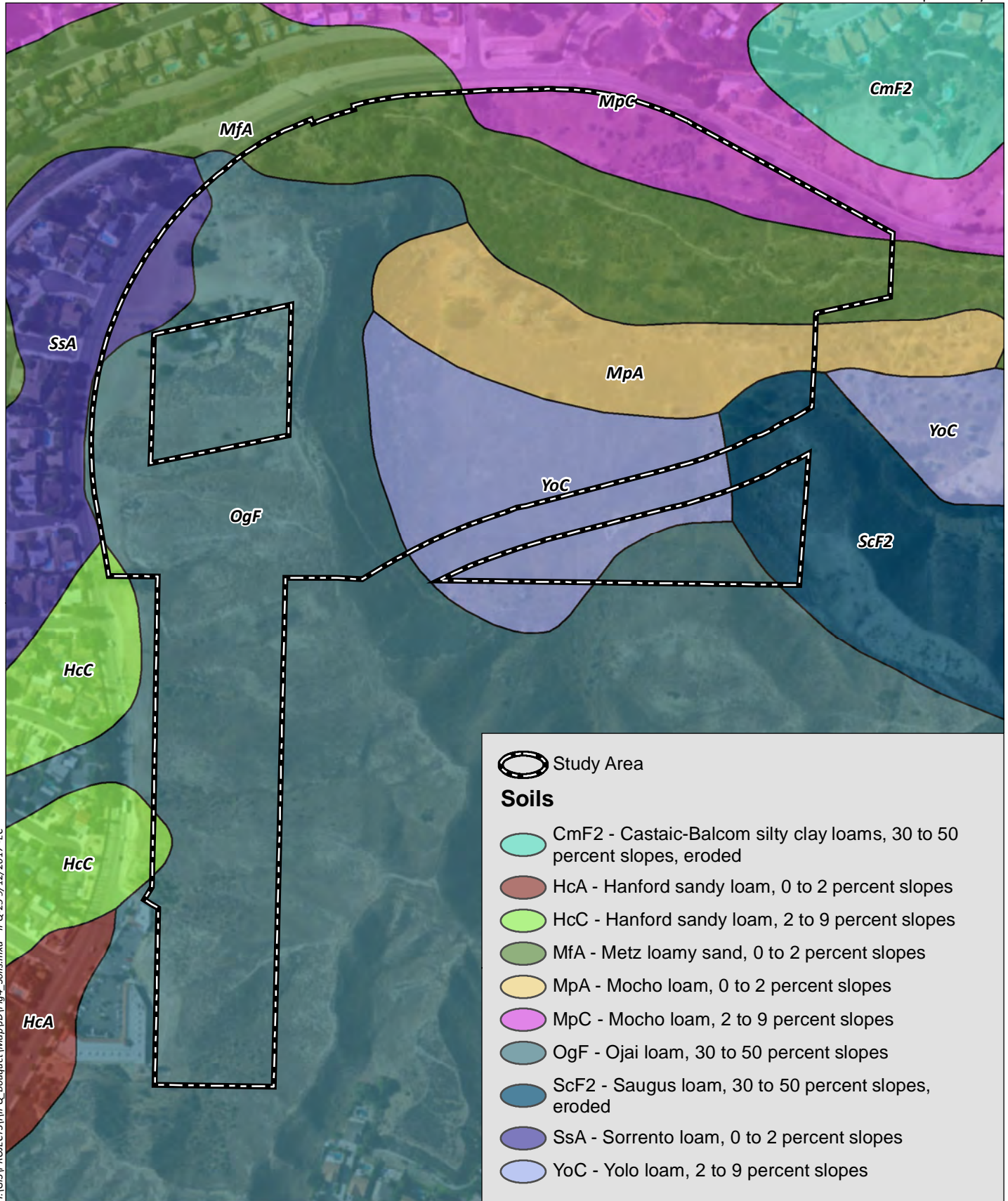
### 3.2 DRAINAGE FEATURE DESCRIPTION

Bouquet Canyon Creek, which is a blueline stream mapped by USGS, is an ephemeral drainage that runs from east to west near the northern study area boundary. The headwaters of the Bouquet Canyon drainage feature originate approximately 10 miles to the northeast of the study area in the Sierra Pelona Mountains, and non-storm related flows through the wash are often controlled via regulated releases from Bouquet Reservoir. The Bouquet Canyon streambed enters the study area at the northeastern boundary and exits at the northwestern boundary. The drainage continues under Bouquet Canyon Road at the northwestern corner of the study area boundary where the drainage has been channelized. The Bouquet Canyon drainage is a tributary to the Santa Clara River, which ultimately drains into the Pacific Ocean approximately 35 miles to the southwest of the study area. The on-site floodplain of the Bouquet Canyon drainage is infested with invasive giant reed (*Arundo donax*). Historical imagery and evidence of grinded material observed on the study area suggest giant reed removal has occurred on the study area. Bouquet Canyon supports somewhat excessively drained sandy loam of the Metz soil series. Aside from Bouquet Canyon, no other surface water feature was observed and the study area is predominantly made up of upland habitat.

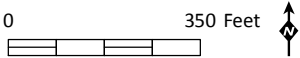
Representative photographs were taken of the drainage and are included as Appendix C, *Representative Drainage Photographs*.

### 3.3 VEGETATION COMMUNITIES

The study area supports 18 vegetation communities, which are shown on Figure 5, *Vegetation* and listed in Table 1, *Vegetation Communities*. Plant communities are classified in accordance with Holland (1986) and Oberbauer (1996). Community names consistent with A Manual of California Vegetation, Second Edition (MCV; Sawyer et al. 2009) are also provided. Sensitive habitats pursuant to CDFW's Natural Communities List (California Department of Fish and Wildlife 2010) are also identified in Table 1.

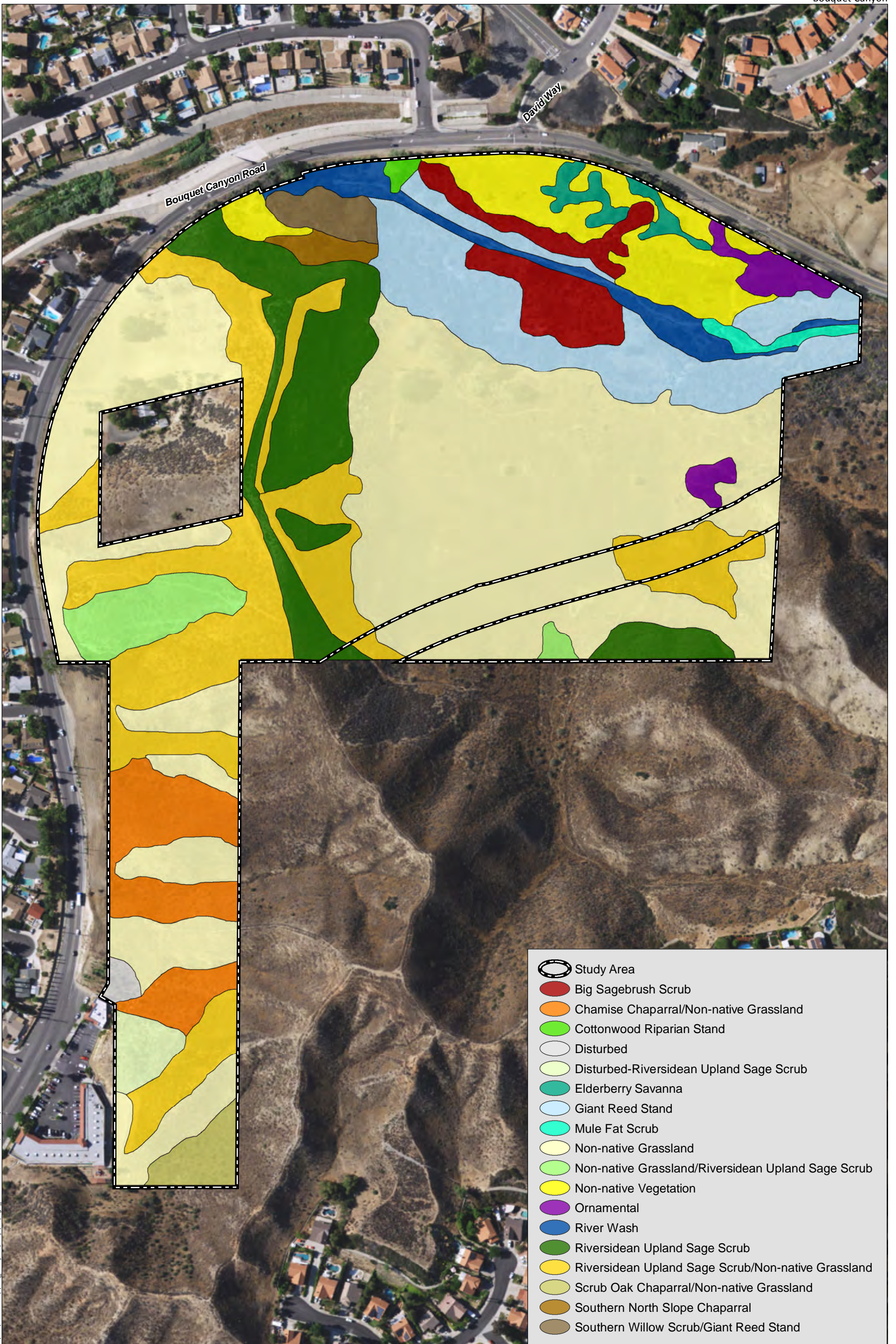


H:\GIS\PROJECTS\IPQ\_Bouquet\Map\JD\Fig4\_Soils.mxd IPQ-25 9/12/2017 -EC



Source: Base Map Layers (NAIP, 2016; NRCS, 2003)





H:\GIS\PROJECTS\IPQ\_Bouquet\Map\UD\Fig5\_PlantCom.mxd IPQ-25-9/12/2017-EC

Source: Base Map Layers (NAIP, 2016)



**Table 1**  
**VEGETATION COMMUNITIES**

Habitat Type (Holland/Oberbauer)	Habitat Type (MCV)	Acres
Big Sagebrush Scrub	Big Sagebrush	1.91
Chamise Chaparral/Non-native Grassland	Chamise Chaparral/Non-native Grassland	2.70
Cottonwood Riparian Stand	Fremont Cottonwood Forest	0.13
Elderberry Savannah	Blue Elderberry Stands <sup>1</sup>	0.56
Mule Fat Scrub	Mule Fat Thickets	0.29
Riversidean Upland Sage Scrub	California Sagebrush Scrub	4.87
Riversidean Upland Sage Scrub/Non-native Grassland	California Sagebrush Scrub/Non-native Grassland	8.86
Scrub Oak Chaparral/Non-native Grassland	Scrub Oak Chaparral/Non-native Grassland	0.67
Southern North Slope Chaparral	Tucker Oak Chaparral	0.34
Southern Willow Scrub/Giant Reed Stand	Red Willow Thickets <sup>1</sup> /Giant Reed Breaks	0.61
Disturbed	Disturbed	0.18
Disturbed-Riversidean Upland Sage Scrub	Disturbed-California Buckwheat Scrub	0.58
Giant Reed Stand	Giant Reed Breaks	5.12
Non-native Grassland	Non-native Grassland	23.02
Non-native Grassland/Riversidean Upland Sage Scrub	Non-native Grassland/California Sagebrush Scrub	1.49
Non-native Vegetation	Upland Mustards	3.30
Ornamental	Ornamental	0.78
River Wash	River Wash	1.36
	<b>TOTAL</b>	<b>56.77</b>

Source: HELIX (2017)

<sup>1</sup> These communities are considered sensitive habitats pursuant to CDFW's Natural Communities List.

### 3.3.1 Description of Jurisdictional Habitats

Potential jurisdictional habitats observed on the study area include big sagebrush scrub, cottonwood riparian stand, giant reed stand, mule fat scrub, river wash, and southern willow scrub/giant reed stand.

#### 3.3.1.1 Big Sagebrush Scrub

Big sagebrush scrub is dominated by big sagebrush (*Artemisia tridentata*). Big sagebrush scrub is typically associated with plains, alluvial fans, lower slopes, and dry washes in well-drained sandy and loamy soils. Associated species observed within this community include shadscale (*Atriplex canescens*), giant reed, Mediterranean grass (*Schismus barbatus*). Big sagebrush scrub/non-native grassland was observed along the eastern boundary of the study area.

#### 3.3.1.2 Cottonwood Riparian Stand

Cottonwood riparian stand consists of tall, open, broad-leaved, winter-deciduous cottonwood (*Populus fremontii* ssp. *fremontii*), with non-native herbaceous species and giant reed comprising the understory. Most of the understory of this community is heavily disturbed due to the community's proximity to Bouquet Canyon Road and the roads associated weed abatement activities. A small cottonwood riparian stand was observed in the northeastern portion of the study area.

### 3.3.1.3 Giant Reed Stand

Giant reed stand is completely dominated by dense stands of giant reed. Giant reed stand is associated with low-gradient streams, ditches, and coastal marshes. Giant reed is an invasive species that outcompetes native riparian species. Other scattered species observed in this community included native big sagebrush and red willow (*Salix laevigata*) and non-native foxtail chess (*Bromus madritensis* ssp. *rubens*) and short podded mustard (*Hirschfeldia incana*). Giant reed stand extends the length of the drainage atop the banks on both sides.

### 3.3.1.4 Mule Fat Scrub

Mule fat scrub is a shrubby riparian scrub community dominated by mule fat (*Baccharis salicifolia*) and interspersed with small willows (*Salix* spp.). This vegetation community occurs along stream channels with a fairly coarse substrate and moderate depth to the water table. Mule fat scrub is present in the downstream most portion of the drainage near the eastern boundary of the study area.

### 3.3.1.5 River Wash

River wash is predominately unvegetated; however, some sparse upland species and giant reed do persist in the wash. River wash is present in the most upstream portion of the drainage near the northern boundary of the study area.

### 3.3.1.6 Southern Willow Scrub/Giant Reed Stand

Southern willow scrub/giant reed stand consists of dense, broad-leaved, winter-deciduous stands of trees dominated by shrubby willows in association with mule fat, and also contains scattered stands of giant reed. This vegetation community occurs on loose, sandy or fine gravelly alluvium deposited near stream channels during flood flows (Holland 1986). Southern willow scrub/giant reed stand is present in the most upstream portion of the drainage near the northern boundary of the study area.

### 3.3.1.7 Riversidean Upland Sage Scrub

Riversidean sage scrub is the most xeric expression of coastal sage scrub south of Point Conception, California. Typical stands are fairly open and dominated by California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum* ssp. *fasciculatum*), and foxtail chess, each attaining at least 20 percent cover. Riversidean sage scrub is typically found on xeric sites such as steep slopes, severely drained soils, or clays that release stored soil moisture only slowly. Intergrades at slightly higher elevations with several southern Californian chaparrals. Characteristic species of Riversidean upland sage scrub in the study area include California buckwheat, California sagebrush, and black sage (*Salvia melifera*), with a sparse understory of non-native grasses.

### 3.3.1.8 Southern North Slope Chaparral

Southern north slope chaparral is a dense, evergreen chaparral up to 20 feet tall, dominated by scrub oak (*Quercus berberidifolia*). Southern north slope chaparral occurs in somewhat more mesic areas than many other chaparrals, such as north facing slopes, and recovers more rapidly from fires than other chaparrals due to resprouting capabilities of scrub oak (Holland 1986; Keeley and Keeley 1988).



Characteristic species of southern north slope chaparral in the study area include scrub oak, with an understory of non-native grasses.

### 3.3.1.9 Non-native Vegetation

Non-native vegetation includes land containing a preponderance of non-native plant species such as ornamentals or ruderal exotic species that take advantage of disturbance (previously cleared or abandoned landscaping), or land showing signs of past or present animal usage. Characteristic species of non-native vegetation in the study area include short podded mustard, foxtail chess, and Mediterranean grass.

### 3.3.1.10 Non-native Grassland

Non-native grassland is a dense to sparse cover of annual grasses, sometimes associated with native annual forbs. Most of the species that occur in non-native grassland originated from the Mediterranean region, an area with a long history of agriculture and a climate similar to California. Characteristic species of non-native grassland in the study area include oats (*Avena* sp.), bromes (*Bromus* spp.), and mustards (*Brassica* spp.).

## 3.4 JURISDICTIONAL SUMMARY

### 3.4.1 Federal Jurisdiction

Areas under USACE jurisdiction within the study area consist of a total of 0.35 acre of non-wetland WUS ephemeral streams (Figure 6, *USACE Waters of the U.S.*; Table 2, *Jurisdictional Habitats Occurring on the Study Area*).

### 3.4.2 State Jurisdiction

Areas under CDFW jurisdiction within the study area total 8.14 acres, including 0.57 acre of big sagebrush scrub, 0.11 acre of cottonwood riparian stand, 4.09 acres of giant reed stand, 0.29 acre of mule fat scrub, 0.68 acre of non-native grassland, 0.35 acre of non-native vegetation, 0.01 acre of Riverisdean upland sage scrub, 1.20 acre of river wash, 0.26 acre of southern north slope chaparral, and 0.58 acre of southern willow scrub/giant reed stand (Figure 7, *CDFW Waters of the State*; Table 2).



**Table 2**  
**JURISDICTIONAL HABITATS OCCURRING ON THE STUDY AREA**

<b>Habitat</b>	<b>CDFW (Acres)<sup>1</sup></b>	<b>USACE/RWQCB (Acres)<sup>1</sup></b>
Big Sagebrush Scrub	0.57	<0.01
Cottonwood Riparian Stand	0.11	<0.01
Giant Reed Stand	4.09	0.00
Mule Fat Scrub	0.29	0.07
Non-native Grassland	0.68	0.00
Non-native Vegetation	0.35	0.00
Riversidean Upland Sage Scrub	0.01	0.00
River Wash	1.20	0.27
Southern North Slope Chaparral	0.26	0.00
Southern Willow Scrub/Giant Reed Stand	0.58	0.00
<b>TOTAL</b>	<b>8.14</b>	<b>0.35</b>

Source: HELIX (2017)

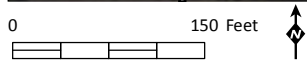
<sup>1</sup> Acres are rounded to the nearest hundredth.



 Study Area  
 USACE/RWQCB Jurisdiction



H:\GIS\PROJECTS\IPG\_Bouquet\Map\ID\Fig6\_USACE.mxd IPQ-25-9-14\2017-EC



Source: Base Map Layers (NAIP, 2016)





H:\GIS\PROJECTS\IPQ\_Bouquet\Map\JD\Fig7\_CDFW.mxd IPQ-25 9/14/2017 - EC



Source: Base Map Layers (NAIP, 2016)



## 4.0 CONCLUSION

---

### 4.1 FEDERAL PERMITTING

Federal jurisdictional areas occurring within the study area total 0.35 acre. Impacts to WUS are regulated by the USACE under Section 404 of the CWA (33 U.S.C. 401 et seq.; 33 U.S.C. 1344; U.S.C. 1413; and U.S. Department of Defense, Department of the Army, USACE 33 CFR Part 323). A federal CWA Section 404 Permit would be required for the proposed Project. A CWA Section 401 Water Quality Certification administered by the RWQCB must be issued prior to any 404 Permit.

Projects may be permitted on an individual basis or may be covered under one of several approved Nationwide Permits (NWP), which is based on the type of action, amount of fill, and size and length of impact. Individual Permits (IPs) typically require substantial time (often longer than 12 months) to review and approve, while NWPs are pre-approved if a project meets appropriate conditions.

#### 4.1.1 404 Permit

A CWA Section 404 Permit is required by the USACE for impacts to WUS. The type of 404 Permit required from the USACE would depend primarily on the quantity of jurisdictional areas to be impacted. If the Project affects less than 0.5 acre of jurisdictional areas, it may qualify for a NWP 29 for residential developments under current regulations. The NWP's are pre-issued permits for certain activities resulting in no more than minimal adverse effects to USACE jurisdictional streambeds. If implementation of the Project on the study area would impact less than 0.5 acre of jurisdictional areas but exceed the 300-foot threshold for linear streambed impacts under NWP 29, an IP could be required if USACE does not grant a waiver of the 300-foot limit for the Project. Based on the preliminary site plan, our sense is that a NWP may be obtainable if unavoidable impacts to USACE waters are required. An IP application generally takes significantly longer to process than a NWP and requires preparation of a biological assessment, a detailed Section 404(b)(1) on- and off-site alternatives analysis, an environmental assessment, and issuance of a public notice.

#### 4.1.2 401 Certification

A 401 Water Quality Certification (Certification) is required by the RWQCB for impacts to Waters of the State. The 401 Certification is tied to the 404 Permit, and the 404 Permit cannot be issued until the 401 Certification is issued. The 401 Certification cannot be issued until the adopted or certified California Environmental Quality Act (CEQA) document is completed by the lead CEQA agency. In HELIX's experience, RWQCB is one of the most challenging regulatory agencies to obtain a regulatory permit from, as the 401 Certification evaluates impacts to jurisdictional WUS and Waters of the State, and also ensures that adequate pre- and post-construction water quality measures are implemented by a proposed project. Early planning and coordination between the design engineer and regulatory consultant is highly recommended to minimize impacts to RWQCB jurisdiction, ensure adequate water quality measures, and determine potential mitigation obligations.

## 4.2 STATE PERMITTING

The CDFW jurisdictional areas occurring within the study area total 8.14 acres, including 0.57 acre of big sagebrush scrub, 0.11 acre of cottonwood riparian stand, 4.09 acres of giant reed stand, 0.29 acre of mule fat scrub, 0.68 acre of non-native grassland, 0.35 acre of non-native vegetation, 0.01 acre of Riverisdean upland sage scrub, 1.20 acre of river wash, 0.26 acre of southern north slope chaparral, and 0.58 acre of southern willow scrub/giant reed stand. The CDFW regulates alterations or impacts to streambeds or lakes under California Fish and Game Code 1602 and requires a Streambed Alteration Agreement (SAA) for projects that will divert or obstruct the natural flow of water; change the bed, channel, or bank of any stream; or use any material from a streambed. The SAA is a contract between the applicant and CDFW that includes reasonable measures necessary to protect the resource (California Association of Resource Conservation Districts 2002). Any impacts to CDFW habitat would be regulated under California Fish and Game Code 1602 (Appendix B) and require an SAA.

### 4.2.1 1602 Agreement

Notification of Lake or Streambed Alteration is required to CDFW for impacts to jurisdictional streambed and riparian habitat. For projects with minor minimal streambed impacts, CDFW may waive their right to issue a formal SAA and issue an Operation of Law authorization, which requires compliance with the terms proposed as part of the SAA notification. For projects in which CDFW takes action and requires a SAA, the SAA cannot be issued until the certified CEQA document or determination is completed by the lead CEQA agency.



## 5.0 REFERENCES

---

- Baldwin, B.G., Goldman, D.H., Keil D.J., Patterson R., Rosatti, T.J. and Wilken, D.H. (eds.). 2012. The Jepson Manual: Vascular Plants of California. Second edition. Berkeley, CA: University of California Press. 1,568 pp.
- Calflora. 2017. Search for Plants. Available from: <http://www.calflora.org/>. Accessed June 21, 2017.
- California Association of Resource Conservation Districts. 2002. Guide to Watershed Project Permitting for the State of California. URL: <http://www.carcd.org/permitting/pguide.pdf>
- California Department of Fish and Wildlife. 2010. Natural Communities List. The Vegetation Classification and Mapping Program. California Department of Fish and Wildlife: Wildlife & Habitat Data Analysis Branch. Sacramento, California. September.
- Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. 100 pp. with Appendices.
- Grumbles, B.H. and J.P. Woodley, Jr. 2007. Memorandum: Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States and Carabell v. United States. June 5. 12 pp.
- Holland R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Nongame-Heritage Program, State of California, Department of Fish and Game, Sacramento, 156 pp.
- Keeley, J. and S. Keeley. 1988. Chaparral. In. M. Barbour and W. Billings (eds). North American Vegetation. Cambridge University Press. pp.165-207.
- Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. Arid West 2016 Regional Wetland Plant List. Phytoneuron 2016-30: 1-17. April 28. Available from: [http://wetland\\_plants.usace.army.mil/](http://wetland_plants.usace.army.mil/)
- National Resource Conservation Service. 2017. Web Soil Survey. Available from: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>. Accessed June 21, 2017.
- Oberbauer, T. 1996. Terrestrial vegetation communities in San Diego County based on Holland's Descriptions, San Diego Association of Governments, San Diego, CA.
- Riley, D.T. 2005. Ordinary high water mark. RGL No. 05-05. 4 p.
- Sawyer, J.O., T. Keeler-Wolf, and J. Evens. 2009. A manual of California vegetation. 2nd Ed. Sacramento: California Native Plant Society.

U.S. Army Corps of Engineers (USACE). 2008a. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). Eds. J.S. Wakely, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-06-16. Vicksburg, MS: U.S. Army Engineer Research and Development Center. September.

2008b. A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States. R.W. Lichvar and S.M. McColley. ERDC/EL TR-08-12. Hanover, NH. U.S. Army Engineer Research and Development Center. August.

2007. Questions and Answers for Rapanos and Carabell Decisions. June 5. 21 pp.

--- and EPA. 2007. Jurisdictional Determination Form Instructional Guidebook. May 30. 60 pp.

U.S. Environmental Protection Agency (EPA) and USACE. 2007. Joint Guidance to Sustain Wetlands Protection under Supreme Court Decision. 2 pp.

U.S. Fish and Wildlife Service. 2017. National Wetlands Inventory. Available from: <https://www.fws.gov/wetlands/data/google-earth.html>. Accessed September 12, 2017.

U.S. Geological Survey (USGS). 2017. National Hydrography Dataset. Available from: [http://nhd.usgs.gov/NHD\\_High\\_Resolution.html](http://nhd.usgs.gov/NHD_High_Resolution.html).

Vyverberg, K. 2010. A Review of Stream Processes and Forms in Dryland Watersheds. California Department of the Fish & Game. December. 32 pp.

# Appendix A

---

## Federal Jurisdictional Information

Appendix A  
Federal Jurisdictional Information

# WETLANDS AND “WATERS OF THE U.S.” DEFINITIONS

---

## WETLANDS

The U.S. Army Corps of Engineers (USACE; 33 CFR 328.3) and the Environmental Protection Agency (EPA; 40 CFR 230.3) jointly define wetlands as “[t]hose areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (Environmental Laboratory 1987).

## WATERS OF THE U.S.

The official definition of “Waters of the U.S.” and their limits of jurisdiction (as they may apply) are defined by the USACE’ Regulatory Program Regulations (33 CFR 328.3, paragraphs [a] 1-3 and [e], and Section 328.4, paragraphs [c] 1 and 2) as follows:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters,
  - i. which are or could be used by interstate or foreign travelers for recreation or other purposes; or
  - ii. from which fish or shellfish are or could be taken and sold in interstate commerce; or
  - iii. which are used or could be used for industrial purpose by industries in interstate commerce;
4. All impoundments of waters otherwise defined as waters of the United States under the definition;
5. Tributaries of waters;
6. The territorial seas;
7. Wetlands adjacent to waters (other than waters that are themselves wetlands)...

## Appendix A (cont.) Federal Jurisdictional Information

### NON-TIDAL WATERS OF THE U.S.

The limits of jurisdiction in non-tidal waters: In the absence of adjacent wetlands, the jurisdiction extends to the OHWM, or when adjacent wetlands are present, the jurisdiction extends to the limit of the adjacent wetlands.

The term OHWM refers to that line on the shore established by the fluctuation of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation (scouring), the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Waters of the U.S. must exhibit an OHWM or other evidence of surface flow created by hydrologic physical changes. These physical changes include (Riley 2005):

- Natural line impressed on the bank
- Shelving
- Changes in the character of soil
- Destruction of terrestrial vegetation
- Presence of litter and debris
- Wracking
- Vegetation matted down, bent, or absent
- Sediment sorting
- Leaf litter disturbed or washed away
- Scour
- Deposition
- Multiple observed flow events
- Bed and banks
- Water staining
- Change in plant community

Further guidance on identifying the OHWM in the Arid Southwest (Lichvar and McColley 2008). This publication provided geomorphic and vegetation OHWM indicators specific to the Arid Southwest.

Jurisdictional areas also must be connected to Waters of the U.S. (Guzy and Anderson 2001; U.S. Supreme Court 2001).

As a consequence of the U.S. Supreme Court decision in *Rapanos v. United States*, a memorandum was developed regarding Clean Water Act jurisdiction (Grumbles and Woodley 2007). The memorandum states that the EPA and the USACE will assert jurisdiction over traditional navigable waters (TNW), wetlands adjacent to TNW, tributaries to TNWs that are a relatively permanent water body (RPW), and wetlands adjacent to TNW. An RPW has year-round flow or a continuous seasonal flow (i.e., typically for three months or longer). Jurisdiction over other waters (i.e., non TNW and RPW) will be based on a fact-specific analysis to determine if they have a significant nexus to a TNW.

Pursuant to the USACE Instructional Guidebook (USACE and EPA 2007), the significant nexus evaluation will cover the subject reach of the stream (upstream and downstream) as well as its adjacent wetlands (Illustrations 2 through 6, USACE and EPA 2007). The evaluation will include the flow characteristics,

## Appendix A (cont.) Federal Jurisdictional Information

annual precipitation, ability to provide habitat for aquatic species, ability to retain floodwaters and filter pollutants, and proximity of the subject reach to a TNW, drainage area, and the watershed.

### WETLAND CRITERIA

Wetland boundaries are determined using three mandatory criteria (hydrophytic vegetation, wetland hydrology, and hydric soil) established for wetland delineations and described within the Wetlands Delineation Manual (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008). Following is a brief discussion of the three criteria and how they are evaluated.

#### Vegetation

“Hydrophytic vegetation is defined herein as the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present” (Environmental Laboratory 1987).

The wetland indicator status (obligate upland, facultative upland, facultative, facultative wetland, obligate wetland, or no indicator status) of the dominant plant species of all vegetative layers is determined. Species considered to be hydrophytic include the classifications of facultative, facultative wetland, and obligate wetland as defined in the current list of wetland plants of the Arid Southwest (Lichvar, et al. 2016; Table A-1). The percent of dominant wetland plant species is calculated. The hydrophytic vegetation criterion is considered to be met if it meets the “Dominance Test,” “Prevalence Index,” or the vegetation has morphological adaptations for prolonged inundation.

**Table A-1  
DEFINITIONS OF PLANT INDICATOR CATEGORIES**

Indicator Categories	Abbreviation	Qualitative Description
Obligate	OBL	Almost always occur in wetlands
Facultative Wetland	FACW	Usually occur in wetlands but may occur in non-wetlands
Facultative	FAC	Occur in wetlands and non-wetlands
Facultative Upland	FACU	Usually occur in non-wetlands but may occur in wetlands
Upland	UPL	Almost never occur in wetlands

#### Hydrology

“The term ‘wetland hydrology’ encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic reducing conditions, respectively” (Environmental Laboratory 1987).

Hydrologic characteristics must indicate that the ground is saturated to within 12 inches of the surface for at least five percent of the growing season during a normal rainfall year (approximately 18 days for most of low-lying southern California). Hydrology criteria are evaluated based on the characteristics



## Appendix A (cont.) Federal Jurisdictional Information

listed below (USACE 2008). Where positive indicators of wetland hydrology are present, the limit of the OHWM (or the limit of adjacent wetlands) is noted and mapped. Evidence of wetland hydrology is met by the presence of a single primary indicator or two secondary indicators.

### Primary

- surface water (A1)
- high water table (A2)
- saturation (A3)
- water marks (B1; non-riverine)
- sediment deposits (B2; non-riverine)
- drift deposits (B3; non-riverine)
- surface soil cracks (B6)
- inundation visible on aerial imagery (B7)
- water-stained leaves (B9)
- salt crust (B11)
- biotic crust (B12)
- aquatic invertebrates (B13)
- hydrogen sulfide odor (C1)
- oxidized rhizospheres along living roots (C3)
- presence of reduced iron (C4)
- recent iron reduction in tilled soils (C6)
- thin muck surface (C7)

### Secondary

- watermarks (B1; riverine)
- sediment deposits (B2; riverine)
- drift deposits (B3; riverine)
- drainage patterns (B10)
- dry-season water table (C2)
- crayfish burrows (C8)
- saturation visible on aerial imagery (C9)
- shallow aquitard (D3)
- FAC-neutral test (D5)

In the absence of all other hydrologic indicators and in the absence of significant modifications of an area's hydrologic function, positive hydric soil characteristics are assumed to indicate positive wetland hydrology. This assumption applies unless the site visit was done during the wet season of a normal or wetter-than-normal year. Under those circumstances, wetland hydrology would not be present.

### Soils

The USACE and EPA, in their administration of Section 404 of the Clean Water Act, rely on the National Technical Committee for Hydric Soils (NTCHS) for a definition of hydric soils. According to the NTCHS, "A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part." (Federal Register 1994)

## Appendix A (cont.) Federal Jurisdictional Information

Soils must exhibit physical and/or chemical characteristics indicative of permanent or periodic saturation. Soil matrix and mottle colors are identified at each sampling plot using a Munsell soil color chart (Kollmorgen 1994). Generally, an 18-inch or deeper pit is excavated with a shovel at each sampling plot unless refusal occurs above 18 inches.

Soils in each area are closely examined for hydric soil indicators, including the characteristics listed below. Hydric soil indicators are presented in three groups. Indicators for “All Soils” (A) are used in any soil regardless of texture, indicators for “Sandy Soils” (S) area used in soil layers with USDA textures of loamy fine sand or coarser, and indicators for “Loamy and Clayey Soils” (F) are used with soil layers of loamy very fine sand and finer (USACE 2008 and Vasiliadis et al. 2017).

- histosols (A1)
- histic epipedons (A2)
- black histic (A3)
- hydrogen sulfide (A4)
- stratified layers (A5)
- 1 cm muck (A9)
- depleted below dark surface (A11)
- thick dark surface (A12)
- sandy mucky mineral (S1)
- sandy gleyed matrix (S4)
- sandy redox (S5)
- stripped matrix (S6)
- loamy mucky mineral (F1)
- loamy gleyed matrix (F2)
- depleted matrix (F3)
- redox dark surface (F6)
- depleted dark surface (F7)
- redox depressions (F8)
- vernal pools (F9)
- 2 cm muck (A10)
- reduced vertic (F18)
- red parent material (TF2)

Hydric soils may be assumed to be present in plant communities that have complete dominance of obligate or facultative wetland species. In some cases, there is only inundation during the growing season and determination must be made by direct observation during that season, recorded hydrologic data, testimony of reliable persons, and/or indication on aerial photographs.

### NON-WETLAND WATERS OF THE U.S.

The non-wetland Waters of the U.S. designation is met when an area has periodic surface flows but lacks sufficient indicators to meet the hydrophytic vegetation and/or hydric soils criteria. For purposes of delineation and jurisdictional designation, the non-wetland Waters of the U.S. boundary in non-tidal areas is the OHWM as described in the Section 404 regulations (33 CFR Part 328).

## Appendix A (cont.) Federal Jurisdictional Information

### U.S. Geological Survey Mapping

The U.S. Geological Survey (USGS) quad maps are one of the resources used to aid in the identification and mapping of jurisdictional areas. Their primary uses include understanding the subregional landscape position of a site, major topographical features, and a project's position in the watershed.

In our experience, the designation of watercourse as a blue-line stream (intermittent or perennial) on USGS maps has been unreliable and typically overstates the hydrology of most streams. This has also been the experience of others, including the late Dr. Luna Leopold. Dr. Leopold was a hydrologist with USGS from 1952 to 1972, professor in the Department of Geology and Geophysics and Department of Landscape Architecture, University of California, Berkeley from 1972 to 1986, and Professor Emeritus from 1987 until his death in 2006. In regard to USGS maps, Dr. Leopold wrote, "I tried to devise a way of defining hydrologic criteria for the channels shown on topographic maps and developed some promising procedures. None were acceptable to the topographers, however. I learned that the blue lines on a map are drawn by non-professional, low-salaried personnel. In actual fact, they are drawn to fit a rather personalized aesthetic" (Leopold 1994).

**Appendix A (cont.)**  
**Federal Jurisdictional Information**

## REFERENCES

---

- Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Technical report Y-87-1. Vicksburg (MS): U.S. Army Engineer Waterways Experiment Station. 100 p. with Appendices.
- Federal Register. 1994. Changes in hydric soils of the United States. July 13.
- Grumbles, B.H. and J.P. Woodley, Jr. 2007. Memorandum: Clean Water Act jurisdiction following the U.S. Supreme Court's decision in Rapanos v. United States & Carabell v. United States. June 5. 12 p.
- Guzy, G.S. and R.M. Anderson. 2001. Memorandum: Supreme Court Ruling concerning CWA jurisdiction over isolated waters. U.S. Environmental Protection Agency and U.S. Army Corps of Engineers.
- Kollmorgen Instruments Corporation. 1994. Munsell Soil Color Charts. Rev. ed. Baltimore (MD).
- Leopold, L.B. 1994. A View of the river. Cambridge (MA): Harvard University Press. 298 p.
- Lichvar, R., D. Banks, W. Kirchner, and N. Melvin. 2016. The National Wetland Plant List: Update of Wetland Ratings. Phytoneuron 2016-30: 1 – 17. 28 April. Available from: [http://wetland-plants.usace.army.mil/nwpl\\_static/index.html](http://wetland-plants.usace.army.mil/nwpl_static/index.html)
- Lichvar, R. and S. McColley. 2008. 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. August. 68 p. plus Appendices.
- Riley, D.T. 2005. Ordinary high water mark. RGL No. 05-05. 4 p.
- U.S. Army Corps of Engineers (USACE). 2008. Regional supplement to the Corps of Engineers wetland delineation manual: arid west region. 2<sup>nd</sup> ver. Eds. J.S. Wakely, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-06-16. Vicksburg (MS): U.S. Army Engineer Research and Development Center. September.
- U.S. Army Corps of Engineers (USACE) and the Environmental Protection Agency (EPA). 2007. U.S. Army Corps of Engineers jurisdictional determination form instructional guidebook. U.S. Army Corps of Engineers. May 30. 60 p.
- U.S. Supreme Court. 2001. Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers, No. 99-1178 (SWANCC). January 9.
- Vasilias, L., G. Hurt, J Berkowitz, ed. 2017. Field Indicators of Hydric Soils in the United States, A Guide for Identifying and Delineating Hydric Soils, v 8.1. Natural Resources Conservation Service, in cooperation with the National Technical Committee for Hydric Soils. 32 pp, plus appendices.

THIS PAGE INTENTIONALLY LEFT BLANK

# Appendix B

---

## State Jurisdictional Information



# CALIFORNIA FISH AND WILDLIFE REGULATIONS

---

The California Department of Fish and Wildlife (CDFW) regulates alterations or impacts to streambeds or lakes (wetlands) under Fish and Game Code Sections 1600 through 1616 for any private, state, or local government or public utility-initiated projects. The Fish and Game Code Section 1602 requires any entity to notify the CDFW before beginning any activity that will do one or more of the following: (1) substantially obstruct or divert the natural flow of a river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake. Fish and Game Code Section 1602 applies to all perennial, intermittent, and ephemeral rivers and streams as well as lakes in the state.

In order to notify the CDFW, a person, state, or local governmental agency or public utility must submit a complete notification package and fee to the CDFW regional office that serves the county where the activity will take place (CDFW 2016). A fee schedule is included in the notification package materials. Under the Permit Streamlining Act (Government Code Sections 65920 et seq.), the CDFW has 30 days to determine whether the package is complete. If the requestor is not notified within 30 days, the application is automatically deemed to be complete.

Once the notification package is deemed to be complete, the CDFW will determine whether the applicant will need a Lake or Streambed Alteration Agreement (SAA) for the activity, which will be required if the activity could substantially adversely affect an existing fish and wildlife resource. If an SAA is required, the CDFW will conduct an on-site inspection, if necessary, and submit a draft SAA that will include measures to protect fish and wildlife resources while conducting the project. If the applicant is applying for a regular SAA (less than five years), the CDFW will submit a draft SAA within 60 calendar days after notification is deemed complete. The 60-day time period does not apply to notifications for long-term SAAs (greater than five years).

After the applicant receives the SAA, the applicant has 30 calendar days to notify the CDFW whether the measures in the draft SAA are acceptable. If the applicant agrees with the measures included in the draft SAA, the applicant will need to sign the SAA and submit it to the CDFW. If the applicant disagrees with any measures in the draft SAA, the applicant must notify the CDFW in writing and specify the measures that are not acceptable. Upon written request, the CDFW will meet with the applicant within 14 calendar days of receiving the request to resolve the disagreement. If the applicant fails to respond in writing within 90 calendar days of receiving the draft SAA, the CDFW may withdraw that SAA. The time periods described above may be extended at any time by mutual agreement.

After the CDFW receives the signed draft SAA, the CDFW will make it final by signing the SAA; however, the CDFW will not sign the SAA until it both receives the notification fee and ensures that the SAA complies with the California Environmental Quality Act (Public Resources Code Section 21000 et seq.). After the applicant receives the final agreement, the applicant may begin the project, provided that the applicant has obtained any other necessary federal, state, and/or local authorizations.

# WATER RESOURCE CONTROL BOARD REGULATIONS

---

## SECTION 401 WATER QUALITY CERTIFICATION

Whenever a project requires a federal Clean Water Act (CWA) Section 404 permit or a Rivers and Harbors Act Section 10 permit, it must first obtain a CWA Section 401 Water Quality Certification. The Regional Water Quality Control Board (RWQCB) administers the 401 Certification program. Federal CWA Section 401 requires that every applicant for a Section 404 permit must request a Water Quality Certification that the proposed activity will not violate state and federal water quality standards.

## PORTER-COLOGNE WATER QUALITY CONTROL ACT

The State Water Resource Control Board (SWRCB) and the RWQCB regulate the discharge of waste to waters of the State via the 1969 Porter-Cologne Water Quality Control Act (Porter-Cologne) as described in the California Water Code (SWRCB 2017). The California Water Code is the State's version of the federal CWA. Waste, according to the California Water Code, includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal. State waters that are not federal waters may be regulated under Porter-Cologne. A Report of Waste Discharge must be filed with the RWQCB for projects that result in discharge of waste into waters of the State. The RWQCB will issue Waste Discharge Requirements (WDRs) or a waiver. The WDRs are the Porter-Cologne version of a CWA 401 Water Quality Certification.

Appendix B (cont.)  
State Jurisdictional Information

## REFERENCES

---

California Department of Fish and Wildlife (CDFW). 2016. Notification of Lake or Streambed Alteration, Notification Instructions and Process.

Available from: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=3773&inline>

State Water Resources Control Board. 2017. Laws and Regulations. Sacramento, CA: State Water Resources Control Board, California Environmental Protection Agency. Available from: [http://www.waterboards.ca.gov/laws\\_regulations/](http://www.waterboards.ca.gov/laws_regulations/)

THIS PAGE INTENTIONALLY LEFT BLANK

# Appendix C

---

## Representative Drainage Photographs



Photograph 1: View of the eastern portion of Bouquet Canyon Creek, facing downstream. The unvegetated river wash can be seen in the foreground and the mule fat scrub community can be seen in the distance.



Photograph 2: View of the central portion of Bouquet Canyon Creek within the project site, facing upstream. The unvegetated river wash can be seen in the foreground and the giant reed stand vegetation community can be seen along the banks.



Photograph 3: View of the western portion of Bouquet Canyon Creek within the project site, facing upstream. The giant reed stand vegetation community can be seen along the banks.



Photograph 4: View of the western most portion of Bouquet Canyon Creek within the project site, facing upstream. The giant reed stand vegetation community can be seen along the banks.

H:\GIS\PROJECTS\IPQ\_Bouquet\Map\ID\App\_C\_SitePhotos.indd IPQ-25 09/12/17-EC

Source: HELIX 2017



# Appendix H

---

Oak Tree Survey Report

HELIX Environmental Planning, Inc.  
16485 Laguna Canyon Road, Suite 150  
Irvine, CA 91942  
949.234.8770 tel  
619.462.1515 fax  
www.helixepi.com



March 21, 2019

IPQ-25

Mr. Scott Covington  
Integral Communities  
888 San Clemente Drive  
Newport Beach, CA 92660

Subject: Oak Tree Survey Report for the Bouquet Canyon Road Project

Dear Mr. Covington:

HELIX Environmental Planning, Inc. (HELIX) prepared this report to document the results of an oak tree survey conducted for the proposed Bouquet Canyon Road Project (project) located the City of Santa Clarita (City), Los Angeles County, California. The purpose of this report is to provide an inventory of all species of oak tree (*Quercus* spp.) within 200-feet of the project footprint with at least one trunk over 6 inches in circumference at a point 4.5 feet above natural grade and to determine the presence of Heritage Trees as defined under the City's Oak Tree Preservation Ordinance (17.51.040; ordinance). This report was also prepared to provide supporting information for obtaining an Oak Tree Permit if sought in the future.

## STUDY AREA LOCATION

The approximately 94-acre study area is generally located 6.9 miles to the east of Interstate 5 and 3.8 miles to the northwest of California State Route 14 in the City of Santa Clarita (Figure 1, *Regional Location*). Specifically, the study area is located directly south of the intersection of David Way and Bouquet Canyon Road. The study area is within Section 6 of Township 4 North, Range 15 West of the Mint Canyon, USGS 7.5-minute topographic quadrangle (Figure 2, *USGS Topography*).

Immediate surrounding land uses include existing residential developments to the north and west, a mixture of undeveloped land and residential development to the south, and undeveloped land and juvenile detention schools to the east (Figure 3, *Aerial Photograph*). The study area is located approximately 0.20 mile to the southeast of Haskell Canyon Open Space and 1.40 miles to the south of Angeles National Forest.

## REGULATORY FRAMEWORK

The City's Oak Tree Preservation ordinance states, "No person shall cut, prune, remove, relocate, endanger, damage, or encroach into the protected zone of any oak tree on any public or private property within the City" (City of Santa Clarita [City] 2013). The protected zone of the oak tree includes

the area within five feet of the dripline (canopy extent), but no less than 15 feet from the trunk. To remove any oak tree or to subject its protected zone to major encroachment, an Oak Tree Permit must be obtained. Trees subject to the permit include all trees of the oak species (*Quercus* sp.) exceeding 6 inches in circumference when measured at a point 4.5 feet above the tree's natural grade. Encroachment is defined as intrusion into the protected zone of an oak tree, which includes but is not limited to, intrusion by trenching, paving, pruning, dumping, parking of commercial vehicles. Major encroachment is defined by the City's ordinance as "an area between the outer edge of the trunk and fifty percent of the diameter of the protected zone" and minor encroachment is defined as an area between the outermost edge of the protected zone and fifty percent of the diameter of the protected zone" (City 2013).

To obtain an Oak Tree Permit, an application must be submitted to the City Manager or designated representative ("Director") and a filing fee as established by the City Council must be paid. The conditions of the Oak Tree Permit will require native oak trees at a minimum of 24-inch box size to be planted for protected trees that are removed or subjected to major encroachment. The number of replacement trees required is dependent upon the circumference of the tree to be impacted. These guidelines are described in Subsection B of the Oak Tree Preservation Ordinance (City 2013), and reproduced below in Table 1, *Number of Replacement Trees*.

**Table 1**  
**NUMBER OF REPLACEMENT TREES**

<b>Circumference of Tree Destroyed (4 feet above ground level)</b>	<b>Number of Replacement Trees Required for Each Tree Destroyed</b>
Under 12 inches	2
12 to 18 inches	3
18 to 24 inches	4
24 to 30 inches	5
30 to 36 inches	6
Over 36 inches	1 additional replacement tree per incremental increase of 6 inches

Source: City of Santa Clarita (2013)

Replacement trees must be placed on the same property. If there is no appropriate location on-site, the replacement trees may be donated to the City or the monetary value of the required replacement trees may be paid to the City at the discretion of the Director.

Heritage Oak Trees are given special consideration and may be fully protected or subject to requirements stricter than those of a standard protected oak tree. A Heritage Oak Tree is defined as any oak tree measuring 108 inches in circumference when measured 4.5 feet above the tree's natural grade. In the case of trees with multiple trunks, two or more trunks each must measure 72 inches or greater in circumference when measured 4.5 feet above the tree's natural grade.

## METHODS

HELIX International Society of Arboriculture (ISA) Certified Arborist Daniel Torres (WE-12249) and HELIX Biologist/Regulatory Specialist Ezekiel Cooley completed an oak tree survey on the study area and within a 200-foot buffer of the study area (survey area) on December 19 and 20, 2018. The purpose of the

survey was to document the presence of: (1) oak trees with at least one trunk over 6 inches in circumference at a point 4.5 feet above natural grade and (2) Heritage Oak Trees.

All oak trees within the survey area that satisfied the previously mentioned criteria were identified to species. The circumference at a point 4.5 feet above natural grade was measured. For trees with co-dominant stems at 4.5 feet above natural grade, the circumference of each stem was measured at this height. The average circumference of all the stems was calculated in order to determine the number of replacement trees required if the tree was to be removed or subject to major encroachment, as outlined in Table 1 above. Next, the height of each tree was estimated and an aluminum tag with a unique number was affixed to the north side of the tree at approximately three feet above natural grade. Trees located outside of the study area but located within the buffer area were not tagged since Integral Communities does not own this property. Finally, the location of each individual tree and the canopy extent were recorded with a global positioning system device with sub-meter accuracy. The collected data are not considered survey-grade accuracy and should not be used for construction purposes.

Physical and horticultural evaluations were performed for each protected tree according to the City’s Oak Tree Preservation and Protection Guidelines (City 1990). The physical evaluation included the assessment of structure, terrain, and general appearance. The horticultural evaluation included the detection of any disease or pathogens and an assessment of the tree’s overall vigor. The physical and horticultural evaluations were used to rate each tree on a scale ranging from A to F as outlined in the City’s Preservation and Protection Guidelines. The rating system is reproduced below in Table 2, *Oak Tree Rating System*.

**Table 2**  
**OAK TREE RATING SYSTEM**

Rating	Description
A – Outstanding	A healthy and vigorous tree characteristic of its species and reasonably free of any visible signs of stress, disease or pest infestation.
B – Above Average	A healthy and vigorous tree with minor visible signs of stress, disease or pest infestation.
C – Average	Although healthy in overall appearance there is an abnormal amount of stress or disease and/or pest infestation.
D – Below Average/Poor	This tree is characterized by exhibiting a greater degree of stress, disease and/or pest infestation than normal and appears to be in a state of rapid decline. The degree of decline may vary greatly in signs of dieback, disease and pest infestation and appears to be in an advanced state of decline.

F – Dead	This tree exhibits no signs of life whatsoever.
----------	---

Source: City of Santa Clarita (1990)

Following the oak tree survey, an impact assessment was conducted using the most recent project grading plans. The impact assessment was used to determine the number of oak trees that would be required to be removed or whose protected zone would be subject to major encroachment to complete project activities.

## RESULTS

A total of 64 oak trees subject to an Oak Tree Permit were located within the survey area (Figure 4, *Oak Tree Locations*). Of these trees, 2 were coast live oak (*Quercus agrifolia*), 6 were scrub oak (*Quercus berberidifolia*), 2 were blue oak (*Quercus douglasii*), 53 were Tucker oak (*Quercus john-tuckeri*), and one was a valley oak (*Quercus lobata*). Six trees (approximately 9 percent) were assigned a rating of A – Outstanding, 22 trees (approximately 34 percent) were B – Above Average, 25 trees (approximately 40 percent) were C – Average, and 11 trees (approximately 17 percent) were D – Below Average. No dead trees were observed during the survey. Overall, there was very little disease noted on the oak trees within the survey area. The majority of trees (37 trees, approximately 58 percent) showed evidence of stress-related growth such as epicormic sprouting and suckers. No Heritage Oak Trees were found during the survey. The locations of all oak tree surveyed are shown in Figure 4. The data collected during the survey is included as Attachment A, *Oak Tree Survey Data*. Representative site and tree photographs are included as Attachment B, *Representative Photographs*.

## IMPACT ASSESSMENT

All oak trees within the project footprint will be removed. In addition, the project will be required to implement fuel medication. The County Fire Department requires fuel modification zones to create a defensible space in the event a wildfire breaks out (County of Los Angeles N.D.). There are three different zones, which are outlined below:

**Zone A (Setback Zone)** – This zone extends 20 feet beyond the edge of any structures. The only allowed vegetation within this zone is green lawns, ground cover not exceeding six inches in height, and well-spaced shrubs. The landscape must be irrigated to promote healthy vegetation and fire resistance.

**Zone B (Irrigated Zone)** – This zone extends from the outermost edge of Zone A to 100 feet from structures. Green lawn, ground cover not exceeding six inches in height, and well-spaced shrubs and trees are allowed in this zone. The landscape must be irrigated to promote healthy vegetation and fire resistance.

**Zone C (Native Brush Thinning Zone)** – This zone extends from the outermost edge of Zone B to 200 feet from the structures. Well-spaced native vegetation and ornamental shrubs and trees are allowed. Vegetation must be thinned and species that constitute a fire risk are not allowed (e.g., chamise [*Adenostoma fasciculatum*], sages [*Salvia* spp.], California sagebrush, and California buckwheat). This zone does not require irrigation.

For the purpose of this assessment, oak trees located within Fuel Modification Zone A were considered impacted while oak trees located within Zones B and C were considered avoided.

Based on analyzing each surveyed oak's location in respect to the project grading plans and fuel modification zones, the project would require the removal of 26 oak trees, including 4 scrub oaks (*Quercus berberidifolia*), 2 blue oaks (*Quercus douglasii*), and 20 Tucker oaks (*Quercus john-tuckeri*). In addition, one Tucker oak would be subjected to major encroachment and two Tucker oaks would be subjected to minor encroachment. The remaining 35 oak trees would be completely avoided by the project (Table 3, *Impacts to Oak Trees*). A map with the location and protected zone of the oak trees assessed during this survey is included as Figure 5, *Impacts to Oak Trees*.

**Table 3  
 IMPACTS TO OAK TREES**

Species Name	Common Name	Number of Trees			
		Removed	Major Encroachment	Minor Encroachment	Avoided
<i>Quercus agrifolia</i>	coast live oak	0	0	0	2
<i>Quercus berberidifolia</i>	scrub oak	4	0	0	2
<i>Quercus douglasii</i>	blue oak	2	0	0	0
<i>Quercus john-tuckeri</i>	Tucker oak	20	1	2	30
<i>Quercus lobata</i>	valley oak	0	0	0	1
<b>TOTAL</b>		<b>26</b>	<b>1</b>	<b>2</b>	<b>35</b>

## MITIGATION

Based on the impacts to oak trees as quantified by the impact assessment, 27 oak trees will be removed or subjected to major encroachment. In order to receive an Oak Tree Removal Permit for these impacts, it is anticipated that the City will require 91 replacement trees to be planted or the equivalent monetary value of the replacement trees to be paid (Table 4, *Oak Tree Mitigation*). Trees that will be completely avoided or subject to minor encroachment will not require replacement trees.

**Table 4  
 OAK TREE MITIGATION**

Species Name	Common Name	Number of Trees	
		Removed/Major Encroachment	Replacement Trees Required
<i>Quercus berberidifolia</i>	scrub oak	4	9
<i>Quercus douglasii</i>	blue oak	2	19
<i>Quercus john-tuckeri</i>	Tucker oak	21	63
<b>TOTAL</b>		<b>27</b>	<b>91</b>



## CONCLUSION

Sixty-four (64) oak trees on the survey area were considered City-protected trees. Construction of the project will require 27 of these trees to be removed or to be subjected to major encroachment. It is anticipated that the City will require mitigation for these impacts through the purchase of 91 replacement trees or payment to the City of their equivalent monetary value. Thirty-seven (37) of these trees will be completely avoided or subjected to minor encroachment during project activities and will not require replacement trees.

During construction, trees subject to minor or major encroachment will require protection measures, including but not limited to those outlined within Section VII. Standards for Performance of Permitted Work of the Oak Tree Preservation Guidelines. Other general guidelines to protect trees during for project construction are included as Attachment C, *Tree Protection Recommendations*.

Should you have any questions or require additional information, please do not hesitate to contact me at (949) 234-1515 or DanielT@helixepi.com.

Sincerely,



Daniel Torres  
ISA Certified Arborist (WE-12249A)

### Enclosures:

- Figure 1: Regional Location
- Figure 2: USGS Topography
- Figure 3: Aerial Vicinity
- Figure 4: Oak Tree Locations
- Figure 5: Impacts to Oak Trees

- Attachment A: Oak Tree Survey Data
- Attachment B: Representative Photos
- Attachment C: Tree Protection Recommendations

## REFERENCES

Los Angeles Fire Department, County of. N.D. Fuel modification plan notes. Available from:  
<https://www.fire.lacounty.gov/wp-content/uploads/2017/03/Fuel-ModificationPlanNotes.pdf>.

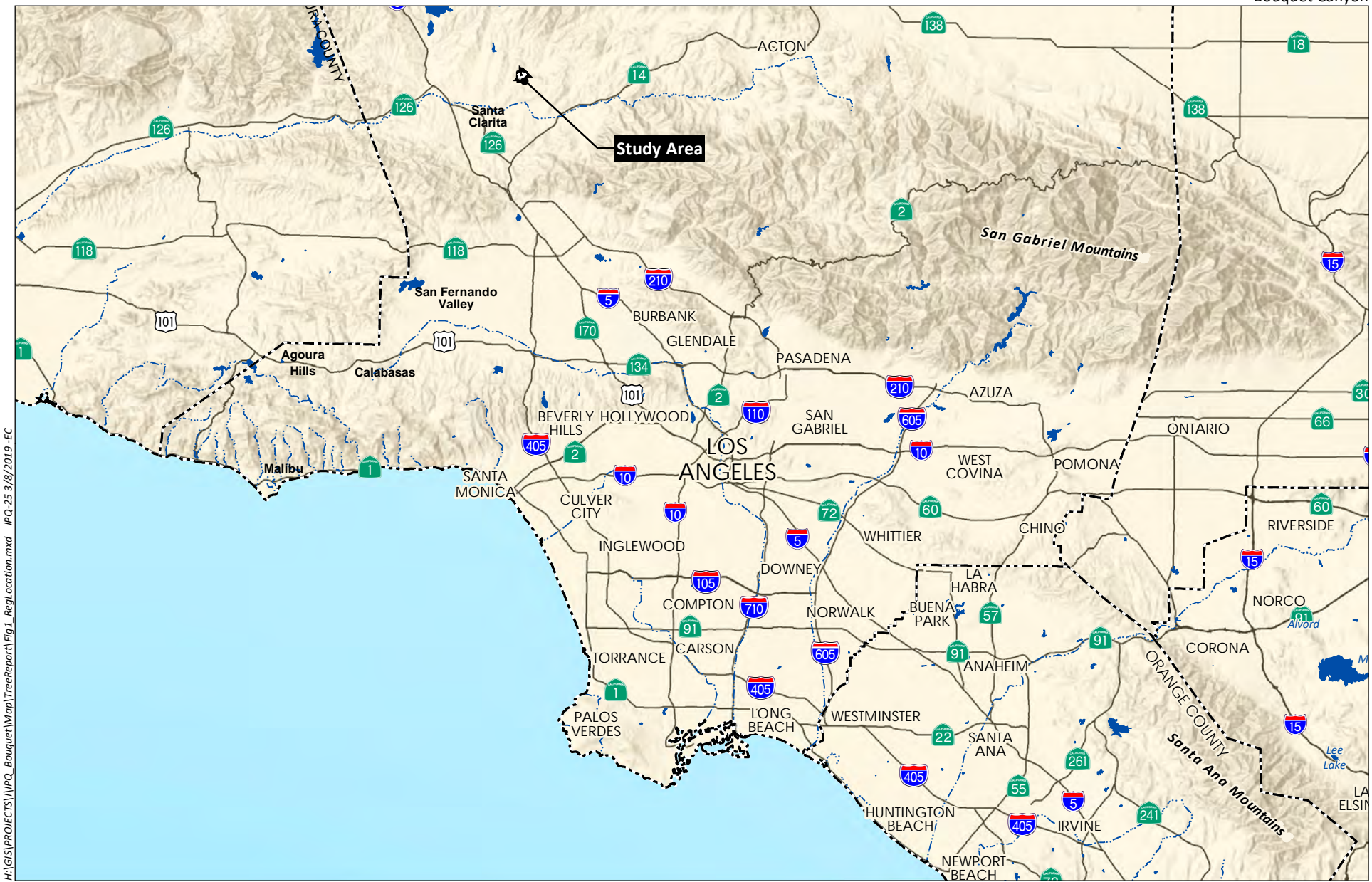
Accessed March 14, 2019.

Santa Clarita, City of. 1990. Oak Tree Preservation and Protection Guidelines. Adopted September 1990.

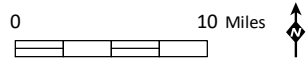
Available from: <https://www.santa-clarita.com/home/showdocument?id=10121>. Accessed  
November 19, 2018.

Santa Clarita, City of. 2013. Oak Tree Preservation. Ordinance No. 17.51.040. Santa Clarita Municipal  
Code. Adopted December 1987, revised in 2013. Available from:

<https://www.codepublishing.com/CA/SantaClarita>. Accessed November 19, 2018.

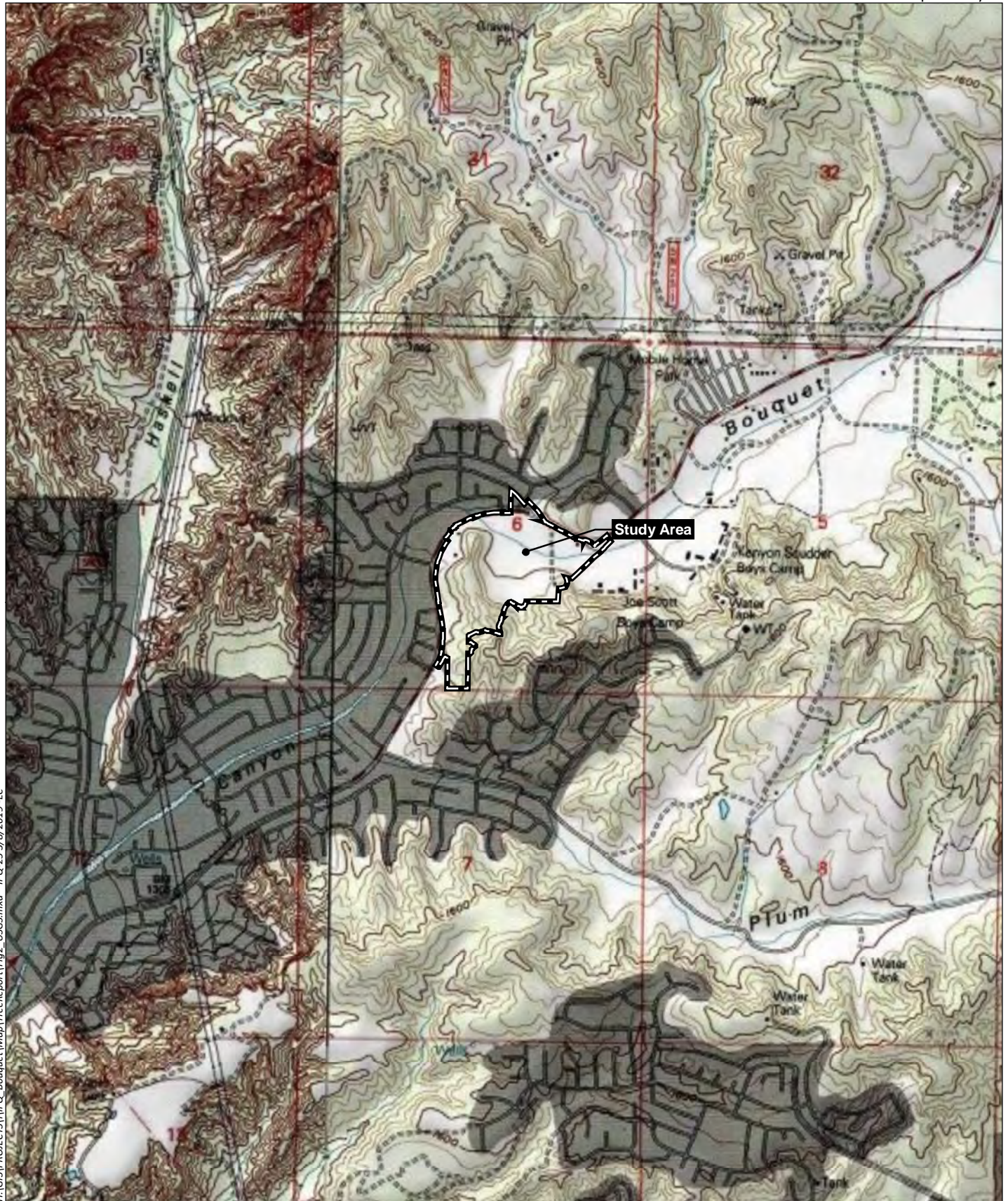


H:\GIS\PROJECTS\IPQ\_Bouquet\Map\TreeReport\Fig1\_Regl location.mxd IPQ-25 3/8/2019-FC

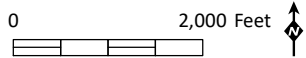


Source: Base Map Layers (ESRI, 2013)



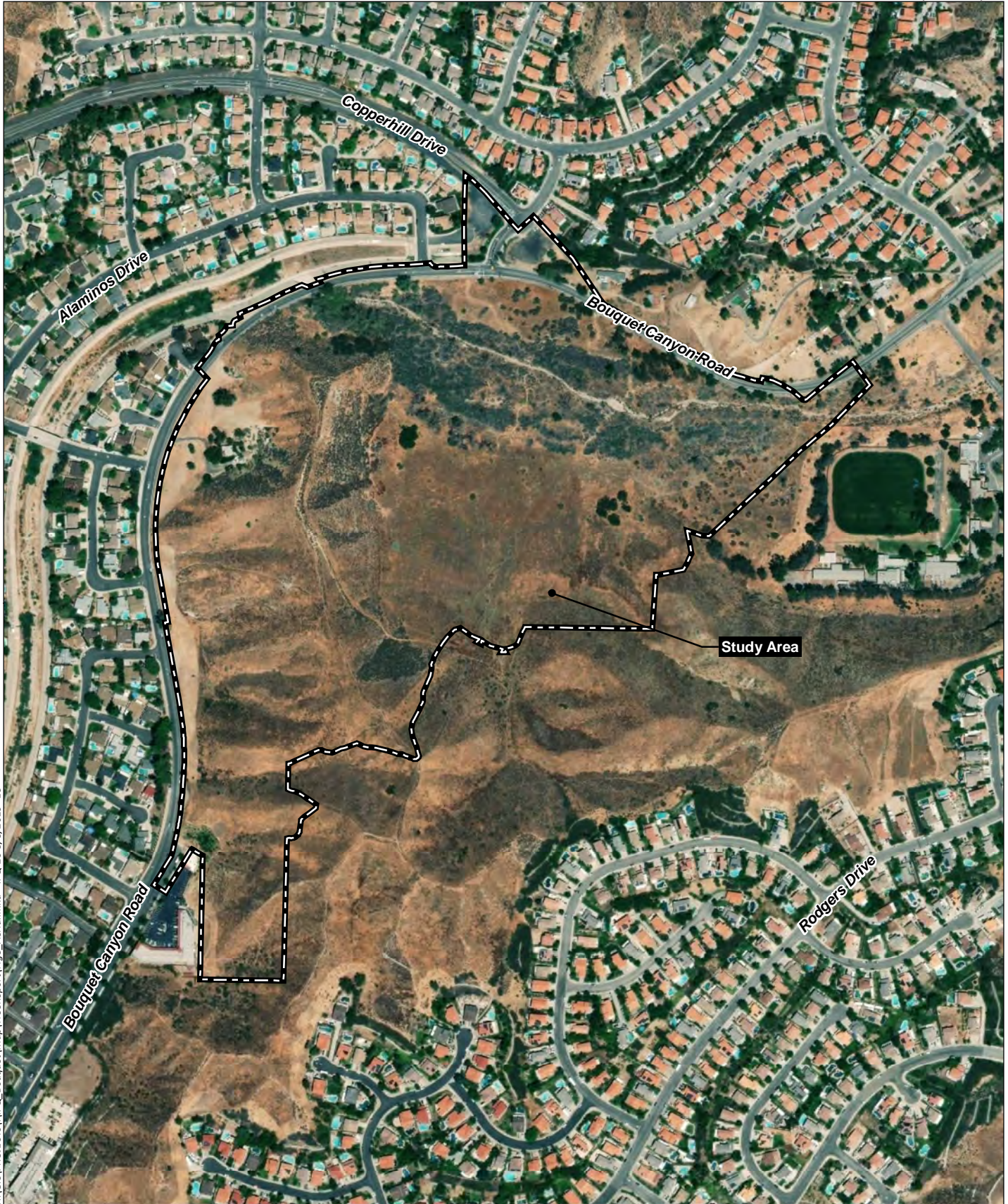


H:\GIS\PROJECTS\IPQ\_Bouquet\Map\TreeReport\Fig2\_USGS.mxd IPQ-25 3/8/2019 - EC



Source: Mint Canyon 7.5' Quad (USGS)



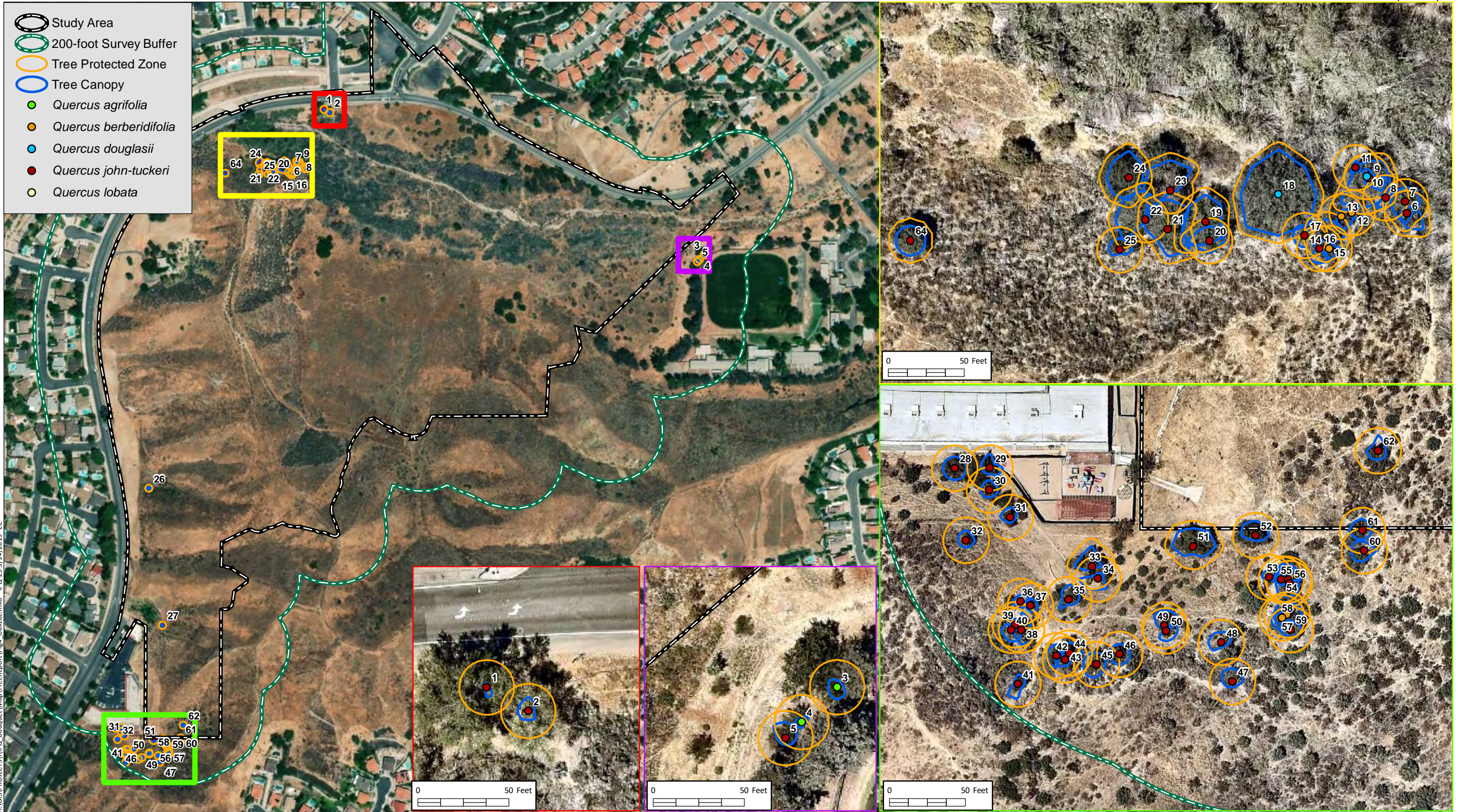


H:\GIS\PROJECTS\IPQ\_Bouquet\Map\TreeReport\Fig3\_Aerial.mxd IPQ-25 3/8/2019 -EC



Source: Base Map Layers (NAIP, 2016)





H:\GIS\PROJECTS\IPC\_Bouquet\MapTreeReport\Fig4\_OakLoc.mxd IPQ\_25\_3/14/2019-EC

Source: Base Map Layers (Nearmap, 2017)



**Study**

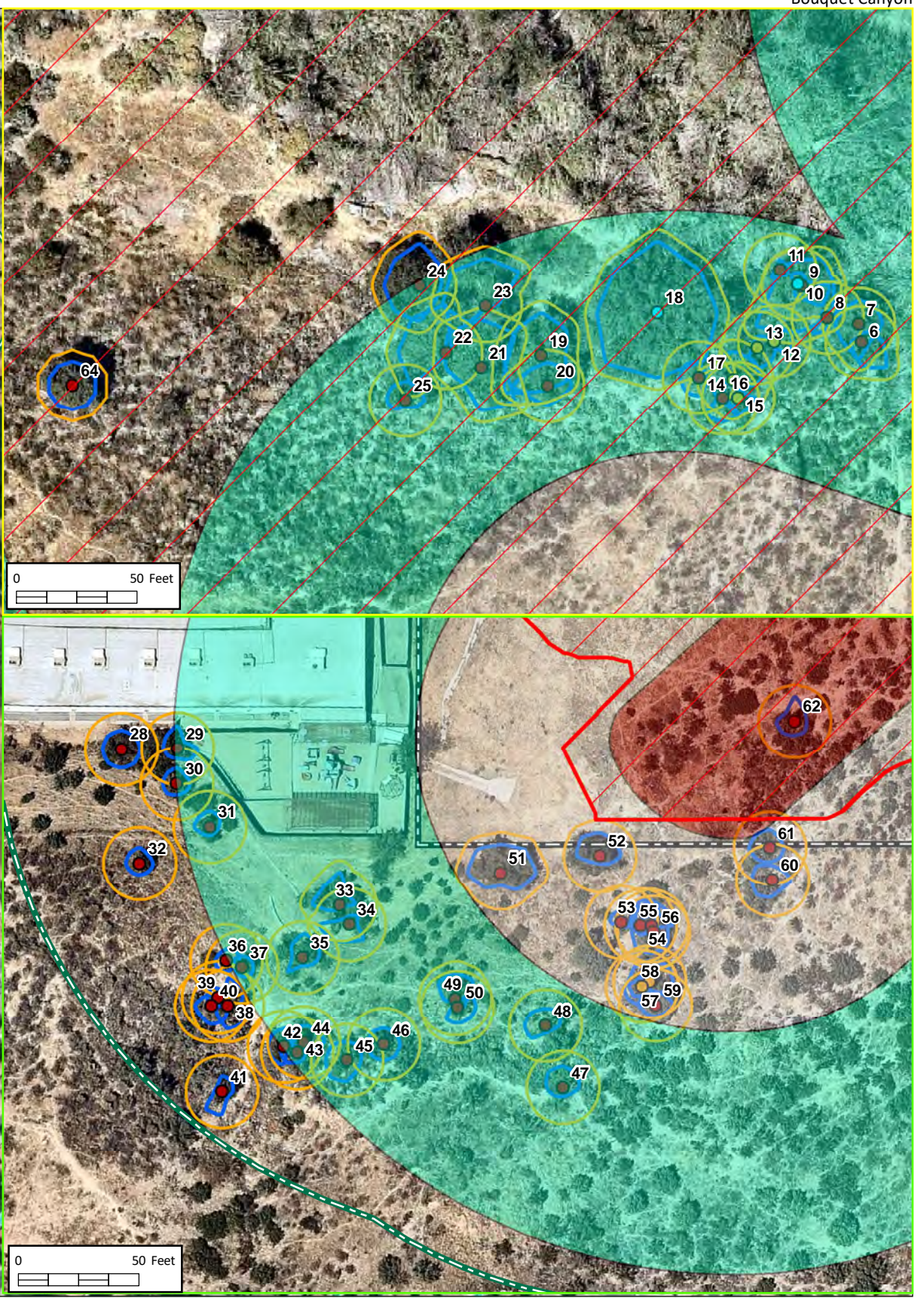
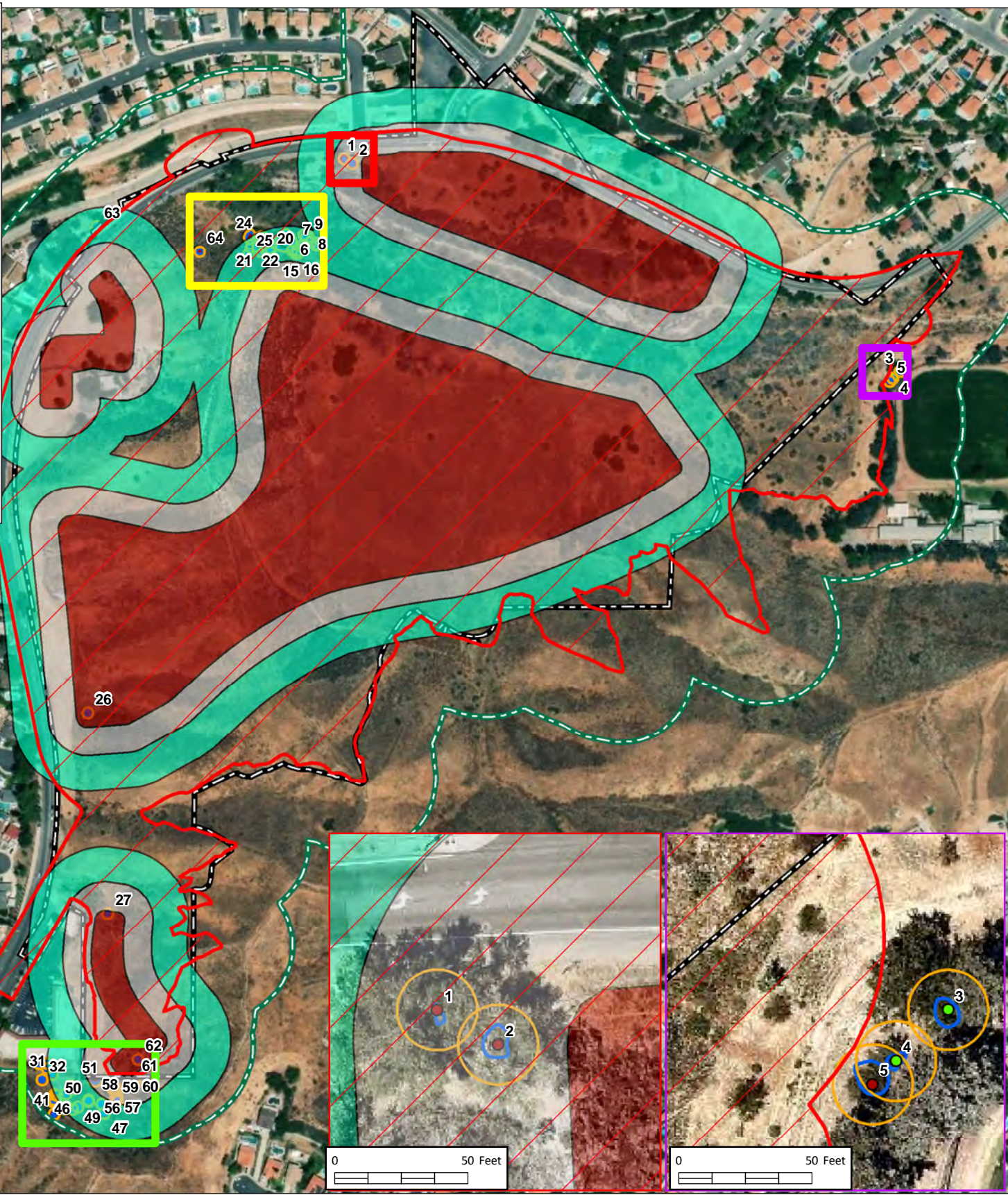
- Study (Black outline)
- 200-foot Survey Buffer (Green dashed line)
- Grading Limits (Red dashed line)

**Fuel Modification Zone**

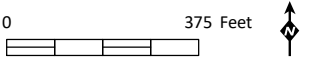
- Zone A (Red fill)
- Zone B (Grey fill)
- Zone C (Light Green fill)

**Oak Tree Survey Data**

- Tree Protected Zone (Yellow outline)
- Tree Canopy (Blue outline)
- Quercus agrifolia* (Green dot)
- Quercus berberidifolia* (Orange dot)
- Quercus douglasii* (Light Blue dot)
- Quercus john-tuckeri* (Red dot)
- Quercus lobata* (White dot)



H:\GIS\PROJECTS\IPG\_Bouquet\Map\TreeReport\Figs\_ImpOak.mxd IPQ-25 3/14/2019 EC



Source: Base Map Layers (Nearmap, 2017)



Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
1	Tucker oak <i>Quercus john-tuckeri</i>	6	10	3	1	1	5	6	1	1	3	Deep v-crotch at 7", canopy is N-S oriented, does not extend E-W.	Appears vigorous, some small galls present, some old, healed trunk injuries.	B		Removal
2	Tucker oak <i>Quercus john-tuckeri</i>	7.5	9	8	6	3	6	5	6	6	6	Trunk leaning northeast, canopy overall well-distributed.	Galls, insect damage.	B		Removal
3	coast live oak <i>Quercus agrifolia</i>	12.75	16	4	3	4	6	7	6	5	6	Tree leaning south.	Has stress-related suckers, sapsucker holes.	B	No tag; off-site.	Avoided
4	coast live oak <i>Quercus agrifolia</i>	10, 9, 7	9	2	6	3	1	4	3	4	3	Tree has been topped.	All epicormic growth, tree in severe decline.	D	No tag; off-site.	Avoided
5	Tucker oak <i>Quercus john-tuckeri</i>	11.75, 12, 8.5	15	9	8	6	5	4	4	5	10	Tree leaning north, away from adjacent eucalyptus.	Some galls present, bark damage present (chainsaw cut)-healing.	B	No tag; off-site.	Minor Encroachment
6	Tucker oak <i>Quercus john-tuckeri</i>	9, 13, 13	16	4	6	9	15	10	5	5	2	Large failure at v-crotch with decay (old main stem), exposed roots.	Declining, significant amount of epicormic sprouting.	D		Removal
7	Tucker oak <i>Quercus john-tuckeri</i>	18, 19, 24	22	10	10	10	8	15	10	10	9	Exposed roots, wide angle crotch at base.	Declining, epicormic sprouting, canopy dieback.	D		Removal

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
8	Tucker oak <i>Quercus john-tuckeri</i>	9.75, 6	5	2	8	2	2	5	10	2	4	Severe lean to south, on steep slope.	Tree is being shaded, very sparse canopy, canopy dieback.	D	Stump shoots from old dead tree.	Removal
9	Tucker oak <i>Quercus john-tuckeri</i>	20	15	6	3	12	12	5	5	2	7	Exposed roots, on steep slope.	Large split with internal decay in trunk, internal decay throughout.	D		Removal
10	blue oak <i>Quercus douglasii</i>	85, 36	45	10	15	15	20	20	25	10	10	Main trunk split long ago, large trunk leaning north, southern-most trunk with severe lean south, on steep slope.	Lots of mistletoe, canopy very sparse.	D		Removal
11	Tucker oak <i>Quercus john-tuckeri</i>	9	16	5	3	3	4	2	6	2	2	On steep slope.	Most of canopy is dead, mistletoe present, epicormic sprouting.	D	Tree is almost completely dead.	Removal
12	scrub oak <i>Quercus berberidifolia</i>	10	15	2	8	8	8	2	2	2	2	Trunk leaning to north, multi-stem, one stem is dead, on steep slope.	Epicormic growth, very sparse canopy.	D		Removal

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
13	scrub oak <i>Quercus berberidifolia</i>	12, 9.5, 10, 10	15	5	6	8	8	9	5	2	2	One dead stem, on steep slope.	Epicormic sprouting, severe decline, some galls present.	D		Removal
14	scrub oak <i>Quercus berberidifolia</i>	22.5, 22, 17, 10, 7.5	20	12	12	12	5	12	10	10	12	Some stems have internal decay, on steep slope.	Epicormic sprouting, mistletoe present, tree in decline.	D		Removal
15	scrub oak <i>Quercus berberidifolia</i>	7.5, 7.5, 8, 5.5	14	5	3	8	6	8	5	5	9	Good balance, on steep slope.	Some mistletoe present, significant amount of epicormic sprouting, some canopy dieback.	C		Removal
16	Tucker oak <i>Quercus john-tuckeri</i>	9.5	10	1	1	1	10	10	10	2	1	Most of canopy is in the south, shaded in the north, on steep slope.	Some dieback present, significant amount of epicormic sprouting.	C		Removal
17	Tucker oak <i>Quercus john-tuckeri</i>	5.5, 6.5, 7, 9	12	7	3	3	4	8	8	8	8	Some included bark at v-crotch about 5" above ground, tree on steep slope.	Small amounts of dieback and epicormic sprouting present.	B		Removal

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
18	blue oak <i>Quercus douglasii</i>	40.5, 24, 47, 52.5, 48	35	30	25	25	28	27	30	25	25	Large multi-stem tree with big split and decay, all stems leaning towards the south, tree on steep slope.	Tree is experiencing some dieback, epicormic sprouting, sap sucker and borer holes present.	C	Tree tagged 61 in old survey, probably burned.	Removal
19	Tucker oak <i>Quercus john-tuckeri</i>	22, 16.5, 17, 13, 10, 11	30	18	15	10	15	15	22	15	15	Included bark in all crotches, tree on a steep slope.	Appears vigorous, some cankers, canopy is somewhat sparse.	B		Removal
20	Tucker oak <i>Quercus john-tuckeri</i>	17.5, 17, 14, 14	15	10	10	10	7	8	8	15	10	Tree on steep slope, nexus of stems is 1' above ground.	Some canopy dieback present.	B		Removal
21	Tucker oak <i>Quercus john-tuckeri</i>	21, 25, 20.5, 9	20	20	20	10	20	18	10	15	20	Multiple trunks all leaning in different directions, tree on a steep slope.	Most of canopy is epicormic sprouting, borer and sapsucker holes are present.	C		Removal
22	Tucker oak <i>Quercus john-tuckeri</i>	15, 19, 18.5, 19, 20	25	20	3	2	1	1	20	20	20	Tree is on a steep slope, included bark present.	Tree appears healthy but is being shaded, canopy is somewhat sparse, significant dieback is present.	C		Removal

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
23	Tucker oak <i>Quercus john-tuckeri</i>	44.5	35	20	20	5	1	1	10	18	20	Strong lean to the north.	Significant amount of dieback in the lower canopy.	B		Removal
24	Tucker oak <i>Quercus john-tuckeri</i>	18, 12.5, 42, 22.5	30	18	12	9	9	15	15	15	15	V-crotch with included bark at 7", 1.5', and 2' above ground.	Some galls are present.	B	Tree tagged 60 in old survey.	Removal
25	Tucker oak <i>Quercus john-tuckeri</i>	9, 9, 10, 6	9	8	8	8	5	2	6	8	8	Tree is on a steep slope.	Some epicormic sprouting is present, fairly even canopy.	B		Removal
26	Tucker oak <i>Quercus john-tuckeri</i>	6.5	10	8	8	8	8	8	8	8	8	Even canopy spread, tree growing in the open.	Some galls are present, canopy is dense and healthy.	A	Shrub form, more than 25 stems, all 1-3 inches in circumference.	Removal
27	Tucker oak <i>Quercus john-tuckeri</i>	6	9	6	4	4	4	6	6	4	5	Structurally good, open, even canopy.	Significant amount of epicormic growth, most leaves are affected by aphids.	D	Some mechanical damage on the east side of the trunk.	Removal
28	Tucker oak <i>Quercus john-tuckeri</i>	6.5	8	8	8	8	8	8	8	8	8	Tree is on a steep slope.	Some galls are present.	B	No tag; off-site.	Avoided
29	Tucker oak <i>Quercus john-tuckeri</i>	10, 6, 6.5, 5.5, 11	9	10	4	9	7	4	5	6	7		Dense canopy, tree appears vigorous.	A	No tag; off-site.	Avoided
30	Tucker oak <i>Quercus john-tuckeri</i>	9, 11	12	7	5	6	5	5	6	6	6		Dense canopy, tree appears vigorous.	A	No tag; off-site.	Avoided



Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
31	Tucker oak <i>Quercus john-tuckeri</i>	6.5, 8, 6.5	8	7	6	4	3	4	4	7	6		Dense canopy, tree appears vigorous.	A	No tag; off-site.	Avoided
32	Tucker oak <i>Quercus john-tuckeri</i>	6	9	7	5	6	5	5	5	6	6		Dense canopy, tree appears vigorous.	A	No tag; off-site.	Avoided
33	Tucker oak <i>Quercus john-tuckeri</i>	12, 9.5, 14.5	13	14	5	7	1	1	4	12	10	Strong lean downhill.	Tree is vigorous, some minor boring insect damage, significant amount of stress-related sprouting at base.	C	No tag; off-site.	Avoided
34	Tucker oak <i>Quercus john-tuckeri</i>	14.5, 11	14	4	5	3	9	7	10	13	3	Good structure.	Tree appears vigorous, lots of stress-related sprouting at base, epicormic sprouting present.	C	No tag; off-site.	Avoided
35	Tucker oak <i>Quercus john-tuckeri</i>	8, 13, 16, 9.5	15	10	10	7	5	3	9	4	7	Internal decay present in one main trunk.	Significant amount of stress-related sprouting at base.	C	No tag; off-site.	Avoided
36	Tucker oak <i>Quercus john-tuckeri</i>	6	12	5	6	6	4	5	5	5	4		Significant amount of epicormic sprouting, some galls present.	C	No tag; off-site.	Avoided

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
37	Tucker oak <i>Quercus john-tuckeri</i>	8	12	5	5	5	5	4	3	3	5		Significant amount of epicormic sprouting, some galls present.	C	No tag; off-site.	Avoided
38	Tucker oak <i>Quercus john-tuckeri</i>	9.5, 10, 8.5	12	12	10	5	10	10	6	5	2	Lean is causing bark to split.	Some internal decay and stress-related sprouting at the base is present.	C	No tag; off-site.	Avoided
39	Tucker oak <i>Quercus john-tuckeri</i>	7	10	4	3	3	3	4	4	5	5		Stress-related sprouting at the base and epicormic sprouting is present.	C	No tag; off-site.	Avoided
40	Tucker oak <i>Quercus john-tuckeri</i>	6, 5	12	5	4	7	8	8	6	7	5		Some galls are present, tree is in good health overall.	B	No tag; off-site.	Avoided
41	Tucker oak <i>Quercus john-tuckeri</i>	8, 6	15	7	6	5	3	10	10	3	3	Bark has a healing fissure down the middle of the trunk.	Some epicormic sprouting is present.	B	No tag; off-site.	Avoided
42	Tucker oak <i>Quercus john-tuckeri</i>	6.5, 6	12	8	8	2	2	8	7	7	7	Several branches are rubbing against each other.	Some galls are present.	B	No tag; off-site.	Avoided
43	Tucker oak <i>Quercus john-tuckeri</i>	6, 4	12	5	5	3	4	4	6	7	7		Some epicormic sprouting is present.	B	No tag; off-site.	Avoided

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
44	Tucker oak <i>Quercus john-tuckeri</i>	6, 6	12	7	8	9	5	3	3	7	7		Some canopy dieback is present.	C	No tag; off-site.	Avoided
45	Tucker oak <i>Quercus john-tuckeri</i>	7, 6, 6, 6, 5	13	8	8	6	6	9	10	9	9	Tree is in shrub form, several widely-spaced branches.	Some epicormic sprouting and galls are present.	B	No tag; off-site.	Avoided
46	Tucker oak <i>Quercus john-tuckeri</i>	6, 6, 6, 6, 8, 8.5	9	7	7	7	7	7	7	7	7	Tree is in shrub form, several widely-spaced branches.	Some epicormic sprouting is present, tree exhibiting vigorous growth.	B	No tag; off-site.	Avoided
47	Tucker oak <i>Quercus john-tuckeri</i>	6.5, 4	9	9	8	7	4	4	5	7	9	Tree is leaning downslope causing fissures in some stems.	Main stem has a large fissure with internal decay.	C	No tag; off-site.	Avoided
48	Tucker oak <i>Quercus john-tuckeri</i>	6, 5, 5	9	7	9	6	3	3	8	9	8	Some healing cracks are present at the base of main stems.	Some galls are present, some canopy dieback.	B	No tag; off-site.	Avoided
49	Tucker oak <i>Quercus john-tuckeri</i>	10, 6.5, 9.5	13	11	11	5	5	5	2	5	10	Good structure.	Some dieback and significant amounts of epicormic sprouting are present.	C	No tag; off-site.	Avoided

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
50	Tucker oak <i>Quercus john-tuckeri</i>	9, 7, 6, 6	13	2	8	8	7	7	7	2	2	Good structure.	Significant amount of epicormic sprouting is present.	C	No tag; off-site.	Avoided
51	Tucker oak <i>Quercus john-tuckeri</i>	15, 16, 16, 17	18	12	14	15	10	5	9	14	14	V-crotches are 1' above ground, some chainsaw wounds are present.	Significant amount of epicormic sprouting is present.	C	No tag; off-site.	Avoided
52	Tucker oak <i>Quercus john-tuckeri</i>	16.5, 10, 9.5, 17, 6, 9, 8.5	17	10	9	9	5	3	4	10	11	Many stems, but good structure.	Significant amount of epicormic sprouting and some canopy dieback are present.	C		Minor Encroachment
53	Tucker oak <i>Quercus john-tuckeri</i>	13	19	5	8	6	3	2	2	5	5	V-crotch at 6" and 4' above ground, tree has a slight lean.	Most of canopy is epicormic sprouting.	C	No tag; off-site.	Avoided
54	Tucker oak <i>Quercus john-tuckeri</i>	10, 8, 10	17	11	11	5	5	3	3	5	5		Most of canopy is epicormic sprouting, significant canopy dieback is present.	C	No tag; off-site.	Avoided
55	Tucker oak <i>Quercus john-tuckeri</i>	12	17	11	9	9	1	1	6	8	9	Tree is leaning northeast.	Borer holes and internal decay are present.	C	No tag; off-site.	Avoided

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
56	Tucker oak <i>Quercus john-tuckeri</i>	12, 11, 7, 7, 8, 10.5	15	8	8	6	8	9	10	9	7		Borer holes, some epicormic sprouting, internal decay, and canopy dieback are present.	C	No tag; off-site.	Avoided
57	scrub oak <i>Quercus berberidifolia</i>	9.5, 9.5, 7, 10, 8, 6.5, 6	12	9	10	10	7	5	9	9	9	Tree is in shrub form, mostly shaded by surrounding trees.	Some galls and epicormic sprouting are present.	B	No tag; off-site.	Avoided
58	scrub oak <i>Quercus berberidifolia</i>	7, 6	11	5	1	3	8	8	8	8	3	Tree is in shrub form.	Canopy is dying back, significant amount of epicormic sprouting is present.	C	No tag; off-site.	Avoided
59	Tucker oak <i>Quercus john-tuckeri</i>	8, 8, 8, 8, 8, 12.5	11	6	6	8	5	5	5	7	7	Tree is in shrub form.	A healing fissure and internal decay are present in one of the main stems.	C	No tag; off-site.	Avoided
60	Tucker oak <i>Quercus john-tuckeri</i>	6, 6, 6, 9, 4	8	6	6	8	5	7	9	9	9	Stems are all widely-spaced, spread out, tree is in shrubby form.	Some canopy dieback is present.	B	No tag; off-site, there is a packrat midden in the middle of the trunks.	Avoided

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
61	Tucker oak <i>Quercus john-tuckeri</i>	6, 6, 4, 5, 8, 6, 4, 4	9	8	6	6	6	6	7	9	8	Tree is in shrub form, stems are spread out.	Some canopy dieback, epicormic sprouting, and galls are present.	B		Major Encroachment
62	Tucker oak <i>Quercus john-tuckeri</i>	9, 7.5, 5.5, 6.5, 5.5, 8.5, 8, 6.5, 4, 5, 6	9	11	6	5	6	6	7	8	5		Cankers, galls, epicormic sprouting, and canopy dieback are present.	C		Removal
63	valley oak <i>Quercus lobata</i>	12, 22	20	5	7	7	7	7	7	7	7	V-crotch at 1.5' and 5' with included bark, tree is growing straight.	Vigorous growth, healthy specimen, no obvious signs of disease.	A	Circumference and canopy were estimated- tree is on private property.	Avoided
64	Tucker oak <i>Quercus john-tuckeri</i>	17, 32.5	19	10	10	10	10	10	8	8	10	Included bark, exposed roots, tree is growing on a steep slope.	Vigorous growth, some canopy dieback is present.	B		Removal





**Photo 1:** Tree 10 (blue oak, *Quercus douglasii*) adjacent to the northwestern corner of the study area.



**Photo 2:** Tucker oak (*Quercus john-tuckeri*) scrub adjacent to the southwestern corner of the study area.





**Photo 3:** Tree 51 (Tucker oak, *Quercus john-tuckeri*) assigned an oak tree rating of C for displaying significant amounts of epicormic growth.



**Photo 4:** Tree 62 (Tucker oak, *Quercus john-tuckeri*) assigned an oak tree rating of C for displaying canopy dieback and significant amounts of epicormic growth.

**General Construction Site Recommendations**

- A minimum 4-foot tall, brightly colored, synthetic fence should be installed around the outermost edge of the protected zone of trees that are designated for retention on-site. Encroachment into the fenced areas should be restricted to the minimum amount feasible and fencing should remain in place until all construction activities have ceased
- The fenced area should be kept clear of building materials, waste, and excess soil.
- No digging, trenching, compaction, or other soil disturbance should be allowed in the fenced area.
- The storage of construction equipment or hazardous materials such as gasoline, oil, or other toxic chemicals should not be allowed in or adjacent to the fenced area.
- Storage areas for equipment, soil, and construction materials as well as burn sites (if permitted), cement washout pits, and construction work zones should be kept away from protected trees and outside the fenced in area.
- Cable, chain, rope or signage should not be attached to retained trees.
- Designated roads and parking areas should be established. All construction personnel should be restricted to driving and parking in designated areas. Discharge of exhaust from construction vehicles and equipment should not be allowed near the protected zone of trees.
- Grade changes should be avoided near fenced areas to the maximum extent possible.

**Recommendations for Construction Activities in the Vicinity of Retained Trees**

- All necessary clearance pruning should be conducted by a Certified Tree Worker or Certified Arborist.
- Trenching within the dripline of retained trees should be avoided to the maximum extent practicable and kept a minimum distance of 10 times the diameter of the tree away from its trunk. If necessary, this trenching should be conducted using hand excavation or compressed air to reduce impacts to tree roots. Machine trenching should not be allowed within the dripline of retained trees. If pipes must be installed closer to the tree than a distance of 10 times the diameter of the tree away from its trunk, they should be bored beneath the tree a minimum of 3 feet below the ground surface to reduce impacts to roots.
- Excavation should also be minimized within the dripline of retained trees. Construction within the dripline of retained trees should be conducted in a manner that minimizes excavation and provides for the best preservation of roots as determined by the Project Arborist.
- If tree roots are severed outside of the fenced area, they should be severed cleanly and kept moist. All exposed roots outside of fenced areas should be covered with protective material during construction such as mulch or plywood sheets to reduce soil

compaction. Protective material should be removed upon completion of construction activities.

- Trenching and excavation should be avoided during hot, dry, weather and trees shall be watered before, during, and after trenching and excavation within the dripline of retained trees to offset water loss due to cut roots.
- Grading within the driplines of retained trees should be avoided wherever feasible.
- To prevent soil compaction, several inches of wood chips should be spread in the root zone area and covered with steel plates.

## **Recommendations for Protection of Trees Post-Construction**

- Post-construction inspections of the trees should be conducted by a Certified Arborist or Certified Tree Worker to determine if retained trees are stressed (e.g., water stress, nutrient stress) or damaged (e.g., broken branches, trunk damage). Appropriate corrective actions should be implemented as necessary. Such corrective actions may include application of root stimulant to encourage new root growth in trees that have a significant portion of their roots lost due to cutting or soil compaction.
- Aeration of soil by vertical mulching or similar technique should be implemented around retained trees to offset the impacts of soil compaction that has already occurred due to construction activities and other site uses.
- Long term maintenance should also be conducted by a Certified Arborist or tree care specialist to assist the trees with recovering from construction related stress and may include watering, fertilization, pruning, and/or pest/disease control.

# Appendix I

---

Rare Plant Species Potential to Occur

**Appendix I**  
**Rare Plant Species Potential to Occur<sup>1</sup>**

Species Name	Common Name	Status <sup>2</sup>	Habitat, Ecology, and Life History	Potential to Occur <sup>3</sup>
<i>Berberis nevinii</i>	Nevin's barberry	FE/SE CRPR 1B.1	Shrub. Occurs on steep, north-facing slopes or washes within chaparral, cismontane woodland, coastal scrub, and riparian scrub. Elevation range 70-825 m. Flowering period Mar-May.	<b>Presumed absent.</b> The study area supports suitable habitat for this species. The nearest observation of this species was recorded in 1987 within the Santa Clara river, approximately 4.25 miles to the southwest of the study area. This species was not observed during the rare plant surveys.
<i>Calochortus clavatus</i> var. <i>gracilis</i>	slender mariposa-lily	CRPR 1B.2	Medium perennial herb. Occurs in shaded foothills and canyons within chaparral, coastal scrub, and valley grassland. Elevation range below 1000 m. Flowering period May-Jun.	<b>Observed.</b> A total of 496 individuals were observed on the study area during the rare plant surveys.
<i>Calochortus palmeri</i> var. <i>palmeri</i>	Palmer's mariposa-lily	CRPR 1B.2	Medium perennial herb. Occurs in mesic and vernal moist areas within chaparral, lower montane coniferous forest, and meadows. Also occurs within seeps. Elevation range 1200-2200 m. Flowering period May-Jul.	<b>None.</b> The study area does not support mesic or vernal moist areas. There are no records of this species in the Santa Clarita area; Los Angeles County records are confined to the San Gabriel Mountains. This study area is below the elevation range for this species.



Appendix I (cont.)  
Rare Plant Species Potential to Occur<sup>1</sup>

Species Name	Common Name	Status <sup>2</sup>	Habitat, Ecology, and Life History	Potential to Occur <sup>3</sup>
<i>Dodecahema leptoceras</i>	slender-horned spineflower	FE/SE CRPR 1B.1	Small annual herb. Occurs in sandy or gravelly places within chaparral, cismontane woodland, and coastal scrub associated with alluvial fans. Elevation range 200-700 m. Flowering period May-Jun.	<b>Presumed absent.</b> The study area supports suitable habitat for this species. The nearest observation of this species was recorded in 1979, approximately 3.75 miles to the east of the study area within a non-specific area of Mint Canyon. This species was not observed during the rare plant surveys.
<i>Navarretia fossalis</i>	spreading navarretia	FT CRPR 1B.1	Small annual herb. Occurs in vernal pools, vernal swales, or roadside depressions. Population size is strongly correlated with rainfall. Depth of pool appears to be a significant factor as this species is rarely found in shallow pools. Elevation range 30-1300 m. Flowering period Apr-Jun.	<b>None.</b> The study area does not support vernal moist areas.
<i>Navarretia setiloba</i>	Piute Mountains navarretia	CRPR 1B.1	Small annual herb. Occurs on depressions in clay or gravelly loam within valley grassland, foothill woodland, and pinyon-juniper woodland. Elevation range 500-2100 m. Flowering period Apr-Jul.	<b>Presumed absent.</b> The study area contains suitable habitat for the species. The nearest observation of this species was recorded in 2001, approximately 2.25 miles to the east of the study area within Plum Canyon. This species was not observed during the rare plant surveys.
<i>Opuntia basilaris</i> var. <i>brachyclada</i>	short-joint beavertail	CRPR 1B.2	Medium succulent. Occurs on sandy or coarse granitic soil within chaparral, Joshua tree woodland, and oak/pine woodland. Elevation range 1200-1800 m. Flowering period Apr-Jun.	<b>None.</b> The study area is below the elevation range for this species.

## Appendix I (cont.) Rare Plant Species Potential to Occur<sup>1</sup>

Species Name	Common Name	Status <sup>2</sup>	Habitat, Ecology, and Life History	Potential to Occur <sup>3</sup>
<i>Orcuttia californica</i>	California Orcutt grass	FE/SE CRPR 1B.1	Small annual herb. Occurs in or near vernal pools. This species tends to grow in wetter portions of the vernal pool basin but does not show much growth until the basins become somewhat desiccated. Elevation range 0-700 m. Flowering period Apr-Aug.	<b>None.</b> The study area does support vernal pools.

Source: HELIX (2018)

<sup>1</sup> Sensitive species reported within the Mint Canyon quadrangle on CNDDDB and CNPS databases.

<sup>2</sup> Listing is as follows: F = Federal; S = State of California; E = Endangered; T = Threatened.

CRPR = California Rare Plant Rank: 1A – presumed extinct; 1B – rare, threatened, or endangered in California and elsewhere; 2A – rare, threatened, or endangered in California and elsewhere; 2B – rare, threatened, or endangered in California but more common elsewhere; 3 – more information on distribution, endangerment, ecology, and/or taxonomic validity is needed. Extension codes: .1 – seriously endangered; .2 – moderately endangered; .3 – not very endangered.

<sup>3</sup> Potential to Occur is assessed as follows: **None:** Habitat suitable for species survival does not occur on the study area, the study area is not within geographic range of the species, and/or the study area is not within the elevation range of the species; **Low:** Suitable habitat is present on the study area but of low quality and/or small extent. The species has not been recorded recently on or near the study area. Although the species was not observed during surveys for the current project, the species cannot be excluded with certainty; **Moderate:** Suitable habitat is present on the study area and the species was recorded recently near the study area; however, the habitat is of moderate quality and/or small extent. Although the species was not observed during surveys for the current project, the species cannot be excluded with certainty; **High:** Suitable habitat of sufficient extent is present on the study area and the species has been recorded recently on or near the study area, but was not observed during surveys for the current project. However, focused/protocol surveys are not required or have not been completed; **Presumed Present:** The species was observed during focused surveys for the current project and is assumed to occupy the study area; **Presumed Absent:** Suitable habitat is present on the study area but focused surveys for the species were negative.

THIS PAGE INTENTIONALLY LEFT BLANK

## Appendix J

---

### Sensitive Animal Species Potential to Occur

**Appendix J**  
**Sensitive Animal Species Potential to Occur<sup>1</sup>**

Species Name	Common Name	Status <sup>2</sup>	Habitat, Ecology, and Life History	Potential to Occur <sup>3</sup>
<b>Invertebrates</b>				
<i>Branchinecta lynchi</i>	vernal pool fairy shrimp	FT	Most commonly found in swale, earth slump, or basal-flow depression pools in unplowed grasslands. Requires cool-water pools.	<b>None.</b> The study area does not support vernal pools or other depressional pool habitat.
<i>Euphydryas editha quino</i>	Quino checkerspot butterfly	FE	Primary larval host plants in San Diego are dwarf plantain ( <i>Plantago erecta</i> ) at lower elevations, woolly plantain ( <i>P. patagonica</i> ) and white snapdragon ( <i>Antirrhinum coulterianum</i> ) at higher elevations. Owl's clover ( <i>Castilleja exserta</i> ) is considered a secondary host plant if primary host plants have senesced. Potential habitat includes vegetation communities with areas of low-growing and sparse vegetation. These habitats include open stands of sage scrub and chaparral, adjacent open meadows, old foot trails and dirt roads.	<b>None.</b> The study area is located outside of this species' current range. A historical record of this species was documented on CNDDDB in 1920, approximately 2.25 miles to the east of the study area within non-specific area in Mint Canyon. The study area does not support this species' primary larval host plant, although a few scattered owl's clover individuals were observed.
<b>Fish</b>				
<i>Gasterosteus aculeatus williamsoni</i>	unarmored threespine stickleback	FE/SE	Occurs in weedy ponds, backwaters, and among emergent vegetation in small, south coast-flowing streams.	<b>None.</b> The study area does not support suitable perennial water for this species.
<b>Amphibians</b>				
<i>Spea hammondi</i>	western spadefoot	SSC	Occurs in open coastal sage scrub, chaparral, and grassland, along sandy or gravelly washes, floodplains, alluvial fans, or playas; require temporary pools for breeding and friable soils for burrowing; generally excluded from areas with bullfrogs ( <i>Rana catesbiana</i> ) or crayfish ( <i>Procambarus</i> spp.)	<b>None.</b> The study area does not support suitable temporary pools required for breeding.

Appendix J (cont.)  
Sensitive Animal Species Potential to Occur<sup>1</sup>

Species Name	Common Name	Status <sup>2</sup>	Habitat, Ecology, and Life History	Potential to Occur <sup>3</sup>
<b>Reptiles</b>				
<i>Anniella</i> sp.	California legless lizard	SSC	Occurs in a variety of habitats, such as coastal dunes, sandy washes, and alluvial fans within chaparral, pine-oak woodlands, stream terraces with cottonwoods, sycamores or oaks. Prefers areas with leaf litter under trees and bushes with generally moist and loose soil.	<b>Moderate.</b> The study area supports suitable habitat for this species, particularly within and adjacent to Bouquet Canyon Creek. However, the site is relatively free of leaf litter due to presence of giant reed ( <i>Arundo donax</i> ) along the banks of Bouquet Canyon Creek. The nearest CNDDDB occurrence was recorded in 2010, approximately 1.5 miles to the northwest of the study area along Pettinger Canyon Road.
<i>Arizona elegans occidentalis</i>	California glossy snake	SSC	Most common in desert habitats but also occur in chaparral, sagebrush, valley-foothill hardwood, pine-juniper, and annual grass. Prefers open sandy areas with scattered brush, but also found in rocky areas.	<b>Low.</b> The study area supports suitable chaparral habitat, although there has not been a CNDDDB occurrence record in the area in over 50 years.
<i>Aspidoscelis tigris stejnegeri</i>	coastal whiptail	SSC	Open coastal sage scrub, chaparral, and woodlands. Frequently found along the edges of dirt roads traversing its habitats. Important habitat components include open, sunny areas, shrub cover with accumulated leaf litter, and an abundance of insects, spiders, or scorpions.	<b>High.</b> The study area supports suitable sage scrub, chaparral, and woodland habitat for this species. The nearest CNDDDB occurrence was recorded in 2008, approximately 1.25 miles to the east of the study area along Hayfork Road.



Appendix J (cont.)  
Sensitive Animal Species Potential to Occur<sup>1</sup>

Species Name	Common Name	Status <sup>2</sup>	Habitat, Ecology, and Life History	Potential to Occur <sup>3</sup>
<b>Reptiles (cont.)</b>				
<i>Phrynosoma blainvillii</i>	coast horned lizard	SSC	Coastal sage scrub and open areas in chaparral, oak ( <i>Quercus</i> sp.) woodlands, and coniferous forests with sufficient basking sites, adequate scrub cover, and areas of loose soil; require native ants, especially harvester ants ( <i>Pogonomyrmex</i> spp.), and are generally excluded from areas invaded by Argentine ants ( <i>Linepithema humile</i> ).	<b>High.</b> The study area supports suitable sage scrub, chaparral, and oak woodland habitats. The nearest CNDDDB occurrence was recorded in 2005, approximately 4.5 miles to the southwest of the study area within the Santa Clara River.
<i>Thamnophis hammondi</i>	two-striped gartersnake	SSC	Occurs along perennial and intermittent streams bordered by dense riparian vegetation, but occasionally associated with vernal pools or stock ponds.	<b>None.</b> The study area does not support perennial or intermittent streams or other aquatic habitats.
<b>Birds</b>				
<i>Athene cunicularia</i>	burrowing owl	SSC	Typical habitat is grasslands, open scrublands, agricultural fields, and other areas where there are ground squirrel burrows or other areas in which to burrow.	<b>Presumed Absent.</b> Although the study area supports suitable habitat and burrows, no burrowing owls were observed during the focused survey.

Appendix J (cont.)  
Sensitive Animal Species Potential to Occur<sup>1</sup>

Species Name	Common Name	Status <sup>2</sup>	Habitat, Ecology, and Life History	Potential to Occur <sup>3</sup>
<b>Birds (cont.)</b>				
<i>Lanius ludovicianus</i>	loggerhead shrike	SSC	Nests in dense, often thorny shrubs or trees. Will nest within brush piles or tumbleweeds when trees or shrubs are not present. Feeds on a wide variety of animals, including arthropods, amphibians, reptiles, small mammals, and small songbirds within open habitats such as grasslands, agricultural fields, pastures, shrublands, and ruderal areas with adequate perching locations.	<b>High.</b> Some portions of the study area support dense shrubs and trees suitable for nesting. The majority of the site supports suitable foraging habitat. The nearest CNDDDB occurrence was recorded in 2005, approximately 1.25 miles to the northeast of the study area.
<i>Polioptila californica californica</i>	coastal California gnatcatcher	FT/SSC	Occurs in coastal sage scrub and very open chaparral.	<b>Presumed Absent.</b> The study area supports coastal scrub and chaparral habitat. This species was not observed during focused surveys.
<b>Mammals</b>				
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	SCT/SSC	Occurs in a wide variety of habitats, although more common in mesic habitats. Usually roosts in caves, abandoned mines, and occasionally buildings. Forages for small moths along the edge of vegetation, such as riparian and woodland habitats.	<b>Low.</b> The study area does not contain suitable roosting habitat but may be used by foraging individuals.
<i>Lepus californicus bennettii</i>	San Diego black-tailed jackrabbit	SSC	Occurs primarily in open habitats including coastal sage scrub, chaparral, grasslands, croplands, and open, disturbed areas if there is at least some shrub cover present.	<b>High.</b> The study area contains suitable habitat for this species. The nearest CNDDDB occurrence was recorded in 2015, approximately 5.5 miles to the southeast of the study area.

Appendix J (cont.)  
Sensitive Animal Species Potential to Occur<sup>1</sup>

Species Name	Common Name	Status <sup>2</sup>	Habitat, Ecology, and Life History	Potential to Occur <sup>3</sup>
<b>Mammals (cont.)</b>				
<i>Onychomys torridus ramona</i>	southern grasshopper mouse	SSC	Sandy valley floors within desert scrub habitat with low to moderate shrub cover and friable soils, but also found in coastal scrub and chaparral habitats.	<b>Low.</b> The study area contains suitable habitat for this species. However, the nearest CNDDDB occurrence was recorded in 1930, approximately 7 miles to the northeast of the study area within the Angeles National Forest.

<sup>1</sup> Sensitive species reported within the Mint Canyon quadrangle on CNDDDB.

<sup>2</sup> Listing is as follows: F = Federal; S = State of California; E = Endangered; T = Threatened; CE = Candidate Endangered; CT = Candidate Threatened; FP = Fully Protected; SSC = State Species of Special Concern.

<sup>3</sup> Potential to Occur is assessed as follows. **None:** Species is so limited to a particular habitat that it cannot disperse across unsuitable habitat (e.g. aquatic organisms), and habitat suitable for its survival does not occur on the study area; **Not Expected:** Species moves freely and might disperse through or across the study area, but suitable habitat for residence or breeding does not occur on the study area (includes species recorded during surveys but only as transients); **Low:** Suitable habitat is present on the study area but of low quality and/or small extent. The species has not been recorded recently on or near the study area. Although the species was not observed during surveys for the current project, the species cannot be excluded with certainty; **Moderate:** Suitable habitat is present on the study area and the species was recorded recently near the study area; however, the habitat is of moderate quality and/or small extent. Although the species was not observed during surveys for the current project, the species cannot be excluded with certainty; **High:** Suitable habitat of sufficient extent for residence or breeding is present on the study area and the species has been recorded recently on or near the study area, but was not observed during surveys for the current project. However, focused/protocol surveys are not required or have not been completed; **Presumed Present:** The species was observed during biological surveys for the current project and is assumed to occupy the study area; **Presumed Absent:** Suitable habitat is present on the study area but focused/protocol surveys for the species were negative.

THIS PAGE INTENTIONALLY LEFT BLANK

# Attachment B

---

Oak Tree Survey Report Addendum

HELIX Environmental Planning, Inc.  
16485 Laguna Canyon Road  
Suite 150  
Irvine, CA 92618  
949.234.8770 tel  
619.462.0552 fax  
[www.helixepi.com](http://www.helixepi.com)



February 16, 2022

Evan Knapp  
Integral Communities  
888 San Clemente Drive, Suite 100  
Newport Beach, CA 92660

Subject: Addendum to the Oak Tree Report for the Bouquet Canyon Project (Tentative Tract No. 82126)

Dear Mr. Knapp:

HELIX Environmental Planning, Inc. (HELIX) completed an oak tree survey report in August 2021 for the proposed Bouquet Canyon Road Project (Project) located in the City of Santa Clarita (City), Los Angeles County, California. This letter report is an addendum to the oak tree survey report to provide updates to the findings of that report based on revised project plans. The revised study area total 89.73 acres (56.91 acres on-site and 32.82 acres off-site). The revised project is shown on Figure 1, *Regional Location*, Figure 2, *USGS Topography*, and Figure 3, *Aerial Photograph*.

## REVISED PROJECT AREAS

The Revised Project Areas and changes made to the project since the BTR are summarized below and depicted on Figure 4, *Revised Project Areas*.

1. Off-Site Flood Control Outlet- Additional temporary impacts to the concrete banks of the off-site concrete flood control channel required for the revisions related to the alignment of the outlet.
2. Copper Hill Road Improvements – Additional grading/paving for Copper Hill Road.
3. Davenport Trailhead – The addition of the Davenport parcel (APN 2812-008-008) for the construction of a city-required trailhead.
4. Bouquet Canyon Road Improvements North – Additional off-site repaving and improvements to existing Bouquet Canyon Road near the northeast corner of the project.



5. Flood Control Channel Inlet & Diversion Structure – Construction of a slightly larger concrete flow diversion structure intended to convey low flows into the low-flow channel and divert high flows into the proposed concrete-lined flood control channel.
6. Sewer Line - Installation of a sewer line in the northeast portion of the site.
7. Slope Grading – Additional slope grading for the new alignment of Bouquet Canyon Road along the southerly border of the study area.
8. Bouquet Canyon Road Improvements South – Minor additional off-site road repaving and improvements to Bouquet Canyon Road located in the southwesterly portion of the project site.
9. Residential Addition – Addition of the “donut hole” parcel (APN 2812-008-002) in the easterly portion of the project site. Note that this area was evaluated for impacts to biological resources in the 2019 BTR yet was not evaluated as part of the project in the EIR. Additional residential uses have been proposed in the donut hole area since the EIR was certified. As such, the donut hole parcel has been included in this addendum.
10. Residential Reduction - Removal of Planning Area 1a, which was previously proposed to be constructed within the southern portion of the study area per the project BTR and EIR. This planning area presented in the Final EIR for the project will not be constructed as part of the revised project.

## UPDATED OAK TREE SURVEY

On February 26, 2021, HELIX biologist and ISA-certified arborist Daniel Torres performed a preliminary oak tree survey on Revised Project Area 3 (Davenport Trailhead). On October 19, 2021, Mr. Torres performed an oak tree survey in Revised Project Area 9 (see *Attachment A, Oak Tree Survey Report*). On August 12, 2021, Carlsberg and Associates performed a follow-up oak tree survey on the Davenport Parcel. The Carlsberg report is included as *Attachment B, Davenport Oak Tree Survey Report*. On December 10, 2021, Mr. Torres performed an oak tree survey on Additional Project Areas 1, 2, 4-8, and 10. Of the Revised Project Areas, City-protected oak trees were detected on the Revised Project Area 3 only.

## UPDATED RESULTS

A total of 20 new trees subject to an Oak Tree Permit were identified on Revised Project Area 3 (Attachment B). The total number of trees within the revised study area is 84. Of the 20 new trees, one was a blue oak (*Quercus douglasii*), two were interior live oak (*Quercus wislizeni* var. *wislizeni*), and 17 were Tucker oak (*Quercus john-tuckeri*). The locations of all oak trees are depicted on Figure 5, *Oak Tree Locations*.

## REVISED PROJECT EFFECTS

The revised project includes avoidance for all oaks within Revised Project Area 3. Tree 27 (Tucker oak) located in the southwestern portion of the study area was avoided in the original project plan. This tree

will be subject to minor encroachment in the revised project plan. The updated oak tree impacts table is included as Attachment C, *Updated Oak Tree Survey Data*. According to the City’s Oak Tree Preservation Ordinance, no mitigation is warranted for minor encroachments. With the removal of Planning Area 1a, 69 oaks are now being avoided. A summary of the revised impacts to oak trees is provided in Table 1, *Revised Impacts to Oak Trees*. A map within the location, canopy, and protected zone of the oak trees assessed during this survey is included as Figure 6, *Impacts to Oak Trees*.

**Table 1**  
**REVISED IMPACTS TO OAK TREES**

Species Name	Common Name	Removed	Major Encroachment	Minor Encroachment	Avoided
<i>Quercus agrifolia</i>	coast live oak	1	0	0	0
<i>Quercus berberidifolia</i>	scrub oak	0	1	1	4
<i>Quercus douglasii</i>	blue oak	1	0	0	2
<i>Quercus john-tuckeri</i>	Tucker oak	10	0	1	60
<i>Quercus lobata</i>	valley oak	0	0	0	1
<i>Quercus wislizeni</i> var. <i>wislizeni</i>	interior live oak	0	0	0	2
<b>TOTAL</b>		<b>12</b>	<b>1</b>	<b>1</b>	<b>69</b>

## OAK TREE APPRAISED VALUES

Since the oak trees within Revised Project Area 3 will be avoided, no oak tree appraisal is warranted for these trees. Additionally, no appraisal is warranted for minor encroachment to Tree 27. Therefore, the total appraised value of the oak trees (\$80,300) remains the same as presented in the Oak Tree Survey Report (Attachment A). The oak tree appraisals are detailed in Attachment C of Oak Tree Survey Report and summarized in Table 2, *Summary of Tree Appraisals*, below.

To mitigate for the full value of the appraised oak trees, an Oak Tree Mitigation Plan will be prepared detailing the installation of \$39,600 worth of oak trees. Additionally, blue oak #10 will be transplanted. If the blue oak tree does not survive after a 5-year monitoring period, the full appraised value of the tree (\$40,700) will be paid to the City.

**Table 2**  
**SUMMARY OF TREE APPRAISALS**

Tree Number	Species	DBH*	Appraised Value
1	Tucker oak	1.9	\$2,300
2	Tucker oak	2.4	\$2,500
3	coast live oak	4.1	\$3,100
4	Tucker oak	4.8*	\$3,700
5	Tucker oak	6.0*	\$5,200
6	Tucker oak	6.5*	\$3,700
7	Tucker oak	11.3*	\$7,000
8	Tucker oak	3.6*	\$2,100
9	Tucker oak	6.4	\$3,100
10	blue oak	29.4*	\$40,700
11	Tucker oak	2.9	\$2,200
12	scrub oak	3.2	\$2,300
26	Tucker oak	2.1	\$2,400
<b>TOTAL APPRAISED VALUE</b>			<b>\$80,300</b>

Source: HELIX (2021)

\*Indicates a tree with multiple trunks at DBH where the aggregate diameter was calculated

## CONCLUSIONS

The analysis provided above is intended to serve as an addendum to the Oak Tree Survey Report to document revisions to the original proposed project, including nine Revised Project Areas and the removal of Planning Area 1a. The revised study area includes 84 City-protected oak trees. All 20 new oak trees detected within Revised Project Area 3 will be completely avoided. The revised project plan includes minor encroachment to Tree 27. No appraisal or mitigation is warranted for minor encroachment according to the City's Oak Tree Preservation Ordinance. The total appraised value required to mitigate for impacted oak trees is \$80,300. This will occur through the planting of \$39,600 worth of mitigation oak trees on site and the transplantation of blue oak #10. If the blue oak does not survive the 5-year monitoring period following transplantation, the appraised value of the blue oak (\$40,700) will be paid to the City.

If you have any questions regarding the information presented in this letter report, please contact me at (619) 462-1515 or [DanielT@helixepi.com](mailto:DanielT@helixepi.com).

Sincerely,



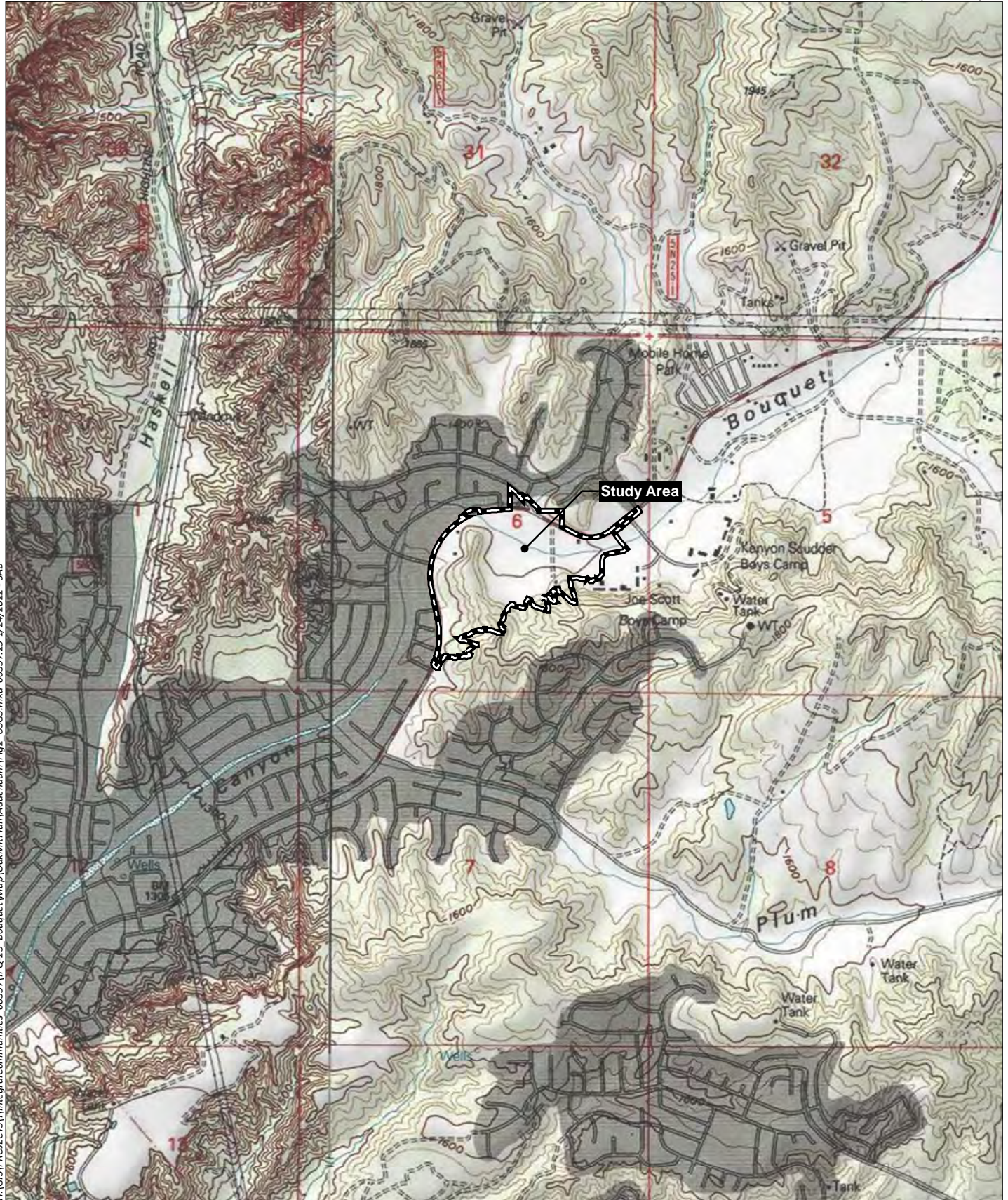
Daniel Torres  
Biologist  
ISA-Certified Arborist (WE-12249)

**Attachments:**

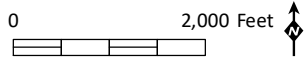
- Figure 1: Regional Location
- Figure 2: USGS Topography
- Figure 3: Aerial Vicinity
- Figure 4: Revised Project Areas
- Figure 5: Oak Tree Locations
- Figure 6: Impacts to Oak Trees
- Attachment A: Oak Tree Survey Report
- Attachment B: Davenport Oak Tree Survey Report
- Attachment C: Updated Oak Tree Survey Data







H:\GIS\PROJECTS\IntegralCommunities\_00357\IPQ-25\_Bouquet\Map\OakMitPlan\Addendum\Fig2\_USGS.mxd 00357.25 1/24/2022 - SAB



Source: Mint Canyon 7.5' Quad (USGS)





H:\GIS\PROJECTS\IntegralCommunities\_00357\IPQ-25\_Bouquet\Map\OakMitPlan\Addendum\Fig3\_Aerial.mxd 00357\_25 1/24/2022 - SAB

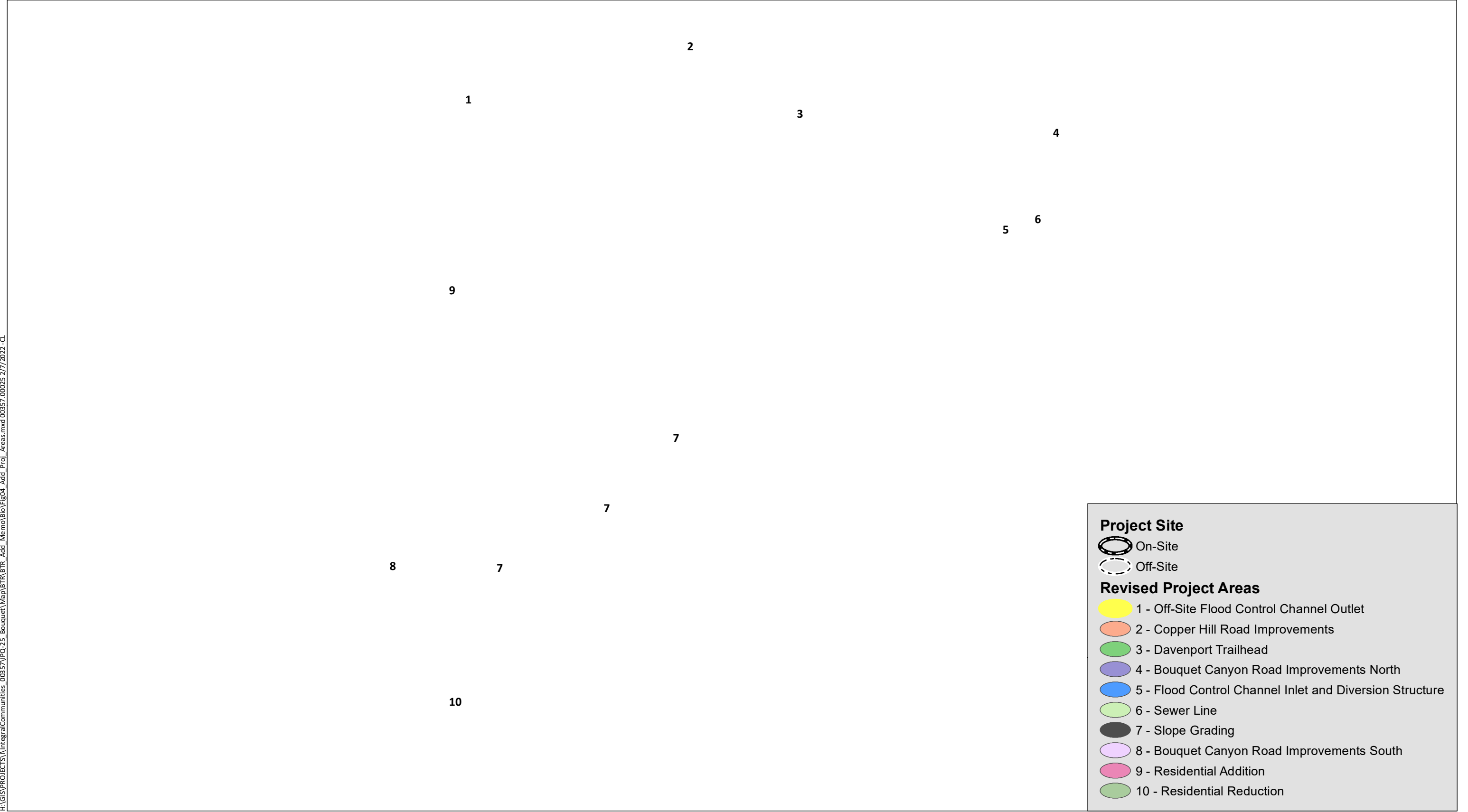
Study Area

Source: Aerial (NearMap, 2021)



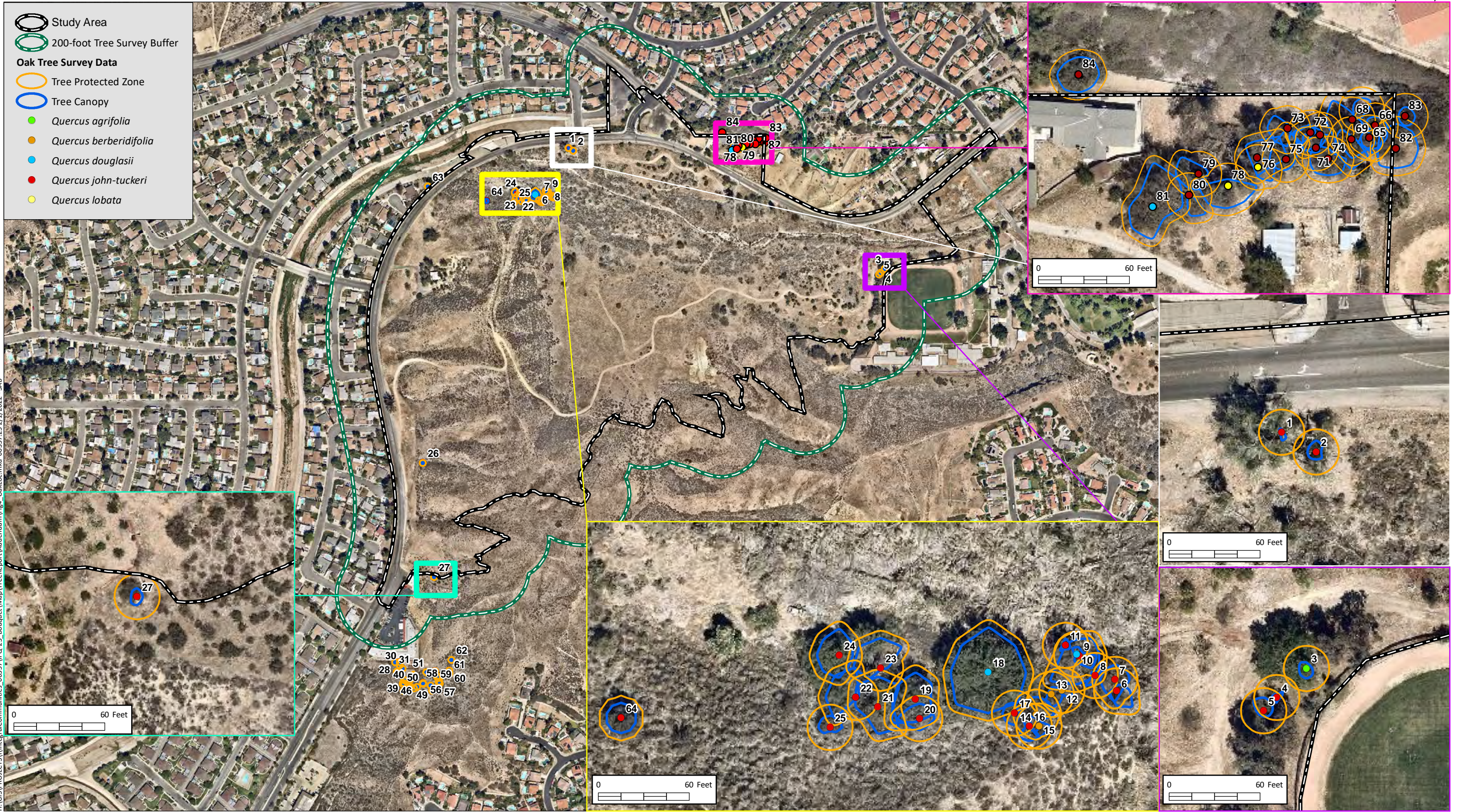


H:\GIS\PROJECTS\IntegralCommunities\_0357\IPQ-25\_Bouquet\Map\BTR\BTR\_Add\_Memo\BIO\Fig04\_Add\_Proj\_Areas.mxd 00357\_00025 2/7/2022 -CL



Source: Site Plan (9-29-21)

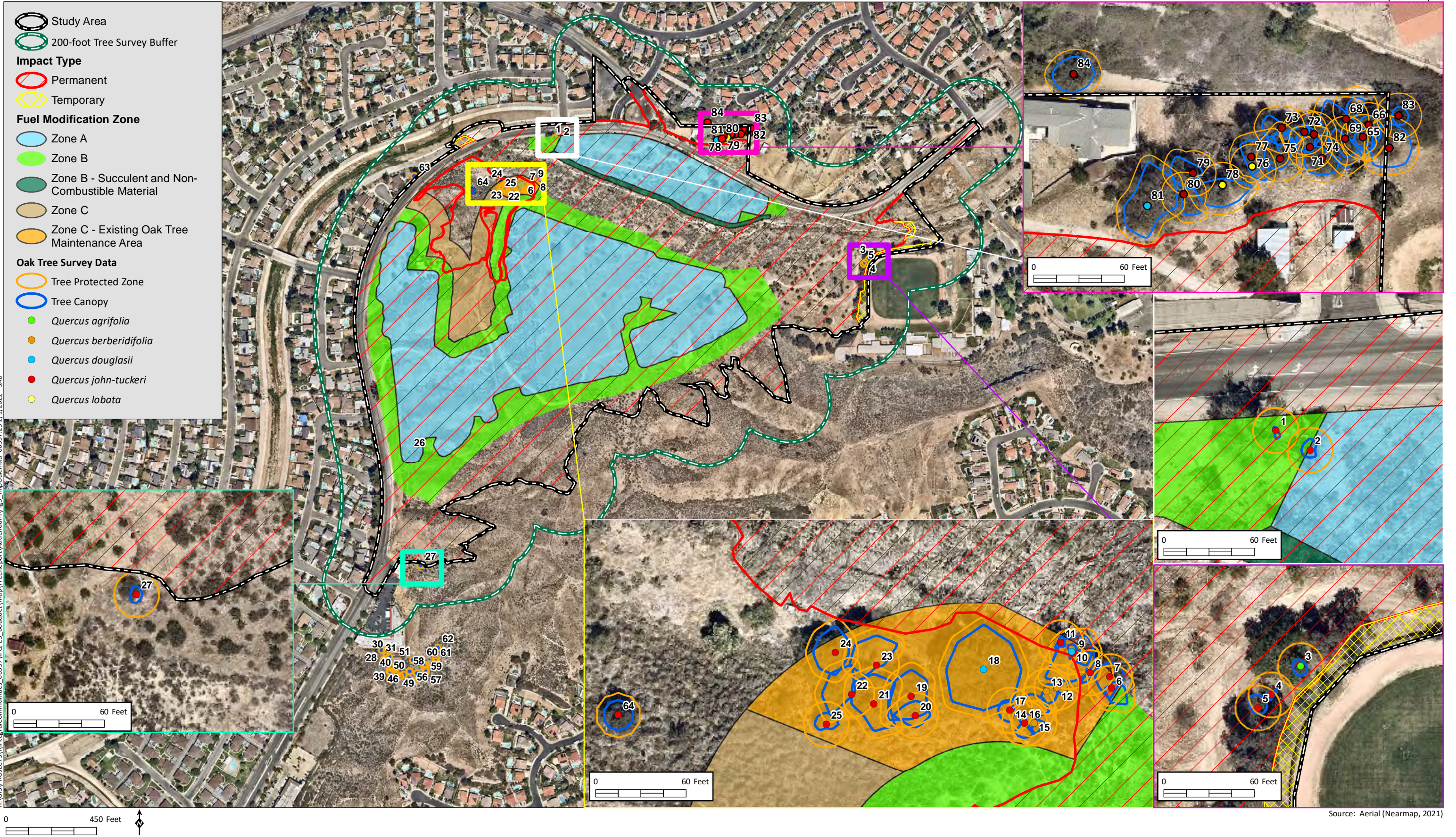




H:\GIS\PROJECTS\IntegralCommunities\_00357\IPQ\_25\_Bouquet\Map\TreeReport\Addendum\Fig4\_OakLoc.mxd 00357\_25\_2/1/2022 - SAB

Source: Aerial (Nearmap, 2021)





H:\GIS\PROJECTS\IntegralCommunities\_00357\IPQ\_25\_Bouquet\Map\TreeReport\Addendum\Figs\_impOak.mxd 00357\_25\_2/1/2022 - SAB

Source: Aerial (Nearmap, 2021)



# Attachment A

---

## Oak Tree Survey Report

HELIX Environmental Planning, Inc.  
16485 Laguna Canyon Road, Suite 150  
Irvine, CA 91942  
949.234.8770 tel  
619.462.1515 fax  
www.helixepi.com



August 16, 2021

IPQ-25

Mr. Peter Vanek  
Integral Communities  
888 San Clemente Drive  
Newport Beach, CA 92660

Subject: Oak Tree Survey Report for the Bouquet Canyon Road Project

Dear Mr. Covington:

HELIX Environmental Planning, Inc. (HELIX) prepared this report to document the results of an oak tree survey conducted for the proposed Bouquet Canyon Road Project (project) located the City of Santa Clarita (City), Los Angeles County, California. The purpose of this report is to provide an inventory of all species of oak tree (*Quercus* spp.) within 200-feet of the project footprint with at least one trunk over 6 inches in circumference at a point 4.5 feet above natural grade and to determine the presence of Heritage Trees as defined under the City's Oak Tree Preservation Ordinance (17.51.040; ordinance). This report was also prepared to provide supporting information for obtaining an Oak Tree Permit if sought in the future.

## STUDY AREA LOCATION

The approximately 94-acre study area is generally located 6.9 miles to the east of Interstate 5 and 3.8 miles to the northwest of California State Route 14 in the City of Santa Clarita (Figure 1, *Regional Location*). Specifically, the study area is located directly south of the intersection of David Way and Bouquet Canyon Road. The study area is within Section 6 of Township 4 North, Range 15 West of the Mint Canyon, USGS 7.5-minute topographic quadrangle (Figure 2, *USGS Topography*).

Immediate surrounding land uses include existing residential developments to the north and west, a mixture of undeveloped land and residential development to the south, and undeveloped land and juvenile detention schools to the east (Figure 3, *Aerial Photograph*). The study area is located approximately 0.20 mile to the southeast of Haskell Canyon Open Space and 1.40 miles to the south of Angeles National Forest.

## REGULATORY FRAMEWORK

The City's Oak Tree Preservation ordinance states, "No person shall cut, prune, remove, relocate, endanger, damage, or encroach into the protected zone of any oak tree on any public or private property within the City" (City of Santa Clarita [City] 2013). The protected zone of the oak tree includes



the area within five feet of the dripline (canopy extent), but no less than 15 feet from the trunk. To remove any oak tree or to subject its protected zone to major encroachment, an Oak Tree Permit must be obtained. Trees subject to the permit include all trees of the oak species (*Quercus* sp.) exceeding 6 inches in circumference when measured at a point 4.5 feet above the tree's natural grade. Encroachment is defined as intrusion into the protected zone of an oak tree, which includes but is not limited to, intrusion by trenching, paving, pruning, dumping, parking of commercial vehicles. Major encroachment is defined by the City's ordinance as "an area between the outer edge of the trunk and fifty percent of the diameter of the protected zone" and minor encroachment is defined as an area between the outermost edge of the protected zone and fifty percent of the diameter of the protected zone" (City 2013).

To obtain an Oak Tree Permit, an application must be submitted to the City Manager or designated representative ("Director") and a filing fee as established by the City Council must be paid. The conditions of the Oak Tree Permit may include replacement or relocation of trees, or payment of a fee based on the ISA's "Guide for Plant Appraisal."

Heritage Oak Trees are given special consideration and may be fully protected or subject to requirements stricter than those of a standard protected oak tree. A Heritage Oak Tree is defined as any oak tree measuring 108 inches in circumference when measured 4.5 feet above the tree's natural grade. In the case of trees with multiple trunks, two or more trunks each must measure 72 inches or greater in circumference when measured 4.5 feet above the tree's natural grade.

## METHODS

HELIX International Society of Arboriculture (ISA) Certified Arborist Daniel Torres (WE-12249) and HELIX Biologist/Regulatory Specialist Ezekiel Cooley completed an oak tree survey on the study area and within a 200-foot buffer of the study area (survey area) on December 19 and 20, 2018. The purpose of the survey was to document the presence of: (1) oak trees with at least one trunk over 6 inches in circumference at a point 4.5 feet above natural grade and (2) Heritage Oak Trees.

All oak trees within the survey area that satisfied the previously mentioned criteria were identified to species. The circumference at a point 4.5 feet above natural grade was measured. For trees with co-dominant stems at 4.5 feet above natural grade, the circumference of each stem was measured at this height. Next, the height of each tree was estimated and an aluminum tag with a unique number was affixed to the north side of the tree at approximately three feet above natural grade. Trees located outside of the study area but located within the buffer area were not tagged since Integral Communities does not own this property. Additionally, trees located on the detention school property to the east were not surveyed since permission to access this property was not provided. Finally, the location of each individual tree and the canopy extent were recorded with a global positioning system device with sub-meter accuracy. The collected data are not considered survey-grade accuracy and should not be used for construction purposes.

Physical and horticultural evaluations were performed for each protected tree according to the City's Oak Tree Preservation and Protection Guidelines (City 1990). The physical evaluation included the assessment of structure, terrain, and general appearance. The horticultural evaluation included the detection of any disease or pathogens and an assessment of the tree's overall vigor. The physical and horticultural evaluations were used to rate each tree on a scale ranging from A to F as outlined in the

City’s Preservation and Protection Guidelines. The rating system is reproduced below in Table 2, *Oak Tree Rating System*.

**Table 2**  
**OAK TREE RATING SYSTEM**

<b>Rating</b>	<b>Description</b>
A – Outstanding	A healthy and vigorous tree characteristic of its species and reasonably free of any visible signs of stress, disease or pest infestation.
B – Above Average	A healthy and vigorous tree with minor visible signs of stress, disease or pest infestation.
C – Average	Although healthy in overall appearance there is an abnormal amount of stress or disease and/or pest infestation.
D – Below Average/Poor	This tree is characterized by exhibiting a greater degree of stress, disease and/or pest infestation than normal and appears to be in a state of rapid decline. The degree of decline may vary greatly in signs of dieback, disease and pest infestation and appears to be in an advanced state of decline.
F – Dead	This tree exhibits no signs of life whatsoever.

Source: City of Santa Clarita (1990)

Following the oak tree survey, an impact assessment was conducted using the most recent project grading plans. The impact assessment was used to determine the number of oak trees that would be required to be removed or whose protected zone would be subject to major encroachment to complete project activities.

## RESULTS

A total of 64 oak trees subject to an Oak Tree Permit were located within the survey area (Figure 4, *Oak Tree Locations*). Of these trees, one was coast live oak (*Quercus agrifolia*), six were scrub oak (*Quercus berberidifolia*), two were blue oak (*Quercus douglasii*), 54 were Tucker oak (*Quercus john-tuckeri*), and one was a valley oak (*Quercus lobata*). Six trees (approximately 9 percent) were assigned a rating of A – Outstanding, 22 trees (approximately 34 percent) were B – Above Average, 25 trees (approximately 40 percent) were C – Average, and 11 trees (approximately 17 percent) were D – Below Average. No dead trees were observed during the survey. Overall, there was very little disease noted on the oak trees within the survey area. The majority of trees (37 trees, approximately 58 percent) showed evidence of

stress-related growth such as epicormic sprouting and suckers. No Heritage Oak Trees were found during the survey. The locations of all oak tree surveyed are shown in Figure 4. The data collected during the survey is included as Attachment A, *Oak Tree Survey Data*. Representative site and tree photographs are included as Attachment B, *Representative Photographs*.

## IMPACT ASSESSMENT

All oak trees within the project footprint will be removed. In addition, the project will be required to implement fuel modification. The County Fire Department requires fuel modification zones to create a defensible space in the event a wildfire breaks out (County of Los Angeles N.D.). There are five different zones, which are outlined below:

**Zone A (Setback Zone)** – This zone extends 30 feet beyond the edge of any structures. The only allowed vegetation within this zone is green lawns, ground cover not exceeding six inches in height, and well-spaced shrubs. The landscape must be irrigated to promote healthy vegetation and fire resistance.

**Zone B (Irrigated Zone)** – This zone extends from the outermost edge of Zone A to 100 feet from structures. Green lawn, ground cover not exceeding six inches in height, and well-spaced shrubs and trees are allowed in this zone. The landscape must be irrigated to promote healthy vegetation and fire resistance.

**Zone B (Succulent and Non-Combustible Material)** – This zone is included within Zone B and will be comprised of a minimum of 50% succulent plant material and non-combustible material (including rock, decomposed granite [DG], or concrete), comprising a minimum 25% succulents and 25% non-combustible material.

**Zone C (Native Brush Thinning Zone)** – This zone extends from the outermost edge of Zone B to 200 feet from the structures. Well-spaced native vegetation and ornamental shrubs and trees are allowed. Vegetation must be thinned and species that constitute a fire risk are not allowed (e.g., chamise [*Adenostoma fasciculatum*], sages [*Salvia* spp.], California sagebrush, and California buckwheat). This zone does not require irrigation.

**Zone C (Existing Oak Tree Maintenance Area)** – This zone is included within Zone C and shall comply with the following requirements: (1) any plant material and tree litter under the oak canopies shall be cleared twice yearly, once by May 15<sup>th</sup> and August 15<sup>th</sup> of each calendar year; (2) in lieu of plant material where topography allows, DG may be placed, but is not required to be placed, within the drip line area of the oak trees beginning approximately 3-feet from the trunk of the tree with an approximately thickness of 2-inches, DG shall not be compacted, rather shall be loosely placed; and (3) use of soil sterilizers shall be prohibited under and around existing oak trees, use of pre-emergent weed killer shall be prohibited within 100 feet of any individual oak tree or within a natural drainage that seasonally irrigates oak trees.

According to County Fire Department guidelines, all vegetation within Zone A must be irrigated, and the only vegetation allowed is green lawns, ground cover not exceeding six inches in height, and well-spaced shrubs. It was determined that requirements of Zone A are incompatible with the retainment of native oak trees. For the purpose of this assessment, oak trees located within Fuel Modification Zone A were

considered removed, while oak trees located within Zones B and C were considered retained. In order to retain oaks within Zones A, authorization from the County Fire Department would be required. No tree pruning will be performed in any of the zones. The fuel modification zone plans were prepared by FireSafe Planning Solutions and were submitted to the County Fire Department on July 20, 2021.

Based on analyzing each surveyed oak's location in respect to the project grading plans and fuel modification zones, the project would require the removal of 12 oak trees, including one coast live oak (*Quercus agrifolia*, Tree 3), one blue oak (*Quercus douglasii*, Tree 10), and 10 Tucker oaks (*Quercus john-tuckeri*, Trees 1,2, 4-9, 11, and 26). Finally, one scrub oak (Tree 12) would be subjected to major encroachment.

One scrub oak (Tree 13) would be subjected to minor encroachment. Additionally, a retaining wall will be built outside of the protected zone of one blue oak (Tree 18), therefore this tree will be avoided. A total of 50 oak trees would be completely avoided by the project (Table 3, *Impacts to Oak Trees*). A map with the location, canopy, and protected zone of the oak trees assessed during this survey is included as Figure 5, *Impacts to Oak Trees*.

**Table 3**  
**IMPACTS TO OAK TREES**

Species Name	Common Name	Removed	Major Encroachment	Minor Encroachment	Avoided
<i>Quercus agrifolia</i>	coast live oak	1	0	0	0
<i>Quercus berberidifolia</i>	scrub oak	0	1	1	4
<i>Quercus douglasii</i>	blue oak	1	0	0	1
<i>Quercus john-tuckeri</i>	Tucker oak	10	0	0	44
<i>Quercus lobata</i>	valley oak	0	0	0	1
<b>TOTAL</b>		<b>12</b>	<b>1</b>	<b>1</b>	<b>50</b>

## MITIGATION

Based on the impacts to oak trees as quantified by the impact assessment, 12 oak trees will be removed, and one will be subjected to major encroachment. In order to receive an Oak Tree Removal Permit for these impacts, the City may determine whether the project proponent shall replace or relocate, pay a fee, or donate boxed trees to the City of an equivalent value to all oak trees removed or subject to major encroachment. In order to determine the value of impacted trees, the appraised value of each tree subject to impacts was calculated using the 10<sup>th</sup> Edition of the Guide for Plant Appraisal (CTLA 2019). The total appraised value of trees subject to removal or major encroachment is \$80,300 (Attachment C). Trees that will be completely avoided or subject to minor encroachment will not require mitigation.

## CONCLUSION

Sixty-four (64) oak trees on the survey area were considered City-protected trees. Construction of the project will require 12 of these trees to be removed and one to be subjected to major encroachment. It is anticipated that the City will require mitigation for the value of these trees, which totals \$80,300. Fifty

(50) of these trees will be completely avoided or subjected to minor encroachment during project activities and therefore will not require mitigation.

During construction, trees subject to minor or major encroachment will require protection measures, including but not limited to those outlined within Section VII. Standards for Performance of Permitted Work of the Oak Tree Preservation Guidelines. Other general guidelines to protect trees during for project construction are included as Attachment D, *Tree Protection Recommendations*.

Should you have any questions or require additional information, please do not hesitate to contact me at (949) 234-1515 or DanielT@helixepi.com.

Sincerely,



Daniel Torres  
ISA Certified Arborist (WE-12249A)

**Enclosures:**

- Figure 1: Regional Location
- Figure 2: USGS Topography
- Figure 3: Aerial Vicinity
- Figure 4: Oak Tree Locations
- Figure 5: Impacts to Oak Trees

- Attachment A: Oak Tree Survey Data
- Attachment B: Representative Photos
- Attachment C: Oak Tree Appraisal Addendum
- Attachment D: Tree Protection Recommendations



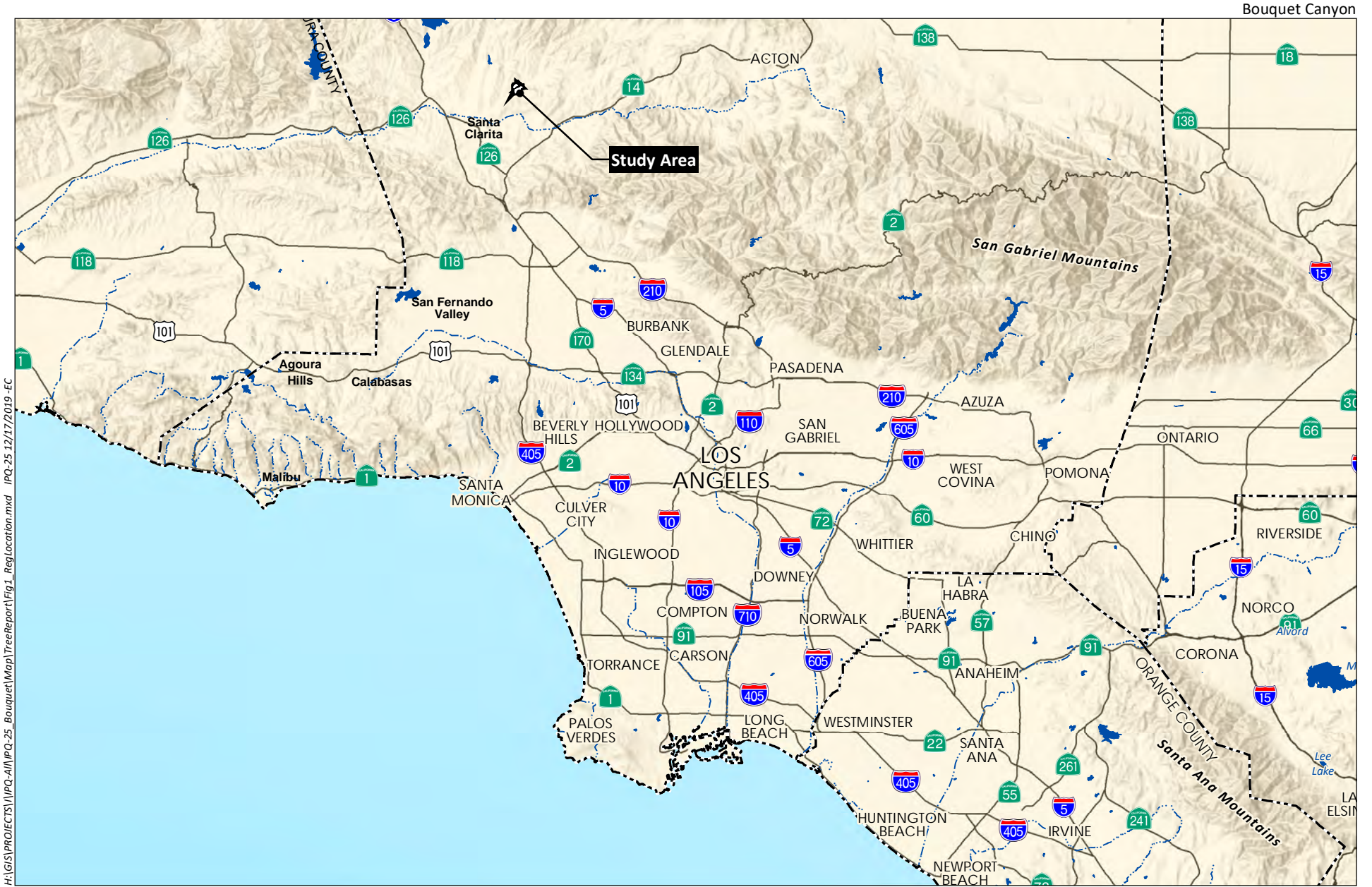
## REFERENCES

Council of Tree and Landscape Appraisers (CTLA). 2019. *Guide for Plant Appraisal, 10<sup>th</sup> Edition*.

Los Angeles Fire Department, County of. N.D. Fuel modification plan notes. Available from:  
<https://www.fire.lacounty.gov/wp-content/uploads/2017/03/Fuel-ModificationPlanNotes.pdf>.  
Accessed March 14, 2019.

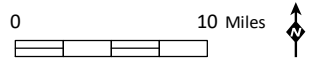
Santa Clarita, City of. 1990. Oak Tree Preservation and Protection Guidelines. Adopted September 1990.  
Available from: <https://www.santa-clarita.com/home/showdocument?id=10121>. Accessed  
November 19, 2018.

Santa Clarita, City of. 2013. Oak Tree Preservation. Ordinance No. 17.51.040. Santa Clarita Municipal  
Code. Adopted December 1987, revised in 2013. Available from:  
<https://www.codepublishing.com/CA/SantaClarita>. Accessed November 19, 2018.

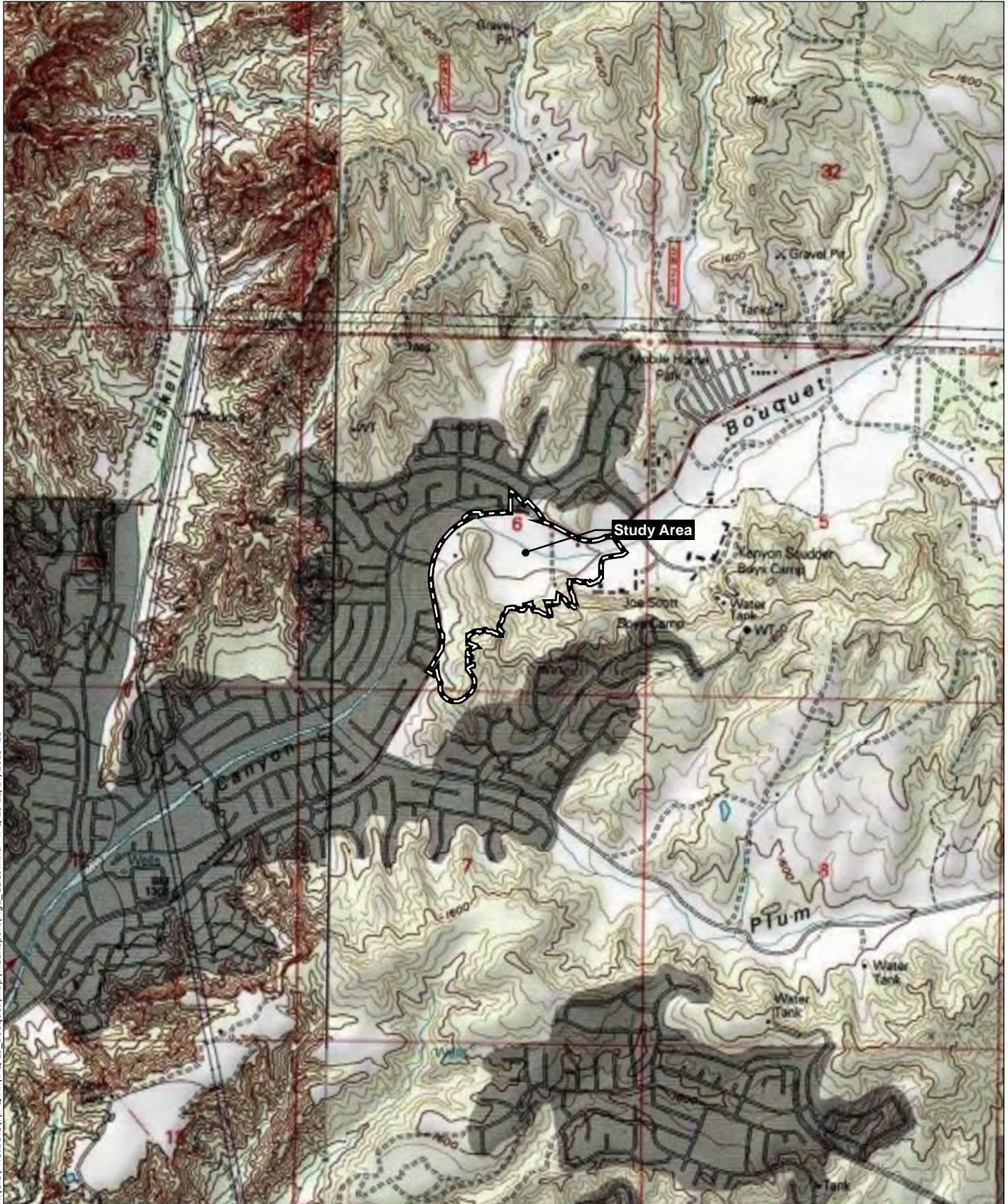


H:\GIS\PROJECTS\IPOQ-All\IPOQ-25\_Bouquet\Map\TreeReport\Fig1\_RegLocation.mxd IPQ-25 12/17/2019 -EC

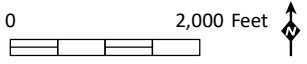
Source: Base Map Layers (ESRI, 2013)







H:\GIS\PROJECTS\IPO-All\IPO-25 Bouquet\Map\TreeReport\Fig2\_USGS.mxd IPO-25 12/17/2019 -EC

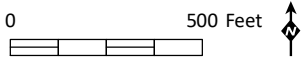


Source: Mint Canyon 7.5' Quad (USGS)



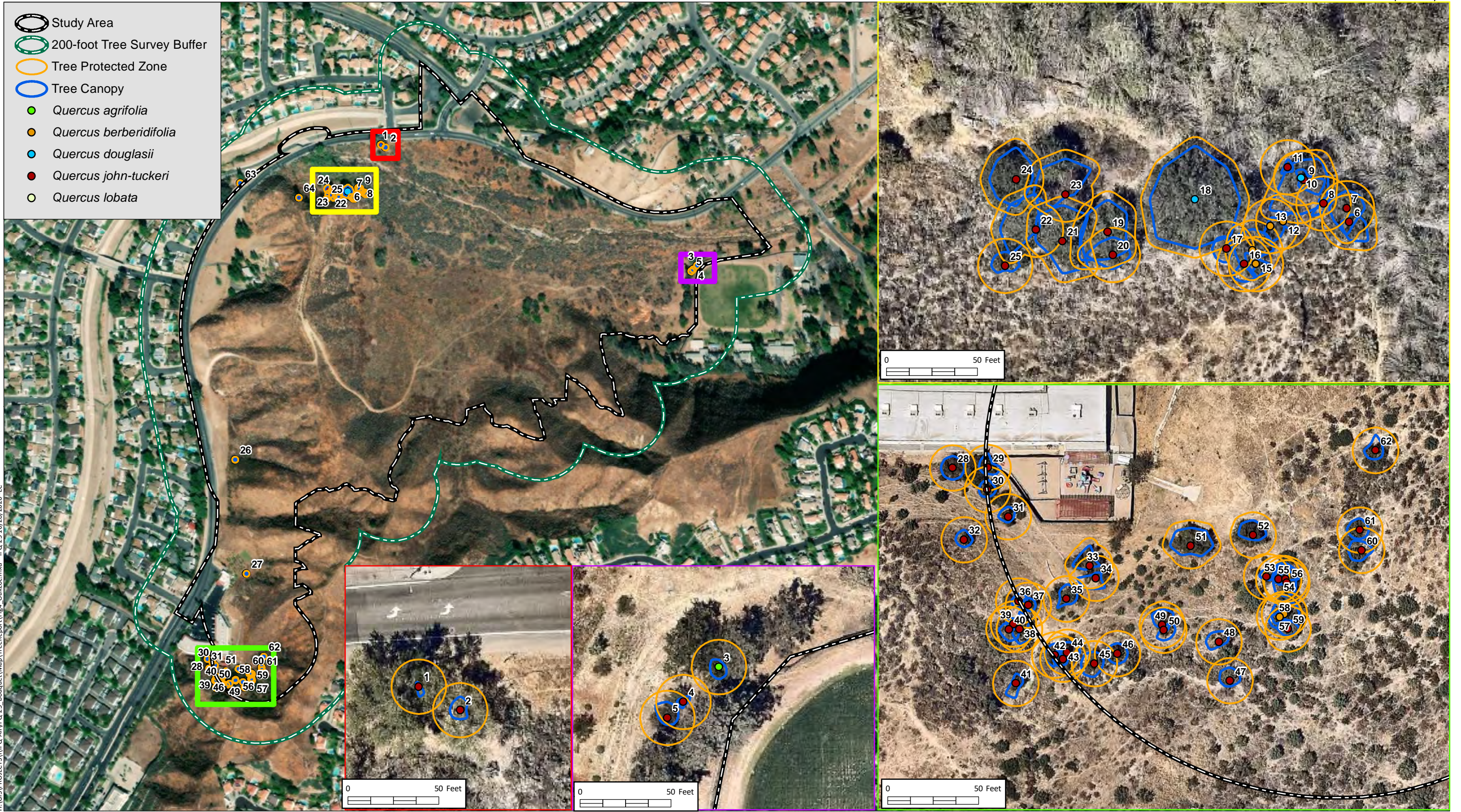


H:\GIS\PROJECTS\IPQ-QA\IPQ-25\_Bouquet\Map\TreeReport\Fig3\_Aerial.mxd IPQ-25 12/17/2019 -EC



Source: Base Map Layers (NAIP, 2016)





H:\GIS\PROJECTS\IPC-All\IPC-25 - Bouquet\Map\TreeReport\Figs\_OakLoc.mxd IPQ-25 10/28/2020 -EC

Source: Base Map Layers (Nearmap, 2017)



**Study Area**

- Study Area
- 200-foot Tree Survey Buffer

**Impact Type**

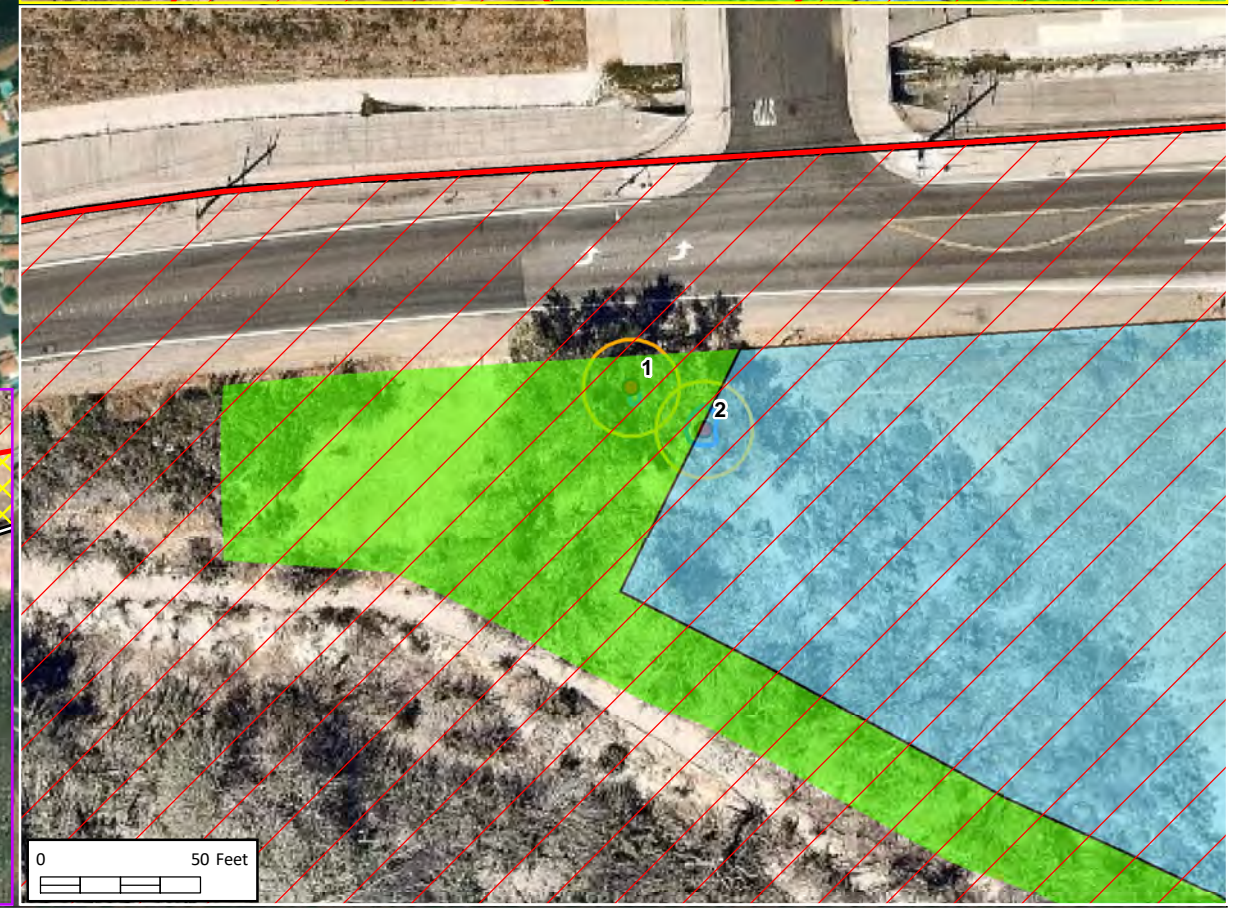
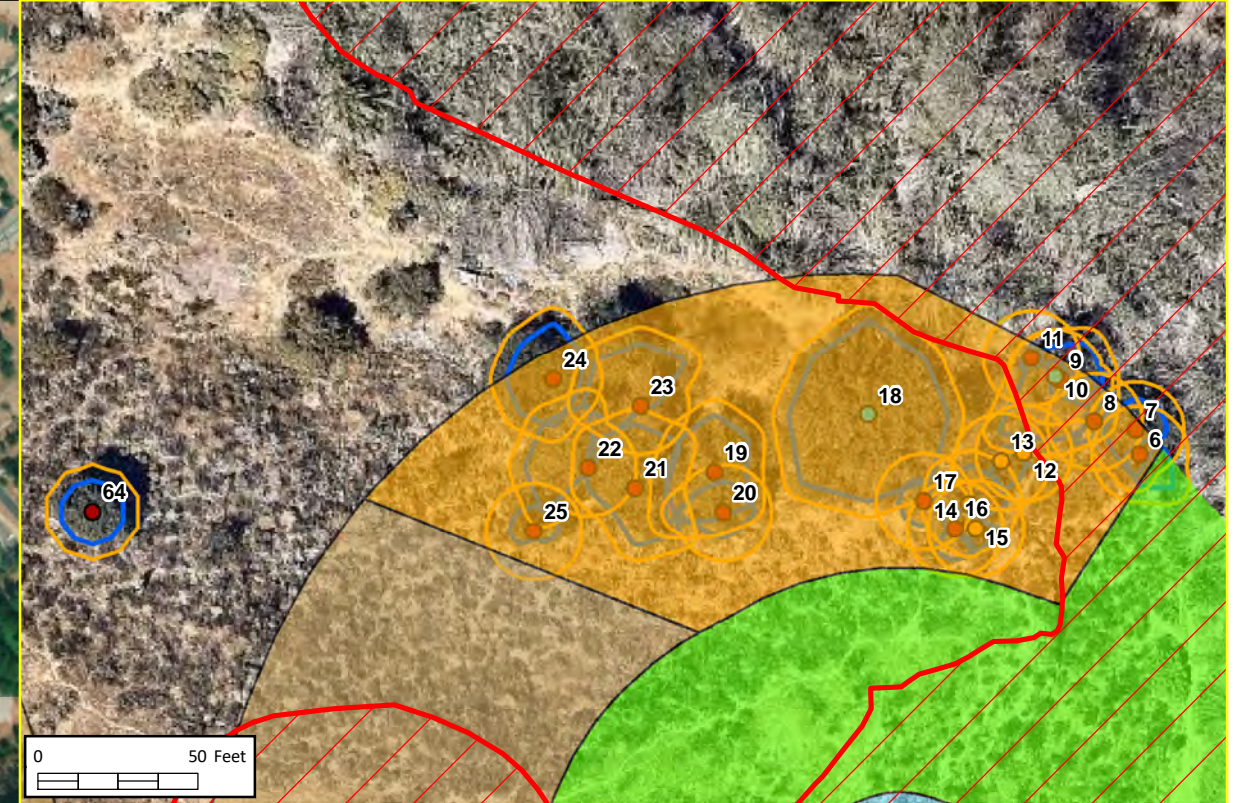
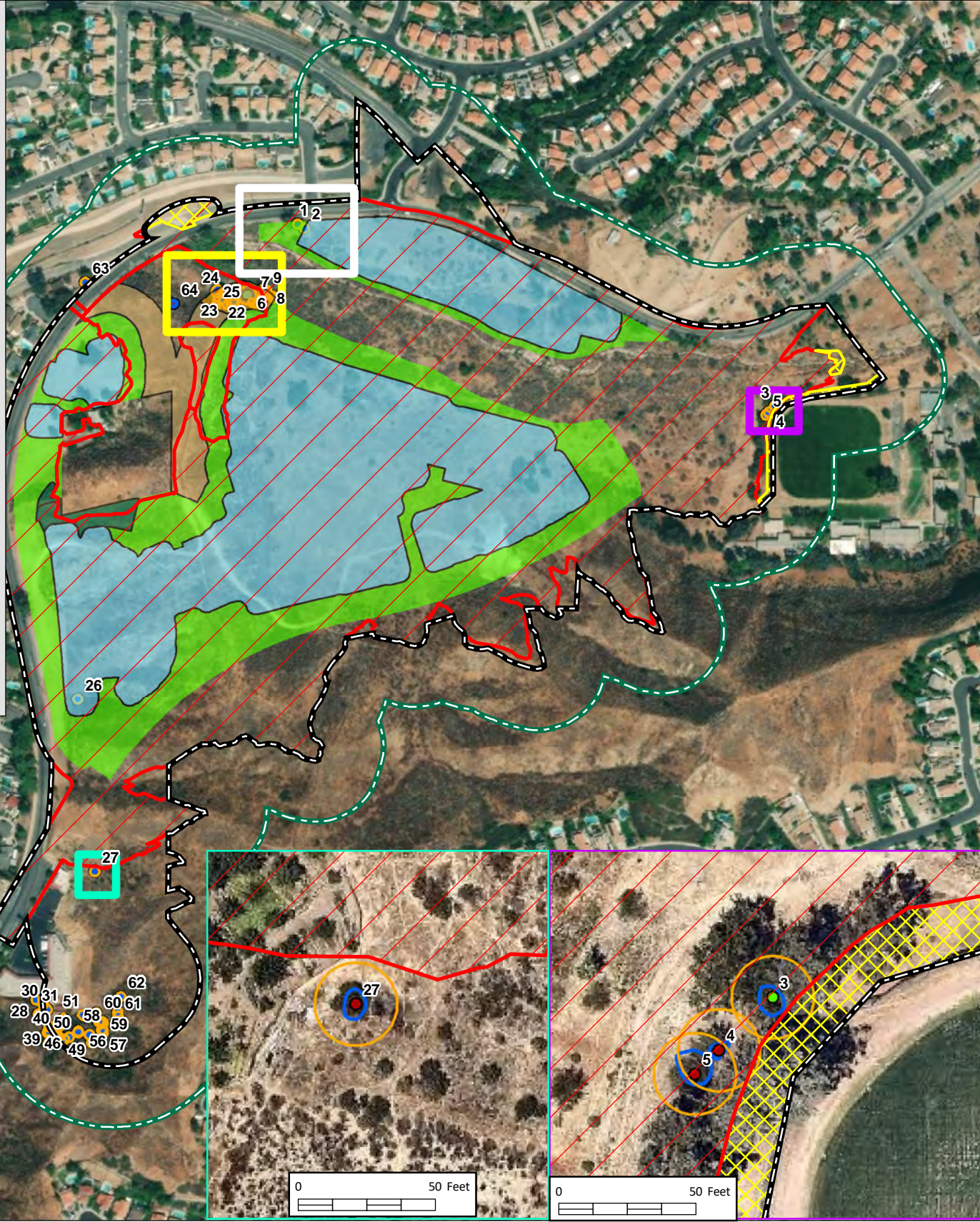
- Temporary
- Permanent

**Fuel Modification Zone**

- Zone A
- Zone B
- Zone B - Succulent and Non-Combustible Material
- Zone C
- Zone C - Existing Oak Tree Maintenance Area

**Oak Tree Survey Data**

- Tree Protected Zone
- Tree Canopy
- Quercus agrifolia*
- Quercus berberidifolia*
- Quercus douglasii*
- Quercus john-tuckeri*
- Quercus lobata*



H:\GIS\PROJECTS\IntegralCommunities\_0357\IPQ-25\_Bouquet\Map\TreeReport\Fig5\_ImpOak\_06-11-21.mxd IPQ-25 6/11/2021-EC

Source: Base Map Layers (NAIP, 2016; Nearmap, 2017)



# Attachment A

---

Oak Tree Survey Data

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
1	Tucker oak <i>Quercus john-tuckeri</i>	6	10	3	1	1	5	6	1	1	3	Deep v-crotch at 7", canopy is N-S oriented, does not extend E-W.	Appears vigorous, some small galls present, some old, healed trunk injuries.	B		Removal
2	Tucker oak <i>Quercus john-tuckeri</i>	7.5	9	8	6	3	6	5	6	6	6	Trunk leaning northeast, canopy overall well-distributed.	Galls, insect damage.	B		Removal
3	coast live oak <i>Quercus agrifolia</i>	12.75	16	4	3	4	6	7	6	5	6	Tree leaning south.	Has stress-related suckers, sapsucker holes.	B	No tag; off-site.	Removal
4	Tucker oak <i>Quercus john-tuckeri</i>	10, 9, 7	9	2	6	3	1	4	3	4	3	Tree has been topped.	All epicormic growth, tree in severe decline.	D	No tag; off-site.	Removal
5	Tucker oak <i>Quercus john-tuckeri</i>	11.75, 12, 8.5	15	9	8	6	5	4	4	5	10	Tree leaning north, away from adjacent eucalyptus.	Some galls present, bark damage present (chainsaw cut)-healing.	B	No tag; off-site.	Removal
6	Tucker oak <i>Quercus john-tuckeri</i>	9, 13, 13	16	4	6	9	15	10	5	5	2	Large failure at v-crotch with decay (old main stem), exposed roots.	Declining, significant amount of epicormic sprouting.	D		Removal
7	Tucker oak <i>Quercus john-tuckeri</i>	18, 19, 24	22	10	10	10	8	15	10	10	9	Exposed roots, wide angle crotch at base.	Declining, epicormic sprouting, canopy dieback.	D		Removal

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
8	Tucker oak <i>Quercus john-tuckeri</i>	9.75, 6	5	2	8	2	2	5	10	2	4	Severe lean to south, on steep slope.	Tree is being shaded, very sparse canopy, canopy dieback.	D	Stump shoots from old dead tree.	Removal
9	Tucker oak <i>Quercus john-tuckeri</i>	20	15	6	3	12	12	5	5	2	7	Exposed roots, on steep slope.	Large split with internal decay in trunk, internal decay throughout.	D		Removal
10	blue oak <i>Quercus douglasii</i>	85, 36	45	10	15	15	20	20	25	10	10	Main trunk split long ago, large trunk leaning north, southern-most trunk with severe lean south, on steep slope.	Lots of mistletoe, canopy very sparse.	D		Removal
11	Tucker oak <i>Quercus john-tuckeri</i>	9	16	5	3	3	4	2	6	2	2	On steep slope.	Most of canopy is dead, mistletoe present, epicormic sprouting.	D	Tree is almost completely dead.	Removal
12	scrub oak <i>Quercus berberidifolia</i>	10	15	2	8	8	8	2	2	2	2	Trunk leaning to north, multi-stem, one stem is dead, on steep slope.	Epicormic growth, very sparse canopy.	D		Major Encroachment

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
13	scrub oak <i>Quercus berberidifolia</i>	12, 9.5, 10, 10	15	5	6	8	8	9	5	2	2	One dead stem, on steep slope.	Epicormic sprouting, severe decline, some galls present.	D		Minor Encroachment
14	scrub oak <i>Quercus berberidifolia</i>	22.5, 22, 17, 10, 7.5	20	12	12	12	5	12	10	10	12	Some stems have internal decay, on steep slope.	Epicormic sprouting, mistletoe present, tree in decline.	D		Avoided
15	scrub oak <i>Quercus berberidifolia</i>	7.5, 7.5, 8, 5.5	14	5	3	8	6	8	5	5	9	Good balance, on steep slope.	Some mistletoe present, significant amount of epicormic sprouting, some canopy dieback.	C		Avoided
16	Tucker oak <i>Quercus john-tuckeri</i>	9.5	10	1	1	1	10	10	10	2	1	Most of canopy is in the south, shaded in the north, on steep slope.	Some dieback present, significant amount of epicormic sprouting.	C		Avoided
17	Tucker oak <i>Quercus john-tuckeri</i>	5.5, 6.5, 7, 9	12	7	3	3	4	8	8	8	8	Some included bark at v-crotch about 5" above ground, tree on steep slope.	Small amounts of dieback and epicormic sprouting present.	B		Avoided



Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
18	blue oak <i>Quercus douglasii</i>	40.5, 24, 47, 52.5, 48	35	30	25	25	28	27	30	25	25	Large multi-stem tree with big split and decay, all stems leaning towards the south, tree on steep slope.	Tree is experiencing some dieback, epicormic sprouting, sap sucker and borer holes present.	C	Tree tagged 61 in old survey, probably burned.	Avoided
19	Tucker oak <i>Quercus john-tuckeri</i>	22, 16.5, 17, 13, 10, 11	30	18	15	10	15	15	22	15	15	Included bark in all crotches, tree on a steep slope.	Appears vigorous, some cankers, canopy is somewhat sparse.	B		Avoided
20	Tucker oak <i>Quercus john-tuckeri</i>	17.5, 17, 14, 14	15	10	10	10	7	8	8	15	10	Tree on steep slope, nexus of stems is 1' above ground.	Some canopy dieback present.	B		Avoided
21	Tucker oak <i>Quercus john-tuckeri</i>	21, 25, 20.5, 9	20	20	20	10	20	18	10	15	20	Multiple trunks all leaning in different directions, tree on a steep slope.	Most of canopy is epicormic sprouting, borer and sapsucker holes are present.	C		Avoided
22	Tucker oak <i>Quercus john-tuckeri</i>	15, 19, 18.5, 19, 20	25	20	3	2	1	1	20	20	20	Tree is on a steep slope, included bark present.	Tree appears healthy but is being shaded, canopy is somewhat sparse, significant dieback is present.	C		Avoided

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
23	Tucker oak <i>Quercus john-tuckeri</i>	44.5	35	20	20	5	1	1	10	18	20	Strong lean to the north.	Significant amount of dieback in the lower canopy.	B		Avoided
24	Tucker oak <i>Quercus john-tuckeri</i>	18, 12.5, 42, 22.5	30	18	12	9	9	15	15	15	15	V-crotch with included bark at 7", 1.5', and 2' above ground.	Some galls are present.	B	Tree tagged 60 in old survey.	Avoided
25	Tucker oak <i>Quercus john-tuckeri</i>	9, 9, 10, 6	9	8	8	8	5	2	6	8	8	Tree is on a steep slope.	Some epicormic sprouting is present, fairly even canopy.	B		Avoided
26	Tucker oak <i>Quercus john-tuckeri</i>	6.5	10	8	8	8	8	8	8	8	8	Even canopy spread, tree growing in the open.	Some galls are present, canopy is dense and healthy.	A	Shrub form, more than 25 stems, all 1-3 inches in circumference.	Removal
27	Tucker oak <i>Quercus john-tuckeri</i>	6	9	6	4	4	4	6	6	4	5	Structurally good, open, even canopy.	Significant amount of epicormic growth, most leaves are affected by aphids.	D	Some mechanical damage on the east side of the trunk.	Avoided
28	Tucker oak <i>Quercus john-tuckeri</i>	6.5	8	8	8	8	8	8	8	8	8	Tree is on a steep slope.	Some galls are present.	B	No tag; off-site.	Avoided
29	Tucker oak <i>Quercus john-tuckeri</i>	10, 6, 6.5, 5.5, 11	9	10	4	9	7	4	5	6	7		Dense canopy, tree appears vigorous.	A	No tag; off-site.	Avoided
30	Tucker oak <i>Quercus john-tuckeri</i>	9, 11	12	7	5	6	5	5	6	6	6		Dense canopy, tree appears vigorous.	A	No tag; off-site.	Avoided

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
31	Tucker oak <i>Quercus john-tuckeri</i>	6.5, 8, 6.5	8	7	6	4	3	4	4	7	6		Dense canopy, tree appears vigorous.	A	No tag; off-site.	Avoided
32	Tucker oak <i>Quercus john-tuckeri</i>	6	9	7	5	6	5	5	5	6	6		Dense canopy, tree appears vigorous.	A	No tag; off-site.	Avoided
33	Tucker oak <i>Quercus john-tuckeri</i>	12, 9.5, 14.5	13	14	5	7	1	1	4	12	10	Strong lean downhill.	Tree is vigorous, some minor boring insect damage, significant amount of stress-related sprouting at base.	C	No tag; off-site.	Avoided
34	Tucker oak <i>Quercus john-tuckeri</i>	14.5, 11	14	4	5	3	9	7	10	13	3	Good structure.	Tree appears vigorous, lots of stress-related sprouting at base, epicormic sprouting present.	C	No tag; off-site.	Avoided
35	Tucker oak <i>Quercus john-tuckeri</i>	8, 13, 16, 9.5	15	10	10	7	5	3	9	4	7	Internal decay present in one main trunk.	Significant amount of stress-related sprouting at base.	C	No tag; off-site.	Avoided
36	Tucker oak <i>Quercus john-tuckeri</i>	6	12	5	6	6	4	5	5	5	4		Significant amount of epicormic sprouting, some galls present.	C	No tag; off-site.	Avoided

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
37	Tucker oak <i>Quercus john-tuckeri</i>	8	12	5	5	5	5	4	3	3	5		Significant amount of epicormic sprouting, some galls present.	C	No tag; off-site.	Avoided
38	Tucker oak <i>Quercus john-tuckeri</i>	9.5, 10, 8.5	12	12	10	5	10	10	6	5	2	Lean is causing bark to split.	Some internal decay and stress-related sprouting at the base is present.	C	No tag; off-site.	Avoided
39	Tucker oak <i>Quercus john-tuckeri</i>	7	10	4	3	3	3	4	4	5	5		Stress-related sprouting at the base and epicormic sprouting is present.	C	No tag; off-site.	Avoided
40	Tucker oak <i>Quercus john-tuckeri</i>	6, 5	12	5	4	7	8	8	6	7	5		Some galls are present, tree is in good health overall.	B	No tag; off-site.	Avoided
41	Tucker oak <i>Quercus john-tuckeri</i>	8, 6	15	7	6	5	3	10	10	3	3	Bark has a healing fissure down the middle of the trunk.	Some epicormic sprouting is present.	B	No tag; off-site.	Avoided
42	Tucker oak <i>Quercus john-tuckeri</i>	6.5, 6	12	8	8	2	2	8	7	7	7	Several branches are rubbing against each other.	Some galls are present.	B	No tag; off-site.	Avoided
43	Tucker oak <i>Quercus john-tuckeri</i>	6, 4	12	5	5	3	4	4	6	7	7		Some epicormic sprouting is present.	B	No tag; off-site.	Avoided

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
44	Tucker oak <i>Quercus john-tuckeri</i>	6, 6	12	7	8	9	5	3	3	7	7		Some canopy dieback is present.	C	No tag; off-site.	Avoided
45	Tucker oak <i>Quercus john-tuckeri</i>	7, 6, 6, 6, 5	13	8	8	6	6	9	10	9	9	Tree is in shrub form, several widely-spaced branches.	Some epicormic sprouting and galls are present.	B	No tag; off-site.	Avoided
46	Tucker oak <i>Quercus john-tuckeri</i>	6, 6, 6, 6, 8, 8.5	9	7	7	7	7	7	7	7	7	Tree is in shrub form, several widely-spaced branches.	Some epicormic sprouting is present, tree exhibiting vigorous growth.	B	No tag; off-site.	Avoided
47	Tucker oak <i>Quercus john-tuckeri</i>	6.5, 4	9	9	8	7	4	4	5	7	9	Tree is leaning downslope causing fissures in some stems.	Main stem has a large fissure with internal decay.	C	No tag; off-site.	Avoided
48	Tucker oak <i>Quercus john-tuckeri</i>	6, 5, 5	9	7	9	6	3	3	8	9	8	Some healing cracks are present at the base of main stems.	Some galls are present, some canopy dieback.	B	No tag; off-site.	Avoided
49	Tucker oak <i>Quercus john-tuckeri</i>	10, 6.5, 9.5	13	11	11	5	5	5	2	5	10	Good structure.	Some dieback and significant amounts of epicormic sprouting are present.	C	No tag; off-site.	Avoided
50	Tucker oak <i>Quercus john-tuckeri</i>	9, 7, 6, 6	13	2	8	8	7	7	7	2	2	Good structure.	Significant amount of epicormic sprouting is present.	C	No tag; off-site.	Avoided



Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
51	Tucker oak <i>Quercus john-tuckeri</i>	15, 16, 16, 17	18	12	14	15	10	5	9	14	14	V-crotches are 1' above ground, some chainsaw wounds are present.	Significant amount of epicormic sprouting is present.	C	No tag; off-site.	Avoided
52	Tucker oak <i>Quercus john-tuckeri</i>	16.5, 10, 9.5, 17, 6, 9, 8.5	17	10	9	9	5	3	4	10	11	Many stems, but good structure.	Significant amount of epicormic sprouting and some canopy dieback are present.	C		Avoided
53	Tucker oak <i>Quercus john-tuckeri</i>	13	19	5	8	6	3	2	2	5	5	V-crotch at 6" and 4' above ground, tree has a slight lean.	Most of canopy is epicormic sprouting.	C	No tag; off-site.	Avoided
54	Tucker oak <i>Quercus john-tuckeri</i>	10, 8, 10	17	11	11	5	5	3	3	5	5		Most of canopy is epicormic sprouting, significant canopy dieback is present.	C	No tag; off-site.	Avoided
55	Tucker oak <i>Quercus john-tuckeri</i>	12	17	11	9	9	1	1	6	8	9	Tree is leaning northeast.	Borer holes and internal decay are present.	C	No tag; off-site.	Avoided
56	Tucker oak <i>Quercus john-tuckeri</i>	12, 11, 7, 7, 8, 10.5	15	8	8	6	8	9	10	9	7		Borer holes, some epicormic sprouting, internal decay, and canopy dieback are present.	C	No tag; off-site.	Avoided

# Attachment A

# Oak Tree Survey Data

Oak Tree Survey Report for the Bouquet Canyon Road Project, Santa Clarita, CA

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
57	scrub oak <i>Quercus berberidifolia</i>	9.5, 9.5, 7, 10, 8, 6.5, 6	12	9	10	10	7	5	9	9	9	Tree is in shrub form, mostly shaded by surrounding trees.	Some galls and epicormic sprouting are present.	B	No tag; off-site.	Avoided
58	scrub oak <i>Quercus berberidifolia</i>	7, 6	11	5	1	3	8	8	8	8	3	Tree is in shrub form.	Canopy is dying back, significant amount of epicormic sprouting is present.	C	No tag; off-site.	Avoided
59	Tucker oak <i>Quercus john-tuckeri</i>	8, 8, 8, 8, 8, 12.5	11	6	6	8	5	5	5	7	7	Tree is in shrub form.	A healing fissure and internal decay are present in one of the main stems.	C	No tag; off-site.	Avoided
60	Tucker oak <i>Quercus john-tuckeri</i>	6, 6, 6, 9, 4	8	6	6	8	5	7	9	9	9	Stems are all widely-spaced, spread out, tree is in shrubby form.	Some canopy dieback is present.	B	No tag; off-site, there is a packrat midden in the middle of the trunks.	Avoided
61	Tucker oak <i>Quercus john-tuckeri</i>	6, 6, 4, 5, 8, 6, 4, 4	9	8	6	6	6	6	7	9	8	Tree is in shrub form, stems are spread out.	Some canopy dieback, epicormic sprouting, and galls are present.	B		Avoided
62	Tucker oak <i>Quercus john-tuckeri</i>	9, 7.5, 5.5, 6.5, 5.5, 8.5, 8, 6.5, 4, 5, 6	9	11	6	5	6	6	7	8	5		Cankers, galls, epicormic sprouting, and canopy dieback are present.	C		Avoided

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
63	valley oak <i>Quercus lobata</i>	12, 22	20	5	7	7	7	7	7	7	7	V-crotch at 1.5' and 5' with included bark, tree is growing straight.	Vigorous growth, healthy specimen, no obvious signs of disease.	A	Circumference and canopy were estimated- tree is on private property.	Avoided
64	Tucker oak <i>Quercus john-tuckeri</i>	17, 32.5	19	10	10	10	10	10	8	8	10	Included bark, exposed roots, tree is growing on a steep slope.	Vigorous growth, some canopy dieback is present.	B		Avoided

# Attachment B

---

Representative Photos



**Photo 1:** Tree 10 (blue oak, *Quercus douglasii*) adjacent to the northwestern corner of the study area.



**Photo 2:** Tucker oak (*Quercus john-tuckeri*) scrub adjacent to the southwestern corner of the study area.





**Photo 3:** Tree 51 (Tucker oak, *Quercus john-tuckeri*) assigned an oak tree rating of C for displaying significant amounts of epicormic growth.



**Photo 4:** Tree 62 (Tucker oak, *Quercus john-tuckeri*) assigned an oak tree rating of C for displaying canopy dieback and significant amounts of epicormic growth.

# Attachment C

---

Oak Tree Appraisal Addendum

**HELIX Environmental Planning, Inc.**  
16485 Laguna Canyon Road, Suite 150  
Irvine, CA 92618  
619.462.1515 tel  
619.462.0552 fax  
www.helixepi.com



July 7, 2021

IPQ-25

Mr. Peter Vanek  
Integral Communities  
888 San Clemente Drive  
Newport Beach, CA 92660

Subject: Addendum to the Oak Tree Survey Report for the Bouquet Canyon Road Project

Dear Mr. Vanek:

HELIX Environmental Planning, Inc. (HELIX) completed an oak tree survey report for the proposed Bouquet Canyon Road Project (Project) located in the City of Santa Clarita (City), Los Angeles County, California. This letter report is an addendum to the oak tree survey report to provide the appraised value and a photograph of each tree to be removed or subjected to major encroachment by the proposed project. The appraised values and photographs were requested by the City in order to process the Oak Tree Permit, as defined under the City's Oak Tree Preservation Ordinance (17.51.040; ordinance).

## METHODS

### Photographs

HELIX International Society of Arboriculture (ISA) Certified Arborist Daniel Torres (WE-12249) performed a field visits on June 5, 2020 and October 20, 2020 in order to collect photographs of each oak tree that has been proposed for major encroachment or removal by the proposed project. During the field visits, Mr. Torres located each tree, verified the tree tag number, and collected photographs.

### Oak Tree Appraised Values

In order to determine the appraised value of each tree subject to major encroachment or removal, the Trunk Formula Method as described in the 10<sup>th</sup> Edition of the Council of Tree and Landscape Appraisers (CTLA) Guide for Plant Appraisal was used (CTLA 2019). The Trunk Formula Method is used to extrapolate the costs to purchase the largest commonly available nurse plant to the size of the plant being appraised. Data collected during the oak tree survey was used to assess the condition, functional limitations, and external limitations of each tree. The condition ratings were intuitively designated based on each tree's ratings for health, structure, and form. For trees with multiple trunks at breast height, the aggregate diameter was calculated using the following formula:

$$\text{Aggregate diameter} = \sqrt{(d1^2 + d2^2 + d3^2 + d4^2)}$$

Where d1, d2, etc. are each trunk's diameter at breast height (DBH).

### Replacement Tree

As discussed above, the cost of a replacement tree is extrapolated from the largest commonly available nursery stock. On June 12, 2020, several Southern California nurseries were contacted to determine the largest commonly available nursery stock and the cost of this stock. The nurseries contacted included Matilija Nursery in Moorpark, Boething Treeland Farms in Woodland Hills, and Tree of Life Nursery in San Juan Capistrano. The arborist determined that the largest commonly available nursery stock to replace coast live oaks (*Quercus agrifolia*) was a 36"-box sized coast live oak at a cost of \$870 per tree from Boething Treeland Farms. The largest commonly available replacement for scrub oaks (*Quercus berberidifolia*), Tucker oaks (*Quercus john-tuckeri*), and blue oaks (*Quercus douglasii*), was a 15-gallon scrub oak at a cost of \$63 per tree from Tree of Life Nursery.

Based on coordination with the nurseries mentioned it above, the following assumptions about trunk diameter were applied when calculation the cost of as replacement tree: 15-gallon scrub oaks were assumed to have a diameter of 0.75 inch, 24-inch box sized trees were assumed to have a diameter of 2 inches, and 36-inch box sized trees were assumed to have a diameter of 3 inches.

Blue oaks and Tucker oaks were not available at any of the nurseries mentioned above and are not commonly available. Scrub oaks were used as a replacement for Tucker oak, as this species is commonly available and has similar form, functional value, and growth rate.

On October 6, 2020, the City prepared a Draft Conditions of Approval (COA) for the project. According to OT6 of the draft COA, a scrub oak should be used as a replacement for blue oaks because this species closely matches the growth rate of the blue oak.

### Additional Costs

Additional costs include the costs to plant and maintain a replacement tree. For the purposes of this appraisal, HELIX has assumed a maintenance and establishment period of one year. Additional costs include labor, installation of irrigation, equipment to plant a replacement tree, tree stakes, and pruning. Through consultation with HELIX Senior Construction Project Manager Peter Tomsovic, it was determined that the cost to plant and maintain a 36" box sized tree is \$2,000. This additional cost was applied to the appraised value of each oak tree to be impacted.

## RESULTS AND CONCLUSION

As determined in the oak tree report, the project proposes to subject a total of 12 trees to removal and one tree to major encroachment. This includes one coast live oak (removal), one blue oak (removal), one scrub oak (major encroachment), and ten Tucker oaks (ten removals).

The total appraised value for the trees proposed for impacts is \$80,300. Table 1 below provides a summary of the tree appraisals. Attachment A provides a photograph of each tree and the detailed tree appraisal calculations.

**Table 1**  
**SUMMARY OF TREE APPRAISALS**

Tree Number	Species	DBH*	Appraised Value
1	Tucker oak	1.9	\$2,300
2	Tucker oak	2.4	\$2,500
3	coast live oak	4.1	\$3,100
4	Tucker oak	4.8*	\$3,700
5	Tucker oak	6.0*	\$5,200
6	Tucker oak	6.5*	\$3,700
7	Tucker oak	11.3*	\$7,000
8	Tucker oak	3.6*	\$2,100
9	Tucker oak	6.4	\$3,100
10	blue oak	29.4*	\$40,700
11	Tucker oak	2.9	\$2,200
12	scrub oak	3.2	\$2,300
26	Tucker oak	2.1	\$2,400
<b>TOTAL APPRAISED VALUE</b>			<b>\$80,300</b>

Source: HELIX (2021)

\*Indicates a tree with multiple trunks at DBH where the aggregate diameter was calculated

Should you have any questions or require additional information, please do not hesitate to contact me at (949) 234-1515 or DanielT@helixepi.com.



Daniel Torres  
ISA Certified Arborist (WE-12249A)

**Attachments:**

Attachment A: Appraised Values and Photographs



## REFERENCES

Council of Tree and Landscape Appraisers (CTLA). 2019. *Guide for Plant Appraisal, 10<sup>th</sup> Edition*.

# Attachment A

---

Tree Appraisals and Photographs

## Tree #1 – Tucker oak (*Quercus john-tuckeri*)

---



## Appraised Values and Photographs

# Tree #1 – Tucker oak (*Quercus john-tuckeri*)

Subject Tree		Tree #1
Species	<i>Quercus john-tuckeri</i>	
Trunk diameter, inches (inches)		1.9
Cross-sectional Area (square inches)		2.8
Condition Rating		70%
Health	Health appears normal for this species	80%
Structure	There is a deep v-crotch at 7" above grade	55%
Form	The canopy is not symmetric due to shading by adjacent tree	75%
Functional Limitations	None	100%
External Limitations	None	100%

Replacement Tree		
Species	<i>Quercus berberidifolia</i>	
Size (trunk diameter, inches)	15-gallon	0.75
Cross-sectional Area (square inches)		0.4
Cost		\$ 63

Calculations		
Unit Tree Cost (\$/sq.in.)		\$ 142.60
Basic Replacement Cost		\$ 404.32
Depreciated Functional Replacement Cost		\$ 283.02

Additional Costs		
Installation of Replacement Tree		
Maintenance during establishment		
Total Additional Costs		\$ 2,000.00

<b>Total Functional Replacement Cost</b>		<b>\$ 2,283.02</b>
<b>Rounded Estimate</b>		<b>\$ 2,300.00</b>



## Tree #2 – Tucker oak (*Quercus john-tuckeri*)

---





## Tree #2 – Tucker oak (*Quercus john-tuckeri*)

Subject Tree		Tree #2
Species	<i>Quercus john-tuckeri</i>	
Trunk diameter, inches (inches)		2.4
Cross-sectional Area (square inches)		4.5
Condition Rating		75%
Health	Health appears normal for this species	80%
Structure	Structure appears normal for this species	80%
Form	The tree canopy is fairly symmetric; however, the trunk has a lean	75%
Functional Limitations	None	100%
External Limitations	None	100%

Replacement Tree		
Species	<i>Quercus berberidifolia</i>	
Size (trunk diameter, inches)	15-gallon	0.75
Cross-sectional Area (square inches)		0.4
Cost		\$ 63

Calculations		
Unit Tree Cost (\$/sq.in.)		\$ 142.60
Basic Replacement Cost		\$ 645.12
Depreciated Functional Replacement Cost		\$ 483.84

Additional Costs		
Installation of Replacement Tree		
Maintenance during establishment		
Total Additional Costs		\$ 2,000.00

<b>Total Functional Replacement Cost</b>		<b>\$ 2,483.84</b>
<b>Rounded Estimate</b>		<b>\$ 2,500.00</b>

## Tree #3 – coast live oak (*Quercus agrifolia*)

---



## Appraised Values and Photographs



## Tree #3 – coast live oak (*Quercus agrifolia*)

Subject Tree		Tree #3
Species	<i>Quercus agrifolia</i>	
Trunk diameter, inches (inches)		4.1
Cross-sectional Area (square inches)		13.2
Condition Rating		65%
Health	Tree health appears good	75%
Structure	Structure appears normal for this species	85%
Form	Canopy is not symmetric due to shading by adjacent tree, trunk is leaning	65%
Functional Limitations	None	100%
External Limitations	None	100%

Replacement Tree		
Species	<i>Quercus agrifolia</i>	
Size (trunk diameter, inches, inches)	36" box	3
Cross-sectional Area (square inches)		7.1
Cost		\$ 870

Calculations		
Unit Tree Cost (\$/sq.in.)		\$ 123.08
Basic Replacement Cost		\$ 1,624.97
Depreciated Functional Replacement Cost		\$ 1,056.23

Additional Costs		
Installation of Replacement Tree		
Maintenance during establishment		
Total Additional Costs		\$ 2,000.00

<b>Total Functional Replacement Cost</b>		<b>\$ 3,056.23</b>
<b>Rounded Estimate</b>		<b>\$ 3,100.00</b>

## Tree #4 – Tucker oak (*Quercus john-tuckeri*)

---



## Appraised Values and Photographs

## Tree #4 – Tucker oak (*Quercus john-tuckeri*)

Subject Tree		Tree #4
Species	<i>Quercus john-tuckeri</i>	
Trunk diameter, inches (inches)	3.2, 2.9, 2.2	4.8
Cross-sectional Area (square inches)		18.1
Condition Rating		65%
Health	Tree health appears fair, significant amounts of epicormic sprouting	70%
Structure	Structure appears normal for this species	80%
Form	Canopy is not symmetric; tree has been topped	65%
Functional Limitations	None	100%
External Limitations	None	100%

### Replacement Tree

Species	<i>Quercus berberidifolia</i>	
Size (trunk diameter, inches, inches)	15-gallon	0.75
Cross-sectional Area (square inches)		0.4
Cost		\$ 63

### Calculations

Unit Tree Cost (\$/sq.in.)		\$ 142.60
Basic Replacement Cost		\$ 2,580.48
Depreciated Functional Replacement Cost		\$ 1,677.31

### Additional Costs

Installation of Replacement Tree		
Maintenance during establishment		
Total Additional Costs		\$ 2,000.00

<b>Total Functional Replacement Cost</b>		<b>\$ 3,677.31</b>
<b>Rounded Estimate</b>		<b>\$ 3,700.00</b>



## Tree #5 – Tucker oak (*Quercus john-tuckeri*)

---



## Appraised Values and Photographs

## Tree #5 – Tucker oak (*Quercus john-tuckeri*)

Subject Tree		Tree #5
Species	<i>Quercus john-tuckeri</i>	
Trunk diameter, inches (inches)	3.7, 3.8, 2.7	6.0
Cross-sectional Area (square inches)		28.3
Condition Rating		78%
Health	Health appears normal for this species	80%
Structure	Structure appears normal for this species	80%
Form	The tree canopy is fairly symmetric; however, the trunk has a lean due to shading by adjacent tree, some branches were pruned in the past	75%
Functional Limitations	None	100%
External Limitations	None	100%

### Replacement Tree

Species	<i>Quercus berberidifolia</i>	
Size (trunk diameter, inches)	15-gallon	0.75
Cross-sectional Area (square inches)		0.4
Cost		\$ 63

### Calculations

Unit Tree Cost (\$/sq.in.)		\$ 142.60
Basic Replacement Cost		\$ 4,032.00
Depreciated Functional Replacement Cost		\$ 3,158.40

### Additional Costs

Installation of Replacement Tree		
Maintenance during establishment		
Total Additional Costs		\$ 2,000.00

<b>Total Functional Replacement Cost</b>		<b>\$ 5,158.40</b>
<b>Rounded Estimate</b>		<b>\$ 5,200.00</b>



## Tree #6 – Tucker oak (*Quercus john-tuckeri*)

---



## Appraised Values and Photographs



## Tree #6 – Tucker oak (*Quercus john-tuckeri*)

Subject Tree		Tree #6
Species	<i>Quercus john-tuckeri</i>	
Trunk diameter, inches (inches)	2.9, 4.1, 4.1	6.5
Cross-sectional Area (square inches)		33.2
Condition Rating		35%
Health	Tree is in decline	35%
Structure	There was a large branch failure at the v-crotch	35%
Form	Tree canopy is not symmetric due to shading by adjacent tree	35%
Functional Limitations	None	100%
External Limitations	None	100%

### Replacement Tree

Species	<i>Quercus berberidifolia</i>	
Size (trunk diameter, inches)	15-gallon	0.75
Cross-sectional Area (square inches)		0.4
Cost		\$ 63

### Calculations

Unit Tree Cost (\$/sq.in.)		\$ 142.60
Basic Replacement Cost		\$ 4,732.00
Depreciated Functional Replacement Cost		\$ 1,656.20

### Additional Costs

Installation of Replacement Tree		
Maintenance during establishment		
Total Additional Costs		\$ 2,000.00

<b>Total Functional Replacement Cost</b>		<b>\$ 3,656.20</b>
<b>Rounded Estimate</b>		<b>\$ 3,700.00</b>



## Tree #7 – Tucker oak (*Quercus john-tuckeri*)

---



### Appraised Values and Photographs



## Tree #7 – Tucker oak (*Quercus john-tuckeri*)

Subject Tree		Tree #7
Species	<i>Quercus john-tuckeri</i>	
Trunk diameter, inches (inches)	5.7, 6.1, 7.6	11.3
Cross-sectional Area (square inches)		100.3
Condition Rating		35%
Health	Tree is in decline	35%
Structure	There was a large branch failure at the v-crotch	35%
Form	Tree canopy is not symmetric	35%
Functional Limitations	None	100%
External Limitations	None	100%

Replacement Tree		
Species	<i>Quercus berberidifolia</i>	
Size (trunk diameter, inches)	15-gallon	0.75
Cross-sectional Area (square inches)		0.4
Cost		\$ 63

Calculations		
Unit Tree Cost (\$/sq.in.)		\$ 142.60
Basic Replacement Cost		\$ 14,301.28
Depreciated Functional Replacement Cost		\$ 5,005.45

Additional Costs		
Installation of Replacement Tree		
Maintenance during establishment		
Total Additional Costs		\$ 2,000.00

<b>Total Functional Replacement Cost</b>		<b>\$ 7,005.45</b>
<b>Rounded Estimate</b>		<b>\$ 7,000.00</b>



## Tree #8 – Tucker oak (*Quercus john-tuckeri*)

---



## Appraised Values and Photographs



## Tree #8 – Tucker oak (*Quercus john-tuckeri*)

Subject Tree		Tree #8
Species	<i>Quercus john-tuckeri</i>	
Trunk diameter, inches (inches)	3.1, 1.9	3.6
Cross-sectional Area (square inches)		10.2
Condition Rating		10%
Health	Tree is almost dead; canopy is extremely sparse	10%
Structure	Tree has a severe lean to the south	20%
Form	Tree has very poor form- strong lean	20%
Functional Limitations	None	100%
External Limitations	None	100%

Replacement Tree		
Species	<i>Quercus berberidifolia</i>	
Size (trunk diameter, inches)	15-gallon	0.75
Cross-sectional Area (square inches)		0.4
Cost		\$ 63

Calculations		
Unit Tree Cost (\$/sq.in.)		\$ 142.60
Basic Replacement Cost		\$ 1,451.52
Depreciated Functional Replacement Cost		\$ 145.15

Additional Costs		
Installation of Replacement Tree		
Maintenance during establishment		
Total Additional Costs		\$ 2,000.00

<b>Total Functional Replacement Cost</b>		<b>\$ 2,145.15</b>
<b>Rounded Estimate</b>		<b>\$ 2,100.00</b>

## Tree #9 – Tucker oak (*Quercus john-tuckeri*)

---



### Appraised Values and Photographs



## Tree #9 – Tucker oak (*Quercus john-tuckeri*)

Subject Tree		Tree #9
Species	<i>Quercus john-tuckeri</i>	
Trunk diameter, inches (inches)	6.4	
Cross-sectional Area (square inches)	32.2	
Condition Rating	25%	
Health	Tree appears to be in decline, exhibiting internal decay throughout	20%
Structure	Large split in main trunk	20%
Form	Form is fair	45%
Functional Limitations	None	100%
External Limitations	None	100%

Replacement Tree		
Species	<i>Quercus berberidifolia</i>	
Size (trunk diameter, inches)	15-gallon	0.75
Cross-sectional Area (square inches)	0.4	
Cost	\$ 63	

Calculations		
Unit Tree Cost (\$/sq.in.)	\$ 142.60	
Basic Replacement Cost	\$ 4,587.52	
Depreciated Functional Replacement Cost	\$ 1,146.88	

Additional Costs		
Installation of Replacement Tree		
Maintenance during establishment		
Total Additional Costs	\$ 2,000.00	

<b>Total Functional Replacement Cost</b>	<b>\$ 3,146.88</b>
<b>Rounded Estimate</b>	<b>\$ 3,100.00</b>



## Tree #10 – blue oak (*Quercus douglasii*)

---



## Appraised Values and Photographs

## Tree #10 – blue oak (*Quercus douglasii*)

Subject Tree		Tree #10
Species	<i>Quercus douglasii</i>	
Trunk diameter, inches (inches)	27.1, 11.5	29.4
Cross-sectional Area (square inches)		678.9
Condition Rating		40%
Health	Tree appears to be in decline	40%
Structure	Main trunk has split, trunks are widely divergent	60%
Form	Canopy is not symmetric	60%
Functional Limitations	None	100%
External Limitations	None	100%

### Replacement Tree

Species	<i>Quercus berberidifolia</i>	
Size (trunk diameter, inches, inches)	15-gallon	0.75
Cross-sectional Area (square inches)		.4
Cost		\$ 63

### Calculations

Unit Tree Cost (\$/sq.in.)		\$ 142.60
Basic Replacement Cost		\$ 96,808.32
Depreciated Functional Replacement Cost		\$ 38,723.33

### Additional Costs

Installation of Replacement Tree		
Maintenance during establishment		
Total Additional Costs		\$ 2,000.00

<b>Total Functional Replacement Cost</b>		<b>\$ 40,723.33</b>
<b>Rounded Estimate</b>		<b>\$ 40,700.00</b>



## Tree #11 – Tucker oak (*Quercus john-tuckeri*)

---



## Appraised Values and Photographs

## Tree #11 – Tucker oak (*Quercus john-tuckeri*)

Subject Tree		Tree #11
Species	<i>Quercus john-tuckeri</i>	
Trunk diameter, inches (inches)		2.9
Cross-sectional Area (square inches)		6.6
Condition Rating		25%
Health	Tree appears to be in decline, canopy is extremely sparse	20%
Structure	Structure appears normal	80%
Form	Form is fair	45%
Functional Limitations	None	100%
External Limitations	None	100%

Replacement Tree		
Species	<i>Quercus berberidifolia</i>	
Size (trunk diameter, inches)	15-gallon	0.75
Cross-sectional Area (square inches)		0.4
Cost		\$ 63

Calculations		
Unit Tree Cost (\$/sq.in.)		\$ 142.60
Basic Replacement Cost		\$ 941.92
Depreciated Functional Replacement Cost		\$ 235.48

Additional Costs		
Installation of Replacement Tree		
Maintenance during establishment		
Total Additional Costs		\$ 2,000.00

<b>Total Functional Replacement Cost</b>		<b>\$ 2,235.48</b>
<b>Rounded Estimate</b>		<b>\$ 2,200.00</b>



## Tree #12 – scrub oak (*Quercus berberidifolia*)

---



### Appraised Values and Photographs



## Tree #12 – scrub oak (*Quercus berberidifolia*)

Subject Tree		Tree #12
Species	<i>Quercus berberidifolia</i>	
Trunk diameter, inches (inches)		3.2
Cross-sectional Area (square inches)		8.0
Condition Rating		25%
Health	Tree appears to be in decline, canopy is extremely sparse	20%
Structure	Structure is poor	35%
Form	Form is poor- not symmetrical and trunk is leaning	25%
Functional Limitations	None	100%
External Limitations	None	100%

### Replacement Tree

Species	<i>Quercus berberidifolia</i>	
Size (trunk diameter, inches)	15-gallon	0.75
Cross-sectional Area (square inches)		0.4
Cost		\$ 63

### Calculations

Unit Tree Cost (\$/sq.in.)		\$ 142.60
Basic Replacement Cost		\$ 1,146.88
Depreciated Functional Replacement Cost		\$ 286.72

### Additional Costs

Installation of Replacement Tree		
Maintenance during establishment		
Total Additional Costs		\$ 2,000.00

<b>Total Functional Replacement Cost</b>		<b>\$ 2,286.72</b>
<b>Rounded Estimate</b>		<b>\$ 2,300.00</b>

## Tree #26 – Tucker oak (*Quercus john-tuckeri*)

---



## Tree #26 – Tucker oak (*Quercus john-tuckeri*)

---

Subject Tree		Tree #26
Species	<i>Quercus john-tuckeri</i>	
Trunk diameter, inches (inches)		2.1
Cross-sectional Area (square inches)		3.5
Condition Rating		90%
Health	Tree health appears good	90%
Structure	Structure appears normal for this species	90%
Form	Canopy is symmetric	90%
Functional Limitations	None	100%
External Limitations	None	100%

Replacement Tree		
Species	<i>Quercus berberidifolia</i>	
Size (trunk diameter, inches)	15-gallon	0.75
Cross-sectional Area (square inches)		0.4
Cost		\$ 63

Calculations		
Unit Tree Cost (\$/sq.in.)		\$ 142.60
Basic Replacement Cost		\$ 493.92
Depreciated Functional Replacement Cost		\$ 444.53

Additional Costs		
Installation of Replacement Tree		
Maintenance during establishment		
Total Additional Costs		\$ 2,000.00

<b>Total Functional Replacement Cost</b>		<b>\$ 2,444.53</b>
<b>Rounded Estimate</b>		<b>\$ 2,400.00</b>

# Attachment D

---

## Tree Protection Recommendations

## General Construction Site Recommendations

- A minimum 4-foot tall, brightly colored, synthetic fence should be installed around the outermost edge of the protected zone of trees that are designated for retention on-site. Encroachment into the fenced areas should be restricted to the minimum amount feasible and fencing should remain in place until all construction activities have ceased
- The fenced area should be kept clear of building materials, waste, and excess soil.
- No digging, trenching, compaction, or other soil disturbance should be allowed in the fenced area.
- The storage of construction equipment or hazardous materials such as gasoline, oil, or other toxic chemicals should not be allowed in or adjacent to the fenced area.
- Storage areas for equipment, soil, and construction materials as well as burn sites (if permitted), cement washout pits, and construction work zones should be kept away from protected trees and outside the fenced in area.
- Cable, chain, rope or signage should not be attached to retained trees.
- Designated roads and parking areas should be established. All construction personnel should be restricted to driving and parking in designated areas. Discharge of exhaust from construction vehicles and equipment should not be allowed near the protected zone of trees.
- Grade changes should be avoided near fenced areas to the maximum extent possible.

## Recommendations for Construction Activities in the Vicinity of Retained Trees

- All necessary clearance pruning should be conducted by a Certified Tree Worker or Certified Arborist.
- Trenching within the dripline of retained trees should be avoided to the maximum extent practicable and kept a minimum distance of 10 times the diameter of the tree away from its trunk. If necessary, this trenching should be conducted using hand excavation or compressed air to reduce impacts to tree roots. Machine trenching should not be allowed within the dripline of retained trees. If pipes must be installed closer to the tree than a distance of 10 times the diameter of the tree away from its trunk, they should be bored beneath the tree a minimum of 3 feet below the ground surface to reduce impacts to roots.
- Excavation should also be minimized within the dripline of retained trees. Construction within the dripline of retained trees should be conducted in a manner that minimizes excavation and provides for the best preservation of roots as determined by the Project Arborist.
- If tree roots are severed outside of the fenced area, they should be severed cleanly and kept moist. All exposed roots outside of fenced areas should be covered with protective material during construction such as mulch or plywood sheets to reduce soil



compaction. Protective material should be removed upon completion of construction activities.

- Trenching and excavation should be avoided during hot, dry, weather and trees shall be watered before, during, and after trenching and excavation within the dripline of retained trees to offset water loss due to cut roots.
- Grading within the driplines of retained trees should be avoided wherever feasible.
- To prevent soil compaction, several inches of wood chips should be spread in the root zone area and covered with steel plates.

## Recommendations for Protection of Trees Post-Construction

- Post-construction inspections of the trees should be conducted by a Certified Arborist or Certified Tree Worker to determine if retained trees are stressed (e.g., water stress, nutrient stress) or damaged (e.g., broken branches, trunk damage). Appropriate corrective actions should be implemented as necessary. Such corrective actions may include application of root stimulant to encourage new root growth in trees that have a significant portion of their roots lost due to cutting or soil compaction.
- Aeration of soil by vertical mulching or similar technique should be implemented around retained trees to offset the impacts of soil compaction that has already occurred due to construction activities and other site uses.
- Long term maintenance should also be conducted by a Certified Arborist or tree care specialist to assist the trees with recovering from construction related stress and may include watering, fertilization, pruning, and/or pest/disease control.

# "Donut Hole" Parcel Addendum

# Memorandum

HELIX Environmental Planning, Inc.  
16485 Laguna Canyon Road, Suite 150  
Irvine, CA 92618  
949.234.8770 tel  
619.462.0552 fax  
[www.helixepi.com](http://www.helixepi.com)



**Date:** October 27, 2021

**To:** Mr. Peter Vanek  
Integral Communities  
888 San Clemente Drive  
Newport Beach, CA 92660

**From:** Daniel Torres, HELIX Environmental Planning, Inc.

**Subject:** Oak Tree Survey Addendum, Additional Survey Area

**HELIX Project:** 00357.00025.001

**Message:**

The oak tree survey report<sup>1</sup> and tree appraisal addendum<sup>2</sup> were both dated August 16, 2021. Since submittal of these reports, an additional property along Bouquet Canyon Road was added to the project site (Additional Survey Area; see Figure 5, *Impacts to Oak Trees*). The additional survey area was analyzed as part of the Project's EIR. However, this property was not owned by the project proponent during the time of the oak tree survey, and therefore, an oak tree survey was not performed within this area.

On October 19, 2021, HELIX International Society of Arboriculture (ISA) Certified Arborist Daniel Torres (WE-12249) performed an oak tree survey within the additional survey area. The purpose of the survey was to document the presence of (1) oak trees with at least one trunk over 6 inches in circumference at a point 4.5 feet above natural grade, and (2) Heritage Oak Trees within the additional survey area.

No oak trees, including Heritage trees, were found within the additional survey area.

If you have any questions regarding the information presented in this memorandum, please contact me at [DanielT@helixepi.com](mailto:DanielT@helixepi.com) or at (949) 234-8770.

**Enclosures:**

Figure 5: Impacts to Oak Trees

---

<sup>1</sup> HELIX Environmental Planning. 2021. Oak Tree Survey Report for the Bouquet Canyon Road Project. August.

<sup>2</sup> HELIX Environmental Planning. 2021. Addendum to the Oak Tree Survey Report for the Bouquet Canyon Road Project. August.





H:\GIS\PROJECTS\IntegralCommunities\_0357\IPQ\_25\_Bouquet\Map\TreeReport\Addendum\Figs\_impOak\_10-20-21.mxd IPQ\_25\_10/25/2021-EC



Source: Base Map Layers (Nearmap, 2017)



# Attachment B

---

Davenport Oak Tree Survey Report





Horticulturists and  
Registered Consulting  
ARBORISTS

August 15, 2021

Peter Vanek  
Vice President of Forward Planning  
Integral Communities  
888 San Clemente, Suite 100  
Newport Beach, California 92660

**Re: Oak Tree Health Assessment  
Davenport Trailhead Site – 28601 and 28635 Bouquet Canyon Road, Santa Clarita, California**

Dear Mr. Vanek,

This letter is presented in response to your request for arboricultural consulting services. You requested a health assessment of 20 oak trees located on and immediately adjacent to 28601 and 28635 Bouquet Canyon Road, Santa Clarita, California. These properties are held by Integral Communities and are the proposed site of the project known as the 'Davenport Trailhead'.

On August 12, 2021, I conducted a site visit to perform a health evaluation of the 20 oak trees identified in the enclosed tree location exhibit (by Helix Environmental Planning) provided to us by you. The trees were assessed for health and structural integrity, and photographs were recorded to support my opinions. No other information was gathered or recorded regarding mapped tree trunk and canopy locations, genera or species identification, impact analysis, etc. I used Helix's exhibit to locate the trees and to fill in the tree number and species listings in the enclosed table.

Table 1 on page 5 summarizes my opinions on the trees' health ratings. Based on the health and structure rating, each tree was assigned an overall grade. In our opinion, both health and structure must be addressed when evaluating the condition of a tree. Definitions for the grading structure are enclosed before the table. Enclosed exhibits and representative photographs illustrate the setting, the oak trees, and their condition at the time of the site visit. Additional photographs are available upon request.

With the exception of one tree, Tree #84, the subject oaks appear to be in fair-to-poor condition. Severe drought stress is evident and most of the trees exhibit sparse foliage, cavities, poor form due to close growing conditions, and two trees were found to have active bee hives.

Please feel free to call or email me with any questions. Thank you.

Very truly yours,

Christy Cuba, Senior Arborist  
Registered Consulting Arborist, #504  
International Society of Arboriculture (ISA) Certified Arborist, #WE1982A  
ISA Tree Risk Qualified



**Santa Monica Office**  
828 Fifth Street, Suite 3  
Santa Monica, California 90403  
Office: 310.451.4804

**Sierra Madre Office**  
80 West Sierra Madre Boulevard, #241  
Sierra Madre, California 91024  
Office: 626.428.5072

[www.cycarlberg.com](http://www.cycarlberg.com)

## HEALTH AND STRUCTURE GRADE DEFINITIONS

Health and structure ratings are based on an archetypal tree of the same species, determined by a subjective evaluation of physiological health, aesthetic quality, and structural integrity. Overall physiological condition (health) and structural condition are rated A-D and F:

### Health

- A) **Outstanding** – Exceptional trees comprising above-average foliage production and vigor for their age class; exhibiting very good to excellent health as evidenced by normal to exceptional shoot growth during the current growing season, good bud development and leaf color, lack of leaf, twig or branch dieback throughout the crown, and the absence of decay, bleeding, or cankers. Common leaf and/or twig pests may be noted at very minor levels.
- B) **Above average** – Good to very good trees that exhibit minor necrotic (dead) or physiological symptoms of stress and/or disease; shoot growth is less than reasonably expected, leaf color is less than optimal in some areas, the crown may be thinning, minor levels of leaf, twig, and branch dieback may be present, and minor areas of decay, bleeding, or cankers may be manifesting. Minor amounts of epicormic growth may be present. Minor amounts of fire damage or mechanical damage may be present. Still healthy, but with moderately diminished vigor and vitality. No significant decline noted.
- C) **Average** – Average, moderately good trees whose growth habit and physiological or fire-induced symptoms indicate an equal chance to either decline or continue with good health into the near future. Most of these trees exhibit moderate to significant small dead material in outer crown areas, decreased shoot growth, and diminished leaf color and mass. Some stem and branch dieback is usually present and epicormic growth may be moderate to extensive. Cavities, pockets of decay, relatively significant fire damage, bark exfoliation, or cracks may be present. Moderate to significant amounts of insect or disease symptoms may be present; the tree may be shaded or crowded in such a way that it is expected to negatively impact the lifespan of the tree. Tree may be in early decline.
- D) **Below Average/Poor** – trees whose growth habit and physiological or fire-induced symptoms indicate significant, irreversible decline. Most of these trees exhibit significant dieback of wood in the crown, possibly accompanied by significant epicormic sprouting. Shoot growth and leaf color and mass is either significantly diminished or nonexistent throughout the crown. Cavities, pockets of decay, significant fire damage, bark exfoliation, and/or cracks may be present. Significant amounts of insect or disease symptoms may be present; the tree may be shaded or crowded in such a way that it has negatively impacted the lifespan of the tree. Tree appears to be in irreversible decline.
- F) **Dead or in spiral of decline** – this tree exhibits very little to no signs of life.

### Structure

- A) **Outstanding** – Trees with outstanding structure for their species exhibit trunk and branch arrangement and orientation that results in a sturdy form or architecture that can resist failure under normal circumstances. The spacing, orientation, and size of the branches relative to the trunk are quintessential for the species and free from defects. No outward signs of decay or pathological disease is present. Some trees exhibit naturally inherent branching defects, like multiple, narrow points of attachment from one point on the trunk, which would preclude them from achieving an “A” grade.
- B) **Above average** - Trees with good to very good structure for their species. They exhibit trunk and branch arrangement and orientation that result in a relatively sturdy form or architecture that resists failure under normal circumstances, but may have some mechanical damage, over-pruning, or other minor structural defects. The spacing, orientation, and size of the branches relative to the trunk are still in the normal range for the species, but they exhibit a minor degree of defects. Minor, sub-critical levels of decay or pathological disease may be present, but the degree of damage is not yet structurally significant. Trees that exhibit naturally inherent branching defects, like multiple, narrow points of attachment from one point on the trunk, would generally fall in to this category. A small percentage of the canopy may be shaded or crowded, but not in such a way that it is expected to negatively impact the structural integrity or lifespan of the tree.



- C) **Average** - Trees with moderately good structure for their species, but with obvious defects. They exhibit trunk and branch arrangement and orientation that result in a less than sturdy form or architecture, which reduces their resistance to failure under normal circumstances. Moderate levels of mechanical damage, over-pruning, or other structural defects may be present. The spacing, orientation, and size of some of the branches relative to the trunk are not in the normal range for the species. Moderate to significant levels of decay or pathological disease may be present that increase the likelihood of structural instability. Influences such as an excessive trunk lean, slope erosion, root pruning, or other growth-inhibiting factors may be present. A moderate to significant percentage of the canopy may be shaded or crowded in such a way that it is expected to negatively impact the structural integrity or lifespan of the tree. Risk of full or partial failure in the near future appears to be moderately elevated.
- D) **Well Below Average/Poor** - Trees with poor structure for their species and with obvious defects. They exhibit trunk and branch arrangement and orientation that result in a significantly less than sturdy form or architecture, significantly reducing their resistance to failure under normal circumstances. Significant levels of mechanical damage, over-pruning, or other structural defects may be present. The spacing, orientation, and size of many of the branches relative to the trunk are not in the normal range for the species. Significant levels of decay or pathological disease may be present that increase the likelihood of structural instability. Influences such as an excessive trunk lean, slope erosion, root pruning, or other growth-inhibiting factors may be present. A significant percentage of the canopy may be shaded or crowded in such a way that it is expected to negatively impact the structural integrity or lifespan of the tree. Risk of full or partial failure in the near future appears to be advanced.
- F) **Severely Compromised** – trees with very poor structure and numerous or severe defects due to growing conditions, historical or recent pruning, mechanical damage, history of limb or trunk failures, advanced and irreparable decay, disease, or severe fire damage. Trees with this rating are in severe, irreparable decline, or are barely alive. Risk of full or partial failures in the near future may be severe.



## ARBORIST STATEMENT

Arborists are tree specialists who use their education, knowledge, training and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risk of living near trees. Clients may choose to accept or disregard the recommendations of the arborist, or to seek additional advice.

Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like any medicine, cannot be guaranteed.

Treatment, pruning and removal of trees may involve considerations beyond the scope of the arborist's services, such as property boundaries, property ownership, site lines, disputes between neighbors, and other issues. Arborists cannot take such considerations into account unless complete and accurate information is disclosed to the arborist. An arborist should then be expected to reasonably rely upon the completeness and accuracy of the information provided.

Trees contribute greatly to our enjoyment and appreciation of life. Nonetheless, they are subject to the laws of gravity and physiological decline. Any tree, whether it has visible weaknesses or not, will fail if the forces applied exceed the strength of the tree or its parts. Therefore, neither arborists nor tree owners can be reasonably expected to warrant unflinching predictability or elimination of risk.

Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate all trees.

No risk assessments were requested or performed for this project.

Health and structure information presented in this report represents the condition of the tree(s) at the time and date of assessment.

Execution of any/all recommendations for cultural care, maintenance, pest or disease treatment, pruning, tree removal, etc., when made verbally or in writing by the arborist, is/are the sole responsibility of the client.



**TABLE 1 – SUMMARY OF OAK TREE HEALTH ASSESSMENT – DAVENPORT TRAILHEAD PROJECT**

TREE #	COMMON NAME	BOTANICAL NAME	HEALTH GRADE (A -D, F)	STRUCTURE GRADE (A-D, F)	OVERALL GRADE (A-D, F)
65	Tucker's oak	<i>Quercus john-tuckeri</i>	C	C	C
66	Tucker's oak	<i>Quercus john-tuckeri</i>	D	C-	D
67	Tucker's oak	<i>Quercus john-tuckeri</i>	C	C	C
68	Tucker's oak	<i>Quercus john-tuckeri</i>	C-	C	C-
69	Tucker's oak	<i>Quercus john-tuckeri</i>	D	C-	D
70	Tucker's oak	<i>Quercus john-tuckeri</i>	C	C	C
71	Tucker's oak	<i>Quercus john-tuckeri</i>	C	C	C
72	Tucker's oak	<i>Quercus john-tuckeri</i>	C	C	C
73	Tucker's oak	<i>Quercus john-tuckeri</i>	C	C	C
74	Tucker's oak	<i>Quercus john-tuckeri</i>	C	C	C
75	Tucker's oak	<i>Quercus john-tuckeri</i>	C	C	C
76	Interior live oak	<i>Quercus wislizenii</i> var. <i>wislizenii</i>	C	C	C
77	Tucker's oak	<i>Quercus john-tuckeri</i>	C	C	C
78	Interior live oak	<i>Quercus wislizenii</i> var. <i>wislizenii</i>	C	C	C
79	Tucker's oak	<i>Quercus john-tuckeri</i>	C	C	C
80	Tucker's oak	<i>Quercus john-tuckeri</i>	C	C	C
81	Blue oak	<i>Quercus douglasii</i>	C	C	C-
82	Tucker's oak	<i>Quercus john-tuckeri</i>	D	C	C-
83	Tucker's oak	<i>Quercus john-tuckeri</i>	C-	C	C-
84	Tucker's oak	<i>Quercus john-tuckeri</i>	A-	B	B

Notes: Tree numbers and species identification are taken from the enclosed Helix Tree Location exhibit.







Assessed Oak Tree Locations  
(Not to Scale)







Facing west – illustrating Tree #84







Facing south – illustrating Trees #79, 80, and 81, from left to right. Tree #79 recently lost a large limb when the adjacent Tree #78 (left and out of photo) suffered two massive limb failures. Tree #81 has cavities and an active bee hive in in the main trunk.







Facing roughly southeast – illustrating Trees #79, 78, 77, 76, 75, 74, and 71, from right to left. Tree #78 (center) recently suffered two massive limb failures. The failed half of Tree #78 is in the foreground.







Facing roughly east – illustrating Trees #65-78 from left to right on the slope.







Facing north – illustrating Trees #78's limb failures. Cavities are present in the trunk and scaffolds, and this tree has an active bee hive in the main trunk.







Facing east – illustrating Tree 65 (center) and a dead portion of the canopy of Tree #68 in the foreground.







Facing roughly east – illustrating Tree #83 on the left and Tree #82 on the right.



# Attachment C

---

Updated Oak Tree Survey Data



# Attachment C

# Updated Oak Tree Survey Data

Oak Tree Survey Report for the Bouquet Canyon Road Project, Santa Clarita, CA

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
1	Tucker oak <i>Quercus john-tuckeri</i>	6	10	3	1	1	5	6	1	1	3	Deep v-crotch at 7", canopy is N-S oriented, does not extend E-W.	Appears vigorous, some small galls present, some old, healed trunk injuries.	B		Removal
2	Tucker oak <i>Quercus john-tuckeri</i>	7.5	9	8	6	3	6	5	6	6	6	Trunk leaning northeast, canopy overall well-distributed.	Galls, insect damage.	B		Removal
3	coast live oak <i>Quercus agrifolia</i>	12.75	16	4	3	4	6	7	6	5	6	Tree leaning south.	Has stress-related suckers, sapsucker holes.	B	No tag; off-site.	Removal
4	Tucker oak <i>Quercus john-tuckeri</i>	10, 9, 7	9	2	6	3	1	4	3	4	3	Tree has been topped.	All epicormic growth, tree in severe decline.	D	No tag; off-site.	Removal
5	Tucker oak <i>Quercus john-tuckeri</i>	11.75, 12, 8.5	15	9	8	6	5	4	4	5	10	Tree leaning north, away from adjacent eucalyptus.	Some galls present, bark damage present (chainsaw cut)-healing.	B	No tag; off-site.	Removal
6	Tucker oak <i>Quercus john-tuckeri</i>	9, 13, 13	16	4	6	9	15	10	5	5	2	Large failure at v-crotch with decay (old main stem), exposed roots.	Declining, significant amount of epicormic sprouting.	D		Removal
7	Tucker oak <i>Quercus john-tuckeri</i>	18, 19, 24	22	10	10	10	8	15	10	10	9	Exposed roots, wide angle crotch at base.	Declining, epicormic sprouting, canopy dieback.	D		Removal

# Attachment C

# Updated Oak Tree Survey Data

Oak Tree Survey Report for the Bouquet Canyon Road Project, Santa Clarita, CA

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
8	Tucker oak <i>Quercus john-tuckeri</i>	9.75, 6	5	2	8	2	2	5	10	2	4	Severe lean to south, on steep slope.	Tree is being shaded, very sparse canopy, canopy dieback.	D	Stump shoots from old dead tree.	Removal
9	Tucker oak <i>Quercus john-tuckeri</i>	20	15	6	3	12	12	5	5	2	7	Exposed roots, on steep slope.	Large split with internal decay in trunk, internal decay throughout.	D		Removal
10	blue oak <i>Quercus douglasii</i>	85, 36	45	10	15	15	20	20	25	10	10	Main trunk split long ago, large trunk leaning north, southern-most trunk with severe lean south, on steep slope.	Lots of mistletoe, canopy very sparse.	D		Removal
11	Tucker oak <i>Quercus john-tuckeri</i>	9	16	5	3	3	4	2	6	2	2	On steep slope.	Most of canopy is dead, mistletoe present, epicormic sprouting.	D	Tree is almost completely dead.	Removal
12	scrub oak <i>Quercus berberidifolia</i>	10	15	2	8	8	8	2	2	2	2	Trunk leaning to north, multi-stem, one stem is dead, on steep slope.	Epicormic growth, very sparse canopy.	D		Major Encroachment

# Attachment C

# Updated Oak Tree Survey Data

Oak Tree Survey Report for the Bouquet Canyon Road Project, Santa Clarita, CA

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
13	scrub oak <i>Quercus berberidifolia</i>	12, 9.5, 10, 10	15	5	6	8	8	9	5	2	2	One dead stem, on steep slope.	Epicormic sprouting, severe decline, some galls present.	D		Minor Encroachment
14	scrub oak <i>Quercus berberidifolia</i>	22.5, 22, 17, 10, 7.5	20	12	12	12	5	12	10	10	12	Some stems have internal decay, on steep slope.	Epicormic sprouting, mistletoe present, tree in decline.	D		Avoided
15	scrub oak <i>Quercus berberidifolia</i>	7.5, 7.5, 8, 5.5	14	5	3	8	6	8	5	5	9	Good balance, on steep slope.	Some mistletoe present, significant amount of epicormic sprouting, some canopy dieback.	C		Avoided
16	Tucker oak <i>Quercus john-tuckeri</i>	9.5	10	1	1	1	10	10	10	2	1	Most of canopy is in the south, shaded in the north, on steep slope.	Some dieback present, significant amount of epicormic sprouting.	C		Avoided
17	Tucker oak <i>Quercus john-tuckeri</i>	5.5, 6.5, 7, 9	12	7	3	3	4	8	8	8	8	Some included bark at v-crotch about 5" above ground, tree on steep slope.	Small amounts of dieback and epicormic sprouting present.	B		Avoided

# Attachment C

# Updated Oak Tree Survey Data

Oak Tree Survey Report for the Bouquet Canyon Road Project, Santa Clarita, CA

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
18	blue oak <i>Quercus douglasii</i>	40.5, 24, 47, 52.5, 48	35	30	25	25	28	27	30	25	25	Large multi-stem tree with big split and decay, all stems leaning towards the south, tree on steep slope.	Tree is experiencing some dieback, epicormic sprouting, sap sucker and borer holes present.	C	Tree tagged 61 in old survey, probably burned.	Avoided
19	Tucker oak <i>Quercus john-tuckeri</i>	22, 16.5, 17, 13, 10, 11	30	18	15	10	15	15	22	15	15	Included bark in all crotches, tree on a steep slope.	Appears vigorous, some cankers, canopy is somewhat sparse.	B		Avoided
20	Tucker oak <i>Quercus john-tuckeri</i>	17.5, 17, 14, 14	15	10	10	10	7	8	8	15	10	Tree on steep slope, nexus of stems is 1' above ground.	Some canopy dieback present.	B		Avoided
21	Tucker oak <i>Quercus john-tuckeri</i>	21, 25, 20.5, 9	20	20	20	10	20	18	10	15	20	Multiple trunks all leaning in different directions, tree on a steep slope.	Most of canopy is epicormic sprouting, borer and sapsucker holes are present.	C		Avoided
22	Tucker oak <i>Quercus john-tuckeri</i>	15, 19, 18.5, 19, 20	25	20	3	2	1	1	20	20	20	Tree is on a steep slope, included bark present.	Tree appears healthy but is being shaded, canopy is somewhat sparse, significant dieback is present.	C		Avoided



# Attachment C

# Updated Oak Tree Survey Data

Oak Tree Survey Report for the Bouquet Canyon Road Project, Santa Clarita, CA

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
23	Tucker oak <i>Quercus john-tuckeri</i>	44.5	35	20	20	5	1	1	10	18	20	Strong lean to the north.	Significant amount of dieback in the lower canopy.	B		Avoided
24	Tucker oak <i>Quercus john-tuckeri</i>	18, 12.5, 42, 22.5	30	18	12	9	9	15	15	15	15	V-crotch with included bark at 7", 1.5', and 2' above ground.	Some galls are present.	B	Tree tagged 60 in old survey.	Avoided
25	Tucker oak <i>Quercus john-tuckeri</i>	9, 9, 10, 6	9	8	8	8	5	2	6	8	8	Tree is on a steep slope.	Some epicormic sprouting is present, fairly even canopy.	B		Avoided
26	Tucker oak <i>Quercus john-tuckeri</i>	6.5	10	8	8	8	8	8	8	8	8	Even canopy spread, tree growing in the open.	Some galls are present, canopy is dense and healthy.	A	Shrub form, more than 25 stems, all 1-3 inches in circumference.	Removal
27	Tucker oak <i>Quercus john-tuckeri</i>	6	9	6	4	4	4	6	6	4	5	Structurally good, open, even canopy.	Significant amount of epicormic growth, most leaves are affected by aphids.	D	Some mechanical damage on the east side of the trunk.	Minor Encroachment
28	Tucker oak <i>Quercus john-tuckeri</i>	6.5	8	8	8	8	8	8	8	8	8	Tree is on a steep slope.	Some galls are present.	B	No tag; off-site.	Avoided
29	Tucker oak <i>Quercus john-tuckeri</i>	10, 6, 6.5, 5.5, 11	9	10	4	9	7	4	5	6	7		Dense canopy, tree appears vigorous.	A	No tag; off-site.	Avoided
30	Tucker oak <i>Quercus john-tuckeri</i>	9, 11	12	7	5	6	5	5	6	6	6		Dense canopy, tree appears vigorous.	A	No tag; off-site.	Avoided

# Attachment C

# Updated Oak Tree Survey Data

Oak Tree Survey Report for the Bouquet Canyon Road Project, Santa Clarita, CA

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
31	Tucker oak <i>Quercus john-tuckeri</i>	6.5, 8, 6.5	8	7	6	4	3	4	4	7	6		Dense canopy, tree appears vigorous.	A	No tag; off-site.	Avoided
32	Tucker oak <i>Quercus john-tuckeri</i>	6	9	7	5	6	5	5	5	6	6		Dense canopy, tree appears vigorous.	A	No tag; off-site.	Avoided
33	Tucker oak <i>Quercus john-tuckeri</i>	12, 9.5, 14.5	13	14	5	7	1	1	4	12	10	Strong lean downhill.	Tree is vigorous, some minor boring insect damage, significant amount of stress-related sprouting at base.	C	No tag; off-site.	Avoided
34	Tucker oak <i>Quercus john-tuckeri</i>	14.5, 11	14	4	5	3	9	7	10	13	3	Good structure.	Tree appears vigorous, lots of stress-related sprouting at base, epicormic sprouting present.	C	No tag; off-site.	Avoided
35	Tucker oak <i>Quercus john-tuckeri</i>	8, 13, 16, 9.5	15	10	10	7	5	3	9	4	7	Internal decay present in one main trunk.	Significant amount of stress-related sprouting at base.	C	No tag; off-site.	Avoided
36	Tucker oak <i>Quercus john-tuckeri</i>	6	12	5	6	6	4	5	5	5	4		Significant amount of epicormic sprouting, some galls present.	C	No tag; off-site.	Avoided

# Attachment C

# Updated Oak Tree Survey Data

Oak Tree Survey Report for the Bouquet Canyon Road Project, Santa Clarita, CA

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
37	Tucker oak <i>Quercus john-tuckeri</i>	8	12	5	5	5	5	4	3	3	5		Significant amount of epicormic sprouting, some galls present.	C	No tag; off-site.	Avoided
38	Tucker oak <i>Quercus john-tuckeri</i>	9.5, 10, 8.5	12	12	10	5	10	10	6	5	2	Lean is causing bark to split.	Some internal decay and stress-related sprouting at the base is present.	C	No tag; off-site.	Avoided
39	Tucker oak <i>Quercus john-tuckeri</i>	7	10	4	3	3	3	4	4	5	5		Stress-related sprouting at the base and epicormic sprouting is present.	C	No tag; off-site.	Avoided
40	Tucker oak <i>Quercus john-tuckeri</i>	6, 5	12	5	4	7	8	8	6	7	5		Some galls are present, tree is in good health overall.	B	No tag; off-site.	Avoided
41	Tucker oak <i>Quercus john-tuckeri</i>	8, 6	15	7	6	5	3	10	10	3	3	Bark has a healing fissure down the middle of the trunk.	Some epicormic sprouting is present.	B	No tag; off-site.	Avoided
42	Tucker oak <i>Quercus john-tuckeri</i>	6.5, 6	12	8	8	2	2	8	7	7	7	Several branches are rubbing against each other.	Some galls are present.	B	No tag; off-site.	Avoided
43	Tucker oak <i>Quercus john-tuckeri</i>	6, 4	12	5	5	3	4	4	6	7	7		Some epicormic sprouting is present.	B	No tag; off-site.	Avoided

# Attachment C

# Updated Oak Tree Survey Data

Oak Tree Survey Report for the Bouquet Canyon Road Project, Santa Clarita, CA

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
44	Tucker oak <i>Quercus john-tuckeri</i>	6, 6	12	7	8	9	5	3	3	7	7		Some canopy dieback is present.	C	No tag; off-site.	Avoided
45	Tucker oak <i>Quercus john-tuckeri</i>	7, 6, 6, 6, 5	13	8	8	6	6	9	10	9	9	Tree is in shrub form, several widely-spaced branches.	Some epicormic sprouting and galls are present.	B	No tag; off-site.	Avoided
46	Tucker oak <i>Quercus john-tuckeri</i>	6, 6, 6, 6, 8, 8.5	9	7	7	7	7	7	7	7	7	Tree is in shrub form, several widely-spaced branches.	Some epicormic sprouting is present, tree exhibiting vigorous growth.	B	No tag; off-site.	Avoided
47	Tucker oak <i>Quercus john-tuckeri</i>	6.5, 4	9	9	8	7	4	4	5	7	9	Tree is leaning downslope causing fissures in some stems.	Main stem has a large fissure with internal decay.	C	No tag; off-site.	Avoided
48	Tucker oak <i>Quercus john-tuckeri</i>	6, 5, 5	9	7	9	6	3	3	8	9	8	Some healing cracks are present at the base of main stems.	Some galls are present, some canopy dieback.	B	No tag; off-site.	Avoided
49	Tucker oak <i>Quercus john-tuckeri</i>	10, 6.5, 9.5	13	11	11	5	5	5	2	5	10	Good structure.	Some dieback and significant amounts of epicormic sprouting are present.	C	No tag; off-site.	Avoided
50	Tucker oak <i>Quercus john-tuckeri</i>	9, 7, 6, 6	13	2	8	8	7	7	7	2	2	Good structure.	Significant amount of epicormic sprouting is present.	C	No tag; off-site.	Avoided



# Attachment C

# Updated Oak Tree Survey Data

Oak Tree Survey Report for the Bouquet Canyon Road Project, Santa Clarita, CA

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
51	Tucker oak <i>Quercus john-tuckeri</i>	15, 16, 16, 17	18	12	14	15	10	5	9	14	14	V-crotches are 1' above ground, some chainsaw wounds are present.	Significant amount of epicormic sprouting is present.	C	No tag; off-site.	Avoided
52	Tucker oak <i>Quercus john-tuckeri</i>	16.5, 10, 9.5, 17, 6, 9, 8.5	17	10	9	9	5	3	4	10	11	Many stems, but good structure.	Significant amount of epicormic sprouting and some canopy dieback are present.	C		Avoided
53	Tucker oak <i>Quercus john-tuckeri</i>	13	19	5	8	6	3	2	2	5	5	V-crotch at 6" and 4' above ground, tree has a slight lean.	Most of canopy is epicormic sprouting.	C	No tag; off-site.	Avoided
54	Tucker oak <i>Quercus john-tuckeri</i>	10, 8, 10	17	11	11	5	5	3	3	5	5		Most of canopy is epicormic sprouting, significant canopy dieback is present.	C	No tag; off-site.	Avoided
55	Tucker oak <i>Quercus john-tuckeri</i>	12	17	11	9	9	1	1	6	8	9	Tree is leaning northeast.	Borer holes and internal decay are present.	C	No tag; off-site.	Avoided
56	Tucker oak <i>Quercus john-tuckeri</i>	12, 11, 7, 7, 8, 10.5	15	8	8	6	8	9	10	9	7		Borer holes, some epicormic sprouting, internal decay, and canopy dieback are present.	C	No tag; off-site.	Avoided

# Attachment C

# Updated Oak Tree Survey Data

Oak Tree Survey Report for the Bouquet Canyon Road Project, Santa Clarita, CA

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
57	scrub oak <i>Quercus berberidifolia</i>	9.5, 9.5, 7, 10, 8, 6.5, 6	12	9	10	10	7	5	9	9	9	Tree is in shrub form, mostly shaded by surrounding trees.	Some galls and epicormic sprouting are present.	B	No tag; off-site.	Avoided
58	scrub oak <i>Quercus berberidifolia</i>	7, 6	11	5	1	3	8	8	8	8	3	Tree is in shrub form.	Canopy is dying back, significant amount of epicormic sprouting is present.	C	No tag; off-site.	Avoided
59	Tucker oak <i>Quercus john-tuckeri</i>	8, 8, 8, 8, 8, 12.5	11	6	6	8	5	5	5	7	7	Tree is in shrub form.	A healing fissure and internal decay are present in one of the main stems.	C	No tag; off-site.	Avoided
60	Tucker oak <i>Quercus john-tuckeri</i>	6, 6, 6, 9, 4	8	6	6	8	5	7	9	9	9	Stems are all widely-spaced, spread out, tree is in shrubby form.	Some canopy dieback is present.	B	No tag; off-site, there is a packrat midden in the middle of the trunks.	Avoided
61	Tucker oak <i>Quercus john-tuckeri</i>	6, 6, 4, 5, 8, 6, 4, 4	9	8	6	6	6	6	7	9	8	Tree is in shrub form, stems are spread out.	Some canopy dieback, epicormic sprouting, and galls are present.	B		Avoided
62	Tucker oak <i>Quercus john-tuckeri</i>	9, 7.5, 5.5, 6.5, 5.5, 8.5, 8, 6.5, 4, 5, 6	9	11	6	5	6	6	7	8	5		Cankers, galls, epicormic sprouting, and canopy dieback are present.	C		Avoided

Tree Tag No.	Species	Circumference (in)	Height (ft)	Canopy Extent (feet)								Physical Evaluation	Horticultural Evaluation	Oak Tree Rating	Comments	Proposed Impacts
				N	NE	E	SE	S	SW	W	NW					
63	valley oak <i>Quercus lobata</i>	12, 22	20	5	7	7	7	7	7	7	7	V-crotch at 1.5' and 5' with included bark, tree is growing straight.	Vigorous growth, healthy specimen, no obvious signs of disease.	A	Circumference and canopy were estimated- tree is on private property.	Avoided
64	Tucker oak <i>Quercus john-tuckeri</i>	17, 32.5	19	10	10	10	10	10	8	8	10	Included bark, exposed roots, tree is growing on a steep slope.	Vigorous growth, some canopy dieback is present.	B		Avoided

## **Appendix B.2**

---

Oak Tree Health Assessment for the  
Davenport Trailhead Site



# Bouquet Canyon Residential Development

## Slender Mariposa Lily Mitigation Plan

April 2022 | 00357.00025.001

*Prepared for:*

**Mr. Evan Knapp**  
Integral Communities  
888 San Clemente Drive  
Newport Beach, CA 92660

*Prepared by:*

**HELIX Environmental Planning, Inc.**  
7578 El Cajon Boulevard  
La Mesa, CA 91942

This page intentionally left blank

# TABLE OF CONTENTS

---

<b><u>Section</u></b>	<b><u>Page</u></b>
1.0 INTRODUCTION.....	1
2.0 PROJECT SUMMARY.....	1
2.1 STUDY AREA Location .....	1
2.2 Project Description .....	1
2.3 Environmental Setting within the Project STUDY Area .....	2
2.3.1 Existing Conditions.....	2
2.4 Project Impacts to Slender Mariposa Lily .....	3
3.0 MITIGATION DESCRIPTION .....	3
3.1 Required Mitigation.....	3
3.2 Proposed Mitigation .....	4
3.3 Mitigation Goal .....	5
3.4 Mitigation Site Suitability.....	5
3.5 Cost .....	5
4.0 PROJECT RESPONSIBILITY.....	6
4.1 Project Proponent.....	6
4.2 Mitigation Site Landowner .....	6
4.3 Restoration ECOLOGIST .....	6
4.4 Maintenance Contractor.....	6
5.0 MITIGATION IMPLEMENTATION.....	7
5.1 Financial Assurances .....	7
5.2 Mitigation Schedule.....	7
5.2.1 Proposed Schedule .....	7
5.2.2 Scheduling Constraints .....	9
5.3 Slender Mariposa Lily Salvage/Storage.....	9
5.4 Slender Mariposa Lily Transplantation .....	10
5.4.1 Transplant Initiation.....	10
5.4.2 Timing .....	10
5.4.3 Transplant Site Preparation .....	10
5.4.4 Fencing and Signage .....	10
5.4.5 Removal of Non-native Vegetation and Soil Preparation.....	10
5.4.6 Soil Amendments.....	11
5.4.7 Erosion Control .....	11
5.4.8 Irrigation .....	11
5.4.9 Planting .....	11

# TABLE OF CONTENTS (cont.)

---

<b><u>Section</u></b>	<b><u>Page</u></b>
6.0 MAINTENANCE PLAN .....	11
6.1 Maintenance Access .....	12
6.2 Maintenance Activities .....	12
6.2.1 Invasive Plant Control .....	12
6.2.2 Irrigation .....	12
6.2.3 Erosion Control .....	12
6.2.4 Trash/Debris Removal.....	12
6.2.5 Pest Management.....	13
6.2.6 Horticultural Treatments .....	13
6.2.7 Remedial Measures .....	13
6.2.8 Timeframe.....	13
6.3 Maintenance Schedule .....	13
7.0 MONITORING PLAN .....	14
7.1 Bulb Salvage Monitoring.....	14
7.2 Spring OPEN SPACE Surveys .....	15
7.3 TRANSPLANT Monitoring.....	15
8.0 SUCCESS CRITERIA.....	15
9.0 COMPLETION OF MITIGATION.....	16
9.1 Notification of Completion .....	16
9.2 Agency Confirmation .....	16
9.3 Long-Term Preservation .....	16
10.0 CONTINGENCY MEASURES.....	16
10.1 Initiating Procedures.....	16
10.2 Alternative Mitigation Locations .....	17
10.3 Funding Mechanism.....	17
11.0 LIST OF PREPARERS .....	17
12.0 REFERENCES.....	18



# TABLE OF CONTENTS (cont.)

---

## LIST OF FIGURES

<u>No.</u>	<u>Title</u>	<u>Follows Page</u>
1	Regional Location.....	2
2	Impacts to Vegetation and Slender Mariposa Lily.....	2
3	Rare Plant Survey Areas.....	2
4	Soils .....	4
5	Topography.....	4
6	Potential Slender Mariposa Lily Transplant Locations.....	6
7	Vegetation in Potential Slender Mariposa Lily Transplant Locations .....	6
8	Soils and Topography in Potential Slender Mariposa Lily Transplant Locations .....	6

## LIST OF TABLES

<u>No.</u>	<u>Title</u>	<u>Page</u>
1	Recommended Monitoring/Reporting Schedule.....	14

## ACRONYMS AND ABBREVIATIONS

---

AMSL	above mean sea level
Cal-IPC	California Invasive Plant Council
CEQA	California Environmental Quality Act
CDFW	California Department of Fish and Wildlife
City	City of Santa Clarita
CNPS	California Native Plant Society
County	County of Los Angeles
CRPR	California Rare Plant Rank
EIR	Environmental Impact Report
GPS	Global Positioning System
HcC	Hanford sandy loam
HELIX	HELIX Environmental Planning, Inc.
MfA	Metz loam sandy
Mitigation Plan	Slender Mariposa Lily Mitigation Plan
MM	Mitigation Measure
MpA	Mocho loam
OgF	Ojai loam
Project	Bouquet Canyon Residential Development
ScF2	Saugus loam
SML	slender mariposa lily
SsA	Sorrento loam
USGS	U.S. Geological Survey
YoC	Yolo loam

# 1.0 INTRODUCTION

This Slender Mariposa Lily Mitigation Plan (SML Mitigation Plan) presents a strategy to compensate for the loss of slender mariposa lily (*Calochortus clavatus* var. *gracilis*; SML) plants impacted by the Bouquet Canyon Residential Development Project (Project) located in the City of Santa Clarita (City), within the County of Los Angeles (County), California. This Mitigation Plan satisfies mitigation measure Bio-1 of the Biological Technical Report (HELIX Environmental Planning, Inc. [HELIX] 2020), which requires mitigation for all impacted SML.

The goal of the Mitigation Plan is to describe methods to mitigate for impacts to SML at a 1:1 ratio. Mitigation would include the preservation of both on-site lands and adjacent lands on the Toll Brothers Property with the potential to contain this species and, if necessary, the transplantation of SML collected from the impact area into appropriate locations on the conserved lands.

This Mitigation Plan includes a description of the mitigation areas, and a methodology and approach for SML surveys, bulb collection, storage, and planting methods, as well as maintenance and monitoring requirements, and performance standards to measure the success of bulb transplantation during a three-year maintenance period. With the successful implementation of this Mitigation Plan, SML established in on-site and adjacent conserved lands will mitigate the loss of impacted SML from Project development. Nomenclature used in this report follows Oberbauer (2008) for vegetation community classifications and Baldwin et al. (2012) for plants.

## 2.0 PROJECT SUMMARY

### 2.1 STUDY AREA LOCATION

Both the Project and the study area have been revised since the prior submittal of the draft SML Mitigation Plan; the study area now encompasses an approximately 89.73-acre area in the Saugus Community in the northern portion of the City of Santa Clarita (as summarized in the addendum to the Biological Technical Report [HELIX 2022]). The study area includes approximately 56.91 acres of on-site areas within the Project boundary and approximately 32.82 acres of off-site areas outside of the Project boundary, where Project-related disturbance may be required. The study area is generally located 5.5 miles to the northeast of Interstate 5 and 3.8 miles to the northwest of California State Route 14 (Figure 1, *Regional Location*). The study area is within Section 6 of Township 4 North, Range 15 West of the Mint Canyon U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle, directly south of the intersection of David Way and Bouquet Canyon Road (Figure 2, *Impacts to Vegetation and Slender Mariposa Lily*).

### 2.2 PROJECT DESCRIPTION

The Project is a residential development that will consist of a gated community encompassing several neighborhoods and common area amenities. This development will be comprised of private residences that will include a combination of detached single-family lots, auto court detached bungalow units, attached row townhomes, and attached motor court condominiums. The Project will also require some slope stabilization in addition to implementing fuel modification zones in accordance with the County Fire Department regulations (County of Los Angeles 2017).

The Project includes the construction of a concrete-lined flood control channel parallel to, and to the south of, the existing Bouquet Canyon Creek low-flow channel to convey high storm flows. The low-flow channel will be returned to pre-Project topographic contours and will function to convey flows up to 200 cubic feet per second. Downstream flows within the re-contoured Bouquet Canyon Creek will ultimately feed into the downstream portion of the proposed concrete-lined flood control channel, which then drains to an existing off-site flood control channel operated by the Los Angeles County Flood Control District.

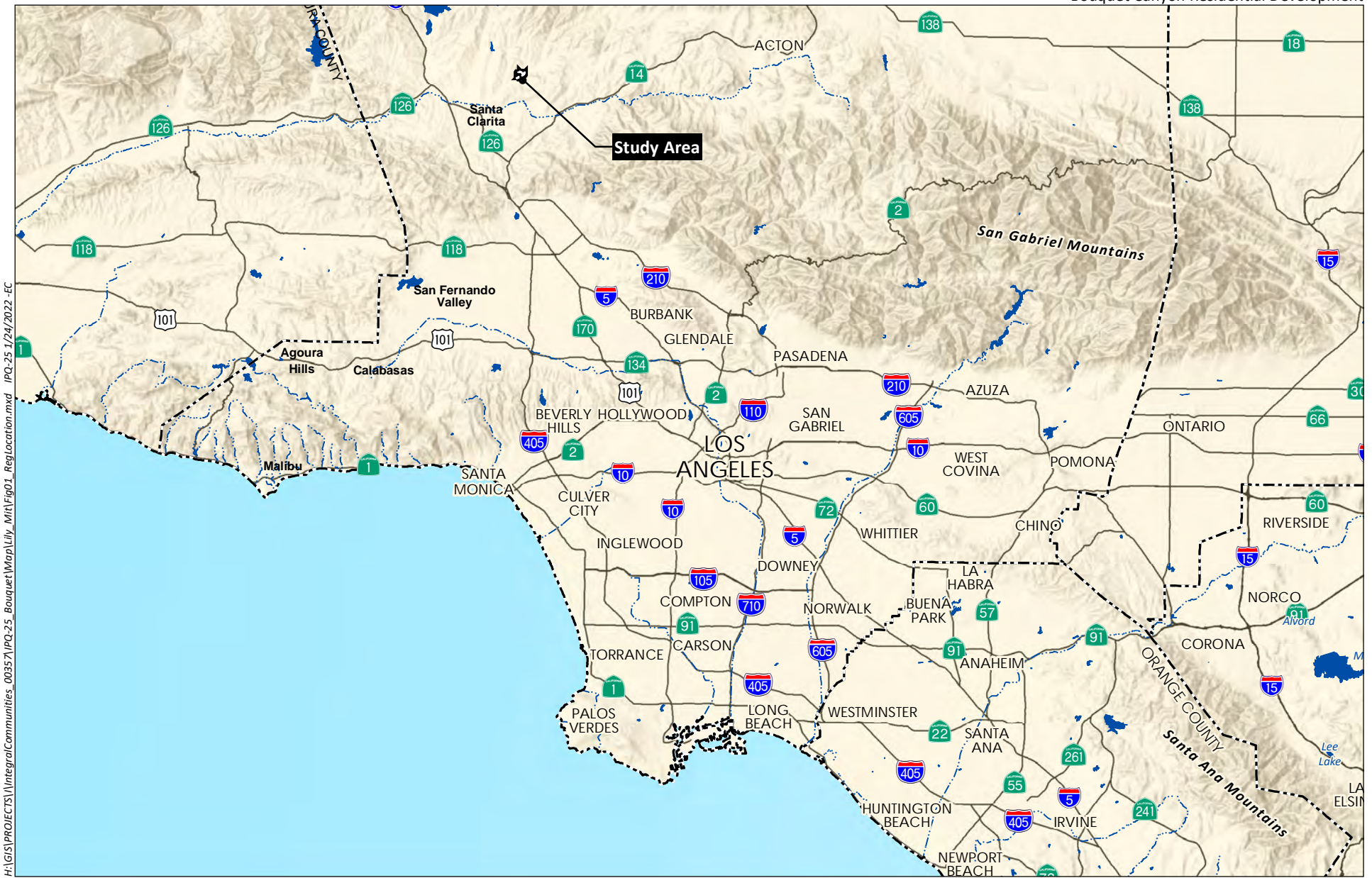
In addition to on-site impacts, the Project will re-align Bouquet Canyon Road, to improve a heavily traveled route that connects to Copper Hill Drive and the northern portion of the City. The new road alignment will be constructed approximately 1,500 feet north of Plum Canyon Road on the south end to a connection point at the existing Bouquet Canyon Road, approximately 700 feet south of Shadow Valley Lane. Construction of the new Bouquet Canyon Road alignment will implement a portion of the City's General Plan Circulation Element (City 2011) and will include widened lane and shoulder areas, a full-width bridge over Bouquet Canyon Creek, pedestrian walkways, and a multi-use trail accessible to both existing neighborhoods and the proposed development. Because the Project contains both on-site and off-site elements, an 89.73-acre revised 'study area' that encompasses all Project aspects has been identified and will be referenced throughout this Mitigation Plan (Figure 2). All revisions associated with the revised Project and the revised study area are summarized in the addendum to the Biological Technical Report (HELIX 2022).

## **2.3 ENVIRONMENTAL SETTING WITHIN THE PROJECT STUDY AREA**

### **2.3.1 Existing Conditions**

Portions of the Project study area, located in the foothills of the Sierra Pelona Mountains, were historically used as a school, ranch, and hog farm from the early 1900s through the 1970s (Historic Aerials 1948). The topography in the southern and western portions of the study area is predominantly steep hillsides, while the northern portion is mostly flat. The steep hills throughout the southern and western portions of the study area are mainly vegetated by native Riversidean upland sage scrub habitat, while the flatter portions are dominated by non-native grassland due to historic disturbance from ranching activities. Bouquet Canyon Creek flows from east to west in the northern portion of the study area. Elevations in the study area range from approximately 1,365 feet above mean sea level (AMSL) near the western boundary to approximately 1,600 feet above AMSL near the southeastern corner. Seven soil types are mapped in the Project study area, including Hanford sandy loam (HcC), Metz loam sandy (MfA), Mocho loam (MpA), Ojai loam (OgF), Saugus loam (ScF2), Sorrento loam (SsA), and Yolo loam (YoC; NRCS 2017).

The Project study area is located approximately 0.20 mile to the southeast of Haskell Canyon Open Space and 1.40 miles to the south of the Angeles National Forest. Immediately surrounding land uses include existing residential development to the north and west, a mixture of undeveloped land and residential development to the south, and a juvenile detention camp (Los Angeles County Camp Joseph Scott) to the east (Figure 2). Part of the study area, and the remainder of a 43-acre site consisting of undeveloped open space, was recently acquired from Toll Brothers by the Project proponent (Figure 3, *Rare Plant Survey Areas*). The Toll Brothers Property will support grading for the new proposed alignment of Bouquet Canyon Road.



H:\GIS\PROJECTS\IntegralCommunities\_00357\IPQ-25\_Bouquet\Map\Lily\_Mit\Fig01\_RegLocation.mxd IPQ-25 1/24/2022-EC

Source: Base Map Layers (ESRI, 2013)



**Project Site**

- On-Site
- Off-Site

**Impacts**

- Permanent
- Temporary

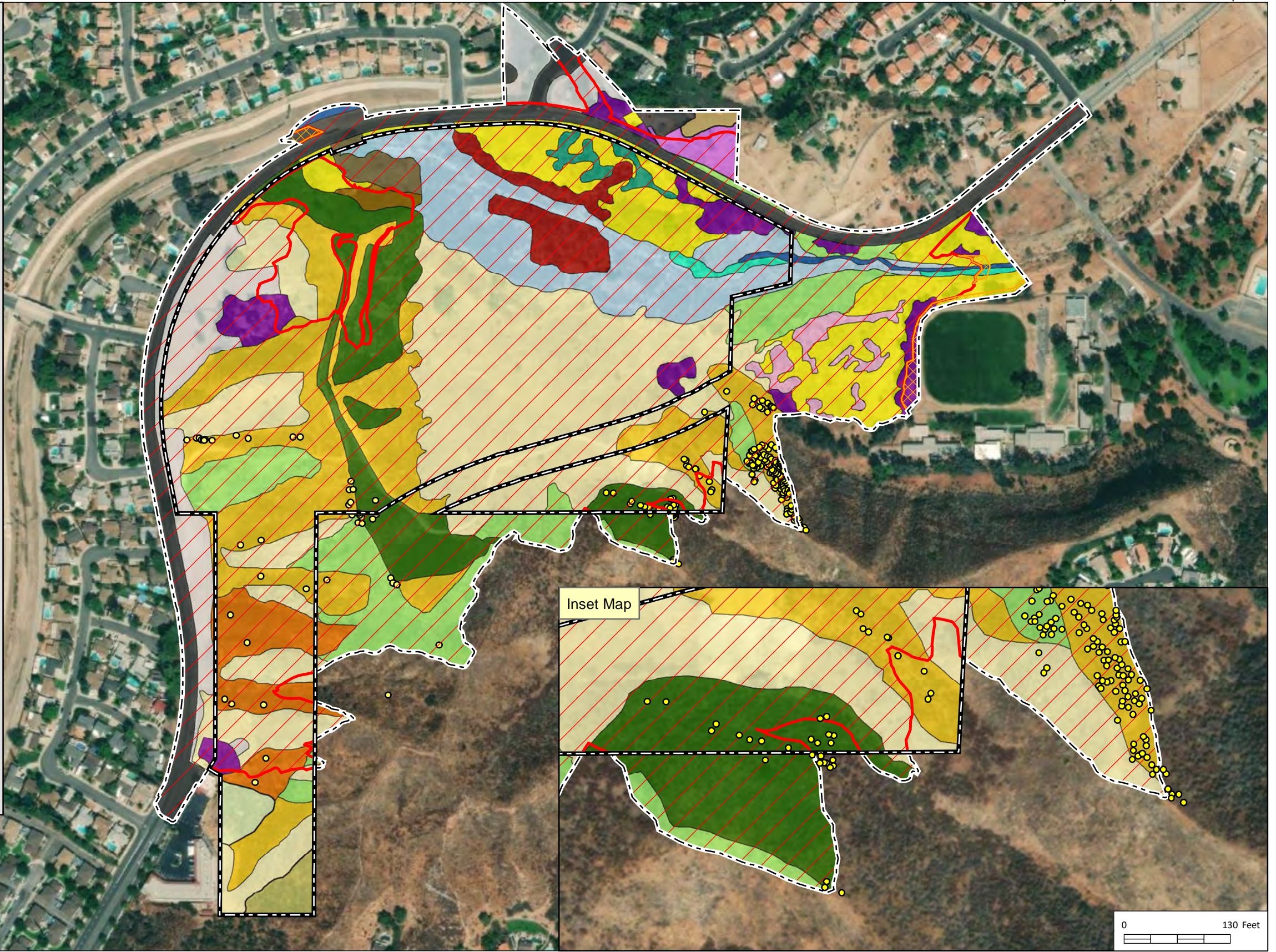
**Rare Plant Locations**

- Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*)

**Vegetation and Land Uses**

- Big Sagebrush Scrub
- Chamise Chaparral/Non-native Grassland
- Developed
- Disturbed
- Disturbed-Riversidean Upland Sage Scrub
- Elderberry Savanna
- Giant Reed Stand
- Mule Fat Scrub
- Non-native Grassland
- Non-native Grassland/Riversidean Upland Sage Scrub
- Non-native Vegetation
- Non-native Vegetation/Elderberry Savanna
- Non-native Vegetation/Riversidean Upland Sage Scrub
- Ornamental
- River Wash
- Riversidean Upland Sage Scrub
- Riversidean Upland Sage Scrub/Non-native Grassland
- Scrub Oak Chaparral
- Scrub Oak Chaparral/Non-native Grassland
- Southern North Slope Chaparral
- Southern Willow Scrub/Giant Reed Stand
- Tucker Oak Chaparral

\* 496 combined individuals observed within the study area during 2018 and 2019 surveys for this species; 462 will be impacted by the proposed project and 34 avoided.



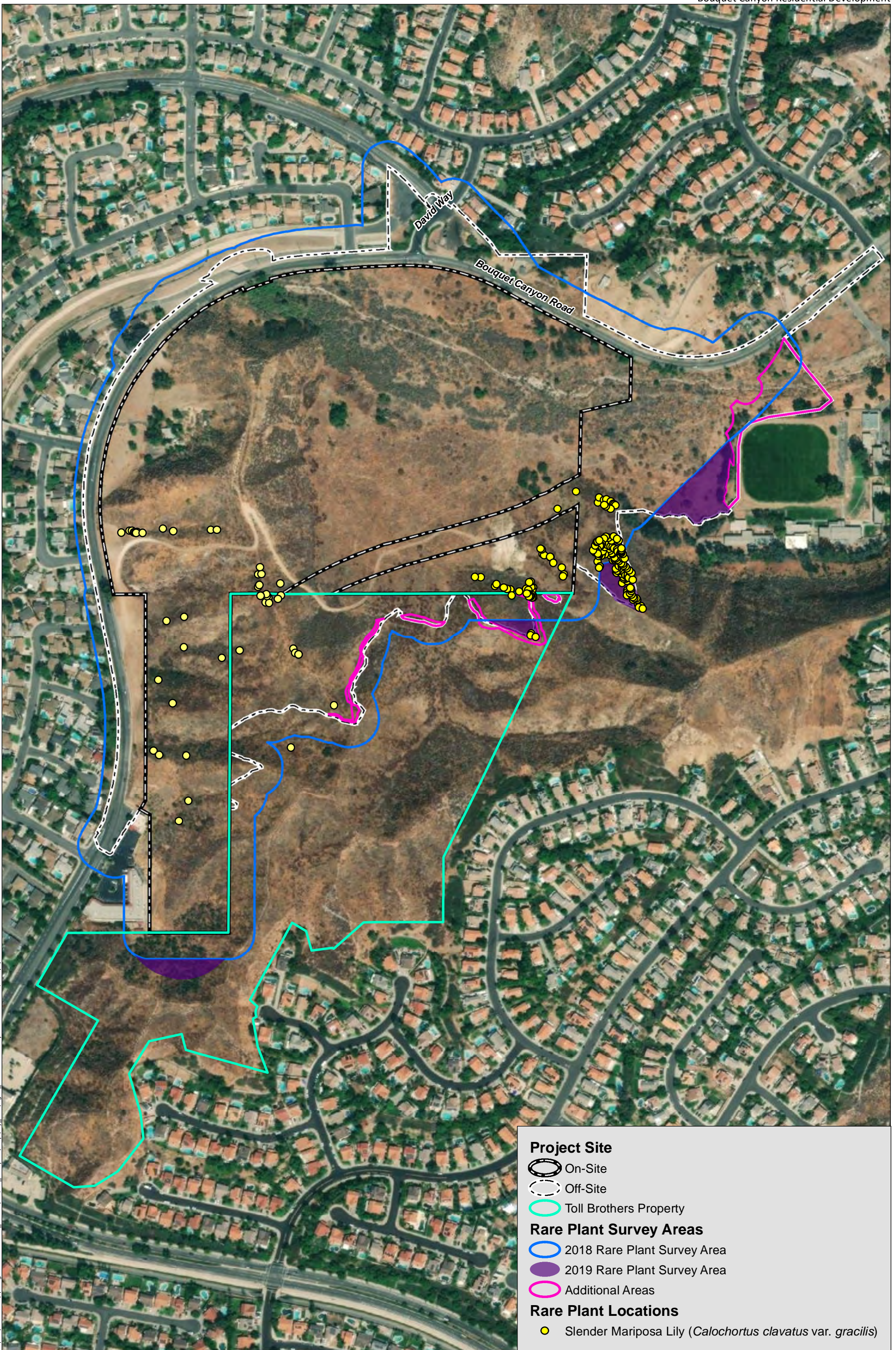
H:\GIS\PROJECTS\IntegralCommunities\_00357\1PQ-25\_Bouquet\Map\Lily\_Mit\Fig02\_Imp/Veg\_Lily\_2021\_1112.mxd 00357.25.1.3/8/2022 - SAB

0 350 Feet

0 130 Feet

Source: Aerial (Maxar, 2020)





H:\GIS\PROJECTS\IntegralCommunities\_00357\IPQ-25\_Bouquet\Map\Lily\_MIT\Fig03\_RarePlantSurveyAreas.mxd IPQ-25 3/8/2022-EC

**Project Site**

On-Site

Off-Site

Toll Brothers Property

**Rare Plant Survey Areas**

2018 Rare Plant Survey Area

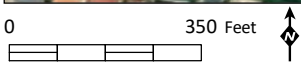
2019 Rare Plant Survey Area

Additional Areas

**Rare Plant Locations**

Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*)

Source: Maxar, 2020; USDA NRCS, 2015





A total of 496 SML, considered sensitive by the California Native Plant Society (CNPS) and City, were observed in the Project study area (which included a portion of the Toll Brothers Property) during the spring rare plant surveys conducted by HELIX on May 15, 2018, and May 9, 2019 (Figure 3). Approximately 2.09 acres added to the northeast and southern portions of the Project study area in late 2019 (Figure 3) were to be surveyed for rare plants in 2020 (HELIX 2020); however, this survey was not conducted because (1) the far northeastern polygon was determined to not support suitable habitat for rare plants during a general biological survey conducted by HELIX; and (2) the other additional areas had largely been surveyed for rare plants as part of a “survey buffer” of the 2018 and 2019 rare plant surveys (Figure 3). The portion of the Toll Brothers Property that is located outside of the study area was not surveyed for SML in 2018, 2019, or 2020.

In 2021, HELIX biologists only documented two SML individuals within the Project study area. These individuals were observed during an April 28, 2021 spot check of the densest population of SML previously documented within the study area, near the Camp Joseph Scott Detention Center. A second SML focused survey conducted on May 11, 2021, within portions of the Toll Brothers Property that were considered to be appropriate for SML was negative. Spring 2021 followed a drier than average 2020/2021 wet season (per the Los Angeles Almanac website, which recorded this season as having nine inches below average rainfall). During non-drought conditions, it is believed that significant numbers of SML are likely to flower within the Toll Brothers Property, where suitable conditions related to slope aspect, topographic relief, and soil type exist.

SML is considered sensitive by the CNPS, which lists the plant as having a California Rare Plant Rank (CRPR) of 1B.2, for species considered rare throughout their range that have declined significantly over the last century. This species is not federal or state listed as endangered or threatened. On-site, SML occurs mainly on north, north-west, and north-east facing slopes; between 1,400 and 1,575 feet AMSL; in relatively open chamise chaparral or Riversidean upland sage scrub habitat or in non-native grasslands; and on Saugus loam, 30 to 50 percent slopes, eroded (ScF2) or Ojai loam, 30 to 50 percent slopes (OgF) soils (Figure 2; Figure 4, *Soils*; Figure 5, *Topography*).

## 2.4 PROJECT IMPACTS TO SLENDER MARIPOSA LILY

Of the 496 SML individuals previously documented within the Project study area, 453 will be impacted by the proposed Project (Figure 2). The remaining 43 individuals will be avoided by the Project and conserved within on-site/Toll Brothers Property open space. Project impacts to this species are considered significant under the California Environmental Quality Act (CEQA), and mitigation is required to reduce impacts to less than significant.

## 3.0 MITIGATION DESCRIPTION

### 3.1 REQUIRED MITIGATION

To avoid significant impacts to SML by the Project, the Mitigation Monitoring and Reporting Program of the Final Environmental Impact Report (EIR) for the Project (Michael Baker International, Inc., 2020) identifies Mitigation Measure (MM) 3.3-1 as outlined below:

### MM 3.3-1: Preserve or Replace Slender Mariposa Lilies

Mitigation for Project impacts to the slender mariposa-lily (*Calochortus clavatus* var. *gracilis*) shall include one or more of the following, implemented in consultation with the City and California Department of Fish and Wildlife (CDFW) prior to construction:

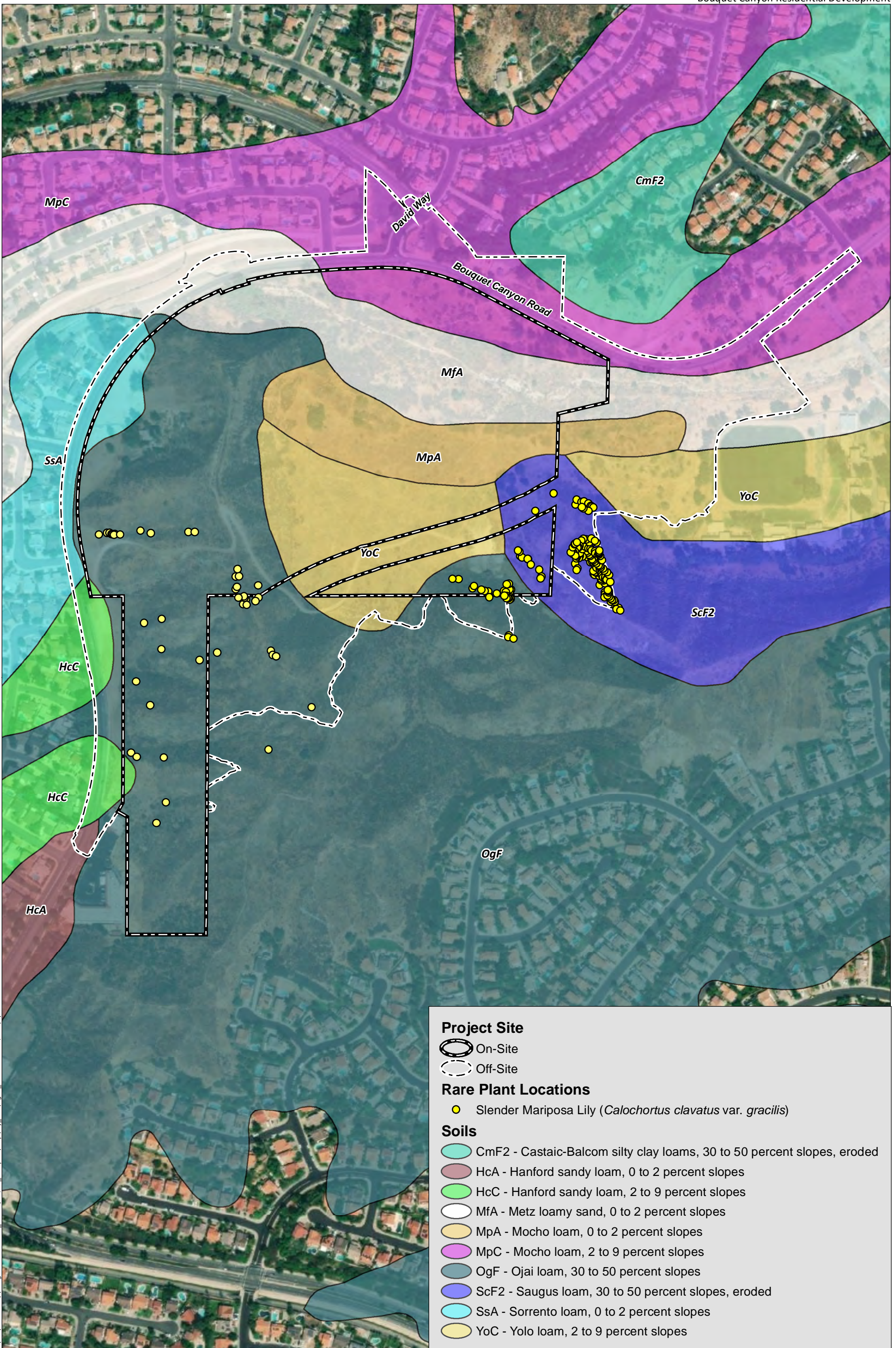
- a) Prior to construction, a mitigation plan shall be developed that describes methods to mitigate for impacts to slender mariposa lily at a 1:1 ratio. The mitigation plan shall include a description of the mitigation site, seed/bulb collection and planting methods, maintenance and monitoring requirements, and performance standards to measure the success of the mitigation. Slender mariposa lily bulbs shall be collected at the end of the growing season and prior to ground disturbance, or seeds shall be obtained from a native plant nursery if available. The seeds/bulbs shall be planted within an appropriate on-site or off-site mitigation area, which will be conserved as open space in perpetuity.
- b) Payment into a mitigation bank and/or in-lieu fee program that has mitigation available for the rare plant species.
- c) Preservation of land that contains the rare plant species.

## 3.2 PROPOSED MITIGATION

The measures outlined in MM 3.3-1 of the Project EIR are being met as follows:

- a) This Mitigation Plan addressed SML mitigation at a 1:1 ratio. Mitigation proposed herein consists of the following:
  - (1) Conducting two spot checks and three targeted surveys for flowering SML during spring/early summer 2022 within all previously documented SML populations located within the study area and appropriate areas of the Toll Brothers Property. If 453 or more individuals are documented within the areas designated for preservation, mitigation will be considered complete.
  - (2) If fewer than 453 SML are documented during spring/summer 2022 surveys, the remaining balance of 453 SML bulbs will be mitigated for via seed and bulb salvage in the Project impact area. Bulbs from any positively identified SML plants, as well as all bulbs (which will include SML and other species) that can be salvaged from the densest SML populations previously documented within the Project impact area will be collected, and stored at a City-approved nursery. Salvaged bulbs will be sorted into similar-looking groupings and a sample of each grouping will be germinated at a City-approved nursery for identification. Salvaged SML seed would be grown out into bulbs at an approved nursery; bulbs would be planted into conserved areas if needed to increase the number of SML.
  - (3) Additional surveys for SML within the conserved areas will be conducted in spring/summer 2023 and 2024. If 453 or more individuals are documented within the areas designated for preservation in either year, mitigation will be considered complete.
  - (4) If fewer than 453 SML are documented during both the 2023 and 2024 surveys, approximately 1/3 of the salvaged bulbs, and if necessary, bulbs grown from salvaged seed, will





**Project Site**

- On-Site
- Off-Site

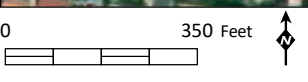
**Rare Plant Locations**

- Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*)

**Soils**

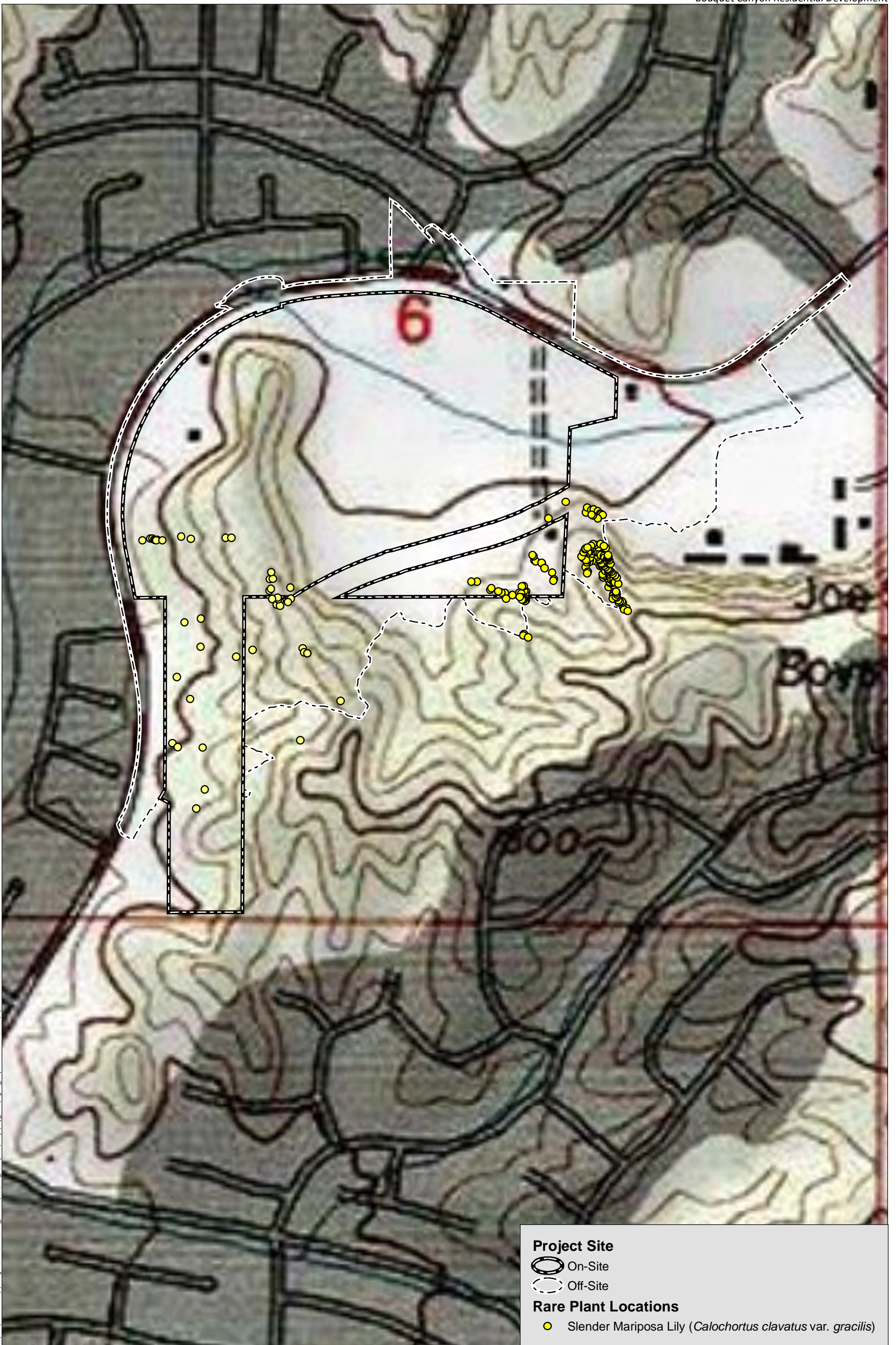
- CmF2 - Castaic-Balcom silty clay loams, 30 to 50 percent slopes, eroded
- HcA - Hanford sandy loam, 0 to 2 percent slopes
- HcC - Hanford sandy loam, 2 to 9 percent slopes
- Mfa - Metz loamy sand, 0 to 2 percent slopes
- Mpa - Mocho loam, 0 to 2 percent slopes
- Mpc - Mocho loam, 2 to 9 percent slopes
- OgF - Ojai loam, 30 to 50 percent slopes
- ScF2 - Saugus loam, 30 to 50 percent slopes, eroded
- Ssa - Sorrento loam, 0 to 2 percent slopes
- YoC - Yolo loam, 2 to 9 percent slopes

H:\GIS\PROJECTS\IntegratCommunities\_00357\IPQ-25\_Bouquet\Map\Lily\_MRI\Fig04\_Soils.mxd IPQ-25 3/8/2022 -EC



Source: Maxar, 2020; USDA NRCS, 2015





F:\GIS\PROJECTS\IntegratCommunities\_00357\IPQ-25\_Bouquet\Map\Lily\_ML\Fig05\_Topo.mxd IPQ-25 3/8/2022-EC



be planted annually for up to three years (starting in fall 2024) directly into the ground in conserved areas where SML appropriate soils, slopes, and aspects are present (Figure 6, *Potential Slender Mariposa Lily Transplant Locations*). The number of bulbs installed will be determined in coordination with the restoration ecologist, and will be based on the number of SML needed to meet the 453 target, and predicted weather patterns for the upcoming wet season.

- b) Although it is an option addressed in MM 3.3-1, SML mitigation credits at a mitigation bank and/or in-lieu fee program are not being pursued at this time.
- c) All open space located within the combined study area and Toll Brothers Property will be conserved long term, as described in Section 9.3 of this Mitigation Plan.

### 3.3 MITIGATION GOAL

The Mitigation Plan outlined herein is focused on mitigating for impacts to 453 SML that occur within the development footprint of the proposed Project. The goal of this Mitigation Plan is to successfully preserve an equal number of SML plants at an appropriate site. If fewer than 453 SML are found to occur naturally within the proposed mitigation area, then SML bulbs salvaged from within the Project footprint, prior to impacts, would be transplanted to help meet the target of 453 preserved individuals.

### 3.4 MITIGATION SITE SUITABILITY

The proposed SML transplant locations were selected because they contain similar slopes, aspects, elevations, soils, and vegetation types/densities as those that occur in areas where SML were documented within the study area during 2018 and 2019 rare plant surveys. Specifically, the proposed transplant locations contain open chamise chaparral or Riversidean upland sage scrub habitat (Figure 7, *Vegetation in Potential Slender Mariposa Lily Transplant Locations*); on Saugus loam or Ojai loam with 30 to 50 percent slopes (Figure 8, *Soils and Topography in Potential Slender Mariposa Lily Transplant Locations*); on mainly north-facing slopes. In addition, Transplant sites 1, 2, and 3 occur adjacent to at least one SML observed in 2018 or 2019 surveys. All transplant locations are also suitable due to their location within open space that will be conserved; thereby protecting any documented/ established SML in the long-term. Additional locations may be identified during the first two years of mitigation implementation, when additional spring surveys for SML will be conducted, in both the on-site open space and on the Toll Brothers Property.

### 3.5 COST

The cost of implementing the on-site/Toll Brothers Property mitigation program proposed in this Mitigation Plan, including SML salvage, storage, propagation (if needed), SML planting, and all maintenance, monitoring, and reporting is expected to be approximately \$300,000.

## **4.0 PROJECT RESPONSIBILITY**

### **4.1 PROJECT PROPONENT**

The City of Santa Clarita is the Lead Agency for this Project. Contact information is provided below.

City of Santa Clarita  
Contact: Robert Sartain  
Oak Tree Specialist Special Districts Division  
23920 Valencia Blvd., Suite 300  
Santa Clarita, CA 91355 [(619) 294-2556]

Integral Communities will be responsible for financing the SML salvage, storage, monitoring, and, if necessary, transplantation of salvaged SML during the five years proposed in this Mitigation Plan. Contact information is provided below. The financial responsibilities of Integral Communities will be fulfilled upon receiving the final sign-off, in writing, from the City.

Integral Communities  
Contact: Peter Vanek  
888 San Clemente Drive  
Newport Beach, CA 92660 [(949) 307-3482]

### **4.2 MITIGATION SITE LANDOWNER**

Integral Communities owns both the open space located within the study area, as well as the Toll Brothers Property.

### **4.3 RESTORATION ECOLOGIST**

Overall supervision of the SML salvage, storage, and transplantation, if needed, as well as all monitoring and reporting for up to five years will be the responsibility of a restoration ecologist with experience in sensitive plant mitigation. The restoration ecologist will oversee the efforts of the maintenance contractor for the life of the effort. Specific tasks of the restoration ecologist include educating all participants regarding mitigation goals and requirements; directly overseeing SML salvage; conducting annual SML surveys; and overseeing SML transplant site preparation, SML planting, and maintenance. The restoration ecologist will ensure that the contractor does not inadvertently impact sensitive habitat areas (and sensitive species). The restoration ecologist will also prepare and submit required reports to the Project proponent(s) and City and CDFW each year.

### **4.4 MAINTENANCE CONTRACTOR**

The maintenance contractor will have specific experience salvaging and transplanting sensitive plants. They will be responsible for SML salvage, storage, and propagation (if needed), as well as transplant site preparation, installation of salvaged SML, and any required transplant site maintenance. All activities conducted will be seasonally appropriate and approved by the restoration ecologist. The contractor will be familiar with native and non-native plant identification and will service the SML transplant sites according to the maintenance schedule outlined in this Mitigation Plan. Service will include but not be





H:\GIS\PROJECTS\IntegratCommunities\_00357\IPQ-25-Bouquet\Map\Lily\_MIT\Fig06\_Pot\_Trans\_Loc.mxd IPQ-25-3/14/2022-EC

**Project Site**

- On-Site
- Off-Site

Toll Brothers Property

Potential Slender Mariposa Lily Transplant Locations

**Impacts**

- Permanent
- Temporary

**Rare Plant Locations**

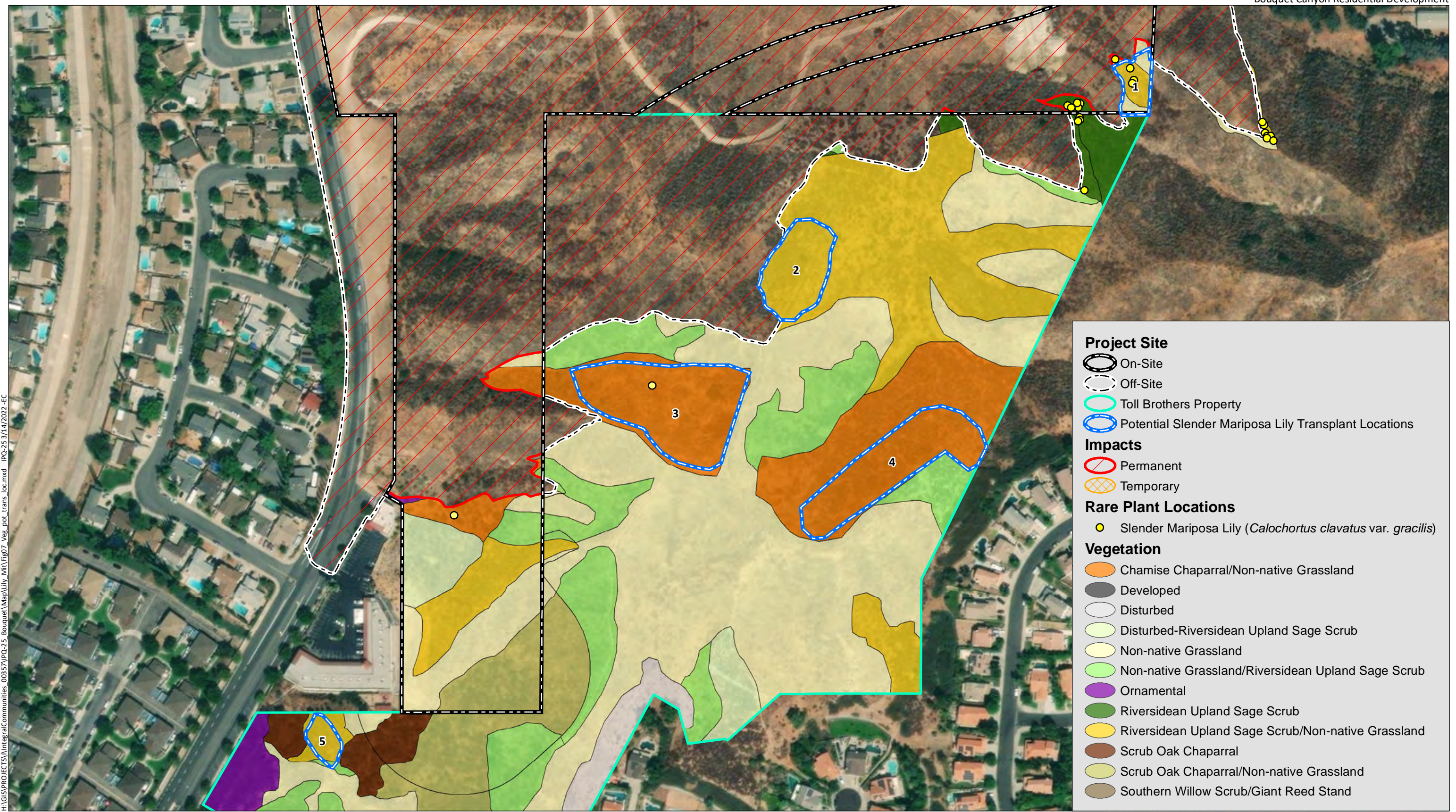
Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*)

Source: Base Map Layers (SanGIS, 2016)





H:\GIS\PROJECTS\IntegralCommunities\_08357\IPQ-25\_Bouquet\Map\Lily\_Mit\Fig07\_Veg\_pot\_trans\_loc.mxd IPQ-25 3/14/2022-EC



**Project Site**

- On-Site
- Off-Site
- Toll Brothers Property
- Potential Slender Mariposa Lily Transplant Locations

**Impacts**

- Permanent
- Temporary

**Rare Plant Locations**

- Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*)

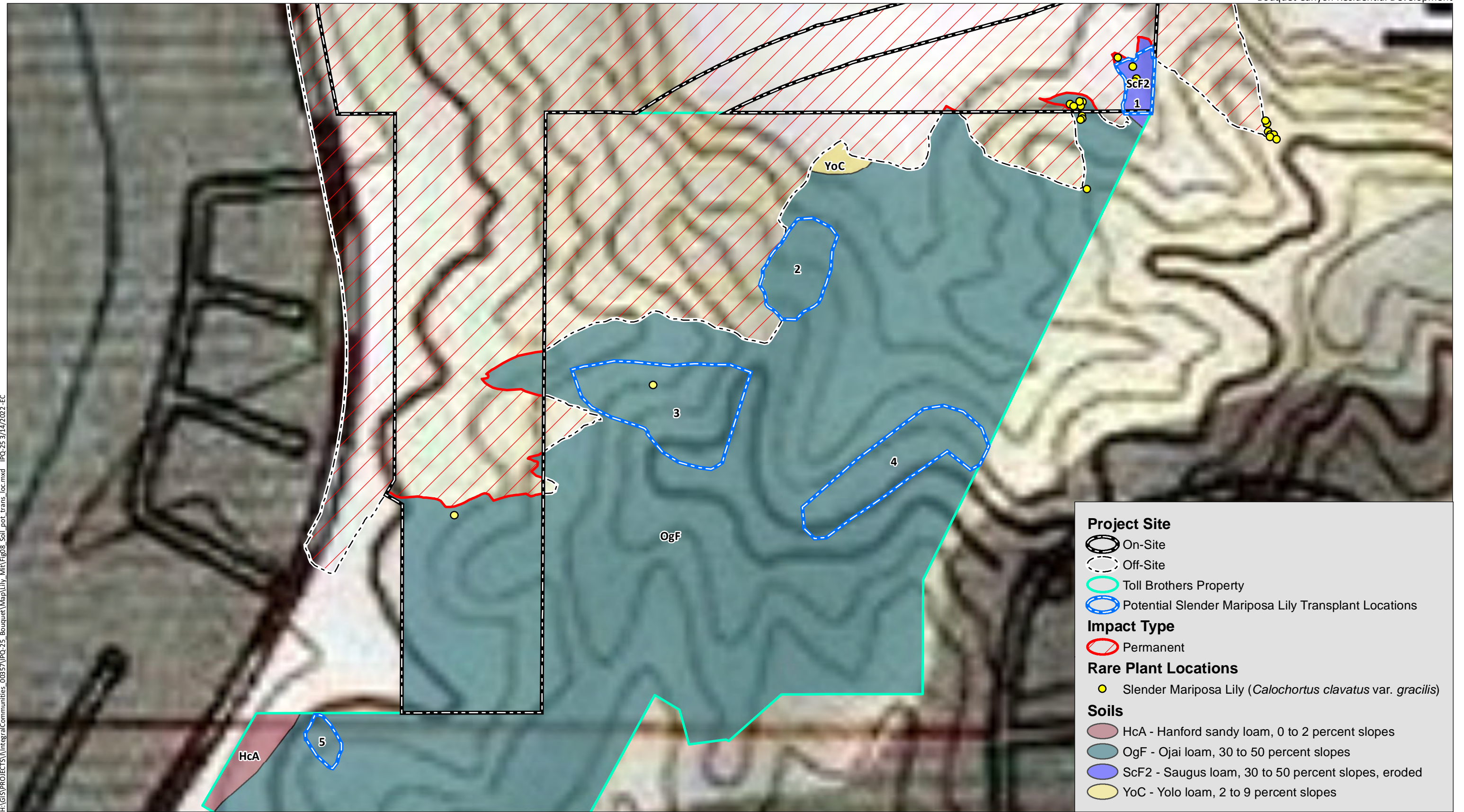
**Vegetation**

- Chamise Chaparral/Non-native Grassland
- Developed
- Disturbed
- Disturbed-Riversidean Upland Sage Scrub
- Non-native Grassland
- Non-native Grassland/Riversidean Upland Sage Scrub
- Ornamental
- Riversidean Upland Sage Scrub
- Riversidean Upland Sage Scrub/Non-native Grassland
- Scrub Oak Chaparral
- Scrub Oak Chaparral/Non-native Grassland
- Southern Willow Scrub/Giant Reed Stand

Source: Base Map Layers (Maxar, 2020)



H:\GIS\PROJECTS\IntegralCommunities\_08357\IPQ-25\_Bouquet\Map\Lily\_Mit\Fig08\_Soil\_pot\_trans\_loc.mxd IPQ-25 3/14/2022-EC



**Project Site**

- On-Site
- Off-Site
- Toll Brothers Property
- Potential Slender Mariposa Lily Transplant Locations

**Impact Type**

- Permanent

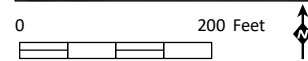
**Rare Plant Locations**

- Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*)

**Soils**

- HcA - Hanford sandy loam, 0 to 2 percent slopes
- OgF - Ojai loam, 30 to 50 percent slopes
- ScF2 - Saugus loam, 30 to 50 percent slopes, eroded
- YoC - Yolo loam, 2 to 9 percent slopes

Source: Mint Canyon 7.5' Quad (USGS); USDA NRCS, 2015



limited to weed control. The maintenance contractor will meet the restoration ecologist at the site when requested and will perform all checklist items in a timely manner as directed.

## 5.0 MITIGATION IMPLEMENTATION

### 5.1 FINANCIAL ASSURANCES

Integral Communities will be responsible for financing the SML salvage, storage, surveys, and, if necessary, transplantation and monitoring for up to five years, as described in this Mitigation Plan. A mitigation agreement shall be signed and notarized by the Project proponent following approval of this Mitigation Plan, accompanied by the required security as agreed upon by the City.

### 5.2 MITIGATION SCHEDULE

#### 5.2.1 Proposed Schedule

Implementation of this Mitigation Plan will be conducted as follows:

**Step 1** - Spring 2022 (start of Year 1 of the mitigation effort) – In 2022, HELIX will survey for and map SML within the Project site as well as the on-site and Toll Brothers Property conserved areas. Two spot check site visits by a Biologist would be conducted within the survey window of March through April 2022 to determine if SML are blooming. If flowering is documented during spot-check visits, two Biologists will conduct up to three SML surveys of the Project site and Toll Brothers Property within the 2022 blooming period (typically early May to mid-June). Repeated surveys are intended to maximize the number of SML that are detected. Flowering SML will be mapped using a hand-held GPS. SML observed within the Project impact area will also be flagged in the field using pin flags. If 453 SML are observed within the conserved areas, the 1:1 mitigation ratio will have been met and mitigation would be complete. If fewer than 453 SML are observed, proceed to Step 2.

**Step 2** – Summer 2022 (Year 1) – Salvage the following prior to grading any positively identified SML or grading previously mapped areas of dense SML:

#### **Seed Salvage**

Collect SML seed from any flowering individuals located within the Project impact area. Salvage SML bulbs from any individuals identified within the Project impact area prior to grading. As needed, seed can be grown out at a nursery beginning in late 2022.

#### **Bulb Salvage**

SML bulb salvage needs to occur when plants are dormant, typically between August and October, because germinating bulbs are more likely to be damaged during salvage operations, reducing the success of establishment following transplantation. Bulb salvage will occur using two methods: soil block salvage and individual bulb salvage:

**Soil Block Salvage** - Prior to Project impacts, if any flowering SML are located within the impact area, these individuals will be flagged and, during dormancy, up to 20 blocks of soil the length and width of a standard nursery flat and at least five inches deep, will be manually



removed from around these plants. Blocks will be centered upon the positively identified SML. Salvaged soil blocks will be placed into nursery flats and be transported to a nursery, where they will be stored in an area where they are protected from herbivory, but exposed to sunlight, ambient weather, and natural rainfall. No supplementary watering would be conducted, but flats would be weeded, as needed.

**Individual Bulb Salvage** – Following salvage of any positively identified SML in up to 20 soil blocks, additional positively identified SML will be manually excavated as individual bulbs. It is expected that, given the low rainfall during the 2021/2022 wet season, many SML will not produce flowers in 2022. Therefore, additional bulb collection will be conducted in areas where SML was previously mapped in high concentrations. These areas will be ripped to a depth of five inches, or soils will be otherwise disturbed using earth moving equipment such that individual bulbs can be extracted from the soil. It should be noted that SML bulbs will likely be indistinguishable from other bulb-producing species that occur in the area and, to help ensure that SML bulbs are salvaged, substantially more than the number of SML needed to meet the 1:1 mitigation ratio would be collected. To minimize impacts to SML, the exact timing of bulb salvage will be coordinated with the Project Restoration Ecologist to coincide with the dormant period for this species..

Following salvage, collected bulbs will be sorted into groupings based on appearance and stored in paper bags at a qualified nursery facility. A qualified nursery will retain samples of 25 bulbs from each grouping; these bulbs will be grown out for identification purposes in late 2022/early 2023.

**Step 3** – Spring 2023 (Year 2) - On site, conduct an SML focused survey within the conserved areas. If 453 SML are observed, the 1:1 mitigation ratio will have been met and mitigation would be complete. If fewer than 453 SML are observed within conserved areas, count/mark any flowering SML at the nursery and proceed to Step 4.

**Step 4** – Fall 2023 (Year 2) – Install up to 1/3 of all positively identified salvaged SML bulbs, as well as up to 1/3 of all unidentified bulbs, in designated transplant plots, depending on how many individuals are identified in conserved open space. Also install any salvaged soil blocks containing SML bulbs. Transplant plots should be periodically weeded; no supplemental watering or other maintenance is proposed.

**Step 5** – Spring 2024 (Year 3) – Conduct a focused SML survey within the conserved areas and SML transplant plots. If 453 SML are positively identified within conserved areas (including the plots), the mitigation ratio will have been met and mitigation would be complete; if not, count/mark any flowering SML at the nursery and proceed to Step 6.

**Step 6** – Fall 2024 (Year 3) – As needed, install up to ½ of all remaining positively identified salvaged SML bulbs, and up to ½ of the unidentified bulbs into designated transplant plots. Transplant plots should be periodically weeded; no supplemental watering is proposed.

**Step 7** – Spring 2025 (Year 4) – Conduct a focused SML survey within the conserved areas and SML transplant plots. If 453 SML are positively identified within conserved areas, the mitigation ratio will have been met and mitigation would be complete; if not, count/mark any flowering SML at the nursery and proceed to Step 8.



**Step 8** – Fall 2025 (Year 4) – As needed, install up to all of the remaining positively identified salvaged SML bulbs and up to all of the remaining unidentified bulbs into designated transplant plots. Transplant plots should be periodically weeded; no supplemental watering is proposed.

**Step 9** – Spring 2026 (Year 5) – Conduct a focused SML survey within the conserved areas and SML transplant plots. If 453 SML are positively identified within conserved areas, the mitigation ratio will have been met and mitigation would be complete; if not, coordinate with the City regarding extending monitoring for SML on site, or appropriate alternative mitigation.

An annual report summarizing the results of the respective spring rare plant survey would be prepared within two months of each of the five annual spring surveys.

## 5.2.2 Scheduling Constraints

Ideally, SML salvage would occur outside of the general bird nesting season for migratory birds (February 15 through August 31 for songbirds and January 15 to August 31 for raptors). Should this activity need to be conducted during the bird nesting season, a qualified biologist shall perform a pre-construction survey of potential nesting habitat to confirm the absence of active nests belonging to migratory birds and raptors afforded protection under the Migratory Bird Treaty Act and California Department of Fish and Game Code. The pre-construction survey shall be performed no more than seven days prior to the commencement of construction activities, including any vegetation clearing/grubbing required to access documented SML locations. The qualified biologist shall document the results of the pre-construction survey.

If the qualified biologist determines that no active migratory bird or raptor nests occur, the activities shall be allowed to proceed without any further requirements. If the qualified biologist determines that an active migratory bird or raptor nest is present, no impacts within 300 feet (500 feet for raptors) of the active nest shall occur until the young have fledged the nest and the nest is confirmed to no longer be active, or as determined by the qualified biologist. The biological monitor may modify the buffer or propose other recommendations in order to minimize disturbance to nesting birds.

## 5.3 SLENDER MARIPOSA LILY SALVAGE/STORAGE

Prior to initiation of SML salvage, the restoration ecologist and maintenance contractor shall meet to coordinate regarding this activity, including discussing salvage timing (during dormancy) and any required vegetation clearing. The restoration ecologist would assist with locating previously mapped SML populations within the impact area and identifying the limits for bulb salvage. Native vegetation may need to be cleared to facilitate access to mapped SML locations. Salvage during the SML dormant period may be conducted by first ripping and cross-ripping the soil to approximately at least 5 inches in depth using a earth moving equipment, then manually inspecting the ripped soil and extracting bulbs. In addition, buckets of soil from the salvage area will be collected for use as a growing medium for the salvaged bulbs test groups.

The majority of salvaged bulbs will be stored in a cool/dry location at a City-approved nursery facility. In addition, 25 bulbs of each ‘type’ identified during collection will be temporarily stored, then, as needed, these bulbs will be grown out in native soil collected from the site. . Planted bulbs will be stored outside, exposed to natural rainfall, and watered, as needed, to stimulate growth. Flowering SML will be marked

at the nursery. If any of the bulb groupings can be identified to species, this identification will be applied to the other stored bulbs from this grouping.

## **5.4 SLENDER MARIPOSA LILY TRANSPLANTATION**

### **5.4.1 Transplant Initiation**

Salvaged SML bulbs and soil blocks will only be installed into conserved open space if fewer than 453 SML are positively identified (i.e., as flowering individuals) within the on-site and Toll Brothers Property open space areas during spring surveys conducted during Year 1 of the mitigation effort. If this occurs, the restoration ecologist will select one or more of the transplant sites identified in this Mitigation Plan (Figure 5) or identify other appropriate sites, either on-site or on the Toll Brothers Property, to receive salvaged SML bulbs and soil blocks starting in fall of Year 2. Salvaged bulbs and soil blocks would be installed directly into the designated transplant areas.

### **5.4.2 Timing**

SML bulbs should be transplanted during their natural dormant phase, between August and October.

### **5.4.3 Transplant Site Preparation**

Preparation of the transplant sites for SML installation will be minimal, as described in this section of the Mitigation Plan.

### **5.4.4 Fencing and Signage**

There will be no fencing or signage erected around the selected transplant locations.

### **5.4.5 Removal of Non-native Vegetation and Soil Preparation**

In preparation for SML bulb installation, the maintenance contractor will remove all living plants considered to be moderately or highly invasive by the California Invasive Plant Council (Cal-IPC; 2021), exclusive of annual grasses, from the selected transplant location(s). This will occur just prior to installation. Given that the proposed timing of installation is to occur in the fall, little live vegetation is expected to be present.

In preparation for soil block installation, the maintenance contractor will excavate out areas of the same size and depth as the salvaged soil blocks. Excavated soils shall be spread no more than 1-inch deep in the surrounding area, with the exception of a small pile by each plot that shall be kept for later use in back-filling around the blocks after soil settling occurs. To facilitate contact between the excavated soils and soil block, the bottom of the excavated depression shall be loosened to a depth of one inch. Soil shall be packed in around the margins of the soil block and the margins will be lightly watered in to facilitate good contact. Additional soil shall be added if there is settling. Following planting, the soil block should be flush with the surrounding surface.

### **5.4.6 Soil Amendments**

Unless deemed appropriate by the restoration ecologist, fertilization will not take place as part of this Mitigation Plan. Fertilization with nitrogen or phosphorus-based chemical fertilizers has been shown to favor exotic species over native plants in many sites throughout southern California. Many species native to arid regions have evolved under low nutrient conditions and are adapted to non-fertilized soils.

### **5.4.7 Erosion Control**

Although transplant plots will be located on slopes, soil disturbance will be minimal and limited to existing patches of bare ground or non-native grassland. Since existing shrubs will not be removed, no soil erosion control measures are anticipated to be required. If the restoration ecologist determines that post-planting conditions warrant erosion control, installation of straw wattles or other appropriate measures will then be coordinated with the maintenance contractor.

### **5.4.8 Irrigation**

To facilitate flowering of installed SML bulbs at the transplant sites, supplemental watering may be used. To mimic natural conditions as much as possible, supplemental watering would only be used during the wet season (October to April), and preferably only to supplement natural rainfall once bulbs begin to put out leaves on their own.

### **5.4.9 Planting**

If the 2022 and 2023 spring rare plant surveys locate fewer than 453 SML bulbs and transplantation is warranted, salvaged bulbs that have been positively identified as SML at the nursery will be installed as follows: (1) fall 2023 - 1/3 of the total number of positively identified SML bulbs and 1/3 of all unidentified bulbs; (2) fall 2024 - half of remaining, SML bulbs, and half of the unidentified bulbs; (3) fall 2025 - all remaining SML and unidentified bulbs. Spacing out installation over multiple years protects against loss of all salvaged bulbs due to unforeseen issues at the site, such as loss of bulbs due to prolonged drought or gopher herbivory.

Bulbs will be planted in approximately two-inch deep rows (the depth at which they are typically found in nature). Bulbs will be fully encased within chicken wire baskets to prevent small mammal herbivory of the underground bulbs. SML bulbs will be oriented with their rooting area toward the bottom of the planting hole. Holes will be excavated with shovels or trowels and backfilled with excavated material following planting. Bulbs will be watered on the day they are planted so that soil settles around the bulbs and helps protect them from drying out; additional supplemental watering will only be conducted if deemed necessary to prevent die-back after leaves have emerged.

## **6.0 MAINTENANCE PLAN**

Maintenance within the conserved areas will be required starting in fall of Year 2, but only if bulbs are planted into these areas. After bulbs have been transplanted into conserved areas, maintenance activities will continue until at least 453 flowering SML have been counted, or through Year 5.

## 6.1 MAINTENANCE ACCESS

Access to SML transplant sites would occur from adjacent developed areas.

## 6.2 MAINTENANCE ACTIVITIES

Maintenance at the transplant sites would consist of removing species ranked as moderately or highly invasive by Cal-IPC multiple times per year, removing trash, supplemental watering (if warranted and feasible), and supplemental planting of SML bulbs, as needed, to successfully establish at least 453 individuals.

### 6.2.1 Invasive Plant Control

Non-native species considered to be moderately or highly invasive by the Cal-IPC, exclusive of annual non-native grasses that are considered naturalized in California, shall be removed by hand within the SML transplant sites whenever feasible. Herbicide shall only be applied if determined to be necessary by the maintenance contractor in coordination with the restoration ecologist, and a qualified individual shall oversee any herbicide application. Invasive species previously observed on-site that would be targeted for removal include: hottentot-fig (*Carpobrotus edulis*), tocalote (*Centaurea melitensis*), short-pod mustard (*Hirschfeldia incana*), Australian saltbush (*Atriplex semibaccata*), tree tobacco (*Nicotiana glauca*), and Bermuda grass (*Cynodon dactylon*). In addition, though ranked as 'limited' for invasiveness, milk thistle (*Silybum marianum*), London rocket (*Sisymbrium irio*), Russian thistle (*Salsola tragus*), and puncture vine (*Tribulus terrestris*) should also be targeted for removal. The restoration ecologist, at their discretion, can add other species to the list of targeted non-native plants, if their presence or abundance could hamper the success of the transplant effort. Maintenance personnel should be knowledgeable in distinguishing between native and non-native species; however, additional guidance will be provided, as needed, by the restoration ecologist.

### 6.2.2 Irrigation

The goal is for the SML transplants to become established as quickly as possible and minimize mortality due to transplant shock while following the natural wet/dry cycles of the southern California climate. To this end, an irrigation system will not be installed, but supplemental watering may be conducted after leaves have emerged, if feasible and determined to be warranted to supplement natural rainfall.

### 6.2.3 Erosion Control

Due to the limited amount of soil disturbance within the transplant areas during planting, erosion control is not expected to be needed, unless otherwise recommended by the restoration ecologist. Any installed erosion control materials will be removed prior to mitigation sign-off.

### 6.2.4 Trash/Debris Removal

Any trash or synthetic debris found will be removed from the SML transplant areas and properly disposed of at a licensed landfill.



### **6.2.5 Pest Management**

Insects, vertebrate pests, and diseases will be monitored. Generally, there will be a high threshold of tolerance before control measures are considered. As required by law, only a licensed pest control advisor will make specific recommendations. All applicable federal and state laws and regulations will be closely followed. The restoration specialist will be consulted on any pest control matters.

### **6.2.6 Horticultural Treatments**

Fertilizer or other soil amendments will/not be applied except in extraordinary circumstances and only at the written direction of the restoration ecologist. Post-installation pruning will/not be necessary unless otherwise directed by the restoration ecologist.

### **6.2.7 Remedial Measures**

As noted in Section 5.4.4 of this Mitigation Plan, salvaged bulbs may be installed during Years 2, 3, and 4 of the mitigation effort, if the target number of SML are not observed flowering.

Damage to plants, irrigation systems, and other facilities occurring as a result of unusual weather or vandalism will be repaired, as directed by the restoration ecologist. The contractor will repair any damage caused by the contractor's inadequate maintenance or operation of irrigation facilities, as determined by the restoration ecologist.

### **6.2.8 Timeframe**

The mitigation period will begin with spring SML surveys in Year 1 and end following spring SML surveys conducted in Year 5.

## **6.3 MAINTENANCE SCHEDULE**

The start of Year 1 will be marked by spring SML focused surveys within the Project impact area and conserved on-site and off-site open space. If needed, salvaged bulbs and soil blocks will be installed in conserved open space in fall of Year 2. No on-site maintenance is proposed for Years 1 and 2 of the mitigation effort. Test bulbs being grown out at a nursery facility to see if there is a correlation between bulb appearance and species may require periodic weeding of pots.

In Years 3 and 4, maintenance will be performed four times per year, or as needed to control invasive vegetation other than annual grasses in the transplant areas. In Year 5, up to two maintenance events may be conducted prior to the annual spring survey. The recommended schedule is for weeding to be conducted in December, February, April, and June; however, this schedule is only a guideline, and maintenance timing may be modified depending on plant germination observed each year. Additional inspections should be conducted to determine if supplemental watering is needed, and to execute supplemental watering. In addition, in Years 2, 3 and 4, between August and October, the maintenance contractor will install SML bulbs stored at the nursery, as described in Section 5.4.4 of this Mitigation Plan.

## 7.0 MONITORING PLAN

Regular monitoring and annual assessments will be carried out under the direction of the restoration ecologist. This monitoring program will begin with SML surveys and bulb salvage and, if necessary, continue for a minimum of three years following bulb transplantation. Monitoring/reporting details are provided in this section of the Mitigation Plan (Table 1, *Recommended Monitoring/Reporting Schedule*).

**Table 1**  
**RECOMMENDED MONITORING/REPORTING SCHEDULE**

<b>Year</b>	<b>Monitoring Schedule*</b>	<b>Reporting Schedule</b>
1	<b>1 SML Survey</b> April	Memo
	<b>Bulb/Soil Block Salvage</b> 1 multi-day event between August-October (This event starts the Year 1, 12-month period)	Annual Report
2	<b>1 Rare Plant Survey/Salvaged Bulb Count</b> April	Memo
	<b>Bulb Installation</b> 1 event between August and October	Annual Report
3, and 4	<b>1 SML Survey</b> April	Memo
	<b>4 Monitoring Events</b> January, March, May, November	4 Email Status Reports
5	<b>Bulb Installation</b> 1 event between August and October	Annual Report
	<b>2 Monitoring Events</b> January, March	2 Email Status Reports
	<b>1 SML Survey</b> April	Annual Report

\* This schedule is only a guideline; monitoring will be performed as necessary, as determined by the restoration ecologist.

### 7.1 BULB SALVAGE MONITORING

A restoration ecologist will be present daily during individual SML bulb salvage as well as soil block salvage. They will assist the maintenance contractor in locating the previously mapped SML populations within the impact area and help ensure that proper bulb collection techniques are being implemented. In addition, they will document the bulb storage facility at the designated nursery. Completion of bulb salvage will initiate the clock on Year 1 of the mitigation effort. Bulb salvage will be documented in a memo that includes photos of the salvage effort and storage facilities.

## 7.2 SPRING OPEN SPACE SURVEYS

During Year 1 through 5, monitoring will consist of one annual survey of all open space located both on site and on the Toll Brothers Property. This survey will be conducted in April, the typical peak of the SML flowering period. The results of this assessment will be documented in an annual report that will be submitted within two months of the end of each respective year to the Project proponent. This report will include a figure depicting the 2018/2019 SML locations, GPS-mapped locations of any new SML observations, and the locations and numbers of any other sensitive plants observed. In addition, photos of SML within open space, and at the nursery, will be included. Annual reports will be submitted each year to the City and CDFW.

## 7.3 TRANSPLANT MONITORING

Salvaged bulbs will be grouped by appearance and 25 bulbs from each grouping will be grown out at an approved nursery. A biologist will inspect these bulbs during the flowering period to identify species and determine whether SML can be identified by bulb shape. This monitoring will only be required once. Any SML identified from the test bulbs, and any bulbs that remain unidentified will be installed in test plots according to the schedule outlined in Section 5.2.1 of this report. Any bulbs confirmed to be other species can be removed from storage.

If needed, installed transplants will be monitored during Years 3, 4, and 5 (the first transplants would be installed in fall/winter of Year 2). Monitoring of transplant plots conducted during these years will include four monitoring events during the growing season for upland vegetation and an annual SML survey in April. Any positively identified SML will be mapped using a GPS. In addition to SML counts, cover by invasive vegetation will be visually estimated separately for each transplant location. Annual reports, including updated figures showing all new SML locations and photos, will continue to be submitted each year.

## 8.0 SUCCESS CRITERIA

The only performance criterion required to meet final mitigation goals is to count at least 453 SML flowering individuals within on-site and off-site (Toll Brothers Property) open space conserved as part of this Project. These individuals can be naturally occurring within the conserved open space areas or be established from SML bulbs salvaged from the Project impact area. Planted bulbs can count towards success criteria as long as supplemental irrigation is only conducted as needed to supplement natural rainfall during the wet season. As soon as at least 453 SML are positively identified, the required mitigation will be complete, and sign-off will be requested. While cover by invasive vegetation within transplant locations will be reduced by the maintenance contractor to enhance these areas, and this cover will be visually estimated each year by the restoration ecologist, there is no cover limit that must be attained for final sign-off.

## **9.0 COMPLETION OF MITIGATION**

### **9.1 NOTIFICATION OF COMPLETION**

The Project proponent will notify and coordinate with the City to seek concurrence that the mitigation effort is complete following the first year that at least 453 SML are counted within the conserved areas identified in this Mitigation Plan. This notification will be provided via submittal of the respective year's annual report.

### **9.2 AGENCY CONFIRMATION**

Once 453 SML are established within the preservation areas the mitigation effort will be considered a success; if not, then contingency measures, as outlined in Section 10.0 of this report, would be implemented. Final sign-off from the City must be obtained in writing.

### **9.3 LONG-TERM PRESERVATION**

Integral Communities owns both the on-site conserved open space as well as the adjacent Toll Brothers Property. The on-site open space will initially be held in fee title by the future Home Owners Association. Following the successful implementation of this Mitigation Plan and sign-off from the City in writing, all areas supporting SML mitigation will be dedicated as open space and given to the City in fee title. In the absence of fee title ownership by the City and dedication of SML mitigation areas as open space, the open space will remain in HOA ownership and a deed restriction will be placed over all areas supporting SML mitigation.

## **10.0 CONTINGENCY MEASURES**

This section describes the contingency measures that might be invoked in the event that the SML mitigation effort does not meet the goal of 1:1 replacement for impacts to 453 individuals with the methods and in the timeframe identified in this Mitigation Plan.

### **10.1 INITIATING PROCEDURES**

As soon as 453 SML are counted within the on-site open space and Toll Brothers Property, the mitigation effort will be deemed complete, and sign-off in writing shall be coordinated with the City. If 453 SML are not counted within the identified preservation areas during the first four years encompassed by this Mitigation Plan, the Project proponent will work with the restoration ecologist and the contractor to implement additional measures to help ensure the success of the mitigation effort. If the target number of SML are also not counted within conserved areas by the fifth year, the Project proponent may buy mitigation credits at an approved mitigation bank or equivalent program approved by the City. If requested, a site visit may be conducted with the City to verify site conditions.

In the event that wildfire or other force results in major damage to the target preservation areas before documentation that 453 individuals are present, and that the conserved areas could not meet performance standards in the post-event condition, the Project proponent would be required to take contingency measures to fulfill their mitigation obligations unless the City, at its discretion, agrees to



sign-off without those remedial measures being taken.

## 10.2 ALTERNATIVE MITIGATION LOCATIONS

If the 1:1 mitigation for SML impacts are not met through the mitigation outlined in this Mitigation Plan, the Project proponent will work together with the City (in consultation with the CDFW) to reach a mutually acceptable alternative mitigation location.

## 10.3 FUNDING MECHANISM

The Project proponent is responsible for covering all costs associated with planning, implementation, and monitoring of any contingency measures identified by the City if the mitigation outlined in this Mitigation Plan fails to mitigate at a 1:1 ratio for impacts to SML in the identified time frame.

# 11.0 LIST OF PREPARERS

The following individuals contributed to the fieldwork and/or preparation of this report:

Ezekiel Cooley	B.S., Natural Resources, Emphasis in Wildlife, Central Michigan University, 2004
Amir Morales	B.S., Hydrological Sciences, University of California, Santa Barbara, 2001
Peter Tomsovic	B.S., Ecology and Systematic Biology, California Polytechnic State University, San Luis Obispo, California, 1997
Sally Trnka*	M.S., Biology, Emphasis in Ecology, San Diego State University, 1998 B.S., Biological Sciences, University of California-Davis, 1992

\* Primary author(s)

## 12.0 REFERENCES

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, editors. 2012. The Jepson manual: Vascular plants of California. 2nd ed. University of California Press, Berkeley.

California Invasive Plant Council (Cal-IPC). California invasive plant inventory database. Accessed in September 2021 at: <http://www.cal-ipc.org/paf/>.

HELIX Environmental Planning (HELIX). 2022. Addendum to the Biological Technical Report for the Bouquet Canyon Project (Tentative Tract No. 82126). February 16.

2020. Bouquet Canyon Project (Tentative Tract No. 82126) Biological Technical Report. January 31.

Los Angeles Almanac. Accessed in September 2021 at:  
<http://www.laalmanac.com/weather/we134a.php>.

Michael Baker International, Inc. 2020. Final EIR Bouquet Canyon Project. Master Case 18-089 / Tentative Tract Map No. 82126. November.

Oberbauer, T., Kelly, M., and Buegge, J. 2008. Vegetation communities of San Diego County. Based on “Preliminary Descriptions of the Terrestrial Natural Communities of California”, R.F. Holland, 1986. 73 pp.

## **Appendix B.3**

---

### Slender Mariposa Lily Mitigation Plan



Horticulturists and  
Registered Consulting  
ARBORISTS

November 19, 2021

Peter Vanek  
Vice President of Forward Planning  
Integral Communities  
888 San Clemente, Suite 100  
Newport Beach, California 92660

**Re: Davenport Trailhead Site –28601 and 28635 Bouquet Canyon Road, Santa Clarita, California  
Off-site Trailhead Associated with Tentative Tract Map No. 82126**

Dear Mr. Vanek,

This letter confirms that the Carlberg Associates Oak Tree Health Assessment letter, dated August 15, 2021, is acceptable to be used as part of the Revised Tentative Map submittal package for the off-site trailhead improvements for Tentative Tract Map No. 82126. That Oak Tree Health Assessment letter covers the entirety of the property located at 28601 and 28635 Bouquet Canyon Road.

Please feel free to contact me at our Sierra Madre number with any questions. Thank you.

Sincerely,

Christy Cuba  
Senior Arborist



**Santa Monica Office**  
828 Fifth Street, Suite 3  
Santa Monica, California 90403  
Office: 310.451.4804

**Sierra Madre Office**  
80 West Sierra Madre Boulevard, #241  
Sierra Madre, California 91024  
Office: 626.428.5072

[www.cycarlberg.com](http://www.cycarlberg.com)





Horticulturists and  
Registered Consulting  
ARBORISTS

August 15, 2021

Peter Vanek  
Vice President of Forward Planning  
Integral Communities  
888 San Clemente, Suite 100  
Newport Beach, California 92660

**Re: Oak Tree Health Assessment  
Davenport Trailhead Site – 28601 and 28635 Bouquet Canyon Road, Santa Clarita, California**

Dear Mr. Vanek,

This letter is presented in response to your request for arboricultural consulting services. You requested a health assessment of 20 oak trees located on and immediately adjacent to 28601 and 28635 Bouquet Canyon Road, Santa Clarita, California. These properties are held by Integral Communities and are the proposed site of the project known as the 'Davenport Trailhead'.

On August 12, 2021, I conducted a site visit to perform a health evaluation of the 20 oak trees identified in the enclosed tree location exhibit (by Helix Environmental Planning) provided to us by you. The trees were assessed for health and structural integrity, and photographs were recorded to support my opinions. No other information was gathered or recorded regarding mapped tree trunk and canopy locations, genera or species identification, impact analysis, etc. I used Helix's exhibit to locate the trees and to fill in the tree number and species listings in the enclosed table.

Table 1 on page 5 summarizes my opinions on the trees' health ratings. Based on the health and structure rating, each tree was assigned an overall grade. In our opinion, both health and structure must be addressed when evaluating the condition of a tree. Definitions for the grading structure are enclosed before the table. Enclosed exhibits and representative photographs illustrate the setting, the oak trees, and their condition at the time of the site visit. Additional photographs are available upon request.

With the exception of one tree, Tree #84, the subject oaks appear to be in fair-to-poor condition. Severe drought stress is evident and most of the trees exhibit sparse foliage, cavities, poor form due to close growing conditions, and two trees were found to have active bee hives.

Please feel free to call or email me with any questions. Thank you.

Very truly yours,

Christy Cuba, Senior Arborist  
Registered Consulting Arborist, #504  
International Society of Arboriculture (ISA) Certified Arborist, #WE1982A  
ISA Tree Risk Qualified



**Santa Monica Office**  
828 Fifth Street, Suite 3  
Santa Monica, California 90403  
Office: 310.451.4804

**Sierra Madre Office**  
80 West Sierra Madre Boulevard, #241  
Sierra Madre, California 91024  
Office: 626.428.5072

[www.cycarlberg.com](http://www.cycarlberg.com)

## HEALTH AND STRUCTURE GRADE DEFINITIONS

Health and structure ratings are based on an archetypal tree of the same species, determined by a subjective evaluation of physiological health, aesthetic quality, and structural integrity. Overall physiological condition (health) and structural condition are rated A-D and F:

### Health

- A) **Outstanding** – Exceptional trees comprising above-average foliage production and vigor for their age class; exhibiting very good to excellent health as evidenced by normal to exceptional shoot growth during the current growing season, good bud development and leaf color, lack of leaf, twig or branch dieback throughout the crown, and the absence of decay, bleeding, or cankers. Common leaf and/or twig pests may be noted at very minor levels.
- B) **Above average** – Good to very good trees that exhibit minor necrotic (dead) or physiological symptoms of stress and/or disease; shoot growth is less than reasonably expected, leaf color is less than optimal in some areas, the crown may be thinning, minor levels of leaf, twig, and branch dieback may be present, and minor areas of decay, bleeding, or cankers may be manifesting. Minor amounts of epicormic growth may be present. Minor amounts of fire damage or mechanical damage may be present. Still healthy, but with moderately diminished vigor and vitality. No significant decline noted.
- C) **Average** – Average, moderately good trees whose growth habit and physiological or fire-induced symptoms indicate an equal chance to either decline or continue with good health into the near future. Most of these trees exhibit moderate to significant small dead material in outer crown areas, decreased shoot growth, and diminished leaf color and mass. Some stem and branch dieback is usually present and epicormic growth may be moderate to extensive. Cavities, pockets of decay, relatively significant fire damage, bark exfoliation, or cracks may be present. Moderate to significant amounts of insect or disease symptoms may be present; the tree may be shaded or crowded in such a way that it is expected to negatively impact the lifespan of the tree. Tree may be in early decline.
- D) **Below Average/Poor** – trees whose growth habit and physiological or fire-induced symptoms indicate significant, irreversible decline. Most of these trees exhibit significant dieback of wood in the crown, possibly accompanied by significant epicormic sprouting. Shoot growth and leaf color and mass is either significantly diminished or nonexistent throughout the crown. Cavities, pockets of decay, significant fire damage, bark exfoliation, and/or cracks may be present. Significant amounts of insect or disease symptoms may be present; the tree may be shaded or crowded in such a way that it has negatively impacted the lifespan of the tree. Tree appears to be in irreversible decline.
- F) **Dead or in spiral of decline** – this tree exhibits very little to no signs of life.

### Structure

- A) **Outstanding** – Trees with outstanding structure for their species exhibit trunk and branch arrangement and orientation that results in a sturdy form or architecture that can resist failure under normal circumstances. The spacing, orientation, and size of the branches relative to the trunk are quintessential for the species and free from defects. No outward signs of decay or pathological disease is present. Some trees exhibit naturally inherent branching defects, like multiple, narrow points of attachment from one point on the trunk, which would preclude them from achieving an “A” grade.
- B) **Above average** - Trees with good to very good structure for their species. They exhibit trunk and branch arrangement and orientation that result in a relatively sturdy form or architecture that resists failure under normal circumstances, but may have some mechanical damage, over-pruning, or other minor structural defects. The spacing, orientation, and size of the branches relative to the trunk are still in the normal range for the species, but they exhibit a minor degree of defects. Minor, sub-critical levels of decay or pathological disease may be present, but the degree of damage is not yet structurally significant. Trees that exhibit naturally inherent branching defects, like multiple, narrow points of attachment from one point on the trunk, would generally fall in to this category. A small percentage of the canopy may be shaded or crowded, but not in such a way that it is expected to negatively impact the structural integrity or lifespan of the tree.



- C) **Average** - Trees with moderately good structure for their species, but with obvious defects. They exhibit trunk and branch arrangement and orientation that result in a less than sturdy form or architecture, which reduces their resistance to failure under normal circumstances. Moderate levels of mechanical damage, over-pruning, or other structural defects may be present. The spacing, orientation, and size of some of the branches relative to the trunk are not in the normal range for the species. Moderate to significant levels of decay or pathological disease may be present that increase the likelihood of structural instability. Influences such as an excessive trunk lean, slope erosion, root pruning, or other growth-inhibiting factors may be present. A moderate to significant percentage of the canopy may be shaded or crowded in such a way that it is expected to negatively impact the structural integrity or lifespan of the tree. Risk of full or partial failure in the near future appears to be moderately elevated.
- D) **Well Below Average/Poor** - Trees with poor structure for their species and with obvious defects. They exhibit trunk and branch arrangement and orientation that result in a significantly less than sturdy form or architecture, significantly reducing their resistance to failure under normal circumstances. Significant levels of mechanical damage, over-pruning, or other structural defects may be present. The spacing, orientation, and size of many of the branches relative to the trunk are not in the normal range for the species. Significant levels of decay or pathological disease may be present that increase the likelihood of structural instability. Influences such as an excessive trunk lean, slope erosion, root pruning, or other growth-inhibiting factors may be present. A significant percentage of the canopy may be shaded or crowded in such a way that it is expected to negatively impact the structural integrity or lifespan of the tree. Risk of full or partial failure in the near future appears to be advanced.
- F) **Severely Compromised** – trees with very poor structure and numerous or severe defects due to growing conditions, historical or recent pruning, mechanical damage, history of limb or trunk failures, advanced and irreparable decay, disease, or severe fire damage. Trees with this rating are in severe, irreparable decline, or are barely alive. Risk of full or partial failures in the near future may be severe.



## ARBORIST STATEMENT

Arborists are tree specialists who use their education, knowledge, training and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risk of living near trees. Clients may choose to accept or disregard the recommendations of the arborist, or to seek additional advice.

Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like any medicine, cannot be guaranteed.

Treatment, pruning and removal of trees may involve considerations beyond the scope of the arborist's services, such as property boundaries, property ownership, site lines, disputes between neighbors, and other issues. Arborists cannot take such considerations into account unless complete and accurate information is disclosed to the arborist. An arborist should then be expected to reasonably rely upon the completeness and accuracy of the information provided.

Trees contribute greatly to our enjoyment and appreciation of life. Nonetheless, they are subject to the laws of gravity and physiological decline. Any tree, whether it has visible weaknesses or not, will fail if the forces applied exceed the strength of the tree or its parts. Therefore, neither arborists nor tree owners can be reasonably expected to warrant unflinching predictability or elimination of risk.

Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate all trees.

No risk assessments were requested or performed for this project.

Health and structure information presented in this report represents the condition of the tree(s) at the time and date of assessment.

Execution of any/all recommendations for cultural care, maintenance, pest or disease treatment, pruning, tree removal, etc., when made verbally or in writing by the arborist, is/are the sole responsibility of the client.





**TABLE 1 – SUMMARY OF OAK TREE HEALTH ASSESSMENT – DAVENPORT TRAILHEAD PROJECT**

TREE #	COMMON NAME	BOTANICAL NAME	HEALTH GRADE (A -D, F)	STRUCTURE GRADE (A-D, F)	OVERALL GRADE (A-D, F)
65	Tucker's oak	<i>Quercus john-tuckeri</i>	C	C	C
66	Tucker's oak	<i>Quercus john-tuckeri</i>	D	C-	D
67	Tucker's oak	<i>Quercus john-tuckeri</i>	C	C	C
68	Tucker's oak	<i>Quercus john-tuckeri</i>	C-	C	C-
69	Tucker's oak	<i>Quercus john-tuckeri</i>	D	C-	D
70	Tucker's oak	<i>Quercus john-tuckeri</i>	C	C	C
71	Tucker's oak	<i>Quercus john-tuckeri</i>	C	C	C
72	Tucker's oak	<i>Quercus john-tuckeri</i>	C	C	C
73	Tucker's oak	<i>Quercus john-tuckeri</i>	C	C	C
74	Tucker's oak	<i>Quercus john-tuckeri</i>	C	C	C
75	Tucker's oak	<i>Quercus john-tuckeri</i>	C	C	C
76	Interior live oak	<i>Quercus wislizenii</i> var. <i>wislizenii</i>	C	C	C
77	Tucker's oak	<i>Quercus john-tuckeri</i>	C	C	C
78	Interior live oak	<i>Quercus wislizenii</i> var. <i>wislizenii</i>	C	C	C
79	Tucker's oak	<i>Quercus john-tuckeri</i>	C	C	C
80	Tucker's oak	<i>Quercus john-tuckeri</i>	C	C	C
81	Blue oak	<i>Quercus douglasii</i>	C	C	C-
82	Tucker's oak	<i>Quercus john-tuckeri</i>	D	C	C-
83	Tucker's oak	<i>Quercus john-tuckeri</i>	C-	C	C-
84	Tucker's oak	<i>Quercus john-tuckeri</i>	A-	B	B

Notes: Tree numbers and species identification are taken from the enclosed Helix Tree Location exhibit.





HELIX Environmental Planning

Oak Tree Locations

Figure 4

Assessed Oak Tree Locations  
(Not to Scale)







Facing west – illustrating Tree #84







Facing south – illustrating Trees #79, 80, and 81, from left to right. Tree #79 recently lost a large limb when the adjacent Tree #78 (left and out of photo) suffered two massive limb failures. Tree #81 has cavities and an active bee hive in in the main trunk.







Facing roughly southeast – illustrating Trees #79, 78, 77, 76, 75, 74, and 71, from right to left. Tree #78 (center) recently suffered two massive limb failures. The failed half of Tree #78 is in the foreground.







Facing roughly east – illustrating Trees #65-78 from left to right on the slope.







Facing north – illustrating Trees #78's limb failures. Cavities are present in the trunk and scaffolds, and this tree has an active bee hive in the main trunk.







Facing east – illustrating Tree 65 (center) and a dead portion of the canopy of Tree #68 in the foreground.







Facing roughly east – illustrating Tree #83 on the left and Tree #82 on the right.



# **Appendix C**

---

Addendum to the Cultural Resources Survey  
and Assessment

# Bouquet Canyon Road Project

## Addendum to the Cultural Resources Survey and Assessment

February 2022 | 00357.00025.001

*Prepared for:*

**Integral Communities**  
888 San Clemente Drive, Suite 100  
Newport Beach, CA 92660

*Prepared by:*

**HELIX Environmental Planning, Inc.**  
7578 El Cajon Boulevard  
La Mesa, CA 91942

This page intentionally left blank



### **National Archaeological Database Information**

Authors: Trevor Gittelhough, M.A., RPA

Firm: HELIX Environmental Planning, Inc.

Client/Project: Integral Communities / Bouquet Canyon Road Project

Report Date: February 2022

Report Title: Addendum to the Cultural Resources Inventory and Assessment for the Bouquet Canyon Road Project, Los Angeles County, California

Type of Study: Cultural Resources Survey and Assessment

New Sites: 28601 Bouquet Canyon Road

Updated Sites: None

USGS Quad: Mint Canyon 7.5-minute Quadrangle

Acreage: Approximately 7.5 acres

Key Words: Los Angeles County; Township 4 North, Range 15 West; Santa Clarita; Bouquet Canyon; Bouquet Canyon Road; Copper Hill Road; Davenport

This page intentionally left blank

# TABLE OF CONTENTS

---

<b><u>Section</u></b>	<b><u>Page</u></b>
EXECUTIVE SUMMARY .....	ES-1
1.0 INTRODUCTION.....	1
1.1 Project Location and Description.....	1
1.1.1 Revised Project Areas .....	1
1.2 Regulatory Framework .....	2
1.3 Project Personnel.....	2
2.0 PROJECT SETTING.....	2
2.1 Natural Setting.....	2
2.2 Cultural Setting .....	3
2.2.1 Prehistoric Period .....	3
2.2.2 Ethnohistory.....	3
2.2.3 Historical Background .....	3
3.0 ARCHIVAL RESEARCH AND CONTACT PROGRAM .....	3
3.1 Records Search.....	3
3.2 Historic Topographic Map and Aerial Imagery Research.....	3
3.3 Native American Contact Program .....	4
4.0 PREVIOUS SURVEY RESULTS .....	4
5.0 FIELD SURVEY .....	5
5.1 Methodology.....	5
5.2 Results.....	7
5.2.1 28601 Bouquet Canyon Road .....	7
5.3 Eligibility Recommendation .....	8
6.0 SUMMARY AND MANAGEMENT RECOMMENDATIONS.....	9
7.0 REFERENCES.....	10

# TABLE OF CONTENTS (cont.)

---

## LIST OF APPENDICES

A Site Form, 28601 Bouquet Canyon Road

## LIST OF FIGURES

<b><u>No.</u></b>	<b><u>Title</u></b>	<b><u>Follows Page</u></b>
1	Regional Location.....	2
2	USGS Topography .....	2
3	Aerial Photograph .....	2
4	Cultural Resources .....	6



## ACRONYMS AND ABBREVIATIONS

---

APN	Assessor's Parcel Number
BLM	Bureau of Land Management
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Information System
CRHR	California Register of Historical Resources
EIR	Environmental Impact Report
GLO	General Land Office
HELIX	HELIX Environmental Planning, Inc.
NAHC	Native American Heritage Commission
NRHP	National Register of Historic Places
OHP	Office of Historic Preservation
SCCIC	South Central Coastal Information Center
SCH	State Clearinghouse
USGS	U.S. Geological Survey

This page intentionally left blank

## EXECUTIVE SUMMARY

HELIX Environmental Planning, Inc. (HELIX) was originally contracted by Integral Communities to provide cultural resources services for the Bouquet Canyon Road Project (project) in Los Angeles County, California. Results of the cultural resource survey conducted in 2018 for the project were presented in a Cultural Resources Inventory and Assessment Report (Wilson and Wright 2019) and included in the Final Environmental Impact Report (EIR) for the project, dated November 2020 (Michael Baker International 2020). Several design changes have been proposed following the certification of the Final EIR, resulting in revised project areas totaling 7.5 acres. This cultural resources survey addendum includes a summary of the results of additional historic research and a pedestrian survey undertaken for the revised project areas outside of the original 2019 study area.

The results of the cultural resources survey presented in the 2019 Cultural Resources Report (Wilson and Wright 2019) included the identification of four historic-period cultural resources: P-19-004853, P-19-004854 (CA-LAN-4854), P-19-192514, and P-19-004855. One of these resources, P-19-192514, is a residential structure constructed in the mid-twentieth century situated within Assessor's Parcel Number (APN) 2812-008-002, the residential addition ("donut hole" parcel) included in the revised project area. Resource P-19-192514 was assessed for significance in the 2019 Cultural Resources Report and it was concluded that the resource does not meet the criteria for inclusion in the California Register of Historical Resources (CRHR) or the National Register of Historic Places (NRHP).

The field investigations included an intensive pedestrian survey of the additional areas outside of the original 2019 study area on December 12 and 14, 2021. A single resource was identified during archival research: a single-family home located at 28601 Bouquet Canyon Road. This residence has had multiple modern additions to the main residential structure, and the buildings have undergone extensive changes, including new roofing, stucco siding, along with new windows and doors. As such, the structures do not retain enough of their historic character or appearance to be recognizable as a historical resource, and as such, the resource is not considered a significant historical resource for the purposes of the California Environmental Quality Act (CEQA).

Based on the results of the current study, no significant historical resources will be impacted by the revised project and the results of this addendum demonstrate that the revised project remains consistent with the findings documented in the "Cultural Resources" section of the Final EIR.

Per mitigation measure 3.4-1 within the project's Mitigation Monitoring and Reporting Program, contained within the final EIR, an archaeological and Native American monitoring program will be implemented, during which an archaeologist and Native American monitor shall be present to monitor initial ground disturbance for the project for all ground-disturbing activities within young (Holocene) alluvial deposits (Michael Baker International 2020).

Should the project limits change to incorporate new areas of proposed disturbance, a cultural resources survey of these areas will be required.

This page intentionally left blank



# 1.0 INTRODUCTION

HELIX Environmental Planning, Inc. (HELIX) prepared this addendum to the Cultural Resources Inventory and Assessment Report (Wilson and Wright 2019) for the Bouquet Canyon Road Project (project). The Bouquet Canyon Project Final Environmental Impact Report (EIR; State Clearinghouse [SCH] Number 2018121009) was prepared by Michael Baker International, Inc. and certified by the City of Santa Clarita (California Environmental Quality Act [CEQA] lead agency) on November 10, 2020 (Michael Baker International 2020). Following certification of the Final EIR, some revisions were made to the project design (revised project), resulting in minor changes to the study area evaluated in the 2019 cultural report. HELIX conducted a review of historic aerial photographs and maps and a pedestrian survey for the portions of the revisions that were outside the original 2019 study area. The purpose of this addendum is to demonstrate that the revised project remains consistent with the findings documented in the “Cultural Resources” section of the Final EIR.

## 1.1 PROJECT LOCATION AND DESCRIPTION

The project is located in the Saugus Community of the City of Santa Clarita (City) in west-central Los Angeles County, within Section 6 of Township 4 North, Range 15 West, on the U.S. Geological Survey (USGS) 7.5-minute Mint Canyon topographic quadrangle (Figure 1 and 2, *Regional Location* and *USGS Topography*, respectively). The project site is generally located 6.9 miles to the east of Interstate (I-) 5 and 3.8 miles to the northwest of California State Route (SR) 14 and is bordered by Bouquet Canyon Road along the northern and western project boundaries (Figure 3, *Aerial Photograph*).

The previous design analyzed in the Final EIR proposed the development of 375 single-family homes organized into five distinct neighborhoods, along with extensive supporting site improvements including roads, storm drainage, utility facilities, private and public recreation areas, the construction of a new segment of Bouquet Canyon Road, as well as reconfiguration of Bouquet Creek and associated flood controls.

### 1.1.1 Revised Project Areas

The additional areas and revisions made to the project design since certification of the Final EIR are summarized below. The revised project areas comprise approximately 7.50 acres and are included within the approximately 85.86-acre revised study area for the project (Figure 3).

1. Off-Site Flood Control Channel – Additional temporary impacts to the concrete banks of the off-site concrete flood control channel required for the revisions related to the alignment of the outlet.
2. Copper Hill Road Improvements – Additional grading/paving for Copper Hill Road.
3. Davenport Trailhead – The addition of the Davenport parcel (Assessor’s Parcel Number [APN] 2812-008-008) for the construction of a city-required trailhead.
4. Bouquet Canyon Road Improvements North – Additional off-site repaving and improvements to existing Bouquet Canyon Road near the northeast corner of the project.

5. Flow Diversion Structure – Construction of a slightly larger concrete flow diversion structure intended to convey low flows into the low-flow channel and divert high flows into the proposed concrete-lined flood control channel.
6. Sewer Line – Installation of a sewer line in the northeast portion of the site.
7. Slope Grading – Additional slope grading for the new alignment of Bouquet Canyon Road along the southerly border of the study area.
8. Bouquet Canyon Road Improvements South – Minor additional off-site road repaving and improvements to Bouquet Canyon Road located in the southwesterly portion of the project site.
9. Residential Addition – Addition of the “donut hole” parcel (APN 2812-008-002) in the easterly portion of the project site. Note that this area was evaluated for impacts to historical resources in the 2019 Cultural Resources Report yet was not evaluated as part of the project in the EIR. Additional residential uses have been proposed in the donut hole area since the Final EIR was certified. As such, the donut hole parcel has been included in the revised project area.
10. Residential Reduction – Removal of Planning Area 1a, which previously proposed the construction of residential development within the southern portion of the study area per the project Biological Technical Report (BTR) and EIR. This planning area presented in the Final EIR for the project will not be impacted by construction as part of the revised project.

## 1.2 REGULATORY FRAMEWORK

The regulatory setting was outlined in the 2019 Cultural Resources Report (Wilson and Wright 2019). For a detailed discussion of regulations and applicable laws, please refer to that report.

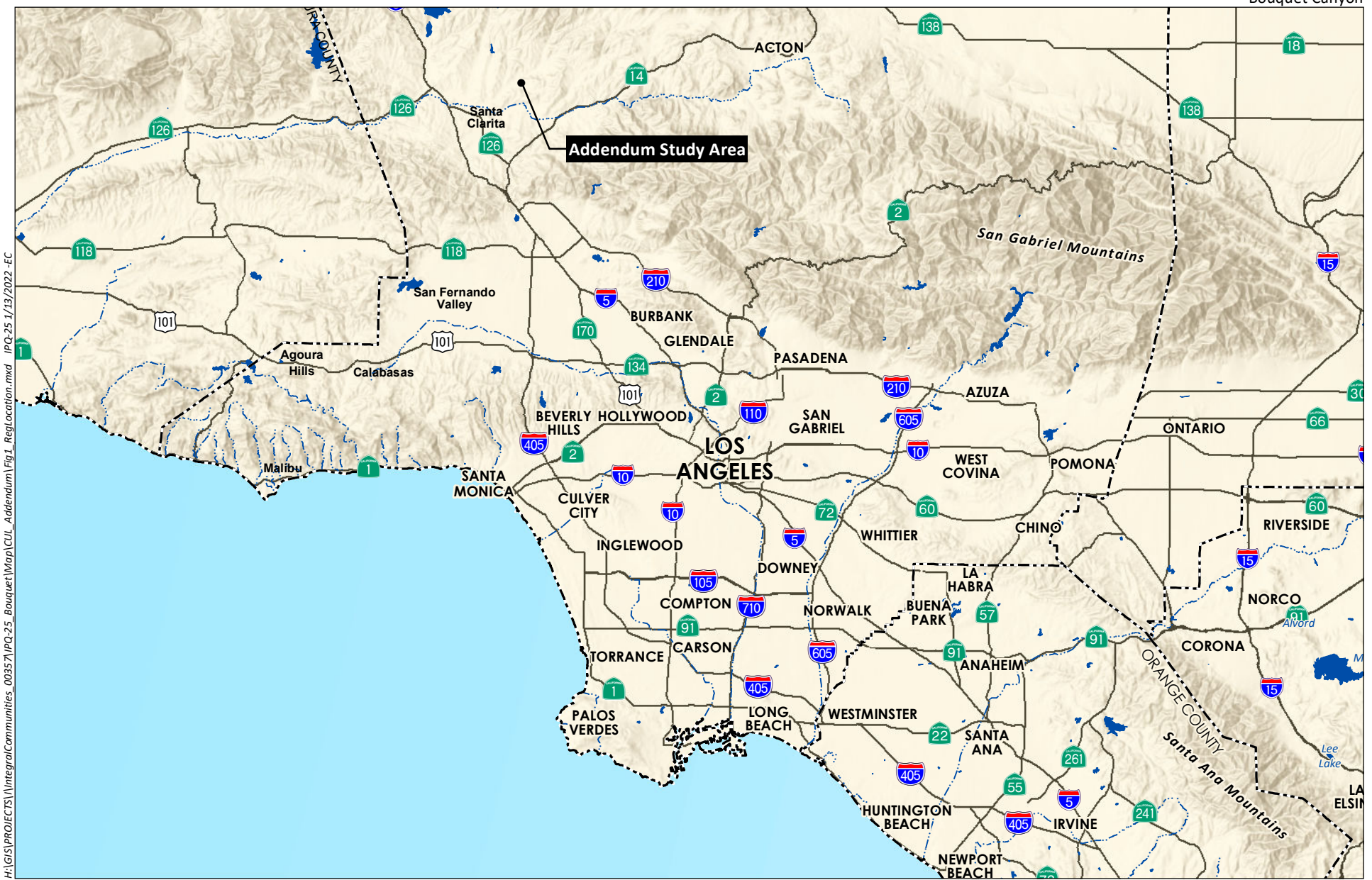
## 1.3 PROJECT PERSONNEL

Stacie Wilson, M.S., RPA, served as principal investigator. Ms. Wilson meets the qualifications of the Secretary of Interior’s Standards and Guidelines for Archaeology and was the principal investigator and primary author of the 2019 Cultural Resources Report (Wilson and Wright 2019). Trevor Gittelough, M.A., RPA, conducted the field survey and is the primary author of this report. Mx. Gittelough meets the qualifications of the Secretary of Interior’s Standards and Guidelines for archaeology and history.

## 2.0 PROJECT SETTING

### 2.1 NATURAL SETTING

The natural context outlined in the 2019 Cultural Resources Report (Wilson and Wright 2019) included information about physiography, geology, flora, and fauna within the region of the study. For a detailed discussion of the natural setting of the Bouquet Canyon Road Project study area, please refer to that report.

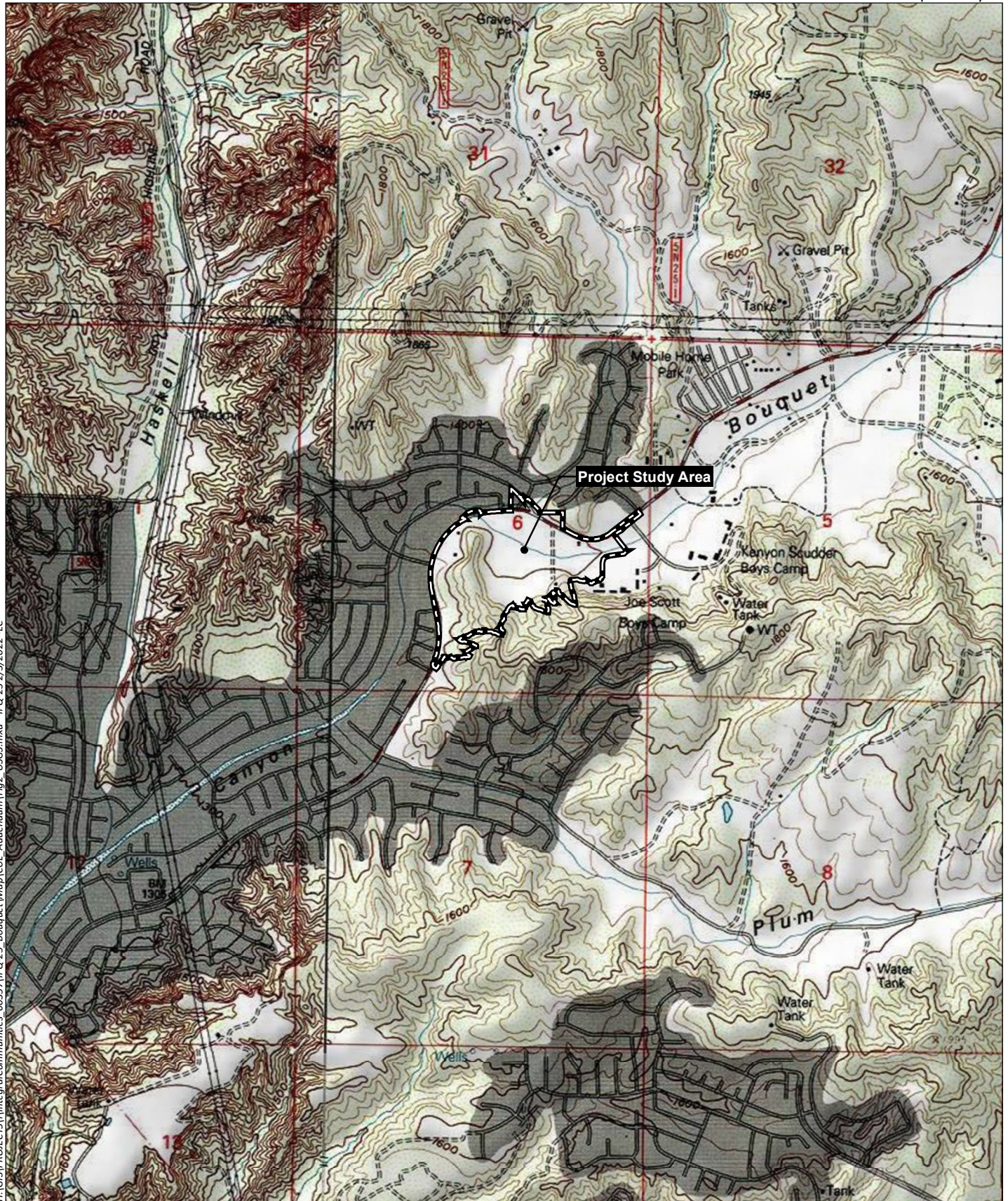


H:\GIS\PROJECTS\IntegralCommunities\_00357\IPQ-25\_Bouquet\Map\CUL\_Addendum\Fig\_1\_RegLocation.mxd IPQ-25 1/13/2022 -EC

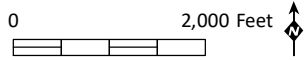


Source: Base Map Layers (ESRI, 2013)







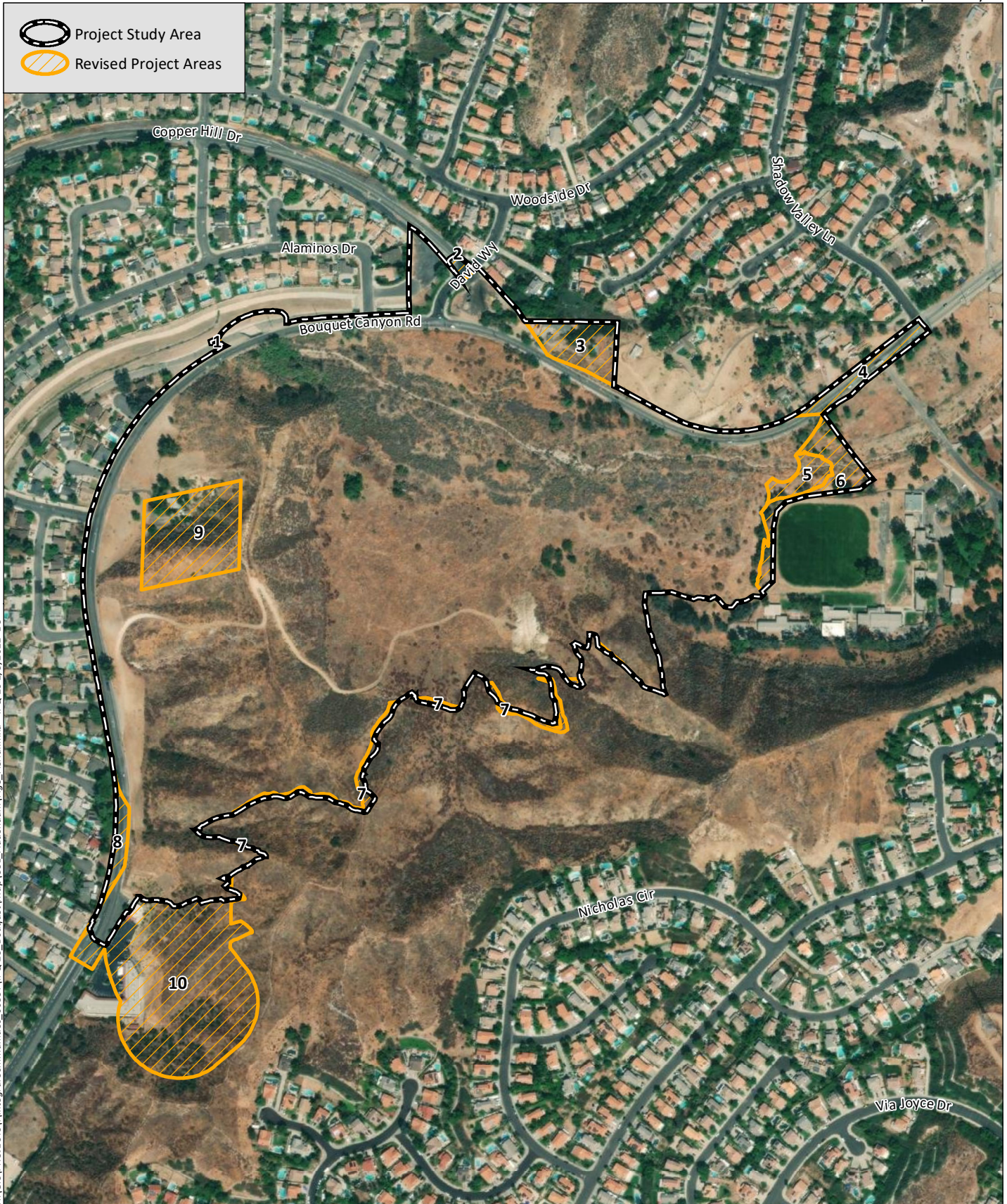
H:\GIS\PROJECTS\IntegralCommunities\_00357\IPQ-25\_Bouquet\Map\CUL\_Addendum\Fig2\_USGS.mxd IPQ-25 2/3/2022 - EC



Source: Mint Canyon 7.5' Quad (USGS)



-  Project Study Area
-  Revised Project Areas



H:\GIS\PROJECTS\IntegralCommunities\_00357\IPQ-25\Bouquet\Map\CUL\_Addendum\Fig3\_Aerial.mxd IPQ-25 2/3/2022 -EC



Source: Aerial (Maxar, 2020)



## **2.2 CULTURAL SETTING**

### **2.2.1 Prehistoric Period**

The prehistoric background for the proposed project was discussed at length in the 2019 Cultural Resources Report (Wilson and Wright 2019). This included a discussion of the Late Prehistoric period (Early, Milling Stone [Archaic Period], Intermediate, and Late horizons) prior to European contact. For a detailed discussion of the prehistoric background of the Bouquet Canyon Road Project study area, please refer to that report.

### **2.2.2 Ethnohistory**

The ethnographic background for the proposed project was described in the 2019 Cultural Resources Report (Wilson and Wright 2019). This included a discussion of the Tataviam people. For a detailed discussion of the ethnohistory of the Bouquet Canyon Road Project study area, please refer to that report.

### **2.2.3 Historical Background**

The historic context for the proposed was included in the 2019 Cultural Resources Report (Wilson and Wright 2019). This included discussions on the Spanish, Mexican, and American periods and the historical and twentieth-century growth of Santa Clarita, Saugus, and Bouquet Canyon. For a detailed discussion of the historical context for the Bouquet Canyon Road Project, please refer to that report.

## **3.0 ARCHIVAL RESEARCH AND CONTACT PROGRAM**

### **3.1 RECORDS SEARCH**

As part of the 2019 Cultural Resources Report (Wilson and Wright 2019), HELIX staff conducted a record search of the California Historical Resources Information System (CHRIS) at the South Coastal Information Center (SCIC) on March 6, 2016. The records search covered a half-mile radius around the project alignment and included the identification of previously recorded cultural resources and locations and citations for previous cultural resources studies. A review of the California Historical Resources and the state Office of Historic Preservation (OHP) historic properties directories were also included. As the revised project areas are all located within the original records search boundaries, no additional record search was requested by HELIX. A total of 24 previous cultural studies have been completed within the search limits, though none were located within the project study area. Prior to the 2019 survey of the project area, nine previously recorded resources were identified within the record search limits. For the full discussion of the results of the records search, please refer to the 2019 Cultural Resources Report (Wilson and Wright 2019).

### **3.2 HISTORIC TOPOGRAPHIC MAP AND AERIAL IMAGERY RESEARCH**

As part of the 2019 Cultural Resources Report (Wilson and Wright 2019), various archival sources were also consulted, including historic topographic maps, aerial imagery (NETR Online 2018), and the Bureau of Land Management (BLM) General Land Office (GLO) Records. Historic aerials from 1947, 1952, 1959,

1969, 1974, and 1977 were reviewed (NETR Online 2018). Plat maps reviewed included the 1875 survey plat for the Rancho San Francisco and the 1877 survey plats for Township 4 North and Range 15 and 16 West. Topographic maps reviewed included the 1900 Fernando (1:62,500); the 1900 (1930 reprint), 1940, and 1945 San Fernando (1:62,500); the 1932 and 1946 edition of the Humphreys (1:24,000); and the 1960 and 1974 Mint Canyon (1:24,000) topographic maps. The purpose of this research was to identify historic structures and land use in the area.

An updated review of the archival resources was conducted as part of this addendum study. On the 1947 aerial photograph, a single-family home is present within the boundaries of the Davenport parcel (within revised project area number 3). The home was visible in the 1952 aerials with no changes and had an unattached garage in the 1959 aerial. Three additions appear to have been added to the structure between 1994 and 1997. The structure is also shown on topographic maps, beginning with the 1932 Humphreys (1:24,000) quadrangle maps.

### **3.3 NATIVE AMERICAN CONTACT PROGRAM**

As part of the 2019 Cultural Resources Report (Wilson and Wright 2019), HELIX contacted the Native American Heritage Commission (NAHC) in May 2018 for a Sacred Lands File search and list of Native American contacts for the original project alignment. The NAHC responded in June 2018 that the search of their Sacred Lands File was complete for the project area with negative results; a list of Tribal Contacts to be contacted for additional information about the project area was provided with NAHC's response. Letters were sent to these contacts in June 2018, with no responses received. A Native American monitor from the Fernandeño Tataviam Band of Mission Indians accompanied the survey crew during the fieldwork, and upon coordination for the survey, Jairo Avila responded in an email dated June 22, 2018 that their records show the presence of a Tataviam Village and Native burial site in the vicinity of the project.

No new outreach was conducted for this addendum, though the Fernandeño Tataviam Tribe of Mission Indians were invited to participate in the survey for the revised project areas. Due to scheduling urgency, however, they were unable to send someone to be involved in the pedestrian survey.

For copies of the contact program correspondence, see Appendix C of the Cultural Resources Report (Wilson and Wright 2019).

## **4.0 PREVIOUS SURVEY RESULTS**

HELIX performed an intensive pedestrian survey for the original study area in 2018 (Wilson and Wright 2019). The cultural resources study area for the project totaled approximately 94 acres and consisted of the four project-owned parcels (APNs 2812-008-003, 2812-008-013, 2812-008-022, and 2812-008-031) and areas of proposed off-site improvements. Additionally, APN 2812-008-002, which was a private in-holding situated within the western portion of the project, was included in the cultural resources study area.

Results of the cultural resource surveys were presented in the 2019 Cultural Resources Report (Wilson and Wright 2019). In summary, the survey resulted in the identification of four newly recorded historic-period cultural resources: P-19-004853, P-19-004854 (CA-LAN-4854), P-19-192514, and P-19-004855. The resources include a concrete foundation that may represent the remnants of the "New Era School" from the early twentieth century (P-19-004853), the remnants of a ranch dating to the early- to mid-

twentieth century (CA-LAN-4854), a residential structure constructed between 1952 and 1959 (P-19-192514), and the remnants of a residence from the turn of the twentieth century (P-19-004855). None of the resources meet the criteria for inclusion in the California Register of Historical Resources (CRHR) or the National Register of Historic Places (NRHP).

Of these resources, P-19-192514 is situated within APN 2812-008-002, the residential addition (“donut hole” parcel) included as revised project area number 9 (Figure 4, *Cultural Resources*). As described in Section 1.1.1. above, this parcel was evaluated for impacts to historical resources in the 2019 Cultural Resources Report as private in-holding situated within the western portion of the project (Wilson and Wright 2019). As such, although the donut hole parcel has been included in the revised project area, the evaluation of the resource (P-19-192514) can be found in that report.

## **5.0 FIELD SURVEY**

### **5.1 METHODOLOGY**

HELIX archaeologist Trevor Gittelough surveyed the revised project areas on December 12 and 14, 2021 (Plates 1 and 2). During the pedestrian survey, the additional areas within the revised project area were walked in transects, spaced approximately 10 meters apart where possible. Slopes greater than 25 degrees were visually assessed but were not surveyed. Visibility was excellent (76 to 100 percent) throughout the revised project area, though the slope along the northern edge of Bouquet Canyon was very steep and overgrown with sagebrush and buckwheat, hindering visibility and the ability to survey. Mx. Gittelough also visited the residence located on the Davenport parcel, as part of this pedestrian survey.








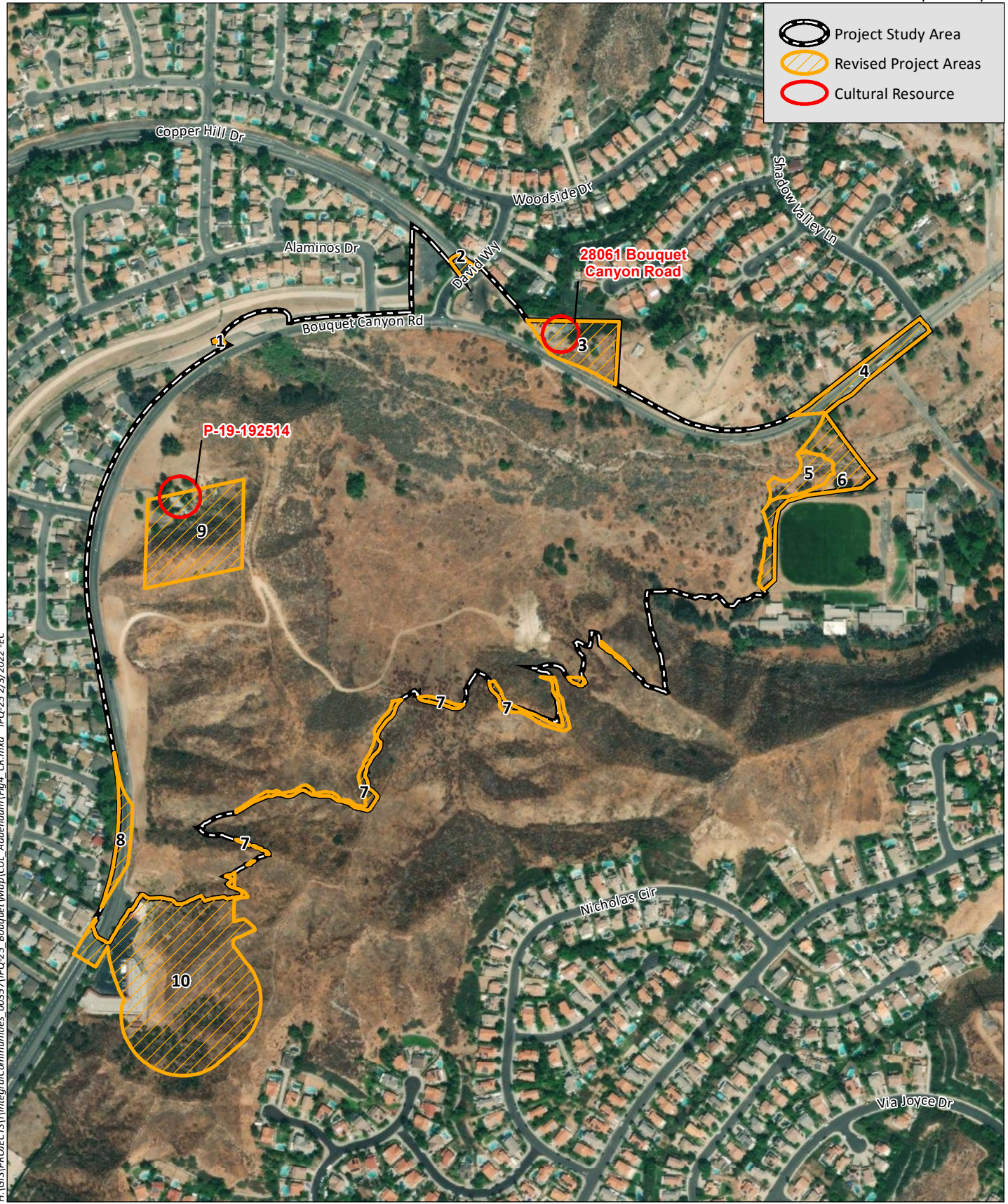
Plate 1. Overview of the area containing the Copper Hill reconfiguration. View to the southeast.



Plate 2. Overview of area north of Bouquet Canyon Road. View to the east.



-  Project Study Area
-  Revised Project Areas
-  Cultural Resource



H:\GIS\PROJECTS\IntegralCommunities\_00357\IPQ-25\_Bouquet\Map\CUL\_Addendum\Fig4\_CR.mxd IPQ-25 2/3/2022-EC

Source: Aerial (Maxar, 2020)





## 5.2 RESULTS

One cultural resource was identified with the additional survey area: a single-family home at 28601 Bouquet Canyon Road (Figure 4; Appendix A). This resource was identified during archival research before being visited as part of the intensive pedestrian survey and is detailed below. No other cultural materials were observed within the additional project areas. Much of the newly added areas had been disturbed by nineteenth- and twentieth-century agriculture, road building, and urban development.

### 5.2.1 28601 Bouquet Canyon Road

This resource, 28601 Bouquet Canyon Road, is a residential structure situated within the Davenport parcel (APN 2812-008-008; Plates 3 and 4). A structure is indicated at this location on the 1932 Humphreys (1:24,000) topographic map, and two structures (a portion of the main house and the existing garage) appear on the 1947 aerial photograph. As noted earlier in this report, additions to the main structure occurred in the 1990s, as confirmed by the intensive pedestrian survey. These additions included multiple additions to the main residential structure, extending it westward. Furthermore, the structures have undergone extensive changes, including new roofing, stucco siding, along with new windows and doors. Permits from 2003 show that a retaining wall was added, a 247-square foot (sf) bedroom was added, and the remodel of a 210-sf bedroom was undertaken. Previously, in 1996, permits for the addition of a 496-sf master suite, a new bathroom, associated piping and duct work, and a new house connect for the addition were issued. Only a few historic-period components appear to remain—including the chimney, a shed, and a rock wall extending from the shed to the garage.



Plate 3. Overview of 28601 Bouquet Canyon Road. View to the east.



Plate 4. Overview of 28601 Bouquet Canyon Road, view to the north.

### 5.3 ELIGIBILITY RECOMMENDATION

28601 Bouquet Canyon Road is a historic residence originally constructed in the early twentieth century. The residence is comprised of a single-family home, unattached garage, and small shed. The residence does not appear to meet the criteria for inclusion in the NRHP or CRHR, as addressed below.

- Criterion A: Given the early to mid-twentieth century date of construction, the house does not represent the pioneering phase of Santa Clarita’s development in the nineteenth century and is not associated with events that have made a significant contribution to the broad patterns of local or national history.
- Criterion B: The house and associated garage have no known significant association with the lives of persons important to local, California, or national history.
- Criterion C: The residential structures do not embody distinctive architectural characteristics, represent the work of a master, or possess artistic value.
- Criterion D: The structure does not appear to have the potential to yield important information about historic construction materials or technologies and would not be considered significant as a source of information important in history.

In summary, while a few original historic-period components appear to remain—such as the chimney, a shed, and a rock wall extending from the shed to the garage—the residential structure and detached garage have been modified to such degree that they lack historic integrity, and the original character of



the buildings is no longer evident. Because the house and the unattached garage do not retain enough of their historic character or appearance to be recognizable as historical resources and do not meet the criteria for inclusion in the NRHP or CRHR, 28601 Bouquet Canyon Road is recommended as not eligible for listing in the NRHP or the CRHR, and as such, is not considered a significant “historical resource” for the purposes of CEQA.

## **6.0 SUMMARY AND MANAGEMENT RECOMMENDATIONS**

A study was undertaken to identify cultural resources that are present in the revised project areas and to determine the effects of the revised project on cultural resources. Based on the results of the 2019 Cultural Resources Report (Wilson and Wright 2019) and the current study addendum, no historical resources, per CEQA, will be affected by the Bouquet Canyon Project.

As such, the additional areas and revisions made to the project design since certification of the Final EIR would not result in new significant or adverse impacts on cultural resources pursuant to CEQA and applicable federal, state, and local policy. The results of this addendum demonstrate that the revised project remains consistent with the findings documented in the “Cultural Resources” section of the Final EIR.

Per mitigation measure 3.4-1 contained within the project’s Mitigation Monitoring and Reporting Program contained within the Final EIR, an archaeological and Native American monitoring program will be implemented, during which an archaeologist and Native American monitor shall be present to monitor initial ground disturbance for the project for all ground-disturbing activities (Michael Baker International 2020).

Should the project limits change to incorporate new areas of proposed disturbance, cultural resources survey of these areas will be required.

## 7.0 REFERENCES

Michael Baker International Inc.

- 2020 Final Environmental Impact Report, Bouquet Canyon Project, Master Case 18-089/  
Tentative Tract Map No. 82126. Prepared for the City of Santa Clarita.

NETR Online

- 2021 Historic Aerials. Nationwide Environmental Title Research, LLC. Electronic document  
available at: <http://www.historicaerials.com>, accessed December 2021.

Wilson, Stacie and Catherine Wright

- 2019 *Bouquet Canyon Road Project, City of Santa Clarita, Los Angeles County, California,  
Cultural Resources Survey and Assessment*. Report on file at the South Coastal  
Information Center, San Diego State University, San Diego.

# Appendix A

---

Site Form, 28601 Bouquet Canyon  
Road

Other Listings  
Review Code

Reviewer

Date

Page 1 of 5

\*Resource Name or #:

**P1. Other Identifier:** 28601 Bouquet Canyon Road

**\*P2. Location:**  Not for Publication  Unrestricted  
and

**\*a. County:** Los Angeles

**\*b. USGS 7.5' Quad:** Mint Canyon **Date:** 1995 T 4N; R 15W; NW ¼ of SE ¼ of Sec 6; B.M. San Bernardino

c. Address: 28061 Bouquet Canyon

City: Santa Clarita

Zip: 91351

d. UTM: Zone: 11N; 363142 mE/ 3814089 mN (G.P.S.)

e. Other Locational Data: From the intersection of Plum Canyon Road and Bouquet Canyon Road, take Bouquet Canyon Road north for approximately 0.92 miles. The resource will be located immediately to the north side of the road. Elevation: 1,412 feet amsl

**\*P3a. Description:** This resource consists of residence structures located within the Davenport parcel (APN 2812-008-008) at 28601 Bouquet Canyon Road. The presence of this residence dates back to the 1930s, with a structure indicated at its location on the 1932 Humphreys (1:24,000) topographic map. Structures are notated on all later topographic maps. Later, in 1947, two structures are visible in a 1947 aerial photograph. The structure consists of a residential, single-family home with a detached garage, located at the bottom of a small hill, that has been modified to construct the residence. The house has asphalt roofing shingles, exterior stucco walls, and louvered window, and has been modified numerous times over the years. Permits from 2003 show that a retaining wall was added, a 247-sf bedroom was added, and 210 sf remodel of a bedroom was undertaken. Previously, in 1996, permits for the addition of 496-sf master suite, a new bathroom, associated piping and duct work, and a new house connect for the addition was issued. Only a few of the original historic-period components appear to remain - such as the chimney, a shed, and a rock wall extending from the shed to the garage.

**\*P3b. Resource Attributes:** HP2. Single family property

**\*P4. Resources Present:**  Building  Structure  Object  Site  District  Element of District  Other (Isolates, etc.)

**P5a. Photo or Drawing** (Photo required for buildings, structures, and objects.)



**P5b. Description of Photo:**  
Overview of Residence, View facing east. Photo # 18, 12/13/2021

**\*P6. Date Constructed/Age and Sources:**  Historic  
 Prehistoric  Both

**\*P7. Owner and Address:**

**\*P8. Recorded by:**  
Trevor Gittelhough, M.A., RPA  
HELIX Environmental Planning  
7578 El Cajon Boulevard  
La Mesa, CA 91942

**\*P9. Date Recorded:**  
12/13/2021

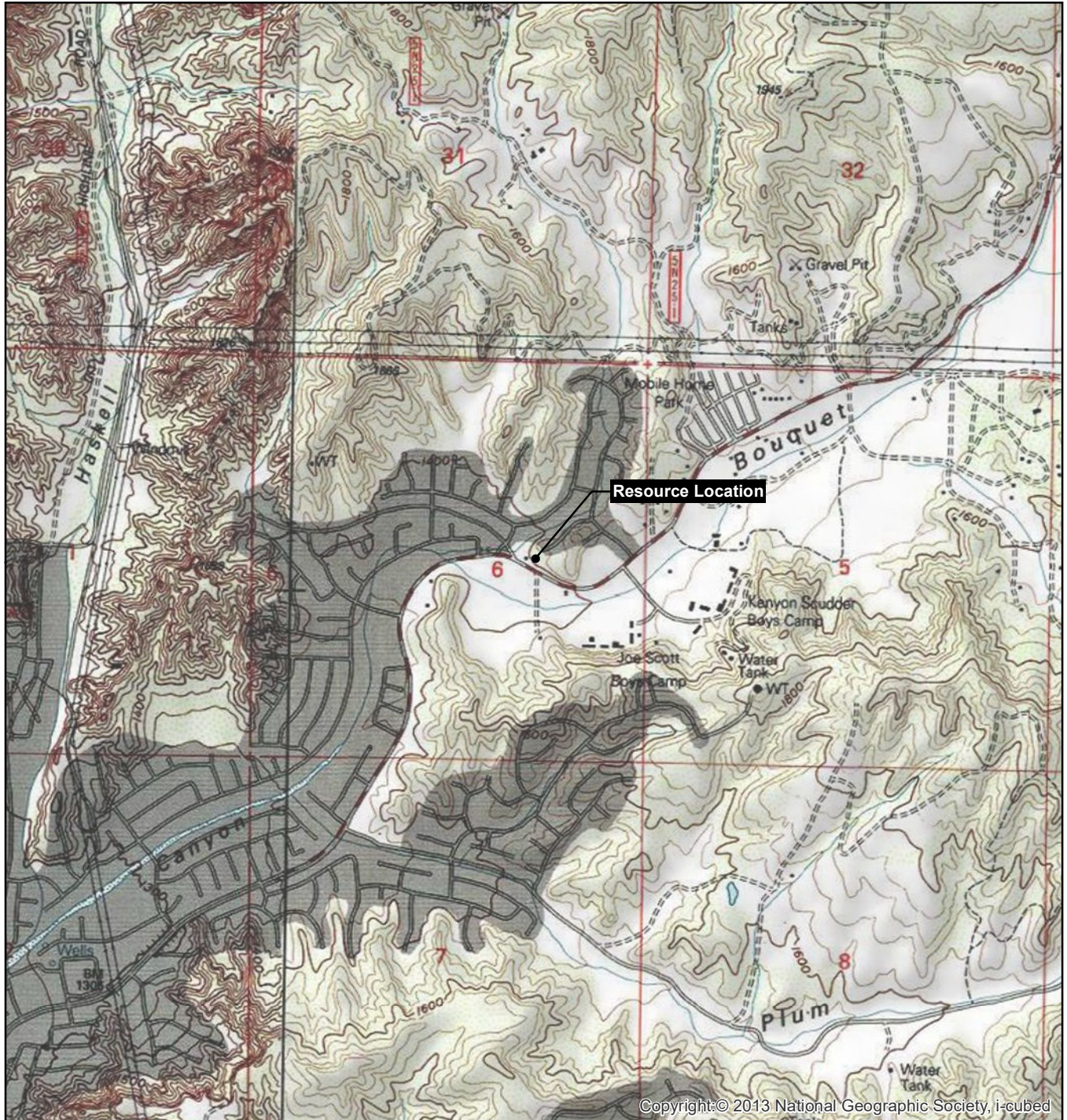
**\*P10. Survey Type:**  
Pedestrian Survey

**\*P11. Report Citation:** Addendum to the Cultural Resources Inventory and Assessment for the Bouquet Canyon Road Project, Los Angeles County, California.

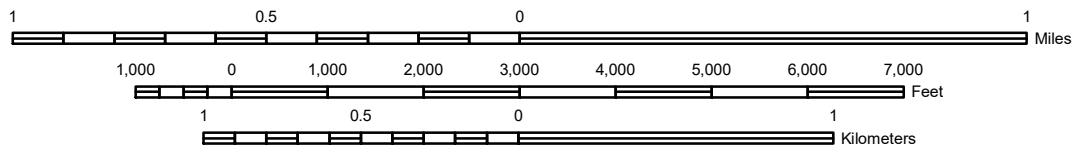
**\*Attachments:**  NONE  Location Map  Sketch Map  Continuation Sheet  Building, Structure, and Object Record  
 Archaeological Record  District Record  Linear Feature Record  Milling Station Record  Rock Art Record  
 Artifact Record  Photograph Record  Other (List):



# LOCATION MAP



SCALE 1:24,000



TRUE NORTH







Recorded By:

\*Date:

Continuation  Update



Overview of possible historic brick chimney, view to the north. Phot # 22, 12/13/2021



Overview of possible historic retaining wall, view to the south-southwest. Photo # 24, 12/13/2021



Recorded By:

\*Date:

Continuation  Update



Overview of detached shed, view to the east-northeast. Photo # 23, 12/13/2022



Overview of detached garage, view to the southwest. Photo # 25, 12/13/2022



# **Appendix D**

---

Geology and Soils

# **Appendix D.1**

---

## Geotechnical Update Memorandum



October 20, 2021

Project No. 21095-01

Mr. Peter Vanek  
***Integral Communities***  
888 San Clemente, Suite 100  
Newport Beach, CA 92660

***Subject: Geotechnical Update to EIR, Revised Site Plan and Additional Developable Parcel, Proposed "Bouquet Canyon" Residential Development, Tract No. 82126, City of Santa Clarita, County of Los Angeles, California***

***References:*** Petra Geosciences, Inc., 2019, Updated Geotechnical EIR-Level Assessment, Bouquet Canyon Project, Tentative Tract Map 82126, Southerly Adjacent to Bouquet Canyon Road at Copper Hill Drive, City of Santa Clarita, Los Angeles County, California, Job Number 18-322, dated October 18, 2019.

LGC Geotechnical, Inc., 2021, Change of Geotechnical Consultant of Record for Proposed "Bouquet Canyon" Residential Development, Tract No. 82126, City of Santa Clarita, County of Los Angeles, California, Project No. 21095-01, dated September 13, 2021.

### **Introduction**

In accordance with your request, LGC Geotechnical, Inc. has prepared this letter to provide a geotechnical update to the Environmental Impact Report (EIR) document with regards to a proposed addition to the developable parcel for the proposed Bouquet Canyon Residential Development, Tract No. 82126, located in the City of Santa Clarita, County of Los Angeles, California.

The intent of this letter is to provide updated geotechnical conclusions for the EIR document with regards to the addition of approximately 2.7-acres of developable land located within the current limits of the subject approximately 75-acre Bouquet Canyon development that was addressed in the referenced report by Petra (2019). It should be noted LGC Geotechnical became the geotechnical consultant of record for the proposed development as explained in the reference letter report (LGC Geotechnical, 2021).

### **Updated Site Plan**

The updated site plan includes a revision to a parallelogram-shaped parcel of land located within the subject development that was previously anticipated to remain undeveloped, see attached Exhibit of Additional Parcel on Geotechnical Map (Sheet 1). The updated site plan provides an additional 12

single-family residential units for the subject project as well as an extension of the north/south trending private street in the same area.

**Conclusions**

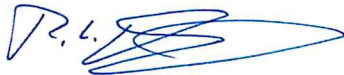
Based on our review of the modified site plan and the geotechnical conditions of the subject site, the conclusions and recommendations with regards to the site-specific geologic impacts and corresponding mitigations presented in the reference geotechnical EIR report (Petra, 2019) remain valid and applicable to the subject parcel addition. No additional changes or updates to the EIR report are required from a geotechnical perspective.

Design level geotechnical recommendations addressing the additional developable parcel located within the original limits of the subject site should be provided in an updated 40-scale grading plan review geotechnical report.

Should you have any questions regarding this letter, please do not hesitate to contact this office. We appreciate the opportunity to be of service.

Sincerely,

**LGC Geotechnical, Inc.**



Ryan Douglas, PE, GE 3147  
Project Engineer



Katie Maes, CEG 2216  
Project Geologist

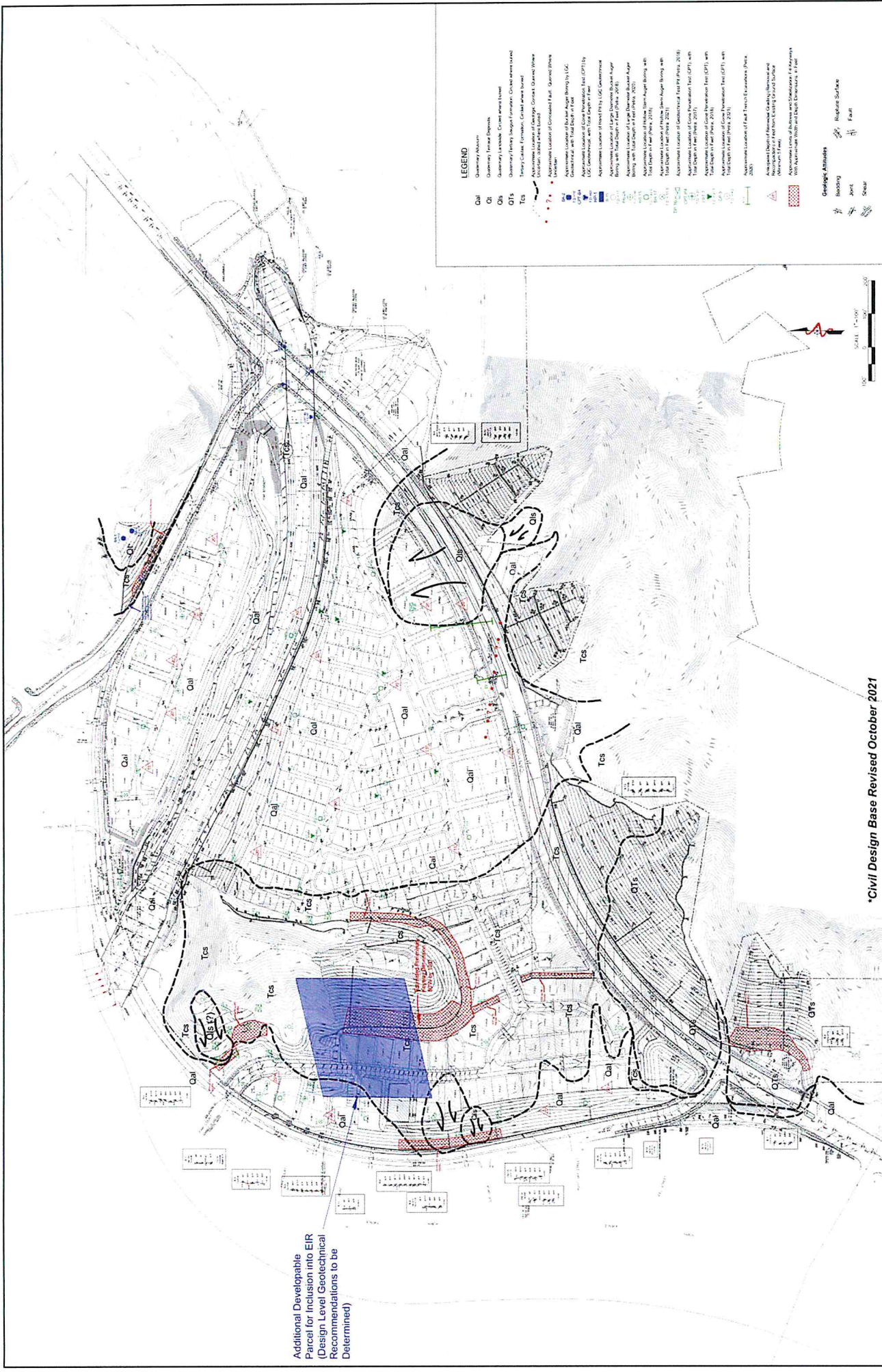


RLD/KTM/amm

Attachments: Sheet 1 – Exhibit of Additional Parcel on Geotechnical Map

Distribution: (1) Addressee (electronic copy)





**LEGEND**

- Qal
- Qal1
- Qal2
- Qal3
- Qal4
- Qal5
- Qal6
- Qal7
- Qal8
- Qal9
- Qal10
- Qal11
- Qal12
- Qal13
- Qal14
- Qal15
- Qal16
- Qal17
- Qal18
- Qal19
- Qal20
- Qal21
- Qal22
- Qal23
- Qal24
- Qal25
- Qal26
- Qal27
- Qal28
- Qal29
- Qal30
- Qal31
- Qal32
- Qal33
- Qal34
- Qal35
- Qal36
- Qal37
- Qal38
- Qal39
- Qal40
- Qal41
- Qal42
- Qal43
- Qal44
- Qal45
- Qal46
- Qal47
- Qal48
- Qal49
- Qal50
- Qal51
- Qal52
- Qal53
- Qal54
- Qal55
- Qal56
- Qal57
- Qal58
- Qal59
- Qal60
- Qal61
- Qal62
- Qal63
- Qal64
- Qal65
- Qal66
- Qal67
- Qal68
- Qal69
- Qal70
- Qal71
- Qal72
- Qal73
- Qal74
- Qal75
- Qal76
- Qal77
- Qal78
- Qal79
- Qal80
- Qal81
- Qal82
- Qal83
- Qal84
- Qal85
- Qal86
- Qal87
- Qal88
- Qal89
- Qal90
- Qal91
- Qal92
- Qal93
- Qal94
- Qal95
- Qal96
- Qal97
- Qal98
- Qal99
- Qal100

Additional Developable Parcel for Inclusion into EIR (Design Level Geotechnical Recommendations to be Determined)

\*Civil Design Base Revised October 2021

PROJECT NAME	Integral - Beaulieu Canyon
PROJECT NO.	21095-01
ENG./GEOL.	RJD/KTM
SCALE	1" = 100'
DATE	October 2021

**Exhibit of Additional Parcel on Geotechnical Map**

LGC Geotechnical, Inc.  
 131 Calle Iglesia, Ste. 200  
 San Clemente, CA 92672  
 TEL (949) 368-6141 FAX (949) 368-6142



# **Appendix D.2**

---

Geotechnical Review of Grading Plan Update



April 12, 2022

Project No. 21095-01

Mr. Peter Vanek  
***Integral Communities***  
888 San Clemente, Suite 100  
Newport Beach, CA 92660

***Subject: Geotechnical Review of Updated 40-Scale Rough Grading Plan, Proposed Residential Development, Tract No. 82126, City of Santa Clarita, County of Los Angeles, California***

### **Introduction**

In accordance with your request, LGC Geotechnical, Inc. (LGC Geotechnical) has prepared this geotechnical review of the updated 40-scale rough grading plans for the proposed Bouquet Canyon residential development, Tract No. 82126, located in the City of Santa Clarita, Los Angeles County, California. The revised plan review is based on the updated grading plan prepared by Sikand (2022). This map was used as a base for our Geotechnical Map (Sheet 1). The purpose of this letter was to document the changes from the previous grading plan and to update any recommendations due to these changes.

This grading plan review report should be considered part of the project design documents in conjunction with our geotechnical reports (LGC Geotechnical, 2021a through 2021d) and previous geotechnical reports by Petra. In the case of conflict, the recommendations contained herein should supersede those provided in previous reports; the remaining recommendations remain valid and applicable.

### **Grading Plan Revisions**

The major changes on the grading plan can be seen on the western half of the site, Planning Area 1A (see Sheet 1). Originally, an irregular shaped parcel was excluded from development along the western side of the central ridgeline adjacent to old Bouquet Canyon Road (LGC Geotechnical, 2021a). This parcel was referred to as the “donut hole.” The original proposed entry road accessed the site from old Bouquet Canyon Road, across from Pam Court, and extended south until reaching a cul-de-sac which serviced a total of 7 single-family units. The updated grading plans present the entry road adjacent to Pam Court extending south and connecting with the remainder of PA-1. An additional 12 single-family units have been added to the development as part of the revised grading plan. A cemetery area exists in a proposed landscape area between Units 4, 6 and 45. Recommendations for grading around the cemetery area are provided in our referenced geotechnical report (LGC Geotechnical, 2022). An approximately 100-foot-tall westerly facing cut slope has been incorporated into the plans (see Cross-

Section W-W') cutting into the natural ridge to create building pads for the residential units and connecting the two portions of PA-1 with a road.

The general proximity of the grading plans revisions for PA-1 have been clouded in red on the updated Geotechnical Map (Sheet 1). Updated geotechnical recommendations are provided on Sheets 1 through 3 and should be included as part of the design documents.

### **Updated Slope Stability Analysis**

Due to the changes in the rough grading plan, a portion of our geotechnical map (Sheet 1) and nine cross-sections (Sheets 2 & 3) were updated. The nine updated cross-sections are F-F', G-G', H-H', I-I', U-U', V-V', W-W', X-X' and Y-Y'. The majority of the cross sections only had minor changes. Cross-section W-W' was added to address the major new cut slope presented on the updated grading plans (Sikand, 2022). The revisions to the grading plan have been reflected on the updated Geotechnical Map (Sheet 1) and cross-sections (Sheets 2 & 3).

Updates to cross-sections F-F', I-I' and X-X' from the updated rough grading plans were negligible compared to the grading plans reviewed for our 40-scale geotechnical report (LGC Geotechnical, 2021a), refer to the 40-scale geotechnical report (LGC Geotechnical, 2021a) for slope stability analysis.

Updated slope stability analysis was performed on critical cross-sections V-V' and W-W' as part of this study. Shear strengths were taken from our 40-scale geotechnical report (LGC Geotechnical, 2021a). Slope stability analysis was performed using the computer program GSTABL7 with STEDwin version 2.005.3 (Gregory Geotechnical Software, 2013). Potential rotational and block failure modes were analyzed using Bishop's Modified Method and Janbu's Simplified Method, respectively. Slope stability analysis was performed for static and pseudo-static (seismic) loading conditions. A minimum factor of safety of 1.5 and 1.1 is typically required for static and seismic loading conditions.

Based on the proposed rough grading plan (Sikand, 2022), slope stability analysis indicates global factors of safety greater than 1.5 and 1.1 for static and seismic loading conditions, respectively. Slope stability analysis is provided in Appendix B.

### **Conclusions**

Based on our review, it is our opinion that the subject rough grading plans (Sikand, 2022) are considered acceptable for construction from a geotechnical viewpoint and were found to be in general conformance with the recommendations provided in our reference geotechnical reports (LGC Geotechnical, 2021a through 2021d) and those contained in this report. The previously provided preliminary geotechnical recommendations (LGC Geotechnical, 2021a through 2021d) remain valid and applicable. Updated Geotechnical Map (Sheet 1) and Cross Sections (Sheets 2 & 3) attached to this report supersede previous version in the areas identified and should be included in the project design documents.

LGC Geotechnical should provide geotechnical observation and testing during grading and construction operations to confirm anticipated site geotechnical conditions. If geotechnical conditions



differ from those that are anticipated, additional recommendations will be provided during rough grading.

**Closure**

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable soils engineers and geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report.

We appreciate this opportunity to be of service. Should you have any questions or concerns regarding this proposal, please do not hesitate to contact our office.

Respectfully,

*LGC Geotechnical, Inc.*



Ryan Douglas, PE, GE 3147  
Project Engineer



Katie Maes, CEG 2216  
Project Geologist



RLD/KTM/BPP/klr

Attachment: Appendix A – References  
Appendix B – Slope Stability Analysis  
Sheet 1 – Geotechnical Map  
Sheet 2 & 3 – Geotechnical Cross Sections

Distribution: (1) Addressee (electronic copy)

***Appendix A***  
***References***

## References

- American Concrete Institute, 2014, Building Code Requirements for Structural Concrete (ACI 318-14) and Commentary (ACI 318R-14).
- California Building Standards Commission, 2019, California Building Code, California Code of Regulations Title 24, Volumes 1 and 2, dated July 2019.
- California Department of Transportation (Caltrans), 2021, Corrosion Guidelines, Version 3.2, dated May 2021.
- Gregory Geotechnical Software, 2013, GSTABL7, Version 2.005.3, March, 2013.
- Lew, et al, 2010, Seismic Earth Pressures on Deep Basements, Structural Engineers Association of California (SEAOC) Convention Proceedings.
- LGC Geotechnical, 2021a, Geotechnical 40-Scale Rough Grading Plan Review for Proposed “Bouquet Canyon” Residential Development, Tract No. 82126, City of Santa Clarita, County of Los Angeles, California, Project No. 21095-01, dated August 27, 2021.
- \_\_\_\_\_, 2021b, Change of Geotechnical Consultant of Record for Proposed “Bouquet Canyon” Residential Development, Tract No. 82126, City of Santa Clarita, County of Los Angeles, California, Project No. 21095-01, dated September 13, 2021.
- \_\_\_\_\_, 2021c, Second Response to Tentative Tract Map Geotechnical Review Comments, Proposed Bouquet Canyon Residential Development, Tentative Tract Map No. 82126, Santa Clarita, California, Project No. 21095-01, dated November 11, 2021.
- \_\_\_\_\_, 2021d, Response to Geotechnical Review Comments Regarding Geotechnical 40-Scale Rough Grading Plan Review Report for Proposed “Bouquet Canyon” Residential Development, Tract No. 82126, City of Santa Clarita, County of Los Angeles, California, Project No. 21095-01, dated November 24, 2021.
- \_\_\_\_\_, 2022, Supplemental Geotechnical Recommendations, Selected Buildings in PA-1A and PA-4, Proposed “Bouquet Canyon” Residential Development, Tract No. 82126, City of Santa Clarita, County of Los Angeles, California, dated March 31, 2022.
- Petra Geosciences (Petra), 2019a, Geotechnical EIR-Level Assessment, *Bouquet Canyon Project*, Tentative Tract Map 82126, Southerly Adjacent to Bouquet Canyon Road at Copper Hill Drive, City of Santa Clarita, Los Angeles County, California, Job No. 18-322, dated January 22, 2019
- \_\_\_\_\_, 2019b, Response to Peer Review Comments Regarding the Geotechnical EIR-Level Assessment, *Bouquet Canyon Project*, Tentative Tract Map 82126, Southerly Adjacent to Bouquet Canyon Road at Copper Hill Drive, City of Santa Clarita, Los Angeles County, California, Job No. 18-322, dated July 9, 2019.

- \_\_\_\_\_, 2019c, Response to Peer Review Comments regarding the Geotechnical EIR-Level Assessment, Bouquet Canyon Project, Tentative Tract Map 82126, Southerly Adjacent to Bouquet Canyon Road at Copperhill Drive, City of Santa Clarita, Los Angeles County, California, Job No. 18-322, dated September 18, 2019.
- \_\_\_\_\_, 2020, Geotechnical Review of Tentative Tract Map No. 82116, *Bouquet Canyon Project*, Southerly Adjacent to Bouquet Canyon Road at Copper Hill Drive, City of Santa Clarita, Los Angeles County, California, J.N. 18-322, dated September 8, 2020.
- \_\_\_\_\_, 2021, Response to Geotechnical Review Comments (dated November 5, 2020), Tentative Tract Map No. 82126, *Bouquet Canyon Project*, Southerly Adjacent to Bouquet Canyon Road at Copper Hill Drive, City of Santa Clarita, Los Angeles County, California, J.N. 18-322, dated June 21, 2021.
- R.T. Frankian and Associates (RT&A), 2019a, Peer Review Geotechnical EIR-Level Assessment Report, Bouquet canyon Project, prepared by Petra Geosciences, Inc., Tentative Tract Map 82126, Southerly Adjacent to Bouquet Canyon Road at Copper Hill Drive, City of Santa Clarita, Los Angeles County, California, dated April 23, 2019.
- \_\_\_\_\_, 2019b, 2<sup>nd</sup> Peer Review, Response to Peer Review Comments, Geotechnical EIR-Level Assessment Report, Bouquet Canyon Project, Tentative Tract Map 82126, Prepared by Petra Geosciences, Inc., Dated September 18, 2019, J.N. 18-322, Santa Clarita, Los Angeles County, California, for Michael Baker International, dated October 14, 2019.
- \_\_\_\_\_, 2020, Review of Petra Review of Petra Geosciences, Inc. Report, Geotechnical Review, Tentative Tract Map No. 82126, Bouquet Canyon Project, Santa Clarita, California, Job No. 2018-010-650, dated November 5, 2020.
- \_\_\_\_\_, 2021a, Review of Petra Geosciences, Inc. Report, Response to Geotechnical Review Comments, Tentative Tract Map No. 82126, Bouquet Canyon Project, Santa Clarita, California, Job No. 2018-010-650, dated July 23, 2021.
- \_\_\_\_\_, 2021b, Review of LGC Geotechnical Inc. Report, Geotechnical 40-scale Rough Grading Plan Review, Proposed “Bouquet Canyon” Residential Development, Tract No. 82126, Santa Clarita, California, dated October 4, 2021; Project No. 21095-01.
- Sikand Engineering, 2022, Updated Rough Grading Plan, Bouquet Canyon, City of Santa Clarita, Tract Map No. 82126, dated March 3, 2022.



***Appendix B***  
***Slope Stability Analysis***

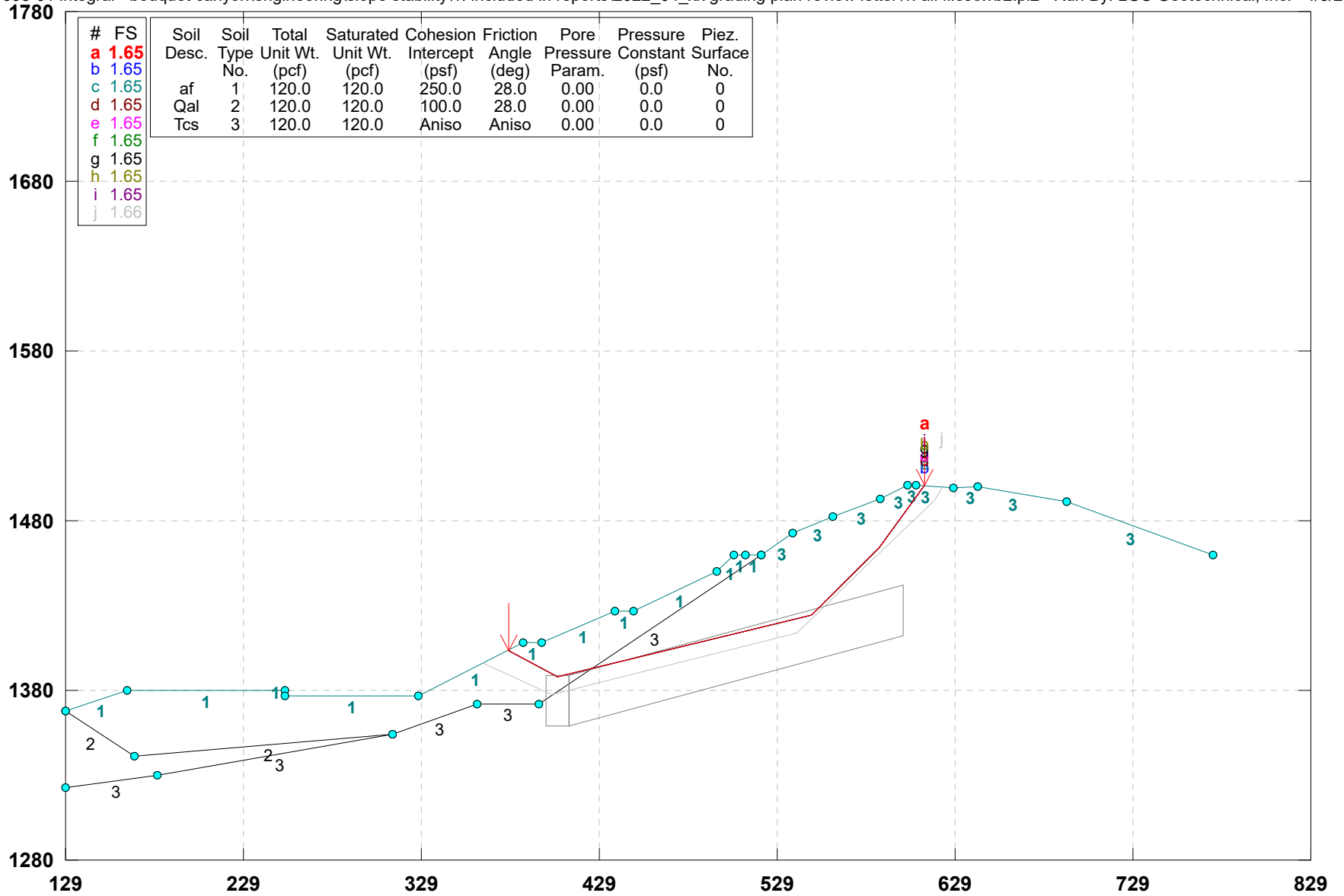
**Appendix B**

***Summary of Slope Stability Analysis***

<b>Cross-Section</b>	<b>File Name</b>	<b>Factor of Safety</b>	<b>Description</b>
V-V'	xvb2	1.65	Static; Block Search
	xvb2e	1.16	Seismic
	xvb2-1	1.60	Static; Block Search
	xvb2-1e	1.13	Seismic
	xvb2-2	1.62	Static; Block Search
	xvb2-2e	1.14	Seismic
	xvc2	1.69	Static; Circular Search
	xvc2e	1.21	Seismic
	xvb2t	1.35	Temporary; Block Search
	xvc2t	1.42	Temporary; Circular Search
W-W'	xwb	1.65	Static; Block Search
	xwbe	1.14	Seismic
	xwb-2	1.80	Static; Block Search
	xwb-2e	1.26	Seismic
	xwb-3	1.68	Static; Block Search
	xwb-3e	1.17	Seismic
	xwc	1.87	Static; Circular Search
	xwce	1.31	Seismic
	xwtb	1.48	Temporary; Block Search
	xwtc	1.65	Temporary; Circular Search

# Bouquet Canyon/21095-01/Section V-V' Static

z:\2021\21095-01 integral - bouquet canyon\engineering\slope stability\1. included in reports\2022\_04\_xx grading plan review letter\1. all files\svb2.pl2 Run By: LGC Geotechnical, Inc. 4/5/2022 10:02A



GSTABL7 v.2 FSmin=1.65

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

```

1          *** GSTABL7 ***
2
3          ** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
4
5          ** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
6          (All Rights Reserved-Unauthorized Use Prohibited)
7
8
9
10         *****
11         **
12         SLOPE STABILITY ANALYSIS SYSTEM
13         Modified Bishop, Simplified Janbu, or GLE Method of Slices.
14         (Includes Spencer & Morgenstern-Price Type Analysis)
15         Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
16         Nonlinear Undrained Shear Strength, Curved Phi Envelope,
17         Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
18         Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
19
20         *****
21         **
22
23         Analysis Run Date:      4/5/2022
24         Time of Run:           10:02AM
25         Run By:                LGC Geotechnical,
26         Inc.
27
28
29         Input Data Filename:    Z:\2021\21095-01 Integral - Bouquet
30         Canyon\Engineering\slope stability\Sec
31         V-V'\2022_04_05\xvb2.in
32
33         Output Filename:       Z:\2021\21095-01 Integral - Bouquet
34         Canyon\Engineering\slope stability\Sec
35         V-V'\2022_04_05\xvb2.OUT
36
37         Unit System:           English
38
39         Plotted Output Filename: Z:\2021\21095-01 Integral - Bouquet
40         Canyon\Engineering\slope stability\Sec
41         V-V'\2022_04_05\xvb2.PLT
42
43
44         PROBLEM DESCRIPTION:   Bouquet Canyon/21095-01/Section V-V'/
45         Static
46
47
48         BOUNDARY COORDINATES
49
50         21 Top Boundaries
51         28 Total Boundaries
52
53         Boundary   X-Left   Y-Left   X-Right   Y-Right   Soil Type
54         No.        (ft)    (ft)    (ft)     (ft)     Below Bnd

```

48	1	129.00	1368.00	164.00	1380.00	1
49	2	164.00	1380.00	252.00	1380.00	1
50	3	252.00	1380.00	252.10	1377.00	1
51	4	252.10	1377.00	327.00	1377.00	1
52	5	327.00	1377.00	386.00	1408.00	1
53	6	386.00	1408.00	397.00	1408.00	1
54	7	397.00	1408.00	438.00	1427.00	1
55	8	438.00	1427.00	448.00	1427.00	1
56	9	448.00	1427.00	495.00	1450.00	1
57	10	495.00	1450.00	505.00	1460.00	1
58	11	505.00	1460.00	511.00	1460.00	1
59	12	511.00	1460.00	520.00	1460.00	1
60	13	520.00	1460.00	538.00	1473.00	3
61	14	538.00	1473.00	560.00	1482.00	3
62	15	560.00	1482.00	587.00	1493.00	3
63	16	587.00	1493.00	602.00	1501.00	3
64	17	602.00	1501.00	607.00	1501.00	3
65	18	607.00	1501.00	628.00	1499.00	3
66	19	628.00	1499.00	642.00	1500.00	3
67	20	642.00	1500.00	692.00	1491.00	3
68	21	692.00	1491.00	774.00	1460.00	3
69	22	129.00	1368.00	168.00	1341.00	2
70	23	168.00	1341.00	313.00	1354.00	2
71	24	313.00	1354.00	360.00	1372.00	3
72	25	360.00	1372.00	395.00	1372.00	3
73	26	395.00	1372.00	520.00	1460.00	3
74	27	129.00	1323.00	181.00	1330.00	3
75	28	181.00	1330.00	313.00	1354.00	3
76						
77				User Specified Y-Origin =	1280.00(ft)	
78						
79				Default X-Plus Value =	0.00(ft)	
80						
81				Default Y-Plus Value =	0.00(ft)	
82	1					
83						
84						
85				ISOTROPIC SOIL PARAMETERS		
86						
87						
88				3 Type(s) of Soil		
89						
90						
91				Soil Total Saturated Cohesion Friction Pore Pressure Piez.		
92				Type Unit Wt. Unit Wt. Intercept Angle Pressure Constant Surface		
93				No. (pcf) (pcf) (psf) (deg) Param. (psf) No.		
94						
95				1 120.0 120.0 250.0 28.0 0.00 0.0 0		
96				2 120.0 120.0 100.0 28.0 0.00 0.0 0		
97				3 120.0 120.0 250.0 32.0 0.00 0.0 0		
98						
99						
100						
101				ANISOTROPIC STRENGTH PARAMETERS		
102				1 soil type(s)		
103						
104						
105				Soil Type 3 Is Anisotropic		
106						
107				Number Of Direction Ranges Specified =	3	
108						
109						
110				Direction Counterclockwise Cohesion Friction		
111				Range Direction Limit Intercept Angle		
112				No. (deg) (psf) (deg)		
113						



114	1	10.0	250.00	32.00
115	2	15.0	150.00	25.00
116	3	90.0	250.00	32.00

ANISOTROPIC SOIL NOTES:

- (1) An input value of 0.01 for C and/or Phi will cause Aniso C and/or Phi to be ignored in that range.
- (2) An input value of 0.02 for Phi will set both Phi and C equal to zero, with no water weight in the tension crack.
- (3) An input value of 0.03 for Phi will set both Phi and C equal to zero, with water weight in the tension crack.

Janbus Empirical Coef is being used for the case of c & phi both > 0

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.

4999 Trial Surfaces Have Been Generated.

2 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 55.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	399.00	1374.00	412.00	1374.00	30.00
2	412.10	1374.00	600.00	1427.00	30.00

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	350.28	1389.23
2	355.60	1384.36
3	408.68	1369.95
4	429.70	1377.48
5	429.78	1423.19

Factor of Safety for the Preceding Surface is Between89.790 and87.995

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	360.95	1394.84
2	366.54	1391.70
3	411.47	1359.99
4	440.71	1369.68
5	441.14	1424.68
6	441.93	1427.00

Factor of Safety for the Preceding Surface is Between47.451 and47.442

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	380.07	1404.89
2	411.33	1380.78
3	558.66	1400.95
4	558.79	1455.95
5	567.63	1485.11

Factor of Safety for the Preceding Surface is Between 6.865 and 6.859

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	350.28	1389.23
2	355.60	1384.36
3	408.68	1369.95
4	429.70	1377.48
5	429.78	1423.19

Factor of Safety for the Preceding Surface is Between89.790 and87.995

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 6 Coordinate Points

246 Point X-Surf Y-Surf  
 247 No. (ft) (ft)  
 248  
 249 1 360.95 1394.84  
 250 2 366.54 1391.70  
 251 3 411.47 1359.99  
 252 4 440.71 1369.68  
 253 5 441.14 1424.68  
 254 6 441.93 1427.00  
 255  
 256  
 257 Factor of Safety for the Preceding Surface is Between 47.451 and 47.442  
 258  
 259  
 260 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 261  
 262  
 263 The Trial Failure Surface In Question Is Defined  
 264 By The Following 5 Coordinate Points  
 265  
 266  
 267 Point X-Surf Y-Surf  
 268 No. (ft) (ft)  
 269  
 270  
 271 1 380.07 1404.89  
 272 2 411.33 1380.78  
 273 3 558.66 1400.95  
 274 4 558.79 1455.95  
 275 5 567.63 1485.11  
 276  
 277  
 278 Factor of Safety for the Preceding Surface is Between 6.865 and 6.859  
 279  
 280  
 281 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 282  
 283  
 284 The Trial Failure Surface In Question Is Defined  
 285 By The Following 5 Coordinate Points  
 286  
 287  
 288 Point X-Surf Y-Surf  
 289 No. (ft) (ft)  
 290  
 291  
 292 1 350.28 1389.23  
 293 2 355.60 1384.36  
 294 3 408.68 1369.95  
 295 4 429.70 1377.48  
 296 5 429.78 1423.19  
 297  
 298  
 299 Factor of Safety for the Preceding Surface is Between 89.790 and 87.995  
 300  
 301  
 302 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 303  
 304  
 305 The Trial Failure Surface In Question Is Defined  
 306 By The Following 6 Coordinate Points  
 307  
 308  
 309 Point X-Surf Y-Surf  
 310 No. (ft) (ft)  
 311

312  
 313 1 360.95 1394.84  
 314 2 366.54 1391.70  
 315 3 411.47 1359.99  
 316 4 440.71 1369.68  
 317 5 441.14 1424.68  
 318 6 441.93 1427.00  
 319  
 320  
 321 Factor of Safety for the Preceding Surface is Between 47.451 and 47.442  
 322  
 323  
 324 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 325  
 326  
 327 The Trial Failure Surface In Question Is Defined  
 328 By The Following 5 Coordinate Points  
 329  
 330  
 331 Point X-Surf Y-Surf  
 332 No. (ft) (ft)  
 333  
 334  
 335 1 380.07 1404.89  
 336 2 411.33 1380.78  
 337 3 558.66 1400.95  
 338 4 558.79 1455.95  
 339 5 567.63 1485.11  
 340  
 341  
 342 Factor of Safety for the Preceding Surface is Between 6.865 and 6.859  
 343  
 344  
 345 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 346  
 347  
 348 The Trial Failure Surface In Question Is Defined  
 349 By The Following 5 Coordinate Points  
 350  
 351  
 352 Point X-Surf Y-Surf  
 353 No. (ft) (ft)  
 354  
 355  
 356 1 350.28 1389.23  
 357 2 355.60 1384.36  
 358 3 408.68 1369.95  
 359 4 429.70 1377.48  
 360 5 429.78 1423.19  
 361  
 362  
 363 Factor of Safety for the Preceding Surface is Between 89.790 and 87.995  
 364  
 365  
 366 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 367  
 368  
 369 The Trial Failure Surface In Question Is Defined  
 370 By The Following 6 Coordinate Points  
 371  
 372  
 373 Point X-Surf Y-Surf  
 374 No. (ft) (ft)  
 375  
 376  
 377 1 360.95 1394.84

378 2 366.54 1391.70  
379 3 411.47 1359.99  
380 4 440.71 1369.68  
381 5 441.14 1424.68  
382 6 441.93 1427.00

Factor of Safety for the Preceding Surface is Between 47.451 and 47.442

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	380.07	1404.89
2	411.33	1380.78
3	558.66	1400.95
4	558.79	1455.95
5	567.63	1485.11

Factor of Safety for the Preceding Surface is Between 6.865 and 6.859

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	350.28	1389.23
2	355.60	1384.36
3	408.68	1369.95
4	429.70	1377.48
5	429.78	1423.19

Factor of Safety for the Preceding Surface is Between 89.790 and 87.995

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
By The Following 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	360.95	1394.84
2	366.54	1391.70
3	411.47	1359.99

444 4 440.71 1369.68  
445 5 441.14 1424.68  
446 6 441.93 1427.00

Factor of Safety for the Preceding Surface is Between 47.451 and 47.442

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	380.07	1404.89
2	411.33	1380.78
3	558.66	1400.95
4	558.79	1455.95
5	567.63	1485.11

Factor of Safety for the Preceding Surface is Between 6.865 and 6.859

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	350.28	1389.23
2	355.60	1384.36
3	408.68	1369.95
4	429.70	1377.48
5	429.78	1423.19

Factor of Safety for the Preceding Surface is Between 89.790 and 87.995

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
By The Following 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	360.95	1394.84
2	366.54	1391.70
3	411.47	1359.99
4	440.71	1369.68
5	441.14	1424.68

510 6 441.93 1427.00

511  
512  
513 Factor of Safety for the Preceding Surface is Between 47.451 and 47.442

514  
515  
516 WARNING! The factor of safety calculation did not converge in 20 iterations.

517  
518  
519  
520 The Trial Failure Surface In Question Is Defined  
521 By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	380.07	1404.89
2	411.33	1380.78
3	558.66	1400.95
4	558.79	1455.95
5	567.63	1485.11

532  
533  
534 Factor of Safety for the Preceding Surface is Between 6.865 and 6.859

535  
536  
537 WARNING! The factor of safety calculation did not converge in 20 iterations.

538  
539  
540  
541 The Trial Failure Surface In Question Is Defined  
542 By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	350.28	1389.23
2	355.60	1384.36
3	408.68	1369.95
4	429.70	1377.48
5	429.78	1423.19

543  
544  
545  
546  
547  
548  
549  
550  
551  
552  
553  
554 Factor of Safety for the Preceding Surface is Between 89.790 and 87.995

555  
556  
557  
558 WARNING! The factor of safety calculation did not converge in 20 iterations.

559  
560  
561  
562 The Trial Failure Surface In Question Is Defined  
563 By The Following 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	360.95	1394.84
2	366.54	1391.70
3	411.47	1359.99
4	440.71	1369.68
5	441.14	1424.68
6	441.93	1427.00

564  
565  
566  
567  
568  
569  
570  
571  
572  
573  
574  
575

576  
577 Factor of Safety for the Preceding Surface is Between 47.451 and 47.442

578  
579  
580  
581  
582  
583  
584  
585  
586  
587  
588  
589  
590  
591  
592  
593  
594  
595  
596  
597  
598  
599  
600  
601  
602  
603  
604  
605  
606  
607  
608  
609  
610  
611  
612  
613  
614  
615  
616  
617  
618  
619  
620  
621  
622  
623  
624  
625  
626  
627  
628  
629  
630  
631  
632  
633  
634  
635  
636  
637  
638  
639  
640  
641

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	380.07	1404.89
2	411.33	1380.78
3	558.66	1400.95
4	558.79	1455.95
5	567.63	1485.11

Factor of Safety for the Preceding Surface is Between 6.865 and 6.859

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	350.28	1389.23
2	355.60	1384.36
3	408.68	1369.95
4	429.70	1377.48
5	429.78	1423.19

Factor of Safety for the Preceding Surface is Between 89.790 and 87.995

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
By The Following 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	360.95	1394.84
2	366.54	1391.70
3	411.47	1359.99
4	440.71	1369.68
5	441.14	1424.68
6	441.93	1427.00

Factor of Safety for the Preceding Surface is Between 47.451 and 47.442



642  
643  
644 WARNING! The factor of safety calculation did not converge in 20 iterations.  
645

646  
647 The Trial Failure Surface In Question Is Defined  
648 By The Following 5 Coordinate Points  
649

Point No.	X-Surf (ft)	Y-Surf (ft)
1	380.07	1404.89
2	411.33	1380.78
3	558.66	1400.95
4	558.79	1455.95
5	567.63	1485.11

650  
651  
652  
653  
654  
655  
656  
657  
658  
659  
660  
661  
662 Factor of Safety for the Preceding Surface is Between 6.865 and 6.859  
663  
664

665 WARNING! The factor of safety calculation did not converge in 20 iterations.  
666  
667

668  
669 The Trial Failure Surface In Question Is Defined  
670 By The Following 5 Coordinate Points  
671

Point No.	X-Surf (ft)	Y-Surf (ft)
1	350.28	1389.23
2	355.60	1384.36
3	408.68	1369.95
4	429.70	1377.48
5	429.78	1423.19

672  
673  
674  
675  
676  
677  
678  
679  
680  
681  
682  
683 Factor of Safety for the Preceding Surface is Between 89.790 and 87.995  
684  
685

686 WARNING! The factor of safety calculation did not converge in 20 iterations.  
687  
688

689  
690 The Trial Failure Surface In Question Is Defined  
691 By The Following 6 Coordinate Points  
692

Point No.	X-Surf (ft)	Y-Surf (ft)
1	360.95	1394.84
2	366.54	1391.70
3	411.47	1359.99
4	440.71	1369.68
5	441.14	1424.68
6	441.93	1427.00

693  
694  
695  
696  
697  
698  
699  
700  
701  
702  
703  
704  
705 Factor of Safety for the Preceding Surface is Between 47.451 and 47.442  
706  
707

708 WARNING! The factor of safety calculation did not converge in 20 iterations.  
709  
710

711  
712 The Trial Failure Surface In Question Is Defined  
713 By The Following 5 Coordinate Points  
714

Point No.	X-Surf (ft)	Y-Surf (ft)
1	380.07	1404.89
2	411.33	1380.78
3	558.66	1400.95
4	558.79	1455.95
5	567.63	1485.11

715  
716  
717  
718  
719  
720  
721  
722  
723  
724  
725  
726  
727  
728  
729  
730  
731  
732  
733  
734  
735  
736  
737  
738  
739  
740  
741  
742  
743  
744  
745  
746  
747  
748  
749  
750  
751  
752  
753  
754  
755  
756  
757  
758  
759  
760  
761  
762  
763  
764  
765  
766  
767  
768  
769  
770  
771  
772  
773

Factor of Safety for the Preceding Surface is Between 6.865 and 6.859  
  
Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.

\* \* Safety Factors Are Calculated By The Simplified Janbu Method \* \*

Total Number of Trial Surfaces Attempted = 4999

WARNING! The Factor of Safety Calculation for one or More Trial Surfaces Did Not Converge in 20 Iterations.

Number of Trial Surfaces with Non-Converged FS = 27

Number of Trial Surfaces With Valid FS = 4972

Percentage of Trial Surfaces With Non-Valid FS Solutions of the Total Attempted = 0.5 %

Statistical Data On All Valid FS Values:  
FS Max = 19.824 FS Min = 1.645 FS Ave = 2.931  
Standard Deviation = 1.868 Coefficient of Variation = 63.73 %

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	377.780	1403.681
2	405.639	1387.951
3	547.967	1424.267
4	585.779	1464.208
5	612.100	1500.514

Factor of Safety  
\*\*\* 1.645 \*\*\*

774  
775  
776 Individual data on the 18 slices  
777  
778  
779  
780

Slice No.	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force		Surcharge Load (lbs)	
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)		
781										
782										
783										
784	1	8.2	4419.4	0.0	0.0	0.	0.	0.0	0.0	0.0
785	2	11.0	15927.0	0.0	0.0	0.	0.	0.0	0.0	0.0
786	3	8.6	20331.1	0.0	0.0	0.	0.	0.0	0.0	0.0
787	4	18.9	58849.7	0.0	0.0	0.	0.	0.0	0.0	0.0
788	5	13.5	47640.2	0.0	0.0	0.	0.	0.0	0.0	0.0
789	6	10.0	35419.3	0.0	0.0	0.	0.	0.0	0.0	0.0
790	7	47.0	190316.3	0.0	0.0	0.	0.	0.0	0.0	0.0
791	8	10.0	51566.5	0.0	0.0	0.	0.	0.0	0.0	0.0
792	9	6.0	33070.2	0.0	0.0	0.	0.	0.0	0.0	0.0
793	10	9.0	47538.5	0.0	0.0	0.	0.	0.0	0.0	0.0
794	11	18.0	101676.4	0.0	0.0	0.	0.	0.0	0.0	0.0
795	12	10.0	62248.2	0.0	0.0	0.	0.	0.0	0.0	0.0
796	13	12.0	70630.9	0.0	0.0	0.	0.	0.0	0.0	0.0
797	14	25.8	113402.4	0.0	0.0	0.	0.	0.0	0.0	0.0
798	15	1.2	4058.6	0.0	0.0	0.	0.	0.0	0.0	0.0
799	16	15.0	37372.4	0.0	0.0	0.	0.	0.0	0.0	0.0
800	17	5.0	6581.4	0.0	0.0	0.	0.	0.0	0.0	0.0
801	18	5.1	2301.3	0.0	0.0	0.	0.	0.0	0.0	0.0
802										

803 Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
806		
807		
808		
809	1	377.780
810	2	405.639
811	3	547.967
812	4	585.779
813	5	612.100
814		

815  
816 Factor of Safety  
817 \*\*\* 1.645 \*\*\*

818  
819  
820  
821 1  
822  
823 Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
824		
825		
826		
827		
828		
829	1	377.780
830	2	405.639
831	3	547.967
832	4	585.779
833	5	612.100
834		

835  
836 Factor of Safety  
837 \*\*\* 1.645 \*\*\*

840  
841  
842 Failure Surface Specified By 5 Coordinate Points  
843  
844

Point No.	X-Surf (ft)	Y-Surf (ft)
845		
846		
847		
848	1	377.780
849	2	405.639
850	3	547.967
851	4	585.779
852	5	612.100
853		

854  
855 Factor of Safety  
856 \*\*\* 1.645 \*\*\*

857  
858  
859 1  
860  
861 Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
862		
863		
864		
865	1	377.780
866	2	405.639
867	3	547.967
868	4	585.779
869	5	612.100
870		

871  
872  
873  
874  
875 Factor of Safety  
876 \*\*\* 1.645 \*\*\*

877  
878  
879  
880  
881 Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
882		
883		
884		
885		
886		
887	1	377.780
888	2	405.639
889	3	547.967
890	4	585.779
891	5	612.100
892		

893  
894  
895 Factor of Safety  
896 \*\*\* 1.645 \*\*\*

897  
898  
899 1  
900  
901 Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
902		
903		
904		
905		

```

906
907      1      377.780      1403.681
908      2      405.639      1387.951
909      3      547.967      1424.267
910      4      585.779      1464.208
911      5      612.100      1500.514

```

```

914      Factor of Safety
915      ***      1.645      ***

```

```

919      Failure Surface Specified By 5 Coordinate Points

```

```

924      Point      X-Surf      Y-Surf
925      No.      (ft)      (ft)
926      1      377.780      1403.681
927      2      405.639      1387.951
928      3      547.967      1424.267
929      4      585.779      1464.208
930      5      612.100      1500.514

```

```

933      Factor of Safety
934      ***      1.645      ***

```

```

938      1

```

```

939      Failure Surface Specified By 5 Coordinate Points

```

```

944      Point      X-Surf      Y-Surf
945      No.      (ft)      (ft)
946      1      377.780      1403.681
947      2      405.639      1387.951
948      3      547.967      1424.267
949      4      585.779      1464.208
950      5      612.100      1500.514

```

```

953      Factor of Safety
954      ***      1.645      ***

```

```

959      Failure Surface Specified By 6 Coordinate Points

```

```

964      Point      X-Surf      Y-Surf
965      No.      (ft)      (ft)
966      1      363.608      1396.235
967      2      402.341      1377.382
968      3      540.306      1413.940
969      4      579.036      1452.992
970      5      617.402      1492.400
971      6      621.816      1499.589

```

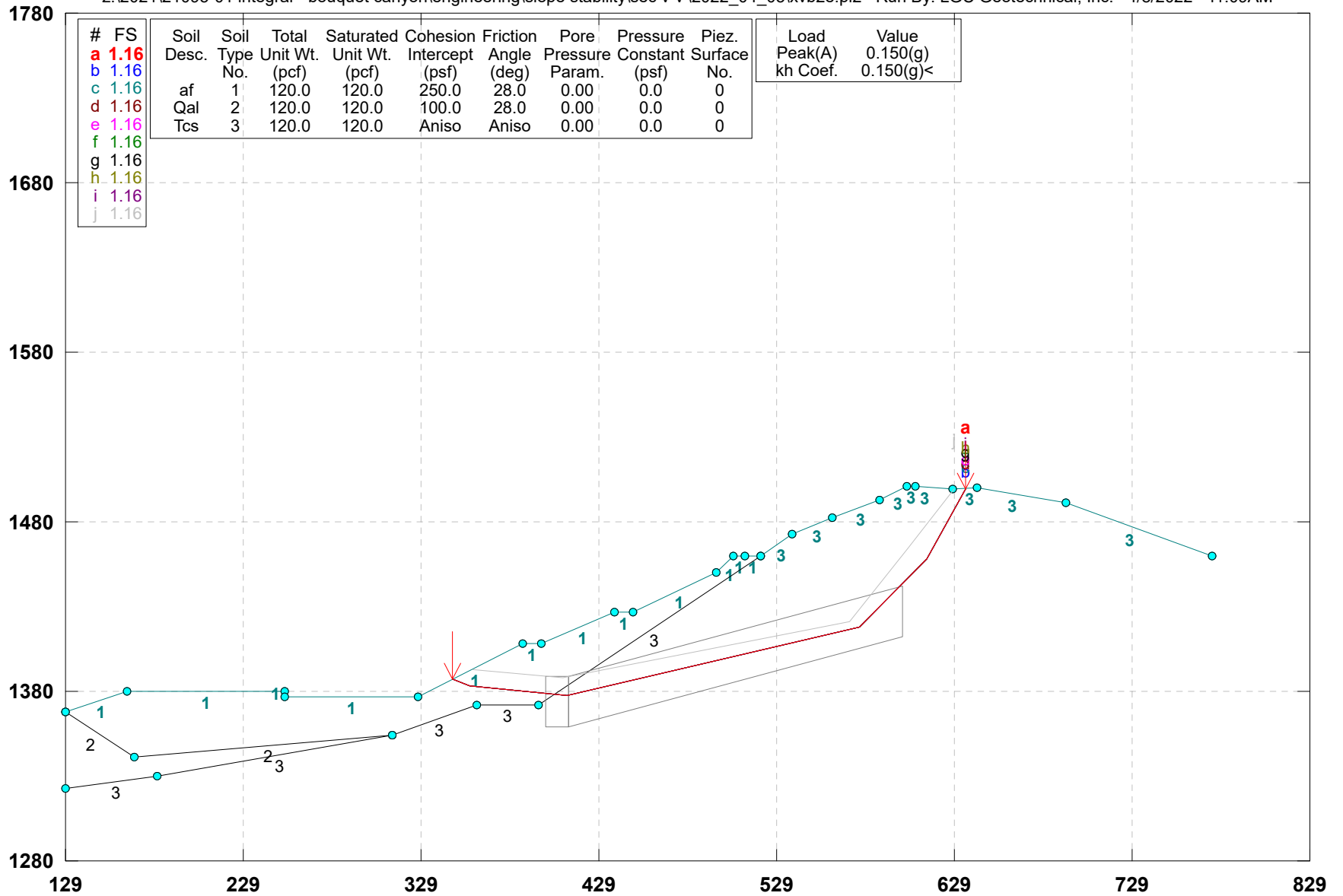
```

972
973      Factor of Safety
974      ***      1.659      ***
975
976
977
978
979
980      **** END OF GSTABL7 OUTPUT ****
981

```

# Bouquet Canyon/21095-01/Section V-V' Seismic

z:\2021\21095-01 integral - bouquet canyon\engineering\slope stability\sec v-v'\2022\_04\_05\vb2e.pl2 Run By: LGC Geotechnical, Inc. 4/8/2022 11:09AM



GSTABL7 v.2 FSmin=1.16

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0



```

1          *** GSTABL7 ***
2
3          ** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
4
5          ** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
6          (All Rights Reserved-Unauthorized Use Prohibited)
7
8
9
10         *****
11         **
12         SLOPE STABILITY ANALYSIS SYSTEM
13         Modified Bishop, Simplified Janbu, or GLE Method of Slices.
14         (Includes Spencer & Morgenstern-Price Type Analysis)
15         Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
16         Nonlinear Undrained Shear Strength, Curved Phi Envelope,
17         Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
18         Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
19
20         *****
21         **
22
23         Analysis Run Date:      4/8/2022
24         Time of Run:           11:09AM
25         Run By:                LGC Geotechnical,
26         Inc.
27
28
29         Input Data Filename:    Z:\2021\21095-01 Integral - Bouquet
30         Canyon\Engineering\slope stability\Sec
31         V-V'\2022_04_05\xvb2e.in
32
33         Output Filename:       Z:\2021\21095-01 Integral - Bouquet
34         Canyon\Engineering\slope stability\Sec
35         V-V'\2022_04_05\xvb2e.OUT
36
37         Unit System:           English
38
39         Plotted Output Filename: Z:\2021\21095-01 Integral - Bouquet
40         Canyon\Engineering\slope stability\Sec
41         V-V'\2022_04_05\xvb2e.PLT
42
43
44         PROBLEM DESCRIPTION:   Bouquet Canyon/21095-01/Section V-V'/
45         Seismic
46
47
48         BOUNDARY COORDINATES
49
50         21 Top Boundaries
51         28 Total Boundaries
52
53         Boundary   X-Left   Y-Left   X-Right   Y-Right   Soil Type
54         No.        (ft)    (ft)    (ft)      (ft)      Below Bnd

```

48	1	129.00	1368.00	164.00	1380.00	1
49	2	164.00	1380.00	252.00	1380.00	1
50	3	252.00	1380.00	252.10	1377.00	1
51	4	252.10	1377.00	327.00	1377.00	1
52	5	327.00	1377.00	386.00	1408.00	1
53	6	386.00	1408.00	397.00	1408.00	1
54	7	397.00	1408.00	438.00	1427.00	1
55	8	438.00	1427.00	448.00	1427.00	1
56	9	448.00	1427.00	495.00	1450.00	1
57	10	495.00	1450.00	505.00	1460.00	1
58	11	505.00	1460.00	511.00	1460.00	1
59	12	511.00	1460.00	520.00	1460.00	1
60	13	520.00	1460.00	538.00	1473.00	3
61	14	538.00	1473.00	560.00	1482.00	3
62	15	560.00	1482.00	587.00	1493.00	3
63	16	587.00	1493.00	602.00	1501.00	3
64	17	602.00	1501.00	607.00	1501.00	3
65	18	607.00	1501.00	628.00	1499.00	3
66	19	628.00	1499.00	642.00	1500.00	3
67	20	642.00	1500.00	692.00	1491.00	3
68	21	692.00	1491.00	774.00	1460.00	3
69	22	129.00	1368.00	168.00	1341.00	2
70	23	168.00	1341.00	313.00	1354.00	2
71	24	313.00	1354.00	360.00	1372.00	3
72	25	360.00	1372.00	395.00	1372.00	3
73	26	395.00	1372.00	520.00	1460.00	3
74	27	129.00	1323.00	181.00	1330.00	3
75	28	181.00	1330.00	313.00	1354.00	3
76						
77				User Specified Y-Origin =	1280.00(ft)	
78						
79				Default X-Plus Value =	0.00(ft)	
80						
81				Default Y-Plus Value =	0.00(ft)	
82	1					
83						
84						
85				ISOTROPIC SOIL PARAMETERS		
86						
87						
88				3 Type(s) of Soil		
89						
90						
91				Soil Total Saturated Cohesion Friction Pore Pressure Piez.		
92				Type Unit Wt. Unit Wt. Intercept Angle Pressure Constant Surface		
93				No. (pcf) (pcf) (psf) (deg) Param. (psf) No.		
94						
95				1 120.0 120.0 250.0 28.0 0.00 0.0 0		
96				2 120.0 120.0 100.0 28.0 0.00 0.0 0		
97				3 120.0 120.0 250.0 32.0 0.00 0.0 0		
98						
99						
100						
101				ANISOTROPIC STRENGTH PARAMETERS		
102				1 soil type(s)		
103						
104						
105				Soil Type 3 Is Anisotropic		
106						
107				Number Of Direction Ranges Specified =	3	
108						
109						
110				Direction Counterclockwise Cohesion Friction		
111				Range Direction Limit Intercept Angle		
112				No. (deg) (psf) (deg)		
113						

114 1 10.0 250.00 32.00  
 115 2 15.0 150.00 25.00  
 116 3 90.0 250.00 32.00  
 117  
 118 ANISOTROPIC SOIL NOTES:  
 119 (1) An input value of 0.01 for C and/or Phi will cause Aniso  
 120 C and/or Phi to be ignored in that range.  
 121 (2) An input value of 0.02 for Phi will set both Phi and  
 122 C equal to zero, with no water weight in the tension crack.  
 123 (3) An input value of 0.03 for Phi will set both Phi and  
 124 C equal to zero, with water weight in the tension crack.  
 125  
 126 Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)  
 127 Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)  
 128 Specified Vertical Earthquake Coefficient (kv) = 0.000(g)  
 129  
 130 Specified Seismic Pore-Pressure Factor = 0.000  
 131  
 132 Janbus Empirical Coef is being used for the case of c & phi both > 0  
 133  
 134 1  
 135  
 136 A Critical Failure Surface Searching Method, Using A Random  
 137 Technique For Generating Sliding Block Surfaces, Has Been  
 138 Specified.  
 139  
 140  
 141 4999 Trial Surfaces Have Been Generated.  
 142  
 143  
 144 2 Boxes Specified For Generation Of Central Block Base  
 145  
 146  
 147 Length Of Line Segments For Active And Passive Portions Of  
 148 Sliding Block Is 55.0  
 149  
 150  
 151  
 152 Box X-Left Y-Left X-Right Y-Right Height  
 153 No. (ft) (ft) (ft) (ft) (ft)  
 154  
 155 1 399.00 1374.00 412.00 1374.00 30.00  
 156 2 412.10 1374.00 600.00 1427.00 30.00  
 157  
 158  
 159 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 160  
 161  
 162  
 163 The Trial Failure Surface In Question Is Defined  
 164 By The Following 5 Coordinate Points  
 165  
 166  
 167 Point X-Surf Y-Surf  
 168 No. (ft) (ft)  
 169  
 170 1 350.28 1389.23  
 171 2 355.60 1384.36  
 172 3 408.68 1369.95  
 173 4 429.70 1377.48  
 174 5 429.78 1423.19  
 175  
 176  
 177 Factor of Safety for the Preceding Surface is Between10.595 and10.509  
 178  
 179

180 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 181  
 182  
 183  
 184 The Trial Failure Surface In Question Is Defined  
 185 By The Following 6 Coordinate Points  
 186  
 187  
 188 Point X-Surf Y-Surf  
 189 No. (ft) (ft)  
 190  
 191 1 360.95 1394.84  
 192 2 366.54 1391.70  
 193 3 411.47 1359.99  
 194 4 440.71 1369.68  
 195 5 441.14 1424.68  
 196 6 441.93 1427.00  
 197  
 198  
 199 Factor of Safety for the Preceding Surface is Between17.011 and16.974  
 200  
 201  
 202 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 203  
 204  
 205 The Trial Failure Surface In Question Is Defined  
 206 By The Following 5 Coordinate Points  
 207  
 208  
 209  
 210 Point X-Surf Y-Surf  
 211 No. (ft) (ft)  
 212  
 213 1 350.28 1389.23  
 214 2 355.60 1384.36  
 215 3 408.68 1369.95  
 216 4 429.70 1377.48  
 217 5 429.78 1423.19  
 218  
 219  
 220 Factor of Safety for the Preceding Surface is Between10.595 and10.509  
 221  
 222  
 223 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 224  
 225  
 226 The Trial Failure Surface In Question Is Defined  
 227 By The Following 6 Coordinate Points  
 228  
 229  
 230  
 231 Point X-Surf Y-Surf  
 232 No. (ft) (ft)  
 233  
 234 1 360.95 1394.84  
 235 2 366.54 1391.70  
 236 3 411.47 1359.99  
 237 4 440.71 1369.68  
 238 5 441.14 1424.68  
 239 6 441.93 1427.00  
 240  
 241  
 242 Factor of Safety for the Preceding Surface is Between17.011 and16.974  
 243  
 244  
 245 WARNING! The factor of safety calculation did not converge in 20 iterations.

246  
247  
248  
249  
250  
251  
252  
253  
254  
255  
256  
257  
258  
259  
260  
261  
262  
263  
264  
265  
266  
267  
268  
269  
270  
271  
272  
273  
274  
275  
276  
277  
278  
279  
280  
281  
282  
283  
284  
285  
286  
287  
288  
289  
290  
291  
292  
293  
294  
295  
296  
297  
298  
299  
300  
301  
302  
303  
304  
305  
306  
307  
308  
309  
310  
311

The Trial Failure Surface In Question Is Defined  
By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	350.28	1389.23
2	355.60	1384.36
3	408.68	1369.95
4	429.70	1377.48
5	429.78	1423.19

Factor of Safety for the Preceding Surface is Between10.595 and10.509

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
By The Following 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	360.95	1394.84
2	366.54	1391.70
3	411.47	1359.99
4	440.71	1369.68
5	441.14	1424.68
6	441.93	1427.00

Factor of Safety for the Preceding Surface is Between17.011 and16.974

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	350.28	1389.23
2	355.60	1384.36
3	408.68	1369.95
4	429.70	1377.48
5	429.78	1423.19

Factor of Safety for the Preceding Surface is Between10.595 and10.509

WARNING! The factor of safety calculation did not converge in 20 iterations.

312  
313  
314  
315  
316  
317  
318  
319  
320  
321  
322  
323  
324  
325  
326  
327  
328  
329  
330  
331  
332  
333  
334  
335  
336  
337  
338  
339  
340  
341  
342  
343  
344  
345  
346  
347  
348  
349  
350  
351  
352  
353  
354  
355  
356  
357  
358  
359  
360  
361  
362  
363  
364  
365  
366  
367  
368  
369  
370  
371  
372  
373  
374  
375  
376  
377

The Trial Failure Surface In Question Is Defined  
By The Following 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	360.95	1394.84
2	366.54	1391.70
3	411.47	1359.99
4	440.71	1369.68
5	441.14	1424.68
6	441.93	1427.00

Factor of Safety for the Preceding Surface is Between17.011 and16.974

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	350.28	1389.23
2	355.60	1384.36
3	408.68	1369.95
4	429.70	1377.48
5	429.78	1423.19

Factor of Safety for the Preceding Surface is Between10.595 and10.509

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
By The Following 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	360.95	1394.84
2	366.54	1391.70
3	411.47	1359.99
4	440.71	1369.68
5	441.14	1424.68
6	441.93	1427.00

Factor of Safety for the Preceding Surface is Between17.011 and16.974

WARNING! The factor of safety calculation did not converge in 20 iterations.

378 The Trial Failure Surface In Question Is Defined  
379 By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	350.28	1389.23
2	355.60	1384.36
3	408.68	1369.95
4	429.70	1377.48
5	429.78	1423.19

391  
392 Factor of Safety for the Preceding Surface is Between10.595 and10.509

393  
394  
395 WARNING! The factor of safety calculation did not converge in 20 iterations.

396  
397  
398  
399 The Trial Failure Surface In Question Is Defined  
400 By The Following 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	360.95	1394.84
2	366.54	1391.70
3	411.47	1359.99
4	440.71	1369.68
5	441.14	1424.68
6	441.93	1427.00

411  
412  
413  
414 Factor of Safety for the Preceding Surface is Between17.011 and16.974

415  
416  
417 WARNING! The factor of safety calculation did not converge in 20 iterations.

418  
419  
420  
421 The Trial Failure Surface In Question Is Defined  
422 By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	350.28	1389.23
2	355.60	1384.36
3	408.68	1369.95
4	429.70	1377.48
5	429.78	1423.19

433  
434  
435 Factor of Safety for the Preceding Surface is Between10.595 and10.509

436  
437  
438 WARNING! The factor of safety calculation did not converge in 20 iterations.

439  
440  
441  
442 The Trial Failure Surface In Question Is Defined  
443 By The Following 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	360.95	1394.84
2	366.54	1391.70
3	411.47	1359.99
4	440.71	1369.68
5	441.14	1424.68
6	441.93	1427.00

444  
445  
446  
447  
448  
449  
450  
451  
452  
453  
454  
455  
456  
457 Factor of Safety for the Preceding Surface is Between17.011 and16.974

458  
459  
460  
461 WARNING! The factor of safety calculation did not converge in 20 iterations.

462  
463  
464  
465 The Trial Failure Surface In Question Is Defined  
466 By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	350.28	1389.23
2	355.60	1384.36
3	408.68	1369.95
4	429.70	1377.48
5	429.78	1423.19

471  
472  
473  
474  
475  
476  
477  
478  
479  
480  
481  
482  
483  
484  
485  
486  
487  
488  
489  
490  
491  
492  
493  
494  
495  
496  
497  
498  
499  
500  
501  
502  
503  
504  
505  
506  
507  
508  
509

Factor of Safety for the Preceding Surface is Between10.595 and10.509  
WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
By The Following 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	360.95	1394.84
2	366.54	1391.70
3	411.47	1359.99
4	440.71	1369.68
5	441.14	1424.68
6	441.93	1427.00

Factor of Safety for the Preceding Surface is Between17.011 and16.974

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
By The Following 5 Coordinate Points



Point No.	X-Surf (ft)	Y-Surf (ft)
1	350.28	1389.23
2	355.60	1384.36
3	408.68	1369.95
4	429.70	1377.48
5	429.78	1423.19

Factor of Safety for the Preceding Surface is Between 10.595 and 10.509

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	360.95	1394.84
2	366.54	1391.70
3	411.47	1359.99
4	440.71	1369.68
5	441.14	1424.68
6	441.93	1427.00

Factor of Safety for the Preceding Surface is Between 17.011 and 16.974

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.

\* \* Safety Factors Are Calculated By The Simplified Janbu Method \* \*

Total Number of Trial Surfaces Attempted = 4999

WARNING! The Factor of Safety Calculation for one or More Trial Surfaces Did Not Converge in 20 Iterations.

Number of Trial Surfaces with Non-Converged FS = 18

Number of Trial Surfaces With Valid FS = 4981

Percentage of Trial Surfaces With Non-Valid FS Solutions of the Total Attempted = 0.4 %

Statistical Data On All Valid FS Values:

FS Max = 12.740 FS Min = 1.157 FS Ave = 1.973  
Standard Deviation = 1.037 Coefficient of Variation = 52.57 %

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	346.853	1387.431
2	356.334	1383.224
3	411.066	1377.799
4	575.767	1418.090
5	613.237	1458.352
6	635.595	1499.542

Factor of Safety  
\*\*\* 1.157 \*\*\*

Individual data on the 20 slices

Slice No.	Width (ft)	Weight (lbs)	Water	Water	Tie	Tie	Earthquake		
			Force Top (lbs)	Force Bot (lbs)	Force Norm (lbs)	Force Tan (lbs)	Force Hor (lbs)	Force Ver (lbs)	Surcharge Load (lbs)
1	9.5	5227.3	0.0	0.0	0.	0.	784.1	0.0	0.0
2	29.7	65689.3	0.0	0.0	0.	0.	9853.4	0.0	0.0
3	11.0	37305.0	0.0	0.0	0.	0.	5595.7	0.0	0.0
4	7.2	26653.8	0.0	0.0	0.	0.	3998.1	0.0	0.0
5	6.9	28647.5	0.0	0.0	0.	0.	4297.1	0.0	0.0
6	26.9	128201.3	0.0	0.0	0.	0.	19230.2	0.0	0.0
7	10.0	49666.3	0.0	0.0	0.	0.	7449.9	0.0	0.0
8	47.0	258969.8	0.0	0.0	0.	0.	38845.5	0.0	0.0
9	10.0	66533.6	0.0	0.0	0.	0.	9980.0	0.0	0.0
10	6.0	42111.1	0.0	0.0	0.	0.	6316.7	0.0	0.0
11	9.0	61185.2	0.0	0.0	0.	0.	9177.8	0.0	0.0
12	18.0	129277.0	0.0	0.0	0.	0.	19391.6	0.0	0.0
13	22.0	174128.8	0.0	0.0	0.	0.	26119.3	0.0	0.0
14	15.8	130646.2	0.0	0.0	0.	0.	19596.9	0.0	0.0
15	11.2	89755.9	0.0	0.0	0.	0.	13463.4	0.0	0.0
16	15.0	105805.8	0.0	0.0	0.	0.	15870.9	0.0	0.0
17	5.0	31221.5	0.0	0.0	0.	0.	4683.2	0.0	0.0
18	6.2	34204.1	0.0	0.0	0.	0.	5130.6	0.0	0.0
19	14.8	49165.3	0.0	0.0	0.	0.	7374.8	0.0	0.0
20	7.6	6129.5	0.0	0.0	0.	0.	919.4	0.0	0.0

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	346.853	1387.431
2	356.334	1383.224
3	411.066	1377.799
4	575.767	1418.090
5	613.237	1458.352
6	635.595	1499.542

Factor of Safety  
\*\*\* 1.157 \*\*\*

642 1

643 Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	346.853	1387.431
2	356.334	1383.224
3	411.066	1377.799
4	575.767	1418.090
5	613.237	1458.352
6	635.595	1499.542

646 Factor of Safety  
647 \*\*\* 1.157 \*\*\*

648 Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	346.853	1387.431
2	356.334	1383.224
3	411.066	1377.799
4	575.767	1418.090
5	613.237	1458.352
6	635.595	1499.542

649 Factor of Safety  
650 \*\*\* 1.157 \*\*\*

651 Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	346.853	1387.431
2	356.334	1383.224
3	411.066	1377.799
4	575.767	1418.090
5	613.237	1458.352
6	635.595	1499.542

652 Factor of Safety  
653 \*\*\* 1.157 \*\*\*

654 Failure Surface Specified By 6 Coordinate Points

655

708

709 Point X-Surf Y-Surf  
710 No. (ft) (ft)

711	1	346.853	1387.431
712	2	356.334	1383.224
713	3	411.066	1377.799
714	4	575.767	1418.090
715	5	613.237	1458.352
716	6	635.595	1499.542

717 Factor of Safety  
718 \*\*\* 1.157 \*\*\*

719 1

720 Failure Surface Specified By 6 Coordinate Points

721 Point X-Surf Y-Surf  
722 No. (ft) (ft)

723	1	346.853	1387.431
724	2	356.334	1383.224
725	3	411.066	1377.799
726	4	575.767	1418.090
727	5	613.237	1458.352
728	6	635.595	1499.542

729 Factor of Safety  
730 \*\*\* 1.157 \*\*\*

731 Failure Surface Specified By 6 Coordinate Points

732 Point X-Surf Y-Surf  
733 No. (ft) (ft)

734	1	346.853	1387.431
735	2	356.334	1383.224
736	3	411.066	1377.799
737	4	575.767	1418.090
738	5	613.237	1458.352
739	6	635.595	1499.542

740 Factor of Safety  
741 \*\*\* 1.157 \*\*\*

742 1

743 Failure Surface Specified By 6 Coordinate Points

744 Point X-Surf Y-Surf  
745 No. (ft) (ft)

746	1	346.853	1387.431
-----	---	---------	----------

```
774          2      356.334    1383.224
775          3      411.066    1377.799
776          4      575.767    1418.090
777          5      613.237    1458.352
778          6      635.595    1499.542
779
```

```
780
781      Factor of Safety
782      ***  1.157  ***
```

```
783
784
785
786
787      Failure Surface Specified By  5  Coordinate Points
788
```

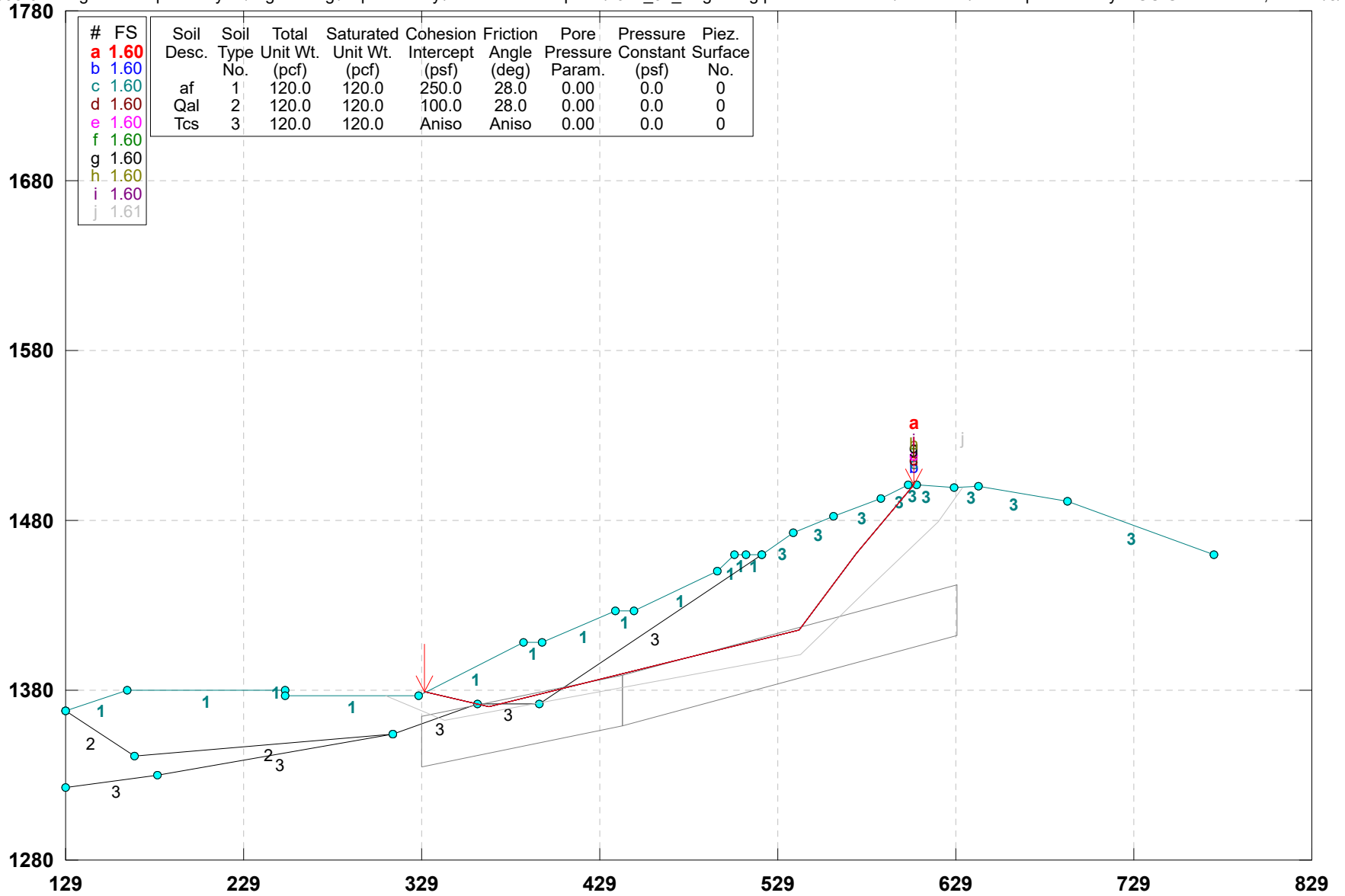
```
789
790      Point      X-Surf      Y-Surf
791      No.        (ft)        (ft)
792
793      1          357.902    1393.237
794      2          408.965    1388.361
795      3          569.620    1420.941
796      4          602.792    1464.811
797      5          629.108    1499.079
798
```

```
799
800      Factor of Safety
801      ***  1.158  ***
```

```
802
803
804
805
806
807      **** END OF GSTABL7 OUTPUT ****
808
```

# Bouquet Canyon/21095-01/Section V-V' Static

z:\2021\21095-01 integral - bouquet canyon\engineering\slope stability\1. included in reports\2022\_04\_xx grading plan review letter\1. all files\svb2-1.pl2 Run By: LGC Geotechnical, Inc. 4/5/2022 10:03



GSTABL7 v.2 FSmin=1.60

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0



```

1          *** GSTABL7 ***
2
3          ** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
4
5          ** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
6          (All Rights Reserved-Unauthorized Use Prohibited)
7
8
9
10         *****
11         **
12         SLOPE STABILITY ANALYSIS SYSTEM
13         Modified Bishop, Simplified Janbu, or GLE Method of Slices.
14         (Includes Spencer & Morgenstern-Price Type Analysis)
15         Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
16         Nonlinear Undrained Shear Strength, Curved Phi Envelope,
17         Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
18         Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
19
20         *****
21         **
22
23         Analysis Run Date:      4/5/2022
24         Time of Run:           10:03AM
25         Run By:                LGC Geotechnical,
26         Inc.
27
28         Input Data Filename:   Z:\2021\21095-01 Integral - Bouquet
29         Canyon\Engineering\slope stability\Sec
30         V-V'\2022_04_05\xvb2-1.in
31
32         Output Filename:       Z:\2021\21095-01 Integral - Bouquet
33         Canyon\Engineering\slope stability\Sec
34         V-V'\2022_04_05\xvb2-1.OUT
35
36         Unit System:           English
37
38         Plotted Output Filename: Z:\2021\21095-01 Integral - Bouquet
39         Canyon\Engineering\slope stability\Sec
40         V-V'\2022_04_05\xvb2-1.PLT
41
42
43
44
45         PROBLEM DESCRIPTION:   Bouquet Canyon/21095-01/Section V-V'/
46         Static
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000

```

```

48         1      129.00   1368.00   164.00   1380.00      1
49         2      164.00   1380.00   252.00   1380.00      1
50         3      252.00   1380.00   252.10   1377.00      1
51         4      252.10   1377.00   327.00   1377.00      1
52         5      327.00   1377.00   386.00   1408.00      1
53         6      386.00   1408.00   397.00   1408.00      1
54         7      397.00   1408.00   438.00   1427.00      1
55         8      438.00   1427.00   448.00   1427.00      1
56         9      448.00   1427.00   495.00   1450.00      1
57        10      495.00   1450.00   505.00   1460.00      1
58        11      505.00   1460.00   511.00   1460.00      1
59        12      511.00   1460.00   520.00   1460.00      1
60        13      520.00   1460.00   538.00   1473.00      3
61        14      538.00   1473.00   560.00   1482.00      3
62        15      560.00   1482.00   587.00   1493.00      3
63        16      587.00   1493.00   602.00   1501.00      3
64        17      602.00   1501.00   607.00   1501.00      3
65        18      607.00   1501.00   628.00   1499.00      3
66        19      628.00   1499.00   642.00   1500.00      3
67        20      642.00   1500.00   692.00   1491.00      3
68        21      692.00   1491.00   774.00   1460.00      3
69        22      129.00   1368.00   168.00   1341.00      2
70        23      168.00   1341.00   313.00   1354.00      2
71        24      313.00   1354.00   360.00   1372.00      3
72        25      360.00   1372.00   395.00   1372.00      3
73        26      395.00   1372.00   520.00   1460.00      3
74        27      129.00   1323.00   181.00   1330.00      3
75        28      181.00   1330.00   313.00   1354.00      3
76
77         User Specified Y-Origin =      1280.00(ft)
78
79         Default X-Plus Value = 0.00(ft)
80
81         Default Y-Plus Value = 0.00(ft)
82
83
84
85         ISOTROPIC SOIL PARAMETERS
86
87
88         3 Type(s) of Soil
89
90
91         Soil Total Saturated Cohesion Friction Pore Pressure Piez.
92         Type Unit Wt. Unit Wt. Intercept Angle Pressure Constant Surface
93         No. (pcf) (pcf) (psf) (deg) Param. (psf) No.
94
95         1 120.0 120.0 250.0 28.0 0.00 0.0 0
96         2 120.0 120.0 100.0 28.0 0.00 0.0 0
97         3 120.0 120.0 250.0 32.0 0.00 0.0 0
98
99
100
101         ANISOTROPIC STRENGTH PARAMETERS
102         1 soil type(s)
103
104
105         Soil Type 3 Is Anisotropic
106
107         Number Of Direction Ranges Specified = 3
108
109
110         Direction Counterclockwise Cohesion Friction
111         Range Direction Limit Intercept Angle
112         No. (deg) (psf) (deg)
113

```

114 1 10.0 250.00 32.00  
 115 2 15.0 150.00 25.00  
 116 3 90.0 250.00 32.00  
 117  
 118 ANISOTROPIC SOIL NOTES:  
 119 (1) An input value of 0.01 for C and/or Phi will cause Aniso  
 120 C and/or Phi to be ignored in that range.  
 121 (2) An input value of 0.02 for Phi will set both Phi and  
 122 C equal to zero, with no water weight in the tension crack.  
 123 (3) An input value of 0.03 for Phi will set both Phi and  
 124 C equal to zero, with water weight in the tension crack.  
 125  
 126 Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)  
 127 Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)  
 128 Specified Vertical Earthquake Coefficient (kv) = 0.000(g)  
 129  
 130 Specified Seismic Pore-Pressure Factor = 0.000  
 131  
 132 EARTHQUAKE DATA HAS BEEN SUPPRESSED  
 133  
 134 Janbus Empirical Coef is being used for the case of c & phi both > 0  
 135  
 136 1  
 137  
 138  
 139 A Critical Failure Surface Searching Method, Using A Random  
 140 Technique For Generating Sliding Block Surfaces, Has Been  
 141 Specified.  
 142  
 143 4999 Trial Surfaces Have Been Generated.  
 144  
 145 2 Boxes Specified For Generation Of Central Block Base  
 146  
 147 Length Of Line Segments For Active And Passive Portions Of  
 148 Sliding Block Is 55.0  
 149  
 150  
 151  
 152  
 153  
 154  
 155  
 156  
 157  
 158  
 159  
 160  
 161  
 162  
 163  
 164  
 165  
 166  
 167  
 168  
 169  
 170  
 171  
 172  
 173  
 174  
 175  
 176  
 177  
 178  
 179

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	329.00	1350.00	442.00	1374.00	30.00
2	442.10	1374.00	630.00	1427.00	30.00

180 Factor of Safety for the Preceding Surface is Between 14.754 and 14.747  
 181  
 182  
 183 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 184  
 185  
 186  
 187 The Trial Failure Surface In Question Is Defined  
 188 By The Following 6 Coordinate Points  
 189  
 190  
 191  
 192  
 193  
 194  
 195  
 196  
 197  
 198  
 199  
 200  
 201  
 202  
 203  
 204  
 205  
 206  
 207  
 208  
 209  
 210  
 211  
 212  
 213  
 214  
 215  
 216  
 217  
 218  
 219  
 220  
 221  
 222  
 223  
 224  
 225  
 226  
 227  
 228  
 229  
 230  
 231  
 232  
 233  
 234  
 235  
 236  
 237  
 238  
 239  
 240  
 241  
 242  
 243  
 244  
 245

Point No.	X-Surf (ft)	Y-Surf (ft)
1	382.59	1406.21
2	387.20	1401.86
3	428.89	1365.98
4	491.40	1379.79
5	492.10	1434.79
6	496.93	1451.93

Factor of Safety for the Preceding Surface is Between 14.754 and 14.747  
 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 The Trial Failure Surface In Question Is Defined  
 By The Following 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	382.59	1406.21
2	387.20	1401.86
3	428.89	1365.98
4	491.40	1379.79
5	492.10	1434.79
6	496.93	1451.93

Factor of Safety for the Preceding Surface is Between 14.754 and 14.747  
 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 The Trial Failure Surface In Question Is Defined  
 By The Following 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	382.59	1406.21
2	387.20	1401.86
3	428.89	1365.98
4	491.40	1379.79
5	492.10	1434.79
6	496.93	1451.93

246 Factor of Safety for the Preceding Surface is Between14.754 and14.747  
247  
248  
249 WARNING! The factor of safety calculation did not converge in 20 iterations.  
250  
251

252  
253 The Trial Failure Surface In Question Is Defined  
254 By The Following 6 Coordinate Points  
255

Point No.	X-Surf (ft)	Y-Surf (ft)
1	382.59	1406.21
2	387.20	1401.86
3	428.89	1365.98
4	491.40	1379.79
5	492.10	1434.79
6	496.93	1451.93

256  
257  
258  
259  
260  
261  
262  
263  
264  
265  
266  
267  
268 Factor of Safety for the Preceding Surface is Between14.754 and14.747  
269  
270  
271 WARNING! The factor of safety calculation did not converge in 20 iterations.  
272  
273

274  
275 The Trial Failure Surface In Question Is Defined  
276 By The Following 6 Coordinate Points  
277

Point No.	X-Surf (ft)	Y-Surf (ft)
1	382.59	1406.21
2	387.20	1401.86
3	428.89	1365.98
4	491.40	1379.79
5	492.10	1434.79
6	496.93	1451.93

278  
279  
280  
281  
282  
283  
284  
285  
286  
287  
288  
289  
290 Factor of Safety for the Preceding Surface is Between14.754 and14.747  
291  
292  
293 WARNING! The factor of safety calculation did not converge in 20 iterations.  
294  
295  
296

297  
298 The Trial Failure Surface In Question Is Defined  
299 By The Following 6 Coordinate Points  
300

Point No.	X-Surf (ft)	Y-Surf (ft)
1	382.59	1406.21
2	387.20	1401.86
3	428.89	1365.98
4	491.40	1379.79
5	492.10	1434.79
6	496.93	1451.93

301  
302  
303  
304  
305  
306  
307  
308  
309  
310  
311

312 Factor of Safety for the Preceding Surface is Between14.754 and14.747  
313  
314  
315 WARNING! The factor of safety calculation did not converge in 20 iterations.  
316  
317  
318

319  
320 The Trial Failure Surface In Question Is Defined  
321 By The Following 6 Coordinate Points  
322

Point No.	X-Surf (ft)	Y-Surf (ft)
1	382.59	1406.21
2	387.20	1401.86
3	428.89	1365.98
4	491.40	1379.79
5	492.10	1434.79
6	496.93	1451.93

323  
324  
325  
326  
327  
328  
329  
330  
331  
332  
333  
334 Factor of Safety for the Preceding Surface is Between14.754 and14.747  
335  
336  
337 WARNING! The factor of safety calculation did not converge in 20 iterations.  
338  
339

340  
341 The Trial Failure Surface In Question Is Defined  
342 By The Following 6 Coordinate Points  
343

Point No.	X-Surf (ft)	Y-Surf (ft)
1	382.59	1406.21
2	387.20	1401.86
3	428.89	1365.98
4	491.40	1379.79
5	492.10	1434.79
6	496.93	1451.93

344  
345  
346  
347  
348  
349  
350  
351  
352  
353  
354  
355  
356 Factor of Safety for the Preceding Surface is Between14.754 and14.747  
357  
358  
359 WARNING! The factor of safety calculation did not converge in 20 iterations.  
360  
361  
362

363  
364 The Trial Failure Surface In Question Is Defined  
365 By The Following 6 Coordinate Points  
366

Point No.	X-Surf (ft)	Y-Surf (ft)
1	382.59	1406.21
2	387.20	1401.86
3	428.89	1365.98
4	491.40	1379.79
5	492.10	1434.79
6	496.93	1451.93

367  
368  
369  
370  
371  
372  
373  
374  
375  
376  
377

378 Factor of Safety for the Preceding Surface is Between 14.754 and 14.747

379  
380

381 Following Are Displayed The Ten Most Critical Of The Trial  
382 Failure Surfaces Evaluated. They Are  
383 Ordered - Most Critical First.

384  
385

386 \* \* Safety Factors Are Calculated By The Simplified Janbu Method \* \*

387  
388

389  
390

391  
392

393  
394

395  
396

397  
398

399  
400

401  
402

403  
404

405  
406

407  
408

409  
410

411  
412

413  
414

415  
416

417  
418

419  
420

421  
422

423  
424

425  
426

427  
428

429  
430

431  
432

433  
434

435  
436

437  
438

439  
440

441  
442

443  
444

Slice No.	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force			Surcharge Load (lbs)
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)		
1	29.4	39319.6	0.0	0.0	0.	0.	0.0	0.0	0.0	0.0
2	0.2	657.0	0.0	0.0	0.	0.	0.0	0.0	0.0	0.0
3	6.8	20419.6	0.0	0.0	0.	0.	0.0	0.0	0.0	0.0
4	6.7	22765.1	0.0	0.0	0.	0.	0.0	0.0	0.0	0.0
5	12.6	46814.2	0.0	0.0	0.	0.	0.0	0.0	0.0	0.0
6	11.0	41293.7	0.0	0.0	0.	0.	0.0	0.0	0.0	0.0
7	10.7	39774.2	0.0	0.0	0.	0.	0.0	0.0	0.0	0.0
8	30.3	127469.2	0.0	0.0	0.	0.	0.0	0.0	0.0	0.0

444	9	10.0	44199.0	0.0	0.0	0.	0.	0.0	0.0	0.0
445	10	47.0	230614.2	0.0	0.0	0.	0.	0.0	0.0	0.0
446	11	10.0	59934.5	0.0	0.0	0.	0.	0.0	0.0	0.0
447	12	6.0	38056.4	0.0	0.0	0.	0.	0.0	0.0	0.0
448	13	9.0	54969.0	0.0	0.0	0.	0.	0.0	0.0	0.0
449	14	18.0	116362.1	0.0	0.0	0.	0.	0.0	0.0	0.0
450	15	3.2	22205.6	0.0	0.0	0.	0.	0.0	0.0	0.0
451	16	18.8	110733.7	0.0	0.0	0.	0.	0.0	0.0	0.0
452	17	12.9	51227.4	0.0	0.0	0.	0.	0.0	0.0	0.0
453	18	14.1	34913.6	0.0	0.0	0.	0.	0.0	0.0	0.0
454	19	15.0	17043.3	0.0	0.0	0.	0.	0.0	0.0	0.0
455	20	3.3	833.1	0.0	0.0	0.	0.	0.0	0.0	0.0

456  
457

458  
459

460  
461

462  
463

464  
465

466  
467

468  
469

470  
471

472  
473

474  
475

476  
477

478  
479

480  
481

482  
483

484  
485

486  
487

488  
489

490  
491

492  
493

494  
495

496  
497

498  
499

500  
501

502  
503

504  
505

506  
507

508  
509

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	330.374	1378.773
2	366.789	1370.263
3	541.176	1415.809
4	572.918	1460.725
5	605.344	1501.000

Factor of Safety  
\*\*\* 1.596 \*\*\*

1

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	330.374	1378.773
2	366.789	1370.263
3	541.176	1415.809
4	572.918	1460.725
5	605.344	1501.000

Factor of Safety  
\*\*\* 1.596 \*\*\*

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	330.374	1378.773
2	366.789	1370.263
3	541.176	1415.809
4	572.918	1460.725
5	605.344	1501.000

Factor of Safety



510 \*\*\* 1.596 \*\*\*

511

512

513

514 1

515

Failure Surface Specified By 5 Coordinate Points

516

517

518

Point No.	X-Surf (ft)	Y-Surf (ft)
-----------	-------------	-------------

519

520

521

1	330.374	1378.773
---	---------	----------

522

523

2	366.789	1370.263
---	---------	----------

524

3	541.176	1415.809
---	---------	----------

525

4	572.918	1460.725
---	---------	----------

526

5	605.344	1501.000
---	---------	----------

527

Factor of Safety

\*\*\* 1.596 \*\*\*

528

529

530

Failure Surface Specified By 5 Coordinate Points

531

532

533

534

535

536

537

Point No.	X-Surf (ft)	Y-Surf (ft)
-----------	-------------	-------------

538

1	330.374	1378.773
---	---------	----------

539

2	366.789	1370.263
---	---------	----------

540

3	541.176	1415.809
---	---------	----------

541

4	572.918	1460.725
---	---------	----------

542

5	605.344	1501.000
---	---------	----------

543

Factor of Safety

\*\*\* 1.596 \*\*\*

544

545

546

547

548

549

550

Failure Surface Specified By 5 Coordinate Points

551

552

553 1

554

555

Point No.	X-Surf (ft)	Y-Surf (ft)
-----------	-------------	-------------

556

1	330.374	1378.773
---	---------	----------

557

2	366.789	1370.263
---	---------	----------

558

3	541.176	1415.809
---	---------	----------

559

4	572.918	1460.725
---	---------	----------

560

5	605.344	1501.000
---	---------	----------

561

Factor of Safety

\*\*\* 1.596 \*\*\*

562

563

564

565

Failure Surface Specified By 5 Coordinate Points

566

567

576

577

Point No.	X-Surf (ft)	Y-Surf (ft)
-----------	-------------	-------------

578

579

580

1	330.374	1378.773
---	---------	----------

581

2	366.789	1370.263
---	---------	----------

582

3	541.176	1415.809
---	---------	----------

583

4	572.918	1460.725
---	---------	----------

584

5	605.344	1501.000
---	---------	----------

585

586

587

Factor of Safety

\*\*\* 1.596 \*\*\*

588

589

590

591

592 1

593

Failure Surface Specified By 5 Coordinate Points

594

595

596

Point No.	X-Surf (ft)	Y-Surf (ft)
-----------	-------------	-------------

597

598

599

1	330.374	1378.773
---	---------	----------

600

2	366.789	1370.263
---	---------	----------

601

3	541.176	1415.809
---	---------	----------

602

4	572.918	1460.725
---	---------	----------

603

5	605.344	1501.000
---	---------	----------

604

605

606

Factor of Safety

\*\*\* 1.596 \*\*\*

607

608

609

610

611

612

Failure Surface Specified By 6 Coordinate Points

613

614

615

Point No.	X-Surf (ft)	Y-Surf (ft)
-----------	-------------	-------------

616

617

618

1	308.772	1377.000
---	---------	----------

619

2	341.601	1362.123
---	---------	----------

620

3	541.498	1401.332
---	---------	----------

621

4	580.386	1440.225
---	---------	----------

622

5	619.259	1479.134
---	---------	----------

623

6	632.597	1499.328
---	---------	----------

624

625

626

Factor of Safety

\*\*\* 1.611 \*\*\*

627

628

629

630

631

632

633

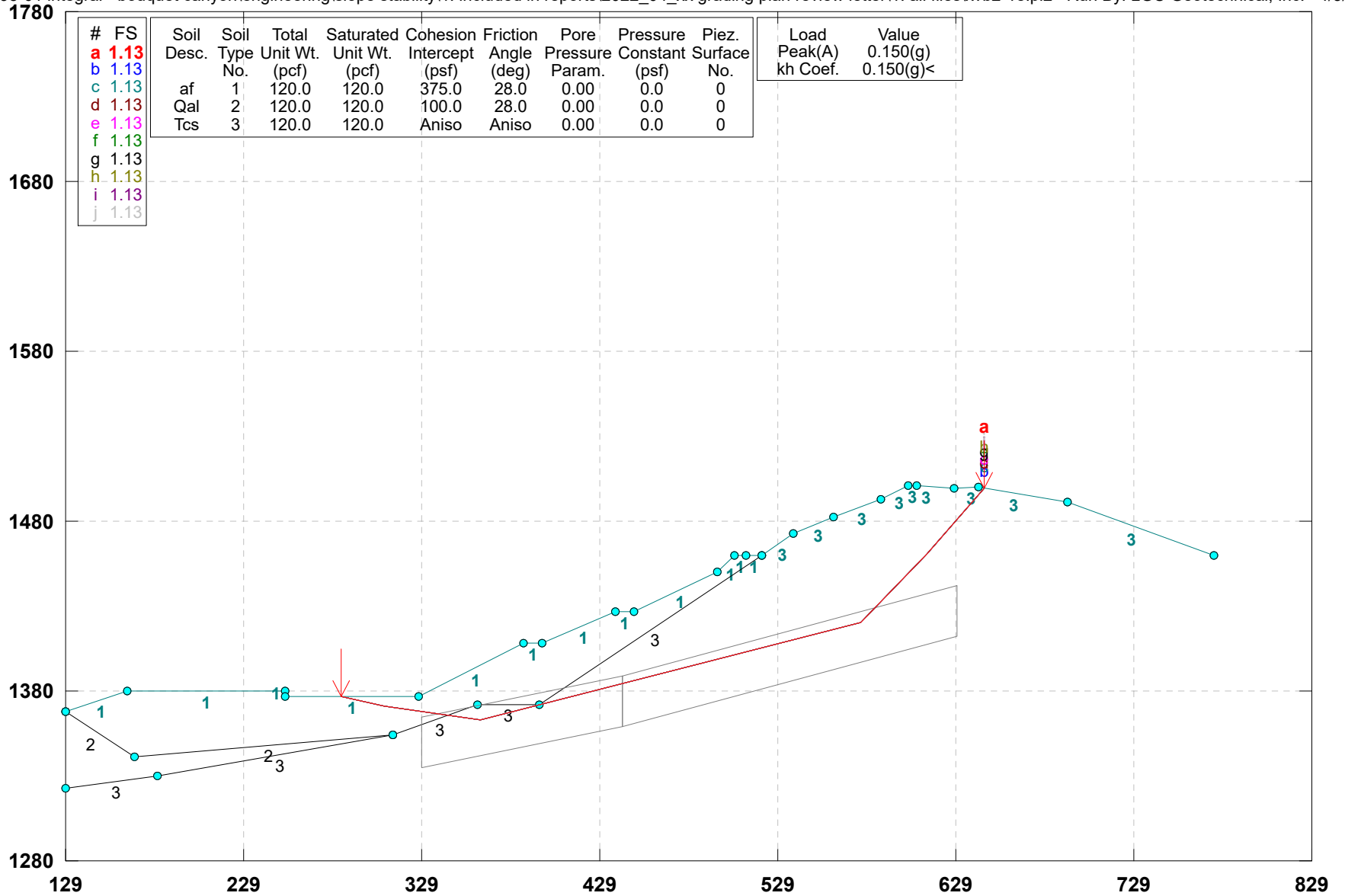
634

\*\*\*\* END OF GSTABL7 OUTPUT \*\*\*\*

635

# Bouquet Canyon/21095-01/Section V-V' Seismic

z:\2021\21095-01 integral - bouquet canyon\engineering\slope stability\1. included in reports\2022\_04\_xx grading plan review letter\1. all files\svb2-1e.pl2 Run By: LGC Geotechnical, Inc. 4/5/2022 10:04



GSTABL7 v.2 FSmin=1.13

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

```

1          *** GSTABL7 ***
2
3          ** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
4
5          ** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
6          (All Rights Reserved-Unauthorized Use Prohibited)
7
8
9
10         *****
11         **
12         SLOPE STABILITY ANALYSIS SYSTEM
13         Modified Bishop, Simplified Janbu, or GLE Method of Slices.
14         (Includes Spencer & Morgenstern-Price Type Analysis)
15         Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
16         Nonlinear Undrained Shear Strength, Curved Phi Envelope,
17         Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
18         Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
19
20         *****
21         **
22
23         Analysis Run Date:      4/5/2022
24         Time of Run:           10:04AM
25         Run By:                LGC Geotechnical,
26         Inc.
27
28
29         Input Data Filename:    Z:\2021\21095-01 Integral - Bouquet
30         Canyon\Engineering\slope stability\Sec
31         V-V'\2022_04_05\xvb2-1e.in
32
33         Output Filename:       Z:\2021\21095-01 Integral - Bouquet
34         Canyon\Engineering\slope stability\Sec
35         V-V'\2022_04_05\xvb2-1e.OUT
36
37         Unit System:           English
38
39         Plotted Output Filename: Z:\2021\21095-01 Integral - Bouquet
40         Canyon\Engineering\slope stability\Sec
41         V-V'\2022_04_05\xvb2-1e.PLT
42
43
44         PROBLEM DESCRIPTION:   Bouquet Canyon/21095-01/Section V-V'/
45         Seismic
46
47
48         BOUNDARY COORDINATES
49
50         21 Top Boundaries
51         28 Total Boundaries
52
53         Boundary   X-Left   Y-Left   X-Right   Y-Right   Soil Type
54         No.        (ft)    (ft)    (ft)     (ft)     Below Bnd

```

```

48         1      129.00  1368.00  164.00  1380.00  1
49         2      164.00  1380.00  252.00  1380.00  1
50         3      252.00  1380.00  252.10  1377.00  1
51         4      252.10  1377.00  327.00  1377.00  1
52         5      327.00  1377.00  386.00  1408.00  1
53         6      386.00  1408.00  397.00  1408.00  1
54         7      397.00  1408.00  438.00  1427.00  1
55         8      438.00  1427.00  448.00  1427.00  1
56         9      448.00  1427.00  495.00  1450.00  1
57        10      495.00  1450.00  505.00  1460.00  1
58        11      505.00  1460.00  511.00  1460.00  1
59        12      511.00  1460.00  520.00  1460.00  1
60        13      520.00  1460.00  538.00  1473.00  3
61        14      538.00  1473.00  560.00  1482.00  3
62        15      560.00  1482.00  587.00  1493.00  3
63        16      587.00  1493.00  602.00  1501.00  3
64        17      602.00  1501.00  607.00  1501.00  3
65        18      607.00  1501.00  628.00  1499.00  3
66        19      628.00  1499.00  642.00  1500.00  3
67        20      642.00  1500.00  692.00  1491.00  3
68        21      692.00  1491.00  774.00  1460.00  3
69        22      129.00  1368.00  168.00  1341.00  2
70        23      168.00  1341.00  313.00  1354.00  2
71        24      313.00  1354.00  360.00  1372.00  3
72        25      360.00  1372.00  395.00  1372.00  3
73        26      395.00  1372.00  520.00  1460.00  3
74        27      129.00  1323.00  181.00  1330.00  3
75        28      181.00  1330.00  313.00  1354.00  3
76
77         User Specified Y-Origin =      1280.00(ft)
78
79         Default X-Plus Value = 0.00(ft)
80
81         Default Y-Plus Value = 0.00(ft)
82
83         1
84
85         ISOTROPIC SOIL PARAMETERS
86
87         3 Type(s) of Soil
88
89
90         Soil Total Saturated Cohesion Friction Pore Pressure Piez.
91         Type Unit Wt. Unit Wt. Intercept Angle Pressure Constant Surface
92         No. (pcf) (pcf) (psf) (deg) Param. (psf) No.
93
94         1 120.0 120.0 375.0 28.0 0.00 0.0 0
95         2 120.0 120.0 100.0 28.0 0.00 0.0 0
96         3 120.0 120.0 250.0 32.0 0.00 0.0 0
97
98
99
100
101         ANISOTROPIC STRENGTH PARAMETERS
102         1 soil type(s)
103
104
105         Soil Type 3 Is Anisotropic
106
107         Number Of Direction Ranges Specified = 3
108
109
110         Direction Counterclockwise Cohesion Friction
111         Range Direction Limit Intercept Angle
112         No. (deg) (psf) (deg)
113

```

114 1 10.0 250.00 32.00  
 115 2 15.0 150.00 25.00  
 116 3 90.0 250.00 32.00  
 117  
 118 ANISOTROPIC SOIL NOTES:  
 119 (1) An input value of 0.01 for C and/or Phi will cause Aniso  
 120 C and/or Phi to be ignored in that range.  
 121 (2) An input value of 0.02 for Phi will set both Phi and  
 122 C equal to zero, with no water weight in the tension crack.  
 123 (3) An input value of 0.03 for Phi will set both Phi and  
 124 C equal to zero, with water weight in the tension crack.  
 125  
 126 Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)  
 127 Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)  
 128 Specified Vertical Earthquake Coefficient (kv) = 0.000(g)  
 129  
 130 Specified Seismic Pore-Pressure Factor = 0.000  
 131  
 132 Janbus Empirical Coef is being used for the case of c & phi both > 0  
 133  
 134  
 135  
 136  
 137 A Critical Failure Surface Searching Method, Using A Random  
 138 Technique For Generating Sliding Block Surfaces, Has Been  
 139 Specified.  
 140  
 141  
 142 4999 Trial Surfaces Have Been Generated.  
 143  
 144  
 145 2 Boxes Specified For Generation Of Central Block Base  
 146  
 147  
 148 Length Of Line Segments For Active And Passive Portions Of  
 149 Sliding Block Is 55.0  
 150  
 151  
 152  
 153  
 154  
 155  
 156  
 157  
 158  
 159  
 160  
 161  
 162  
 163  
 164  
 165  
 166  
 167  
 168  
 169  
 170  
 171  
 172  
 173  
 174  
 175  
 176  
 177  
 178  
 179

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	329.00	1350.00	442.00	1374.00	30.00
2	442.10	1374.00	630.00	1427.00	30.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.

\* \* Safety Factors Are Calculated By The Simplified Janbu Method \* \*

Total Number of Trial Surfaces Attempted = 4999  
 Number of Trial Surfaces With Valid FS = 4999

Statistical Data On All Valid FS Values:  
 FS Max = 7.731 FS Min = 1.125 FS Ave = 1.693  
 Standard Deviation = 0.567 Coefficient of Variation = 33.49 %

Failure Surface Specified By 6 Coordinate Points

180  
 181  
 182  
 183  
 184  
 185  
 186  
 187  
 188  
 189  
 190  
 191  
 192  
 193  
 194  
 195  
 196  
 197  
 198  
 199  
 200  
 201  
 202  
 203  
 204  
 205  
 206  
 207  
 208  
 209  
 210  
 211  
 212  
 213  
 214  
 215  
 216  
 217  
 218  
 219  
 220  
 221  
 222  
 223  
 224  
 225  
 226  
 227  
 228  
 229  
 230  
 231  
 232  
 233  
 234  
 235  
 236  
 237  
 238  
 239  
 240  
 241  
 242  
 243  
 244  
 245

Point No.	X-Surf (ft)	Y-Surf (ft)
1	284.115	1377.000
2	307.794	1371.329
3	362.209	1363.328
4	575.398	1420.086
5	612.835	1460.378
6	645.327	1499.401

Factor of Safety  
 \*\*\* 1.125 \*\*\*

Individual data on the 25 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	23.7	8056.3	0.0	0.0	0.	0.	1208.5	0.0	0.0
2	19.2	16323.2	0.0	0.0	0.	0.	2448.5	0.0	0.0
3	17.3	29593.8	0.0	0.0	0.	0.	4439.1	0.0	0.0
4	15.7	47983.6	0.0	0.0	0.	0.	7197.5	0.0	0.0
5	2.2	8330.8	0.0	0.0	0.	0.	1249.6	0.0	0.0
6	23.8	100649.1	0.0	0.0	0.	0.	15097.4	0.0	0.0
7	8.8	39167.2	0.0	0.0	0.	0.	5875.1	0.0	0.0
8	0.4	1517.2	0.0	0.0	0.	0.	227.6	0.0	0.0
9	1.9	7988.8	0.0	0.0	0.	0.	1198.3	0.0	0.0
10	41.0	194102.2	0.0	0.0	0.	0.	29115.3	0.0	0.0
11	10.0	50595.3	0.0	0.0	0.	0.	7589.3	0.0	0.0
12	47.0	259864.1	0.0	0.0	0.	0.	38979.6	0.0	0.0
13	10.0	65985.2	0.0	0.0	0.	0.	9897.8	0.0	0.0
14	6.0	41657.6	0.0	0.0	0.	0.	6248.6	0.0	0.0
15	9.0	60330.0	0.0	0.0	0.	0.	9049.5	0.0	0.0
16	18.0	126936.6	0.0	0.0	0.	0.	19040.5	0.0	0.0
17	22.0	170127.9	0.0	0.0	0.	0.	25519.2	0.0	0.0
18	15.4	123989.8	0.0	0.0	0.	0.	18598.5	0.0	0.0
19	11.6	89528.4	0.0	0.0	0.	0.	13429.3	0.0	0.0
20	15.0	101439.8	0.0	0.0	0.	0.	15216.0	0.0	0.0
21	5.0	29755.5	0.0	0.0	0.	0.	4463.3	0.0	0.0
22	5.8	30447.5	0.0	0.0	0.	0.	4567.1	0.0	0.0
23	15.2	55025.8	0.0	0.0	0.	0.	8253.9	0.0	0.0
24	14.0	21002.7	0.0	0.0	0.	0.	3150.4	0.0	0.0
25	3.3	917.2	0.0	0.0	0.	0.	137.6	0.0	0.0

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	284.115	1377.000
2	307.794	1371.329
3	362.209	1363.328
4	575.398	1420.086
5	612.835	1460.378
6	645.327	1499.401



246 Factor of Safety  
247 \*\*\* 1.125 \*\*\*

1

252 Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	284.115	1377.000
2	307.794	1371.329
3	362.209	1363.328
4	575.398	1420.086
5	612.835	1460.378
6	645.327	1499.401

267 Factor of Safety  
268 \*\*\* 1.125 \*\*\*

273 Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	284.115	1377.000
2	307.794	1371.329
3	362.209	1363.328
4	575.398	1420.086
5	612.835	1460.378
6	645.327	1499.401

288 Factor of Safety  
289 \*\*\* 1.125 \*\*\*

1

294 Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	284.115	1377.000
2	307.794	1371.329
3	362.209	1363.328
4	575.398	1420.086
5	612.835	1460.378
6	645.327	1499.401

308 Factor of Safety  
309 \*\*\* 1.125 \*\*\*

310  
311

312  
313

314 Failure Surface Specified By 6 Coordinate Points

315  
316

Point No.	X-Surf (ft)	Y-Surf (ft)
1	284.115	1377.000
2	307.794	1371.329
3	362.209	1363.328
4	575.398	1420.086
5	612.835	1460.378
6	645.327	1499.401

328 Factor of Safety  
329 \*\*\* 1.125 \*\*\*

330  
331

332  
333

1

334 Failure Surface Specified By 6 Coordinate Points

335  
336

337  
338

Point No.	X-Surf (ft)	Y-Surf (ft)
1	284.115	1377.000
2	307.794	1371.329
3	362.209	1363.328
4	575.398	1420.086
5	612.835	1460.378
6	645.327	1499.401

349 Factor of Safety  
350 \*\*\* 1.125 \*\*\*

351  
352

353  
354

355 Failure Surface Specified By 6 Coordinate Points

356  
357

358  
359

Point No.	X-Surf (ft)	Y-Surf (ft)
1	284.115	1377.000
2	307.794	1371.329
3	362.209	1363.328
4	575.398	1420.086
5	612.835	1460.378
6	645.327	1499.401

369 Factor of Safety  
370 \*\*\* 1.125 \*\*\*

371  
372

373  
374

1

375 Failure Surface Specified By 6 Coordinate Points

376  
377

378  
379  
380  
381  
382  
383  
384  
385  
386  
387  
388  
389  
390  
391  
392  
393  
394  
395  
396  
397  
398  
399  
400  
401  
402  
403  
404  
405  
406  
407  
408  
409  
410  
411  
412  
413  
414  
415  
416  
417  
418

Point No.	X-Surf (ft)	Y-Surf (ft)
1	284.115	1377.000
2	307.794	1371.329
3	362.209	1363.328
4	575.398	1420.086
5	612.835	1460.378
6	645.327	1499.401

Factor of Safety  
\*\*\* 1.125 \*\*\*

Failure Surface Specified By 6 Coordinate Points

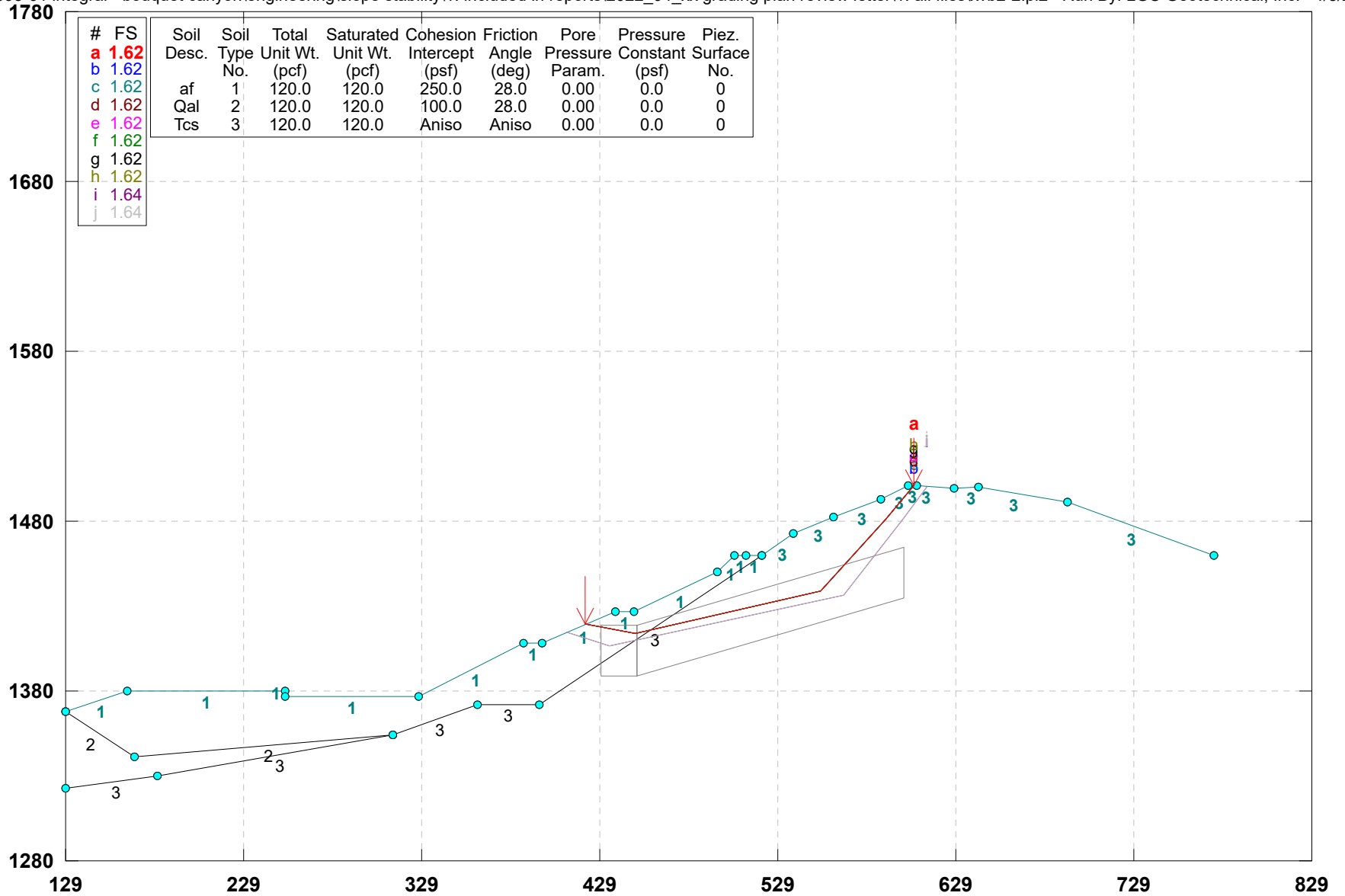
Point No.	X-Surf (ft)	Y-Surf (ft)
1	284.115	1377.000
2	307.794	1371.329
3	362.209	1363.328
4	575.398	1420.086
5	612.835	1460.378
6	645.327	1499.401

Factor of Safety  
\*\*\* 1.125 \*\*\*

\*\*\*\* END OF GSTABL7 OUTPUT \*\*\*\*

# Bouquet Canyon/21095-01/Section V-V' Static

z:\2021\21095-01 integral - bouquet canyon\engineering\slope stability\1. included in reports\2022\_04\_xx grading plan review letter\1. all files\svb2-2.pl2 Run By: LGC Geotechnical, Inc. 4/5/2022 10:05



GSTABL7 v.2 FSmin=1.62

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

```

1          *** GSTABL7 ***
2
3          ** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
4
5          ** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
6          (All Rights Reserved-Unauthorized Use Prohibited)
7
8
9
10         *****
11         **
12         SLOPE STABILITY ANALYSIS SYSTEM
13         Modified Bishop, Simplified Janbu, or GLE Method of Slices.
14         (Includes Spencer & Morgenstern-Price Type Analysis)
15         Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
16         Nonlinear Undrained Shear Strength, Curved Phi Envelope,
17         Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
18         Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
19
20         *****
21         **
22
23         Analysis Run Date:      4/5/2022
24         Time of Run:           10:05AM
25         Run By:                LGC Geotechnical,
26         Inc.
27
28
29         Input Data Filename:    Z:\2021\21095-01 Integral - Bouquet
30         Canyon\Engineering\slope stability\Sec
31         V-V'\2022_04_05\xvb2-2.in
32
33         Output Filename:       Z:\2021\21095-01 Integral - Bouquet
34         Canyon\Engineering\slope stability\Sec
35         V-V'\2022_04_05\xvb2-2.OUT
36
37         Unit System:           English
38
39         Plotted Output Filename: Z:\2021\21095-01 Integral - Bouquet
40         Canyon\Engineering\slope stability\Sec
41         V-V'\2022_04_05\xvb2-2.PLT
42
43
44         PROBLEM DESCRIPTION:   Bouquet Canyon/21095-01/Section V-V'/
45         Static
46
47
48         BOUNDARY COORDINATES
49
50         21 Top Boundaries
51         28 Total Boundaries
52
53         Boundary   X-Left   Y-Left   X-Right   Y-Right   Soil Type
54         No.        (ft)    (ft)    (ft)     (ft)     Below Bnd

```

```

48         1      129.00  1368.00  164.00  1380.00  1
49         2      164.00  1380.00  252.00  1380.00  1
50         3      252.00  1380.00  252.10  1377.00  1
51         4      252.10  1377.00  327.00  1377.00  1
52         5      327.00  1377.00  386.00  1408.00  1
53         6      386.00  1408.00  397.00  1408.00  1
54         7      397.00  1408.00  438.00  1427.00  1
55         8      438.00  1427.00  448.00  1427.00  1
56         9      448.00  1427.00  495.00  1450.00  1
57        10      495.00  1450.00  505.00  1460.00  1
58        11      505.00  1460.00  511.00  1460.00  1
59        12      511.00  1460.00  520.00  1460.00  1
60        13      520.00  1460.00  538.00  1473.00  3
61        14      538.00  1473.00  560.00  1482.00  3
62        15      560.00  1482.00  587.00  1493.00  3
63        16      587.00  1493.00  602.00  1501.00  3
64        17      602.00  1501.00  607.00  1501.00  3
65        18      607.00  1501.00  628.00  1499.00  3
66        19      628.00  1499.00  642.00  1500.00  3
67        20      642.00  1500.00  692.00  1491.00  3
68        21      692.00  1491.00  774.00  1460.00  3
69        22      129.00  1368.00  168.00  1341.00  2
70        23      168.00  1341.00  313.00  1354.00  2
71        24      313.00  1354.00  360.00  1372.00  3
72        25      360.00  1372.00  395.00  1372.00  3
73        26      395.00  1372.00  520.00  1460.00  3
74        27      129.00  1323.00  181.00  1330.00  3
75        28      181.00  1330.00  313.00  1354.00  3
76
77         User Specified Y-Origin =      1280.00(ft)
78
79         Default X-Plus Value = 0.00(ft)
80
81         Default Y-Plus Value = 0.00(ft)
82
83         1
84
85         ISOTROPIC SOIL PARAMETERS
86
87         3 Type(s) of Soil
88
89
90         Soil Total Saturated Cohesion Friction Pore Pressure Piez.
91         Type Unit Wt. Unit Wt. Intercept Angle Pressure Constant Surface
92         No. (pcf) (pcf) (psf) (deg) Param. (psf) No.
93
94         1 120.0 120.0 250.0 28.0 0.00 0.0 0
95         2 120.0 120.0 100.0 28.0 0.00 0.0 0
96         3 120.0 120.0 250.0 32.0 0.00 0.0 0
97
98
99
100
101         ANISOTROPIC STRENGTH PARAMETERS
102         1 soil type(s)
103
104
105         Soil Type 3 Is Anisotropic
106
107         Number Of Direction Ranges Specified = 3
108
109
110         Direction Counterclockwise Cohesion Friction
111         Range Direction Limit Intercept Angle
112         No. (deg) (psf) (deg)
113

```



114	1	10.0	250.00	32.00
115	2	15.0	150.00	25.00
116	3	90.0	250.00	32.00

ANISOTROPIC SOIL NOTES:

- (1) An input value of 0.01 for C and/or Phi will cause Aniso C and/or Phi to be ignored in that range.
- (2) An input value of 0.02 for Phi will set both Phi and C equal to zero, with no water weight in the tension crack.
- (3) An input value of 0.03 for Phi will set both Phi and C equal to zero, with water weight in the tension crack.

Janbus Empirical Coef is being used for the case of c & phi both > 0

1

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.

4999 Trial Surfaces Have Been Generated.

2 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 55.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	430.00	1404.00	450.00	1404.00	30.00
2	450.10	1404.00	600.00	1450.00	30.00

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	426.81	1421.81
2	446.49	1403.05
3	487.86	1402.67
4	488.22	1446.68

Factor of Safety for the Preceding Surface is Between48.909 and48.901

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	426.81	1421.81
2	446.49	1403.05
3	487.86	1402.67
4	488.22	1446.68

Factor of Safety for the Preceding Surface is Between48.909 and48.901

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	426.81	1421.81
2	446.49	1403.05
3	487.86	1402.67
4	488.22	1446.68

Factor of Safety for the Preceding Surface is Between48.909 and48.901

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	426.81	1421.81
2	446.49	1403.05
3	487.86	1402.67
4	488.22	1446.68

Factor of Safety for the Preceding Surface is Between48.909 and48.901

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	426.81	1421.81
2	446.49	1403.05

246 3 487.86 1402.67  
 247 4 488.22 1446.68  
 248  
 249  
 250 Factor of Safety for the Preceding Surface is Between 48.909 and 48.901  
 251  
 252  
 253 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 254  
 255  
 256  
 257 The Trial Failure Surface In Question Is Defined  
 258 By The Following 4 Coordinate Points  
 259  
 260  
 261 Point X-Surf Y-Surf  
 262 No. (ft) (ft)  
 263  
 264 1 426.81 1421.81  
 265 2 446.49 1403.05  
 266 3 487.86 1402.67  
 267 4 488.22 1446.68  
 268  
 269  
 270 Factor of Safety for the Preceding Surface is Between 48.909 and 48.901  
 271  
 272  
 273 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 274  
 275  
 276  
 277 The Trial Failure Surface In Question Is Defined  
 278 By The Following 4 Coordinate Points  
 279  
 280  
 281 Point X-Surf Y-Surf  
 282 No. (ft) (ft)  
 283  
 284 1 426.81 1421.81  
 285 2 446.49 1403.05  
 286 3 487.86 1402.67  
 287 4 488.22 1446.68  
 288  
 289  
 290 Factor of Safety for the Preceding Surface is Between 48.909 and 48.901  
 291  
 292  
 293 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 294  
 295  
 296  
 297 The Trial Failure Surface In Question Is Defined  
 298 By The Following 4 Coordinate Points  
 299  
 300  
 301 Point X-Surf Y-Surf  
 302 No. (ft) (ft)  
 303  
 304 1 426.81 1421.81  
 305 2 446.49 1403.05  
 306 3 487.86 1402.67  
 307 4 488.22 1446.68  
 308  
 309  
 310 Factor of Safety for the Preceding Surface is Between 48.909 and 48.901  
 311

312  
 313 Following Are Displayed The Ten Most Critical Of The Trial  
 314 Failure Surfaces Evaluated. They Are  
 315 Ordered - Most Critical First.  
 316  
 317  
 318 \* \* Safety Factors Are Calculated By The Simplified Janbu Method \* \*  
 319  
 320  
 321  
 322 Total Number of Trial Surfaces Attempted = 4999  
 323  
 324 WARNING! The Factor of Safety Calculation for one or More Trial Surfaces  
 325 Did Not Converge in 20 Iterations.  
 326  
 327  
 328 Number of Trial Surfaces with Non-Converged FS = 8  
 329  
 330 Number of Trial Surfaces With Valid FS = 4991  
 331  
 332  
 333 Percentage of Trial Surfaces With Non-Valid FS Solutions  
 334 of the Total Attempted = 0.2 %  
 335  
 336 Statistical Data On All Valid FS Values:  
 337 FS Max = 28.257 FS Min = 1.621 FS Ave = 2.714  
 338 Standard Deviation = 1.686 Coefficient of Variation = 62.12 %  
 339  
 340  
 341 Failure Surface Specified By 5 Coordinate Points  
 342  
 343  
 344 Point X-Surf Y-Surf  
 345 No. (ft) (ft)  
 346  
 347 1 420.945 1419.096  
 348 2 449.374 1413.761  
 349 3 553.367 1438.991  
 350 4 589.159 1480.751  
 351 5 605.510 1501.000  
 352  
 353  
 354 Factor of Safety  
 355 \*\*\* 1.621 \*\*\*  
 356  
 357  
 358  
 359  
 360 Individual data on the 15 slices  
 361  
 362  
 363  
 364  
 365  
 366  
 367  
 368  
 369  
 370  
 371  
 372  
 373  
 374  
 375  
 376  
 377

Slice No.	Width (ft)	Weight (lbs)	Water	Water	Tie	Tie	Earthquake		
			Force Top (lbs)	Force Bot (lbs)	Force Norm (lbs)	Force Tan (lbs)	Force Hor (lbs)	Force Ver (lbs)	Surcharge Load (lbs)
1	17.1	11363.4	0.0	0.0	0.	0.	0.0	0.0	0.0
2	10.0	14451.1	0.0	0.0	0.	0.	0.0	0.0	0.0
3	1.4	2216.6	0.0	0.0	0.	0.	0.0	0.0	0.0
4	7.5	13441.9	0.0	0.0	0.	0.	0.0	0.0	0.0
5	38.1	93543.3	0.0	0.0	0.	0.	0.0	0.0	0.0
6	10.0	34747.6	0.0	0.0	0.	0.	0.0	0.0	0.0
7	6.0	23051.1	0.0	0.0	0.	0.	0.0	0.0	0.0
8	9.0	32611.5	0.0	0.0	0.	0.	0.0	0.0	0.0
9	18.0	72188.6	0.0	0.0	0.	0.	0.0	0.0	0.0
10	15.4	71946.1	0.0	0.0	0.	0.	0.0	0.0	0.0

378 11 6.6 30074.9 0.0 0.0 0. 0. 0.0 0.0 0.0  
 379 12 27.0 81062.5 0.0 0.0 0. 0. 0.0 0.0 0.0  
 380 13 2.2 3649.9 0.0 0.0 0. 0. 0.0 0.0 0.0  
 381 14 12.8 13673.3 0.0 0.0 0. 0. 0.0 0.0 0.0  
 382 15 3.5 915.2 0.0 0.0 0. 0. 0.0 0.0 0.0

383  
 384 Failure Surface Specified By 5 Coordinate Points  
 385

Point No.	X-Surf (ft)	Y-Surf (ft)
1	420.945	1419.096
2	449.374	1413.761
3	553.367	1438.991
4	589.159	1480.751
5	605.510	1501.000

395  
 396  
 397 Factor of Safety  
 398 \*\*\* 1.621 \*\*\*  
 399

400  
 401  
 402 1  
 403 Failure Surface Specified By 5 Coordinate Points  
 404

Point No.	X-Surf (ft)	Y-Surf (ft)
1	420.945	1419.096
2	449.374	1413.761
3	553.367	1438.991
4	589.159	1480.751
5	605.510	1501.000

405  
 406  
 407  
 408  
 409  
 410  
 411  
 412  
 413  
 414  
 415  
 416  
 417 Factor of Safety  
 418 \*\*\* 1.621 \*\*\*  
 419

420  
 421  
 422  
 423 Failure Surface Specified By 5 Coordinate Points  
 424

Point No.	X-Surf (ft)	Y-Surf (ft)
1	420.945	1419.096
2	449.374	1413.761
3	553.367	1438.991
4	589.159	1480.751
5	605.510	1501.000

425  
 426  
 427  
 428  
 429  
 430  
 431  
 432  
 433  
 434  
 435  
 436  
 437 Factor of Safety  
 438 \*\*\* 1.621 \*\*\*  
 439

440  
 441 1  
 442  
 443 Failure Surface Specified By 5 Coordinate Points

444  
 445  
 446 Point X-Surf Y-Surf  
 447 No. (ft) (ft)  
 448  
 449 1 420.945 1419.096  
 450 2 449.374 1413.761  
 451 3 553.367 1438.991  
 452 4 589.159 1480.751  
 453 5 605.510 1501.000  
 454  
 455

456  
 457 Factor of Safety  
 458 \*\*\* 1.621 \*\*\*  
 459  
 460  
 461

462  
 463 Failure Surface Specified By 5 Coordinate Points  
 464

Point No.	X-Surf (ft)	Y-Surf (ft)
1	420.945	1419.096
2	449.374	1413.761
3	553.367	1438.991
4	589.159	1480.751
5	605.510	1501.000

465  
 466  
 467  
 468  
 469  
 470  
 471  
 472  
 473  
 474  
 475  
 476  
 477  
 478  
 479  
 480  
 481  
 482  
 483  
 484  
 485  
 486  
 487  
 488  
 489  
 490  
 491  
 492  
 493  
 494  
 495  
 496  
 497  
 498  
 499  
 500  
 501  
 502  
 503  
 504  
 505  
 506  
 507  
 508  
 509

504  
 505  
 506  
 507  
 508  
 509  
 510  
 511  
 512  
 513  
 514  
 515  
 516  
 517  
 518  
 519  
 520  
 521  
 522  
 523  
 524  
 525  
 526  
 527  
 528  
 529  
 530  
 531  
 532  
 533  
 534  
 535  
 536  
 537  
 538  
 539  
 540  
 541  
 542  
 543  
 544  
 545  
 546  
 547  
 548  
 549  
 550  
 551  
 552  
 553  
 554  
 555  
 556  
 557  
 558  
 559  
 560  
 561  
 562  
 563  
 564  
 565  
 566  
 567  
 568  
 569  
 570  
 571  
 572  
 573  
 574  
 575  
 576  
 577  
 578  
 579  
 580  
 581  
 582  
 583  
 584  
 585  
 586  
 587  
 588  
 589  
 590  
 591  
 592  
 593  
 594  
 595  
 596  
 597  
 598  
 599  
 600  
 601  
 602  
 603  
 604  
 605  
 606  
 607  
 608  
 609  
 610  
 611  
 612  
 613  
 614  
 615  
 616  
 617  
 618  
 619  
 620  
 621  
 622  
 623  
 624  
 625  
 626  
 627  
 628  
 629  
 630  
 631  
 632  
 633  
 634  
 635  
 636  
 637  
 638  
 639  
 640  
 641  
 642  
 643  
 644  
 645  
 646  
 647  
 648  
 649  
 650  
 651  
 652  
 653  
 654  
 655  
 656  
 657  
 658  
 659  
 660  
 661  
 662  
 663  
 664  
 665  
 666  
 667  
 668  
 669  
 670  
 671  
 672  
 673  
 674  
 675  
 676  
 677  
 678  
 679  
 680  
 681  
 682  
 683  
 684  
 685  
 686  
 687  
 688  
 689  
 690  
 691  
 692  
 693  
 694  
 695  
 696  
 697  
 698  
 699  
 700  
 701  
 702  
 703  
 704  
 705  
 706  
 707  
 708  
 709  
 710  
 711  
 712  
 713  
 714  
 715  
 716  
 717  
 718  
 719  
 720  
 721  
 722  
 723  
 724  
 725  
 726  
 727  
 728  
 729  
 730  
 731  
 732  
 733  
 734  
 735  
 736  
 737  
 738  
 739  
 740  
 741  
 742  
 743  
 744  
 745  
 746  
 747  
 748  
 749  
 750  
 751  
 752  
 753  
 754  
 755  
 756  
 757  
 758  
 759  
 760  
 761  
 762  
 763  
 764  
 765  
 766  
 767  
 768  
 769  
 770  
 771  
 772  
 773  
 774  
 775  
 776  
 777  
 778  
 779  
 780  
 781  
 782  
 783  
 784  
 785  
 786  
 787  
 788  
 789  
 790  
 791  
 792  
 793  
 794  
 795  
 796  
 797  
 798  
 799  
 800

504  
 505  
 506  
 507  
 508  
 509  
 510  
 511  
 512  
 513  
 514  
 515  
 516  
 517  
 518  
 519  
 520  
 521  
 522  
 523  
 524  
 525  
 526  
 527  
 528  
 529  
 530  
 531  
 532  
 533  
 534  
 535  
 536  
 537  
 538  
 539  
 540  
 541  
 542  
 543  
 544  
 545  
 546  
 547  
 548  
 549  
 550  
 551  
 552  
 553  
 554  
 555  
 556  
 557  
 558  
 559  
 560  
 561  
 562  
 563  
 564  
 565  
 566  
 567  
 568  
 569  
 570  
 571  
 572  
 573  
 574  
 575  
 576  
 577  
 578  
 579  
 580  
 581  
 582  
 583  
 584  
 585  
 586  
 587  
 588  
 589  
 590  
 591  
 592  
 593  
 594  
 595  
 596  
 597  
 598  
 599  
 600  
 601  
 602  
 603  
 604  
 605  
 606  
 607  
 608  
 609  
 610  
 611  
 612  
 613  
 614  
 615  
 616  
 617  
 618  
 619  
 620  
 621  
 622  
 623  
 624  
 625  
 626  
 627  
 628  
 629  
 630  
 631  
 632  
 633  
 634  
 635  
 636  
 637  
 638  
 639  
 640  
 641  
 642  
 643  
 644  
 645  
 646  
 647  
 648  
 649  
 650  
 651  
 652  
 653  
 654  
 655  
 656  
 657  
 658  
 659  
 660  
 661  
 662  
 663  
 664  
 665  
 666  
 667  
 668  
 669  
 670  
 671  
 672  
 673  
 674  
 675  
 676  
 677  
 678  
 679  
 680  
 681  
 682  
 683  
 684  
 685  
 686  
 687  
 688  
 689  
 690  
 691  
 692  
 693  
 694  
 695  
 696  
 697  
 698  
 699  
 700

604  
 605  
 606  
 607  
 608  
 609  
 610  
 611  
 612  
 613  
 614  
 615  
 616  
 617  
 618  
 619  
 620  
 621  
 622  
 623  
 624  
 625  
 626  
 627  
 628  
 629  
 630  
 631  
 632  
 633  
 634  
 635  
 636  
 637  
 638  
 639  
 640  
 641  
 642  
 643  
 644  
 645  
 646  
 647  
 648  
 649  
 650  
 651  
 652  
 653  
 654  
 655  
 656  
 657  
 658  
 659  
 660  
 661  
 662  
 663  
 664  
 665  
 666  
 667  
 668  
 669  
 670  
 671  
 672  
 673  
 674  
 675  
 676  
 677  
 678  
 679  
 680  
 681  
 682  
 683  
 684  
 685  
 686  
 687  
 688  
 689  
 690  
 691  
 692  
 693  
 694  
 695  
 696  
 697  
 698  
 699  
 700

Point No.	X-Surf (ft)	Y-Surf (ft)
1	420.945	1419.096
2	449.374	1413.761
3	553.367	1438.991

510 4 589.159 1480.751  
511 5 605.510 1501.000  
512

Factor of Safety  
\*\*\* 1.621 \*\*\*

1

Failure Surface Specified By 5 Coordinate Points

523  
524 Point X-Surf Y-Surf  
525 No. (ft) (ft)  
526  
527 1 410.622 1414.313  
528 2 434.408 1406.693  
529 3 566.212 1436.744  
530 4 598.989 1480.910  
531 5 613.116 1500.417  
532

Factor of Safety  
\*\*\* 1.643 \*\*\*

Failure Surface Specified By 5 Coordinate Points

542  
543 Point X-Surf Y-Surf  
544 No. (ft) (ft)  
545  
546 1 410.622 1414.313  
547 2 434.408 1406.693  
548 3 566.212 1436.744  
549 4 598.989 1480.910  
550 5 613.116 1500.417  
551

Factor of Safety  
\*\*\* 1.643 \*\*\*

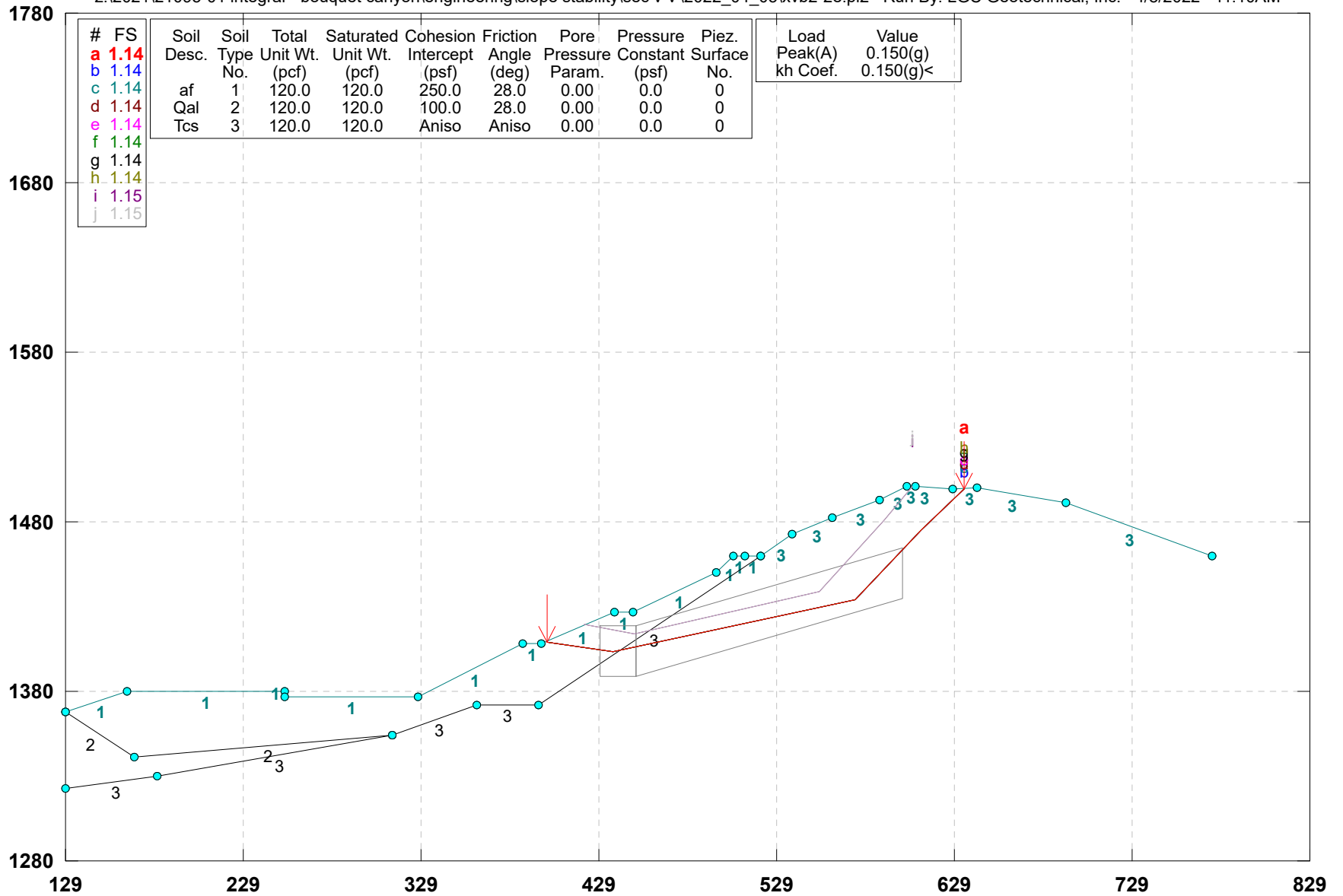
\*\*\*\* END OF GSTABL7 OUTPUT \*\*\*\*

561



# Bouquet Canyon/21095-01/Section V-V' Seismic

z:\2021\21095-01 integral - bouquet canyon\engineering\slope stability\sec v-v'\2022\_04\_05\svb2-2e.pl2 Run By: LGC Geotechnical, Inc. 4/8/2022 11:10AM



GSTABL7 v.2 FSmin=1.14

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

```

1          *** GSTABL7 ***
2
3          ** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
4
5          ** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
6          (All Rights Reserved-Unauthorized Use Prohibited)
7
8
9
10         *****
11         **
12         SLOPE STABILITY ANALYSIS SYSTEM
13         Modified Bishop, Simplified Janbu, or GLE Method of Slices.
14         (Includes Spencer & Morgenstern-Price Type Analysis)
15         Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
16         Nonlinear Undrained Shear Strength, Curved Phi Envelope,
17         Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
18         Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
19
20         *****
21         **
22
23         Analysis Run Date:      4/8/2022
24         Time of Run:           11:10AM
25         Run By:                LGC Geotechnical,
26         Inc.
27
28
29         Input Data Filename:    Z:\2021\21095-01 Integral - Bouquet
30         Canyon\Engineering\slope stability\Sec
31         V-V'\2022_04_05\xvb2-2e.in
32
33         Output Filename:       Z:\2021\21095-01 Integral - Bouquet
34         Canyon\Engineering\slope stability\Sec
35         V-V'\2022_04_05\xvb2-2e.OUT
36
37         Unit System:           English
38
39         Plotted Output Filename: Z:\2021\21095-01 Integral - Bouquet
40         Canyon\Engineering\slope stability\Sec
41         V-V'\2022_04_05\xvb2-2e.PLT
42
43
44         PROBLEM DESCRIPTION:   Bouquet Canyon/21095-01/Section V-V'/
45         Seismic
46
47
48         BOUNDARY COORDINATES
49
50         21 Top Boundaries
51         28 Total Boundaries
52
53         Boundary   X-Left   Y-Left   X-Right   Y-Right   Soil Type
54         No.        (ft)    (ft)    (ft)     (ft)     Below Bnd

```

```

48         1      129.00  1368.00  164.00  1380.00  1
49         2      164.00  1380.00  252.00  1380.00  1
50         3      252.00  1380.00  252.10  1377.00  1
51         4      252.10  1377.00  327.00  1377.00  1
52         5      327.00  1377.00  386.00  1408.00  1
53         6      386.00  1408.00  397.00  1408.00  1
54         7      397.00  1408.00  438.00  1427.00  1
55         8      438.00  1427.00  448.00  1427.00  1
56         9      448.00  1427.00  495.00  1450.00  1
57        10      495.00  1450.00  505.00  1460.00  1
58        11      505.00  1460.00  511.00  1460.00  1
59        12      511.00  1460.00  520.00  1460.00  1
60        13      520.00  1460.00  538.00  1473.00  3
61        14      538.00  1473.00  560.00  1482.00  3
62        15      560.00  1482.00  587.00  1493.00  3
63        16      587.00  1493.00  602.00  1501.00  3
64        17      602.00  1501.00  607.00  1501.00  3
65        18      607.00  1501.00  628.00  1499.00  3
66        19      628.00  1499.00  642.00  1500.00  3
67        20      642.00  1500.00  692.00  1491.00  3
68        21      692.00  1491.00  774.00  1460.00  3
69        22      129.00  1368.00  168.00  1341.00  2
70        23      168.00  1341.00  313.00  1354.00  2
71        24      313.00  1354.00  360.00  1372.00  3
72        25      360.00  1372.00  395.00  1372.00  3
73        26      395.00  1372.00  520.00  1460.00  3
74        27      129.00  1323.00  181.00  1330.00  3
75        28      181.00  1330.00  313.00  1354.00  3
76
77         User Specified Y-Origin =      1280.00(ft)
78
79         Default X-Plus Value = 0.00(ft)
80
81         Default Y-Plus Value = 0.00(ft)
82
83         1
84
85         ISOTROPIC SOIL PARAMETERS
86
87         3 Type(s) of Soil
88
89
90         Soil Total Saturated Cohesion Friction Pore Pressure Piez.
91         Type Unit Wt. Unit Wt. Intercept Angle Pressure Constant Surface
92         No. (pcf) (pcf) (psf) (deg) Param. (psf) No.
93
94         1 120.0 120.0 250.0 28.0 0.00 0.0 0
95         2 120.0 120.0 100.0 28.0 0.00 0.0 0
96         3 120.0 120.0 250.0 32.0 0.00 0.0 0
97
98
99
100
101         ANISOTROPIC STRENGTH PARAMETERS
102         1 soil type(s)
103
104
105         Soil Type 3 Is Anisotropic
106
107         Number Of Direction Ranges Specified = 3
108
109
110         Direction Counterclockwise Cohesion Friction
111         Range Direction Limit Intercept Angle
112         No. (deg) (psf) (deg)
113

```

114 1 10.0 250.00 32.00  
 115 2 15.0 150.00 25.00  
 116 3 90.0 250.00 32.00  
 117  
 118 ANISOTROPIC SOIL NOTES:  
 119 (1) An input value of 0.01 for C and/or Phi will cause Aniso  
 120 C and/or Phi to be ignored in that range.  
 121 (2) An input value of 0.02 for Phi will set both Phi and  
 122 C equal to zero, with no water weight in the tension crack.  
 123 (3) An input value of 0.03 for Phi will set both Phi and  
 124 C equal to zero, with water weight in the tension crack.  
 125  
 126 Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)  
 127 Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)  
 128 Specified Vertical Earthquake Coefficient (kv) = 0.000(g)  
 129  
 130 Specified Seismic Pore-Pressure Factor = 0.000  
 131  
 132 Janbus Empirical Coef is being used for the case of c & phi both > 0  
 133  
 134 1  
 135  
 136 A Critical Failure Surface Searching Method, Using A Random  
 137 Technique For Generating Sliding Block Surfaces, Has Been  
 138 Specified.  
 139  
 140  
 141 4999 Trial Surfaces Have Been Generated.  
 142  
 143  
 144 2 Boxes Specified For Generation Of Central Block Base  
 145  
 146  
 147 Length Of Line Segments For Active And Passive Portions Of  
 148 Sliding Block Is 55.0  
 149  
 150  
 151  
 152 Box X-Left Y-Left X-Right Y-Right Height  
 153 No. (ft) (ft) (ft) (ft) (ft)  
 154  
 155 1 430.00 1404.00 450.00 1404.00 30.00  
 156 2 450.10 1404.00 600.00 1450.00 30.00  
 157  
 158  
 159 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 160  
 161  
 162  
 163 The Trial Failure Surface In Question Is Defined  
 164 By The Following 4 Coordinate Points  
 165  
 166  
 167 Point X-Surf Y-Surf  
 168 No. (ft) (ft)  
 169  
 170 1 426.81 1421.81  
 171 2 446.49 1403.05  
 172 3 487.86 1402.67  
 173 4 488.22 1446.68  
 174  
 175  
 176 Factor of Safety for the Preceding Surface is Between19.512 and19.461  
 177  
 178  
 179 WARNING! The factor of safety calculation did not converge in 20 iterations.

180  
 181  
 182  
 183 The Trial Failure Surface In Question Is Defined  
 184 By The Following 4 Coordinate Points  
 185  
 186  
 187 Point X-Surf Y-Surf  
 188 No. (ft) (ft)  
 189  
 190 1 426.81 1421.81  
 191 2 446.49 1403.05  
 192 3 487.86 1402.67  
 193 4 488.22 1446.68  
 194  
 195  
 196 Factor of Safety for the Preceding Surface is Between19.512 and19.461  
 197  
 198  
 199 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 200  
 201  
 202  
 203 The Trial Failure Surface In Question Is Defined  
 204 By The Following 4 Coordinate Points  
 205  
 206  
 207 Point X-Surf Y-Surf  
 208 No. (ft) (ft)  
 209  
 210 1 426.81 1421.81  
 211 2 446.49 1403.05  
 212 3 487.86 1402.67  
 213 4 488.22 1446.68  
 214  
 215  
 216 Factor of Safety for the Preceding Surface is Between19.512 and19.461  
 217  
 218  
 219 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 220  
 221  
 222  
 223 The Trial Failure Surface In Question Is Defined  
 224 By The Following 4 Coordinate Points  
 225  
 226  
 227 Point X-Surf Y-Surf  
 228 No. (ft) (ft)  
 229  
 230 1 426.81 1421.81  
 231 2 446.49 1403.05  
 232 3 487.86 1402.67  
 233 4 488.22 1446.68  
 234  
 235  
 236 Factor of Safety for the Preceding Surface is Between19.512 and19.461  
 237  
 238  
 239 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 240  
 241  
 242  
 243 The Trial Failure Surface In Question Is Defined  
 244 By The Following 4 Coordinate Points  
 245

Point No.	X-Surf (ft)	Y-Surf (ft)
1	426.81	1421.81
2	446.49	1403.05
3	487.86	1402.67
4	488.22	1446.68

Factor of Safety for the Preceding Surface is Between 19.512 and 19.461

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	426.81	1421.81
2	446.49	1403.05
3	487.86	1402.67
4	488.22	1446.68

Factor of Safety for the Preceding Surface is Between 19.512 and 19.461

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	426.81	1421.81
2	446.49	1403.05
3	487.86	1402.67
4	488.22	1446.68

Factor of Safety for the Preceding Surface is Between 19.512 and 19.461

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	426.81	1421.81
2	446.49	1403.05

3	487.86	1402.67
4	488.22	1446.68

Factor of Safety for the Preceding Surface is Between 19.512 and 19.461

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.

\* \* Safety Factors Are Calculated By The Simplified Janbu Method \* \*

Total Number of Trial Surfaces Attempted = 4999

WARNING! The Factor of Safety Calculation for one or More Trial Surfaces Did Not Converge in 20 Iterations.

Number of Trial Surfaces with Non-Converged FS = 8

Number of Trial Surfaces With Valid FS = 4991

Percentage of Trial Surfaces With Non-Valid FS Solutions of the Total Attempted = 0.2 %

Statistical Data On All Valid FS Values:  
 FS Max = 16.243 FS Min = 1.140 FS Ave = 1.868  
 Standard Deviation = 0.976 Coefficient of Variation = 52.23 %

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	399.754	1409.276
2	437.191	1403.310
3	573.605	1434.340
4	610.291	1475.316
5	634.376	1499.455

Factor of Safety  
 \*\*\* 1.140 \*\*\*

Individual data on the 17 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force		
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)	Surcharge Load (lbs)
1	37.4	52371.6	0.0	0.0	0.	0.	7855.7	0.0	0.0
2	0.8	2272.3	0.0	0.0	0.	0.	340.8	0.0	0.0
3	2.6	7141.8	0.0	0.0	0.	0.	1071.3	0.0	0.0
4	7.4	19700.9	0.0	0.0	0.	0.	2955.1	0.0	0.0



378	5	47.0	154457.7	0.0	0.0	0.	0.	23168.6	0.0	0.0
379	6	10.0	44883.8	0.0	0.0	0.	0.	6732.6	0.0	0.0
380	7	6.0	29220.1	0.0	0.0	0.	0.	4383.0	0.0	0.0
381	8	9.0	41987.6	0.0	0.0	0.	0.	6298.1	0.0	0.0
382	9	18.0	91382.3	0.0	0.0	0.	0.	13707.4	0.0	0.0
383	10	22.0	128719.0	0.0	0.0	0.	0.	19307.9	0.0	0.0
384	11	13.6	84859.1	0.0	0.0	0.	0.	12728.9	0.0	0.0
385	12	13.4	77881.7	0.0	0.0	0.	0.	11682.3	0.0	0.0
386	13	15.0	70778.8	0.0	0.0	0.	0.	10616.8	0.0	0.0
387	14	5.0	19291.3	0.0	0.0	0.	0.	2893.7	0.0	0.0
388	15	3.3	10807.6	0.0	0.0	0.	0.	1621.1	0.0	0.0
389	16	17.7	33262.6	0.0	0.0	0.	0.	4989.4	0.0	0.0
390	17	6.4	2270.6	0.0	0.0	0.	0.	340.6	0.0	0.0

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	399.754	1409.276
2	437.191	1403.310
3	573.605	1434.340
4	610.291	1475.316
5	634.376	1499.455

Factor of Safety  
\*\*\* 1.140 \*\*\*

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	399.754	1409.276
2	437.191	1403.310
3	573.605	1434.340
4	610.291	1475.316
5	634.376	1499.455

Factor of Safety  
\*\*\* 1.140 \*\*\*

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	399.754	1409.276
2	437.191	1403.310
3	573.605	1434.340
4	610.291	1475.316
5	634.376	1499.455

Factor of Safety  
\*\*\* 1.140 \*\*\*

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	399.754	1409.276
2	437.191	1403.310
3	573.605	1434.340
4	610.291	1475.316
5	634.376	1499.455

Factor of Safety  
\*\*\* 1.140 \*\*\*

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	399.754	1409.276
2	437.191	1403.310
3	573.605	1434.340
4	610.291	1475.316
5	634.376	1499.455

Factor of Safety  
\*\*\* 1.140 \*\*\*

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	399.754	1409.276
2	437.191	1403.310
3	573.605	1434.340
4	610.291	1475.316
5	634.376	1499.455

Factor of Safety  
\*\*\* 1.140 \*\*\*

Failure Surface Specified By 5 Coordinate Points

510  
511  
512  
513  
514  
515  
516  
517  
518  
519  
520  
521  
522  
523  
524  
525  
526  
527  
528  
529  
530  
531  
532  
533  
534  
535  
536  
537  
538  
539  
540  
541  
542  
543  
544  
545  
546  
547  
548  
549  
550  
551  
552  
553  
554  
555  
556  
557  
558  
559  
560  
561  
562  
563  
564  
565  
566  
567  
568  
569

Point No.	X-Surf (ft)	Y-Surf (ft)
1	399.754	1409.276
2	437.191	1403.310
3	573.605	1434.340
4	610.291	1475.316
5	634.376	1499.455

Factor of Safety  
\*\*\* 1.140 \*\*\*

1

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	420.945	1419.096
2	449.374	1413.761
3	553.367	1438.991
4	589.159	1480.751
5	605.510	1501.000

Factor of Safety  
\*\*\* 1.146 \*\*\*

Failure Surface Specified By 5 Coordinate Points

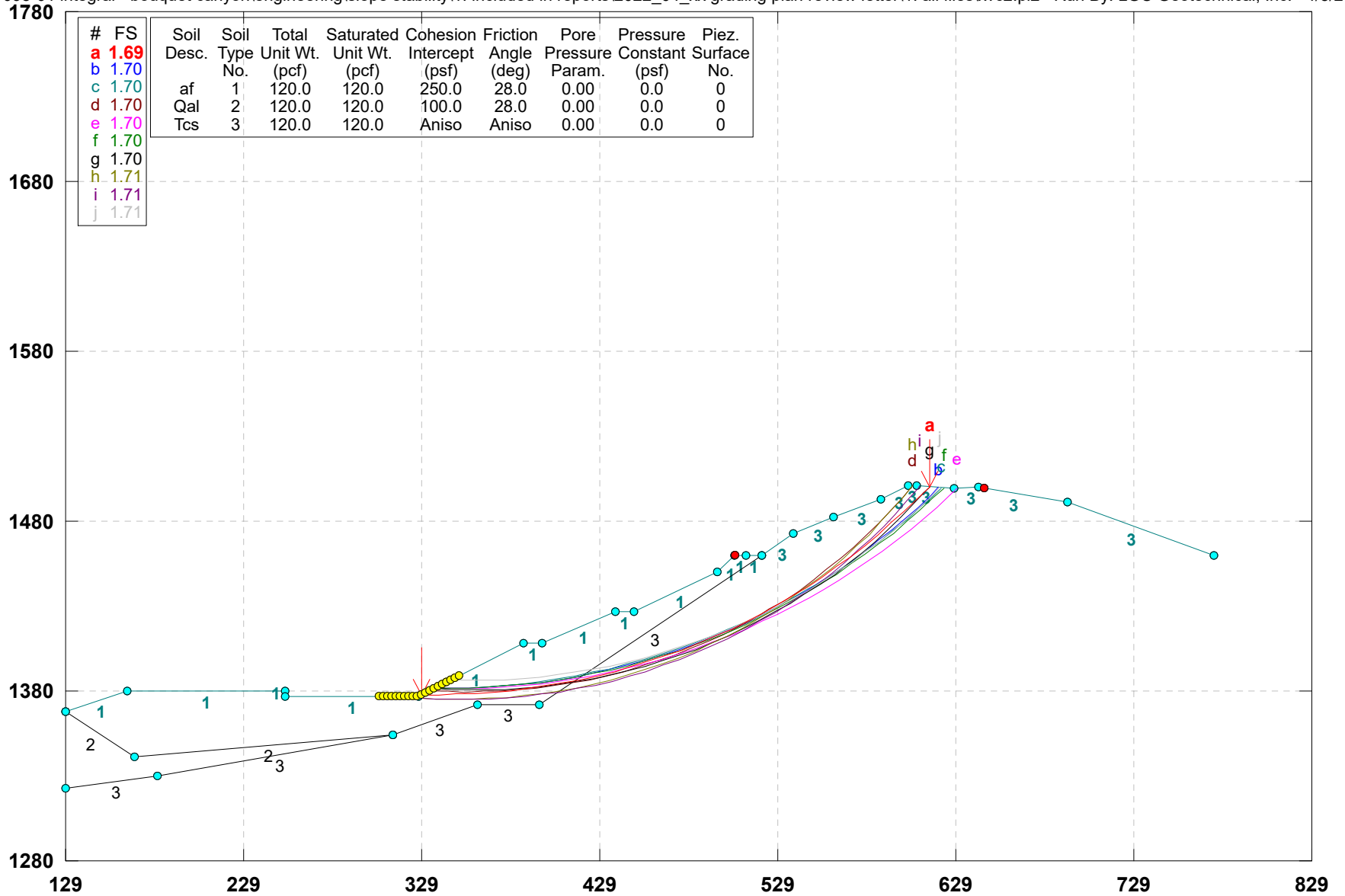
Point No.	X-Surf (ft)	Y-Surf (ft)
1	420.945	1419.096
2	449.374	1413.761
3	553.367	1438.991
4	589.159	1480.751
5	605.510	1501.000

Factor of Safety  
\*\*\* 1.146 \*\*\*

\*\*\*\* END OF GSTABL7 OUTPUT \*\*\*\*

# Bouquet Canyon/21095-01/Section V-V' Static

z:\2021\21095-01 integral - bouquet canyon\engineering\slope stability\1. included in reports\2022\_04\_xx grading plan review letter\1. all files\svc2.pl2 Run By: LGC Geotechnical, Inc. 4/5/2022 10:05AM



GSTABL7 v.2 FSmin=1.69  
Safety Factors Are Calculated By The Modified Bishop Method

```

1          *** GSTABL7 ***
2
3          ** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
4
5          ** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
6          (All Rights Reserved-Unauthorized Use Prohibited)
7
8
9
10         *****
11         **
12         SLOPE STABILITY ANALYSIS SYSTEM
13         Modified Bishop, Simplified Janbu, or GLE Method of Slices.
14         (Includes Spencer & Morgenstern-Price Type Analysis)
15         Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
16         Nonlinear Undrained Shear Strength, Curved Phi Envelope,
17         Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
18         Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
19
20         *****
21         **
22
23         Analysis Run Date:      4/5/2022
24         Time of Run:           10:05AM
25         Run By:                LGC Geotechnical,
26         Inc.
27
28
29         Input Data Filename:    Z:\2021\21095-01 Integral - Bouquet
30         Canyon\Engineering\slope stability\Sec
31         V-V'\2022_04_05\xvc2.in
32
33         Output Filename:       Z:\2021\21095-01 Integral - Bouquet
34         Canyon\Engineering\slope stability\Sec
35         V-V'\2022_04_05\xvc2.OUT
36
37         Unit System:           English
38
39         Plotted Output Filename: Z:\2021\21095-01 Integral - Bouquet
40         Canyon\Engineering\slope stability\Sec
41         V-V'\2022_04_05\xvc2.PLT
42
43
44         PROBLEM DESCRIPTION:   Bouquet Canyon/21095-01/Section V-V'/
45         Static
46
47
48         BOUNDARY COORDINATES
49
50         21 Top Boundaries
51         28 Total Boundaries
52
53         Boundary   X-Left   Y-Left   X-Right   Y-Right   Soil Type
54         No.        (ft)    (ft)    (ft)     (ft)     Below Bnd

```

```

48         1      129.00  1368.00  164.00  1380.00  1
49         2      164.00  1380.00  252.00  1380.00  1
50         3      252.00  1380.00  252.10  1377.00  1
51         4      252.10  1377.00  327.00  1377.00  1
52         5      327.00  1377.00  386.00  1408.00  1
53         6      386.00  1408.00  397.00  1408.00  1
54         7      397.00  1408.00  438.00  1427.00  1
55         8      438.00  1427.00  448.00  1427.00  1
56         9      448.00  1427.00  495.00  1450.00  1
57        10      495.00  1450.00  505.00  1460.00  1
58        11      505.00  1460.00  511.00  1460.00  1
59        12      511.00  1460.00  520.00  1460.00  1
60        13      520.00  1460.00  538.00  1473.00  3
61        14      538.00  1473.00  560.00  1482.00  3
62        15      560.00  1482.00  587.00  1493.00  3
63        16      587.00  1493.00  602.00  1501.00  3
64        17      602.00  1501.00  607.00  1501.00  3
65        18      607.00  1501.00  628.00  1499.00  3
66        19      628.00  1499.00  642.00  1500.00  3
67        20      642.00  1500.00  692.00  1491.00  3
68        21      692.00  1491.00  774.00  1460.00  3
69        22      129.00  1368.00  168.00  1341.00  2
70        23      168.00  1341.00  313.00  1354.00  2
71        24      313.00  1354.00  360.00  1372.00  3
72        25      360.00  1372.00  395.00  1372.00  3
73        26      395.00  1372.00  520.00  1460.00  3
74        27      129.00  1323.00  181.00  1330.00  3
75        28      181.00  1330.00  313.00  1354.00  3
76
77         User Specified Y-Origin =      1280.00(ft)
78
79         Default X-Plus Value = 0.00(ft)
80
81         Default Y-Plus Value = 0.00(ft)
82
83         1
84
85         ISOTROPIC SOIL PARAMETERS
86
87         3 Type(s) of Soil
88
89
90         Soil Total Saturated Cohesion Friction Pore Pressure Piez.
91         Type Unit Wt. Unit Wt. Intercept Angle Pressure Constant Surface
92         No. (pcf) (pcf) (psf) (deg) Param. (psf) No.
93
94         1 120.0 120.0 250.0 28.0 0.00 0.0 0
95         2 120.0 120.0 100.0 28.0 0.00 0.0 0
96         3 120.0 120.0 250.0 32.0 0.00 0.0 0
97
98
99
100
101         ANISOTROPIC STRENGTH PARAMETERS
102         1 soil type(s)
103
104
105         Soil Type 3 Is Anisotropic
106
107         Number Of Direction Ranges Specified = 3
108
109
110         Direction Counterclockwise Cohesion Friction
111         Range Direction Limit Intercept Angle
112         No. (deg) (psf) (deg)
113

```



114 1 10.0 250.00 32.00  
 115 2 15.0 150.00 25.00  
 116 3 90.0 250.00 32.00  
 117  
 118 ANISOTROPIC SOIL NOTES:  
 119 (1) An input value of 0.01 for C and/or Phi will cause Aniso  
 120 C and/or Phi to be ignored in that range.  
 121 (2) An input value of 0.02 for Phi will set both Phi and  
 122 C equal to zero, with no water weight in the tension crack.  
 123 (3) An input value of 0.03 for Phi will set both Phi and  
 124 C equal to zero, with water weight in the tension crack.  
 125  
 126 1  
 127  
 128 A Critical Failure Surface Searching Method, Using A Random  
 129 Technique For Generating Circular Surfaces, Has Been Specified.  
 130  
 131  
 132 4980 Trial Surfaces Have Been Generated.  
 133  
 134  
 135 249 Surface(s) Initiate(s) From Each Of 20 Points Equally Spaced  
 136 Along The Ground Surface Between X = 305.00(ft)  
 137 and X = 350.00(ft)  
 138  
 139 Each Surface Terminates Between X = 505.00(ft)  
 140 and X = 645.00(ft)  
 141  
 142  
 143 Unless Further Limitations Were Imposed, The Minimum Elevation  
 144 At Which A Surface Extends Is Y = 0.00(ft)  
 145  
 146 10.00(ft) Line Segments Define Each Trial Failure Surface.  
 147  
 148  
 149  
 150  
 151  
 152  
 153 Following Are Displayed The Ten Most Critical Of The Trial  
 154 Failure Surfaces Evaluated. They Are  
 155 Ordered - Most Critical First.  
 156  
 157  
 158 \* \* Safety Factors Are Calculated By The Modified Bishop Method \* \*  
 159  
 160  
 161  
 162  
 163 Total Number of Trial Surfaces Attempted = 4980  
 164  
 165 Number of Trial Surfaces With Valid FS = 4980  
 166  
 167  
 168 Statistical Data On All Valid FS Values:  
 169 FS Max = 3.488 FS Min = 1.689 FS Ave = 2.400  
 170 Standard Deviation = 0.411 Coefficient of Variation = 17.13 %  
 171  
 172  
 173 Failure Surface Specified By 34 Coordinate Points  
 174  
 175  
 176 Point X-Surf Y-Surf  
 177 No. (ft) (ft)  
 178 1 328.684 1377.885  
 179

180 2 338.684 1377.818  
 181 3 348.682 1378.016  
 182 4 358.671 1378.479  
 183 5 368.645 1379.207  
 184 6 378.595 1380.200  
 185 7 388.516 1381.456  
 186 8 398.400 1382.974  
 187 9 408.240 1384.754  
 188 10 418.030 1386.795  
 189 11 427.762 1389.094  
 190 12 437.430 1391.651  
 191 13 447.026 1394.463  
 192 14 456.545 1397.529  
 193 15 465.978 1400.846  
 194 16 475.321 1404.412  
 195 17 484.566 1408.224  
 196 18 493.706 1412.281  
 197 19 502.736 1416.578  
 198 20 511.648 1421.114  
 199 21 520.437 1425.884  
 200 22 529.096 1430.885  
 201 23 537.620 1436.115  
 202 24 546.002 1441.568  
 203 25 554.236 1447.242  
 204 26 562.317 1453.133  
 205 27 570.239 1459.235  
 206 28 577.997 1465.546  
 207 29 585.584 1472.060  
 208 30 592.996 1478.773  
 209 31 600.227 1485.681  
 210 32 607.272 1492.777  
 211 33 614.127 1500.058  
 212 34 614.343 1500.301  
 213  
 214 Circle Center At X = 336.215 ; Y = 1754.814 ; and Radius = 377.005  
 215  
 216  
 217 Factor of Safety  
 218 \*\*\* 1.689 \*\*\*  
 219  
 220  
 221 Individual data on the 47 slices  
 222  
 223  
 224  
 225  
 226  
 227 Water Water Tie Tie Earthquake  
 228 Slice Width Weight Force Force Force Force Force Surcharge  
 229 No. (ft) (lbs) Top Bot Norm Tan Hor Ver Load  
 230  
 231 1 10.0 3192.6 0.0 0.0 0. 0. 0.0 0.0 0.0  
 232 2 10.0 9416.5 0.0 0.0 0. 0. 0.0 0.0 0.0  
 233 3 10.0 15306.0 0.0 0.0 0. 0. 0.0 0.0 0.0  
 234 4 10.0 20845.6 0.0 0.0 0. 0. 0.0 0.0 0.0  
 235 5 10.0 26021.1 0.0 0.0 0. 0. 0.0 0.0 0.0  
 236 6 7.4 22557.5 0.0 0.0 0. 0. 0.0 0.0 0.0  
 237 7 2.5 8062.8 0.0 0.0 0. 0. 0.0 0.0 0.0  
 238 8 8.5 26360.5 0.0 0.0 0. 0. 0.0 0.0 0.0  
 239 9 1.4 4277.4 0.0 0.0 0. 0. 0.0 0.0 0.0  
 240 10 9.8 31958.9 0.0 0.0 0. 0. 0.0 0.0 0.0  
 241 11 6.9 24388.7 0.0 0.0 0. 0. 0.0 0.0 0.0  
 242 12 2.9 10504.8 0.0 0.0 0. 0. 0.0 0.0 0.0  
 243 13 9.7 37436.5 0.0 0.0 0. 0. 0.0 0.0 0.0  
 244 14 9.7 39586.7 0.0 0.0 0. 0. 0.0 0.0 0.0  
 245 15 0.6 2404.3 0.0 0.0 0. 0. 0.0 0.0 0.0

246	16	9.0	36674.5	0.0	0.0	0.	0.	0.0	0.0	0.0
247	17	1.0	3784.0	0.0	0.0	0.	0.	0.0	0.0	0.0
248	18	8.5	33773.2	0.0	0.0	0.	0.	0.0	0.0	0.0
249	19	9.4	38832.5	0.0	0.0	0.	0.	0.0	0.0	0.0
250	20	9.3	39748.9	0.0	0.0	0.	0.	0.0	0.0	0.0
251	21	9.2	40285.1	0.0	0.0	0.	0.	0.0	0.0	0.0
252	22	9.1	40449.0	0.0	0.0	0.	0.	0.0	0.0	0.0
253	23	1.3	5759.9	0.0	0.0	0.	0.	0.0	0.0	0.0
254	24	7.7	36323.4	0.0	0.0	0.	0.	0.0	0.0	0.0
255	25	2.3	11335.1	0.0	0.0	0.	0.	0.0	0.0	0.0
256	26	6.0	29334.8	0.0	0.0	0.	0.	0.0	0.0	0.0
257	27	0.6	3036.2	0.0	0.0	0.	0.	0.0	0.0	0.0
258	28	8.4	36702.4	0.0	0.0	0.	0.	0.0	0.0	0.0
259	29	0.4	1803.1	0.0	0.0	0.	0.	0.0	0.0	0.0
260	30	8.7	36429.6	0.0	0.0	0.	0.	0.0	0.0	0.0
261	31	8.5	36973.1	0.0	0.0	0.	0.	0.0	0.0	0.0
262	32	0.4	1670.4	0.0	0.0	0.	0.	0.0	0.0	0.0
263	33	8.0	34252.7	0.0	0.0	0.	0.	0.0	0.0	0.0
264	34	8.2	33153.9	0.0	0.0	0.	0.	0.0	0.0	0.0
265	35	5.8	21771.6	0.0	0.0	0.	0.	0.0	0.0	0.0
266	36	2.3	8393.3	0.0	0.0	0.	0.	0.0	0.0	0.0
267	37	7.9	26972.9	0.0	0.0	0.	0.	0.0	0.0	0.0
268	38	7.8	23607.9	0.0	0.0	0.	0.	0.0	0.0	0.0
269	39	7.6	20097.8	0.0	0.0	0.	0.	0.0	0.0	0.0
270	40	1.4	3400.7	0.0	0.0	0.	0.	0.0	0.0	0.0
271	41	6.0	13339.4	0.0	0.0	0.	0.	0.0	0.0	0.0
272	42	7.2	13796.1	0.0	0.0	0.	0.	0.0	0.0	0.0
273	43	1.8	2969.3	0.0	0.0	0.	0.	0.0	0.0	0.0
274	44	5.0	6609.1	0.0	0.0	0.	0.	0.0	0.0	0.0
275	45	0.3	272.5	0.0	0.0	0.	0.	0.0	0.0	0.0
276	46	6.9	3479.5	0.0	0.0	0.	0.	0.0	0.0	0.0
277	47	0.2	3.4	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 33 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	335.789	1381.618
2	345.789	1381.518
3	355.787	1381.683
4	365.778	1382.112
5	375.754	1382.805
6	385.708	1383.763
7	395.634	1384.983
8	405.523	1386.466
9	415.370	1388.210
10	425.167	1390.214
11	434.908	1392.476
12	444.585	1394.996
13	454.192	1397.771
14	463.723	1400.799
15	473.170	1404.078
16	482.527	1407.606
17	491.787	1411.381
18	500.944	1415.399
19	509.992	1419.659
20	518.923	1424.156
21	527.733	1428.888
22	536.414	1433.852
23	544.960	1439.044
24	553.367	1444.460
25	561.627	1450.096
26	569.735	1455.950
27	577.685	1462.016

312	28	585.472	1468.290
313	29	593.090	1474.768
314	30	600.534	1481.446
315	31	607.798	1488.318
316	32	614.878	1495.380
317	33	619.124	1499.845

Circle Center At X = 344.570 ; Y = 1759.298 ; and Radius = 377.782

Factor of Safety  
\*\*\* 1.697 \*\*\*

Failure Surface Specified By 33 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	335.789	1381.618
2	345.789	1381.644
3	355.785	1381.924
4	365.771	1382.457
5	375.740	1383.243
6	385.686	1384.281
7	395.603	1385.572
8	405.483	1387.114
9	415.321	1388.906
10	425.111	1390.946
11	434.845	1393.235
12	444.519	1395.769
13	454.125	1398.548
14	463.657	1401.570
15	473.110	1404.833
16	482.477	1408.334
17	491.752	1412.072
18	500.930	1416.044
19	510.004	1420.247
20	518.968	1424.679
21	527.817	1429.337
22	536.545	1434.218
23	545.146	1439.318
24	553.615	1444.636
25	561.947	1450.166
26	570.135	1455.906
27	578.176	1461.852
28	586.063	1467.999
29	593.792	1474.345
30	601.357	1480.885
31	608.754	1487.614
32	615.977	1494.529
33	621.072	1499.660

Circle Center At X = 339.766 ; Y = 1775.850 ; and Radius = 394.252

Factor of Safety  
\*\*\* 1.700 \*\*\*

378 Failure Surface Specified By 32 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
381		
382		
383		
384	1	333.421
385	2	343.404
386	3	353.401
387	4	363.401
388	5	373.394
389	6	383.369
390	7	393.318
391	8	403.229
392	9	413.093
393	10	422.900
394	11	432.640
395	12	442.302
396	13	451.878
397	14	461.358
398	15	470.732
399	16	479.990
400	17	489.124
401	18	498.123
402	19	506.980
403	20	515.684
404	21	524.228
405	22	532.602
406	23	540.798
407	24	548.808
408	25	556.624
409	26	564.238
410	27	571.642
411	28	578.828
412	29	585.790
413	30	592.520
414	31	599.012
415	32	604.813

416 Circle Center At X = 356.455 ; Y = 1694.159 ; and Radius = 314.630

417 Factor of Safety  
418 \*\*\* 1.701 \*\*\*

419  
420  
421  
422  
423  
424  
425 1  
426 Failure Surface Specified By 34 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
427		
428		
429		
430		
431		
432		
433	1	335.789
434	2	345.788
435	3	355.788
436	4	365.782
437	5	375.765
438	6	385.730
439	7	395.671
440	8	405.581
441	9	415.455
442	10	425.285
443	11	435.067

444	12	444.793	1393.527
445	13	454.457	1396.096
446	14	464.054	1398.907
447	15	473.577	1401.958
448	16	483.021	1405.248
449	17	492.378	1408.775
450	18	501.644	1412.536
451	19	510.812	1416.528
452	20	519.877	1420.750
453	21	528.833	1425.199
454	22	537.674	1429.872
455	23	546.395	1434.765
456	24	554.990	1439.876
457	25	563.454	1445.202
458	26	571.781	1450.740
459	27	579.966	1456.484
460	28	588.004	1462.433
461	29	595.890	1468.583
462	30	603.619	1474.928
463	31	611.185	1481.466
464	32	618.585	1488.193
465	33	625.813	1495.103
466	34	629.819	1499.130

467 Circle Center At X = 347.563 ; Y = 1778.764 ; and Radius = 397.320

471 Factor of Safety  
472 \*\*\* 1.701 \*\*\*

473  
474  
475  
476  
477 Failure Surface Specified By 33 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
478		
479		
480		
481		
482		
483	1	335.789
484	2	345.789
485	3	355.787
486	4	365.778
487	5	375.754
488	6	385.709
489	7	395.636
490	8	405.528
491	9	415.380
492	10	425.184
493	11	434.933
494	12	444.622
495	13	454.245
496	14	463.793
497	15	473.262
498	16	482.645
499	17	491.935
500	18	501.127
501	19	510.214
502	20	519.190
503	21	528.050
504	22	536.787
505	23	545.395
506	24	553.870
507	25	562.204
508	26	570.394
509	27	578.432

510 28 586.314 1466.701  
 511 29 594.035 1473.057  
 512 30 601.589 1479.609  
 513 31 608.972 1486.354  
 514 32 616.178 1493.287  
 515 33 622.348 1499.538

Circle Center At X = 343.920 ; Y = 1769.051 ; and Radius = 387.518

Factor of Safety  
 \*\*\* 1.702 \*\*\*

1

Failure Surface Specified By 33 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
530		
531		
532		
533	1	335.789
534	2	345.773
535	3	355.769
536	4	365.769
537	5	375.763
538	6	385.743
539	7	395.700
540	8	405.623
541	9	415.505
542	10	425.336
543	11	435.107
544	12	444.808
545	13	454.433
546	14	463.970
547	15	473.413
548	16	482.751
549	17	491.977
550	18	501.082
551	19	510.058
552	20	518.896
553	21	527.589
554	22	536.128
555	23	544.506
556	24	552.715
557	25	560.747
558	26	568.596
559	27	576.253
560	28	583.713
561	29	590.967
562	30	598.010
563	31	604.835
564	32	611.436
565	33	614.273

Circle Center At X = 359.874 ; Y = 1711.263 ; and Radius = 330.523

Factor of Safety  
 \*\*\* 1.703 \*\*\*

575

Failure Surface Specified By 34 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
576		
577		
578		
579		
580		
581		
582	1	316.842
583	2	326.801
584	3	336.783
585	4	346.779
586	5	356.779
587	6	366.773
588	7	376.752
589	8	386.705
590	9	396.623
591	10	406.496
592	11	416.315
593	12	426.070
594	13	435.751
595	14	445.349
596	15	454.855
597	16	464.259
598	17	473.552
599	18	482.725
600	19	491.769
601	20	500.675
602	21	509.435
603	22	518.039
604	23	526.480
605	24	534.750
606	25	542.839
607	26	550.741
608	27	558.447
609	28	565.951
610	29	573.244
611	30	580.319
612	31	587.170
613	32	593.790
614	33	600.173
615	34	605.024

Circle Center At X = 350.818 ; Y = 1694.912 ; and Radius = 319.723

Factor of Safety  
 \*\*\* 1.705 \*\*\*

1

Failure Surface Specified By 35 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
620		
621		
622		
623		
624		
625		
626		
627		
628		
629		
630		
631		
632		
633	1	316.842
634	2	326.796
635	3	336.776
636	4	346.770
637	5	356.770
638	6	366.766
639	7	376.749
640	8	386.708
641	9	396.635



642	10	406.521	1379.517
643	11	416.355	1381.332
644	12	426.128	1383.450
645	13	435.831	1385.868
646	14	445.455	1388.586
647	15	454.990	1391.599
648	16	464.427	1394.905
649	17	473.758	1398.501
650	18	482.974	1402.384
651	19	492.065	1406.550
652	20	501.023	1410.994
653	21	509.840	1415.713
654	22	518.507	1420.702
655	23	527.015	1425.956
656	24	535.357	1431.470
657	25	543.525	1437.240
658	26	551.511	1443.259
659	27	559.307	1449.522
660	28	566.905	1456.022
661	29	574.300	1462.754
662	30	581.483	1469.712
663	31	588.447	1476.888
664	32	595.187	1484.275
665	33	601.695	1491.868
666	34	607.966	1499.657
667	35	608.847	1500.824

Circle Center At X = 352.687 ; Y = 1698.738 ; and Radius = 323.729

Factor of Safety  
 \*\*\* 1.705 \*\*\*

Failure Surface Specified By 32 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)	
684	1	345.263	1386.596
685	2	355.261	1386.389
686	3	365.261	1386.460
687	4	375.254	1386.809
688	5	385.235	1387.435
689	6	395.194	1388.338
690	7	405.124	1389.517
691	8	415.018	1390.971
692	9	424.868	1392.699
693	10	434.665	1394.700
694	11	444.404	1396.973
695	12	454.075	1399.515
696	13	463.672	1402.324
697	14	473.188	1405.399
698	15	482.614	1408.737
699	16	491.945	1412.335
700	17	501.171	1416.191
701	18	510.287	1420.302
702	19	519.286	1424.664
703	20	528.160	1429.274
704	21	536.902	1434.129
705	22	545.506	1439.224
706	23	553.966	1444.557
707	24	562.274	1450.123

708	25	570.424	1455.917
709	26	578.411	1461.935
710	27	586.227	1468.172
711	28	593.867	1474.624
712	29	601.325	1481.286
713	30	608.595	1488.152
714	31	615.672	1495.217
715	32	619.980	1499.764

Circle Center At X = 357.735 ; Y = 1746.344 ; and Radius = 359.965

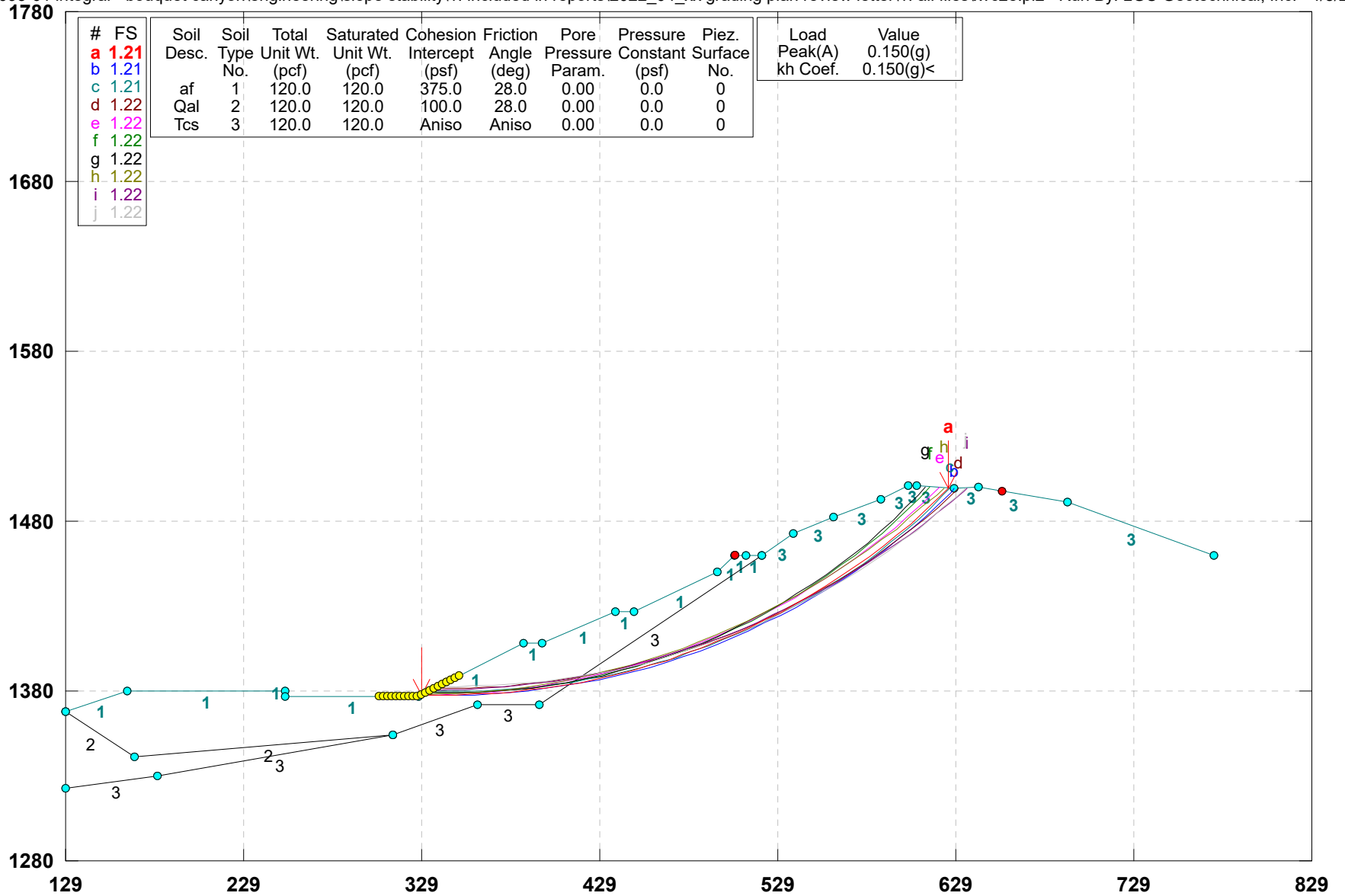
Factor of Safety  
 \*\*\* 1.706 \*\*\*

\*\*\*\* END OF GSTABL7 OUTPUT \*\*\*\*

728

# Bouquet Canyon/21095-01/Section V-V' Seismic

z:\2021\21095-01 integral - bouquet canyon\engineering\slope stability\1. included in reports\2022\_04\_xx grading plan review letter\1. all files\svc2e.pl2 Run By: LGC Geotechnical, Inc. 4/5/2022 10:06



GSTABL7 v.2 FSmin=1.21  
Safety Factors Are Calculated By The Modified Bishop Method

```

1          *** GSTABL7 ***
2
3          ** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
4
5          ** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
6          (All Rights Reserved-Unauthorized Use Prohibited)
7
8
9
10         *****
11         **
12         SLOPE STABILITY ANALYSIS SYSTEM
13         Modified Bishop, Simplified Janbu, or GLE Method of Slices.
14         (Includes Spencer & Morgenstern-Price Type Analysis)
15         Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
16         Nonlinear Undrained Shear Strength, Curved Phi Envelope,
17         Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
18         Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
19
20         *****
21         **
22
23         Analysis Run Date:      4/5/2022
24         Time of Run:           10:06AM
25         Run By:                LGC Geotechnical,
26         Inc.
27
28
29         Input Data Filename:    Z:\2021\21095-01 Integral - Bouquet
30         Canyon\Engineering\slope stability\Sec
31         V-V'\2022_04_05\xvc2e.in
32
33         Output Filename:       Z:\2021\21095-01 Integral - Bouquet
34         Canyon\Engineering\slope stability\Sec
35         V-V'\2022_04_05\xvc2e.OUT
36
37         Unit System:           English
38
39         Plotted Output Filename: Z:\2021\21095-01 Integral - Bouquet
40         Canyon\Engineering\slope stability\Sec
41         V-V'\2022_04_05\xvc2e.PLT
42
43
44         PROBLEM DESCRIPTION:    Bouquet Canyon/21095-01/Section V-V'/
45         Seismic
46
47
48         BOUNDARY COORDINATES
49
50         21 Top Boundaries
51         28 Total Boundaries
52
53         Boundary   X-Left   Y-Left   X-Right   Y-Right   Soil Type
54         No.        (ft)    (ft)    (ft)      (ft)      Below Bnd

```

48	1	129.00	1368.00	164.00	1380.00	1
49	2	164.00	1380.00	252.00	1380.00	1
50	3	252.00	1380.00	252.10	1377.00	1
51	4	252.10	1377.00	327.00	1377.00	1
52	5	327.00	1377.00	386.00	1408.00	1
53	6	386.00	1408.00	397.00	1408.00	1
54	7	397.00	1408.00	438.00	1427.00	1
55	8	438.00	1427.00	448.00	1427.00	1
56	9	448.00	1427.00	495.00	1450.00	1
57	10	495.00	1450.00	505.00	1460.00	1
58	11	505.00	1460.00	511.00	1460.00	1
59	12	511.00	1460.00	520.00	1460.00	1
60	13	520.00	1460.00	538.00	1473.00	3
61	14	538.00	1473.00	560.00	1482.00	3
62	15	560.00	1482.00	587.00	1493.00	3
63	16	587.00	1493.00	602.00	1501.00	3
64	17	602.00	1501.00	607.00	1501.00	3
65	18	607.00	1501.00	628.00	1499.00	3
66	19	628.00	1499.00	642.00	1500.00	3
67	20	642.00	1500.00	692.00	1491.00	3
68	21	692.00	1491.00	774.00	1460.00	3
69	22	129.00	1368.00	168.00	1341.00	2
70	23	168.00	1341.00	313.00	1354.00	2
71	24	313.00	1354.00	360.00	1372.00	3
72	25	360.00	1372.00	395.00	1372.00	3
73	26	395.00	1372.00	520.00	1460.00	3
74	27	129.00	1323.00	181.00	1330.00	3
75	28	181.00	1330.00	313.00	1354.00	3
76						
77				User Specified Y-Origin =	1280.00(ft)	
78						
79				Default X-Plus Value =	0.00(ft)	
80						
81				Default Y-Plus Value =	0.00(ft)	
82	1					
83						
84						
85				ISOTROPIC SOIL PARAMETERS		
86						
87						
88				3 Type(s) of Soil		
89						
90						
91				Soil Total Saturated Cohesion Friction Pore Pressure Piez.		
92				Type Unit Wt. Unit Wt. Intercept Angle Pressure Constant Surface		
93				No. (pcf) (pcf) (psf) (deg) Param. (psf) No.		
94						
95				1 120.0 120.0 375.0 28.0 0.00 0.0 0		
96				2 120.0 120.0 100.0 28.0 0.00 0.0 0		
97				3 120.0 120.0 250.0 32.0 0.00 0.0 0		
98						
99						
100						
101				ANISOTROPIC STRENGTH PARAMETERS		
102				1 soil type(s)		
103						
104						
105				Soil Type 3 Is Anisotropic		
106						
107				Number Of Direction Ranges Specified =	3	
108						
109						
110				Direction Counterclockwise Cohesion Friction		
111				Range Direction Limit Intercept Angle		
112				No. (deg) (psf) (deg)		
113						

114 1 10.0 250.00 32.00  
 115 2 15.0 150.00 25.00  
 116 3 90.0 250.00 32.00  
 117  
 118 ANISOTROPIC SOIL NOTES:  
 119 (1) An input value of 0.01 for C and/or Phi will cause Aniso  
 120 C and/or Phi to be ignored in that range.  
 121 (2) An input value of 0.02 for Phi will set both Phi and  
 122 C equal to zero, with no water weight in the tension crack.  
 123 (3) An input value of 0.03 for Phi will set both Phi and  
 124 C equal to zero, with water weight in the tension crack.  
 125  
 126 Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)  
 127 Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)  
 128 Specified Vertical Earthquake Coefficient (kv) = 0.000(g)  
 129  
 130 Specified Seismic Pore-Pressure Factor = 0.000  
 131  
 132 1  
 133  
 134  
 135 A Critical Failure Surface Searching Method, Using A Random  
 136 Technique For Generating Circular Surfaces, Has Been Specified.  
 137  
 138 4980 Trial Surfaces Have Been Generated.  
 139  
 140  
 141 249 Surface(s) Initiate(s) From Each Of 20 Points Equally Spaced  
 142 Along The Ground Surface Between X = 305.00(ft)  
 143 and X = 350.00(ft)  
 144  
 145 Each Surface Terminates Between X = 505.00(ft)  
 146 and X = 655.00(ft)  
 147  
 148 Unless Further Limitations Were Imposed, The Minimum Elevation  
 149 At Which A Surface Extends Is Y = 0.00(ft)  
 150  
 151 10.00(ft) Line Segments Define Each Trial Failure Surface.  
 152  
 153  
 154  
 155  
 156  
 157  
 158  
 159  
 160 Following Are Displayed The Ten Most Critical Of The Trial  
 161 Failure Surfaces Evaluated. They Are  
 162 Ordered - Most Critical First.  
 163  
 164  
 165 \* \* Safety Factors Are Calculated By The Modified Bishop Method \* \*  
 166  
 167  
 168 Total Number of Trial Surfaces Attempted = 4980  
 169  
 170  
 171 Number of Trial Surfaces With Valid FS = 4980  
 172  
 173  
 174 Statistical Data On All Valid FS Values:  
 175 FS Max = 3.048 FS Min = 1.207 FS Ave = 1.740  
 176 Standard Deviation = 0.303 Coefficient of Variation = 17.40 %  
 177  
 178  
 179 Failure Surface Specified By 34 Coordinate Points

180  
181  
182 Point X-Surf Y-Surf  
183 No. (ft) (ft)  
184  
185 1 328.684 1377.885  
186 2 338.682 1377.675  
187 3 348.682 1377.721  
188 4 358.677 1378.024  
189 5 368.662 1378.583  
190 6 378.628 1379.398  
191 7 388.571 1380.469  
192 8 398.483 1381.794  
193 9 408.357 1383.373  
194 10 418.188 1385.204  
195 11 427.969 1387.287  
196 12 437.693 1389.620  
197 13 447.354 1392.202  
198 14 456.945 1395.031  
199 15 466.461 1398.105  
200 16 475.895 1401.422  
201 17 485.241 1404.980  
202 18 494.492 1408.776  
203 19 503.643 1412.809  
204 20 512.688 1417.074  
205 21 521.620 1421.571  
206 22 530.434 1426.295  
207 23 539.123 1431.243  
208 24 547.683 1436.413  
209 25 556.108 1441.800  
210 26 564.392 1447.402  
211 27 572.529 1453.214  
212 28 580.515 1459.233  
213 29 588.343 1465.455  
214 30 596.010 1471.876  
215 31 603.509 1478.492  
216 32 610.836 1485.297  
217 33 617.986 1492.288  
218 34 624.803 1499.304  
219  
220 Circle Center At X = 341.875 ; Y = 1767.514 ; and Radius = 389.852  
221  
222  
223 Factor of Safety  
224 \*\*\* 1.207 \*\*\*  
225  
226  
227  
228 Individual data on the 47 slices  
229  
230  
231  
232  
233  
234  
235  
236  
237  
238  
239  
240  
241  
242  
243  
244  
245

Slice No.	Width (ft)	Weight (lbs)	Water	Water	Tie	Tie	Earthquake		Surcharge Load (lbs)
			Force Top (lbs)	Force Bot (lbs)	Force Norm (lbs)	Force Tan (lbs)	Force Hor (lbs)	Force Ver (lbs)	
1	10.0	3277.2	0.0	0.0	0.0	0.0	491.6	0.0	0.0
2	10.0	9680.3	0.0	0.0	0.0	0.0	1452.0	0.0	0.0
3	10.0	15767.4	0.0	0.0	0.0	0.0	2365.1	0.0	0.0
4	10.0	21522.3	0.0	0.0	0.0	0.0	3228.3	0.0	0.0
5	10.0	26931.2	0.0	0.0	0.0	0.0	4039.7	0.0	0.0
6	7.4	23237.2	0.0	0.0	0.0	0.0	3485.6	0.0	0.0
7	2.6	8536.0	0.0	0.0	0.0	0.0	1280.4	0.0	0.0
8	8.4	27278.1	0.0	0.0	0.0	0.0	4091.7	0.0	0.0
9	1.5	4741.3	0.0	0.0	0.0	0.0	711.2	0.0	0.0



246	10	9.9	33643.0	0.0	0.0	0.	0.	5046.5	0.0	0.0
247	11	3.8	13883.4	0.0	0.0	0.	0.	2082.5	0.0	0.0
248	12	6.0	22985.3	0.0	0.0	0.	0.	3447.8	0.0	0.0
249	13	9.8	39716.6	0.0	0.0	0.	0.	5957.5	0.0	0.0
250	14	9.7	42183.4	0.0	0.0	0.	0.	6327.5	0.0	0.0
251	15	0.3	1374.3	0.0	0.0	0.	0.	206.1	0.0	0.0
252	16	9.4	40461.0	0.0	0.0	0.	0.	6069.2	0.0	0.0
253	17	0.6	2691.6	0.0	0.0	0.	0.	403.7	0.0	0.0
254	18	8.9	38081.4	0.0	0.0	0.	0.	5712.2	0.0	0.0
255	19	9.5	42407.4	0.0	0.0	0.	0.	6361.1	0.0	0.0
256	20	9.4	43673.7	0.0	0.0	0.	0.	6551.1	0.0	0.0
257	21	9.3	44563.8	0.0	0.0	0.	0.	6684.6	0.0	0.0
258	22	9.3	45083.5	0.0	0.0	0.	0.	6762.5	0.0	0.0
259	23	0.5	2498.7	0.0	0.0	0.	0.	374.8	0.0	0.0
260	24	8.6	45030.3	0.0	0.0	0.	0.	6754.6	0.0	0.0
261	25	1.4	7522.4	0.0	0.0	0.	0.	1128.4	0.0	0.0
262	26	6.0	32498.3	0.0	0.0	0.	0.	4874.7	0.0	0.0
263	27	1.7	8773.0	0.0	0.0	0.	0.	1316.0	0.0	0.0
264	28	7.3	36052.2	0.0	0.0	0.	0.	5407.8	0.0	0.0
265	29	1.6	7661.8	0.0	0.0	0.	0.	1149.3	0.0	0.0
266	30	8.8	42750.9	0.0	0.0	0.	0.	6412.6	0.0	0.0
267	31	7.6	37970.5	0.0	0.0	0.	0.	5695.6	0.0	0.0
268	32	1.1	5703.0	0.0	0.0	0.	0.	855.5	0.0	0.0
269	33	8.6	42508.6	0.0	0.0	0.	0.	6376.3	0.0	0.0
270	34	8.4	40011.8	0.0	0.0	0.	0.	6001.8	0.0	0.0
271	35	3.9	17788.4	0.0	0.0	0.	0.	2668.3	0.0	0.0
272	36	4.4	19487.5	0.0	0.0	0.	0.	2923.1	0.0	0.0
273	37	8.1	34312.2	0.0	0.0	0.	0.	5146.8	0.0	0.0
274	38	8.0	31150.5	0.0	0.0	0.	0.	4672.6	0.0	0.0
275	39	6.5	23245.0	0.0	0.0	0.	0.	3486.7	0.0	0.0
276	40	1.3	4583.3	0.0	0.0	0.	0.	687.5	0.0	0.0
277	41	7.7	24926.4	0.0	0.0	0.	0.	3739.0	0.0	0.0
278	42	6.0	17888.2	0.0	0.0	0.	0.	2683.2	0.0	0.0
279	43	1.5	4195.6	0.0	0.0	0.	0.	629.3	0.0	0.0
280	44	3.5	8750.7	0.0	0.0	0.	0.	1312.6	0.0	0.0
281	45	3.8	7963.8	0.0	0.0	0.	0.	1194.6	0.0	0.0
282	46	7.2	9868.6	0.0	0.0	0.	0.	1480.3	0.0	0.0
283	47	6.8	3135.5	0.0	0.0	0.	0.	470.3	0.0	0.0

Failure Surface Specified By 35 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)	
291	1	328.684	1377.885
292	2	338.680	1377.610
293	3	348.680	1377.590
294	4	358.678	1377.825
295	5	368.666	1378.314
296	6	378.638	1379.057
297	7	388.588	1380.054
298	8	398.510	1381.304
299	9	408.396	1382.806
300	10	418.241	1384.560
301	11	428.039	1386.563
302	12	437.782	1388.816
303	13	447.464	1391.315
304	14	457.080	1394.061
305	15	466.623	1397.050
306	16	476.086	1400.282
307	17	485.464	1403.753
308	18	494.751	1407.462
309	19	503.940	1411.406
310	20	513.026	1415.583
311	21	522.003	1419.990

312	22	530.864	1424.624
313	23	539.605	1429.482
314	24	548.219	1434.561
315	25	556.701	1439.858
316	26	565.045	1445.369
317	27	573.246	1451.091
318	28	581.299	1457.020
319	29	589.199	1463.152
320	30	596.939	1469.483
321	31	604.516	1476.009
322	32	611.925	1482.726
323	33	619.160	1489.629
324	34	626.216	1496.714
325	35	628.407	1499.029

Circle Center At X = 344.465 ; Y = 1770.276 ; and Radius = 392.708

Factor of Safety  
 \*\*\* 1.211 \*\*\*

Failure Surface Specified By 34 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)	
326	1	333.421	1380.374
327	2	343.415	1380.042
328	3	353.415	1379.976
329	4	363.413	1380.175
330	5	373.402	1380.639
331	6	383.376	1381.368
332	7	393.326	1382.361
333	8	403.247	1383.617
334	9	413.131	1385.136
335	10	422.971	1386.917
336	11	432.761	1388.958
337	12	442.493	1391.258
338	13	452.160	1393.815
339	14	461.757	1396.628
340	15	471.275	1399.694
341	16	480.709	1403.012
342	17	490.051	1406.578
343	18	499.295	1410.391
344	19	508.436	1414.448
345	20	517.465	1418.746
346	21	526.377	1423.282
347	22	535.166	1428.052
348	23	543.825	1433.054
349	24	552.349	1438.284
350	25	560.730	1443.738
351	26	568.965	1449.412
352	27	577.045	1455.303
353	28	584.967	1461.406
354	29	592.724	1467.716
355	30	600.312	1474.231
356	31	607.723	1480.944
357	32	614.954	1487.851
358	33	622.000	1494.948
359	34	625.994	1499.191

378 Circle Center At X = 350.942 ; Y = 1756.851 ; and Radius = 376.885

379  
380  
381 Factor of Safety  
382 \*\*\* 1.211 \*\*\*  
383

384  
385  
386  
387 Failure Surface Specified By 34 Coordinate Points  
388

Point No.	X-Surf (ft)	Y-Surf (ft)
389		
390		
391		
392		
393	1	335.789 1381.618
394	2	345.789 1381.537
395	3	355.788 1381.702
396	4	365.779 1382.111
397	5	375.758 1382.766
398	6	385.717 1383.665
399	7	395.652 1384.807
400	8	405.555 1386.193
401	9	415.422 1387.822
402	10	425.245 1389.691
403	11	435.020 1391.802
404	12	444.740 1394.151
405	13	454.400 1396.737
406	14	463.993 1399.560
407	15	473.515 1402.617
408	16	482.958 1405.907
409	17	492.318 1409.427
410	18	501.589 1413.176
411	19	510.765 1417.151
412	20	519.841 1421.349
413	21	528.811 1425.769
414	22	537.670 1430.408
415	23	546.413 1435.262
416	24	555.034 1440.329
417	25	563.528 1445.607
418	26	571.890 1451.090
419	27	580.116 1456.777
420	28	588.199 1462.665
421	29	596.136 1468.748
422	30	603.921 1475.024
423	31	611.550 1481.490
424	32	619.018 1488.140
425	33	626.321 1494.972
426	34	630.610 1499.186

427 Circle Center At X = 344.117 ; Y = 1789.175 ; and Radius = 407.642

428  
429  
430  
431 Factor of Safety  
432 \*\*\* 1.217 \*\*\*  
433

434  
435  
436  
437 Failure Surface Specified By 34 Coordinate Points  
438

Point No.	X-Surf (ft)	Y-Surf (ft)
439		
440		
441		
442		
443		

444	1	328.684 1377.885
445	2	338.684 1377.931
446	3	348.680 1378.227
447	4	358.665 1378.771
448	5	368.633 1379.565
449	6	378.579 1380.607
450	7	388.495 1381.897
451	8	398.376 1383.433
452	9	408.216 1385.216
453	10	418.009 1387.243
454	11	427.747 1389.515
455	12	437.426 1392.028
456	13	447.040 1394.782
457	14	456.581 1397.775
458	15	466.045 1401.005
459	16	475.426 1404.469
460	17	484.717 1408.167
461	18	493.913 1412.096
462	19	503.008 1416.252
463	20	511.997 1420.635
464	21	520.873 1425.240
465	22	529.632 1430.064
466	23	538.268 1435.106
467	24	546.776 1440.362
468	25	555.150 1445.828
469	26	563.384 1451.502
470	27	571.475 1457.379
471	28	579.417 1463.456
472	29	587.204 1469.729
473	30	594.833 1476.195
474	31	602.298 1482.848
475	32	609.595 1489.686
476	33	616.719 1496.704
477	34	619.700 1499.791

478 Circle Center At X = 331.872 ; Y = 1778.588 ; and Radius = 400.715

479  
480  
481 Factor of Safety  
482 \*\*\* 1.219 \*\*\*  
483

484  
485  
486  
487 Failure Surface Specified By 33 Coordinate Points  
488

Point No.	X-Surf (ft)	Y-Surf (ft)
489		
490		
491		
492		
493		
494	1	331.052 1379.129
495	2	341.050 1378.915
496	3	351.050 1378.977
497	4	361.044 1379.315
498	5	371.026 1379.927
499	6	380.986 1380.815
500	7	390.918 1381.977
501	8	400.815 1383.412
502	9	410.668 1385.119
503	10	420.470 1387.097
504	11	430.215 1389.345
505	12	439.893 1391.860
506	13	449.498 1394.641
507	14	459.024 1397.686
508	15	468.461 1400.992
509	16	477.804 1404.557

510	17	487.045	1408.379
511	18	496.178	1412.453
512	19	505.194	1416.778
513	20	514.088	1421.349
514	21	522.853	1426.164
515	22	531.481	1431.218
516	23	539.967	1436.509
517	24	548.304	1442.031
518	25	556.485	1447.781
519	26	564.505	1453.755
520	27	572.357	1459.947
521	28	580.036	1466.353
522	29	587.535	1472.968
523	30	594.849	1479.788
524	31	601.972	1486.806
525	32	608.899	1494.019
526	33	614.587	1500.277

Circle Center At X = 343.808 ; Y = 1741.696 ; and Radius = 362.791

Factor of Safety  
 \*\*\* 1.220 \*\*\*

Failure Surface Specified By 33 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)	
541	1	331.052	1379.129
542	2	341.049	1378.867
543	3	351.049	1378.888
544	4	361.044	1379.191
545	5	371.027	1379.777
546	6	380.989	1380.645
547	7	390.923	1381.794
548	8	400.820	1383.224
549	9	410.673	1384.933
550	10	420.474	1386.921
551	11	430.214	1389.184
552	12	439.887	1391.722
553	13	449.484	1394.533
554	14	458.997	1397.614
555	15	468.420	1400.962
556	16	477.744	1404.576
557	17	486.962	1408.452
558	18	496.067	1412.587
559	19	505.052	1416.978
560	20	513.908	1421.622
561	21	522.630	1426.514
562	22	531.210	1431.650
563	23	539.641	1437.027
564	24	547.917	1442.641
565	25	556.031	1448.486
566	26	563.976	1454.559
567	27	571.746	1460.853
568	28	579.335	1467.365
569	29	586.737	1474.089
570	30	593.946	1481.020
571	31	600.956	1488.152
572	32	607.761	1495.479

576	33	612.174	1500.507
-----	----	---------	----------

Circle Center At X = 345.321 ; Y = 1732.412 ; and Radius = 353.571

Factor of Safety  
 \*\*\* 1.221 \*\*\*

Failure Surface Specified By 34 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)	
590	1	328.684	1377.885
591	2	338.683	1378.058
592	3	348.674	1378.470
593	4	358.653	1379.119
594	5	368.614	1380.005
595	6	378.550	1381.128
596	7	388.458	1382.487
597	8	398.330	1384.082
598	9	408.161	1385.911
599	10	417.946	1387.974
600	11	427.679	1390.268
601	12	437.355	1392.794
602	13	446.968	1395.550
603	14	456.512	1398.533
604	15	465.983	1401.742
605	16	475.375	1405.177
606	17	484.683	1408.833
607	18	493.900	1412.710
608	19	503.023	1416.806
609	20	512.046	1421.117
610	21	520.964	1425.642
611	22	529.772	1430.377
612	23	538.464	1435.321
613	24	547.036	1440.471
614	25	555.484	1445.823
615	26	563.801	1451.374
616	27	571.984	1457.122
617	28	580.028	1463.063
618	29	587.928	1469.194
619	30	595.680	1475.510
620	31	603.280	1482.010
621	32	610.723	1488.689
622	33	618.005	1495.543
623	34	622.078	1499.564

Circle Center At X = 326.433 ; Y = 1797.869 ; and Radius = 419.990

Factor of Safety  
 \*\*\* 1.221 \*\*\*

Failure Surface Specified By 35 Coordinate Points

Point	X-Surf	Y-Surf
-------	--------	--------

	No.	(ft)	(ft)
642			
643			
644	1	333.421	1380.374
645	2	343.420	1380.484
646	3	353.415	1380.821
647	4	363.399	1381.383
648	5	373.368	1382.171
649	6	383.316	1383.184
650	7	393.239	1384.422
651	8	403.132	1385.884
652	9	412.989	1387.570
653	10	422.805	1389.478
654	11	432.576	1391.607
655	12	442.296	1393.957
656	13	451.960	1396.526
657	14	461.564	1399.313
658	15	471.102	1402.316
659	16	480.570	1405.535
660	17	489.963	1408.966
661	18	499.276	1412.609
662	19	508.504	1416.462
663	20	517.642	1420.522
664	21	526.687	1424.789
665	22	535.632	1429.258
666	23	544.474	1433.929
667	24	553.209	1438.798
668	25	561.831	1443.864
669	26	570.336	1449.123
670	27	578.720	1454.574
671	28	586.979	1460.212
672	29	595.108	1466.036
673	30	603.103	1472.042
674	31	610.961	1478.228
675	32	618.676	1484.589
676	33	626.246	1491.124
677	34	633.666	1497.828
678	35	635.470	1499.534

Circle Center At X = 333.539 ; Y = 1822.553 ; and Radius = 442.180

Factor of Safety  
 \*\*\* 1.221 \*\*\*

Failure Surface Specified By 34 Coordinate Points

	Point No.	X-Surf (ft)	Y-Surf (ft)
692			
693			
694			
695	1	338.158	1382.863
696	2	348.157	1382.715
697	3	358.156	1382.814
698	4	368.150	1383.158
699	5	378.133	1383.748
700	6	388.098	1384.583
701	7	398.040	1385.662
702	8	407.952	1386.985
703	9	417.828	1388.551
704	10	427.663	1390.360
705	11	437.451	1392.409
706	12	447.185	1394.699
707	13	456.861	1397.227

708	14	466.471	1399.991
709	15	476.010	1402.992
710	16	485.473	1406.225
711	17	494.853	1409.690
712	18	504.146	1413.385
713	19	513.345	1417.306
714	20	522.445	1421.453
715	21	531.440	1425.822
716	22	540.325	1430.410
717	23	549.095	1435.215
718	24	557.744	1440.234
719	25	566.267	1445.465
720	26	574.659	1450.903
721	27	582.915	1456.546
722	28	591.030	1462.389
723	29	598.999	1468.431
724	30	606.817	1474.666
725	31	614.479	1481.092
726	32	621.981	1487.703
727	33	629.319	1494.498
728	34	634.419	1499.458

Circle Center At X = 349.171 ; Y = 1789.565 ; and Radius = 406.851

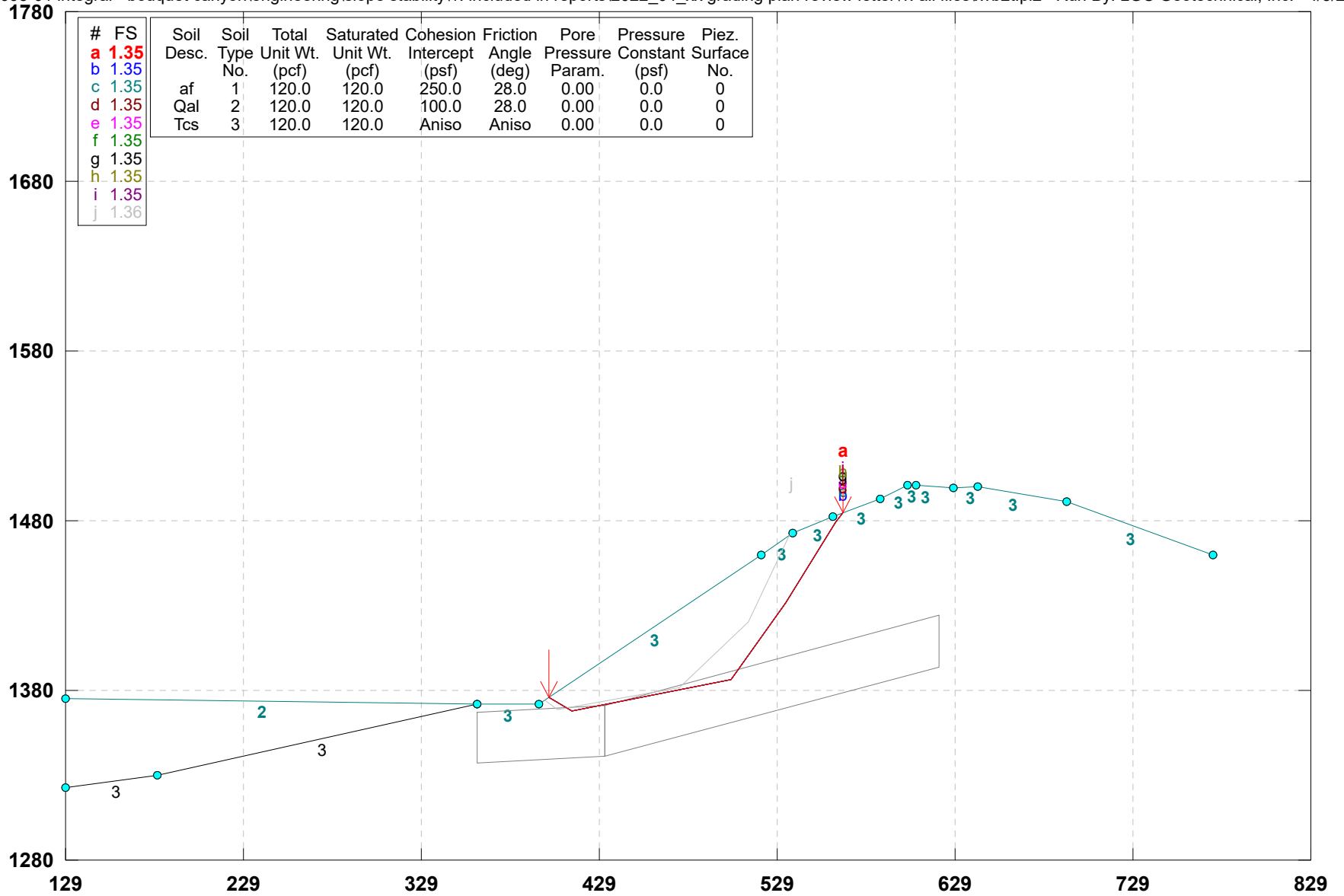
Factor of Safety  
 \*\*\* 1.222 \*\*\*

\*\*\*\* END OF GSTABL7 OUTPUT \*\*\*\*



# Bouquet Canyon/21095-01/Section V-V' Temporary

z:\2021\21095-01 integral - bouquet canyon\engineering\slope stability\1. included in reports\2022\_04\_xx grading plan review letter\1. all files\svb2t.pl2 Run By: LGC Geotechnical, Inc. 4/5/2022 10:08A



GSTABL7 v.2 FSmin=1.35

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

```

1          *** GSTABL7 ***
2
3          ** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
4
5          ** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
6          (All Rights Reserved-Unauthorized Use Prohibited)
7
8
9
10         *****
11         **
12         SLOPE STABILITY ANALYSIS SYSTEM
13         Modified Bishop, Simplified Janbu, or GLE Method of Slices.
14         (Includes Spencer & Morgenstern-Price Type Analysis)
15         Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
16         Nonlinear Undrained Shear Strength, Curved Phi Envelope,
17         Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
18         Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
19
20         *****
21         **
22
23         Analysis Run Date:      4/5/2022
24         Time of Run:           10:08AM
25         Run By:                LGC Geotechnical,
26         Inc.
27
28
29         Input Data Filename:    Z:\2021\21095-01 Integral - Bouquet
30         Canyon\Engineering\slope stability\Sec
31         V-V'\2022_04_05\xvb2t.in
32
33         Output Filename:       Z:\2021\21095-01 Integral - Bouquet
34         Canyon\Engineering\slope stability\Sec
35         V-V'\2022_04_05\xvb2t.OUT
36
37         Unit System:           English
38
39         Plotted Output Filename: Z:\2021\21095-01 Integral - Bouquet
40         Canyon\Engineering\slope stability\Sec
41         V-V'\2022_04_05\xvb2t.PLT
42
43
44
45         PROBLEM DESCRIPTION:   Bouquet Canyon/21095-01/Section V-V'/
46         Temporary
47
48
49         BOUNDARY COORDINATES
50
51         12 Top Boundaries
52         14 Total Boundaries
53
54         Boundary   X-Left   Y-Left   X-Right   Y-Right   Soil Type
55         No.        (ft)     (ft)     (ft)      (ft)     Below Bnd

```

```

48         1      129.00   1375.00   360.00   1372.00   2
49         2      360.00   1372.00   395.00   1372.00   3
50         3      395.00   1372.00   520.00   1460.00   3
51         4      520.00   1460.00   538.00   1473.00   3
52         5      538.00   1473.00   560.00   1482.00   3
53         6      560.00   1482.00   587.00   1493.00   3
54         7      587.00   1493.00   602.00   1501.00   3
55         8      602.00   1501.00   607.00   1501.00   3
56         9      607.00   1501.00   628.00   1499.00   3
57         10     628.00   1499.00   642.00   1500.00   3
58         11     642.00   1500.00   692.00   1491.00   3
59         12     692.00   1491.00   774.00   1460.00   3
60         13     129.00   1323.00   181.00   1330.00   3
61         14     181.00   1330.00   360.00   1372.00   3
62
63         User Specified Y-Origin =      1280.00(ft)
64
65         Default X-Plus Value = 0.00(ft)
66
67         Default Y-Plus Value = 0.00(ft)
68
69         1
70
71         ISOTROPIC SOIL PARAMETERS
72
73         3 Type(s) of Soil
74
75
76
77         Soil Total Saturated Cohesion Friction Pore Pressure Piez.
78         Type Unit Wt. Unit Wt. Intercept Angle Pressure Constant Surface
79         No. (pcf) (pcf) (psf) (deg) Param. (psf) No.
80
81         1 120.0 120.0 250.0 28.0 0.00 0.0 0
82         2 120.0 120.0 100.0 28.0 0.00 0.0 0
83         3 120.0 120.0 250.0 36.0 0.00 0.0 0
84
85
86
87         ANISOTROPIC STRENGTH PARAMETERS
88         1 soil type(s)
89
90
91         Soil Type 3 Is Anisotropic
92
93         Number Of Direction Ranges Specified = 3
94
95
96         Direction Counterclockwise Cohesion Friction
97         Range Direction Limit Intercept Angle
98         No. (deg) (psf) (deg)
99
100        1 10.0 250.00 36.00
101        2 15.0 150.00 25.00
102        3 90.0 250.00 36.00
103
104         ANISOTROPIC SOIL NOTES:
105         (1) An input value of 0.01 for C and/or Phi will cause Aniso
106         C and/or Phi to be ignored in that range.
107         (2) An input value of 0.02 for Phi will set both Phi and
108         C equal to zero, with no water weight in the tension crack.
109         (3) An input value of 0.03 for Phi will set both Phi and
110         C equal to zero, with water weight in the tension crack.
111
112
113         Janbus Empirical Coef is being used for the case of c & phi both > 0

```

114 1

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.

4999 Trial Surfaces Have Been Generated.

2 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 55.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	360.00	1352.00	432.00	1356.00	30.00
2	432.10	1356.00	620.00	1409.00	30.00

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	326.73	1372.43
2	365.34	1354.44
3	481.54	1368.44
4	481.86	1423.44
5	511.96	1454.34

Factor of Safety for the Preceding Surface is Between 8.482 and 8.466

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	396.82	1373.28
2	416.26	1353.97
3	454.80	1365.62
4	454.84	1414.13

Factor of Safety for the Preceding Surface is Between 22.157 and 21.551

180

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	326.73	1372.43
2	365.34	1354.44
3	481.54	1368.44
4	481.86	1423.44
5	511.96	1454.34

Factor of Safety for the Preceding Surface is Between 8.482 and 8.466

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	396.82	1373.28
2	416.26	1353.97
3	454.80	1365.62
4	454.84	1414.13

Factor of Safety for the Preceding Surface is Between 22.157 and 21.551

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	326.73	1372.43
2	365.34	1354.44
3	481.54	1368.44
4	481.86	1423.44
5	511.96	1454.34

Factor of Safety for the Preceding Surface is Between 8.482 and 8.466

WARNING! The factor of safety calculation did not converge in 20 iterations.

246 The Trial Failure Surface In Question Is Defined  
 247 By The Following 4 Coordinate Points  
 248

Point No.	X-Surf (ft)	Y-Surf (ft)
1	396.82	1373.28
2	416.26	1353.97
3	454.80	1365.62
4	454.84	1414.13

252

253 Factor of Safety for the Preceding Surface is Between 22.157 and 21.551

254

255 WARNING! The factor of safety calculation did not converge in 20 iterations.

256

257 The Trial Failure Surface In Question Is Defined  
 258 By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	326.73	1372.43
2	365.34	1354.44
3	481.54	1368.44
4	481.86	1423.44
5	511.96	1454.34

266

267 Factor of Safety for the Preceding Surface is Between 8.482 and 8.466

268

269 WARNING! The factor of safety calculation did not converge in 20 iterations.

270

271 The Trial Failure Surface In Question Is Defined  
 272 By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	396.82	1373.28
2	416.26	1353.97
3	454.80	1365.62
4	454.84	1414.13

276

277 Factor of Safety for the Preceding Surface is Between 22.157 and 21.551

278

279 WARNING! The factor of safety calculation did not converge in 20 iterations.

280

281 The Trial Failure Surface In Question Is Defined  
 282 By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	326.73	1372.43
2	365.34	1354.44
3	481.54	1368.44
4	481.86	1423.44
5	511.96	1454.34

286

287 Factor of Safety for the Preceding Surface is Between 8.482 and 8.466

288

289 WARNING! The factor of safety calculation did not converge in 20 iterations.

290

291 The Trial Failure Surface In Question Is Defined  
 292 By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	396.82	1373.28
2	416.26	1353.97
3	454.80	1365.62
4	454.84	1414.13

296

297 Factor of Safety for the Preceding Surface is Between 22.157 and 21.551

298

299 WARNING! The factor of safety calculation did not converge in 20 iterations.

300

301 The Trial Failure Surface In Question Is Defined  
 302 By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	326.73	1372.43
2	365.34	1354.44
3	481.54	1368.44
4	481.86	1423.44
5	511.96	1454.34

306

307 Factor of Safety for the Preceding Surface is Between 8.482 and 8.466

308

309 WARNING! The factor of safety calculation did not converge in 20 iterations.

310

311 The Trial Failure Surface In Question Is Defined  
 312 By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	396.82	1373.28
2	416.26	1353.97

312 No. (ft) (ft)

1	326.73	1372.43
2	365.34	1354.44
3	481.54	1368.44
4	481.86	1423.44
5	511.96	1454.34

319

320 Factor of Safety for the Preceding Surface is Between 8.482 and 8.466

321

322 WARNING! The factor of safety calculation did not converge in 20 iterations.

323

324 The Trial Failure Surface In Question Is Defined  
 325 By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	396.82	1373.28
2	416.26	1353.97
3	454.80	1365.62
4	454.84	1414.13

329

330 Factor of Safety for the Preceding Surface is Between 22.157 and 21.551

331

332 WARNING! The factor of safety calculation did not converge in 20 iterations.

333

334 The Trial Failure Surface In Question Is Defined  
 335 By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	326.73	1372.43
2	365.34	1354.44
3	481.54	1368.44
4	481.86	1423.44
5	511.96	1454.34

339

340 Factor of Safety for the Preceding Surface is Between 8.482 and 8.466

341

342 WARNING! The factor of safety calculation did not converge in 20 iterations.

343

344 The Trial Failure Surface In Question Is Defined  
 345 By The Following 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	326.73	1372.43
2	365.34	1354.44
3	481.54	1368.44
4	481.86	1423.44
5	511.96	1454.34

349

350 Factor of Safety for the Preceding Surface is Between 8.482 and 8.466

351

352 WARNING! The factor of safety calculation did not converge in 20 iterations.

353

354 The Trial Failure Surface In Question Is Defined  
 355 By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	396.82	1373.28
2	416.26	1353.97

359



378 3 454.80 1365.62  
379 4 454.84 1414.13  
380  
381  
382 Factor of Safety for the Preceding Surface is Between 22.157 and 21.551  
383  
384  
385 WARNING! The factor of safety calculation did not converge in 20 iterations.  
386  
387  
388  
389 The Trial Failure Surface In Question Is Defined  
390 By The Following 5 Coordinate Points  
391  
392  
393 Point X-Surf Y-Surf  
394 No. (ft) (ft)  
395  
396 1 326.73 1372.43  
397 2 365.34 1354.44  
398 3 481.54 1368.44  
399 4 481.86 1423.44  
400 5 511.96 1454.34  
401  
402  
403 Factor of Safety for the Preceding Surface is Between 8.482 and 8.466  
404  
405  
406 WARNING! The factor of safety calculation did not converge in 20 iterations.  
407  
408  
409  
410 The Trial Failure Surface In Question Is Defined  
411 By The Following 4 Coordinate Points  
412  
413  
414 Point X-Surf Y-Surf  
415 No. (ft) (ft)  
416  
417 1 396.82 1373.28  
418 2 416.26 1353.97  
419 3 454.80 1365.62  
420 4 454.84 1414.13  
421  
422  
423 Factor of Safety for the Preceding Surface is Between 22.157 and 21.551  
424  
425  
426 WARNING! The factor of safety calculation did not converge in 20 iterations.  
427  
428  
429  
430 The Trial Failure Surface In Question Is Defined  
431 By The Following 5 Coordinate Points  
432  
433  
434 Point X-Surf Y-Surf  
435 No. (ft) (ft)  
436  
437 1 326.73 1372.43  
438 2 365.34 1354.44  
439 3 481.54 1368.44  
440 4 481.86 1423.44  
441 5 511.96 1454.34  
442  
443

444 Factor of Safety for the Preceding Surface is Between 8.482 and 8.466  
445  
446  
447  
448 WARNING! The factor of safety calculation did not converge in 20 iterations.  
449  
450  
451 The Trial Failure Surface In Question Is Defined  
452 By The Following 4 Coordinate Points  
453  
454  
455 Point X-Surf Y-Surf  
456 No. (ft) (ft)  
457  
458 1 396.82 1373.28  
459 2 416.26 1353.97  
460 3 454.80 1365.62  
461 4 454.84 1414.13  
462  
463  
464 Factor of Safety for the Preceding Surface is Between 22.157 and 21.551  
465  
466  
467  
468 WARNING! The factor of safety calculation did not converge in 20 iterations.  
469  
470  
471  
472 The Trial Failure Surface In Question Is Defined  
473 By The Following 5 Coordinate Points  
474  
475  
476 Point X-Surf Y-Surf  
477 No. (ft) (ft)  
478  
479 1 326.73 1372.43  
480 2 365.34 1354.44  
481 3 481.54 1368.44  
482 4 481.86 1423.44  
483 5 511.96 1454.34  
484  
485  
486 Factor of Safety for the Preceding Surface is Between 8.482 and 8.466  
487  
488  
489  
490  
491  
492  
493  
494  
495  
496  
497  
498  
499  
500  
501  
502  
503  
504  
505  
506  
507  
508  
509

510  
511 The Trial Failure Surface In Question Is Defined  
512 By The Following 5 Coordinate Points  
513  
514

Point No.	X-Surf (ft)	Y-Surf (ft)
1	326.73	1372.43
2	365.34	1354.44
3	481.54	1368.44
4	481.86	1423.44
5	511.96	1454.34

515  
516  
517  
518  
519  
520  
521  
522  
523  
524  
525  
526 Factor of Safety for the Preceding Surface is Between 8.482 and 8.466  
527  
528  
529 WARNING! The factor of safety calculation did not converge in 20 iterations.  
530  
531  
532  
533 The Trial Failure Surface In Question Is Defined  
534 By The Following 4 Coordinate Points  
535  
536

Point No.	X-Surf (ft)	Y-Surf (ft)
1	396.82	1373.28
2	416.26	1353.97
3	454.80	1365.62
4	454.84	1414.13

537  
538  
539  
540  
541  
542  
543  
544  
545  
546 Factor of Safety for the Preceding Surface is Between 22.157 and 21.551  
547  
548  
549 Following Are Displayed The Ten Most Critical Of The Trial  
550 Failure Surfaces Evaluated. They Are  
551 Ordered - Most Critical First.  
552  
553  
554 \* \* Safety Factors Are Calculated By The Simplified Janbu Method \* \*  
555  
556  
557  
558 Total Number of Trial Surfaces Attempted = 4999  
559  
560 WARNING! The Factor of Safety Calculation for one or More Trial Surfaces  
561 Did Not Converge in 20 Iterations.  
562  
563  
564 Number of Trial Surfaces with Non-Converged FS = 20  
565  
566 Number of Trial Surfaces With Valid FS = 4979  
567  
568  
569 Percentage of Trial Surfaces With Non-Valid FS Solutions  
570 of the Total Attempted = 0.4 %  
571  
572 Statistical Data On All Valid FS Values:  
573 FS Max = 9.606 FS Min = 1.352 FS Ave = 2.170  
574 Standard Deviation = 0.776 Coefficient of Variation = 35.74 %  
575

576  
577 Failure Surface Specified By 6 Coordinate Points  
578  
579

Point No.	X-Surf (ft)	Y-Surf (ft)
1	400.442	1375.831
2	413.503	1367.693
3	503.010	1386.246
4	533.940	1431.724
5	561.682	1479.215
6	566.083	1484.478

580  
581  
582  
583  
584  
585  
586  
587  
588  
589  
590  
591 Factor of Safety  
592 \*\*\* 1.352 \*\*\*  
593  
594  
595  
596  
597 Individual data on the 8 slices  
598  
599

Slice No.	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force Surcharge		
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)	Load (lbs)
1	13.1	13584.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	89.5	424940.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	17.0	112712.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	13.9	72866.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	4.1	17700.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	22.0	52787.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	1.7	922.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	4.4	916.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0

600  
601  
602  
603  
604  
605  
606  
607  
608  
609  
610  
611  
612  
613  
614  
615 Failure Surface Specified By 6 Coordinate Points  
616  
617

Point No.	X-Surf (ft)	Y-Surf (ft)
1	400.442	1375.831
2	413.503	1367.693
3	503.010	1386.246
4	533.940	1431.724
5	561.682	1479.215
6	566.083	1484.478

618  
619  
620  
621  
622  
623  
624  
625  
626  
627  
628 Factor of Safety  
629 \*\*\* 1.352 \*\*\*  
630  
631  
632  
633 1  
634  
635 Failure Surface Specified By 6 Coordinate Points  
636  
637

Point No.	X-Surf (ft)	Y-Surf (ft)
1	400.442	1375.831

638  
639  
640  
641

642 2 413.503 1367.693  
643 3 503.010 1386.246  
644 4 533.940 1431.724  
645 5 561.682 1479.215  
646 6 566.083 1484.478

Factor of Safety  
\*\*\* 1.352 \*\*\*

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	400.442	1375.831
2	413.503	1367.693
3	503.010	1386.246
4	533.940	1431.724
5	561.682	1479.215
6	566.083	1484.478

Factor of Safety  
\*\*\* 1.352 \*\*\*

1  
Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	400.442	1375.831
2	413.503	1367.693
3	503.010	1386.246
4	533.940	1431.724
5	561.682	1479.215
6	566.083	1484.478

Factor of Safety  
\*\*\* 1.352 \*\*\*

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	400.442	1375.831
2	413.503	1367.693
3	503.010	1386.246
4	533.940	1431.724
5	561.682	1479.215
6	566.083	1484.478

708

709

Factor of Safety  
\*\*\* 1.352 \*\*\*

710

711

712

713

714

715

1

716

717

Failure Surface Specified By 6 Coordinate Points

718

719

720

Point No.	X-Surf (ft)	Y-Surf (ft)
1	400.442	1375.831
2	413.503	1367.693
3	503.010	1386.246
4	533.940	1431.724
5	561.682	1479.215
6	566.083	1484.478

721

722

723

724

725

726

727

728

729

730

731

732

733

734

735

736

737

738

739

740

741

742

743

744

745

746

747

748

749

750

751

752

753

754

755

756

1

757

758

759

760

761

Failure Surface Specified By 6 Coordinate Points

762

763

764

765

766

767

768

769

770

771

772

773

Factor of Safety  
\*\*\* 1.352 \*\*\*

774  
775  
776  
777  
778  
779  
780  
781  
782  
783  
784  
785  
786  
787  
788  
789  
790  
791  
792  
793  
794  
795  
796  
797  
798  
799  
800

Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	398.360	1374.365
2	405.382	1368.721
3	473.742	1381.462
4	512.448	1420.538
5	535.318	1470.557
6	537.112	1472.359

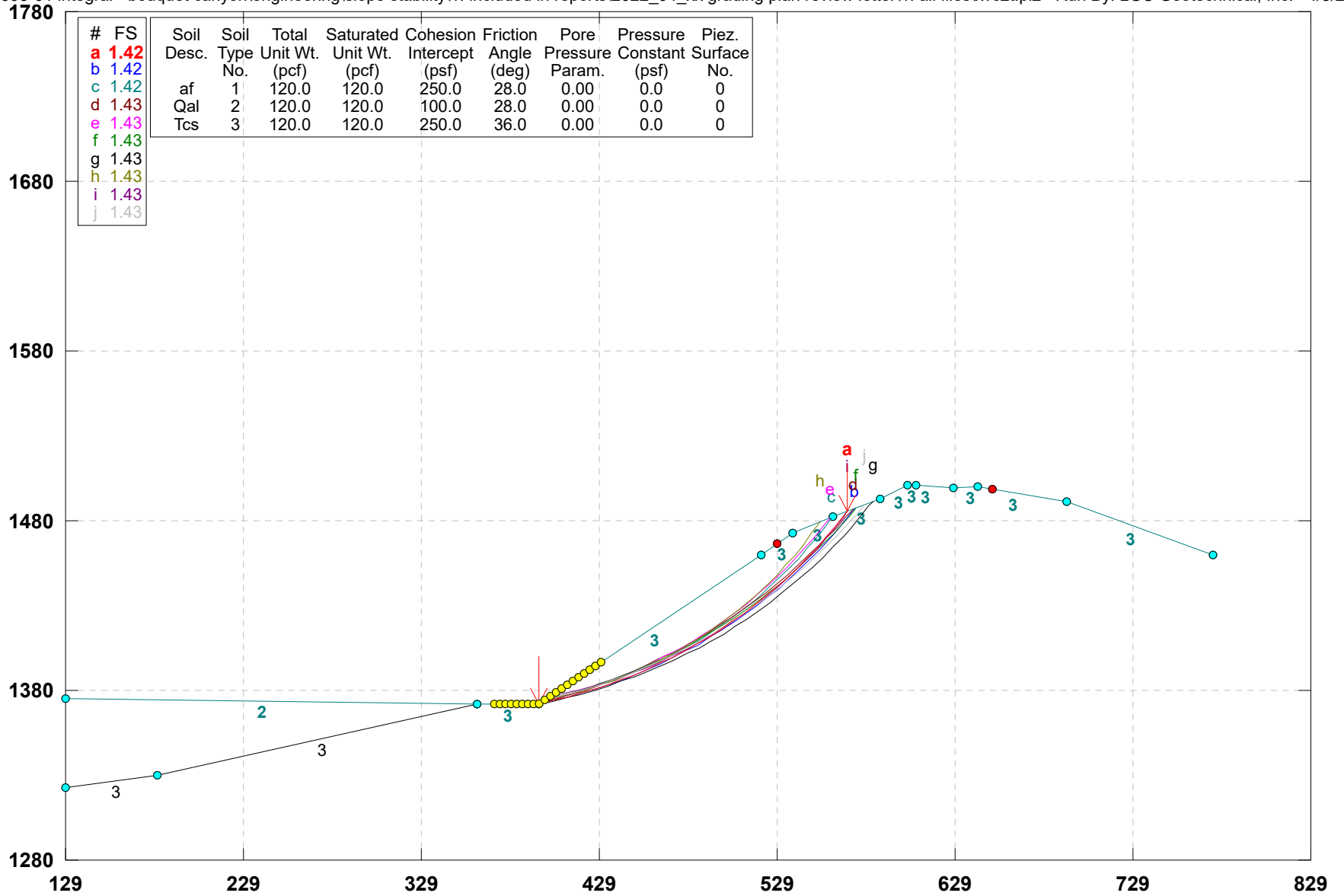
Factor of Safety  
\*\*\* 1.362 \*\*\*

\*\*\*\* END OF GSTABL7 OUTPUT \*\*\*\*



# Bouquet Canyon/21095-01/Section V-V' Temporary

z:\2021\21095-01 integral - bouquet canyon\engineering\slope stability\1. included in reports\2022\_04\_xx grading plan review letter\1. all files\svc2t.pl2 Run By: LGC Geotechnical, Inc. 4/5/2022 10:12A



GSTABL7 v.2 FSmin=1.42  
 Safety Factors Are Calculated By The Modified Bishop Method

```

1          *** GSTABL7 ***
2
3          ** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
4
5          ** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
6          (All Rights Reserved-Unauthorized Use Prohibited)
7
8
9
10         *****
11         **
12         SLOPE STABILITY ANALYSIS SYSTEM
13         Modified Bishop, Simplified Janbu, or GLE Method of Slices.
14         (Includes Spencer & Morgenstern-Price Type Analysis)
15         Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
16         Nonlinear Undrained Shear Strength, Curved Phi Envelope,
17         Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
18         Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
19
20         *****
21         **
22
23         Analysis Run Date:      4/5/2022
24         Time of Run:           10:12AM
25         Run By:                LGC Geotechnical,
26         Inc.
27
28
29         Input Data Filename:    Z:\2021\21095-01 Integral - Bouquet
30         Canyon\Engineering\slope stability\Sec
31         V-V'\2022_04_05\xvc2t.in
32
33         Output Filename:       Z:\2021\21095-01 Integral - Bouquet
34         Canyon\Engineering\slope stability\Sec
35         V-V'\2022_04_05\xvc2t.OUT
36
37         Unit System:           English
38
39         Plotted Output Filename: Z:\2021\21095-01 Integral - Bouquet
40         Canyon\Engineering\slope stability\Sec
41         V-V'\2022_04_05\xvc2t.PLT
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113

```

```

48         1      129.00   1375.00   360.00   1372.00      2
49         2      360.00   1372.00   395.00   1372.00      3
50         3      395.00   1372.00   520.00   1460.00      3
51         4      520.00   1460.00   538.00   1473.00      3
52         5      538.00   1473.00   560.00   1482.00      3
53         6      560.00   1482.00   587.00   1493.00      3
54         7      587.00   1493.00   602.00   1501.00      3
55         8      602.00   1501.00   607.00   1501.00      3
56         9      607.00   1501.00   628.00   1499.00      3
57        10      628.00   1499.00   642.00   1500.00      3
58        11      642.00   1500.00   692.00   1491.00      3
59        12      692.00   1491.00   774.00   1460.00      3
60        13      129.00   1323.00   181.00   1330.00      3
61        14      181.00   1330.00   360.00   1372.00      3
62
63         User Specified Y-Origin =      1280.00(ft)
64
65         Default X-Plus Value = 0.00(ft)
66
67         Default Y-Plus Value = 0.00(ft)
68
69         1
70
71         ISOTROPIC SOIL PARAMETERS
72
73         3 Type(s) of Soil
74
75
76
77         Soil Total Saturated Cohesion Friction Pore Pressure Piez.
78         Type Unit Wt. Unit Wt. Intercept Angle Pressure Constant Surface
79         No. (pcf) (pcf) (psf) (deg) Param. (psf) No.
80
81         1  120.0  120.0  250.0  28.0  0.00  0.0  0
82         2  120.0  120.0  100.0  28.0  0.00  0.0  0
83         3  120.0  120.0  250.0  36.0  0.00  0.0  0
84
85
86
87         ANISOTROPIC STRENGTH PARAMETERS
88         1 soil type(s)
89
90
91         Soil Type 3 Is Anisotropic
92
93         Number Of Direction Ranges Specified = 3
94
95
96         Direction Counterclockwise Cohesion Friction
97         Range Direction Limit Intercept Angle
98         No. (deg) (psf) (deg)
99
100        1  10.0  250.00  36.00
101        2  15.0  150.00  25.00
102        3  90.0  250.00  36.00
103
104         ANISOTROPIC SOIL NOTES:
105         (1) An input value of 0.01 for C and/or Phi will cause Aniso
106             C and/or Phi to be ignored in that range.
107         (2) An input value of 0.02 for Phi will set both Phi and
108             C equal to zero, with no water weight in the tension crack.
109         (3) An input value of 0.03 for Phi will set both Phi and
110             C equal to zero, with water weight in the tension crack.
111
112
113

```

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
12					
14					

114  
 115 ANISOTROPIC STRENGTH DATA HAS BEEN SUPPRESSED  
 116 1  
 117  
 118  
 119 A Critical Failure Surface Searching Method, Using A Random  
 120 Technique For Generating Circular Surfaces, Has Been Specified.  
 121  
 122  
 123 4980 Trial Surfaces Have Been Generated.  
 124  
 125  
 126 249 Surface(s) Initiate(s) From Each Of 20 Points Equally Spaced  
 127 Along The Ground Surface Between X = 370.00(ft)  
 128 and X = 430.00(ft)  
 129  
 130  
 131 Each Surface Terminates Between X = 529.00(ft)  
 132 and X = 650.00(ft)  
 133  
 134  
 135 Unless Further Limitations Were Imposed, The Minimum Elevation  
 136 At Which A Surface Extends Is Y = 0.00(ft)  
 137  
 138  
 139 8.00(ft) Line Segments Define Each Trial Failure Surface.  
 140  
 141  
 142  
 143  
 144 Following Are Displayed The Ten Most Critical Of The Trial  
 145 Failure Surfaces Evaluated. They Are  
 146 Ordered - Most Critical First.  
 147  
 148  
 149 \* \* Safety Factors Are Calculated By The Modified Bishop Method \* \*  
 150  
 151  
 152  
 153 Total Number of Trial Surfaces Attempted = 4980  
 154  
 155 Number of Trial Surfaces With Valid FS = 4980  
 156  
 157  
 158 Statistical Data On All Valid FS Values:  
 159 FS Max = 2.927 FS Min = 1.419 FS Ave = 2.112  
 160 Standard Deviation = 0.405 Coefficient of Variation = 19.16 %  
 161  
 162  
 163 Failure Surface Specified By 28 Coordinate Points  
 164  
 165  
 166 Point X-Surf Y-Surf  
 167 No. (ft) (ft)  
 168  
 169 1 395.263 1372.185  
 170 2 403.065 1373.956  
 171 3 410.813 1375.945  
 172 4 418.503 1378.151  
 173 5 426.129 1380.571  
 174 6 433.683 1383.204  
 175 7 441.160 1386.048  
 176 8 448.555 1389.100  
 177 9 455.862 1392.358  
 178 10 463.074 1395.820  
 179 11 470.186 1399.482

180	12	477.193	1403.343							
181	13	484.089	1407.398							
182	14	490.868	1411.646							
183	15	497.526	1416.081							
184	16	504.057	1420.702							
185	17	510.456	1425.503							
186	18	516.717	1430.482							
187	19	522.837	1435.635							
188	20	528.810	1440.957							
189	21	534.631	1446.445							
190	22	540.296	1452.094							
191	23	545.800	1457.899							
192	24	551.140	1463.856							
193	25	556.311	1469.961							
194	26	561.308	1476.208							
195	27	566.128	1482.593							
196	28	568.037	1485.275							
197										
198										
199										
200										
201										
202										
203										
204										
205										
206										
207										
208										
209										
210										
211										
212										
213										
214										
215	1	7.8	1741.9	0.0	0.0	0.	0.	0.0	0.0	0.0
216	2	7.7	5071.7	0.0	0.0	0.	0.	0.0	0.0	0.0
217	3	7.7	8112.8	0.0	0.0	0.	0.	0.0	0.0	0.0
218	4	7.6	10860.9	0.0	0.0	0.	0.	0.0	0.0	0.0
219	5	7.6	13313.3	0.0	0.0	0.	0.	0.0	0.0	0.0
220	6	7.5	15468.8	0.0	0.0	0.	0.	0.0	0.0	0.0
221	7	7.4	17327.3	0.0	0.0	0.	0.	0.0	0.0	0.0
222	8	7.3	18890.7	0.0	0.0	0.	0.	0.0	0.0	0.0
223	9	7.2	20162.2	0.0	0.0	0.	0.	0.0	0.0	0.0
224	10	7.1	21146.2	0.0	0.0	0.	0.	0.0	0.0	0.0
225	11	7.0	21848.7	0.0	0.0	0.	0.	0.0	0.0	0.0
226	12	6.9	22276.9	0.0	0.0	0.	0.	0.0	0.0	0.0
227	13	6.8	22439.8	0.0	0.0	0.	0.	0.0	0.0	0.0
228	14	6.7	22347.4	0.0	0.0	0.	0.	0.0	0.0	0.0
229	15	6.5	22010.9	0.0	0.0	0.	0.	0.0	0.0	0.0
230	16	6.4	21443.0	0.0	0.0	0.	0.	0.0	0.0	0.0
231	17	6.3	20657.3	0.0	0.0	0.	0.	0.0	0.0	0.0
232	18	3.3	10627.8	0.0	0.0	0.	0.	0.0	0.0	0.0
233	19	2.8	9050.1	0.0	0.0	0.	0.	0.0	0.0	0.0
234	20	6.0	18570.0	0.0	0.0	0.	0.	0.0	0.0	0.0
235	21	5.8	17298.2	0.0	0.0	0.	0.	0.0	0.0	0.0
236	22	3.4	9565.1	0.0	0.0	0.	0.	0.0	0.0	0.0
237	23	2.3	6204.8	0.0	0.0	0.	0.	0.0	0.0	0.0
238	24	5.5	13256.4	0.0	0.0	0.	0.	0.0	0.0	0.0
239	25	5.3	10512.1	0.0	0.0	0.	0.	0.0	0.0	0.0
240	26	5.2	7771.1	0.0	0.0	0.	0.	0.0	0.0	0.0
241	27	3.7	3975.1	0.0	0.0	0.	0.	0.0	0.0	0.0
242	28	1.3	1079.3	0.0	0.0	0.	0.	0.0	0.0	0.0
243	29	4.8	2380.0	0.0	0.0	0.	0.	0.0	0.0	0.0
244	30	1.9	218.1	0.0	0.0	0.	0.	0.0	0.0	0.0
245										

Circle Center At X = 336.075 ; Y = 1651.136 ; and Radius = 285.161

Factor of Safety  
 \*\*\* 1.419 \*\*\*

Individual data on the 30 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	7.8	1741.9	0.0	0.0	0.	0.	0.0	0.0	0.0
2	7.7	5071.7	0.0	0.0	0.	0.	0.0	0.0	0.0
3	7.7	8112.8	0.0	0.0	0.	0.	0.0	0.0	0.0
4	7.6	10860.9	0.0	0.0	0.	0.	0.0	0.0	0.0
5	7.6	13313.3	0.0	0.0	0.	0.	0.0	0.0	0.0
6	7.5	15468.8	0.0	0.0	0.	0.	0.0	0.0	0.0
7	7.4	17327.3	0.0	0.0	0.	0.	0.0	0.0	0.0
8	7.3	18890.7	0.0	0.0	0.	0.	0.0	0.0	0.0
9	7.2	20162.2	0.0	0.0	0.	0.	0.0	0.0	0.0
10	7.1	21146.2	0.0	0.0	0.	0.	0.0	0.0	0.0
11	7.0	21848.7	0.0	0.0	0.	0.	0.0	0.0	0.0
12	6.9	22276.9	0.0	0.0	0.	0.	0.0	0.0	0.0
13	6.8	22439.8	0.0	0.0	0.	0.	0.0	0.0	0.0
14	6.7	22347.4	0.0	0.0	0.	0.	0.0	0.0	0.0
15	6.5	22010.9	0.0	0.0	0.	0.	0.0	0.0	0.0
16	6.4	21443.0	0.0	0.0	0.	0.	0.0	0.0	0.0
17	6.3	20657.3	0.0	0.0	0.	0.	0.0	0.0	0.0
18	3.3	10627.8	0.0	0.0	0.	0.	0.0	0.0	0.0
19	2.8	9050.1	0.0	0.0	0.	0.	0.0	0.0	0.0
20	6.0	18570.0	0.0	0.0	0.	0.	0.0	0.0	0.0
21	5.8	17298.2	0.0	0.0	0.	0.	0.0	0.0	0.0
22	3.4	9565.1	0.0	0.0	0.	0.	0.0	0.0	0.0
23	2.3	6204.8	0.0	0.0	0.	0.	0.0	0.0	0.0
24	5.5	13256.4	0.0	0.0	0.	0.	0.0	0.0	0.0
25	5.3	10512.1	0.0	0.0	0.	0.	0.0	0.0	0.0
26	5.2	7771.1	0.0	0.0	0.	0.	0.0	0.0	0.0
27	3.7	3975.1	0.0	0.0	0.	0.	0.0	0.0	0.0
28	1.3	1079.3	0.0	0.0	0.	0.	0.0	0.0	0.0
29	4.8	2380.0	0.0	0.0	0.	0.	0.0	0.0	0.0
30	1.9	218.1	0.0	0.0	0.	0.	0.0	0.0	0.0

246 Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	395.263	1372.185
2	403.063	1373.963
3	410.813	1375.950
4	418.505	1378.145
5	426.136	1380.548
6	433.699	1383.156
7	441.189	1385.967
8	448.600	1388.979
9	455.928	1392.190
10	463.166	1395.597
11	470.309	1399.199
12	477.352	1402.993
13	484.291	1406.975
14	491.119	1411.143
15	497.833	1415.494
16	504.426	1420.025
17	510.895	1424.731
18	517.234	1429.611
19	523.439	1434.661
20	529.506	1439.875
21	535.430	1445.252
22	541.206	1450.787
23	546.831	1456.476
24	552.300	1462.314
25	557.610	1468.298
26	562.756	1474.423
27	567.735	1480.685
28	572.543	1487.079
29	572.574	1487.123

Circle Center At X = 333.346 ; Y = 1661.940 ; and Radius = 296.297

Factor of Safety  
\*\*\* 1.421 \*\*\*

Failure Surface Specified By 26 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	398.421	1374.408
2	406.222	1376.180
3	413.966	1378.190
4	421.644	1380.435
5	429.251	1382.914
6	436.777	1385.624
7	444.218	1388.563
8	451.565	1391.728
9	458.812	1395.117
10	465.953	1398.725
11	472.979	1402.549
12	479.885	1406.587
13	486.665	1410.834
14	493.312	1415.286

15	499.819	1419.939
16	506.182	1424.789
17	512.393	1429.831
18	518.447	1435.060
19	524.338	1440.472
20	530.062	1446.062
21	535.611	1451.824
22	540.982	1457.753
23	546.170	1463.843
24	551.168	1470.089
25	555.974	1476.485
26	559.803	1481.919

Circle Center At X = 344.408 ; Y = 1630.365 ; and Radius = 261.593

Factor of Safety  
\*\*\* 1.424 \*\*\*

Failure Surface Specified By 28 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	395.263	1372.185
2	402.960	1374.365
3	410.605	1376.724
4	418.192	1379.261
5	425.718	1381.975
6	433.178	1384.863
7	440.569	1387.925
8	447.886	1391.158
9	455.126	1394.561
10	462.285	1398.133
11	469.358	1401.870
12	476.342	1405.772
13	483.233	1409.836
14	490.028	1414.059
15	496.721	1418.440
16	503.311	1422.976
17	509.793	1427.665
18	516.164	1432.503
19	522.420	1437.489
20	528.558	1442.620
21	534.575	1447.893
22	540.467	1453.304
23	546.231	1458.852
24	551.863	1464.533
25	557.362	1470.344
26	562.724	1476.281
27	567.945	1482.342
28	571.520	1486.693

Circle Center At X = 305.827 ; Y = 1702.757 ; and Radius = 342.456

Factor of Safety  
\*\*\* 1.425 \*\*\*



378  
379  
380  
381  
382  
383  
384  
385  
386  
387  
388  
389  
390  
391  
392  
393  
394  
395  
396  
397  
398  
399  
400  
401  
402  
403  
404  
405  
406  
407  
408  
409  
410  
411  
412  
413  
414  
415  
416  
417  
418  
419  
420  
421  
422  
423  
424  
425  
426  
427  
428  
429  
430  
431  
432  
433  
434  
435  
436  
437  
438  
439  
440  
441  
442  
443

Failure Surface Specified By 26 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	398.421	1374.408
2	406.183	1376.346
3	413.885	1378.510
4	421.520	1380.898
5	429.082	1383.508
6	436.565	1386.338
7	443.962	1389.385
8	451.267	1392.647
9	458.473	1396.121
10	465.575	1399.804
11	472.566	1403.693
12	479.440	1407.785
13	486.192	1412.076
14	492.816	1416.562
15	499.306	1421.240
16	505.656	1426.105
17	511.862	1431.154
18	517.917	1436.382
19	523.818	1441.785
20	529.557	1447.357
21	535.132	1453.095
22	540.536	1458.994
23	545.766	1465.048
24	550.816	1471.252
25	555.684	1477.601
26	558.378	1481.336

Circle Center At X = 336.077 ; Y = 1640.777 ; and Radius = 273.567

Factor of Safety  
\*\*\* 1.427 \*\*\*

Failure Surface Specified By 28 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	398.421	1374.408
2	406.162	1376.429
3	413.850	1378.642
4	421.480	1381.046
5	429.047	1383.641
6	436.548	1386.424
7	443.976	1389.394
8	451.328	1392.548
9	458.598	1395.885
10	465.783	1399.403
11	472.878	1403.100
12	479.878	1406.973
13	486.779	1411.019
14	493.577	1415.237
15	500.267	1419.624
16	506.846	1424.176
17	513.308	1428.891

444	18	519.651	1433.767
445	19	525.870	1438.800
446	20	531.961	1443.986
447	21	537.920	1449.323
448	22	543.744	1454.808
449	23	549.430	1460.436
450	24	554.972	1466.205
451	25	560.369	1472.110
452	26	565.616	1478.149
453	27	570.711	1484.317
454	28	573.073	1487.326

Circle Center At X = 321.591 ; Y = 1684.770 ; and Radius = 319.729

Factor of Safety  
\*\*\* 1.428 \*\*\*

1

Failure Surface Specified By 30 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	395.263	1372.185
2	403.086	1373.860
3	410.863	1375.737
4	418.588	1377.815
5	426.257	1380.092
6	433.865	1382.567
7	441.405	1385.238
8	448.875	1388.104
9	456.267	1391.163
10	463.577	1394.412
11	470.801	1397.849
12	477.934	1401.472
13	484.970	1405.279
14	491.905	1409.267
15	498.735	1413.433
16	505.454	1417.775
17	512.059	1422.289
18	518.544	1426.974
19	524.906	1431.824
20	531.140	1436.838
21	537.242	1442.011
22	543.208	1447.341
23	549.034	1452.824
24	554.715	1458.455
25	560.249	1464.232
26	565.632	1470.151
27	570.859	1476.207
28	575.928	1482.396
29	580.834	1488.715
30	582.697	1491.247

Circle Center At X = 334.615 ; Y = 1674.727 ; and Radius = 308.560

Factor of Safety  
\*\*\* 1.428 \*\*\*

500  
501  
502  
503  
504  
505  
506  
507  
508  
509

510  
511  
512  
513  
514  
515  
516  
517  
518  
519  
520  
521  
522  
523  
524  
525  
526  
527  
528  
529  
530  
531  
532  
533  
534  
535  
536  
537  
538  
539  
540  
541  
542  
543  
544  
545  
546  
547  
548  
549  
550  
551  
552  
553  
554  
555  
556  
557  
558  
559  
560  
561  
562  
563  
564  
565  
566  
567  
568  
569  
570  
571  
572  
573  
574  
575

Failure Surface Specified By 25 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	398.421	1374.408
2	406.233	1376.133
3	413.984	1378.114
4	421.665	1380.350
5	429.268	1382.838
6	436.785	1385.576
7	444.207	1388.561
8	451.527	1391.789
9	458.736	1395.258
10	465.827	1398.962
11	472.791	1402.899
12	479.622	1407.063
13	486.311	1411.451
14	492.852	1416.057
15	499.237	1420.877
16	505.460	1425.905
17	511.513	1431.135
18	517.390	1436.563
19	523.085	1442.182
20	528.591	1447.985
21	533.902	1453.968
22	539.013	1460.122
23	543.918	1466.442
24	548.612	1472.921
25	552.736	1479.028

Circle Center At X = 350.131 ; Y = 1611.776 ; and Radius = 242.230

Factor of Safety  
\*\*\* 1.429 \*\*\*

Failure Surface Specified By 27 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	401.579	1376.632
2	409.405	1378.293
3	417.177	1380.187
4	424.889	1382.314
5	432.534	1384.671
6	440.105	1387.256
7	447.595	1390.067
8	454.997	1393.101
9	462.305	1396.355
10	469.513	1399.827
11	476.613	1403.513
12	483.599	1407.411
13	490.466	1411.516
14	497.206	1415.825
15	503.815	1420.333
16	510.285	1425.038

576  
577  
578  
579  
580  
581  
582  
583  
584  
585  
586  
587  
588  
589  
590  
591  
592  
593  
594  
595  
596  
597  
598  
599  
600  
601  
602  
603  
604  
605  
606  
607  
608  
609  
610  
611  
612  
613  
614  
615  
616  
617  
618  
619  
620  
621  
622  
623  
624  
625  
626  
627  
628  
629  
630  
631  
632  
633  
634  
635  
636  
637  
638  
639  
640  
641

Point No.	X-Surf (ft)	Y-Surf (ft)
17	516.611	1429.935
18	522.788	1435.019
19	528.809	1440.286
20	534.670	1445.731
21	540.366	1451.349
22	545.890	1457.136
23	551.238	1463.085
24	556.406	1469.192
25	561.389	1475.451
26	566.181	1481.856
27	568.801	1485.586

Circle Center At X = 350.074 ; Y = 1638.556 ; and Radius = 266.940

Factor of Safety  
\*\*\* 1.431 \*\*\*

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	398.421	1374.408
2	406.175	1376.376
3	413.879	1378.533
4	421.527	1380.879
5	429.116	1383.411
6	436.641	1386.128
7	444.096	1389.028
8	451.479	1392.110
9	458.784	1395.373
10	466.006	1398.813
11	473.142	1402.429
12	480.188	1406.218
13	487.138	1410.179
14	493.990	1414.310
15	500.738	1418.606
16	507.379	1423.067
17	513.908	1427.689
18	520.323	1432.470
19	526.618	1437.406
20	532.791	1442.495
21	538.837	1447.734
22	544.753	1453.120
23	550.535	1458.648
24	556.180	1464.317
25	561.685	1470.122
26	567.045	1476.060
27	572.259	1482.128
28	577.323	1488.321
29	578.160	1489.398

Circle Center At X = 321.973 ; Y = 1691.910 ; and Radius = 326.575

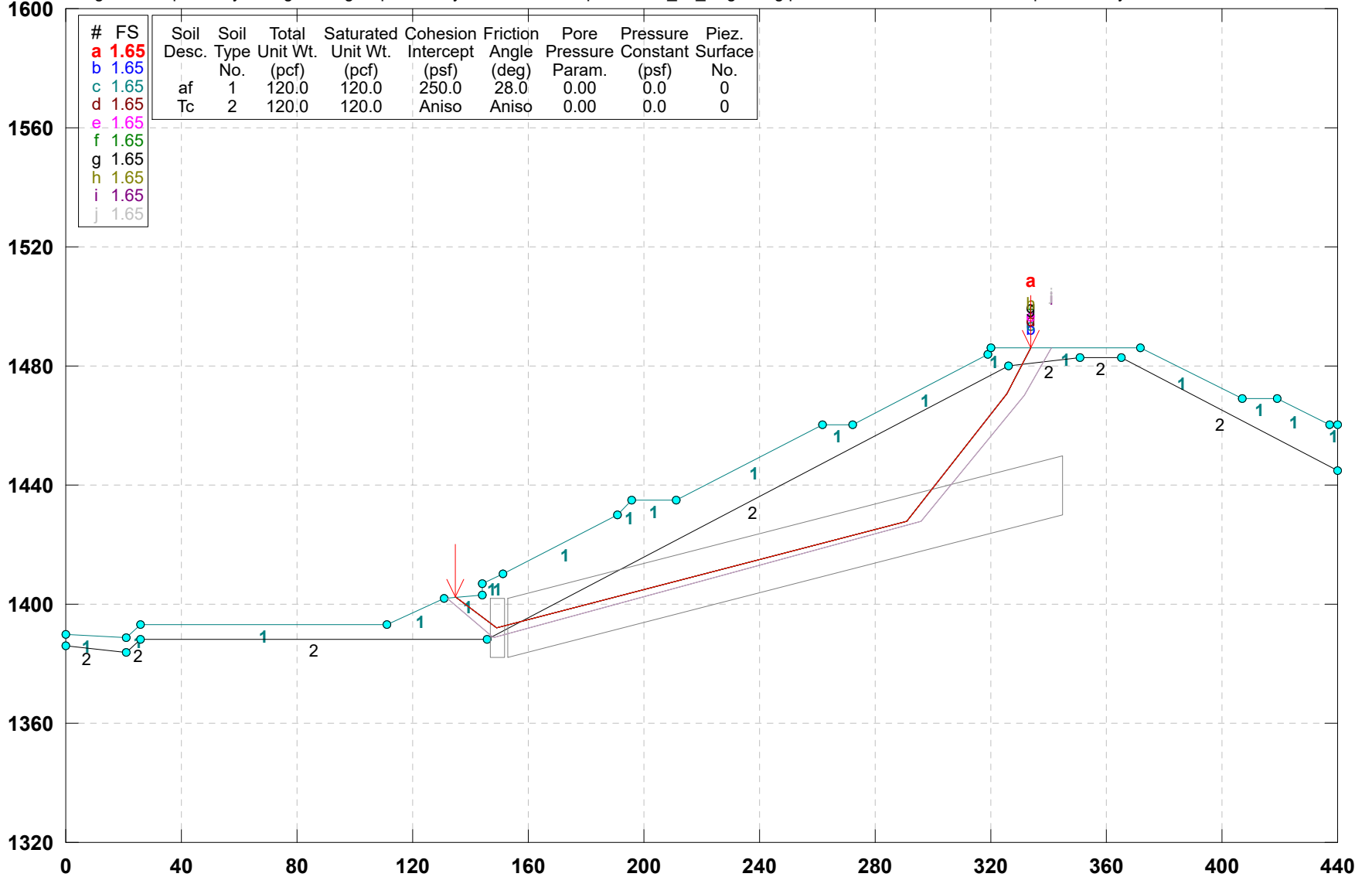
Factor of Safety  
\*\*\* 1.431 \*\*\*

642  
643  
644

\*\*\*\* END OF GSTABL7 OUTPUT \*\*\*\*

# Bouquet Canyon/21095-01/Section W-W'/ Static

z:\2021\21095-01 integral - bouquet canyon\engineering\slope stability\1. included in reports\2022\_04\_xx grading plan review letter\1. all files\xwb.pl2 Run By: LGC Geotechnical, Inc. 4/8/2022 10:11AM



GSTABL7 v.2 FSmin=1.65

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0



```

1          *** GSTABL7 ***
2
3          ** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
4
5          ** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
6          (All Rights Reserved-Unauthorized Use Prohibited)
7
8
9
10         *****
11         **
12         SLOPE STABILITY ANALYSIS SYSTEM
13         Modified Bishop, Simplified Janbu, or GLE Method of Slices.
14         (Includes Spencer & Morgenstern-Price Type Analysis)
15         Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
16         Nonlinear Undrained Shear Strength, Curved Phi Envelope,
17         Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
18         Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
19
20         *****
21         **
22
23         Analysis Run Date:      4/8/2022
24         Time of Run:           10:11AM
25         Run By:                LGC Geotechnical,
26         Inc.
27
28
29
30
31
32
33         Input Data Filename:    Z:\2021\21095-01 Integral - Bouquet
34         Canyon\Engineering\slope stability\Sec
35         W-W'\2022_04_08\xwb.in
36
37
38
39         Output Filename:       Z:\2021\21095-01 Integral - Bouquet
40         Canyon\Engineering\slope stability\Sec
41         W-W'\2022_04_08\xwb.OUT
42
43
44
45         Unit System:           English
46
47         Plotted Output Filename: Z:\2021\21095-01 Integral - Bouquet
48         Canyon\Engineering\slope stability\Sec
49         W-W'\2022_04_08\xwb.PLT
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100        PROBLEM DESCRIPTION: Bouquet Canyon/21095-01/Section W-W'/
101        Static
102
103
104
105        BOUNDARY COORDINATES
106
107        19 Top Boundaries
108        26 Total Boundaries
109
110
111        Boundary   X-Left   Y-Left   X-Right   Y-Right   Soil Type
112        No.        (ft)     (ft)     (ft)      (ft)      Below Bnd
113

```

48	1	0.00	1390.00	21.00	1389.00	1		
49	2	21.00	1389.00	26.00	1393.00	1		
50	3	26.00	1393.00	111.00	1393.00	1		
51	4	111.00	1393.00	131.00	1402.00	1		
52	5	131.00	1402.00	144.00	1403.00	1		
53	6	144.00	1403.00	144.10	1407.00	1		
54	7	144.10	1407.00	151.00	1410.00	1		
55	8	151.00	1410.00	191.00	1430.00	1		
56	9	191.00	1430.00	196.00	1435.00	1		
57	10	196.00	1435.00	211.00	1435.00	1		
58	11	211.00	1435.00	262.00	1460.00	1		
59	12	262.00	1460.00	272.00	1460.00	1		
60	13	272.00	1460.00	319.00	1484.00	1		
61	14	319.00	1484.00	320.00	1486.00	1		
62	15	320.00	1486.00	372.00	1486.00	1		
63	16	372.00	1486.00	407.00	1469.00	1		
64	17	407.00	1469.00	419.00	1469.00	1		
65	18	419.00	1469.00	437.00	1460.00	1		
66	19	437.00	1460.00	440.00	1460.00	1		
67	20	0.00	1386.00	21.00	1384.00	2		
68	21	21.00	1384.00	26.00	1388.00	2		
69	22	26.00	1388.00	146.00	1388.00	2		
70	23	146.00	1388.00	326.00	1480.00	2		
71	24	326.00	1480.00	351.00	1483.00	2		
72	25	351.00	1483.00	365.00	1483.00	2		
73	26	365.00	1483.00	440.00	1445.00	2		
74								
75								
76								
77								
78								
79								
80	1							
81								
82								
83								
84								
85								
86								
87								
88								
89								
90								
91								
92								
93	1	120.0	120.0	250.0	28.0	0.00	0.0	0
94	2	120.0	120.0	250.0	32.0	0.00	0.0	0
95								
96								
97								
98								
99								
100								
101								
102								
103								
104								
105								
106								
107								
108								
109								
110								
111								
112								
113								

User Specified Y-Origin = 1320.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Soil Type	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	250.0	28.0	0.00	0.0	0
2	120.0	120.0	250.0	32.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 2 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	9.0	250.00	32.00
2	15.0	150.00	25.00
3	90.0	250.00	32.00

114 ANISOTROPIC SOIL NOTES:  
 115 (1) An input value of 0.01 for C and/or Phi will cause Aniso  
 116 C and/or Phi to be ignored in that range.  
 117 (2) An input value of 0.02 for Phi will set both Phi and  
 118 C equal to zero, with no water weight in the tension crack.  
 119 (3) An input value of 0.03 for Phi will set both Phi and  
 120 C equal to zero, with water weight in the tension crack.  
 121  
 122  
 123  
 124 Janbus Empirical Coef is being used for the case of c & phi both > 0  
 125  
 126  
 127  
 128 A Critical Failure Surface Searching Method, Using A Random  
 129 Technique For Generating Sliding Block Surfaces, Has Been  
 130 Specified.  
 131  
 132  
 133 4999 Trial Surfaces Have Been Generated.  
 134  
 135  
 136 2 Boxes Specified For Generation Of Central Block Base  
 137  
 138  
 139 Length Of Line Segments For Active And Passive Portions Of  
 140 Sliding Block Is 55.0  
 141  
 142  
 143 Box X-Left Y-Left X-Right Y-Right Height  
 144 No. (ft) (ft) (ft) (ft) (ft)  
 145  
 146 1 147.00 1392.00 152.00 1392.00 20.00  
 147 2 153.00 1392.00 345.00 1440.00 20.00  
 148  
 149  
 150 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 151  
 152  
 153  
 154 The Trial Failure Surface In Question Is Defined  
 155 By The Following 4 Coordinate Points  
 156  
 157  
 158 Point X-Surf Y-Surf  
 159 No. (ft) (ft)  
 160  
 161 1 144.00 1403.12  
 162 2 147.58 1401.81  
 163 3 237.32 1411.75  
 164 4 237.46 1447.97  
 165  
 166  
 167 Factor of Safety for the Preceding Surface is Between10.374 and10.344  
 168  
 169  
 170 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 171  
 172  
 173  
 174 The Trial Failure Surface In Question Is Defined  
 175 By The Following 4 Coordinate Points  
 176  
 177  
 178 Point X-Surf Y-Surf  
 179 No. (ft) (ft)

180  
 181 1 139.30 1402.64  
 182 2 151.12 1391.37  
 183 3 201.36 1395.48  
 184 4 201.68 1435.00  
 185  
 186  
 187 Factor of Safety for the Preceding Surface is Between18.765 and18.723  
 188  
 189  
 190 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 191  
 192  
 193  
 194 The Trial Failure Surface In Question Is Defined  
 195 By The Following 4 Coordinate Points  
 196  
 197  
 198 Point X-Surf Y-Surf  
 199 No. (ft) (ft)  
 200  
 201 1 144.00 1403.12  
 202 2 147.58 1401.81  
 203 3 237.32 1411.75  
 204 4 237.46 1447.97  
 205  
 206  
 207 Factor of Safety for the Preceding Surface is Between10.374 and10.344  
 208  
 209  
 210 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 211  
 212  
 213  
 214 The Trial Failure Surface In Question Is Defined  
 215 By The Following 4 Coordinate Points  
 216  
 217  
 218 Point X-Surf Y-Surf  
 219 No. (ft) (ft)  
 220  
 221 1 139.30 1402.64  
 222 2 151.12 1391.37  
 223 3 201.36 1395.48  
 224 4 201.68 1435.00  
 225  
 226  
 227 Factor of Safety for the Preceding Surface is Between18.765 and18.723  
 228  
 229  
 230 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 231  
 232  
 233  
 234 The Trial Failure Surface In Question Is Defined  
 235 By The Following 4 Coordinate Points  
 236  
 237  
 238 Point X-Surf Y-Surf  
 239 No. (ft) (ft)  
 240  
 241 1 144.00 1403.12  
 242 2 147.58 1401.81  
 243 3 237.32 1411.75  
 244 4 237.46 1447.97  
 245

246  
 247 Factor of Safety for the Preceding Surface is Between10.374 and10.344  
 248  
 249  
 250 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 251  
 252  
 253  
 254 The Trial Failure Surface In Question Is Defined  
 255 By The Following 4 Coordinate Points  
 256  
 257

Point No.	X-Surf (ft)	Y-Surf (ft)
1	139.30	1402.64
2	151.12	1391.37
3	201.36	1395.48
4	201.68	1435.00

258  
 259  
 260  
 261  
 262  
 263  
 264  
 265  
 266  
 267 Factor of Safety for the Preceding Surface is Between18.765 and18.723  
 268  
 269  
 270 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 271  
 272  
 273  
 274 The Trial Failure Surface In Question Is Defined  
 275 By The Following 4 Coordinate Points  
 276  
 277

Point No.	X-Surf (ft)	Y-Surf (ft)
1	144.00	1403.12
2	147.58	1401.81
3	237.32	1411.75
4	237.46	1447.97

278  
 279  
 280  
 281  
 282  
 283  
 284  
 285  
 286  
 287 Factor of Safety for the Preceding Surface is Between10.374 and10.344  
 288  
 289  
 290 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 291  
 292  
 293  
 294 The Trial Failure Surface In Question Is Defined  
 295 By The Following 4 Coordinate Points  
 296  
 297

Point No.	X-Surf (ft)	Y-Surf (ft)
1	139.30	1402.64
2	151.12	1391.37
3	201.36	1395.48
4	201.68	1435.00

298  
 299  
 300  
 301  
 302  
 303  
 304  
 305  
 306  
 307 Factor of Safety for the Preceding Surface is Between18.765 and18.723  
 308  
 309  
 310 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 311

312  
 313  
 314 The Trial Failure Surface In Question Is Defined  
 315 By The Following 4 Coordinate Points  
 316  
 317

Point No.	X-Surf (ft)	Y-Surf (ft)
1	144.00	1403.12
2	147.58	1401.81
3	237.32	1411.75
4	237.46	1447.97

318  
 319  
 320  
 321  
 322  
 323  
 324  
 325  
 326  
 327  
 328  
 329  
 330  
 331  
 332  
 333  
 334  
 335  
 336  
 337  
 338  
 339  
 340  
 341  
 342  
 343  
 344  
 345  
 346  
 347  
 348  
 349  
 350  
 351  
 352  
 353  
 354  
 355  
 356  
 357  
 358  
 359  
 360  
 361  
 362  
 363  
 364  
 365  
 366  
 367  
 368  
 369  
 370  
 371  
 372  
 373  
 374  
 375  
 376  
 377

Factor of Safety for the Preceding Surface is Between10.374 and10.344  
 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 The Trial Failure Surface In Question Is Defined  
 By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	139.30	1402.64
2	151.12	1391.37
3	201.36	1395.48
4	201.68	1435.00

Factor of Safety for the Preceding Surface is Between18.765 and18.723  
 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 The Trial Failure Surface In Question Is Defined  
 By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	144.00	1403.12
2	147.58	1401.81
3	237.32	1411.75
4	237.46	1447.97

Factor of Safety for the Preceding Surface is Between10.374 and10.344  
 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 The Trial Failure Surface In Question Is Defined  
 By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	139.30	1402.64
2	151.12	1391.37
3	201.36	1395.48
4	201.68	1435.00

Factor of Safety for the Preceding Surface is Between 18.765 and 18.723

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	144.00	1403.12
2	147.58	1401.81
3	237.32	1411.75
4	237.46	1447.97

Factor of Safety for the Preceding Surface is Between 10.374 and 10.344

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	139.30	1402.64
2	151.12	1391.37
3	201.36	1395.48
4	201.68	1435.00

Factor of Safety for the Preceding Surface is Between 18.765 and 18.723

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	144.00	1403.12
2	147.58	1401.81
3	237.32	1411.75

4	237.46	1447.97
---	--------	---------

Factor of Safety for the Preceding Surface is Between 10.374 and 10.344

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	139.30	1402.64
2	151.12	1391.37
3	201.36	1395.48
4	201.68	1435.00

Factor of Safety for the Preceding Surface is Between 18.765 and 18.723

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.

\* \* Safety Factors Are Calculated By The Simplified Janbu Method \* \*

Total Number of Trial Surfaces Attempted = 4999

WARNING! The Factor of Safety Calculation for one or More Trial Surfaces Did Not Converge in 20 Iterations.

Number of Trial Surfaces with Non-Converged FS = 16

Number of Trial Surfaces With Valid FS = 4983

Percentage of Trial Surfaces With Non-Valid FS Solutions of the Total Attempted = 0.3 %

Statistical Data On All Valid FS Values:  
 FS Max = 13.789 FS Min = 1.648 FS Ave = 2.382  
 Standard Deviation = 0.977 Coefficient of Variation = 41.02 %

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	134.600	1402.277
2	148.848	1391.799
3	290.988	1428.005
4	325.725	1470.647
5	333.711	1486.000



510  
 511 Factor of Safety  
 512 \*\*\* 1.648 \*\*\*  
 513  
 514  
 515

516 Individual data on the 17 slices  
 517  
 518

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
525	1	9.4	4307.0	0.0	0.0	0.0	0.0	0.0	0.0
526	2	0.1	116.1	0.0	0.0	0.0	0.0	0.0	0.0
527	3	4.7	8254.2	0.0	0.0	0.0	0.0	0.0	0.0
528	4	2.2	4509.1	0.0	0.0	0.0	0.0	0.0	0.0
529	5	7.0	15518.0	0.0	0.0	0.0	0.0	0.0	0.0
530	6	33.0	92764.4	0.0	0.0	0.0	0.0	0.0	0.0
531	7	5.0	17596.6	0.0	0.0	0.0	0.0	0.0	0.0
532	8	15.0	52704.7	0.0	0.0	0.0	0.0	0.0	0.0
533	9	51.0	204252.8	0.0	0.0	0.0	0.0	0.0	0.0
534	10	10.0	45726.9	0.0	0.0	0.0	0.0	0.0	0.0
535	11	19.0	89461.5	0.0	0.0	0.0	0.0	0.0	0.0
536	12	28.0	106388.6	0.0	0.0	0.0	0.0	0.0	0.0
537	13	1.0	2639.4	0.0	0.0	0.0	0.0	0.0	0.0
538	14	5.7	12961.6	0.0	0.0	0.0	0.0	0.0	0.0
539	15	0.3	498.0	0.0	0.0	0.0	0.0	0.0	0.0
540	16	4.9	5944.0	0.0	0.0	0.0	0.0	0.0	0.0
541	17	2.8	914.3	0.0	0.0	0.0	0.0	0.0	0.0

542 Failure Surface Specified By 5 Coordinate Points  
 543  
 544

Point No.	X-Surf (ft)	Y-Surf (ft)	
546	1	134.600	1402.277
547	2	148.848	1391.799
548	3	290.988	1428.005
549	4	325.725	1470.647
550	5	333.711	1486.000

551 Factor of Safety  
 552 \*\*\* 1.648 \*\*\*  
 553  
 554  
 555

556 Failure Surface Specified By 5 Coordinate Points  
 557  
 558

Point No.	X-Surf (ft)	Y-Surf (ft)	
559	1	134.600	1402.277
560	2	148.848	1391.799
561	3	290.988	1428.005
562	4	325.725	1470.647
563	5	333.711	1486.000

564  
 565  
 566  
 567  
 568  
 569  
 570  
 571  
 572  
 573  
 574  
 575

576 Factor of Safety  
 577 \*\*\* 1.648 \*\*\*  
 578  
 579  
 580

581 Failure Surface Specified By 5 Coordinate Points  
 582  
 583

Point No.	X-Surf (ft)	Y-Surf (ft)	
584	1	134.600	1402.277
585	2	148.848	1391.799
586	3	290.988	1428.005
587	4	325.725	1470.647
588	5	333.711	1486.000

589 Factor of Safety  
 590 \*\*\* 1.648 \*\*\*  
 591  
 592  
 593

594 Failure Surface Specified By 5 Coordinate Points  
 595  
 596

Point No.	X-Surf (ft)	Y-Surf (ft)	
597	1	134.600	1402.277
598	2	148.848	1391.799
599	3	290.988	1428.005
600	4	325.725	1470.647
601	5	333.711	1486.000

602 Factor of Safety  
 603 \*\*\* 1.648 \*\*\*  
 604  
 605  
 606

607 Failure Surface Specified By 5 Coordinate Points  
 608  
 609

Point No.	X-Surf (ft)	Y-Surf (ft)	
610	1	134.600	1402.277
611	2	148.848	1391.799
612	3	290.988	1428.005
613	4	325.725	1470.647
614	5	333.711	1486.000

615 Factor of Safety  
 616 \*\*\* 1.648 \*\*\*  
 617  
 618  
 619

620 Failure Surface Specified By 5 Coordinate Points  
 621  
 622

623  
 624  
 625  
 626  
 627  
 628  
 629  
 630  
 631  
 632  
 633  
 634  
 635  
 636  
 637  
 638  
 639  
 640  
 641

642  
643  
644  
645  
646  
647  
648  
649  
650  
651  
652  
653  
654  
655  
656  
657  
658  
659  
660  
661  
662  
663  
664  
665  
666  
667  
668  
669  
670  
671  
672  
673  
674  
675  
676  
677  
678  
679  
680  
681  
682  
683  
684  
685  
686  
687  
688  
689  
690  
691  
692  
693  
694  
695  
696  
697  
698  
699  
700  
701  
702  
703  
704  
705  
706  
707

Point No.	X-Surf (ft)	Y-Surf (ft)
1	134.600	1402.277
2	148.848	1391.799
3	290.988	1428.005
4	325.725	1470.647
5	333.711	1486.000

Factor of Safety  
\*\*\* 1.648 \*\*\*

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	134.600	1402.277
2	148.848	1391.799
3	290.988	1428.005
4	325.725	1470.647
5	333.711	1486.000

Factor of Safety  
\*\*\* 1.648 \*\*\*

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	132.261	1402.097
2	148.081	1388.810
3	296.051	1428.001
4	331.691	1469.891
5	341.092	1486.000

Factor of Safety  
\*\*\* 1.652 \*\*\*

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	132.261	1402.097
2	148.081	1388.810
3	296.051	1428.001

708  
709  
710  
711  
712  
713  
714  
715  
716  
717  
718  
719  
720

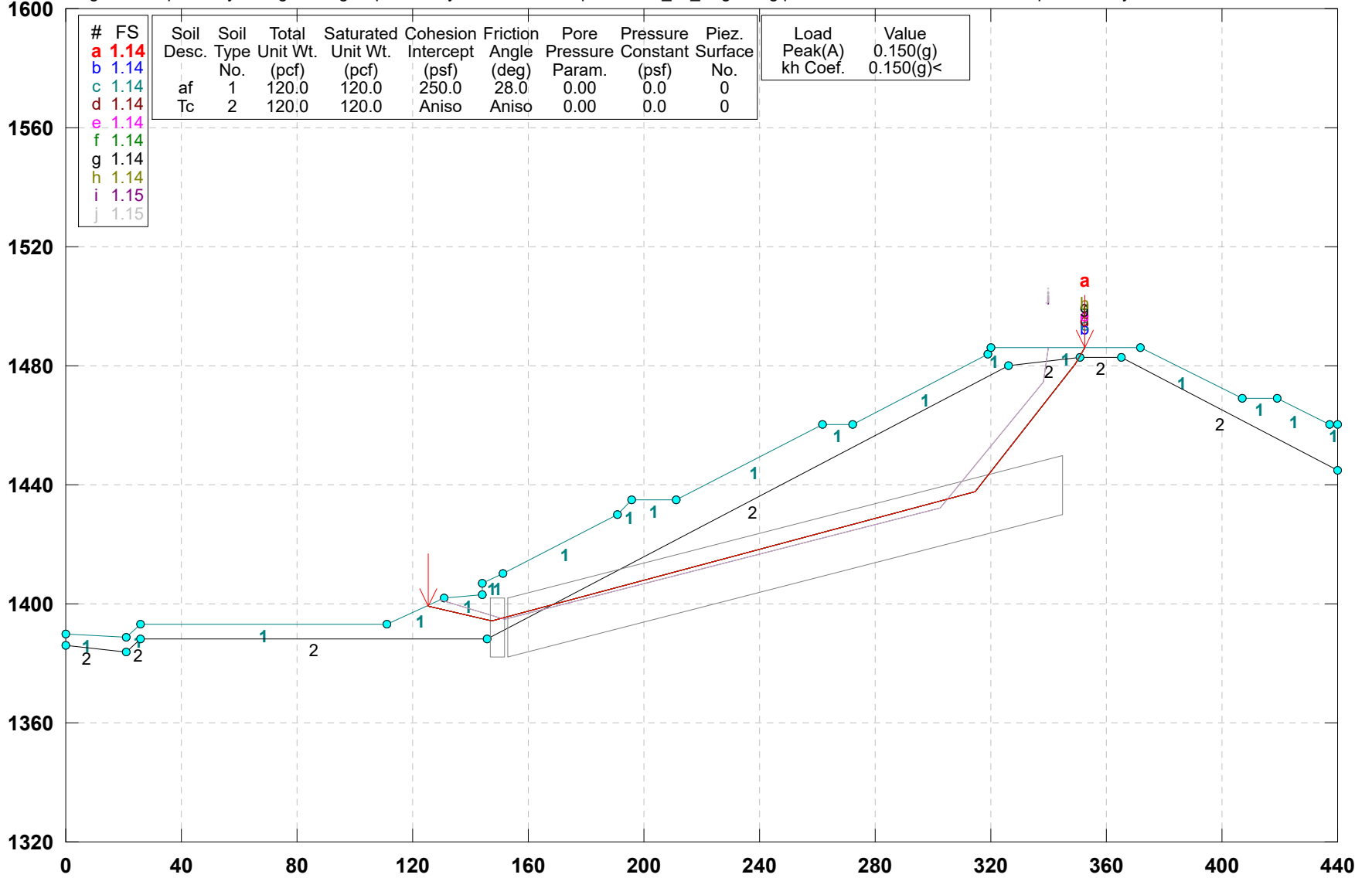
4	331.691	1469.891
5	341.092	1486.000

Factor of Safety  
\*\*\* 1.652 \*\*\*

\*\*\*\* END OF GSTABL7 OUTPUT \*\*\*\*

# Bouquet Canyon/21095-01/Section W-W' Seismic

z:\2021\21095-01 integral - bouquet canyon\engineering\slope stability\1. included in reports\2022\_04\_xx grading plan review letter\1. all files\wxwbe.pl2 Run By: LGC Geotechnical, Inc. 4/8/2022 10:12A



GSTABL7 v.2 FSmin=1.14

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

```

1          *** GSTABL7 ***
2
3          ** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
4
5          ** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
6          (All Rights Reserved-Unauthorized Use Prohibited)
7
8
9
10         *****
11         **
12         SLOPE STABILITY ANALYSIS SYSTEM
13         Modified Bishop, Simplified Janbu, or GLE Method of Slices.
14         (Includes Spencer & Morgenstern-Price Type Analysis)
15         Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
16         Nonlinear Undrained Shear Strength, Curved Phi Envelope,
17         Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
18         Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
19
20         *****
21         **
22
23         Analysis Run Date:      4/8/2022
24         Time of Run:           10:12AM
25         Run By:                LGC Geotechnical,
26         Inc.
27
28
29
30
31
32
33         Input Data Filename:    Z:\2021\21095-01 Integral - Bouquet
34         Canyon\Engineering\slope stability\Sec
35         W-W'\2022_04_08\xwbe.in
36
37
38
39         Output Filename:        Z:\2021\21095-01 Integral - Bouquet
40         Canyon\Engineering\slope stability\Sec
41         W-W'\2022_04_08\xwbe.OUT
42
43
44
45         Unit System:           English
46
47         Plotted Output Filename: Z:\2021\21095-01 Integral - Bouquet
48         Canyon\Engineering\slope stability\Sec
49         W-W'\2022_04_08\xwbe.PLT
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100        PROBLEM DESCRIPTION: Bouquet Canyon/21095-01/Section W-W'/
101        Seismic
102
103
104
105        BOUNDARY COORDINATES
106
107        19 Top Boundaries
108        26 Total Boundaries
109
110
111        Boundary   X-Left   Y-Left   X-Right   Y-Right   Soil Type
112        No.        (ft)     (ft)     (ft)      (ft)      Below Bnd
113

```

48	1	0.00	1390.00	21.00	1389.00	1		
49	2	21.00	1389.00	26.00	1393.00	1		
50	3	26.00	1393.00	111.00	1393.00	1		
51	4	111.00	1393.00	131.00	1402.00	1		
52	5	131.00	1402.00	144.00	1403.00	1		
53	6	144.00	1403.00	144.10	1407.00	1		
54	7	144.10	1407.00	151.00	1410.00	1		
55	8	151.00	1410.00	191.00	1430.00	1		
56	9	191.00	1430.00	196.00	1435.00	1		
57	10	196.00	1435.00	211.00	1435.00	1		
58	11	211.00	1435.00	262.00	1460.00	1		
59	12	262.00	1460.00	272.00	1460.00	1		
60	13	272.00	1460.00	319.00	1484.00	1		
61	14	319.00	1484.00	320.00	1486.00	1		
62	15	320.00	1486.00	372.00	1486.00	1		
63	16	372.00	1486.00	407.00	1469.00	1		
64	17	407.00	1469.00	419.00	1469.00	1		
65	18	419.00	1469.00	437.00	1460.00	1		
66	19	437.00	1460.00	440.00	1460.00	1		
67	20	0.00	1386.00	21.00	1384.00	2		
68	21	21.00	1384.00	26.00	1388.00	2		
69	22	26.00	1388.00	146.00	1388.00	2		
70	23	146.00	1388.00	326.00	1480.00	2		
71	24	326.00	1480.00	351.00	1483.00	2		
72	25	351.00	1483.00	365.00	1483.00	2		
73	26	365.00	1483.00	440.00	1445.00	2		
74								
75								
76								
77								
78								
79								
80								
81	1							
82								
83								
84								
85								
86								
87								
88								
89								
90								
91								
92								
93	1	120.0	120.0	250.0	28.0	0.00	0.0	0
94	2	120.0	120.0	250.0	32.0	0.00	0.0	0
95								
96								
97								
98								
99								
100								
101								
102								
103								
104								
105								
106								
107								
108								
109								
110								
111								
112								
113								

User Specified Y-Origin = 1320.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Soil Type	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	250.0	28.0	0.00	0.0	0
2	120.0	120.0	250.0	32.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 2 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	9.0	250.00	32.00
2	15.0	150.00	25.00
3	90.0	250.00	32.00



114 ANISOTROPIC SOIL NOTES:  
 115  
 116 (1) An input value of 0.01 for C and/or Phi will cause Aniso  
 117 C and/or Phi to be ignored in that range.  
 118 (2) An input value of 0.02 for Phi will set both Phi and  
 119 C equal to zero, with no water weight in the tension crack.  
 120 (3) An input value of 0.03 for Phi will set both Phi and  
 121 C equal to zero, with water weight in the tension crack.  
 122  
 123 Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)  
 124 Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)  
 125 Specified Vertical Earthquake Coefficient (kv) = 0.000(g)  
 126  
 127 Specified Seismic Pore-Pressure Factor = 0.000  
 128  
 129 Janbus Empirical Coef is being used for the case of c & phi both > 0  
 130  
 131 1  
 132  
 133 A Critical Failure Surface Searching Method, Using A Random  
 134 Technique For Generating Sliding Block Surfaces, Has Been  
 135 Specified.  
 136  
 137 4999 Trial Surfaces Have Been Generated.  
 138  
 139 2 Boxes Specified For Generation Of Central Block Base  
 140  
 141  
 142 Length Of Line Segments For Active And Passive Portions Of  
 143 Sliding Block Is 55.0  
 144  
 145  
 146  
 147  
 148  
 149  
 150  
 151  
 152  
 153  
 154  
 155  
 156  
 157  
 158  
 159  
 160  
 161  
 162  
 163  
 164  
 165  
 166  
 167  
 168  
 169  
 170  
 171  
 172  
 173  
 174  
 175  
 176  
 177  
 178  
 179

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	147.00	1392.00	152.00	1392.00	20.00
2	153.00	1392.00	345.00	1440.00	20.00

Factor of Safety for the Preceding Surface is Between 6.358 and 6.351  
 WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
 By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	139.30	1402.64
2	151.12	1391.37
3	201.36	1395.48
4	201.68	1435.00

180 The Trial Failure Surface In Question Is Defined  
 181 By The Following 4 Coordinate Points  
 182  
 183  
 184  
 185  
 186  
 187  
 188  
 189  
 190  
 191  
 192  
 193  
 194  
 195  
 196  
 197  
 198  
 199  
 200  
 201  
 202  
 203  
 204  
 205  
 206  
 207  
 208  
 209  
 210  
 211  
 212  
 213  
 214  
 215  
 216  
 217  
 218  
 219  
 220  
 221  
 222  
 223  
 224  
 225  
 226  
 227  
 228  
 229  
 230  
 231  
 232  
 233  
 234  
 235  
 236  
 237  
 238  
 239  
 240  
 241  
 242  
 243  
 244  
 245

Point No.	X-Surf (ft)	Y-Surf (ft)
1	139.30	1402.64
2	151.12	1391.37
3	201.36	1395.48
4	201.68	1435.00

Factor of Safety for the Preceding Surface is Between 6.358 and 6.351  
 WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
 By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	139.30	1402.64
2	151.12	1391.37
3	201.36	1395.48
4	201.68	1435.00

Factor of Safety for the Preceding Surface is Between 6.358 and 6.351  
 WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
 By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	139.30	1402.64
2	151.12	1391.37
3	201.36	1395.48
4	201.68	1435.00

246  
 247 1 139.30 1402.64  
 248 2 151.12 1391.37  
 249 3 201.36 1395.48  
 250 4 201.68 1435.00  
 251  
 252  
 253 Factor of Safety for the Preceding Surface is Between 6.358 and 6.351  
 254  
 255  
 256 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 257  
 258  
 259  
 260 The Trial Failure Surface In Question Is Defined  
 261 By The Following 4 Coordinate Points  
 262  
 263  
 264 Point X-Surf Y-Surf  
 265 No. (ft) (ft)  
 266  
 267 1 139.30 1402.64  
 268 2 151.12 1391.37  
 269 3 201.36 1395.48  
 270 4 201.68 1435.00  
 271  
 272  
 273 Factor of Safety for the Preceding Surface is Between 6.358 and 6.351  
 274  
 275  
 276 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 277  
 278  
 279  
 280 The Trial Failure Surface In Question Is Defined  
 281 By The Following 4 Coordinate Points  
 282  
 283  
 284 Point X-Surf Y-Surf  
 285 No. (ft) (ft)  
 286  
 287 1 139.30 1402.64  
 288 2 151.12 1391.37  
 289 3 201.36 1395.48  
 290 4 201.68 1435.00  
 291  
 292  
 293 Factor of Safety for the Preceding Surface is Between 6.358 and 6.351  
 294  
 295  
 296 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 297  
 298  
 299  
 300 The Trial Failure Surface In Question Is Defined  
 301 By The Following 4 Coordinate Points  
 302  
 303  
 304 Point X-Surf Y-Surf  
 305 No. (ft) (ft)  
 306  
 307 1 139.30 1402.64  
 308 2 151.12 1391.37  
 309 3 201.36 1395.48  
 310 4 201.68 1435.00  
 311

312  
 313 Factor of Safety for the Preceding Surface is Between 6.358 and 6.351  
 314  
 315  
 316 Following Are Displayed The Ten Most Critical Of The Trial  
 317 Failure Surfaces Evaluated. They Are  
 318 Ordered - Most Critical First.  
 319  
 320  
 321 \* \* Safety Factors Are Calculated By The Simplified Janbu Method \* \*  
 322  
 323  
 324  
 325 Total Number of Trial Surfaces Attempted = 4999  
 326  
 327 WARNING! The Factor of Safety Calculation for one or More Trial Surfaces  
 328 Did Not Converge in 20 Iterations.  
 329  
 330  
 331 Number of Trial Surfaces with Non-Converged FS = 8  
 332  
 333 Number of Trial Surfaces With Valid FS = 4991  
 334  
 335  
 336 Percentage of Trial Surfaces With Non-Valid FS Solutions  
 337 of the Total Attempted = 0.2 %  
 338  
 339 Statistical Data On All Valid FS Values:  
 340 FS Max = 10.120 FS Min = 1.138 FS Ave = 1.654  
 341 Standard Deviation = 0.671 Coefficient of Variation = 40.56 %  
 342  
 343  
 344 Failure Surface Specified By 5 Coordinate Points  
 345  
 346  
 347 Point X-Surf Y-Surf  
 348 No. (ft) (ft)  
 349  
 350 1 125.355 1399.460  
 351 2 147.571 1394.465  
 352 3 314.707 1437.616  
 353 4 349.045 1480.580  
 354 5 352.824 1486.000  
 355  
 356  
 357 Factor of Safety  
 358 \*\*\* 1.138 \*\*\*  
 359  
 360  
 361  
 362  
 363 Individual data on the 18 slices  
 364  
 365  
 366  
 367  
 368  
 369  
 370  
 371  
 372  
 373  
 374  
 375  
 376  
 377

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	5.6	1290.4	0.0	0.0	0.0	0.0	193.6	0.0	0.0
2	13.0	9002.9	0.0	0.0	0.0	0.0	1350.4	0.0	0.0
3	0.1	116.9	0.0	0.0	0.0	0.0	17.5	0.0	0.0
4	3.5	5373.0	0.0	0.0	0.0	0.0	805.9	0.0	0.0
5	3.4	5903.7	0.0	0.0	0.0	0.0	885.5	0.0	0.0
6	19.0	38536.5	0.0	0.0	0.0	0.0	5780.5	0.0	0.0
7	21.0	54998.3	0.0	0.0	0.0	0.0	8249.7	0.0	0.0

378	8	5.0	15706.4	0.0	0.0	0.	0.	2356.0	0.0	0.0
379	9	15.0	46972.0	0.0	0.0	0.	0.	7045.8	0.0	0.0
380	10	51.0	184062.4	0.0	0.0	0.	0.	27609.4	0.0	0.0
381	11	10.0	41641.3	0.0	0.0	0.	0.	6246.2	0.0	0.0
382	12	42.7	198849.2	0.0	0.0	0.	0.	29827.4	0.0	0.0
383	13	4.3	21946.8	0.0	0.0	0.	0.	3292.0	0.0	0.0
384	14	1.0	4966.4	0.0	0.0	0.	0.	745.0	0.0	0.0
385	15	6.0	27365.6	0.0	0.0	0.	0.	4104.8	0.0	0.0
386	16	23.0	54857.2	0.0	0.0	0.	0.	8228.6	0.0	0.0
387	17	1.7	843.6	0.0	0.0	0.	0.	126.5	0.0	0.0
388	18	2.1	385.4	0.0	0.0	0.	0.	57.8	0.0	0.0

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.355	1399.460
2	147.571	1394.465
3	314.707	1437.616
4	349.045	1480.580
5	352.824	1486.000

Factor of Safety  
\*\*\* 1.138 \*\*\*

1

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.355	1399.460
2	147.571	1394.465
3	314.707	1437.616
4	349.045	1480.580
5	352.824	1486.000

Factor of Safety  
\*\*\* 1.138 \*\*\*

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.355	1399.460
2	147.571	1394.465
3	314.707	1437.616
4	349.045	1480.580
5	352.824	1486.000

Factor of Safety  
\*\*\* 1.138 \*\*\*

444										
445										
446										
447	1									
448										
449										
450										
451										
452										
453										
454										
455										
456										
457										
458										
459										
460										
461										
462										
463										
464										
465										
466										
467										
468										
469										
470										
471										
472										
473										
474										
475										
476										
477										
478										
479										
480										
481										
482										
483										
484										
485										
486	1									
487										
488										
489										
490										
491										
492										
493										
494										
495										
496										
497										
498										
499										
500										
501										
502										
503										
504										
505										
506										
507										
508										
509										

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.355	1399.460
2	147.571	1394.465
3	314.707	1437.616
4	349.045	1480.580
5	352.824	1486.000

Factor of Safety  
\*\*\* 1.138 \*\*\*

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.355	1399.460
2	147.571	1394.465
3	314.707	1437.616
4	349.045	1480.580
5	352.824	1486.000

Factor of Safety  
\*\*\* 1.138 \*\*\*

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	125.355	1399.460
2	147.571	1394.465
3	314.707	1437.616
4	349.045	1480.580
5	352.824	1486.000

Factor of Safety  
\*\*\* 1.138 \*\*\*

Failure Surface Specified By 5 Coordinate Points

510 Point X-Surf Y-Surf  
511 No. (ft) (ft)  
512  
513 1 125.355 1399.460  
514 2 147.571 1394.465  
515 3 314.707 1437.616  
516 4 349.045 1480.580  
517 5 352.824 1486.000  
518

519  
520 Factor of Safety  
521 \*\*\* 1.138 \*\*\*  
522

523  
524  
525 1  
526

527 Failure Surface Specified By 5 Coordinate Points  
528

529 Point X-Surf Y-Surf  
530 No. (ft) (ft)  
531  
532  
533 1 129.394 1401.277  
534 2 151.824 1394.992  
535 3 302.520 1432.440  
536 4 338.067 1474.409  
537 5 339.894 1486.000  
538

539  
540 Factor of Safety  
541 \*\*\* 1.148 \*\*\*  
542

543  
544  
545  
546 Failure Surface Specified By 5 Coordinate Points  
547

548 Point X-Surf Y-Surf  
549 No. (ft) (ft)  
550  
551  
552 1 129.394 1401.277  
553 2 151.824 1394.992  
554 3 302.520 1432.440  
555 4 338.067 1474.409  
556 5 339.894 1486.000  
557

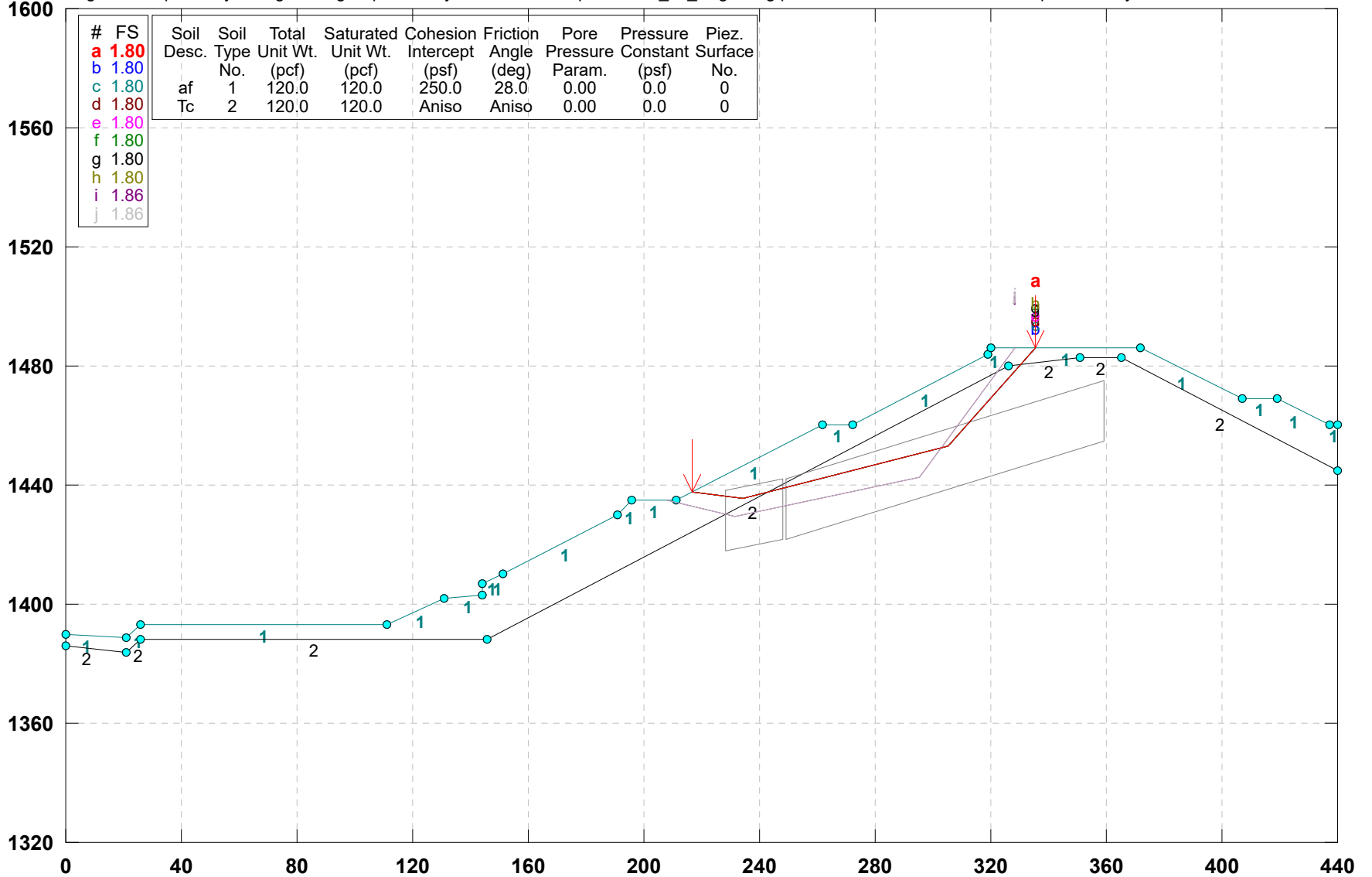
558  
559 Factor of Safety  
560 \*\*\* 1.148 \*\*\*  
561

562  
563  
564  
565  
566 \*\*\*\*\* END OF GSTABL7 OUTPUT \*\*\*\*\*  
567



### Bouquet Canyon/21095-01/Section W-W'/ Static

z:\2021\21095-01 integral - bouquet canyon\engineering\slope stability\1. included in reports\2022\_04\_xx grading plan review letter\1. all files\xwb-2.pl2 Run By: LGC Geotechnical, Inc. 4/8/2022 10:12AM



GSTABL7 v.2 FSmin=1.80

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

```

1          *** GSTABL7 ***
2
3          ** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
4
5          ** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
6          (All Rights Reserved-Unauthorized Use Prohibited)
7
8
9
10         *****
11         **
12         SLOPE STABILITY ANALYSIS SYSTEM
13         Modified Bishop, Simplified Janbu, or GLE Method of Slices.
14         (Includes Spencer & Morgenstern-Price Type Analysis)
15         Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
16         Nonlinear Undrained Shear Strength, Curved Phi Envelope,
17         Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
18         Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
19
20         *****
21         **
22
23         Analysis Run Date:      4/8/2022
24         Time of Run:           10:12AM
25         Run By:                 LGC Geotechnical,
26         Inc.
27
28
29
30
31
32
33         Input Data Filename:    Z:\2021\21095-01 Integral - Bouquet
34         Canyon\Engineering\slope stability\Sec
35         W-W'\2022_04_08\xwb-2.in
36
37
38
39         Output Filename:        Z:\2021\21095-01 Integral - Bouquet
40         Canyon\Engineering\slope stability\Sec
41         W-W'\2022_04_08\xwb-2.OUT
42
43
44
45         Unit System:            English
46
47         Plotted Output Filename: Z:\2021\21095-01 Integral - Bouquet
48         Canyon\Engineering\slope stability\Sec
49         W-W'\2022_04_08\xwb-2.PLT
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100        PROBLEM DESCRIPTION:  Bouquet Canyon/21095-01/Section W-W'/
101        Static
102
103
104
105
106
107        BOUNDARY COORDINATES
108
109        19 Top Boundaries
110        26 Total Boundaries
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500

```

48	1	0.00	1390.00	21.00	1389.00	1		
49	2	21.00	1389.00	26.00	1393.00	1		
50	3	26.00	1393.00	111.00	1393.00	1		
51	4	111.00	1393.00	131.00	1402.00	1		
52	5	131.00	1402.00	144.00	1403.00	1		
53	6	144.00	1403.00	144.10	1407.00	1		
54	7	144.10	1407.00	151.00	1410.00	1		
55	8	151.00	1410.00	191.00	1430.00	1		
56	9	191.00	1430.00	196.00	1435.00	1		
57	10	196.00	1435.00	211.00	1435.00	1		
58	11	211.00	1435.00	262.00	1460.00	1		
59	12	262.00	1460.00	272.00	1460.00	1		
60	13	272.00	1460.00	319.00	1484.00	1		
61	14	319.00	1484.00	320.00	1486.00	1		
62	15	320.00	1486.00	372.00	1486.00	1		
63	16	372.00	1486.00	407.00	1469.00	1		
64	17	407.00	1469.00	419.00	1469.00	1		
65	18	419.00	1469.00	437.00	1460.00	1		
66	19	437.00	1460.00	440.00	1460.00	1		
67	20	0.00	1386.00	21.00	1384.00	2		
68	21	21.00	1384.00	26.00	1388.00	2		
69	22	26.00	1388.00	146.00	1388.00	2		
70	23	146.00	1388.00	326.00	1480.00	2		
71	24	326.00	1480.00	351.00	1483.00	2		
72	25	351.00	1483.00	365.00	1483.00	2		
73	26	365.00	1483.00	440.00	1445.00	2		
74								
75								
76								
77								
78								
79								
80								
81	1							
82								
83								
84								
85								
86								
87								
88								
89								
90								
91								
92								
93	1	120.0	120.0	250.0	28.0	0.00	0.0	0
94	2	120.0	120.0	250.0	32.0	0.00	0.0	0
95								
96								
97								
98								
99								
100								
101								
102								
103								
104								
105								
106								
107								
108								
109								
110								
111	1		9.0		250.00		32.00	
112	2		15.0		150.00		25.00	
113	3		90.0		250.00		32.00	

User Specified Y-Origin = 1320.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	250.0	28.0	0.00	0.0	0
2	120.0	120.0	250.0	32.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 2 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	9.0	250.00	32.00
2	15.0	150.00	25.00
3	90.0	250.00	32.00

114 ANISOTROPIC SOIL NOTES:  
 115 (1) An input value of 0.01 for C and/or Phi will cause Aniso  
 116 C and/or Phi to be ignored in that range.  
 117 (2) An input value of 0.02 for Phi will set both Phi and  
 118 C equal to zero, with no water weight in the tension crack.  
 119 (3) An input value of 0.03 for Phi will set both Phi and  
 120 C equal to zero, with water weight in the tension crack.  
 121

122 Janbus Empirical Coef is being used for the case of c & phi both > 0  
 123  
 124  
 125  
 126  
 127

128 A Critical Failure Surface Searching Method, Using A Random  
 129 Technique For Generating Sliding Block Surfaces, Has Been  
 130 Specified.  
 131

132 4999 Trial Surfaces Have Been Generated.  
 133  
 134  
 135

136 2 Boxes Specified For Generation Of Central Block Base  
 137  
 138

139 Length Of Line Segments For Active And Passive Portions Of  
 140 Sliding Block Is 55.0  
 141

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	228.00	1428.00	248.00	1432.00	20.00
2	249.00	1432.00	359.00	1465.00	20.00

142 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 143  
 144  
 145

146 The Trial Failure Surface In Question Is Defined  
 147 By The Following 4 Coordinate Points  
 148  
 149

Point No.	X-Surf (ft)	Y-Surf (ft)
1	214.49	1436.71
2	229.48	1429.73
3	277.94	1439.68
4	278.08	1463.10

150 Factor of Safety for the Preceding Surface is Between 7.088 and 7.082  
 151  
 152  
 153

154 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 155  
 156  
 157

158 The Trial Failure Surface In Question Is Defined  
 159 By The Following 4 Coordinate Points  
 160  
 161

Point No.	X-Surf (ft)	Y-Surf (ft)
1	214.49	1436.71
2	229.48	1429.73
3	277.94	1439.68
4	278.08	1463.10

180			
181	1	214.49	1436.71
182	2	229.48	1429.73
183	3	277.94	1439.68
184	4	278.08	1463.10
185			
186			
187			
188			
189			
190			
191			
192			
193			
194			
195			
196			
197			
198			
199			
200			
201	1	214.49	1436.71
202	2	229.48	1429.73
203	3	277.94	1439.68
204	4	278.08	1463.10
205			
206			
207			
208			
209			
210			
211			
212			
213			
214			
215			
216			
217			
218			
219			
220			
221	1	214.49	1436.71
222	2	229.48	1429.73
223	3	277.94	1439.68
224	4	278.08	1463.10
225			
226			
227			
228			
229			
230			
231			
232			
233			
234			
235			
236			
237			
238			
239			
240			
241	1	214.49	1436.71
242	2	229.48	1429.73
243	3	277.94	1439.68
244	4	278.08	1463.10
245			

Factor of Safety for the Preceding Surface is Between 7.088 and 7.082

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
 By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	214.49	1436.71
2	229.48	1429.73
3	277.94	1439.68
4	278.08	1463.10

Factor of Safety for the Preceding Surface is Between 7.088 and 7.082

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
 By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	214.49	1436.71
2	229.48	1429.73
3	277.94	1439.68
4	278.08	1463.10

Factor of Safety for the Preceding Surface is Between 7.088 and 7.082

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
 By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	214.49	1436.71
2	229.48	1429.73
3	277.94	1439.68
4	278.08	1463.10

246  
 247 Factor of Safety for the Preceding Surface is Between 7.088 and 7.082  
 248  
 249  
 250 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 251  
 252  
 253

254 The Trial Failure Surface In Question Is Defined  
 255 By The Following 4 Coordinate Points  
 256

Point No.	X-Surf (ft)	Y-Surf (ft)
1	214.49	1436.71
2	229.48	1429.73
3	277.94	1439.68
4	278.08	1463.10

267 Factor of Safety for the Preceding Surface is Between 7.088 and 7.082  
 268  
 269  
 270 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 271  
 272  
 273

274 The Trial Failure Surface In Question Is Defined  
 275 By The Following 4 Coordinate Points  
 276

Point No.	X-Surf (ft)	Y-Surf (ft)
1	214.49	1436.71
2	229.48	1429.73
3	277.94	1439.68
4	278.08	1463.10

287 Factor of Safety for the Preceding Surface is Between 7.088 and 7.082  
 288  
 289  
 290 Following Are Displayed The Ten Most Critical Of The Trial  
 291 Failure Surfaces Evaluated. They Are  
 292 Ordered - Most Critical First.  
 293  
 294

295 \* \* Safety Factors Are Calculated By The Simplified Janbu Method \* \*  
 296  
 297  
 298  
 299 Total Number of Trial Surfaces Attempted = 4999  
 300

301 WARNING! The Factor of Safety Calculation for one or More Trial Surfaces  
 302 Did Not Converge in 20 Iterations.  
 303  
 304

305 Number of Trial Surfaces with Non-Converged FS = 7  
 306

307 Number of Trial Surfaces With Valid FS = 4992  
 308  
 309  
 310 Percentage of Trial Surfaces With Non-Valid FS Solutions  
 311 of the Total Attempted = 0.1 %

312  
 313 Statistical Data On All Valid FS Values:  
 314 FS Max = 48.290 FS Min = 1.799 FS Ave = 2.993  
 315 Standard Deviation = 2.509 Coefficient of Variation = 83.82 %  
 316  
 317

318 Failure Surface Specified By 4 Coordinate Points  
 319

Point No.	X-Surf (ft)	Y-Surf (ft)
1	216.972	1437.927
2	234.483	1435.726
3	305.443	1452.931
4	335.503	1486.000

320  
 321  
 322 Factor of Safety  
 323 \*\*\* 1.799 \*\*\*  
 324  
 325  
 326  
 327  
 328  
 329

330 Individual data on the 10 slices  
 331  
 332  
 333  
 334  
 335

Slice No.	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force		Surcharge Load (lbs)
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)	
336	1	17.5	11331.8	0.0	0.0	0.0	0.0	0.0	0.0
337	2	9.3	13338.8	0.0	0.0	0.0	0.0	0.0	0.0
338	3	18.2	33529.3	0.0	0.0	0.0	0.0	0.0	0.0
339	4	10.0	19668.0	0.0	0.0	0.0	0.0	0.0	0.0
340	5	33.4	78908.8	0.0	0.0	0.0	0.0	0.0	0.0
341	6	13.6	32781.3	0.0	0.0	0.0	0.0	0.0	0.0
342	7	1.0	1992.6	0.0	0.0	0.0	0.0	0.0	0.0
343	8	6.0	9903.5	0.0	0.0	0.0	0.0	0.0	0.0
344	9	4.5	4338.4	0.0	0.0	0.0	0.0	0.0	0.0
345	10	5.0	1622.7	0.0	0.0	0.0	0.0	0.0	0.0

346 Failure Surface Specified By 4 Coordinate Points  
 347

Point No.	X-Surf (ft)	Y-Surf (ft)
1	216.972	1437.927
2	234.483	1435.726
3	305.443	1452.931
4	335.503	1486.000

348  
 349  
 350 Factor of Safety  
 351 \*\*\* 1.799 \*\*\*  
 352  
 353  
 354  
 355  
 356  
 357

358 Failure Surface Specified By 4 Coordinate Points  
 359  
 360  
 361  
 362  
 363  
 364  
 365  
 366  
 367  
 368  
 369  
 370  
 371  
 372  
 373  
 374  
 375  
 376  
 377

Point	X-Surf	Y-Surf
-------	--------	--------



No.	(ft)	(ft)	
378			
379			
380	1	216.972	1437.927
381	2	234.483	1435.726
382	3	305.443	1452.931
383	4	335.503	1486.000

Factor of Safety  
 \*\*\* 1.799 \*\*\*

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)	
395			
396			
397			
398	1	216.972	1437.927
399	2	234.483	1435.726
400	3	305.443	1452.931
401	4	335.503	1486.000

Factor of Safety  
 \*\*\* 1.799 \*\*\*

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)	
413			
414			
415			
416			
417	1	216.972	1437.927
418	2	234.483	1435.726
419	3	305.443	1452.931
420	4	335.503	1486.000

Factor of Safety  
 \*\*\* 1.799 \*\*\*

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)	
431			
432			
433			
434			
435	1	216.972	1437.927
436	2	234.483	1435.726
437	3	305.443	1452.931
438	4	335.503	1486.000

Factor of Safety  
 \*\*\* 1.799 \*\*\*

444

445

1

446

447

448

449

450

451

452

453

454

455

456

457

458

459

460

461

462

463

464

465

466

467

468

469

470

471

472

473

474

475

476

477

478

479

480

481

482

483

1

484

485

486

487

488

489

490

491

492

493

494

495

496

497

498

499

500

501

502

503

504

505

506

507

508

509

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)	
451			
452			
453			
454	1	216.972	1437.927
455	2	234.483	1435.726
456	3	305.443	1452.931
457	4	335.503	1486.000

Factor of Safety  
 \*\*\* 1.799 \*\*\*

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)	
469			
470			
471			
472	1	216.972	1437.927
473	2	234.483	1435.726
474	3	305.443	1452.931
475	4	335.503	1486.000

Factor of Safety  
 \*\*\* 1.799 \*\*\*

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)	
491			
492			
493			
494			
495	1	207.853	1435.000
496	2	231.739	1429.191
497	3	295.077	1442.507
498	4	328.466	1486.000

Factor of Safety  
 \*\*\* 1.855 \*\*\*

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)	
506			
507			
508			
509	1	207.853	1435.000

```
510          2      231.739   1429.191
511          3      295.077   1442.507
512          4      328.466   1486.000
```

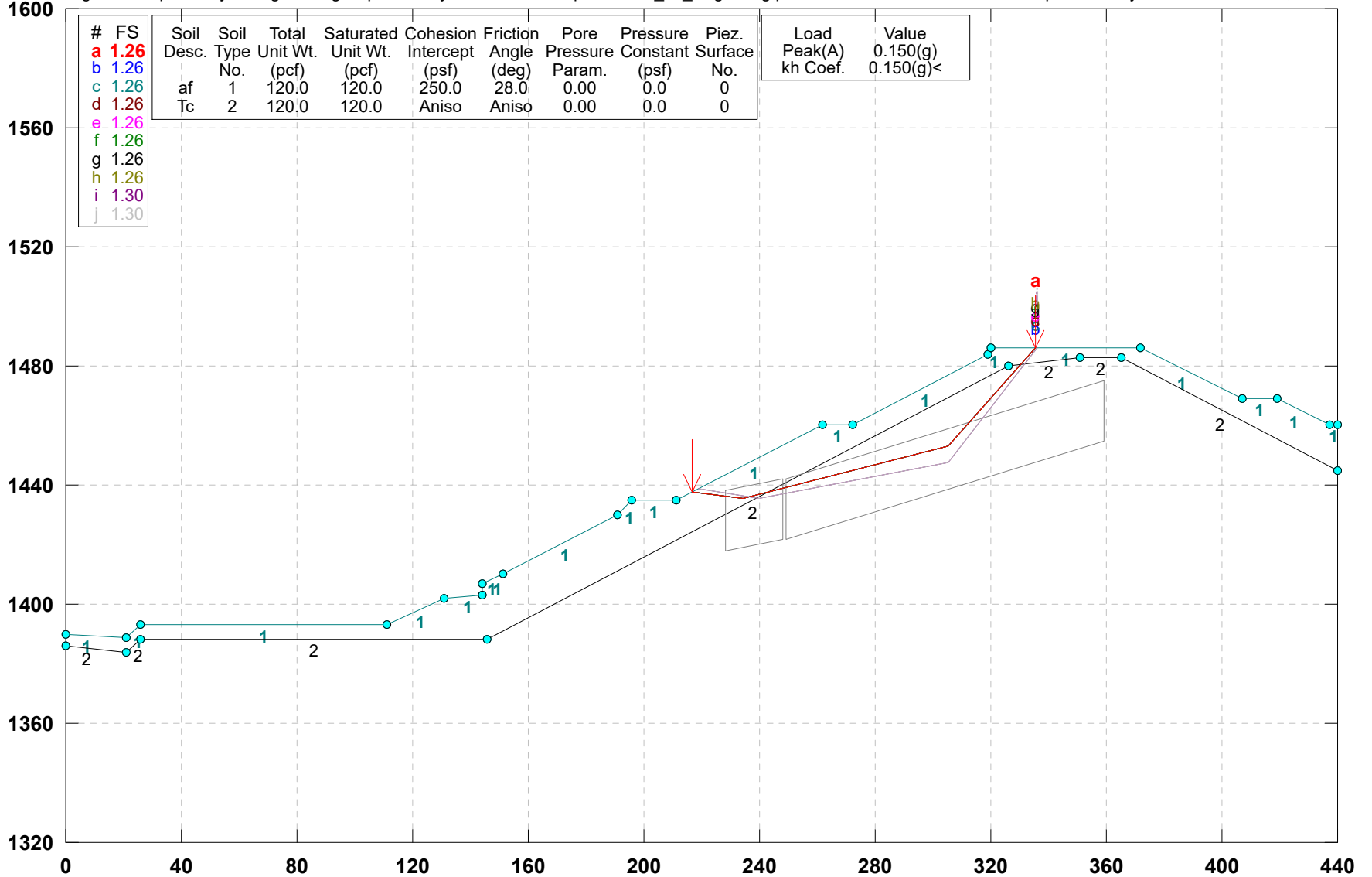
```
515      Factor of Safety
516      ***  1.855  ***
```

```
522      **** END OF GSTABL7 OUTPUT ****
```

```
523
```

# Bouquet Canyon/21095-01/Section W-W' Seismic

z:\2021\21095-01 integral - bouquet canyon\engineering\slope stability\1. included in reports\2022\_04\_xx grading plan review letter\1. all files\xwb-2e.pl2 Run By: LGC Geotechnical, Inc. 4/8/2022 10:12



GSTABL7 v.2 FSmin=1.26

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

```

1          *** GSTABL7 ***
2
3          ** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
4
5          ** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
6          (All Rights Reserved-Unauthorized Use Prohibited)
7
8
9
10         *****
11         **
12         SLOPE STABILITY ANALYSIS SYSTEM
13         Modified Bishop, Simplified Janbu, or GLE Method of Slices.
14         (Includes Spencer & Morgenstern-Price Type Analysis)
15         Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
16         Nonlinear Undrained Shear Strength, Curved Phi Envelope,
17         Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
18         Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
19
20         *****
21         **
22
23         Analysis Run Date:      4/8/2022
24         Time of Run:           10:12AM
25         Run By:                LGC Geotechnical,
26         Inc.
27
28
29
30
31
32
33         Input Data Filename:    Z:\2021\21095-01 Integral - Bouquet
34         Canyon\Engineering\slope stability\Sec
35         W-W'\2022_04_08\xwb-2e.in
36
37
38
39         Output Filename:        Z:\2021\21095-01 Integral - Bouquet
40         Canyon\Engineering\slope stability\Sec
41         W-W'\2022_04_08\xwb-2e.OUT
42
43
44
45         Unit System:           English
46
47         Plotted Output Filename: Z:\2021\21095-01 Integral - Bouquet
48         Canyon\Engineering\slope stability\Sec
49         W-W'\2022_04_08\xwb-2e.PLT
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100        PROBLEM DESCRIPTION:  Bouquet Canyon/21095-01/Section W-W'/
101        Seismic
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000

```

```

48         1          0.00  1390.00  21.00  1389.00  1
49         2          21.00  1389.00  26.00  1393.00  1
50         3          26.00  1393.00  111.00  1393.00  1
51         4          111.00  1393.00  131.00  1402.00  1
52         5          131.00  1402.00  144.00  1403.00  1
53         6          144.00  1403.00  144.10  1407.00  1
54         7          144.10  1407.00  151.00  1410.00  1
55         8          151.00  1410.00  191.00  1430.00  1
56         9          191.00  1430.00  196.00  1435.00  1
57        10          196.00  1435.00  211.00  1435.00  1
58        11          211.00  1435.00  262.00  1460.00  1
59        12          262.00  1460.00  272.00  1460.00  1
60        13          272.00  1460.00  319.00  1484.00  1
61        14          319.00  1484.00  320.00  1486.00  1
62        15          320.00  1486.00  372.00  1486.00  1
63        16          372.00  1486.00  407.00  1469.00  1
64        17          407.00  1469.00  419.00  1469.00  1
65        18          419.00  1469.00  437.00  1460.00  1
66        19          437.00  1460.00  440.00  1460.00  1
67        20           0.00  1386.00  21.00  1384.00  2
68        21          21.00  1384.00  26.00  1388.00  2
69        22          26.00  1388.00  146.00  1388.00  2
70        23          146.00  1388.00  326.00  1480.00  2
71        24          326.00  1480.00  351.00  1483.00  2
72        25          351.00  1483.00  365.00  1483.00  2
73        26          365.00  1483.00  440.00  1445.00  2
74
75         User Specified Y-Origin = 1320.00(ft)
76
77         Default X-Plus Value = 0.00(ft)
78
79         Default Y-Plus Value = 0.00(ft)
80
81
82
83         ISOTROPIC SOIL PARAMETERS
84
85         2 Type(s) of Soil
86
87
88
89         Soil Total Saturated Cohesion Friction Pore Pressure Piez.
90         Type Unit Wt. Unit Wt. Intercept Angle Pressure Constant Surface
91         No. (pcf) (pcf) (psf) (deg) Param. (psf) No.
92
93         1 120.0 120.0 250.0 28.0 0.00 0.0 0
94         2 120.0 120.0 250.0 32.0 0.00 0.0 0
95
96
97
98         ANISOTROPIC STRENGTH PARAMETERS
99         1 soil type(s)
100
101
102         Soil Type 2 Is Anisotropic
103
104         Number Of Direction Ranges Specified = 3
105
106
107         Direction Counterclockwise Cohesion Friction
108         Range Direction Limit Intercept Angle
109         No. (deg) (psf) (deg)
110
111         1 9.0 250.00 32.00
112         2 15.0 150.00 25.00
113         3 90.0 250.00 32.00

```



114 ANISOTROPIC SOIL NOTES:  
 115 (1) An input value of 0.01 for C and/or Phi will cause Aniso  
 116 C and/or Phi to be ignored in that range.  
 117 (2) An input value of 0.02 for Phi will set both Phi and  
 118 C equal to zero, with no water weight in the tension crack.  
 119 (3) An input value of 0.03 for Phi will set both Phi and  
 120 C equal to zero, with water weight in the tension crack.  
 121  
 122

123 Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)  
 124 Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)  
 125 Specified Vertical Earthquake Coefficient (kv) = 0.000(g)  
 126

127 Specified Seismic Pore-Pressure Factor = 0.000  
 128

129 Janbus Empirical Coef is being used for the case of c & phi both > 0  
 130

1

131 A Critical Failure Surface Searching Method, Using A Random  
 132 Technique For Generating Sliding Block Surfaces, Has Been  
 133 Specified.  
 134

135 4999 Trial Surfaces Have Been Generated.  
 136  
 137

138 2 Boxes Specified For Generation Of Central Block Base  
 139  
 140

141 Length Of Line Segments For Active And Passive Portions Of  
 142 Sliding Block Is 55.0  
 143  
 144

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	228.00	1428.00	248.00	1432.00	20.00
2	249.00	1432.00	359.00	1465.00	20.00

145 Following Are Displayed The Ten Most Critical Of The Trial  
 146 Failure Surfaces Evaluated. They Are  
 147 Ordered - Most Critical First.  
 148

149 \* \* Safety Factors Are Calculated By The Simplified Janbu Method \* \*  
 150  
 151

152 Total Number of Trial Surfaces Attempted = 4999  
 153  
 154

155 Number of Trial Surfaces With Valid FS = 4999  
 156  
 157

158 Statistical Data On All Valid FS Values:  
 159

160 FS Max = 28.337 FS Min = 1.261 FS Ave = 2.022  
 161 Standard Deviation = 1.498 Coefficient of Variation = 74.08 %  
 162  
 163

164 Failure Surface Specified By 4 Coordinate Points  
 165  
 166

Point No.	X-Surf (ft)	Y-Surf (ft)
-----------	-------------	-------------

180			
181	1	216.972	1437.927
182	2	234.483	1435.726
183	3	305.443	1452.931
184	4	335.503	1486.000
185			
186			

187 Factor of Safety  
 188 \*\*\* 1.261 \*\*\*  
 189

190 Individual data on the 10 slices  
 191

Slice No.	Width (ft)	Weight (lbs)	Water	Water	Tie	Tie	Earthquake			
			Force Top (lbs)	Force Bot (lbs)	Force Norm (lbs)	Force Tan (lbs)	Force Hor (lbs)	Force Ver (lbs)	Surcharge Load (lbs)	
201	1	17.5	11331.8	0.0	0.0	0.	0.	1699.8	0.0	0.0
202	2	9.3	13338.8	0.0	0.0	0.	0.	2000.8	0.0	0.0
203	3	18.2	33529.3	0.0	0.0	0.	0.	5029.4	0.0	0.0
204	4	10.0	19668.0	0.0	0.0	0.	0.	2950.2	0.0	0.0
205	5	33.4	78908.8	0.0	0.0	0.	0.	11836.3	0.0	0.0
206	6	13.6	32781.3	0.0	0.0	0.	0.	4917.2	0.0	0.0
207	7	1.0	1992.6	0.0	0.0	0.	0.	298.9	0.0	0.0
208	8	6.0	9903.5	0.0	0.0	0.	0.	1485.5	0.0	0.0
209	9	4.5	4338.4	0.0	0.0	0.	0.	650.8	0.0	0.0
210	10	5.0	1622.7	0.0	0.0	0.	0.	243.4	0.0	0.0

211 Failure Surface Specified By 4 Coordinate Points  
 212  
 213

Point No.	X-Surf (ft)	Y-Surf (ft)
215		
216		
217		
218	1	216.972
219	2	234.483
220	3	305.443
221	4	335.503

222 Factor of Safety  
 223 \*\*\* 1.261 \*\*\*  
 224

1

225 Failure Surface Specified By 4 Coordinate Points  
 226  
 227

Point No.	X-Surf (ft)	Y-Surf (ft)
233		
234		
235		
236		
237	1	216.972
238	2	234.483
239	3	305.443
240	4	335.503

241 Factor of Safety  
 242 \*\*\* 1.261 \*\*\*  
 243  
 244  
 245

246  
247  
248  
249  
250  
251  
252  
253  
254  
255  
256  
257  
258  
259  
260  
261  
262  
263  
264  
265  
266  
267  
268  
269  
270  
271  
272  
273  
274  
275  
276  
277  
278  
279  
280  
281  
282  
283  
284  
285  
286  
287  
288  
289  
290  
291  
292  
293  
294  
295  
296  
297  
298  
299  
300  
301  
302  
303  
304  
305  
306  
307  
308  
309  
310  
311

1

1

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	216.972	1437.927
2	234.483	1435.726
3	305.443	1452.931
4	335.503	1486.000

Factor of Safety  
\*\*\* 1.261 \*\*\*

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	216.972	1437.927
2	234.483	1435.726
3	305.443	1452.931
4	335.503	1486.000

Factor of Safety  
\*\*\* 1.261 \*\*\*

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	216.972	1437.927
2	234.483	1435.726
3	305.443	1452.931
4	335.503	1486.000

Factor of Safety  
\*\*\* 1.261 \*\*\*

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	216.972	1437.927

312	2	234.483	1435.726
313	3	305.443	1452.931
314	4	335.503	1486.000

Factor of Safety  
\*\*\* 1.261 \*\*\*

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	216.972	1437.927
2	234.483	1435.726
3	305.443	1452.931
4	335.503	1486.000

Factor of Safety  
\*\*\* 1.261 \*\*\*

1

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	219.153	1438.997
2	239.595	1435.552
3	304.987	1447.809
4	336.299	1486.000

Factor of Safety  
\*\*\* 1.297 \*\*\*

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	219.153	1438.997
2	239.595	1435.552
3	304.987	1447.809
4	336.299	1486.000

Factor of Safety  
\*\*\* 1.297 \*\*\*

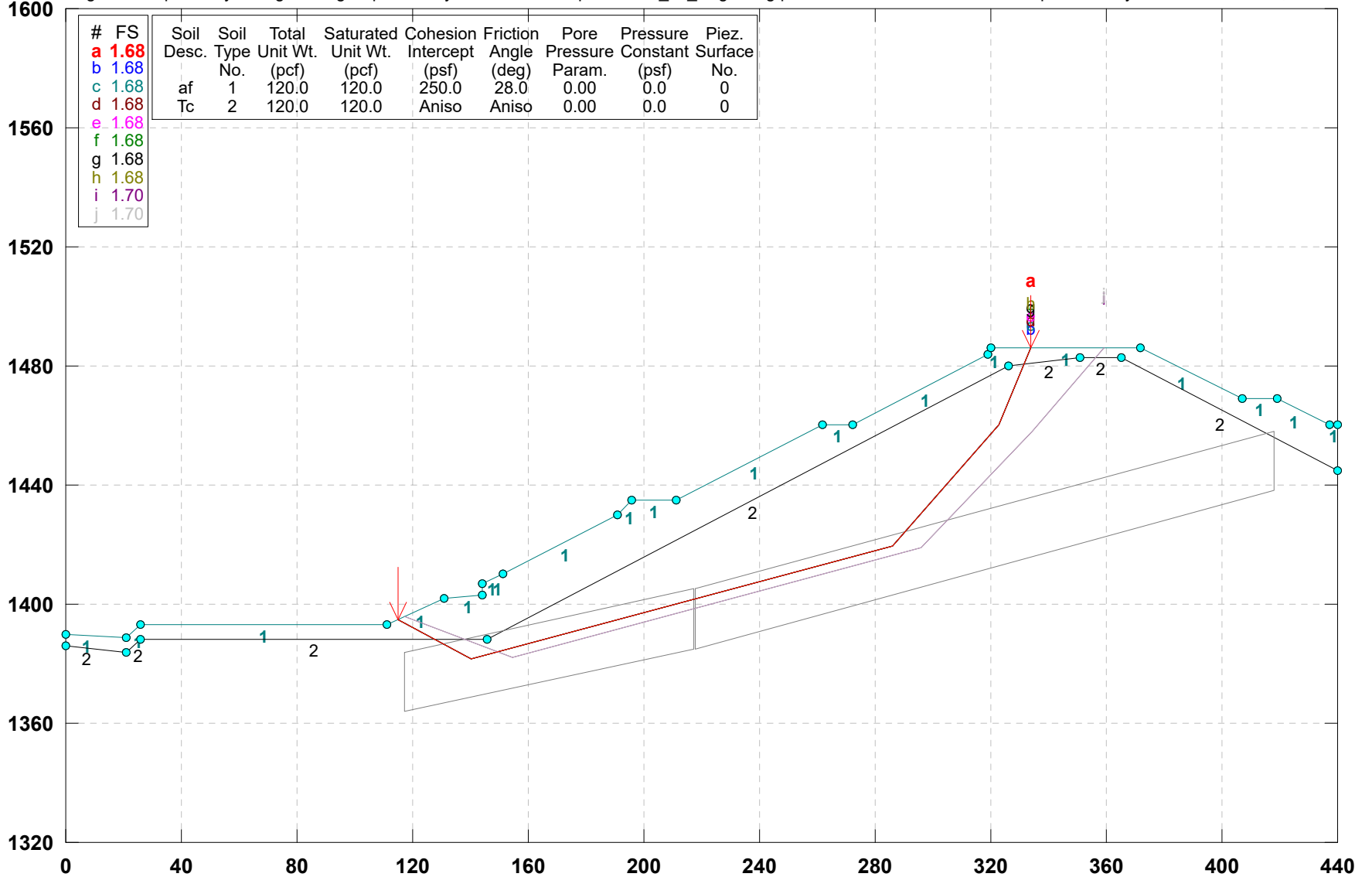
315  
316  
317  
318  
319  
320  
321  
322  
323  
324  
325  
326  
327  
328  
329  
330  
331  
332  
333  
334  
335  
336  
337  
338  
339  
340  
341  
342  
343  
344  
345  
346  
347  
348  
349  
350  
351  
352  
353  
354  
355  
356  
357  
358  
359  
360  
361  
362  
363  
364  
365  
366  
367  
368  
369  
370  
371  
372  
373  
374  
375  
376  
377

378  
379  
380

\*\*\*\* END OF GSTABL7 OUTPUT \*\*\*\*

# Bouquet Canyon/21095-01/Section W-W'/ Static

z:\2021\21095-01 integral - bouquet canyon\engineering\slope stability\1. included in reports\2022\_04\_xx grading plan review letter\1. all files\xwb-3.pl2 Run By: LGC Geotechnical, Inc. 4/8/2022 10:12AM



GSTABL7 v.2 FSmin=1.68

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0



```

1          *** GSTABL7 ***
2
3          ** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
4
5          ** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
6          (All Rights Reserved-Unauthorized Use Prohibited)
7
8
9
10         *****
11         **
12         SLOPE STABILITY ANALYSIS SYSTEM
13         Modified Bishop, Simplified Janbu, or GLE Method of Slices.
14         (Includes Spencer & Morgenstern-Price Type Analysis)
15         Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
16         Nonlinear Undrained Shear Strength, Curved Phi Envelope,
17         Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
18         Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
19
20         *****
21         **
22
23         Analysis Run Date:      4/8/2022
24         Time of Run:           10:12AM
25         Run By:                LGC Geotechnical,
26         Inc.
27
28
29
30
31
32
33         Input Data Filename:    Z:\2021\21095-01 Integral - Bouquet
34         Canyon\Engineering\slope stability\Sec
35         W-W'\2022_04_08\xwb-3.in
36
37
38
39         Output Filename:        Z:\2021\21095-01 Integral - Bouquet
40         Canyon\Engineering\slope stability\Sec
41         W-W'\2022_04_08\xwb-3.OUT
42
43
44
45         Unit System:            English
46
47         Plotted Output Filename: Z:\2021\21095-01 Integral - Bouquet
48         Canyon\Engineering\slope stability\Sec
49         W-W'\2022_04_08\xwb-3.PLT
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100        PROBLEM DESCRIPTION:  Bouquet Canyon/21095-01/Section W-W'/
101        Static
102
103
104
105        BOUNDARY COORDINATES
106
107        19 Top Boundaries
108        26 Total Boundaries
109
110
111        Boundary   X-Left   Y-Left   X-Right   Y-Right   Soil Type
112        No.        (ft)     (ft)     (ft)      (ft)      Below Bnd
113

```

48	1	0.00	1390.00	21.00	1389.00	1		
49	2	21.00	1389.00	26.00	1393.00	1		
50	3	26.00	1393.00	111.00	1393.00	1		
51	4	111.00	1393.00	131.00	1402.00	1		
52	5	131.00	1402.00	144.00	1403.00	1		
53	6	144.00	1403.00	144.10	1407.00	1		
54	7	144.10	1407.00	151.00	1410.00	1		
55	8	151.00	1410.00	191.00	1430.00	1		
56	9	191.00	1430.00	196.00	1435.00	1		
57	10	196.00	1435.00	211.00	1435.00	1		
58	11	211.00	1435.00	262.00	1460.00	1		
59	12	262.00	1460.00	272.00	1460.00	1		
60	13	272.00	1460.00	319.00	1484.00	1		
61	14	319.00	1484.00	320.00	1486.00	1		
62	15	320.00	1486.00	372.00	1486.00	1		
63	16	372.00	1486.00	407.00	1469.00	1		
64	17	407.00	1469.00	419.00	1469.00	1		
65	18	419.00	1469.00	437.00	1460.00	1		
66	19	437.00	1460.00	440.00	1460.00	1		
67	20	0.00	1386.00	21.00	1384.00	2		
68	21	21.00	1384.00	26.00	1388.00	2		
69	22	26.00	1388.00	146.00	1388.00	2		
70	23	146.00	1388.00	326.00	1480.00	2		
71	24	326.00	1480.00	351.00	1483.00	2		
72	25	351.00	1483.00	365.00	1483.00	2		
73	26	365.00	1483.00	440.00	1445.00	2		
74								
75								
76								
77								
78								
79								
80	1							
81								
82								
83								
84								
85								
86								
87								
88								
89								
90								
91								
92								
93	1	120.0	120.0	250.0	28.0	0.00	0.0	0
94	2	120.0	120.0	250.0	32.0	0.00	0.0	0
95								
96								
97								
98								
99								
100								
101								
102								
103								
104								
105								
106								
107								
108								
109								
110								
111								
112								
113								

User Specified Y-Origin = 1320.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Soil Type	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	250.0	28.0	0.00	0.0	0
2	120.0	120.0	250.0	32.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 2 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	9.0	250.00	32.00
2	15.0	150.00	25.00
3	90.0	250.00	32.00

114 ANISOTROPIC SOIL NOTES:  
 115 (1) An input value of 0.01 for C and/or Phi will cause Aniso  
 116 C and/or Phi to be ignored in that range.  
 117 (2) An input value of 0.02 for Phi will set both Phi and  
 118 C equal to zero, with no water weight in the tension crack.  
 119 (3) An input value of 0.03 for Phi will set both Phi and  
 120 C equal to zero, with water weight in the tension crack.  
 121  
 122  
 123  
 124 Janbus Empirical Coef is being used for the case of c & phi both > 0  
 125  
 126  
 127  
 128 A Critical Failure Surface Searching Method, Using A Random  
 129 Technique For Generating Sliding Block Surfaces, Has Been  
 130 Specified.  
 131  
 132  
 133 4999 Trial Surfaces Have Been Generated.  
 134  
 135  
 136 2 Boxes Specified For Generation Of Central Block Base  
 137  
 138  
 139 Length Of Line Segments For Active And Passive Portions Of  
 140 Sliding Block Is 55.0  
 141  
 142  
 143 Box X-Left Y-Left X-Right Y-Right Height  
 144 No. (ft) (ft) (ft) (ft) (ft)  
 145  
 146 1 117.00 1374.00 217.00 1395.00 20.00  
 147 2 218.00 1395.00 418.00 1448.00 20.00  
 148  
 149  
 150 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 151  
 152  
 153 The Trial Failure Surface In Question Is Defined  
 154 By The Following 4 Coordinate Points  
 155  
 156  
 157  
 158 Point X-Surf Y-Surf  
 159 No. (ft) (ft)  
 160  
 161 1 145.49 1407.60  
 162 2 170.39 1394.14  
 163 3 230.93 1402.54  
 164 4 231.45 1445.02  
 165  
 166  
 167 Factor of Safety for the Preceding Surface is Between10.956 and10.951  
 168  
 169  
 170 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 171  
 172  
 173 The Trial Failure Surface In Question Is Defined  
 174 By The Following 5 Coordinate Points  
 175  
 176  
 177  
 178 Point X-Surf Y-Surf  
 179 No. (ft) (ft)

180  
 181 1 144.08 1406.31  
 182 2 174.32 1391.59  
 183 3 275.12 1404.35  
 184 4 275.19 1459.35  
 185 5 279.84 1464.00  
 186  
 187  
 188 Factor of Safety for the Preceding Surface is Between14.802 and14.663  
 189  
 190  
 191 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 192  
 193  
 194 The Trial Failure Surface In Question Is Defined  
 195 By The Following 4 Coordinate Points  
 196  
 197  
 198  
 199 Point X-Surf Y-Surf  
 200 No. (ft) (ft)  
 201  
 202 1 145.49 1407.60  
 203 2 170.39 1394.14  
 204 3 230.93 1402.54  
 205 4 231.45 1445.02  
 206  
 207  
 208 Factor of Safety for the Preceding Surface is Between10.956 and10.951  
 209  
 210  
 211 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 212  
 213  
 214 The Trial Failure Surface In Question Is Defined  
 215 By The Following 5 Coordinate Points  
 216  
 217  
 218  
 219 Point X-Surf Y-Surf  
 220 No. (ft) (ft)  
 221  
 222 1 144.08 1406.31  
 223 2 174.32 1391.59  
 224 3 275.12 1404.35  
 225 4 275.19 1459.35  
 226 5 279.84 1464.00  
 227  
 228  
 229 Factor of Safety for the Preceding Surface is Between14.802 and14.663  
 230  
 231  
 232 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 233  
 234  
 235 The Trial Failure Surface In Question Is Defined  
 236 By The Following 4 Coordinate Points  
 237  
 238  
 239  
 240 Point X-Surf Y-Surf  
 241 No. (ft) (ft)  
 242  
 243 1 145.49 1407.60  
 244 2 170.39 1394.14  
 245 3 230.93 1402.54

246 4 231.45 1445.02  
 247  
 248  
 249 Factor of Safety for the Preceding Surface is Between10.956 and10.951  
 250  
 251  
 252 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 253  
 254  
 255 The Trial Failure Surface In Question Is Defined  
 256 By The Following 5 Coordinate Points  
 257  
 258

Point No.	X-Surf (ft)	Y-Surf (ft)
1	144.08	1406.31
2	174.32	1391.59
3	275.12	1404.35
4	275.19	1459.35
5	279.84	1464.00

259  
 260  
 261  
 262  
 263  
 264  
 265  
 266  
 267  
 268  
 269  
 270 Factor of Safety for the Preceding Surface is Between14.802 and14.663  
 271  
 272  
 273 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 274  
 275  
 276 The Trial Failure Surface In Question Is Defined  
 277 By The Following 4 Coordinate Points  
 278  
 279

Point No.	X-Surf (ft)	Y-Surf (ft)
1	145.49	1407.60
2	170.39	1394.14
3	230.93	1402.54
4	231.45	1445.02

280  
 281  
 282  
 283  
 284  
 285  
 286  
 287  
 288  
 289  
 290 Factor of Safety for the Preceding Surface is Between10.956 and10.951  
 291  
 292  
 293 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 294  
 295  
 296 The Trial Failure Surface In Question Is Defined  
 297 By The Following 5 Coordinate Points  
 298  
 299

Point No.	X-Surf (ft)	Y-Surf (ft)
1	144.08	1406.31
2	174.32	1391.59
3	275.12	1404.35
4	275.19	1459.35
5	279.84	1464.00

300  
 301  
 302  
 303  
 304  
 305  
 306  
 307  
 308  
 309  
 310  
 311 Factor of Safety for the Preceding Surface is Between14.802 and14.663

312  
 313  
 314 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 315  
 316  
 317  
 318 The Trial Failure Surface In Question Is Defined  
 319 By The Following 4 Coordinate Points  
 320  
 321

Point No.	X-Surf (ft)	Y-Surf (ft)
1	145.49	1407.60
2	170.39	1394.14
3	230.93	1402.54
4	231.45	1445.02

322  
 323  
 324  
 325  
 326  
 327  
 328  
 329  
 330  
 331 Factor of Safety for the Preceding Surface is Between10.956 and10.951  
 332  
 333  
 334  
 335  
 336  
 337  
 338  
 339 The Trial Failure Surface In Question Is Defined  
 340 By The Following 5 Coordinate Points  
 341  
 342

Point No.	X-Surf (ft)	Y-Surf (ft)
1	144.08	1406.31
2	174.32	1391.59
3	275.12	1404.35
4	275.19	1459.35
5	279.84	1464.00

343  
 344  
 345  
 346  
 347  
 348  
 349  
 350  
 351  
 352  
 353  
 354  
 355  
 356  
 357  
 358  
 359  
 360  
 361  
 362  
 363  
 364  
 365  
 366  
 367  
 368  
 369  
 370  
 371  
 372  
 373  
 374  
 375  
 376  
 377

378  
 379 The Trial Failure Surface In Question Is Defined  
 380 By The Following 5 Coordinate Points  
 381  
 382  
 383       Point       X-Surf       Y-Surf  
 384       No.       (ft)       (ft)  
 385  
 386       1       144.08     1406.31  
 387       2       174.32     1391.59  
 388       3       275.12     1404.35  
 389       4       275.19     1459.35  
 390       5       279.84     1464.00  
 391  
 392  
 393 Factor of Safety for the Preceding Surface is Between14.802 and14.663  
 394  
 395 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 396  
 397  
 398  
 399 The Trial Failure Surface In Question Is Defined  
 400 By The Following 4 Coordinate Points  
 401  
 402  
 403       Point       X-Surf       Y-Surf  
 404       No.       (ft)       (ft)  
 405  
 406       1       145.49     1407.60  
 407       2       170.39     1394.14  
 408       3       230.93     1402.54  
 409       4       231.45     1445.02  
 410  
 411  
 412 Factor of Safety for the Preceding Surface is Between10.956 and10.951  
 413  
 414 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 415  
 416  
 417  
 418 The Trial Failure Surface In Question Is Defined  
 419 By The Following 5 Coordinate Points  
 420  
 421  
 422       Point       X-Surf       Y-Surf  
 423       No.       (ft)       (ft)  
 424  
 425       1       144.08     1406.31  
 426       2       174.32     1391.59  
 427       3       275.12     1404.35  
 428       4       275.19     1459.35  
 429       5       279.84     1464.00  
 430  
 431  
 432 Factor of Safety for the Preceding Surface is Between14.802 and14.663  
 433  
 434 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 435  
 436  
 437  
 438 The Trial Failure Surface In Question Is Defined  
 439 By The Following 4 Coordinate Points  
 440  
 441  
 442  
 443

444  
 445       Point       X-Surf       Y-Surf  
 446       No.       (ft)       (ft)  
 447  
 448       1       145.49     1407.60  
 449       2       170.39     1394.14  
 450       3       230.93     1402.54  
 451       4       231.45     1445.02  
 452  
 453  
 454 Factor of Safety for the Preceding Surface is Between10.956 and10.951  
 455  
 456  
 457 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 458  
 459  
 460 The Trial Failure Surface In Question Is Defined  
 461 By The Following 5 Coordinate Points  
 462  
 463  
 464       Point       X-Surf       Y-Surf  
 465       No.       (ft)       (ft)  
 466  
 467       1       144.08     1406.31  
 468       2       174.32     1391.59  
 469       3       275.12     1404.35  
 470       4       275.19     1459.35  
 471       5       279.84     1464.00  
 472  
 473  
 474 Factor of Safety for the Preceding Surface is Between14.802 and14.663  
 475  
 476  
 477 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 478  
 479  
 480 The Trial Failure Surface In Question Is Defined  
 481 By The Following 4 Coordinate Points  
 482  
 483  
 484       Point       X-Surf       Y-Surf  
 485       No.       (ft)       (ft)  
 486  
 487       1       145.49     1407.60  
 488       2       170.39     1394.14  
 489       3       230.93     1402.54  
 490       4       231.45     1445.02  
 491  
 492  
 493 Factor of Safety for the Preceding Surface is Between10.956 and10.951  
 494  
 495  
 496  
 497 Following Are Displayed The Ten Most Critical Of The Trial  
 498 Failure Surfaces Evaluated. They Are  
 499 Ordered - Most Critical First.  
 500  
 501  
 502 \* \* Safety Factors Are Calculated By The Simplified Janbu Method \* \*  
 503  
 504  
 505  
 506 Total Number of Trial Surfaces Attempted = 4999  
 507  
 508  
 509 WARNING! The Factor of Safety Calculation for one or More Trial Surfaces

510 Did Not Converge in 20 Iterations.  
 511  
 512  
 513 Number of Trial Surfaces with Non-Converged FS = 17  
 514  
 515 Number of Trial Surfaces With Valid FS = 4982  
 516  
 517  
 518 Percentage of Trial Surfaces With Non-Valid FS Solutions  
 519 of the Total Attempted = 0.3 %  
 520  
 521 Statistical Data On All Valid FS Values:  
 522 FS Max = 10.601 FS Min = 1.677 FS Ave = 2.531  
 523 Standard Deviation = 0.712 Coefficient of Variation = 28.11 %  
 524  
 525  
 526 Failure Surface Specified By 5 Coordinate Points  
 527

Point No.	X-Surf (ft)	Y-Surf (ft)
1	114.700	1394.665
2	140.383	1381.541
3	286.152	1419.431
4	322.801	1460.442
5	333.651	1486.000

Factor of Safety  
 \*\*\* 1.677 \*\*\*

Individual data on the 19 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force			
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)	Surcharge Load (lbs)	
553	1	13.0	9808.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
554	2	3.3	5511.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
555	3	9.4	20742.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
556	4	3.6	9050.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
557	5	0.1	270.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
558	6	1.9	5622.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
559	7	5.0	15157.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
560	8	40.0	146402.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
561	9	5.0	22291.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
562	10	15.0	66694.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
563	11	51.0	250766.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
564	12	10.0	54656.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
565	13	14.2	78154.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
566	14	32.8	149012.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
567	15	1.0	3390.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
568	16	2.8	9116.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
569	17	3.2	8365.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
570	18	5.4	7543.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
571	19	2.3	730.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)	
579	1	114.700	1394.665
580	2	140.383	1381.541
581	3	286.152	1419.431
582	4	322.801	1460.442
583	5	333.651	1486.000

Factor of Safety  
 \*\*\* 1.677 \*\*\*

1

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)	
599	1	114.700	1394.665
600	2	140.383	1381.541
601	3	286.152	1419.431
602	4	322.801	1460.442
603	5	333.651	1486.000

Factor of Safety  
 \*\*\* 1.677 \*\*\*

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)	
618	1	114.700	1394.665
619	2	140.383	1381.541
620	3	286.152	1419.431
621	4	322.801	1460.442
622	5	333.651	1486.000

Factor of Safety  
 \*\*\* 1.677 \*\*\*

1

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)	
638	1	114.700	1394.665
639	2	140.383	1381.541
640	3	286.152	1419.431
641	4	322.801	1460.442



642 5 333.651 1486.000

643  
644  
645 Factor of Safety  
646 \*\*\* 1.677 \*\*\*

647  
648  
649  
650  
651 Failure Surface Specified By 5 Coordinate Points

652  
653  
654 Point X-Surf Y-Surf  
655 No. (ft) (ft)  
656  
657 1 114.700 1394.665  
658 2 140.383 1381.541  
659 3 286.152 1419.431  
660 4 322.801 1460.442  
661 5 333.651 1486.000

662  
663  
664 Factor of Safety  
665 \*\*\* 1.677 \*\*\*

666  
667  
668  
669 1  
670  
671 Failure Surface Specified By 5 Coordinate Points

672  
673  
674 Point X-Surf Y-Surf  
675 No. (ft) (ft)  
676  
677 1 114.700 1394.665  
678 2 140.383 1381.541  
679 3 286.152 1419.431  
680 4 322.801 1460.442  
681 5 333.651 1486.000

682  
683  
684 Factor of Safety  
685 \*\*\* 1.677 \*\*\*

686  
687  
688  
689  
690 Failure Surface Specified By 5 Coordinate Points

691  
692  
693 Point X-Surf Y-Surf  
694 No. (ft) (ft)  
695  
696 1 114.700 1394.665  
697 2 140.383 1381.541  
698 3 286.152 1419.431  
699 4 322.801 1460.442  
700 5 333.651 1486.000

701  
702  
703 Factor of Safety  
704 \*\*\* 1.677 \*\*\*  
705  
706  
707

708 1

709  
710 Failure Surface Specified By 5 Coordinate Points

711  
712  
713 Point X-Surf Y-Surf  
714 No. (ft) (ft)  
715  
716 1 117.002 1395.701  
717 2 154.299 1382.208  
718 3 296.015 1418.930  
719 4 334.601 1458.124  
720 5 359.073 1486.000

721  
722  
723 Factor of Safety  
724 \*\*\* 1.701 \*\*\*

725  
726  
727  
728  
729 Failure Surface Specified By 5 Coordinate Points

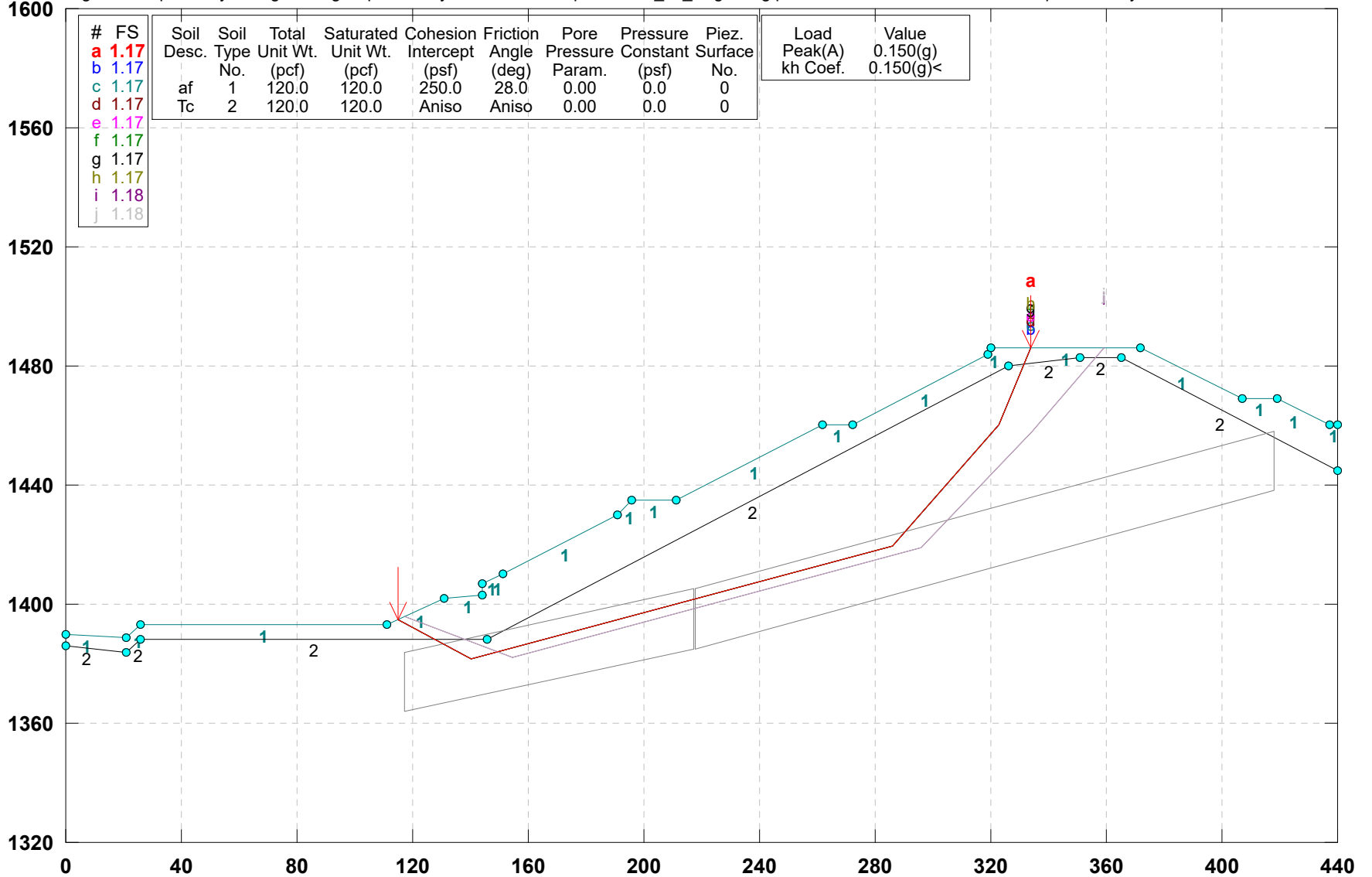
730  
731  
732 Point X-Surf Y-Surf  
733 No. (ft) (ft)  
734  
735 1 117.002 1395.701  
736 2 154.299 1382.208  
737 3 296.015 1418.930  
738 4 334.601 1458.124  
739 5 359.073 1486.000

740  
741  
742 Factor of Safety  
743 \*\*\* 1.701 \*\*\*

744  
745  
746  
747  
748  
749 \*\*\*\*\* END OF GSTABL7 OUTPUT \*\*\*\*\*  
750

# Bouquet Canyon/21095-01/Section W-W' Seismic

z:\2021\21095-01 integral - bouquet canyon\engineering\slope stability\1. included in reports\2022\_04\_xx grading plan review letter\1. all files\xwb-3e.pl2 Run By: LGC Geotechnical, Inc. 4/8/2022 10:13



GSTABL7 v.2 FSmin=1.17

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

```

1          *** GSTABL7 ***
2
3          ** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
4
5          ** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
6          (All Rights Reserved-Unauthorized Use Prohibited)
7
8
9
10         *****
11         **
12         SLOPE STABILITY ANALYSIS SYSTEM
13         Modified Bishop, Simplified Janbu, or GLE Method of Slices.
14         (Includes Spencer & Morgenstern-Price Type Analysis)
15         Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
16         Nonlinear Undrained Shear Strength, Curved Phi Envelope,
17         Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
18         Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
19
20         *****
21         **
22
23         Analysis Run Date:      4/8/2022
24         Time of Run:           10:13AM
25         Run By:                LGC Geotechnical,
26         Inc.
27
28
29
30
31
32
33         Input Data Filename:    Z:\2021\21095-01 Integral - Bouquet
34         Canyon\Engineering\slope stability\Sec
35         W-W'\2022_04_08\xwb-3e.in
36
37
38
39
40
41         Output Filename:       Z:\2021\21095-01 Integral - Bouquet
42         Canyon\Engineering\slope stability\Sec
43         W-W'\2022_04_08\xwb-3e.OUT
44
45
46
47         Unit System:           English
48
49
50         Plotted Output Filename: Z:\2021\21095-01 Integral - Bouquet
51         Canyon\Engineering\slope stability\Sec
52         W-W'\2022_04_08\xwb-3e.PLT
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100        PROBLEM DESCRIPTION:  Bouquet Canyon/21095-01/Section W-W'/
101        Seismic
102
103
104
105
106
107        BOUNDARY COORDINATES
108
109        19 Top Boundaries
110        26 Total Boundaries
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200

```

48	1	0.00	1390.00	21.00	1389.00	1		
49	2	21.00	1389.00	26.00	1393.00	1		
50	3	26.00	1393.00	111.00	1393.00	1		
51	4	111.00	1393.00	131.00	1402.00	1		
52	5	131.00	1402.00	144.00	1403.00	1		
53	6	144.00	1403.00	144.10	1407.00	1		
54	7	144.10	1407.00	151.00	1410.00	1		
55	8	151.00	1410.00	191.00	1430.00	1		
56	9	191.00	1430.00	196.00	1435.00	1		
57	10	196.00	1435.00	211.00	1435.00	1		
58	11	211.00	1435.00	262.00	1460.00	1		
59	12	262.00	1460.00	272.00	1460.00	1		
60	13	272.00	1460.00	319.00	1484.00	1		
61	14	319.00	1484.00	320.00	1486.00	1		
62	15	320.00	1486.00	372.00	1486.00	1		
63	16	372.00	1486.00	407.00	1469.00	1		
64	17	407.00	1469.00	419.00	1469.00	1		
65	18	419.00	1469.00	437.00	1460.00	1		
66	19	437.00	1460.00	440.00	1460.00	1		
67	20	0.00	1386.00	21.00	1384.00	2		
68	21	21.00	1384.00	26.00	1388.00	2		
69	22	26.00	1388.00	146.00	1388.00	2		
70	23	146.00	1388.00	326.00	1480.00	2		
71	24	326.00	1480.00	351.00	1483.00	2		
72	25	351.00	1483.00	365.00	1483.00	2		
73	26	365.00	1483.00	440.00	1445.00	2		
74								
75								
76								
77								
78								
79								
80	1							
81								
82								
83								
84								
85								
86								
87								
88								
89								
90								
91								
92								
93	1	120.0	120.0	250.0	28.0	0.00	0.0	0
94	2	120.0	120.0	250.0	32.0	0.00	0.0	0
95								
96								
97								
98								
99								
100								
101								
102								
103								
104								
105								
106								
107								
108								
109								
110								
111								
112								
113								

User Specified Y-Origin = 1320.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	250.0	28.0	0.00	0.0	0
2	120.0	120.0	250.0	32.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 2 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	9.0	250.00	32.00
2	15.0	150.00	25.00
3	90.0	250.00	32.00

114 ANISOTROPIC SOIL NOTES:  
 115 (1) An input value of 0.01 for C and/or Phi will cause Aniso  
 116 C and/or Phi to be ignored in that range.  
 117 (2) An input value of 0.02 for Phi will set both Phi and  
 118 C equal to zero, with no water weight in the tension crack.  
 119 (3) An input value of 0.03 for Phi will set both Phi and  
 120 C equal to zero, with water weight in the tension crack.  
 121

122 Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)  
 123 Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)  
 124 Specified Vertical Earthquake Coefficient (kv) = 0.000(g)

125 Specified Seismic Pore-Pressure Factor = 0.000

126 Janbus Empirical Coef is being used for the case of c & phi both > 0

1

127 A Critical Failure Surface Searching Method, Using A Random  
 128 Technique For Generating Sliding Block Surfaces, Has Been  
 129 Specified.

130 4999 Trial Surfaces Have Been Generated.

131 2 Boxes Specified For Generation Of Central Block Base

132 Length Of Line Segments For Active And Passive Portions Of  
 133 Sliding Block Is 55.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	117.00	1374.00	217.00	1395.00	20.00
2	218.00	1395.00	418.00	1448.00	20.00

134 Following Are Displayed The Ten Most Critical Of The Trial  
 135 Failure Surfaces Evaluated. They Are  
 136 Ordered - Most Critical First.

137 \* \* Safety Factors Are Calculated By The Simplified Janbu Method \* \*

138 Total Number of Trial Surfaces Attempted = 4999

139 Number of Trial Surfaces With Valid FS = 4999

140 Statistical Data On All Valid FS Values:

141 FS Max = 5.694 FS Min = 1.174 FS Ave = 1.663  
 142 Standard Deviation = 0.430 Coefficient of Variation = 25.85 %

143 Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
-----------	-------------	-------------

180			
181	1	114.700	1394.665
182	2	140.383	1381.541
183	3	286.152	1419.431
184	4	322.801	1460.442
185	5	333.651	1486.000

186 Factor of Safety  
 187 \*\*\* 1.174 \*\*\*

188 Individual data on the 19 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
202	1	13.0	9808.9	0.0	0.0	0.0	1471.3	0.0	0.0
203	2	3.3	5511.6	0.0	0.0	0.0	826.7	0.0	0.0
204	3	9.4	20742.2	0.0	0.0	0.0	3111.3	0.0	0.0
205	4	3.6	9050.7	0.0	0.0	0.0	1357.6	0.0	0.0
206	5	0.1	270.1	0.0	0.0	0.0	40.5	0.0	0.0
207	6	1.9	5622.2	0.0	0.0	0.0	843.3	0.0	0.0
208	7	5.0	15157.3	0.0	0.0	0.0	2273.6	0.0	0.0
209	8	40.0	146402.3	0.0	0.0	0.0	21960.4	0.0	0.0
210	9	5.0	22291.3	0.0	0.0	0.0	3343.7	0.0	0.0
211	10	15.0	66694.9	0.0	0.0	0.0	10004.2	0.0	0.0
212	11	51.0	250766.8	0.0	0.0	0.0	37615.0	0.0	0.0
213	12	10.0	54656.4	0.0	0.0	0.0	8198.5	0.0	0.0
214	13	14.2	78154.5	0.0	0.0	0.0	11723.2	0.0	0.0
215	14	32.8	149012.4	0.0	0.0	0.0	22351.9	0.0	0.0
216	15	1.0	3390.2	0.0	0.0	0.0	508.5	0.0	0.0
217	16	2.8	9116.5	0.0	0.0	0.0	1367.5	0.0	0.0
218	17	3.2	8365.6	0.0	0.0	0.0	1254.8	0.0	0.0
219	18	5.4	7543.3	0.0	0.0	0.0	1131.5	0.0	0.0
220	19	2.3	730.4	0.0	0.0	0.0	109.6	0.0	0.0

221 Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)	
225	1	114.700	1394.665
226	2	140.383	1381.541
227	3	286.152	1419.431
228	4	322.801	1460.442
229	5	333.651	1486.000

230 Factor of Safety  
 231 \*\*\* 1.174 \*\*\*

232 Failure Surface Specified By 5 Coordinate Points

Point	X-Surf	Y-Surf
-------	--------	--------

No.	(ft)	(ft)
246		
247		
248	1	114.700
249	2	140.383
250	3	286.152
251	4	322.801
252	5	333.651
253		

Factor of Safety  
 \*\*\* 1.174 \*\*\*

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
261		
262		
263		
264	1	114.700
265	2	140.383
266	3	286.152
267	4	322.801
268	5	333.651
269		
270		
271		

Factor of Safety  
 \*\*\* 1.174 \*\*\*

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
273		
274		
275		
276		
277		
278		
279		
280		
281		
282		
283		
284	1	114.700
285	2	140.383
286	3	286.152
287	4	322.801
288	5	333.651
289		
290		
291		
292		

Factor of Safety  
 \*\*\* 1.174 \*\*\*

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
293		
294		
295		
296		
297		
298		
299		
300		
301		
302		
303		
304	1	114.700
305	2	140.383
306	3	286.152
307	4	322.801
308	5	333.651
309		
310		
311		

Factor of Safety  
 \*\*\* 1.174 \*\*\*

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
312		
313		
314		
315		
316		
317		
318		
319		
320		
321		
322		
323		
324		
325		
326	1	114.700
327	2	140.383
328	3	286.152
329	4	322.801
330	5	333.651
331		

Factor of Safety  
 \*\*\* 1.174 \*\*\*

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
332		
333		
334		
335		
336		
337		
338		
339		
340		
341		
342		
343		
344		
345		
346	1	114.700
347	2	140.383
348	3	286.152
349	4	322.801
350	5	333.651
351		

Factor of Safety  
 \*\*\* 1.174 \*\*\*

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
352		
353		
354		
355		
356		
357		
358		
359		
360		
361		
362		
363		
364		
365		
366	1	117.002
367	2	154.299
368	3	296.015
369	4	334.601
370	5	359.073
371		

Factor of Safety  
 \*\*\* 1.176 \*\*\*



378  
379  
380  
381  
382  
383  
384  
385  
386  
387  
388  
389  
390  
391  
392  
393  
394  
395  
396  
397  
398  
399

Failure Surface Specified By 5 Coordinate Points

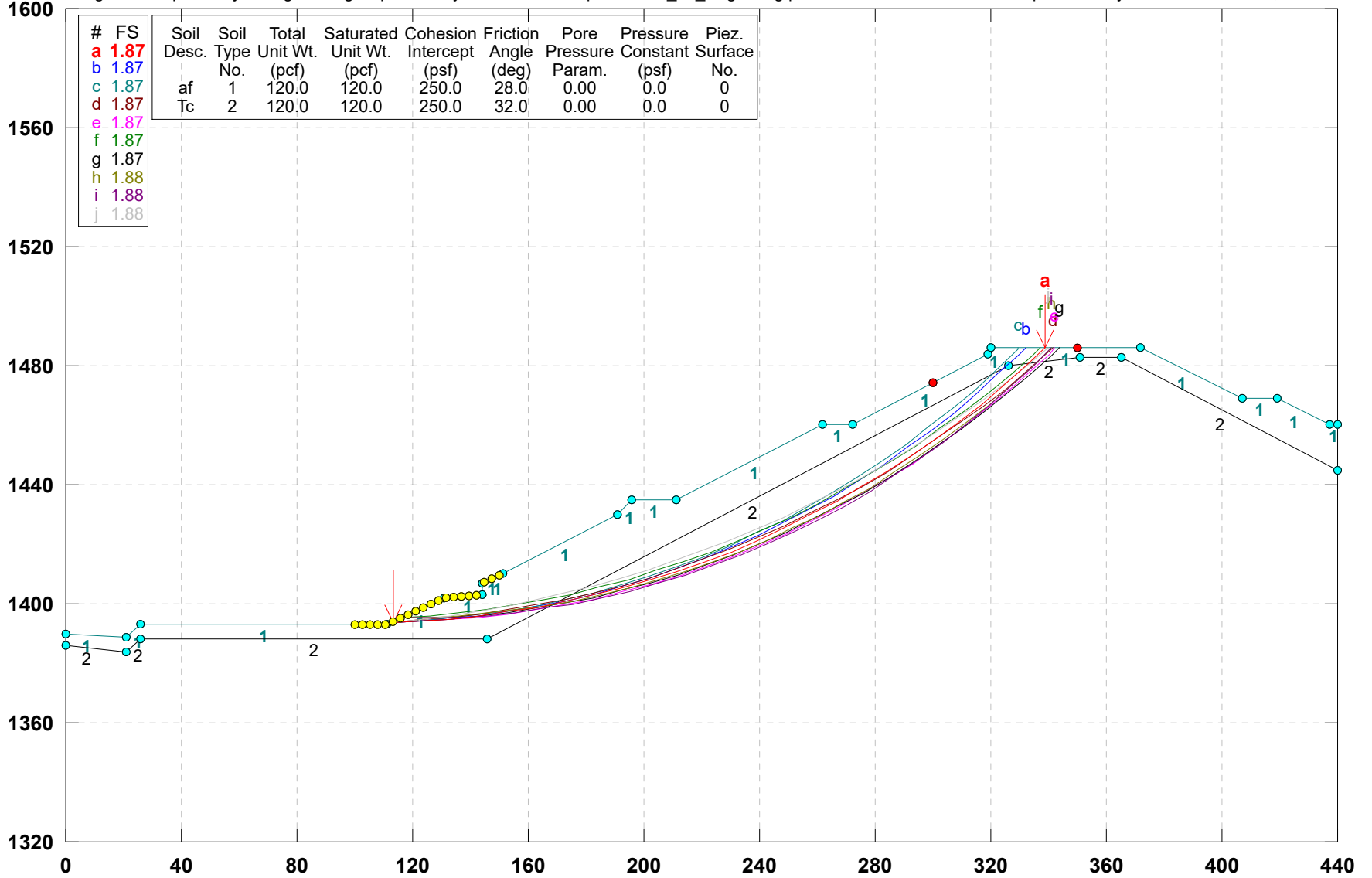
Point No.	X-Surf (ft)	Y-Surf (ft)
1	117.002	1395.701
2	154.299	1382.208
3	296.015	1418.930
4	334.601	1458.124
5	359.073	1486.000

Factor of Safety  
\*\*\* 1.176 \*\*\*

\*\*\*\* END OF GSTABL7 OUTPUT \*\*\*\*

### Bouquet Canyon/21095-01/Section W-W'/ Static

z:\2021\21095-01 integral - bouquet canyon\engineering\slope stability\1. included in reports\2022\_04\_xx grading plan review letter\1. all files\wxc.pl2 Run By: LGC Geotechnical, Inc. 4/8/2022 10:13AM



GSTABL7 v.2 FSmin=1.87  
Safety Factors Are Calculated By The Modified Bishop Method

```

1          *** GSTABL7 ***
2
3          ** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
4
5          ** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
6          (All Rights Reserved-Unauthorized Use Prohibited)
7
8
9
10         *****
11         **
12         SLOPE STABILITY ANALYSIS SYSTEM
13         Modified Bishop, Simplified Janbu, or GLE Method of Slices.
14         (Includes Spencer & Morgenstern-Price Type Analysis)
15         Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
16         Nonlinear Undrained Shear Strength, Curved Phi Envelope,
17         Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
18         Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
19
20         *****
21         **
22
23         Analysis Run Date:      4/8/2022
24         Time of Run:           10:13AM
25         Run By:                LGC Geotechnical,
26         Inc.
27
28
29
30
31
32
33         Input Data Filename:    Z:\2021\21095-01 Integral - Bouquet
34         Canyon\Engineering\slope stability\Sec
35         W-W'\2022_04_08\xwc.in
36
37
38
39         Output Filename:       Z:\2021\21095-01 Integral - Bouquet
40         Canyon\Engineering\slope stability\Sec
41         W-W'\2022_04_08\xwc.OUT
42
43
44
45         Unit System:           English
46
47         Plotted Output Filename: Z:\2021\21095-01 Integral - Bouquet
48         Canyon\Engineering\slope stability\Sec
49         W-W'\2022_04_08\xwc.PLT
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100        PROBLEM DESCRIPTION:  Bouquet Canyon/21095-01/Section W-W'/
101        Static
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500

```

48	1	0.00	1390.00	21.00	1389.00	1		
49	2	21.00	1389.00	26.00	1393.00	1		
50	3	26.00	1393.00	111.00	1393.00	1		
51	4	111.00	1393.00	131.00	1402.00	1		
52	5	131.00	1402.00	144.00	1403.00	1		
53	6	144.00	1403.00	144.10	1407.00	1		
54	7	144.10	1407.00	151.00	1410.00	1		
55	8	151.00	1410.00	191.00	1430.00	1		
56	9	191.00	1430.00	196.00	1435.00	1		
57	10	196.00	1435.00	211.00	1435.00	1		
58	11	211.00	1435.00	262.00	1460.00	1		
59	12	262.00	1460.00	272.00	1460.00	1		
60	13	272.00	1460.00	319.00	1484.00	1		
61	14	319.00	1484.00	320.00	1486.00	1		
62	15	320.00	1486.00	372.00	1486.00	1		
63	16	372.00	1486.00	407.00	1469.00	1		
64	17	407.00	1469.00	419.00	1469.00	1		
65	18	419.00	1469.00	437.00	1460.00	1		
66	19	437.00	1460.00	440.00	1460.00	1		
67	20	0.00	1386.00	21.00	1384.00	2		
68	21	21.00	1384.00	26.00	1388.00	2		
69	22	26.00	1388.00	146.00	1388.00	2		
70	23	146.00	1388.00	326.00	1480.00	2		
71	24	326.00	1480.00	351.00	1483.00	2		
72	25	351.00	1483.00	365.00	1483.00	2		
73	26	365.00	1483.00	440.00	1445.00	2		
74								
75								
76								
77								
78								
79								
80	1							
81								
82								
83								
84								
85								
86								
87								
88								
89								
90								
91								
92								
93	1	120.0	120.0	250.0	28.0	0.00	0.0	0
94	2	120.0	120.0	250.0	32.0	0.00	0.0	0
95								
96								
97								
98								
99								
100								
101								
102								
103								
104								
105								
106								
107								
108								
109								
110								
111	1		9.0		250.00		32.00	
112	2		15.0		150.00		25.00	
113	3		90.0		250.00		32.00	

User Specified Y-Origin = 1320.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	250.0	28.0	0.00	0.0	0
2	120.0	120.0	250.0	32.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 2 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	9.0	250.00	32.00
2	15.0	150.00	25.00
3	90.0	250.00	32.00

114 ANISOTROPIC SOIL NOTES:  
 115 (1) An input value of 0.01 for C and/or Phi will cause Aniso  
 116 C and/or Phi to be ignored in that range.  
 117 (2) An input value of 0.02 for Phi will set both Phi and  
 118 C equal to zero, with no water weight in the tension crack.  
 119 (3) An input value of 0.03 for Phi will set both Phi and  
 120 C equal to zero, with water weight in the tension crack.  
 121  
 122  
 123  
 124  
 125  
 126 ANISOTROPIC STRENGTH DATA HAS BEEN SUPPRESSED  
 127  
 128  
 129  
 130 A Critical Failure Surface Searching Method, Using A Random  
 131 Technique For Generating Circular Surfaces, Has Been Specified.  
 132  
 133 4980 Trial Surfaces Have Been Generated.  
 134  
 135 249 Surface(s) Initiate(s) From Each Of 20 Points Equally Spaced  
 136 Along The Ground Surface Between X = 100.00(ft)  
 137 and X = 150.00(ft)  
 138  
 139 Each Surface Terminates Between X = 300.00(ft)  
 140 and X = 350.00(ft)  
 141  
 142  
 143  
 144  
 145  
 146 Unless Further Limitations Were Imposed, The Minimum Elevation  
 147 At Which A Surface Extends Is Y = 0.00(ft)  
 148  
 149  
 150 10.00(ft) Line Segments Define Each Trial Failure Surface.  
 151  
 152  
 153  
 154  
 155 Following Are Displayed The Ten Most Critical Of The Trial  
 156 Failure Surfaces Evaluated. They Are  
 157 Ordered - Most Critical First.  
 158  
 159 \* \* Safety Factors Are Calculated By The Modified Bishop Method \* \*  
 160  
 161  
 162  
 163  
 164 Total Number of Trial Surfaces Attempted = 4980  
 165  
 166 Number of Trial Surfaces With Valid FS = 4980  
 167  
 168  
 169 Statistical Data On All Valid FS Values:  
 170 FS Max = 3.242 FS Min = 1.867 FS Ave = 2.490  
 171 Standard Deviation = 0.399 Coefficient of Variation = 16.02 %  
 172  
 173  
 174 Failure Surface Specified By 26 Coordinate Points  
 175  
 176  
 177 Point X-Surf Y-Surf  
 178 No. (ft) (ft)  
 179

180	1	113.158	1393.971
181	2	123.150	1394.366
182	3	133.127	1395.052
183	4	143.079	1396.027
184	5	152.999	1397.290
185	6	162.878	1398.841
186	7	172.708	1400.678
187	8	182.480	1402.800
188	9	192.186	1405.205
189	10	201.819	1407.890
190	11	211.370	1410.855
191	12	220.830	1414.095
192	13	230.193	1417.609
193	14	239.449	1421.393
194	15	248.592	1425.444
195	16	257.613	1429.759
196	17	266.505	1434.334
197	18	275.260	1439.166
198	19	283.871	1444.249
199	20	292.332	1449.581
200	21	300.633	1455.156
201	22	308.770	1460.970
202	23	316.734	1467.017
203	24	324.519	1473.294
204	25	332.118	1479.793
205	26	338.962	1486.000
206			
207		Circle Center At X =	104.557 ; Y = 1738.110 ; and Radius = 344.246
208			
209			
210		Factor of Safety	
211		*** 1.867 ***	
212			
213			
214			
215			
216		Individual data on the	39 slices
217			
218			
219			
220			
221			
222			
223			
224			
225			
226			
227			
228			
229			
230			
231			
232			
233			
234			
235			
236			
237			
238			
239			
240			
241			
242			
243			
244			
245			

Slice No.	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force Surcharge			
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)	Load (lbs)	
221	1	10.0	2458.6	0.0	0.0	0.	0.	0.0	0.0	0.0
222	2	7.8	5273.0	0.0	0.0	0.	0.	0.0	0.0	0.0
223	3	2.1	1812.6	0.0	0.0	0.	0.	0.0	0.0	0.0
224	4	10.0	8368.5	0.0	0.0	0.	0.	0.0	0.0	0.0
225	5	0.9	760.4	0.0	0.0	0.	0.	0.0	0.0	0.0
226	6	0.1	106.2	0.0	0.0	0.	0.	0.0	0.0	0.0
227	7	6.9	9856.3	0.0	0.0	0.	0.	0.0	0.0	0.0
228	8	2.0	3198.9	0.0	0.0	0.	0.	0.0	0.0	0.0
229	9	9.9	18260.5	0.0	0.0	0.	0.	0.0	0.0	0.0
230	10	6.8	14891.6	0.0	0.0	0.	0.	0.0	0.0	0.0
231	11	3.0	7091.8	0.0	0.0	0.	0.	0.0	0.0	0.0
232	12	9.8	25280.2	0.0	0.0	0.	0.	0.0	0.0	0.0
233	13	8.5	24552.8	0.0	0.0	0.	0.	0.0	0.0	0.0
234	14	1.2	3635.5	0.0	0.0	0.	0.	0.0	0.0	0.0
235	15	3.8	12519.2	0.0	0.0	0.	0.	0.0	0.0	0.0
236	16	5.8	19496.7	0.0	0.0	0.	0.	0.0	0.0	0.0
237	17	9.2	28297.3	0.0	0.0	0.	0.	0.0	0.0	0.0
238	18	0.4	1077.6	0.0	0.0	0.	0.	0.0	0.0	0.0
239	19	9.5	28410.1	0.0	0.0	0.	0.	0.0	0.0	0.0
240	20	9.4	29504.7	0.0	0.0	0.	0.	0.0	0.0	0.0
241	21	9.3	30186.7	0.0	0.0	0.	0.	0.0	0.0	0.0
242	22	9.1	30464.9	0.0	0.0	0.	0.	0.0	0.0	0.0

246	23	9.0	30351.0	0.0	0.0	0.	0.	0.0	0.0	0.0
247	24	4.4	14761.0	0.0	0.0	0.	0.	0.0	0.0	0.0
248	25	4.5	14500.4	0.0	0.0	0.	0.	0.0	0.0	0.0
249	26	5.5	15925.2	0.0	0.0	0.	0.	0.0	0.0	0.0
250	27	3.3	8828.2	0.0	0.0	0.	0.	0.0	0.0	0.0
251	28	8.6	22895.3	0.0	0.0	0.	0.	0.0	0.0	0.0
252	29	8.5	21631.2	0.0	0.0	0.	0.	0.0	0.0	0.0
253	30	8.3	20057.0	0.0	0.0	0.	0.	0.0	0.0	0.0
254	31	8.1	18195.2	0.0	0.0	0.	0.	0.0	0.0	0.0
255	32	8.0	16070.8	0.0	0.0	0.	0.	0.0	0.0	0.0
256	33	2.3	4212.6	0.0	0.0	0.	0.	0.0	0.0	0.0
257	34	1.0	1890.3	0.0	0.0	0.	0.	0.0	0.0	0.0
258	35	4.5	7878.0	0.0	0.0	0.	0.	0.0	0.0	0.0
259	36	1.5	2145.8	0.0	0.0	0.	0.	0.0	0.0	0.0
260	37	6.1	6478.0	0.0	0.0	0.	0.	0.0	0.0	0.0
261	38	1.2	812.7	0.0	0.0	0.	0.	0.0	0.0	0.0
262	39	5.6	1736.0	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 26 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	113.158	1393.971
2	123.150	1394.375
3	133.124	1395.086
4	143.073	1396.102
5	152.985	1397.423
6	162.852	1399.047
7	172.665	1400.974
8	182.414	1403.200
9	192.090	1405.724
10	201.684	1408.544
11	211.187	1411.657
12	220.591	1415.060
13	229.885	1418.750
14	239.062	1422.723
15	248.112	1426.976
16	257.028	1431.504
17	265.801	1436.304
18	274.423	1441.371
19	282.885	1446.699
20	291.179	1452.285
21	299.299	1458.123
22	307.235	1464.206
23	314.981	1470.531
24	322.529	1477.090
25	329.873	1483.877
26	332.033	1486.000

Circle Center At X = 105.026 ; Y = 1719.603 ; and Radius = 325.733

Factor of Safety  
\*\*\* 1.868 \*\*\*

Failure Surface Specified By 26 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
-----------	-------------	-------------

312			
313	1	113.158	1393.971
314	2	123.146	1394.451
315	3	133.115	1395.238
316	4	143.056	1396.330
317	5	152.958	1397.726
318	6	162.812	1399.425
319	7	172.610	1401.426
320	8	182.342	1403.726
321	9	191.999	1406.323
322	10	201.571	1409.216
323	11	211.050	1412.401
324	12	220.428	1415.875
325	13	229.694	1419.635
326	14	238.840	1423.677
327	15	247.858	1427.998
328	16	256.740	1432.594
329	17	265.476	1437.460
330	18	274.059	1442.591
331	19	282.481	1447.984
332	20	290.733	1453.632
333	21	298.808	1459.530
334	22	306.698	1465.674
335	23	314.397	1472.056
336	24	321.895	1478.672
337	25	329.188	1485.515
338	26	329.674	1486.000

Circle Center At X = 102.513 ; Y = 1719.730 ; and Radius = 325.932

Factor of Safety  
\*\*\* 1.871 \*\*\*

Failure Surface Specified By 27 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	113.158	1393.971
2	123.141	1394.545
3	133.106	1395.388
4	143.044	1396.500
5	152.948	1397.881
6	162.811	1399.528
7	172.627	1401.442
8	182.386	1403.620
9	192.084	1406.061
10	201.712	1408.764
11	211.263	1411.725
12	220.731	1414.944
13	230.109	1418.417
14	239.389	1422.142
15	248.565	1426.117
16	257.630	1430.339
17	266.578	1434.804
18	275.402	1439.509
19	284.095	1444.451
20	292.652	1449.626
21	301.066	1455.030
22	309.331	1460.660
23	317.440	1466.511



378 24 325.389 1472.580  
 379 25 333.170 1478.860  
 380 26 340.779 1485.349  
 381 27 341.501 1486.000

Circle Center At X = 96.928 ; Y = 1763.588 ; and Radius = 369.973

Factor of Safety  
 \*\*\* 1.871 \*\*\*

391 1

Failure Surface Specified By 27 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	113.158	1393.971
2	123.156	1394.181
3	133.143	1394.688
4	143.110	1395.492
5	153.050	1396.592
6	162.952	1397.986
7	172.809	1399.675
8	182.611	1401.655
9	192.349	1403.926
10	202.016	1406.485
11	211.603	1409.330
12	221.101	1412.459
13	230.501	1415.869
14	239.797	1419.557
15	248.978	1423.519
16	258.038	1427.753
17	266.968	1432.253
18	275.760	1437.017
19	284.407	1442.041
20	292.900	1447.319
21	301.233	1452.847
22	309.398	1458.620
23	317.388	1464.634
24	325.196	1470.882
25	332.814	1477.360
26	340.237	1484.061
27	342.261	1486.000

Circle Center At X = 111.085 ; Y = 1730.427 ; and Radius = 336.462

Factor of Safety  
 \*\*\* 1.872 \*\*\*

Failure Surface Specified By 26 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	115.789	1395.155
2	125.766	1395.834

444 3 135.721 1396.786  
 445 4 145.646 1398.011  
 446 5 155.533 1399.508  
 447 6 165.375 1401.276  
 448 7 175.166 1403.313  
 449 8 184.896 1405.619  
 450 9 194.560 1408.190  
 451 10 204.149 1411.026  
 452 11 213.657 1414.124  
 453 12 223.077 1417.482  
 454 13 232.400 1421.098  
 455 14 241.621 1424.967  
 456 15 250.732 1429.089  
 457 16 259.727 1433.459  
 458 17 268.598 1438.074  
 459 18 277.339 1442.932  
 460 19 285.944 1448.027  
 461 20 294.405 1453.356  
 462 21 302.717 1458.916  
 463 22 310.874 1464.702  
 464 23 318.868 1470.710  
 465 24 326.694 1476.934  
 466 25 334.347 1483.372  
 467 26 337.303 1486.000

Circle Center At X = 96.130 ; Y = 1758.581 ; and Radius = 363.957

Factor of Safety  
 \*\*\* 1.873 \*\*\*

477 1

Failure Surface Specified By 27 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	113.158	1393.971
2	123.153	1394.296
3	133.134	1394.906
4	143.094	1395.799
5	153.025	1396.976
6	162.918	1398.435
7	172.765	1400.175
8	182.559	1402.194
9	192.291	1404.492
10	201.955	1407.066
11	211.540	1409.913
12	221.041	1413.033
13	230.450	1416.422
14	239.758	1420.077
15	248.958	1423.996
16	258.043	1428.175
17	267.005	1432.611
18	275.837	1437.301
19	284.532	1442.240
20	293.083	1447.424
21	301.483	1452.850
22	309.725	1458.513
23	317.803	1464.409
24	325.709	1470.532
25	333.438	1476.877

510           26       340.983     1483.440  
 511           27       343.762     1486.000  
 512  
 513       Circle Center At X = 106.739 ; Y = 1745.118 ; and Radius = 351.205  
 514

515                   Factor of Safety  
 516               \*\*\* 1.874 \*\*\*  
 517

518  
 519  
 520  
 521  
 522       Failure Surface Specified By 26 Coordinate Points  
 523

Point No.	X-Surf (ft)	Y-Surf (ft)
525		
526		
527		
528	1	115.789
529	2	125.787
530	3	135.773
531	4	145.738
532	5	155.674
533	6	165.571
534	7	175.420
535	8	185.213
536	9	194.940
537	10	204.593
538	11	214.163
539	12	223.641
540	13	233.018
541	14	242.286
542	15	251.437
543	16	260.463
544	17	269.354
545	18	278.103
546	19	286.703
547	20	295.144
548	21	303.420
549	22	311.523
550	23	319.446
551	24	327.181
552	25	334.721
553	26	341.181

554       Circle Center At X = 113.183 ; Y = 1726.650 ; and Radius = 331.505  
 555

556                   Factor of Safety  
 557               \*\*\* 1.875 \*\*\*  
 558

559  
 560  
 561  
 562  
 563  
 564  
 565       Failure Surface Specified By 26 Coordinate Points  
 566

Point No.	X-Surf (ft)	Y-Surf (ft)
567		
568		
569		
570		
571	1	115.789
572	2	125.789
573	3	135.784
574	4	145.763
575	5	155.715

576	6	165.632	1398.411
577	7	175.503	1400.014
578	8	185.317	1401.932
579	9	195.066	1404.162
580	10	204.738	1406.701
581	11	214.324	1409.549
582	12	223.814	1412.700
583	13	233.199	1416.153
584	14	242.469	1419.904
585	15	251.614	1423.949
586	16	260.626	1428.284
587	17	269.495	1432.904
588	18	278.212	1437.805
589	19	286.767	1442.981
590	20	295.154	1448.428
591	21	303.362	1454.141
592	22	311.383	1460.112
593	23	319.210	1466.336
594	24	326.835	1472.807
595	25	334.248	1479.517
596	26	340.966	1486.000

597  
 598       Circle Center At X = 120.367 ; Y = 1708.303 ; and Radius = 313.181  
 599

600                   Factor of Safety  
 601               \*\*\* 1.877 \*\*\*  
 602

603  
 604  
 605  
 606       Failure Surface Specified By 26 Coordinate Points  
 607

Point No.	X-Surf (ft)	Y-Surf (ft)
608		
609		
610		
611		
612		
613	1	113.158
614	2	123.111
615	3	133.038
616	4	142.932
617	5	152.789
618	6	162.602
619	7	172.366
620	8	182.074
621	9	191.722
622	10	201.304
623	11	210.813
624	12	220.245
625	13	229.593
626	14	238.853
627	15	248.019
628	16	257.086
629	17	266.048
630	18	274.900
631	19	283.637
632	20	292.254
633	21	300.746
634	22	309.107
635	23	317.334
636	24	325.420
637	25	333.362
638	26	340.010

639  
 640       Circle Center At X = 78.160 ; Y = 1805.853 ; and Radius = 413.366  
 641

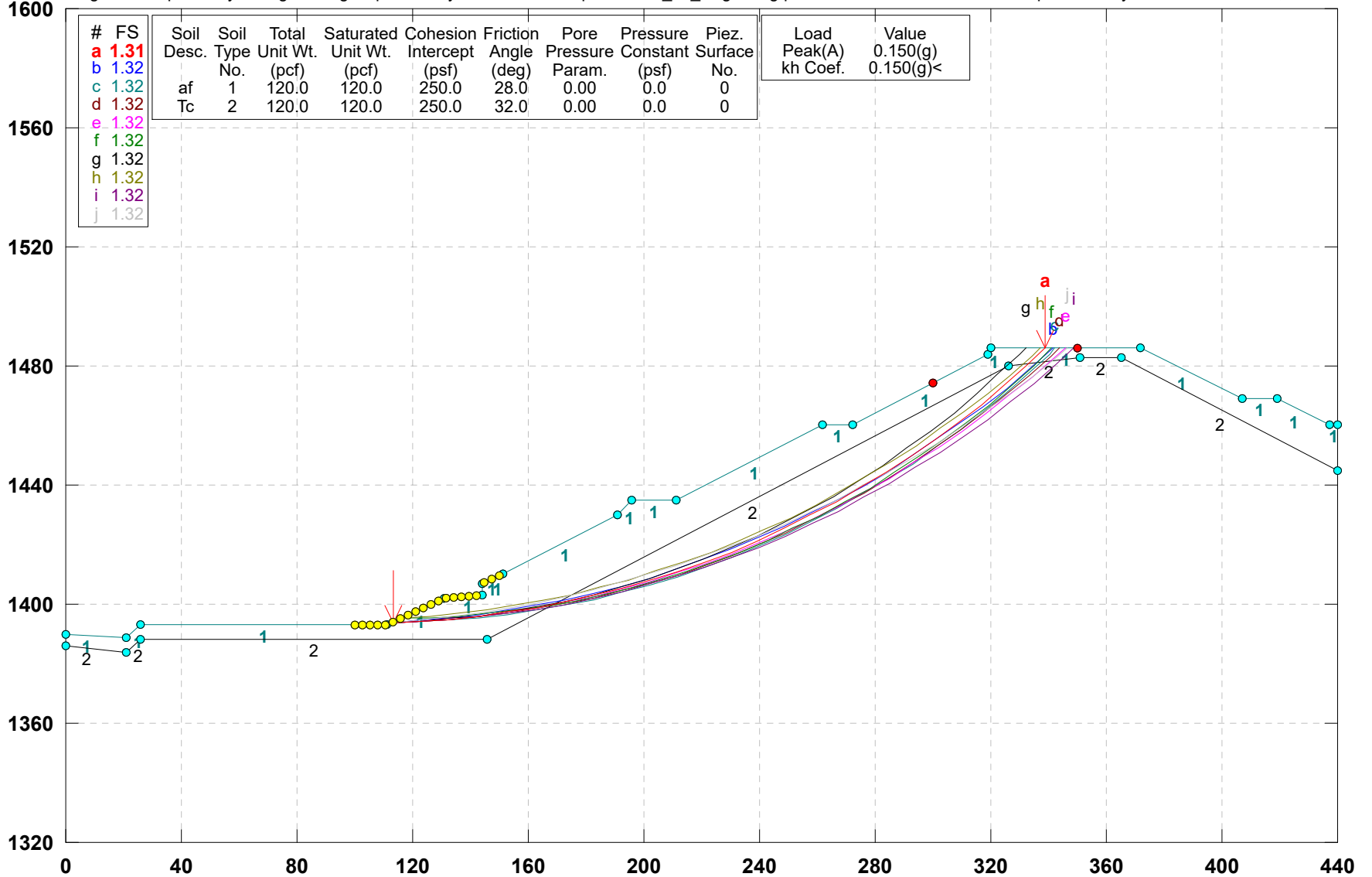
642  
643  
644  
645  
646  
647  
648  
649  
650  
651

Factor of Safety  
\*\*\* 1.877 \*\*\*

\*\*\*\* END OF GSTABL7 OUTPUT \*\*\*\*

# Bouquet Canyon/21095-01/Section W-W' Seismic

z:\2021\21095-01 integral - bouquet canyon\engineering\slope stability\1. included in reports\2022\_04\_xx grading plan review letter\1. all files\wxce.pl2 Run By: LGC Geotechnical, Inc. 4/8/2022 10:13A



GSTABL7 v.2 FSmin=1.31  
 Safety Factors Are Calculated By The Modified Bishop Method

```

1          *** GSTABL7 ***
2
3          ** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
4
5          ** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
6          (All Rights Reserved-Unauthorized Use Prohibited)
7
8
9
10         *****
11         **
12         SLOPE STABILITY ANALYSIS SYSTEM
13         Modified Bishop, Simplified Janbu, or GLE Method of Slices.
14         (Includes Spencer & Morgenstern-Price Type Analysis)
15         Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
16         Nonlinear Undrained Shear Strength, Curved Phi Envelope,
17         Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
18         Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
19
20         *****
21         **
22
23         Analysis Run Date:      4/8/2022
24         Time of Run:           10:13AM
25         Run By:                LGC Geotechnical,
26         Inc.
27
28
29
30
31
32
33         Input Data Filename:    Z:\2021\21095-01 Integral - Bouquet
34         Canyon\Engineering\slope stability\Sec
35         W-W'\2022_04_08\xwce.in
36
37
38
39         Output Filename:       Z:\2021\21095-01 Integral - Bouquet
40         Canyon\Engineering\slope stability\Sec
41         W-W'\2022_04_08\xwce.OUT
42
43
44
45         Unit System:           English
46
47         Plotted Output Filename: Z:\2021\21095-01 Integral - Bouquet
48         Canyon\Engineering\slope stability\Sec
49         W-W'\2022_04_08\xwce.PLT
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100        PROBLEM DESCRIPTION: Bouquet Canyon/21095-01/Section W-W'/
101        Seismic
102
103
104
105        BOUNDARY COORDINATES
106
107        19 Top Boundaries
108        26 Total Boundaries
109
110
111        Boundary   X-Left   Y-Left   X-Right   Y-Right   Soil Type
112        No.        (ft)     (ft)     (ft)      (ft)      Below Bnd
113

```

48	1	0.00	1390.00	21.00	1389.00	1		
49	2	21.00	1389.00	26.00	1393.00	1		
50	3	26.00	1393.00	111.00	1393.00	1		
51	4	111.00	1393.00	131.00	1402.00	1		
52	5	131.00	1402.00	144.00	1403.00	1		
53	6	144.00	1403.00	144.10	1407.00	1		
54	7	144.10	1407.00	151.00	1410.00	1		
55	8	151.00	1410.00	191.00	1430.00	1		
56	9	191.00	1430.00	196.00	1435.00	1		
57	10	196.00	1435.00	211.00	1435.00	1		
58	11	211.00	1435.00	262.00	1460.00	1		
59	12	262.00	1460.00	272.00	1460.00	1		
60	13	272.00	1460.00	319.00	1484.00	1		
61	14	319.00	1484.00	320.00	1486.00	1		
62	15	320.00	1486.00	372.00	1486.00	1		
63	16	372.00	1486.00	407.00	1469.00	1		
64	17	407.00	1469.00	419.00	1469.00	1		
65	18	419.00	1469.00	437.00	1460.00	1		
66	19	437.00	1460.00	440.00	1460.00	1		
67	20	0.00	1386.00	21.00	1384.00	2		
68	21	21.00	1384.00	26.00	1388.00	2		
69	22	26.00	1388.00	146.00	1388.00	2		
70	23	146.00	1388.00	326.00	1480.00	2		
71	24	326.00	1480.00	351.00	1483.00	2		
72	25	351.00	1483.00	365.00	1483.00	2		
73	26	365.00	1483.00	440.00	1445.00	2		
74								
75								
76								
77								
78								
79								
80								
81	1							
82								
83								
84								
85								
86								
87								
88								
89								
90								
91								
92								
93	1	120.0	120.0	250.0	28.0	0.00	0.0	0
94	2	120.0	120.0	250.0	32.0	0.00	0.0	0
95								
96								
97								
98								
99								
100								
101								
102								
103								
104								
105								
106								
107								
108								
109								
110								
111								
112								
113								

User Specified Y-Origin = 1320.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	250.0	28.0	0.00	0.0	0
2	120.0	120.0	250.0	32.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 2 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	9.0	250.00	32.00
2	15.0	150.00	25.00
3	90.0	250.00	32.00



114 ANISOTROPIC SOIL NOTES:  
 115 (1) An input value of 0.01 for C and/or Phi will cause Aniso  
 116 C and/or Phi to be ignored in that range.  
 117 (2) An input value of 0.02 for Phi will set both Phi and  
 118 C equal to zero, with no water weight in the tension crack.  
 119 (3) An input value of 0.03 for Phi will set both Phi and  
 120 C equal to zero, with water weight in the tension crack.  
 121  
 122 ANISOTROPIC STRENGTH DATA HAS BEEN SUPPRESSED  
 123  
 124 Specified Peak Ground Acceleration Coefficient (A) = 0.150(g)  
 125 Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)  
 126 Specified Vertical Earthquake Coefficient (kv) = 0.000(g)  
 127  
 128 Specified Seismic Pore-Pressure Factor = 0.000  
 129  
 130  
 131  
 132  
 133  
 134  
 135  
 136 A Critical Failure Surface Searching Method, Using A Random  
 137 Technique For Generating Circular Surfaces, Has Been Specified.  
 138  
 139  
 140 4980 Trial Surfaces Have Been Generated.  
 141  
 142  
 143 249 Surface(s) Initiate(s) From Each Of 20 Points Equally Spaced  
 144 Along The Ground Surface Between X = 100.00(ft)  
 145 and X = 150.00(ft)  
 146  
 147  
 148 Each Surface Terminates Between X = 300.00(ft)  
 149 and X = 350.00(ft)  
 150  
 151  
 152 Unless Further Limitations Were Imposed, The Minimum Elevation  
 153 At Which A Surface Extends Is Y = 0.00(ft)  
 154  
 155  
 156 10.00(ft) Line Segments Define Each Trial Failure Surface.  
 157  
 158  
 159  
 160  
 161 Following Are Displayed The Ten Most Critical Of The Trial  
 162 Failure Surfaces Evaluated. They Are  
 163 Ordered - Most Critical First.  
 164  
 165  
 166 \* \* Safety Factors Are Calculated By The Modified Bishop Method \* \*  
 167  
 168  
 169  
 170 Total Number of Trial Surfaces Attempted = 4980  
 171  
 172 Number of Trial Surfaces With Valid FS = 4980  
 173  
 174  
 175 Statistical Data On All Valid FS Values:  
 176 FS Max = 2.315 FS Min = 1.314 FS Ave = 1.777  
 177 Standard Deviation = 0.296 Coefficient of Variation = 16.68 %  
 178  
 179

180 Failure Surface Specified By 26 Coordinate Points

181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212
Point	X-Surf	Y-Surf																													
No.	(ft)	(ft)																													
1	113.158	1393.971																													
2	123.150	1394.366																													
3	133.127	1395.052																													
4	143.079	1396.027																													
5	152.999	1397.290																													
6	162.878	1398.841																													
7	172.708	1400.678																													
8	182.480	1402.800																													
9	192.186	1405.205																													
10	201.819	1407.890																													
11	211.370	1410.855																													
12	220.830	1414.095																													
13	230.193	1417.609																													
14	239.449	1421.393																													
15	248.592	1425.444																													
16	257.613	1429.759																													
17	266.505	1434.334																													
18	275.260	1439.166																													
19	283.871	1444.249																													
20	292.332	1449.581																													
21	300.633	1455.156																													
22	308.770	1460.970																													
23	316.734	1467.017																													
24	324.519	1473.294																													
25	332.118	1479.793																													
26	338.962	1486.000																													

Circle Center At X = 104.557 ; Y = 1738.110 ; and Radius = 344.246

Factor of Safety  
 \*\*\* 1.314 \*\*\*

Individual data on the 39 slices

222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245
Slice	Width	Weight	Water	Water	Tie	Tie	Earthquake																
No.	(ft)	(lbs)	Force	Force	Force	Force	Force	Hor	Ver	Surcharge	Load												
			Top	Bot	Norm	Tan		(lbs)	(lbs)	(lbs)	(lbs)												
			(lbs)	(lbs)	(lbs)	(lbs)																	
1	10.0	2458.6	0.0	0.0	0.	0.	368.8	0.0	0.0														
2	7.8	5273.0	0.0	0.0	0.	0.	790.9	0.0	0.0														
3	2.1	1812.6	0.0	0.0	0.	0.	271.9	0.0	0.0														
4	10.0	8368.5	0.0	0.0	0.	0.	1255.3	0.0	0.0														
5	0.9	760.4	0.0	0.0	0.	0.	114.1	0.0	0.0														
6	0.1	106.2	0.0	0.0	0.	0.	15.9	0.0	0.0														
7	6.9	9856.3	0.0	0.0	0.	0.	1478.5	0.0	0.0														
8	2.0	3198.9	0.0	0.0	0.	0.	479.8	0.0	0.0														
9	9.9	18260.5	0.0	0.0	0.	0.	2739.1	0.0	0.0														
10	6.8	14891.6	0.0	0.0	0.	0.	2233.7	0.0	0.0														
11	3.0	7091.8	0.0	0.0	0.	0.	1063.8	0.0	0.0														
12	9.8	25280.2	0.0	0.0	0.	0.	3792.0	0.0	0.0														
13	8.5	24552.8	0.0	0.0	0.	0.	3682.9	0.0	0.0														
14	1.2	3635.5	0.0	0.0	0.	0.	545.3	0.0	0.0														
15	3.8	12519.2	0.0	0.0	0.	0.	1877.9	0.0	0.0														
16	5.8	19496.7	0.0	0.0	0.	0.	2924.5	0.0	0.0														

246	17	9.2	28297.3	0.0	0.0	0.	0.	4244.6	0.0	0.0
247	18	0.4	1077.6	0.0	0.0	0.	0.	161.6	0.0	0.0
248	19	9.5	28410.1	0.0	0.0	0.	0.	4261.5	0.0	0.0
249	20	9.4	29504.7	0.0	0.0	0.	0.	4425.7	0.0	0.0
250	21	9.3	30186.7	0.0	0.0	0.	0.	4528.0	0.0	0.0
251	22	9.1	30464.9	0.0	0.0	0.	0.	4569.7	0.0	0.0
252	23	9.0	30351.0	0.0	0.0	0.	0.	4552.6	0.0	0.0
253	24	4.4	14761.0	0.0	0.0	0.	0.	2214.1	0.0	0.0
254	25	4.5	14500.4	0.0	0.0	0.	0.	2175.1	0.0	0.0
255	26	5.5	15925.2	0.0	0.0	0.	0.	2388.8	0.0	0.0
256	27	3.3	8828.2	0.0	0.0	0.	0.	1324.2	0.0	0.0
257	28	8.6	22895.3	0.0	0.0	0.	0.	3434.3	0.0	0.0
258	29	8.5	21631.2	0.0	0.0	0.	0.	3244.7	0.0	0.0
259	30	8.3	20057.0	0.0	0.0	0.	0.	3008.6	0.0	0.0
260	31	8.1	18195.2	0.0	0.0	0.	0.	2729.3	0.0	0.0
261	32	8.0	16070.8	0.0	0.0	0.	0.	2410.6	0.0	0.0
262	33	2.3	4212.6	0.0	0.0	0.	0.	631.9	0.0	0.0
263	34	1.0	1890.3	0.0	0.0	0.	0.	283.5	0.0	0.0
264	35	4.5	7878.0	0.0	0.0	0.	0.	1181.7	0.0	0.0
265	36	1.5	2145.8	0.0	0.0	0.	0.	321.9	0.0	0.0
266	37	6.1	6478.0	0.0	0.0	0.	0.	971.7	0.0	0.0
267	38	1.2	812.7	0.0	0.0	0.	0.	121.9	0.0	0.0
268	39	5.6	1736.0	0.0	0.0	0.	0.	260.4	0.0	0.0

Failure Surface Specified By 27 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	113.158	1393.971
2	123.141	1394.545
3	133.106	1395.388
4	143.044	1396.500
5	152.948	1397.881
6	162.811	1399.528
7	172.627	1401.442
8	182.386	1403.620
9	192.084	1406.061
10	201.712	1408.764
11	211.263	1411.725
12	220.731	1414.944
13	230.109	1418.417
14	239.389	1422.142
15	248.565	1426.117
16	257.630	1430.339
17	266.578	1434.804
18	275.402	1439.509
19	284.095	1444.451
20	292.652	1449.626
21	301.066	1455.030
22	309.331	1460.660
23	317.440	1466.511
24	325.389	1472.580
25	333.170	1478.860
26	340.779	1485.349
27	341.501	1486.000

Circle Center At X = 96.928 ; Y = 1763.588 ; and Radius = 369.973

Factor of Safety  
\*\*\* 1.315 \*\*\*

312 1

Failure Surface Specified By 27 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	113.158	1393.971
2	123.156	1394.181
3	133.143	1394.688
4	143.110	1395.492
5	153.050	1396.592
6	162.952	1397.986
7	172.809	1399.675
8	182.611	1401.655
9	192.349	1403.926
10	202.016	1406.485
11	211.603	1409.330
12	221.101	1412.459
13	230.501	1415.869
14	239.797	1419.557
15	248.978	1423.519
16	258.038	1427.753
17	266.968	1432.253
18	275.760	1437.017
19	284.407	1442.041
20	292.900	1447.319
21	301.233	1452.847
22	309.398	1458.620
23	317.388	1464.634
24	325.196	1470.882
25	332.814	1477.360
26	340.237	1484.061
27	342.261	1486.000

Circle Center At X = 111.085 ; Y = 1730.427 ; and Radius = 336.462

Factor of Safety  
\*\*\* 1.315 \*\*\*

Failure Surface Specified By 27 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	113.158	1393.971
2	123.153	1394.296
3	133.134	1394.906
4	143.094	1395.799
5	153.025	1396.976
6	162.918	1398.435
7	172.765	1400.175
8	182.559	1402.194
9	192.291	1404.492
10	201.955	1407.066
11	211.540	1409.913
12	221.041	1413.033
13	230.450	1416.422
14	239.758	1420.077
15	248.958	1423.996

378 16 258.043 1428.175  
 379 17 267.005 1432.611  
 380 18 275.837 1437.301  
 381 19 284.532 1442.240  
 382 20 293.083 1447.424  
 383 21 301.483 1452.850  
 384 22 309.725 1458.513  
 385 23 317.803 1464.409  
 386 24 325.709 1470.532  
 387 25 333.438 1476.877  
 388 26 340.983 1483.440  
 389 27 343.762 1486.000

Circle Center At X = 106.739 ; Y = 1745.118 ; and Radius = 351.205

Factor of Safety  
 \*\*\* 1.315 \*\*\*

1  
 Failure Surface Specified By 27 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	113.158	1393.971
2	123.148	1394.415
3	133.122	1395.130
4	143.074	1396.115
5	152.995	1397.369
6	162.878	1398.891
7	172.717	1400.681
8	182.503	1402.737
9	192.230	1405.057
10	201.891	1407.639
11	211.478	1410.483
12	220.985	1413.585
13	230.404	1416.944
14	239.729	1420.557
15	248.952	1424.421
16	258.067	1428.534
17	267.067	1432.892
18	275.946	1437.492
19	284.697	1442.332
20	293.314	1447.406
21	301.790	1452.713
22	310.119	1458.247
23	318.295	1464.004
24	326.312	1469.982
25	334.165	1476.174
26	341.846	1482.576
27	345.734	1486.000

Circle Center At X = 101.763 ; Y = 1762.802 ; and Radius = 369.007

Factor of Safety  
 \*\*\* 1.316 \*\*\*

Failure Surface Specified By 26 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	115.789	1395.155
2	125.787	1395.385
3	135.773	1395.917
4	145.738	1396.749
5	155.674	1397.881
6	165.571	1399.312
7	175.420	1401.042
8	185.213	1403.067
9	194.940	1405.387
10	204.593	1407.999
11	214.163	1410.900
12	223.641	1414.089
13	233.018	1417.562
14	242.286	1421.317
15	251.437	1425.349
16	260.463	1429.656
17	269.354	1434.232
18	278.103	1439.075
19	286.703	1444.179
20	295.144	1449.540
21	303.420	1455.153
22	311.523	1461.013
23	319.446	1467.115
24	327.181	1473.453
25	334.721	1480.021
26	341.181	1486.000

Circle Center At X = 113.183 ; Y = 1726.650 ; and Radius = 331.505

Factor of Safety  
 \*\*\* 1.318 \*\*\*

1  
 Failure Surface Specified By 26 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	113.158	1393.971
2	123.150	1394.375
3	133.124	1395.086
4	143.073	1396.102
5	152.985	1397.423
6	162.852	1399.047
7	172.665	1400.974
8	182.414	1403.200
9	192.090	1405.724
10	201.684	1408.544
11	211.187	1411.657
12	220.591	1415.060
13	229.885	1418.750
14	239.062	1422.723
15	248.112	1426.976
16	257.028	1431.504
17	265.801	1436.304

510	18	274.423	1441.371
511	19	282.885	1446.699
512	20	291.179	1452.285
513	21	299.299	1458.123
514	22	307.235	1464.206
515	23	314.981	1470.531
516	24	322.529	1477.090
517	25	329.873	1483.877
518	26	332.033	1486.000

Circle Center At X = 105.026 ; Y = 1719.603 ; and Radius = 325.733

Factor of Safety  
 \*\*\* 1.318 \*\*\*

Failure Surface Specified By 26 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
532		
533		
534		
535	1	115.789
536	2	125.766
537	3	135.721
538	4	145.646
539	5	155.533
540	6	165.375
541	7	175.166
542	8	184.896
543	9	194.560
544	10	204.149
545	11	213.657
546	12	223.077
547	13	232.400
548	14	241.621
549	15	250.732
550	16	259.727
551	17	268.598
552	18	277.339
553	19	285.944
554	20	294.405
555	21	302.717
556	22	310.874
557	23	318.868
558	24	326.694
559	25	334.347
560	26	337.303

Circle Center At X = 96.130 ; Y = 1758.581 ; and Radius = 363.957

Factor of Safety  
 \*\*\* 1.319 \*\*\*

Failure Surface Specified By 27 Coordinate Points

Point	X-Surf	Y-Surf
575		

No.	(ft)	(ft)
576		
577		
578	1	113.158
579	2	123.153
580	3	133.135
581	4	143.098
582	5	153.033
583	6	162.933
584	7	172.791
585	8	182.599
586	9	192.349
587	10	202.035
588	11	211.648
589	12	221.183
590	13	230.631
591	14	239.986
592	15	249.240
593	16	258.386
594	17	267.418
595	18	276.328
596	19	285.111
597	20	293.758
598	21	302.265
599	22	310.624
600	23	318.829
601	24	326.874
602	25	334.752
603	26	342.459
604	27	348.625

Circle Center At X = 106.662 ; Y = 1757.920 ; and Radius = 364.007

Factor of Safety  
 \*\*\* 1.319 \*\*\*

Failure Surface Specified By 27 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
618		
619		
620		
621	1	113.158
622	2	123.123
623	3	133.066
624	4	142.980
625	5	152.860
626	6	162.701
627	7	172.497
628	8	182.241
629	9	191.930
630	10	201.556
631	11	211.115
632	12	220.601
633	13	230.009
634	14	239.334
635	15	248.570
636	16	257.711
637	17	266.753
638	18	275.691
639	19	284.519
640	20	293.232
641	21	301.826

```
642          22          310.296      1459.723
643          23          318.636      1465.240
644          24          326.842      1470.955
645          25          334.910      1476.864
646          26          342.834      1482.964
647          27          346.589      1486.000
```

```
648          Circle Center At X = 83.286 ; Y = 1811.941 ; and Radius = 419.036
```

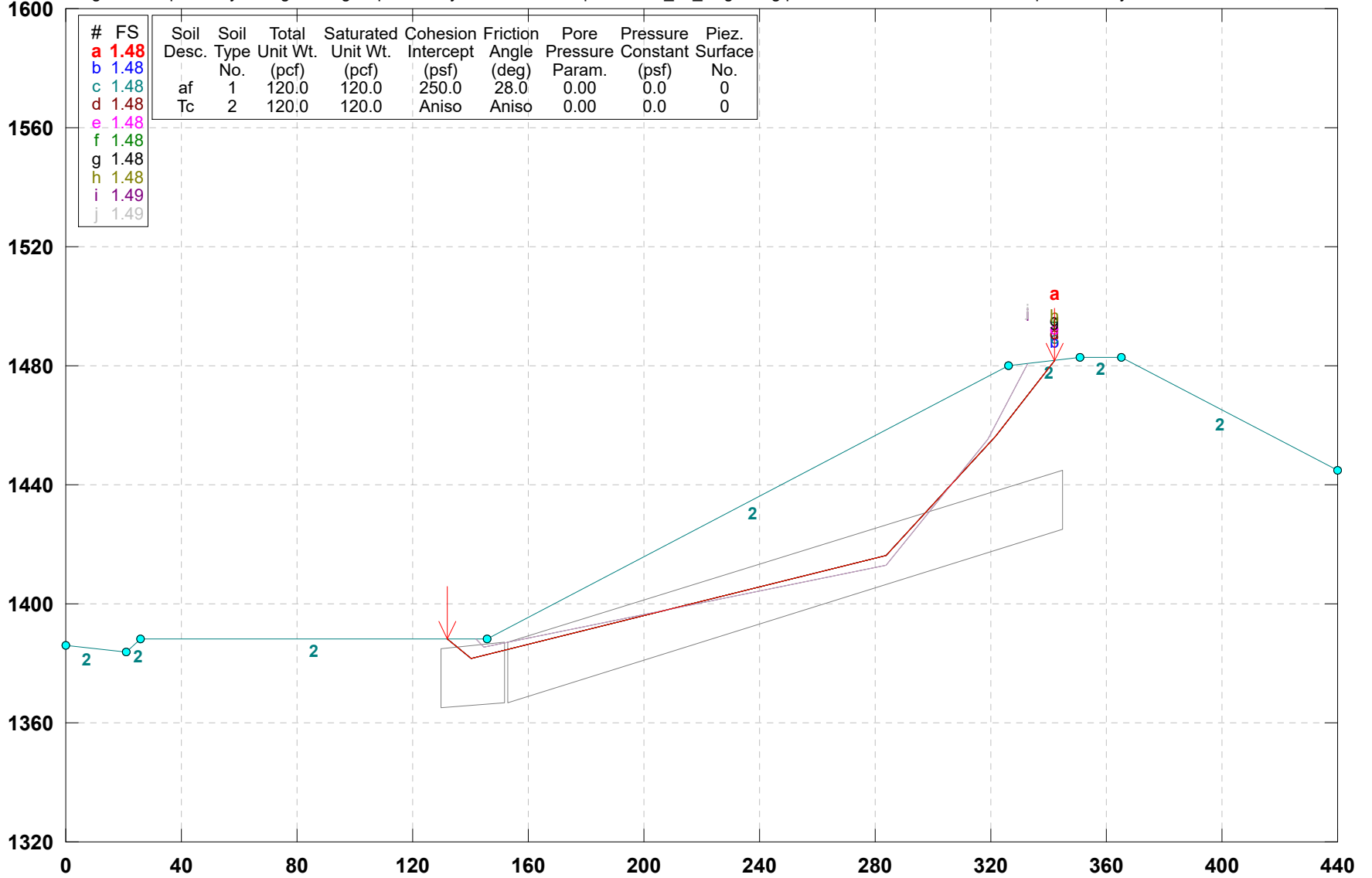
```
649
650
651          Factor of Safety
652          *** 1.319 ***
```

```
653
654
655
656
657
658
659          **** END OF GSTABL7 OUTPUT ****
660
```



# Bouquet Canyon/21095-01/Section W-W' Temporary

z:\2021\21095-01 integral - bouquet canyon\engineering\slope stability\1. included in reports\2022\_04\_xx grading plan review letter\1. all files\xwtb.pl2 Run By: LGC Geotechnical, Inc. 4/8/2022 10:25AM



GSTABL7 v.2 FSmin=1.48

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

```

1          *** GSTABL7 ***
2
3          ** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
4
5          ** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
6          (All Rights Reserved-Unauthorized Use Prohibited)
7
8
9
10         *****
11         **
12         SLOPE STABILITY ANALYSIS SYSTEM
13         Modified Bishop, Simplified Janbu, or GLE Method of Slices.
14         (Includes Spencer & Morgenstern-Price Type Analysis)
15         Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
16         Nonlinear Undrained Shear Strength, Curved Phi Envelope,
17         Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
18         Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
19
20         *****
21         **
22
23         Analysis Run Date:      4/8/2022
24         Time of Run:           10:25AM
25         Run By:                LGC Geotechnical,
26         Inc.
27
28         Input Data Filename:    Z:\2021\21095-01 Integral - Bouquet
29         Canyon\Engineering\slope stability\Sec
30         W-W'\2022_04_08\xwtb.in
31
32         Output Filename:        Z:\2021\21095-01 Integral - Bouquet
33         Canyon\Engineering\slope stability\Sec
34         W-W'\2022_04_08\xwtb.OUT
35
36         Unit System:            English
37
38         Plotted Output Filename: Z:\2021\21095-01 Integral - Bouquet
39         Canyon\Engineering\slope stability\Sec
40         W-W'\2022_04_08\xwtb.PLT
41
42
43
44
45         PROBLEM DESCRIPTION:    Bouquet Canyon/21095-01/Section W-W'/
46         Temporary
47
48         BOUNDARY COORDINATES
49
50         7 Top Boundaries
51         7 Total Boundaries
52
53         Boundary      X-Left      Y-Left      X-Right      Y-Right      Soil Type
54         No.           (ft)       (ft)       (ft)       (ft)       Below Bnd

```

```

48         1           0.00    1386.00    21.00    1384.00    2
49         2           21.00    1384.00    26.00    1388.00    2
50         3           26.00    1388.00    146.00    1388.00    2
51         4           146.00    1388.00    326.00    1480.00    2
52         5           326.00    1480.00    351.00    1483.00    2
53         6           351.00    1483.00    365.00    1483.00    2
54         7           365.00    1483.00    440.00    1445.00    2
55
56         User Specified Y-Origin =      1320.00(ft)
57
58         Default X-Plus Value = 0.00(ft)
59
60         Default Y-Plus Value = 0.00(ft)
61
62         ISOTROPIC SOIL PARAMETERS
63
64         2 Type(s) of Soil
65
66         Soil Total Saturated Cohesion Friction Pore Pressure Piez.
67         Type Unit Wt. Unit Wt. Intercept Angle Pressure Constant Surface
68         No. (pcf) (pcf) (psf) (deg) Param. (psf) No.
69
70         1 120.0 120.0 250.0 28.0 0.00 0.0 0
71         2 120.0 120.0 250.0 32.0 0.00 0.0 0
72
73         ANISOTROPIC STRENGTH PARAMETERS
74         1 soil type(s)
75
76         Soil Type 2 Is Anisotropic
77
78         Number Of Direction Ranges Specified = 3
79
80         Direction Counterclockwise Cohesion Friction
81         Range Direction Limit Intercept Angle
82         No. (deg) (psf) (deg)
83
84         1 9.0 250.00 32.00
85         2 15.0 150.00 25.00
86         3 90.0 250.00 32.00
87
88         ANISOTROPIC SOIL NOTES:
89         (1) An input value of 0.01 for C and/or Phi will cause Aniso
90         C and/or Phi to be ignored in that range.
91         (2) An input value of 0.02 for Phi will set both Phi and
92         C equal to zero, with no water weight in the tension crack.
93         (3) An input value of 0.03 for Phi will set both Phi and
94         C equal to zero, with water weight in the tension crack.
95
96         Janbus Empirical Coef is being used for the case of c & phi both > 0
97
98         A Critical Failure Surface Searching Method, Using A Random
99         Technique For Generating Sliding Block Surfaces, Has Been
100        Specified.

```

114 4999 Trial Surfaces Have Been Generated.  
 115  
 116  
 117 2 Boxes Specified For Generation Of Central Block Base  
 118  
 119  
 120 Length Of Line Segments For Active And Passive Portions Of  
 121 Sliding Block Is 55.0  
 122  
 123  
 124

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	130.00	1375.00	152.00	1377.00	20.00
2	153.00	1377.00	345.00	1435.00	20.00

125  
 126  
 127  
 128  
 129  
 130  
 131 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 132  
 133  
 134  
 135 The Trial Failure Surface In Question Is Defined  
 136 By The Following 4 Coordinate Points  
 137  
 138

Point No.	X-Surf (ft)	Y-Surf (ft)
1	145.17	1388.00
2	149.05	1384.48
3	235.16	1392.88
4	235.41	1433.70

139  
 140  
 141  
 142  
 143  
 144  
 145  
 146  
 147  
 148 Factor of Safety for the Preceding Surface is Between10.308 and10.279  
 149  
 150  
 151 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 152  
 153  
 154  
 155 The Trial Failure Surface In Question Is Defined  
 156 By The Following 4 Coordinate Points  
 157  
 158

Point No.	X-Surf (ft)	Y-Surf (ft)
1	135.57	1388.00
2	148.14	1376.02
3	201.36	1383.00
4	201.64	1416.44

159  
 160  
 161  
 162  
 163  
 164  
 165  
 166  
 167  
 168 Factor of Safety for the Preceding Surface is Between13.400 and13.374  
 169  
 170  
 171 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 172  
 173  
 174  
 175 The Trial Failure Surface In Question Is Defined  
 176 By The Following 4 Coordinate Points  
 177  
 178

Point No.	X-Surf (ft)	Y-Surf (ft)
1	135.57	1388.00
2	148.14	1376.02
3	201.36	1383.00
4	201.64	1416.44

179

180  
 181  
 182

No.	(ft)	(ft)
1	145.17	1388.00
2	149.05	1384.48
3	235.16	1392.88
4	235.41	1433.70

183  
 184  
 185  
 186  
 187  
 188 Factor of Safety for the Preceding Surface is Between10.308 and10.279  
 189  
 190  
 191 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 192  
 193  
 194  
 195 The Trial Failure Surface In Question Is Defined  
 196 By The Following 4 Coordinate Points  
 197  
 198

Point No.	X-Surf (ft)	Y-Surf (ft)
1	135.57	1388.00
2	148.14	1376.02
3	201.36	1383.00
4	201.64	1416.44

199  
 200  
 201  
 202  
 203  
 204  
 205  
 206  
 207  
 208 Factor of Safety for the Preceding Surface is Between13.400 and13.374  
 209  
 210  
 211 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 212  
 213  
 214  
 215 The Trial Failure Surface In Question Is Defined  
 216 By The Following 4 Coordinate Points  
 217  
 218

Point No.	X-Surf (ft)	Y-Surf (ft)
1	145.17	1388.00
2	149.05	1384.48
3	235.16	1392.88
4	235.41	1433.70

219  
 220  
 221  
 222  
 223  
 224  
 225  
 226  
 227  
 228 Factor of Safety for the Preceding Surface is Between10.308 and10.279  
 229  
 230  
 231 WARNING! The factor of safety calculation did not converge in 20 iterations.  
 232  
 233  
 234  
 235 The Trial Failure Surface In Question Is Defined  
 236 By The Following 4 Coordinate Points  
 237  
 238

Point No.	X-Surf (ft)	Y-Surf (ft)
1	135.57	1388.00
2	148.14	1376.02
3	201.36	1383.00
4	201.64	1416.44

239  
 240  
 241  
 242  
 243  
 244  
 245

246  
247  
248 Factor of Safety for the Preceding Surface is Between13.400 and13.374  
249  
250  
251 WARNING! The factor of safety calculation did not converge in 20 iterations.  
252  
253

The Trial Failure Surface In Question Is Defined  
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	145.17	1388.00
2	149.05	1384.48
3	235.16	1392.88
4	235.41	1433.70

Factor of Safety for the Preceding Surface is Between10.308 and10.279

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	135.57	1388.00
2	148.14	1376.02
3	201.36	1383.00
4	201.64	1416.44

Factor of Safety for the Preceding Surface is Between13.400 and13.374

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	145.17	1388.00
2	149.05	1384.48
3	235.16	1392.88
4	235.41	1433.70

Factor of Safety for the Preceding Surface is Between10.308 and10.279

WARNING! The factor of safety calculation did not converge in 20 iterations.

312  
313  
314  
315 The Trial Failure Surface In Question Is Defined  
316 By The Following 4 Coordinate Points  
317  
318

Point No.	X-Surf (ft)	Y-Surf (ft)
1	135.57	1388.00
2	148.14	1376.02
3	201.36	1383.00
4	201.64	1416.44

Factor of Safety for the Preceding Surface is Between13.400 and13.374

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	145.17	1388.00
2	149.05	1384.48
3	235.16	1392.88
4	235.41	1433.70

Factor of Safety for the Preceding Surface is Between10.308 and10.279

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	135.57	1388.00
2	148.14	1376.02
3	201.36	1383.00
4	201.64	1416.44

Factor of Safety for the Preceding Surface is Between13.400 and13.374

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined  
By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	145.17	1388.00
2	149.05	1384.48
3	235.16	1392.88
4	235.41	1433.70

Factor of Safety for the Preceding Surface is Between 10.308 and 10.279

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	135.57	1388.00
2	148.14	1376.02
3	201.36	1383.00
4	201.64	1416.44

Factor of Safety for the Preceding Surface is Between 13.400 and 13.374

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	145.17	1388.00
2	149.05	1384.48
3	235.16	1392.88
4	235.41	1433.70

Factor of Safety for the Preceding Surface is Between 10.308 and 10.279

WARNING! The factor of safety calculation did not converge in 20 iterations.

The Trial Failure Surface In Question Is Defined By The Following 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	135.57	1388.00
2	148.14	1376.02

3	201.36	1383.00
4	201.64	1416.44

Factor of Safety for the Preceding Surface is Between 13.400 and 13.374

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.

\* \* Safety Factors Are Calculated By The Simplified Janbu Method \* \*

Total Number of Trial Surfaces Attempted = 4999

WARNING! The Factor of Safety Calculation for one or More Trial Surfaces Did Not Converge in 20 Iterations.

Number of Trial Surfaces with Non-Converged FS = 16

Number of Trial Surfaces with Valid FS = 4983

Percentage of Trial Surfaces with Non-Valid FS Solutions of the Total Attempted = 0.3 %

Statistical Data On All Valid FS Values:  
 FS Max = 58.784 FS Min = 1.482 FS Ave = 2.720  
 Standard Deviation = 2.711 Coefficient of Variation = 99.68 %

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	131.779	1388.000
2	140.198	1381.570
3	283.910	1416.125
4	321.521	1456.254
5	342.145	1481.937

Factor of Safety  
 \*\*\* 1.482 \*\*\*

Individual data on the 6 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force		Tie Force		Earthquake Force		Surcharge Load (lbs)
			Top (lbs)	Bot (lbs)	Norm (lbs)	Tan (lbs)	Hor (lbs)	Ver (lbs)	
1	8.4	3247.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	5.8	3990.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	137.9	392193.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	37.6	144018.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0



510 5 4.5 10647.9 0.0 0.0 0. 0. 0.0 0.0 0.0  
511 6 16.1 17598.8 0.0 0.0 0. 0. 0.0 0.0 0.0

512 Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	131.779	1388.000
2	140.198	1381.570
3	283.910	1416.125
4	321.521	1456.254
5	342.145	1481.937

524 Factor of Safety  
525 \*\*\* 1.482 \*\*\*

531 1  
532 Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	131.779	1388.000
2	140.198	1381.570
3	283.910	1416.125
4	321.521	1456.254
5	342.145	1481.937

538 Factor of Safety  
539 \*\*\* 1.482 \*\*\*

545 Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	131.779	1388.000
2	140.198	1381.570
3	283.910	1416.125
4	321.521	1456.254
5	342.145	1481.937

548 Factor of Safety  
549 \*\*\* 1.482 \*\*\*

555 Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
-----------	-------------	-------------

No.	(ft)	(ft)
1	131.779	1388.000
2	140.198	1381.570
3	283.910	1416.125
4	321.521	1456.254
5	342.145	1481.937

584 Factor of Safety  
585 \*\*\* 1.482 \*\*\*

591 Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	131.779	1388.000
2	140.198	1381.570
3	283.910	1416.125
4	321.521	1456.254
5	342.145	1481.937

596 Factor of Safety  
597 \*\*\* 1.482 \*\*\*

604 1  
605 Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	131.779	1388.000
2	140.198	1381.570
3	283.910	1416.125
4	321.521	1456.254
5	342.145	1481.937

606 Factor of Safety  
607 \*\*\* 1.482 \*\*\*

614 Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	131.779	1388.000
2	140.198	1381.570
3	283.910	1416.125
4	321.521	1456.254
5	342.145	1481.937

642  
643  
644  
645  
646  
647  
648  
649  
650  
651  
652  
653  
654  
655  
656  
657  
658  
659  
660  
661  
662  
663  
664  
665  
666  
667  
668  
669  
670  
671  
672  
673  
674  
675  
676  
677  
678  
679  
680  
681  
682  
683  
684  
685  
686  
687  
688  
689  
690

Factor of Safety  
\*\*\* 1.482 \*\*\*

1

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	141.988	1388.000
2	144.742	1385.372
3	283.816	1413.157
4	319.167	1455.291
5	332.758	1480.811

Factor of Safety  
\*\*\* 1.494 \*\*\*

Failure Surface Specified By 5 Coordinate Points

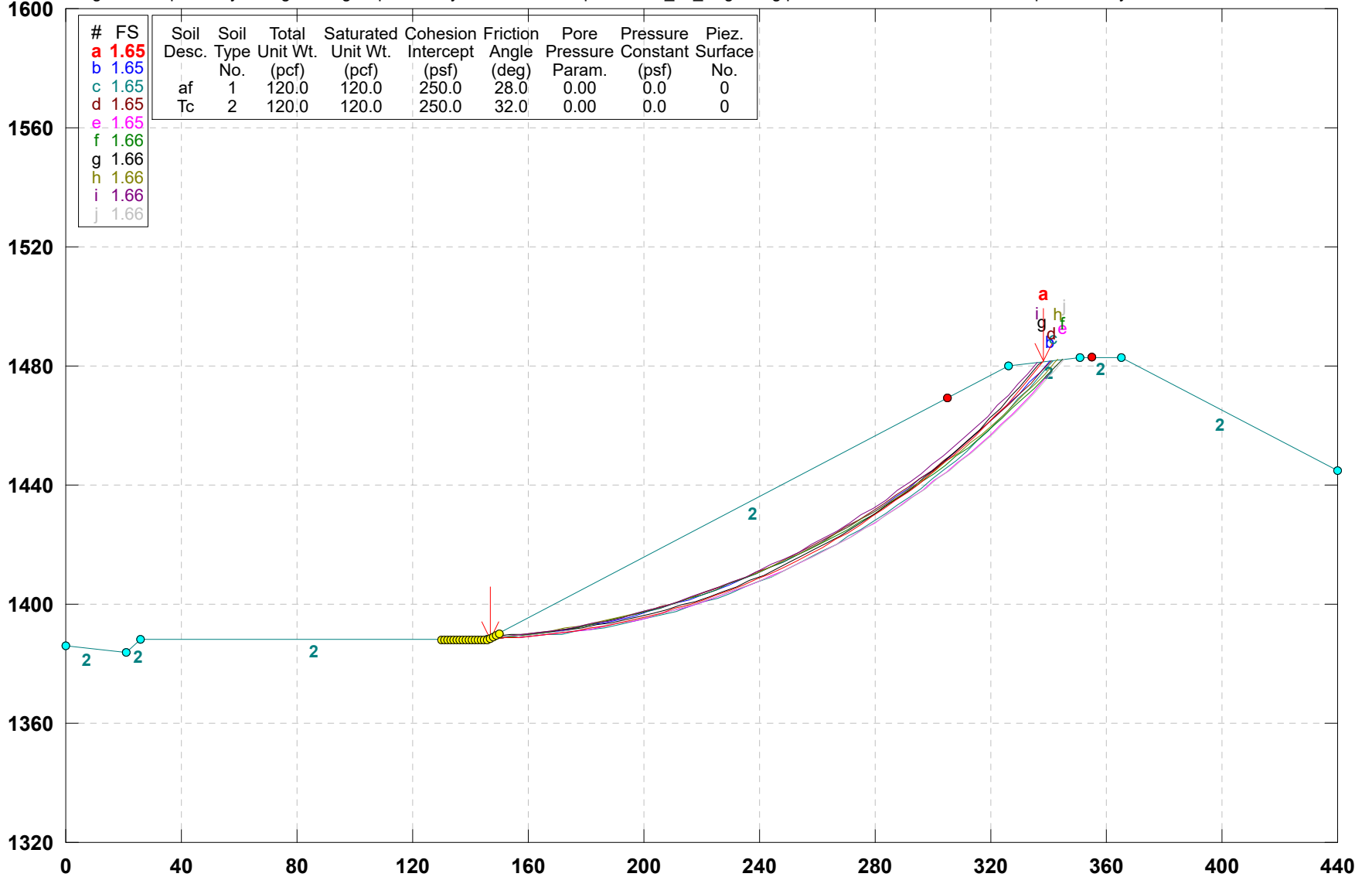
Point No.	X-Surf (ft)	Y-Surf (ft)
1	141.988	1388.000
2	144.742	1385.372
3	283.816	1413.157
4	319.167	1455.291
5	332.758	1480.811

Factor of Safety  
\*\*\* 1.494 \*\*\*

\*\*\*\* END OF GSTABL7 OUTPUT \*\*\*\*

# Bouquet Canyon/21095-01/Section W-W' Temporary

z:\2021\21095-01 integral - bouquet canyon\engineering\slope stability\1. included in reports\2022\_04\_xx grading plan review letter\1. all files\lwtc.pl2 Run By: LGC Geotechnical, Inc. 4/8/2022 10:26AM



GSTABL7 v.2 FSmin=1.65  
Safety Factors Are Calculated By The Modified Bishop Method

```

1          *** GSTABL7 ***
2
3          ** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
4
5          ** Original Version 1.0, January 1996; Current Ver. 2.005.3, Feb. 2013 **
6          (All Rights Reserved-Unauthorized Use Prohibited)
7
8
9
10         *****
11         **
12         SLOPE STABILITY ANALYSIS SYSTEM
13         Modified Bishop, Simplified Janbu, or GLE Method of Slices.
14         (Includes Spencer & Morgenstern-Price Type Analysis)
15         Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
16         Nonlinear Undrained Shear Strength, Curved Phi Envelope,
17         Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
18         Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
19
20         *****
21         **
22
23         Analysis Run Date:      4/8/2022
24         Time of Run:           10:26AM
25         Run By:                LGC Geotechnical,
26         Inc.
27
28         Input Data Filename:    Z:\2021\21095-01 Integral - Bouquet
29         Canyon\Engineering\slope stability\Sec
30         W-W'\2022_04_08\xwtc.in
31
32         Output Filename:       Z:\2021\21095-01 Integral - Bouquet
33         Canyon\Engineering\slope stability\Sec
34         W-W'\2022_04_08\xwtc.OUT
35
36         Unit System:           English
37
38         Plotted Output Filename: Z:\2021\21095-01 Integral - Bouquet
39         Canyon\Engineering\slope stability\Sec
40         W-W'\2022_04_08\xwtc.PLT
41
42
43         PROBLEM DESCRIPTION:    Bouquet Canyon/21095-01/Section W-W'/
44         Temporary
45
46         BOUNDARY COORDINATES
47
48         7 Top Boundaries
49         7 Total Boundaries
50
51         Boundary      X-Left      Y-Left      X-Right      Y-Right      Soil Type
52         No.           (ft)       (ft)       (ft)       (ft)       Below Bnd

```

```

48         1           0.00      1386.00      21.00      1384.00      2
49         2           21.00      1384.00      26.00      1388.00      2
50         3           26.00      1388.00      146.00     1388.00      2
51         4           146.00     1388.00     326.00     1480.00      2
52         5           326.00     1480.00     351.00     1483.00      2
53         6           351.00     1483.00     365.00     1483.00      2
54         7           365.00     1483.00     440.00     1445.00      2
55
56         User Specified Y-Origin =      1320.00(ft)
57
58         Default X-Plus Value = 0.00(ft)
59
60         Default Y-Plus Value = 0.00(ft)
61
62         ISOTROPIC SOIL PARAMETERS
63
64         2 Type(s) of Soil
65
66         Soil Total Saturated Cohesion Friction Pore Pressure Piez.
67         Type Unit Wt. Unit Wt. Intercept Angle Pressure Constant Surface
68         No. (pcf) (pcf) (psf) (deg) Param. (psf) No.
69
70         1 120.0 120.0 250.0 28.0 0.00 0.0 0
71         2 120.0 120.0 250.0 32.0 0.00 0.0 0
72
73         ANISOTROPIC STRENGTH PARAMETERS
74         1 soil type(s)
75
76         Soil Type 2 Is Anisotropic
77
78         Number Of Direction Ranges Specified = 3
79
80         Direction Counterclockwise Cohesion Friction
81         Range Direction Limit Intercept Angle
82         No. (deg) (psf) (deg)
83
84         1 9.0 250.00 32.00
85         2 15.0 150.00 25.00
86         3 90.0 250.00 32.00
87
88         ANISOTROPIC SOIL NOTES:
89         (1) An input value of 0.01 for C and/or Phi will cause Aniso
90         C and/or Phi to be ignored in that range.
91         (2) An input value of 0.02 for Phi will set both Phi and
92         C equal to zero, with no water weight in the tension crack.
93         (3) An input value of 0.03 for Phi will set both Phi and
94         C equal to zero, with water weight in the tension crack.
95
96         ANISOTROPIC STRENGTH DATA HAS BEEN SUPPRESSED
97
98         A Critical Failure Surface Searching Method, Using A Random
99         Technique For Generating Circular Surfaces, Has Been Specified.

```

114  
 115 4980 Trial Surfaces Have Been Generated.  
 116  
 117  
 118 249 Surface(s) Initiate(s) From Each Of 20 Points Equally Spaced  
 119 Along The Ground Surface Between X = 130.00(ft)  
 120 and X = 150.00(ft)  
 121  
 122  
 123 Each Surface Terminates Between X = 305.00(ft)  
 124 and X = 355.00(ft)  
 125  
 126  
 127 Unless Further Limitations Were Imposed, The Minimum Elevation  
 128 At Which A Surface Extends Is Y = 0.00(ft)  
 129  
 130  
 131 5.00(ft) Line Segments Define Each Trial Failure Surface.  
 132  
 133  
 134  
 135  
 136 Following Are Displayed The Ten Most Critical Of The Trial  
 137 Failure Surfaces Evaluated. They Are  
 138 Ordered - Most Critical First.  
 139  
 140  
 141 \* \* Safety Factors Are Calculated By The Modified Bishop Method \* \*  
 142  
 143  
 144  
 145 Total Number of Trial Surfaces Attempted = 4980  
 146  
 147 Number of Trial Surfaces With Valid FS = 4980  
 148  
 149  
 150 Statistical Data On All Valid FS Values:  
 151 FS Max = 2.634 FS Min = 1.652 FS Ave = 2.144  
 152 Standard Deviation = 0.290 Coefficient of Variation = 13.51 %  
 153  
 154  
 155 Failure Surface Specified By 45 Coordinate Points  
 156  
 157  
 158  
 159  
 160  
 161  
 162  
 163  
 164  
 165  
 166  
 167  
 168  
 169  
 170  
 171  
 172  
 173  
 174  
 175  
 176  
 177  
 178  
 179

Point No.	X-Surf (ft)	Y-Surf (ft)
1	146.842	1388.430
2	151.838	1388.632
3	156.829	1388.930
4	161.814	1389.324
5	166.790	1389.813
6	171.755	1390.398
7	176.709	1391.078
8	181.648	1391.854
9	186.572	1392.724
10	191.478	1393.688
11	196.365	1394.746
12	201.230	1395.899
13	206.073	1397.144
14	210.890	1398.482
15	215.681	1399.913
16	220.444	1401.436
17	225.176	1403.049
18	229.877	1404.753
19	234.544	1406.548

180  
 181  
 182  
 183  
 184  
 185  
 186  
 187  
 188  
 189  
 190  
 191  
 192  
 193  
 194  
 195  
 196  
 197  
 198  
 199  
 200  
 201  
 202  
 203  
 204  
 205  
 206  
 207  
 208  
 209  
 210  
 211  
 212  
 213  
 214  
 215  
 216  
 217  
 218  
 219  
 220  
 221  
 222  
 223  
 224  
 225  
 226  
 227  
 228  
 229  
 230  
 231  
 232  
 233  
 234  
 235  
 236  
 237  
 238  
 239  
 240  
 241  
 242  
 243  
 244  
 245

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
20	239.175	1408.431							
21	243.770	1410.404							
22	248.326	1412.464							
23	252.841	1414.611							
24	257.314	1416.845							
25	261.744	1419.164							
26	266.128	1421.568							
27	270.465	1424.056							
28	274.754	1426.626							
29	278.992	1429.279							
30	283.179	1432.012							
31	287.312	1434.826							
32	291.391	1437.718							
33	295.413	1440.688							
34	299.378	1443.735							
35	303.283	1446.857							
36	307.127	1450.054							
37	310.910	1453.324							
38	314.628	1456.667							
39	318.282	1460.080							
40	321.870	1463.562							
41	325.390	1467.114							
42	328.841	1470.731							
43	332.222	1474.415							
44	335.531	1478.163							
45	338.351	1481.482							

Circle Center At X = 138.834 ; Y = 1648.523 ; and Radius = 260.216

Factor of Safety  
 \*\*\* 1.652 \*\*\*

Individual data on the 45 slices



246	23	4.5	15042.6	0.0	0.0	0.	0.	0.0	0.0	0.0
247	24	4.4	14894.9	0.0	0.0	0.	0.	0.0	0.0	0.0
248	25	4.4	14684.8	0.0	0.0	0.	0.	0.0	0.0	0.0
249	26	4.3	14414.4	0.0	0.0	0.	0.	0.0	0.0	0.0
250	27	4.3	14085.9	0.0	0.0	0.	0.	0.0	0.0	0.0
251	28	4.2	13701.1	0.0	0.0	0.	0.	0.0	0.0	0.0
252	29	4.2	13262.6	0.0	0.0	0.	0.	0.0	0.0	0.0
253	30	4.1	12772.6	0.0	0.0	0.	0.	0.0	0.0	0.0
254	31	4.1	12234.2	0.0	0.0	0.	0.	0.0	0.0	0.0
255	32	4.0	11649.6	0.0	0.0	0.	0.	0.0	0.0	0.0
256	33	4.0	11021.9	0.0	0.0	0.	0.	0.0	0.0	0.0
257	34	3.9	10354.0	0.0	0.0	0.	0.	0.0	0.0	0.0
258	35	3.8	9649.0	0.0	0.0	0.	0.	0.0	0.0	0.0
259	36	3.8	8910.1	0.0	0.0	0.	0.	0.0	0.0	0.0
260	37	3.7	8140.4	0.0	0.0	0.	0.	0.0	0.0	0.0
261	38	3.7	7343.5	0.0	0.0	0.	0.	0.0	0.0	0.0
262	39	3.6	6522.7	0.0	0.0	0.	0.	0.0	0.0	0.0
263	40	3.5	5681.5	0.0	0.0	0.	0.	0.0	0.0	0.0
264	41	0.6	908.9	0.0	0.0	0.	0.	0.0	0.0	0.0
265	42	2.8	3725.4	0.0	0.0	0.	0.	0.0	0.0	0.0
266	43	3.4	3233.8	0.0	0.0	0.	0.	0.0	0.0	0.0
267	44	3.3	1849.2	0.0	0.0	0.	0.	0.0	0.0	0.0
268	45	2.8	504.3	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 46 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
273	1	146.842
274	2	151.827
275	3	156.805
276	4	161.774
277	5	166.733
278	6	171.680
279	7	176.614
280	8	181.533
281	9	186.435
282	10	191.320
283	11	196.186
284	12	201.030
285	13	205.853
286	14	210.653
287	15	215.427
288	16	220.175
289	17	224.895
290	18	229.585
291	19	234.245
292	20	238.873
293	21	243.468
294	22	248.027
295	23	252.551
296	24	257.037
297	25	261.484
298	26	265.890
299	27	270.255
300	28	274.578
301	29	278.856
302	30	283.089
303	31	287.275
304	32	291.413
305	33	295.501
306	34	299.540
307	35	303.526
308	36	307.460

312	37	311.340	1454.049
313	38	315.165	1457.270
314	39	318.933	1460.556
315	40	322.644	1463.907
316	41	326.296	1467.322
317	42	329.889	1470.799
318	43	333.421	1474.338
319	44	336.891	1477.938
320	45	340.298	1481.598
321	46	340.417	1481.730

Circle Center At X = 127.248 ; Y = 1676.544 ; and Radius = 288.779

Factor of Safety  
\*\*\* 1.653 \*\*\*

1

Failure Surface Specified By 46 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
322	1	146.842
323	2	151.840
324	3	156.834
325	4	161.823
326	5	166.804
327	6	171.776
328	7	176.737
329	8	181.685
330	9	186.619
331	10	191.535
332	11	196.434
333	12	201.312
334	13	206.168
335	14	211.000
336	15	215.806
337	16	220.585
338	17	225.335
339	18	230.054
340	19	234.740
341	20	239.391
342	21	244.007
343	22	248.584
344	23	253.122
345	24	257.619
346	25	262.072
347	26	266.481
348	27	270.844
349	28	275.159
350	29	279.424
351	30	283.639
352	31	287.801
353	32	291.908
354	33	295.960
355	34	299.954
356	35	303.890
357	36	307.766
358	37	311.580
359	38	315.332
360	39	319.018

378 40 322.639 1461.676  
 379 41 326.193 1465.193  
 380 42 329.679 1468.778  
 381 43 333.095 1472.430  
 382 44 336.439 1476.146  
 383 45 339.712 1479.927  
 384 46 341.302 1481.836

Circle Center At X = 141.926 ; Y = 1647.789 ; and Radius = 259.405

Factor of Safety  
 \*\*\* 1.653 \*\*\*

Failure Surface Specified By 46 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
401	146.842	1388.430
402	151.824	1388.854
403	156.798	1389.361
404	161.763	1389.952
405	166.718	1390.626
406	171.660	1391.384
407	176.589	1392.225
408	181.503	1393.148
409	186.400	1394.155
410	191.280	1395.244
411	196.141	1396.415
412	200.982	1397.667
413	205.800	1399.002
414	210.596	1400.417
415	215.367	1401.912
416	220.112	1403.488
417	224.830	1405.144
418	229.519	1406.879
419	234.179	1408.693
420	238.807	1410.584
421	243.403	1412.554
422	247.965	1414.601
423	252.492	1416.724
424	256.982	1418.923
425	261.434	1421.198
426	265.848	1423.547
427	270.222	1425.971
428	274.554	1428.468
429	278.843	1431.037
430	283.088	1433.678
431	287.289	1436.391
432	291.443	1439.174
433	295.549	1442.026
434	299.607	1444.948
435	303.615	1447.937
436	307.572	1450.993
437	311.477	1454.116
438	315.329	1457.303
439	319.127	1460.556
440	322.869	1463.872
441	326.555	1467.250
442	330.183	1470.690
443	333.753	1474.191

444 44 337.264 1477.751  
 445 45 340.714 1481.370  
 446 46 341.123 1481.815

Circle Center At X = 124.229 ; Y = 1684.264 ; and Radius = 296.697

Factor of Safety  
 \*\*\* 1.654 \*\*\*

Failure Surface Specified By 47 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
464	146.842	1388.430
465	151.838	1388.624
466	156.830	1388.910
467	161.816	1389.286
468	166.794	1389.754
469	171.763	1390.313
470	176.720	1390.963
471	181.665	1391.704
472	186.596	1392.534
473	191.510	1393.455
474	196.407	1394.466
475	201.284	1395.566
476	206.141	1396.756
477	210.975	1398.034
478	215.784	1399.400
479	220.568	1400.854
480	225.325	1402.395
481	230.052	1404.023
482	234.749	1405.738
483	239.414	1407.538
484	244.045	1409.423
485	248.641	1411.393
486	253.199	1413.447
487	257.720	1415.583
488	262.201	1417.802
489	266.640	1420.103
490	271.036	1422.484
491	275.388	1424.946
492	279.695	1427.486
493	283.954	1430.106
494	288.164	1432.802
495	292.325	1435.576
496	296.434	1438.425
497	300.490	1441.348
498	304.491	1444.346
499	308.438	1447.416
500	312.327	1450.558
501	316.159	1453.771
502	319.931	1457.053
503	323.642	1460.403
504	327.291	1463.822
505	330.877	1467.306
506	334.399	1470.855
507	337.855	1474.468
508	341.244	1478.144
509	344.566	1481.882

510 47 344.896 1482.268  
511  
512 Circle Center At X = 138.743 ; Y = 1661.463 ; and Radius = 273.152  
513

515 Factor of Safety  
516 \*\*\* 1.654 \*\*\*  
517

518  
519  
520  
521 Failure Surface Specified By 46 Coordinate Points  
522

Point No.	X-Surf (ft)	Y-Surf (ft)
1	146.842	1388.430
2	151.824	1388.860
3	156.797	1389.371
4	161.762	1389.963
5	166.717	1390.636
6	171.660	1391.389
7	176.590	1392.223
8	181.505	1393.137
9	186.406	1394.131
10	191.289	1395.205
11	196.154	1396.358
12	201.000	1397.591
13	205.825	1398.902
14	210.628	1400.292
15	215.407	1401.760
16	220.163	1403.305
17	224.892	1404.928
18	229.594	1406.628
19	234.268	1408.404
20	238.912	1410.256
21	243.526	1412.183
22	248.107	1414.186
23	252.656	1416.263
24	257.170	1418.413
25	261.648	1420.637
26	266.089	1422.934
27	270.492	1425.303
28	274.856	1427.743
29	279.180	1430.254
30	283.462	1432.835
31	287.702	1435.486
32	291.898	1438.205
33	296.049	1440.992
34	300.154	1443.847
35	304.212	1446.768
36	308.222	1449.755
37	312.182	1452.807
38	316.093	1455.923
39	319.952	1459.102
40	323.758	1462.344
41	327.512	1465.647
42	331.211	1469.012
43	334.854	1472.436
44	338.442	1475.918
45	341.972	1479.459
46	344.653	1482.238

573  
574 Circle Center At X = 122.979 ; Y = 1694.215 ; and Radius = 306.715  
575

576  
577 Factor of Safety  
578 \*\*\* 1.655 \*\*\*  
579

582 1

583  
584 Failure Surface Specified By 45 Coordinate Points  
585

Point No.	X-Surf (ft)	Y-Surf (ft)
1	148.947	1389.506
2	153.943	1389.704
3	158.935	1390.000
4	163.919	1390.393
5	168.895	1390.884
6	173.860	1391.473
7	178.813	1392.159
8	183.751	1392.941
9	188.673	1393.821
10	193.577	1394.797
11	198.461	1395.868
12	203.323	1397.036
13	208.161	1398.298
14	212.973	1399.655
15	217.758	1401.106
16	222.513	1402.651
17	227.238	1404.289
18	231.929	1406.018
19	236.585	1407.840
20	241.205	1409.752
21	245.786	1411.755
22	250.328	1413.847
23	254.827	1416.028
24	259.283	1418.297
25	263.693	1420.652
26	268.056	1423.094
27	272.371	1425.620
28	276.635	1428.231
29	280.848	1430.925
30	285.006	1433.701
31	289.110	1436.558
32	293.156	1439.495
33	297.144	1442.510
34	301.073	1445.603
35	304.940	1448.773
36	308.744	1452.018
37	312.483	1455.337
38	316.157	1458.728
39	319.764	1462.191
40	323.302	1465.724
41	326.770	1469.326
42	330.167	1472.995
43	333.491	1476.730
44	336.742	1480.529
45	337.435	1481.372

636 Circle Center At X = 141.363 ; Y = 1644.391 ; and Radius = 254.998  
637

638  
639 Factor of Safety  
640 \*\*\* 1.655 \*\*\*  
641

642  
643  
644  
645 Failure Surface Specified By 46 Coordinate Points  
646  
647  
648 Point X-Surf Y-Surf  
649 No. (ft) (ft)  
650  
651 1 147.895 1388.968  
652 2 152.877 1389.392  
653 3 157.851 1389.899  
654 4 162.816 1390.488  
655 5 167.771 1391.160  
656 6 172.714 1391.914  
657 7 177.643 1392.750  
658 8 182.558 1393.668  
659 9 187.457 1394.667  
660 10 192.339 1395.748  
661 11 197.202 1396.909  
662 12 202.046 1398.152  
663 13 206.867 1399.475  
664 14 211.667 1400.877  
665 15 216.442 1402.360  
666 16 221.192 1403.921  
667 17 225.915 1405.561  
668 18 230.610 1407.280  
669 19 235.277 1409.076  
670 20 239.912 1410.950  
671 21 244.516 1412.900  
672 22 249.087 1414.927  
673 23 253.624 1417.029  
674 24 258.124 1419.207  
675 25 262.589 1421.459  
676 26 267.015 1423.785  
677 27 271.401 1426.184  
678 28 275.748 1428.656  
679 29 280.052 1431.200  
680 30 284.314 1433.814  
681 31 288.532 1436.500  
682 32 292.704 1439.255  
683 33 296.830 1442.079  
684 34 300.909 1444.971  
685 35 304.939 1447.931  
686 36 308.919 1450.957  
687 37 312.848 1454.049  
688 38 316.726 1457.206  
689 39 320.550 1460.427  
690 40 324.320 1463.711  
691 41 328.035 1467.058  
692 42 331.695 1470.465  
693 43 335.296 1473.933  
694 44 338.840 1477.460  
695 45 342.325 1481.046  
696 46 343.292 1482.075  
697  
698 Circle Center At X = 124.905 ; Y = 1688.802 ; and Radius = 300.714  
699  
700  
701 Factor of Safety  
702 \*\*\* 1.656 \*\*\*  
703  
704  
705  
706  
707

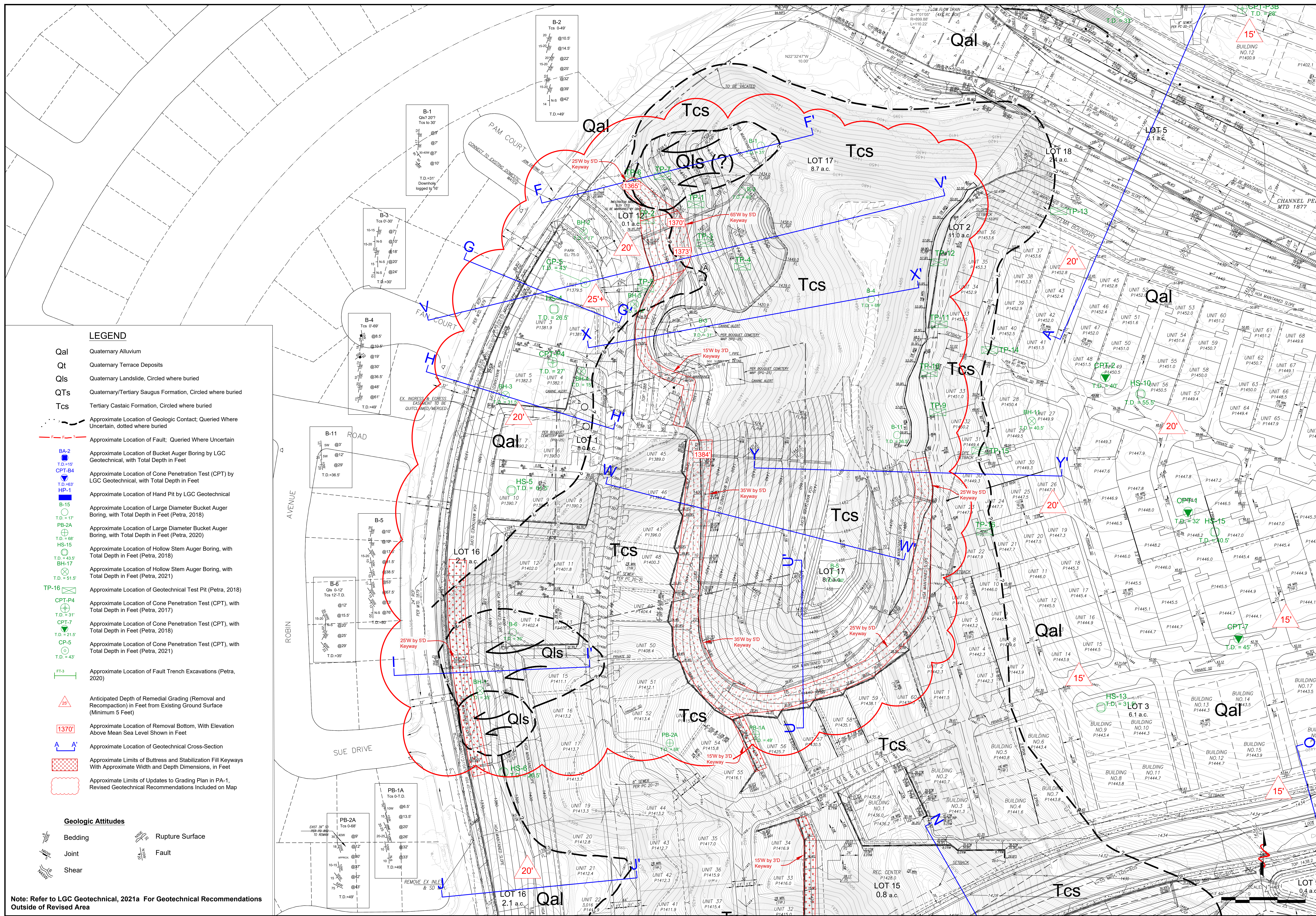
708 Failure Surface Specified By 45 Coordinate Points  
709  
710  
711 Point X-Surf Y-Surf  
712 No. (ft) (ft)  
713  
714 1 147.895 1388.968  
715 2 152.881 1389.343  
716 3 157.859 1389.808  
717 4 162.828 1390.362  
718 5 167.786 1391.007  
719 6 172.732 1391.741  
720 7 177.664 1392.565  
721 8 182.580 1393.478  
722 9 187.479 1394.479  
723 10 192.358 1395.569  
724 11 197.217 1396.748  
725 12 202.054 1398.014  
726 13 206.868 1399.367  
727 14 211.656 1400.807  
728 15 216.417 1402.334  
729 16 221.150 1403.947  
730 17 225.853 1405.645  
731 18 230.524 1407.428  
732 19 235.162 1409.295  
733 20 239.766 1411.246  
734 21 244.334 1413.280  
735 22 248.864 1415.396  
736 23 253.355 1417.594  
737 24 257.805 1419.873  
738 25 262.214 1422.232  
739 26 266.579 1424.670  
740 27 270.899 1427.187  
741 28 275.173 1429.782  
742 29 279.399 1432.454  
743 30 283.577 1435.202  
744 31 287.703 1438.025  
745 32 291.779 1440.922  
746 33 295.800 1443.893  
747 34 299.768 1446.935  
748 35 303.680 1450.050  
749 36 307.535 1453.234  
750 37 311.331 1456.488  
751 38 315.068 1459.810  
752 39 318.744 1463.199  
753 40 322.358 1466.654  
754 41 325.910 1470.173  
755 42 329.396 1473.757  
756 43 332.818 1477.403  
757 44 336.173 1481.111  
758 45 336.280 1481.234  
759  
760 Circle Center At X = 129.700 ; Y = 1664.575 ; and Radius = 276.207  
761  
762  
763 Factor of Safety  
764 \*\*\* 1.656 \*\*\*  
765  
766  
767  
768  
769 Failure Surface Specified By 46 Coordinate Points  
770  
771  
772 Point X-Surf Y-Surf  
773 No. (ft) (ft)

```

774
775      1      147.895      1388.968
776      2      152.891      1389.159
777      3      157.883      1389.442
778      4      162.869      1389.815
779      5      167.847      1390.281
780      6      172.816      1390.837
781      7      177.774      1391.484
782      8      182.719      1392.222
783      9      187.650      1393.051
784     10      192.565      1393.969
785     11      197.462      1394.978
786     12      202.340      1396.076
787     13      207.197      1397.263
788     14      212.032      1398.540
789     15      216.842      1399.904
790     16      221.626      1401.357
791     17      226.383      1402.897
792     18      231.111      1404.524
793     19      235.809      1406.237
794     20      240.474      1408.036
795     21      245.105      1409.920
796     22      249.701      1411.889
797     23      254.260      1413.941
798     24      258.781      1416.077
799     25      263.262      1418.295
800     26      267.702      1420.595
801     27      272.099      1422.976
802     28      276.451      1425.438
803     29      280.757      1427.978
804     30      285.017      1430.597
805     31      289.227      1433.294
806     32      293.387      1436.067
807     33      297.496      1438.916
808     34      301.552      1441.840
809     35      305.554      1444.838
810     36      309.500      1447.908
811     37      313.389      1451.051
812     38      317.220      1454.264
813     39      320.991      1457.547
814     40      324.702      1460.898
815     41      328.351      1464.317
816     42      331.936      1467.802
817     43      335.457      1471.352
818     44      338.912      1474.966
819     45      342.300      1478.643
820     46      345.594      1482.351
821
822      Circle Center At X = 139.978 ; Y = 1661.692 ; and Radius = 272.839
823
824
825      Factor of Safety
826      *** 1.657 ***
827
828
829
830
831
832      **** END OF GSTABL7 OUTPUT ****
833

```





**LEGEND**

- Qal Quaternary Alluvium
- Qt Quaternary Terrace Deposits
- Qls Quaternary Landslide, Circled where buried
- QTs Quaternary/Tertiary Saugus Formation, Circled where buried
- Tcs Tertiary Castaic Formation, Circled where buried

- - - - - Approximate Location of Geologic Contact; Queried Where Uncertain, dotted where buried

- - - - - Approximate Location of Fault; Queried Where Uncertain

BA-2 T.D.=15'  
CPT-B4 T.D.=83'  
HP-1 T.D.=43.5'

B-15 T.D.=17'  
PB-2A T.D.=68'  
HS-15 T.D.=43.5'

BH-17 T.D.=51.5'

TP-16

CPT-P4 T.D.=31'

CPT-7 T.D.=21.5'

CP-5 T.D.=43'

FT-3

25' Anticipated Depth of Remedial Grading (Removal and Recompaction) in Feet from Existing Ground Surface (Minimum 5 Feet)

1370' Approximate Location of Removal Bottom, With Elevation Above Mean Sea Level Shown in Feet

Approximate Location of Geotechnical Cross-Section

Approximate Limits of Buttress and Stabilization Fill Keyways With Approximate Width and Depth Dimensions, in Feet

Approximate Limits of Updates to Grading Plan in PA-1, Revised Geotechnical Recommendations Included on Map

**Geologic Attitudes**

- Bedding
- Joint
- Shear
- Rupture Surface
- Fault

Note: Refer to LGC Geotechnical, 2021a For Geotechnical Recommendations Outside of Revised Area

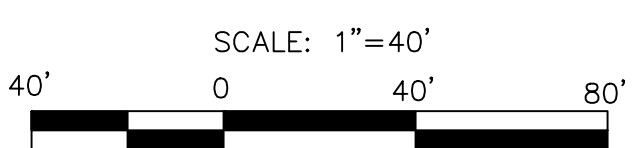
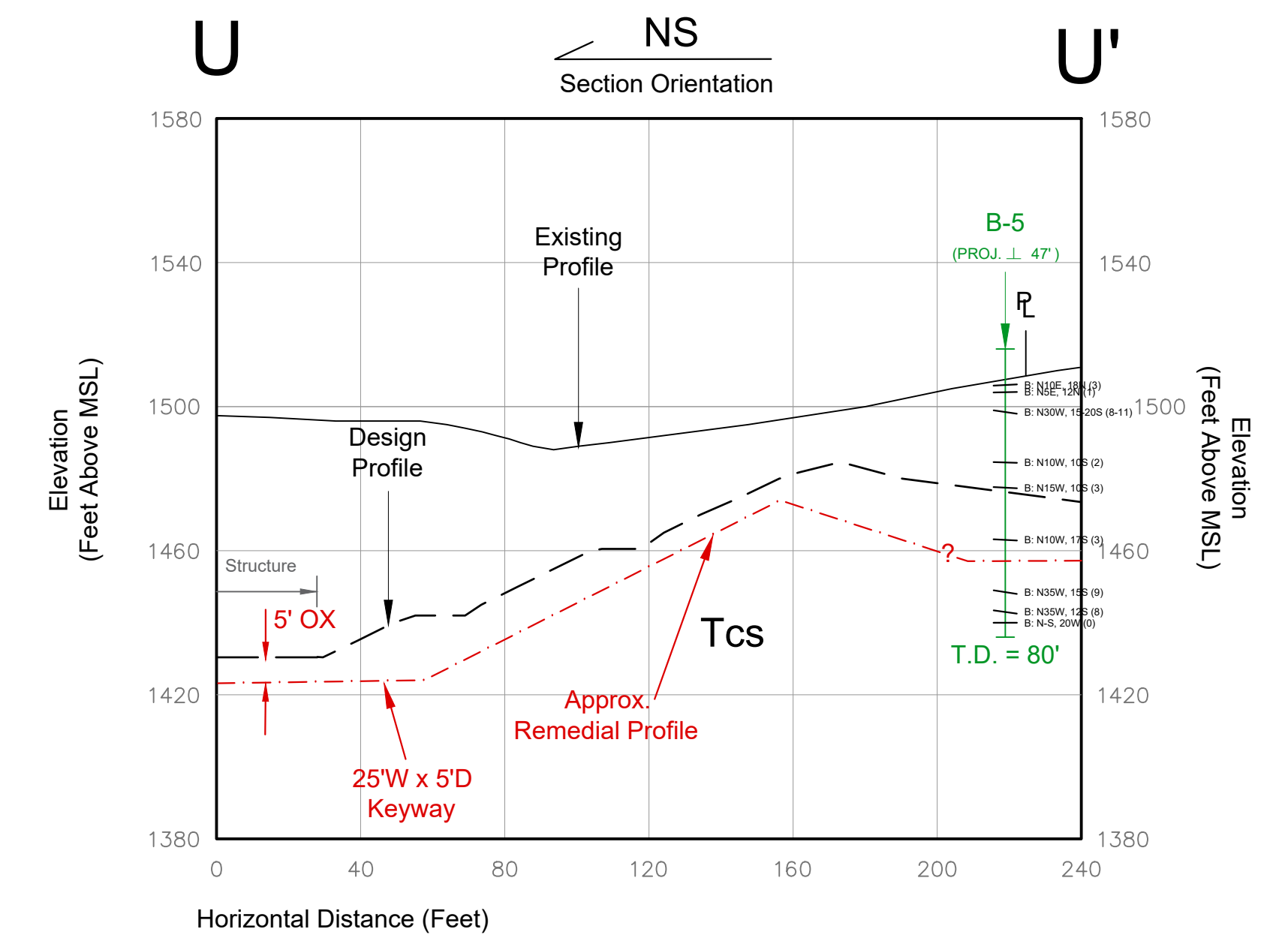
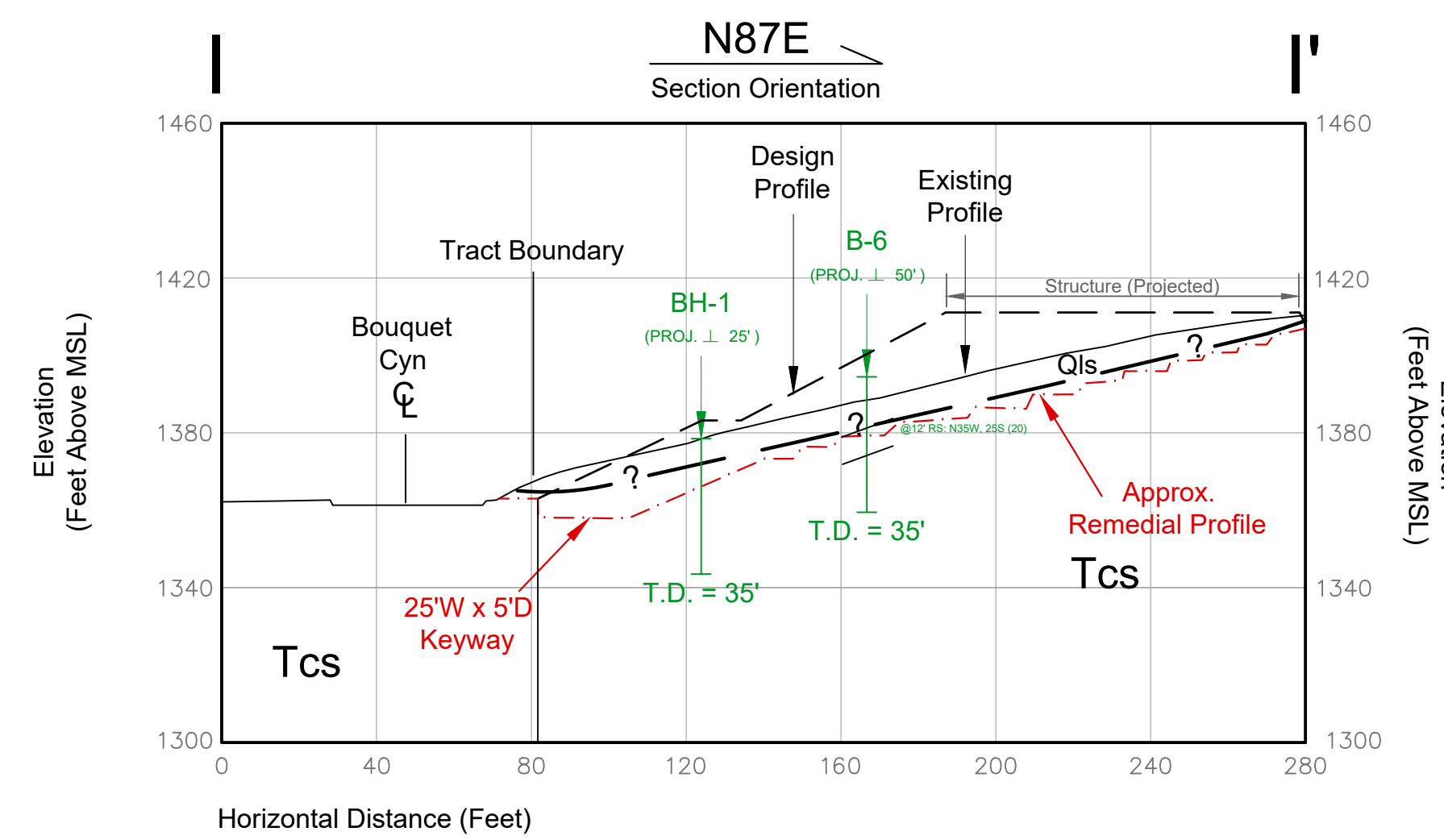
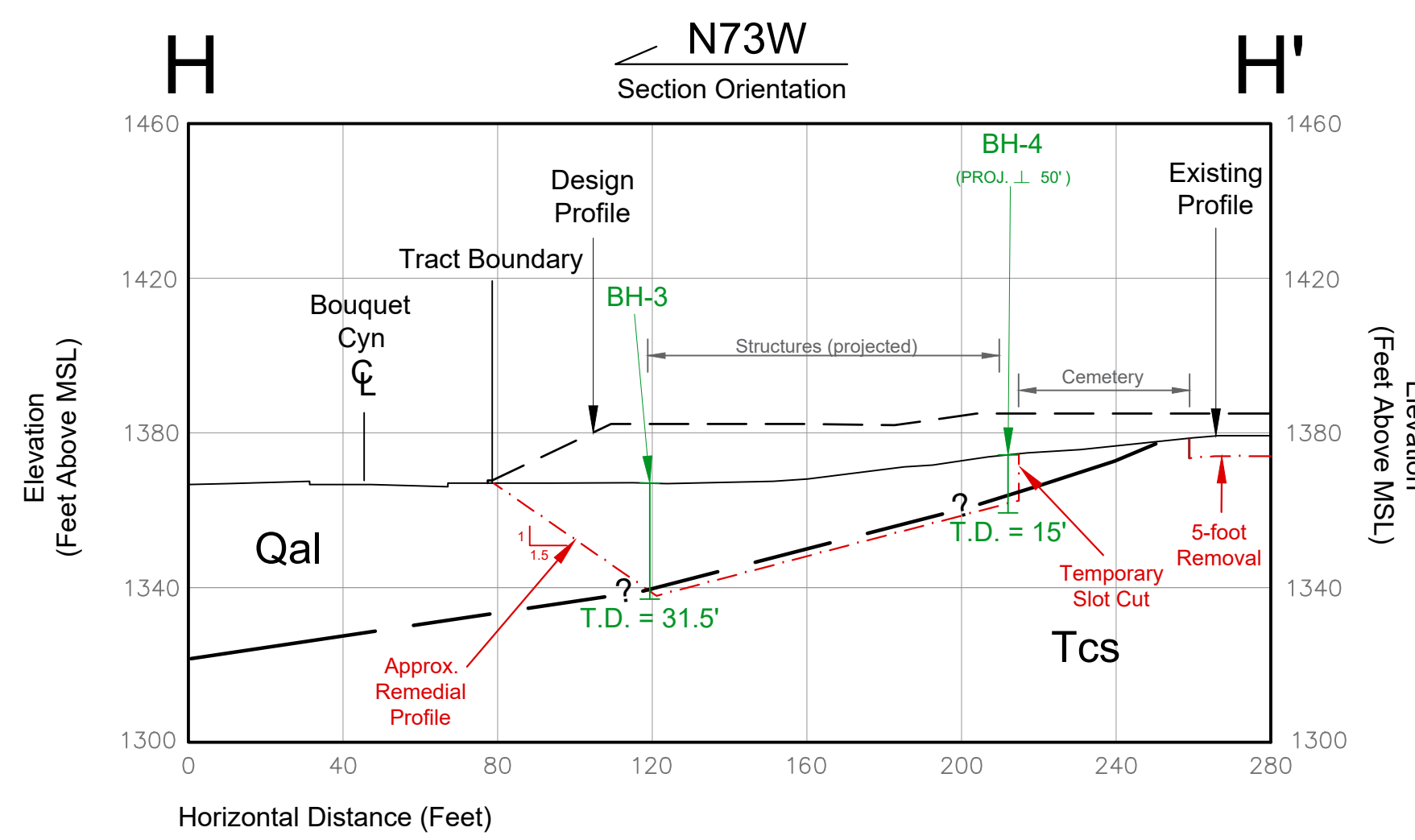
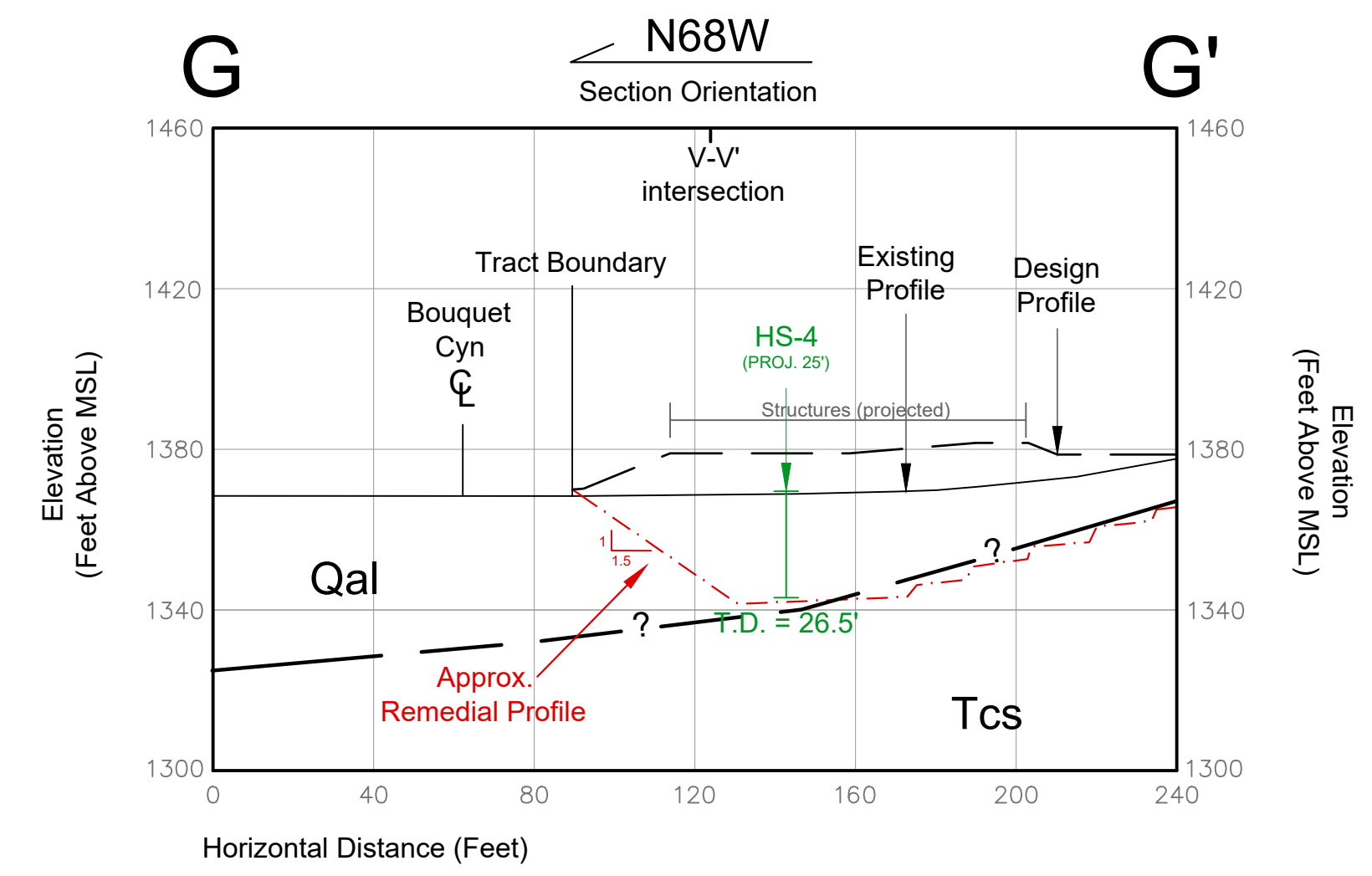
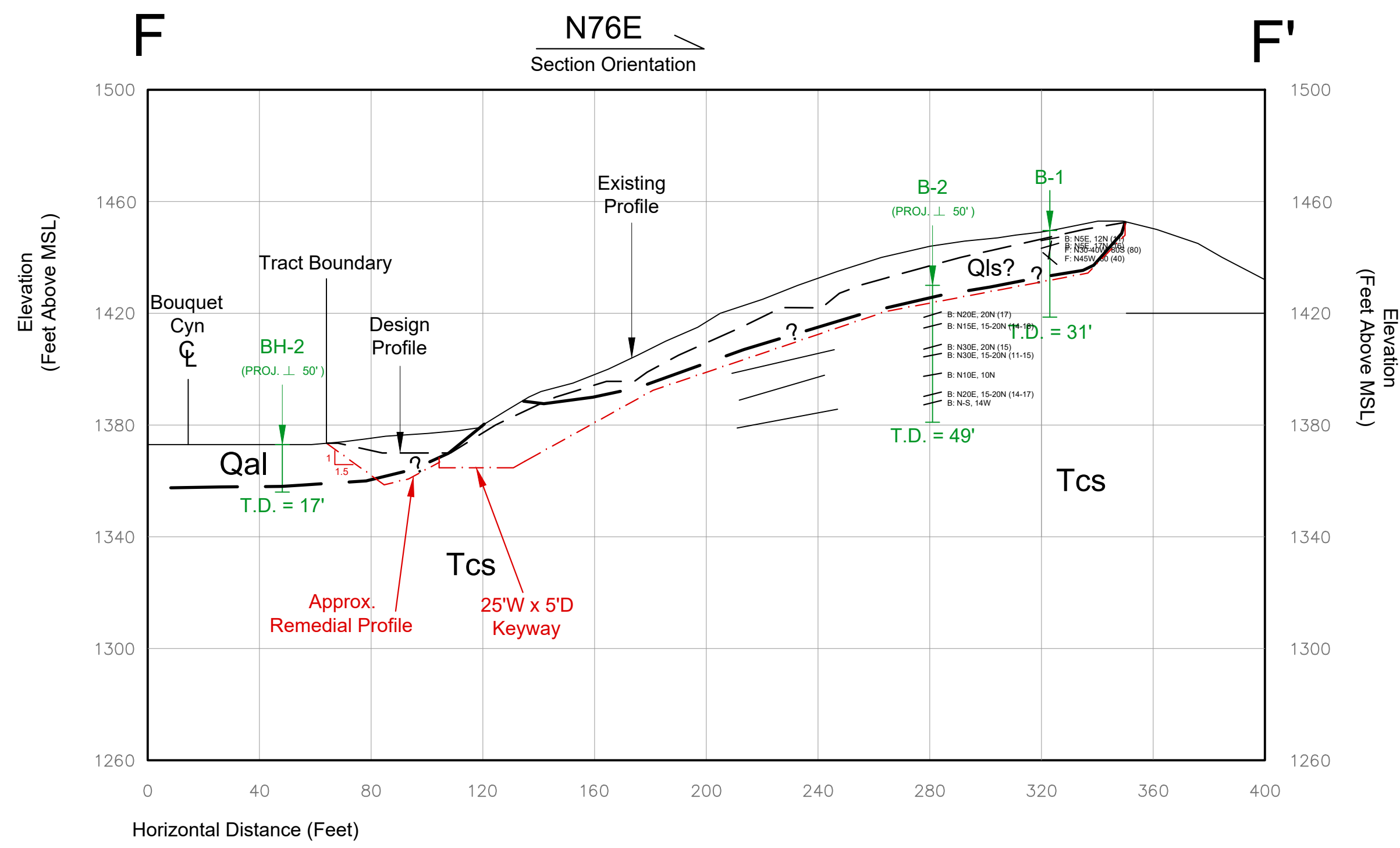
**LGC Geotechnical, Inc.**  
131 Calle Iglesia, Ste. 200  
San Clemente, CA 92672  
TEL (949) 369-6141 FAX (949) 369-6142

**Geotechnical Map**

PROJECT NAME	Bouquet Canyon
PROJECT NO.	21095-01
ENG. / GEOL.	RLD / KTM
SCALE	1" = 40'
DATE	April 2022

**SHEET**  
1 of 3

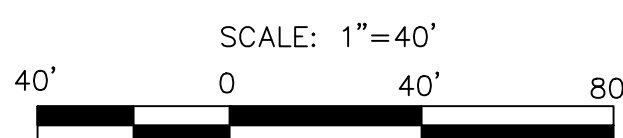
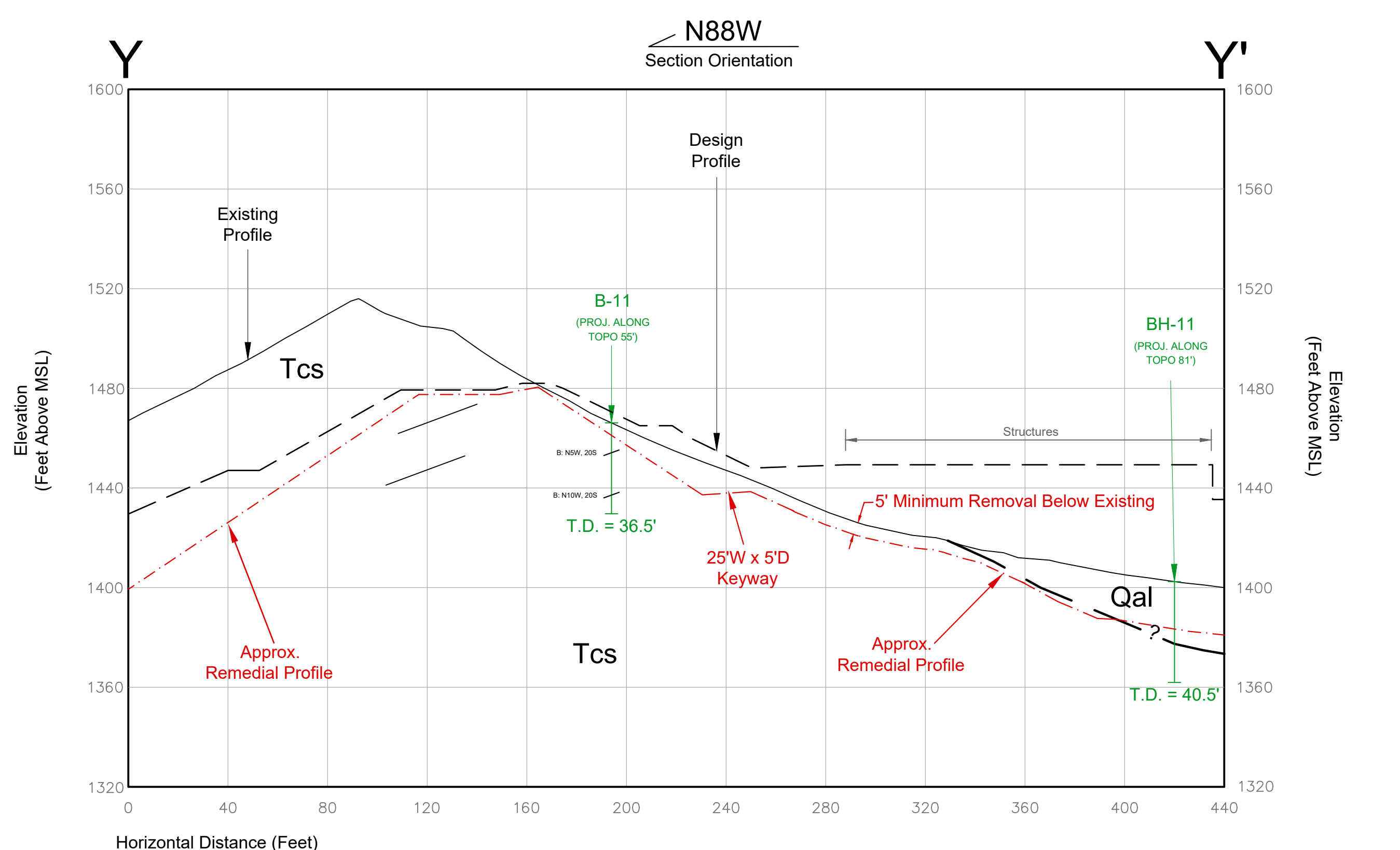
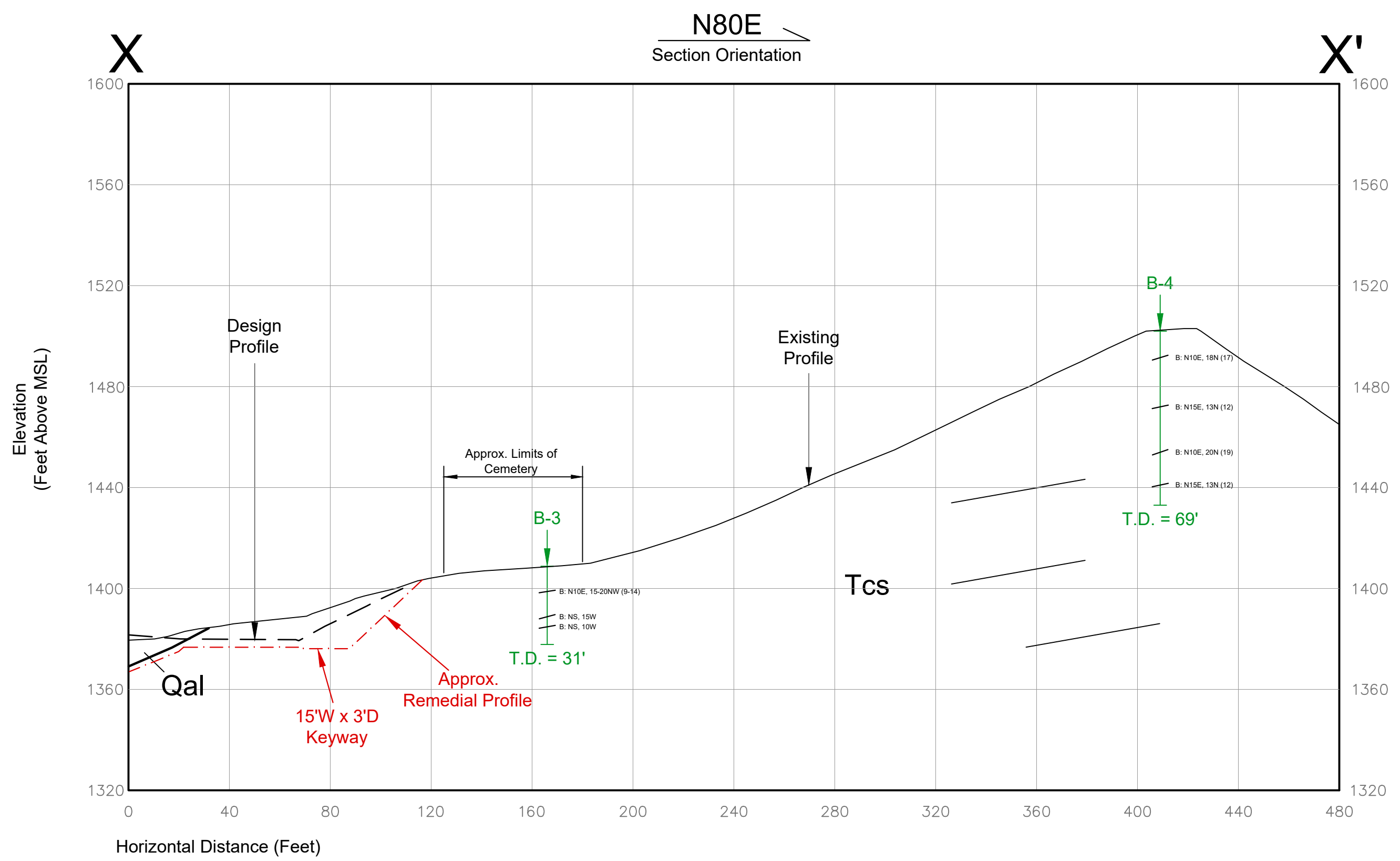
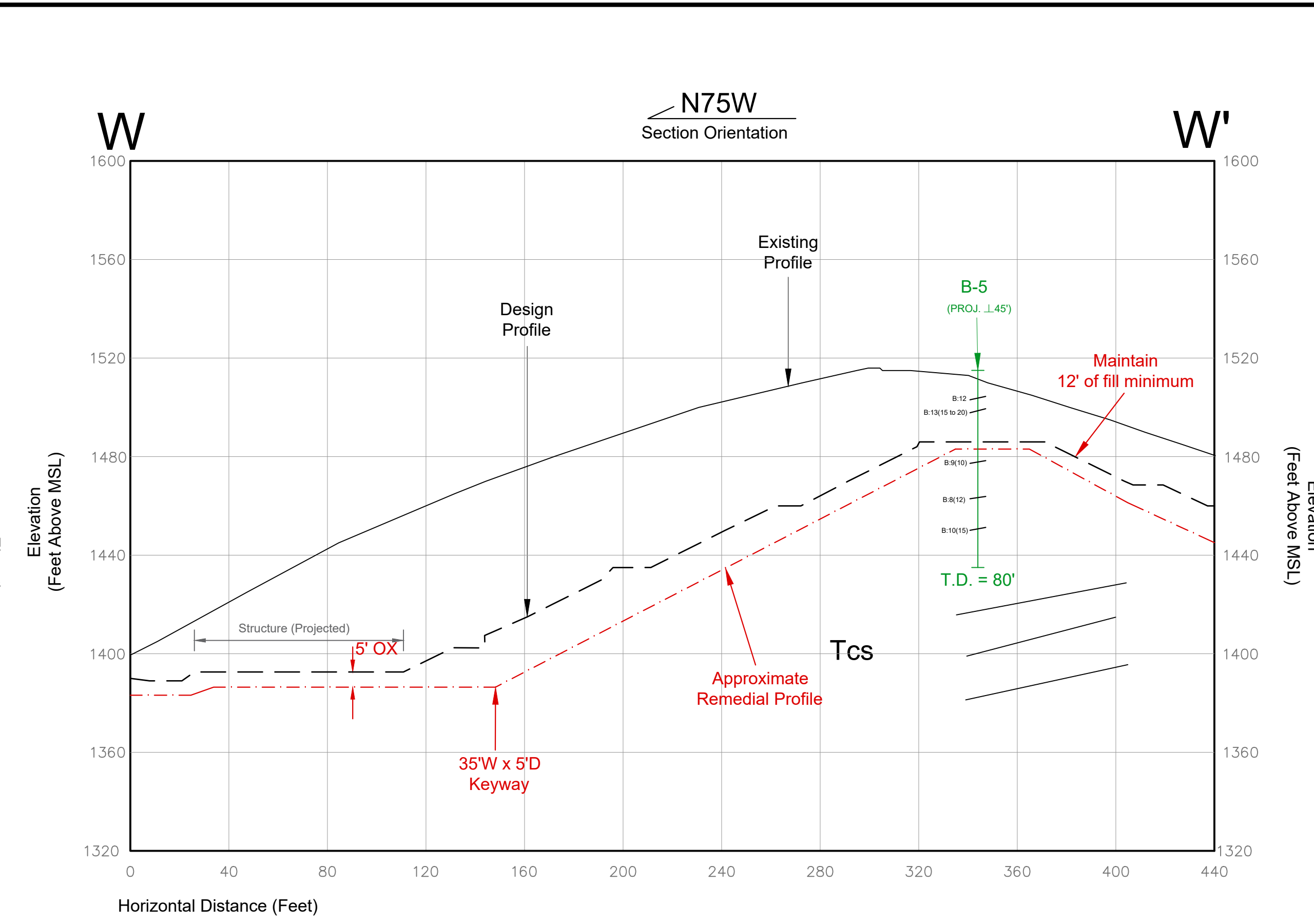
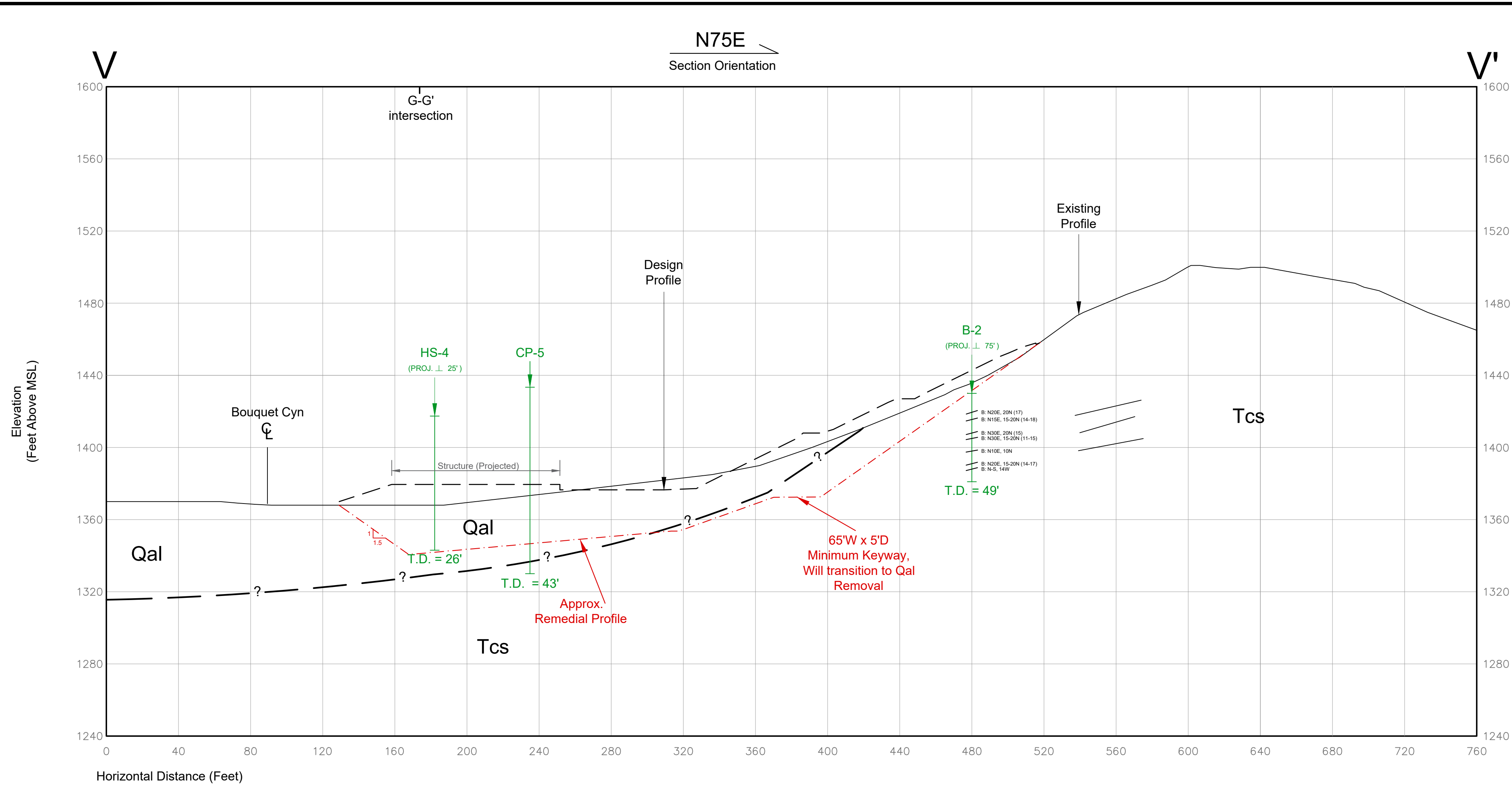




**LGC Geotechnical, Inc.**  
131 Calle Iglesia, Ste. 200  
San Clemente, CA 92672  
TEL (949) 369-6141 FAX (949) 369-6142

**Geotechnical Cross Sections  
F-F', G-G', H-H', I-I' and U-U'**

PROJECT NAME	Bouquet Canyon	<b>SHEET 2 of 3</b>
PROJECT NO.	21095-01	
ENG. / GEOL.	RLD / KTM	
SCALE	1" = 40'	
DATE	April 2022	



**LGC Geotechnical, Inc.**  
 131 Calle Iglesia, Ste. 200  
 San Clemente, CA 92672  
 TEL (949) 369-6141 FAX (949) 369-6142

**Geotechnical Cross Sections**  
**V-V', W-W', X-X' and Y-Y'**

PROJECT NAME	Bouquet Canyon	<b>SHEET</b> <b>3 of 3</b>
PROJECT NO.	21095-01	
ENG. / GEOL.	RLD / KTM	
SCALE	1" = 40'	
DATE	April 2022	

# **Appendix E**

---

## Greenhouse Gas Technical Memorandum

**MEMORANDUM**

**To:** Brent Schleck, Michael Baker International

**From:** Eddie Torres, Michael Baker International  
Tina Yuan, Michael Baker International

**Date:** May 25, 2022

**Subject:** Bouquet Canyon EIR Addendum – Greenhouse Gas Technical Memorandum

**Addendum Revision**

The addendum proposes a new construction schedule starting in 2022 and increasing grading activities to 2,800,000 cubic yards. The details of the update are listed in Table 1, Addendum Update Compared to Adopted EIR. There is no mitigation measure required in the adopted Environmental Impact Report (EIR).

**Table 1**  
**Addendum Update Compared to Adopted EIR**

Categories	Adopted EIR	Addendum	Possible Outcome
Grading Activities	2,069,664 Cubic Yards	2,800,000 Cubic Yards	Increase in exhaust emissions as there would be more transporting trips.
Construction Phase – Site Prep	3.5 months	-	Increase in emissions as the phase is shorter
Construction Phase – Demolition	-	One month	
Construction Phase – Grading	8.5 months	12 months	Decrease in emissions as the phase is longer
Construction Phase – Trenching	Six months	-	Increase in emissions as the phase is shorter
Construction Phase – Paving	Six months	One month	
Construction Phase – Building Construction	36 months	36 months	Decrease in emissions as the emission factor improved
Construction Phase – Architectural Coating	18 months	36 months (intermittent)	Decrease in emissions as the phase is longer
Residential Units	366 units	371 units	Increase in emissions
Modeling Software	California Emissions Estimator Model (CalEEMod), version 2020.4.0	CalEEMod 2016.3.2	Decrease in emissions as the emission factors improved

“-” indicates the information cannot be found.



## Addendum Revision Emissions Change

The new grading activities and construction schedule would cause emissions to change due to improved emissions factors, extended grading phase, and reduced demolition and paving phases. The following are the greenhouse emissions change due to the update. Project-related GHG emissions would include emissions from direct and indirect sources. The proposed project would result in direct and indirect emissions of CO<sub>2</sub>, N<sub>2</sub>O, and CH<sub>4</sub>, and would not result in other GHGs that would facilitate a meaningful analysis. Therefore, this analysis focuses on these three forms of GHG emissions. Direct project-related GHG emissions include emissions from construction activities, area sources, and mobile sources, while indirect sources include emissions from electricity consumption, water demand, and solid waste generation. The most recent version of the CalEEMod, version 2020.4.0, was used to calculate direct and indirect project-related GHG emissions. The new modeling applied the modified Emission FACTor (EMFAC) 2017 emission factors which include with off-model adjustments applied to certain gasoline-fueled light duty and medium duty vehicles (EMFAC vehicle codes: LDA, LDT1, LDT2, and MDV) in accordance with Part One of the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rules and actions adopted by the U.S. Environmental Protection Agency and National Highway Traffic Safety Administration in 2020.<sup>1</sup> Additionally, the CO<sub>2</sub> emissions from mobile has been reduced through a combination of cleaner engine technologies and cleaner fuels. As such, the new modeling would have much lower mobile emissions than adopted EIR. Overall, the GHG emissions in all sectors has been improved as the technologies improved, such as emissions during energy generation and transmission and water processing.

As indicated in Table 1, besides increasing the grading activities, the addendum also proposes to have shorter site preparation/demolition and paving periods but a longer grading phase. Table 2, Project-Generated Greenhouse Gas Emissions Change Due to Update, presents the anticipated change in operational greenhouse gas emissions. The addendum would propose to increase the housing units by 5 units, resulting in a slight increase in operational emissions.

**Table 2**  
**Project-Generated Greenhouse Gas Emissions Change Due to Update**

Source	CO <sub>2</sub>	CH <sub>4</sub>		N <sub>2</sub> O		Total Metric Tons CO <sub>2</sub> e/year <sup>3</sup>
	Metric tons/year	Metric tons/year	Metric Tons CO <sub>2</sub> e/year <sup>3</sup>	Metric tons/year	Metric Tons CO <sub>2</sub> e/year <sup>3</sup>	
<b>Direct Emissions</b>						
Construction (amortized over 30 years)	-124.92	-0.02	-0.47	<0.01	0.05	-125.33
Area Emissions	1.16	0.00	0.00	-0.01	0.01	1.17
Mobile Source <sup>4</sup>	-889.62	0.05	1.22	0.18	54.30	-833.16
Total Direct Emissions	-1013.38	0.03	0.75	0.17	54.36	-957.32
<b>Indirect Emissions</b>						
Energy Emissions	173.83	0.01	0.39	<0.01	0.82	174.99
Solid Waste	10.04	0.59	14.87	0.00	0.00	24.86
Water Usage	-28.43	0.02	0.31	>-0.01	-0.07	-28.21
Total Indirect Emissions	155.43	0.62	15.57	<0.01	0.75	171.63
<b>Combined Net Change in Construction and Operation, Emissions<sup>3</sup></b>	<b>-785.69 MTCO<sub>2</sub>e/yr</b>					

<sup>1</sup> California Air Resources Board, [https://ww3.arb.ca.gov/msei/emfac\\_off\\_model\\_adjustment\\_factors\\_final\\_draft.pdf](https://ww3.arb.ca.gov/msei/emfac_off_model_adjustment_factors_final_draft.pdf), accessed May 23, 2022.

Source	CO <sub>2</sub>	CH <sub>4</sub>		N <sub>2</sub> O		Total Metric Tons CO <sub>2</sub> e/year <sup>3</sup>
	Metric tons/year	Metric tons/year	Metric Tons CO <sub>2</sub> e/year <sup>3</sup>	Metric tons/year	Metric Tons CO <sub>2</sub> e/year <sup>3</sup>	
Notes:						
1. Refer to <u>Appendix A, Greenhouse Gas Data</u> , for all assumptions and calculations.						
2. CO <sub>2</sub> Equivalent values calculated using the U.S. Environmental Protection Agency Website, Greenhouse Gas Equivalencies Calculator, <a href="https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results">https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results</a> , accessed May 25, 2022.						
3. Totals may be slightly off due to rounding. Numbers in parentheses are decrease over adopted EIR.						
4. Mobile emissions during operation are calculated using CalEEMod 2020.4.0.						

*Direct Project-Related Source of Greenhouse Gases*

Construction Emissions. Construction GHG emissions are amortized (i.e., total construction emissions divided by the lifetime of the project, assumed to be 30 years),<sup>2</sup> then added to the operational emissions. As seen in Table 2, construction of the proposed project would result in a total of decrease of 125.33 MTCO<sub>2</sub>e per year (amortized over 30 years).

Area Source. Area source emissions were calculated using CalEEMod and project-specific land use data. Project-related area sources include exhaust emissions from landscape maintenance equipment, such as lawnmowers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the site. As noted in Table 2, The project would result in an increase of approximately 1.17 MTCO<sub>2</sub>e per year of for area source emissions.

Mobile Source Emissions. The trip generation used are the same as the adopted EIR. As discussed above, the emission rate has been updated since 2019. The project would result in a decrease of approximately 833.16 MTCO<sub>2</sub>e per year of mobile source generated GHG emissions; refer to Table 2.

*Indirect Project-Related Source of Greenhouse Gases*

Energy Consumption. Energy consumption emissions were calculated using the CalEEMod model and project-specific land use data. Emissions from energy has been cleaner since adopted EIR. Additionally, the CalEEMod 2020.4.0 has more current natural gas and energy consumption for different land uses. While the proposed project would add 5 more units. The project would indirectly result in increasing 174.99 MTCO<sub>2</sub>e/year of GHG emissions due to energy consumption; refer to Table 2.

Water Demand. The water consumption stays the same, while the emission produced during processing water has been decreased. Emissions from indirect energy impacts due to water supply would result in reduction of 28.21 MTCO<sub>2</sub>e/year; refer to Table 2.

Solid Waste. Emissions from indirect energy impacts due to solid waste would result in increase of 24.86 MTCO<sub>2</sub>e/year; refer to Table 2.

---

<sup>2</sup> In accordance with the SCAQMD guidance, projected GHGs from construction have been quantified and amortized over 30 years, which is the number of years considered to represent the life of the project. The amortized construction emissions are added to the annual average operational emissions.

### *Total Project-Related Sources of Greenhouse Gases*

As shown in Table 2, the total amount of proposed project-related GHG emissions from direct and indirect sources combined would total reduction of 785.69 MTCO<sub>2</sub>e/year over adopted EIR even though the new modeling did not account for the unit reduction in the addendum. The majority of the reduction is from mobile source emissions as the vehicle became cleaner over time.

## Websites / Programs

1. South Coast Air Quality Management District, California Emissions Estimator Model (CalEEMod), version 2020.4.0.



**Appendix A**  
Greenhouse Gas Data

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**Bouquet Canyon Project Addendum\_Mitigated**

**Los Angeles-South Coast County, Annual**

**1.0 Project Characteristics**

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	10.52	1000sqft	0.24	10,522.00	0
City Park	2.65	Acre	2.65	115,434.00	0
Health Club	10.75	1000sqft	0.25	10,750.00	0
Recreational Swimming Pool	9.68	1000sqft	0.22	9,676.00	0
Condo/Townhouse High Rise	175.00	Dwelling Unit	2.73	175,000.00	501
Single Family Housing	196.00	Dwelling Unit	63.64	352,800.00	561

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	33
<b>Climate Zone</b>	9			<b>Operational Year</b>	2026
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MWhr)</b>	390.98	<b>CH4 Intensity (lb/MWhr)</b>	0.033	<b>N2O Intensity (lb/MWhr)</b>	0.004

**1.3 User Entered Comments & Non-Default Data**

Project Characteristics -

Land Use - per project description

Construction Phase - per construction questionnaire

Trips and VMT - Earthwork would be balanced on-site.

Demolition - per CalEEMod formula and data in AQ construction questionnaire

Grading - per email communication

Vehicle Trips - as conservative analysis, this run uses the same trip generation rate as the adopted EIR.



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	75.00	792.00
tblConstructionPhase	NumDays	1,110.00	783.00
tblConstructionPhase	NumDays	70.00	22.00
tblConstructionPhase	NumDays	110.00	262.00
tblConstructionPhase	NumDays	75.00	22.00
tblGrading	AcresOfGrading	786.00	0.00
tblGrading	MaterialExported	0.00	2,800,000.00
tblGrading	MaterialImported	0.00	2,800,000.00
tblLandUse	LandUseSquareFeet	10,520.00	10,522.00
tblLandUse	LandUseSquareFeet	9,680.00	9,676.00
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingVehicleClass	HHDT	MHDT
tblTripsAndVMT	HaulingVehicleClass	HHDT	MHDT
tblTripsAndVMT	HaulingVehicleClass	HHDT	MHDT
tblTripsAndVMT	HaulingVehicleClass	HHDT	MHDT
tblTripsAndVMT	HaulingVehicleClass	HHDT	MHDT
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	ST_TR	4.91	10.77
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	ST_TR	9.10	0.00
tblVehicleTrips	ST_TR	9.54	10.77



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	4.09	10.77
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	SU_TR	13.60	0.00
tblVehicleTrips	SU_TR	8.55	10.77
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	5.44	10.77
tblVehicleTrips	WD_TR	32.93	0.00
tblVehicleTrips	WD_TR	28.82	0.00
tblVehicleTrips	WD_TR	9.44	10.77

**2.0 Emissions Summary**

---

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

**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					
2022	0.2338	2.6799	2.0661	5.0000e-003	0.6616	0.0901	0.7516	0.2151	0.0832	0.2983	0.0000	451.7230	451.7230	0.0920	0.0226	460.7665
2023	0.3658	4.3583	3.5089	9.0200e-003	0.9823	0.1269	1.1092	0.3794	0.1168	0.4962	0.0000	817.2733	817.2733	0.1630	0.0437	834.3632
2024	0.5283	2.0796	3.2543	7.8500e-003	0.4028	0.0822	0.4850	0.1080	0.0774	0.1855	0.0000	714.1327	714.1327	0.0820	0.0258	723.8628
2025	0.8829	2.1942	3.6567	9.0200e-003	0.4959	0.0797	0.5756	0.1329	0.0753	0.2083	0.0000	824.2778	824.2778	0.0858	0.0291	835.1070
2026	0.8762	2.1841	3.5827	8.8800e-003	0.4959	0.0796	0.5755	0.1329	0.0752	0.2082	0.0000	813.8884	813.8884	0.0851	0.0283	824.4494
2027	0.4033	0.3462	0.6367	1.5500e-003	0.0976	0.0132	0.1108	0.0261	0.0127	0.0388	0.0000	142.1905	142.1905	0.0118	3.9600e-003	143.6667
<b>Maximum</b>	<b>0.8829</b>	<b>4.3583</b>	<b>3.6567</b>	<b>9.0200e-003</b>	<b>0.9823</b>	<b>0.1269</b>	<b>1.1092</b>	<b>0.3794</b>	<b>0.1168</b>	<b>0.4962</b>	<b>0.0000</b>	<b>824.2778</b>	<b>824.2778</b>	<b>0.1630</b>	<b>0.0437</b>	<b>835.1070</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**2.1 Overall Construction**

**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					
2022	0.0853	0.8728	2.2678	5.0000e-003	0.2774	0.0104	0.2877	0.0901	0.0101	0.1002	0.0000	451.7227	451.7227	0.0920	0.0226	460.7662
2023	0.1418	1.6269	3.9419	9.0200e-003	0.4273	0.0111	0.4384	0.1610	0.0110	0.1721	0.0000	817.2727	817.2727	0.1630	0.0437	834.3627
2024	0.3813	0.6454	3.4330	7.8500e-003	0.3139	8.8300e-003	0.3227	0.0862	8.6000e-003	0.0948	0.0000	714.1324	714.1324	0.0820	0.0258	723.8625
2025	0.7289	0.7258	3.8392	9.0200e-003	0.3864	9.9700e-003	0.3963	0.1060	9.7000e-003	0.1157	0.0000	824.2774	824.2774	0.0858	0.0291	835.1066
2026	0.7221	0.7158	3.7653	8.8800e-003	0.3864	9.8400e-003	0.3962	0.1060	9.5800e-003	0.1156	0.0000	813.8880	813.8880	0.0851	0.0283	824.4490
2027	0.3753	0.1006	0.6606	1.5500e-003	0.0758	1.6300e-003	0.0775	0.0207	1.5800e-003	0.0223	0.0000	142.1904	142.1904	0.0118	3.9600e-003	143.6666
<b>Maximum</b>	<b>0.7289</b>	<b>1.6269</b>	<b>3.9419</b>	<b>9.0200e-003</b>	<b>0.4273</b>	<b>0.0111</b>	<b>0.4384</b>	<b>0.1610</b>	<b>0.0110</b>	<b>0.1721</b>	<b>0.0000</b>	<b>824.2774</b>	<b>824.2774</b>	<b>0.1630</b>	<b>0.0437</b>	<b>835.1066</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>26.01</b>	<b>66.14</b>	<b>-7.20</b>	<b>0.00</b>	<b>40.46</b>	<b>89.02</b>	<b>46.81</b>	<b>42.67</b>	<b>88.51</b>	<b>56.75</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	10-3-2022	1-2-2023	2.2630	0.7270
2	1-3-2023	4-2-2023	1.7361	0.6504
3	4-3-2023	7-2-2023	1.7442	0.6465
4	7-3-2023	10-2-2023	1.1692	0.4334
6	1-3-2024	4-2-2024	0.4387	0.1303

## Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

7	4-3-2024	7-2-2024	0.6088	0.2073
8	7-3-2024	10-2-2024	0.7497	0.3159
9	10-3-2024	1-2-2025	0.8185	0.3727
10	1-3-2025	4-2-2025	0.7595	0.3599
11	4-3-2025	7-2-2025	0.7603	0.3562
12	7-3-2025	10-2-2025	0.7688	0.3603
13	10-3-2025	1-2-2026	0.7764	0.3680
14	1-3-2026	4-2-2026	0.7553	0.3557
15	4-3-2026	7-2-2026	0.7563	0.3522
16	7-3-2026	10-2-2026	0.7648	0.3563
17	10-3-2026	1-2-2027	0.7722	0.3637
18	1-3-2027	4-2-2027	0.4635	0.2491
19	4-3-2027	7-2-2027	0.1892	0.1516
20	7-3-2027	9-30-2027	0.0873	0.0700
		Highest	2.2630	0.7270



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

**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	tons/yr										MT/yr					
Area	3.4481	0.1403	6.1812	6.2200e-003		0.3755	0.3755		0.3755	0.3755	39.4073	81.9778	121.3851	0.1235	2.6700e-003	125.2698
Energy	0.0403	0.3451	0.1508	2.2000e-003		0.0279	0.0279		0.0279	0.0279	0.0000	820.9792	820.9792	0.0433	0.0116	825.5271
Mobile	2.0043	2.2145	20.6124	0.0456	5.1306	0.0331	5.1637	1.3689	0.0307	1.3996	0.0000	4,354.0687	4,354.0687	0.2902	0.1822	4,415.6131
Waste						0.0000	0.0000		0.0000	0.0000	86.7157	0.0000	86.7157	5.1248	0.0000	214.8345
Water						0.0000	0.0000		0.0000	0.0000	8.0520	96.3146	104.3667	0.8352	0.0205	131.3584
<b>Total</b>	<b>5.4926</b>	<b>2.6998</b>	<b>26.9443</b>	<b>0.0540</b>	<b>5.1306</b>	<b>0.4364</b>	<b>5.5670</b>	<b>1.3689</b>	<b>0.4341</b>	<b>1.8029</b>	<b>134.1750</b>	<b>5,353.3403</b>	<b>5,487.5153</b>	<b>6.4168</b>	<b>0.2170</b>	<b>5,712.6029</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**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	2.2410	0.1133	3.8523	6.4000e-004		0.0268	0.0268		0.0268	0.0268	0.0000	86.4323	86.4323	7.5200e-003	1.4700e-003	87.0585
Energy	0.0403	0.3451	0.1508	2.2000e-003		0.0279	0.0279		0.0279	0.0279	0.0000	820.9792	820.9792	0.0433	0.0116	825.5271
Mobile	2.0043	2.2145	20.6124	0.0456	5.1306	0.0331	5.1637	1.3689	0.0307	1.3996	0.0000	4,354.0687	4,354.0687	0.2902	0.1822	4,415.6131
Waste						0.0000	0.0000		0.0000	0.0000	43.3579	0.0000	43.3579	2.5624	0.0000	107.4173
Water						0.0000	0.0000		0.0000	0.0000	8.0520	96.3146	104.3667	0.8352	0.0205	131.3584
<b>Total</b>	<b>4.2855</b>	<b>2.6728</b>	<b>24.6154</b>	<b>0.0484</b>	<b>5.1306</b>	<b>0.0878</b>	<b>5.2183</b>	<b>1.3689</b>	<b>0.0854</b>	<b>1.4543</b>	<b>51.4099</b>	<b>5,357.7948</b>	<b>5,409.2047</b>	<b>3.7385</b>	<b>0.2158</b>	<b>5,566.9743</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>21.98</b>	<b>1.00</b>	<b>8.64</b>	<b>10.33</b>	<b>0.00</b>	<b>79.89</b>	<b>6.26</b>	<b>0.00</b>	<b>80.32</b>	<b>19.34</b>	<b>61.68</b>	<b>-0.08</b>	<b>1.43</b>	<b>41.74</b>	<b>0.55</b>	<b>2.55</b>

**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	9/1/2022	9/1/2023	5	262	
2	Demolition	Demolition	10/3/2022	11/1/2022	5	22	
3	Paving	Paving	2/1/2024	3/1/2024	5	22	

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

4	Building Construction	Building Construction	2/15/2024	2/15/2027	5	783
5	Architectural Coating	Architectural Coating	8/1/2024	8/13/2027	5	792

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0.24**

**Residential Indoor: 1,068,795; Residential Outdoor: 356,265; Non-Residential Indoor: 16,125; Non-Residential Outdoor: 5,375; Striped Parking Area: 631 (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
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**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	700,000.00	14.70	6.90	0.50	LD_Mix	HDT_Mix	MHDT
Demolition	6	15.00	0.00	112.00	14.70	6.90	0.50	LD_Mix	HDT_Mix	MHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	MHDT
Building Construction	9	258.00	64.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	MHDT
Architectural Coating	1	52.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	MHDT

**3.1 Mitigation Measures Construction**

Use Cleaner Engines for Construction Equipment

Replace Ground Cover

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.2 Grading - 2022**

**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					0.5786	0.0000	0.5786	0.1919	0.0000	0.1919	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1577	1.6897	1.2633	2.7000e-003		0.0711	0.0711		0.0654	0.0654	0.0000	237.2255	237.2255	0.0767	0.0000	239.1436
<b>Total</b>	<b>0.1577</b>	<b>1.6897</b>	<b>1.2633</b>	<b>2.7000e-003</b>	<b>0.5786</b>	<b>0.0711</b>	<b>0.6497</b>	<b>0.1919</b>	<b>0.0654</b>	<b>0.2574</b>	<b>0.0000</b>	<b>237.2255</b>	<b>237.2255</b>	<b>0.0767</b>	<b>0.0000</b>	<b>239.1436</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0435	0.7040	0.5375	1.7700e-003	0.0594	5.2100e-003	0.0646	0.0183	4.9800e-003	0.0232	0.0000	167.6393	167.6393	4.5300e-003	0.0224	174.4163
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	2.9800e-003	2.4800e-003	0.0323	9.0000e-005	9.5300e-003	6.0000e-005	9.6000e-003	2.5300e-003	6.0000e-005	2.5900e-003	0.0000	7.8915	7.8915	2.3000e-004	2.1000e-004	7.9610
<b>Total</b>	<b>0.0465</b>	<b>0.7064</b>	<b>0.5698</b>	<b>1.8600e-003</b>	<b>0.0690</b>	<b>5.2700e-003</b>	<b>0.0742</b>	<b>0.0208</b>	<b>5.0400e-003</b>	<b>0.0258</b>	<b>0.0000</b>	<b>175.5308</b>	<b>175.5308</b>	<b>4.7600e-003</b>	<b>0.0226</b>	<b>182.3772</b>



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.2 Grading - 2022**

**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					0.2144	0.0000	0.2144	0.0711	0.0000	0.0711	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0331	0.1436	1.4355	2.7000e-003		4.4200e-003	4.4200e-003		4.4200e-003	4.4200e-003	0.0000	237.2252	237.2252	0.0767	0.0000	239.1433
<b>Total</b>	<b>0.0331</b>	<b>0.1436</b>	<b>1.4355</b>	<b>2.7000e-003</b>	<b>0.2144</b>	<b>4.4200e-003</b>	<b>0.2188</b>	<b>0.0711</b>	<b>4.4200e-003</b>	<b>0.0755</b>	<b>0.0000</b>	<b>237.2252</b>	<b>237.2252</b>	<b>0.0767</b>	<b>0.0000</b>	<b>239.1433</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0435	0.7040	0.5375	1.7700e-003	0.0497	5.2100e-003	0.0549	0.0159	4.9800e-003	0.0209	0.0000	167.6393	167.6393	4.5300e-003	0.0224	174.4163
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	2.9800e-003	2.4800e-003	0.0323	9.0000e-005	7.3900e-003	6.0000e-005	7.4500e-003	2.0000e-003	6.0000e-005	2.0600e-003	0.0000	7.8915	7.8915	2.3000e-004	2.1000e-004	7.9610
<b>Total</b>	<b>0.0465</b>	<b>0.7064</b>	<b>0.5698</b>	<b>1.8600e-003</b>	<b>0.0571</b>	<b>5.2700e-003</b>	<b>0.0623</b>	<b>0.0179</b>	<b>5.0400e-003</b>	<b>0.0229</b>	<b>0.0000</b>	<b>175.5308</b>	<b>175.5308</b>	<b>4.7600e-003</b>	<b>0.0226</b>	<b>182.3772</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**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					0.8436	0.0000	0.8436	0.3376	0.0000	0.3376	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2907	3.0201	2.4545	5.4300e-003		0.1246	0.1246		0.1147	0.1147	0.0000	477.1831	477.1831	0.1543	0.0000	481.0413
<b>Total</b>	<b>0.2907</b>	<b>3.0201</b>	<b>2.4545</b>	<b>5.4300e-003</b>	<b>0.8436</b>	<b>0.1246</b>	<b>0.9682</b>	<b>0.3376</b>	<b>0.1147</b>	<b>0.4523</b>	<b>0.0000</b>	<b>477.1831</b>	<b>477.1831</b>	<b>0.1543</b>	<b>0.0000</b>	<b>481.0413</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0696	1.3338	0.9947	3.4200e-003	0.1195	2.1300e-003	0.1217	0.0367	2.0300e-003	0.0388	0.0000	324.6346	324.6346	8.2700e-003	0.0433	337.7378
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	5.5600e-003	4.4100e-003	0.0598	1.7000e-004	0.0192	1.2000e-004	0.0193	5.0900e-003	1.1000e-004	5.2000e-003	0.0000	15.4556	15.4556	4.1000e-004	4.0000e-004	15.5841
<b>Total</b>	<b>0.0751</b>	<b>1.3382</b>	<b>1.0545</b>	<b>3.5900e-003</b>	<b>0.1387</b>	<b>2.2500e-003</b>	<b>0.1410</b>	<b>0.0418</b>	<b>2.1400e-003</b>	<b>0.0440</b>	<b>0.0000</b>	<b>340.0902</b>	<b>340.0902</b>	<b>8.6800e-003</b>	<b>0.0437</b>	<b>353.3219</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**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					0.3126	0.0000	0.3126	0.1251	0.0000	0.1251	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0666	0.2888	2.8874	5.4300e-003		8.8800e-003	8.8800e-003		8.8800e-003	8.8800e-003	0.0000	477.1825	477.1825	0.1543	0.0000	481.0408
<b>Total</b>	<b>0.0666</b>	<b>0.2888</b>	<b>2.8874</b>	<b>5.4300e-003</b>	<b>0.3126</b>	<b>8.8800e-003</b>	<b>0.3214</b>	<b>0.1251</b>	<b>8.8800e-003</b>	<b>0.1340</b>	<b>0.0000</b>	<b>477.1825</b>	<b>477.1825</b>	<b>0.1543</b>	<b>0.0000</b>	<b>481.0408</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0696	1.3338	0.9947	3.4200e-003	0.0999	2.1300e-003	0.1020	0.0319	2.0300e-003	0.0340	0.0000	324.6346	324.6346	8.2700e-003	0.0433	337.7378
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	5.5600e-003	4.4100e-003	0.0598	1.7000e-004	0.0149	1.2000e-004	0.0150	4.0300e-003	1.1000e-004	4.1400e-003	0.0000	15.4556	15.4556	4.1000e-004	4.0000e-004	15.5841
<b>Total</b>	<b>0.0751</b>	<b>1.3382</b>	<b>1.0545</b>	<b>3.5900e-003</b>	<b>0.1148</b>	<b>2.2500e-003</b>	<b>0.1170</b>	<b>0.0360</b>	<b>2.1400e-003</b>	<b>0.0381</b>	<b>0.0000</b>	<b>340.0902</b>	<b>340.0902</b>	<b>8.6800e-003</b>	<b>0.0437</b>	<b>353.3219</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.3 Demolition - 2022**

**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					0.0121	0.0000	0.0121	1.8400e-003	0.0000	1.8400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0290	0.2829	0.2265	4.3000e-004		0.0137	0.0137		0.0127	0.0127	0.0000	37.3893	37.3893	0.0105	0.0000	37.6518
<b>Total</b>	<b>0.0290</b>	<b>0.2829</b>	<b>0.2265</b>	<b>4.3000e-004</b>	<b>0.0121</b>	<b>0.0137</b>	<b>0.0258</b>	<b>1.8400e-003</b>	<b>0.0127</b>	<b>0.0146</b>	<b>0.0000</b>	<b>37.3893</b>	<b>37.3893</b>	<b>0.0105</b>	<b>0.0000</b>	<b>37.6518</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	3.4000e-004	2.6000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0808	0.0808	0.0000	1.0000e-005	0.0840
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	5.7000e-004	4.7000e-004	6.1300e-003	2.0000e-005	1.8100e-003	1.0000e-005	1.8200e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.4967	1.4967	4.0000e-005	4.0000e-005	1.5098
<b>Total</b>	<b>5.9000e-004</b>	<b>8.1000e-004</b>	<b>6.3900e-003</b>	<b>2.0000e-005</b>	<b>1.8400e-003</b>	<b>1.0000e-005</b>	<b>1.8500e-003</b>	<b>4.9000e-004</b>	<b>1.0000e-005</b>	<b>5.0000e-004</b>	<b>0.0000</b>	<b>1.5775</b>	<b>1.5775</b>	<b>4.0000e-005</b>	<b>5.0000e-005</b>	<b>1.5939</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.3 Demolition - 2022**

**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					4.5000e-003	0.0000	4.5000e-003	6.8000e-004	0.0000	6.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.0900e-003	0.0220	0.2561	4.3000e-004		6.8000e-004	6.8000e-004		6.8000e-004	6.8000e-004	0.0000	37.3892	37.3892	0.0105	0.0000	37.6518
<b>Total</b>	<b>5.0900e-003</b>	<b>0.0220</b>	<b>0.2561</b>	<b>4.3000e-004</b>	<b>4.5000e-003</b>	<b>6.8000e-004</b>	<b>5.1800e-003</b>	<b>6.8000e-004</b>	<b>6.8000e-004</b>	<b>1.3600e-003</b>	<b>0.0000</b>	<b>37.3892</b>	<b>37.3892</b>	<b>0.0105</b>	<b>0.0000</b>	<b>37.6518</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	3.4000e-004	2.6000e-004	0.0000	2.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0808	0.0808	0.0000	1.0000e-005	0.0840
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	5.7000e-004	4.7000e-004	6.1300e-003	2.0000e-005	1.4000e-003	1.0000e-005	1.4100e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.4967	1.4967	4.0000e-005	4.0000e-005	1.5098
<b>Total</b>	<b>5.9000e-004</b>	<b>8.1000e-004</b>	<b>6.3900e-003</b>	<b>2.0000e-005</b>	<b>1.4200e-003</b>	<b>1.0000e-005</b>	<b>1.4400e-003</b>	<b>3.9000e-004</b>	<b>1.0000e-005</b>	<b>4.0000e-004</b>	<b>0.0000</b>	<b>1.5775</b>	<b>1.5775</b>	<b>4.0000e-005</b>	<b>5.0000e-005</b>	<b>1.5939</b>



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.4 Paving - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0109	0.1048	0.1609	2.5000e-004		5.1500e-003	5.1500e-003		4.7400e-003	4.7400e-003	0.0000	22.0292	22.0292	7.1200e-003	0.0000	22.2073
Paving	3.1000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0112</b>	<b>0.1048</b>	<b>0.1609</b>	<b>2.5000e-004</b>		<b>5.1500e-003</b>	<b>5.1500e-003</b>		<b>4.7400e-003</b>	<b>4.7400e-003</b>	<b>0.0000</b>	<b>22.0292</b>	<b>22.0292</b>	<b>7.1200e-003</b>	<b>0.0000</b>	<b>22.2073</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.9000e-004	3.7000e-004	5.2500e-003	2.0000e-005	1.8100e-003	1.0000e-005	1.8200e-003	4.8000e-004	1.0000e-005	4.9000e-004	0.0000	1.4273	1.4273	3.0000e-005	3.0000e-005	1.4385
<b>Total</b>	<b>4.9000e-004</b>	<b>3.7000e-004</b>	<b>5.2500e-003</b>	<b>2.0000e-005</b>	<b>1.8100e-003</b>	<b>1.0000e-005</b>	<b>1.8200e-003</b>	<b>4.8000e-004</b>	<b>1.0000e-005</b>	<b>4.9000e-004</b>	<b>0.0000</b>	<b>1.4273</b>	<b>1.4273</b>	<b>3.0000e-005</b>	<b>3.0000e-005</b>	<b>1.4385</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.4 Paving - 2024**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.0900e-003	0.0134	0.1903	2.5000e-004		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	22.0292	22.0292	7.1200e-003	0.0000	22.2073
Paving	3.1000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>3.4000e-003</b>	<b>0.0134</b>	<b>0.1903</b>	<b>2.5000e-004</b>		<b>4.1000e-004</b>	<b>4.1000e-004</b>		<b>4.1000e-004</b>	<b>4.1000e-004</b>	<b>0.0000</b>	<b>22.0292</b>	<b>22.0292</b>	<b>7.1200e-003</b>	<b>0.0000</b>	<b>22.2073</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.9000e-004	3.7000e-004	5.2500e-003	2.0000e-005	1.4000e-003	1.0000e-005	1.4100e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.4273	1.4273	3.0000e-005	3.0000e-005	1.4385
<b>Total</b>	<b>4.9000e-004</b>	<b>3.7000e-004</b>	<b>5.2500e-003</b>	<b>2.0000e-005</b>	<b>1.4000e-003</b>	<b>1.0000e-005</b>	<b>1.4100e-003</b>	<b>3.8000e-004</b>	<b>1.0000e-005</b>	<b>3.9000e-004</b>	<b>0.0000</b>	<b>1.4273</b>	<b>1.4273</b>	<b>3.0000e-005</b>	<b>3.0000e-005</b>	<b>1.4385</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1685	1.5393	1.8511	3.0900e-003		0.0702	0.0702		0.0661	0.0661	0.0000	265.4672	265.4672	0.0628	0.0000	267.0366
<b>Total</b>	<b>0.1685</b>	<b>1.5393</b>	<b>1.8511</b>	<b>3.0900e-003</b>		<b>0.0702</b>	<b>0.0702</b>		<b>0.0661</b>	<b>0.0661</b>	<b>0.0000</b>	<b>265.4672</b>	<b>265.4672</b>	<b>0.0628</b>	<b>0.0000</b>	<b>267.0366</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0200e-003	0.2959	0.1082	1.3400e-003	0.0462	1.4300e-003	0.0476	0.0133	1.3600e-003	0.0147	0.0000	131.2403	131.2403	4.4700e-003	0.0189	136.9860
Worker	0.0875	0.0665	0.9400	2.7300e-003	0.3237	1.9100e-003	0.3256	0.0860	1.7600e-003	0.0877	0.0000	255.5385	255.5385	6.2100e-003	6.2300e-003	257.5515
<b>Total</b>	<b>0.0956</b>	<b>0.3624</b>	<b>1.0482</b>	<b>4.0700e-003</b>	<b>0.3699</b>	<b>3.3400e-003</b>	<b>0.3732</b>	<b>0.0993</b>	<b>3.1200e-003</b>	<b>0.1024</b>	<b>0.0000</b>	<b>386.7788</b>	<b>386.7788</b>	<b>0.0107</b>	<b>0.0251</b>	<b>394.5375</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2024**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0375	0.2559	1.9992	3.0900e-003		4.6700e-003	4.6700e-003		4.6700e-003	4.6700e-003	0.0000	265.4669	265.4669	0.0628	0.0000	267.0363
<b>Total</b>	<b>0.0375</b>	<b>0.2559</b>	<b>1.9992</b>	<b>3.0900e-003</b>		<b>4.6700e-003</b>	<b>4.6700e-003</b>		<b>4.6700e-003</b>	<b>4.6700e-003</b>	<b>0.0000</b>	<b>265.4669</b>	<b>265.4669</b>	<b>0.0628</b>	<b>0.0000</b>	<b>267.0363</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0200e-003	0.2959	0.1082	1.3400e-003	0.0377	1.4300e-003	0.0391	0.0113	1.3600e-003	0.0126	0.0000	131.2403	131.2403	4.4700e-003	0.0189	136.9860
Worker	0.0875	0.0665	0.9400	2.7300e-003	0.2508	1.9100e-003	0.2527	0.0681	1.7600e-003	0.0698	0.0000	255.5385	255.5385	6.2100e-003	6.2300e-003	257.5515
<b>Total</b>	<b>0.0956</b>	<b>0.3624</b>	<b>1.0482</b>	<b>4.0700e-003</b>	<b>0.2885</b>	<b>3.3400e-003</b>	<b>0.2918</b>	<b>0.0793</b>	<b>3.1200e-003</b>	<b>0.0824</b>	<b>0.0000</b>	<b>386.7788</b>	<b>386.7788</b>	<b>0.0107</b>	<b>0.0251</b>	<b>394.5375</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2025**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
<b>Total</b>	<b>0.1785</b>	<b>1.6273</b>	<b>2.0991</b>	<b>3.5200e-003</b>		<b>0.0689</b>	<b>0.0689</b>		<b>0.0648</b>	<b>0.0648</b>	<b>0.0000</b>	<b>302.6549</b>	<b>302.6549</b>	<b>0.0711</b>	<b>0.0000</b>	<b>304.4335</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.8800e-003	0.3357	0.1211	1.5000e-003	0.0526	1.6300e-003	0.0543	0.0152	1.5600e-003	0.0168	0.0000	146.8884	146.8884	5.1300e-003	0.0212	153.3264
Worker	0.0934	0.0680	0.9991	3.0100e-003	0.3689	2.0800e-003	0.3710	0.0980	1.9100e-003	0.0999	0.0000	284.1450	284.1450	6.3800e-003	6.6300e-003	286.2815
<b>Total</b>	<b>0.1023</b>	<b>0.4037</b>	<b>1.1202</b>	<b>4.5100e-003</b>	<b>0.4216</b>	<b>3.7100e-003</b>	<b>0.4253</b>	<b>0.1132</b>	<b>3.4700e-003</b>	<b>0.1167</b>	<b>0.0000</b>	<b>431.0334</b>	<b>431.0334</b>	<b>0.0115</b>	<b>0.0278</b>	<b>439.6079</b>



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2025**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0428	0.2916	2.2786	3.5200e-003		5.3200e-003	5.3200e-003		5.3200e-003	5.3200e-003	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
<b>Total</b>	<b>0.0428</b>	<b>0.2916</b>	<b>2.2786</b>	<b>3.5200e-003</b>		<b>5.3200e-003</b>	<b>5.3200e-003</b>		<b>5.3200e-003</b>	<b>5.3200e-003</b>	<b>0.0000</b>	<b>302.6545</b>	<b>302.6545</b>	<b>0.0711</b>	<b>0.0000</b>	<b>304.4331</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.8800e-003	0.3357	0.1211	1.5000e-003	0.0430	1.6300e-003	0.0446	0.0128	1.5600e-003	0.0144	0.0000	146.8884	146.8884	5.1300e-003	0.0212	153.3264
Worker	0.0934	0.0680	0.9991	3.0100e-003	0.2858	2.0800e-003	0.2879	0.0776	1.9100e-003	0.0795	0.0000	284.1450	284.1450	6.3800e-003	6.6300e-003	286.2815
<b>Total</b>	<b>0.1023</b>	<b>0.4037</b>	<b>1.1202</b>	<b>4.5100e-003</b>	<b>0.3288</b>	<b>3.7100e-003</b>	<b>0.3325</b>	<b>0.0904</b>	<b>3.4700e-003</b>	<b>0.0939</b>	<b>0.0000</b>	<b>431.0334</b>	<b>431.0334</b>	<b>0.0115</b>	<b>0.0278</b>	<b>439.6079</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2026**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
<b>Total</b>	<b>0.1785</b>	<b>1.6273</b>	<b>2.0991</b>	<b>3.5200e-003</b>		<b>0.0689</b>	<b>0.0689</b>		<b>0.0648</b>	<b>0.0648</b>	<b>0.0000</b>	<b>302.6549</b>	<b>302.6549</b>	<b>0.0711</b>	<b>0.0000</b>	<b>304.4335</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.6500e-003	0.3332	0.1194	1.4700e-003	0.0526	1.6300e-003	0.0543	0.0152	1.5600e-003	0.0168	0.0000	144.1639	144.1639	5.1600e-003	0.0208	150.4888
Worker	0.0880	0.0617	0.9390	2.9100e-003	0.3689	1.9700e-003	0.3709	0.0980	1.8200e-003	0.0998	0.0000	277.7658	277.7658	5.8000e-003	6.2500e-003	279.7733
<b>Total</b>	<b>0.0966</b>	<b>0.3949</b>	<b>1.0584</b>	<b>4.3800e-003</b>	<b>0.4216</b>	<b>3.6000e-003</b>	<b>0.4252</b>	<b>0.1132</b>	<b>3.3800e-003</b>	<b>0.1166</b>	<b>0.0000</b>	<b>421.9297</b>	<b>421.9297</b>	<b>0.0110</b>	<b>0.0270</b>	<b>430.2621</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2026**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0428	0.2916	2.2786	3.5200e-003		5.3200e-003	5.3200e-003		5.3200e-003	5.3200e-003	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
<b>Total</b>	<b>0.0428</b>	<b>0.2916</b>	<b>2.2786</b>	<b>3.5200e-003</b>		<b>5.3200e-003</b>	<b>5.3200e-003</b>		<b>5.3200e-003</b>	<b>5.3200e-003</b>	<b>0.0000</b>	<b>302.6545</b>	<b>302.6545</b>	<b>0.0711</b>	<b>0.0000</b>	<b>304.4331</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.6500e-003	0.3332	0.1194	1.4700e-003	0.0430	1.6300e-003	0.0446	0.0128	1.5600e-003	0.0144	0.0000	144.1639	144.1639	5.1600e-003	0.0208	150.4888
Worker	0.0880	0.0617	0.9390	2.9100e-003	0.2858	1.9700e-003	0.2878	0.0776	1.8200e-003	0.0794	0.0000	277.7658	277.7658	5.8000e-003	6.2500e-003	279.7733
<b>Total</b>	<b>0.0966</b>	<b>0.3949</b>	<b>1.0584</b>	<b>4.3800e-003</b>	<b>0.3288</b>	<b>3.6000e-003</b>	<b>0.3324</b>	<b>0.0904</b>	<b>3.3800e-003</b>	<b>0.0938</b>	<b>0.0000</b>	<b>421.9297</b>	<b>421.9297</b>	<b>0.0110</b>	<b>0.0270</b>	<b>430.2621</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2027**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0219	0.1995	0.2574	4.3000e-004		8.4400e-003	8.4400e-003		7.9400e-003	7.9400e-003	0.0000	37.1071	37.1071	8.7200e-003	0.0000	37.3252
<b>Total</b>	<b>0.0219</b>	<b>0.1995</b>	<b>0.2574</b>	<b>4.3000e-004</b>		<b>8.4400e-003</b>	<b>8.4400e-003</b>		<b>7.9400e-003</b>	<b>7.9400e-003</b>	<b>0.0000</b>	<b>37.1071</b>	<b>37.1071</b>	<b>8.7200e-003</b>	<b>0.0000</b>	<b>37.3252</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0400e-003	0.0405	0.0145	1.8000e-004	6.4500e-003	2.0000e-004	6.6500e-003	1.8600e-003	1.9000e-004	2.0500e-003	0.0000	17.3276	17.3276	6.3000e-004	2.5000e-003	18.0887
Worker	0.0102	6.9200e-003	0.1089	3.5000e-004	0.0452	2.3000e-004	0.0455	0.0120	2.1000e-004	0.0122	0.0000	33.3666	33.3666	6.5000e-004	7.3000e-004	33.5995
<b>Total</b>	<b>0.0112</b>	<b>0.0475</b>	<b>0.1233</b>	<b>5.3000e-004</b>	<b>0.0517</b>	<b>4.3000e-004</b>	<b>0.0521</b>	<b>0.0139</b>	<b>4.0000e-004</b>	<b>0.0143</b>	<b>0.0000</b>	<b>50.6942</b>	<b>50.6942</b>	<b>1.2800e-003</b>	<b>3.2300e-003</b>	<b>51.6882</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.5 Building Construction - 2027**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.2500e-003	0.0358	0.2794	4.3000e-004		6.5000e-004	6.5000e-004		6.5000e-004	6.5000e-004	0.0000	37.1071	37.1071	8.7200e-003	0.0000	37.3251
<b>Total</b>	<b>5.2500e-003</b>	<b>0.0358</b>	<b>0.2794</b>	<b>4.3000e-004</b>		<b>6.5000e-004</b>	<b>6.5000e-004</b>		<b>6.5000e-004</b>	<b>6.5000e-004</b>	<b>0.0000</b>	<b>37.1071</b>	<b>37.1071</b>	<b>8.7200e-003</b>	<b>0.0000</b>	<b>37.3251</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0400e-003	0.0405	0.0145	1.8000e-004	5.2700e-003	2.0000e-004	5.4700e-003	1.5700e-003	1.9000e-004	1.7600e-003	0.0000	17.3276	17.3276	6.3000e-004	2.5000e-003	18.0887
Worker	0.0102	6.9200e-003	0.1089	3.5000e-004	0.0350	2.3000e-004	0.0353	9.5100e-003	2.1000e-004	9.7200e-003	0.0000	33.3666	33.3666	6.5000e-004	7.3000e-004	33.5995
<b>Total</b>	<b>0.0112</b>	<b>0.0475</b>	<b>0.1233</b>	<b>5.3000e-004</b>	<b>0.0403</b>	<b>4.3000e-004</b>	<b>0.0407</b>	<b>0.0111</b>	<b>4.0000e-004</b>	<b>0.0115</b>	<b>0.0000</b>	<b>50.6942</b>	<b>50.6942</b>	<b>1.2800e-003</b>	<b>3.2300e-003</b>	<b>51.6882</b>



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2024**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2343					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.8500e-003	0.0664	0.0987	1.6000e-004		3.3200e-003	3.3200e-003		3.3200e-003	3.3200e-003	0.0000	13.9152	13.9152	7.8000e-004	0.0000	13.9348
<b>Total</b>	<b>0.2442</b>	<b>0.0664</b>	<b>0.0987</b>	<b>1.6000e-004</b>		<b>3.3200e-003</b>	<b>3.3200e-003</b>		<b>3.3200e-003</b>	<b>3.3200e-003</b>	<b>0.0000</b>	<b>13.9152</b>	<b>13.9152</b>	<b>7.8000e-004</b>	<b>0.0000</b>	<b>13.9348</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.4000e-003	6.3800e-003	0.0902	2.6000e-004	0.0311	1.8000e-004	0.0312	8.2500e-003	1.7000e-004	8.4200e-003	0.0000	24.5150	24.5150	6.0000e-004	6.0000e-004	24.7081
<b>Total</b>	<b>8.4000e-003</b>	<b>6.3800e-003</b>	<b>0.0902</b>	<b>2.6000e-004</b>	<b>0.0311</b>	<b>1.8000e-004</b>	<b>0.0312</b>	<b>8.2500e-003</b>	<b>1.7000e-004</b>	<b>8.4200e-003</b>	<b>0.0000</b>	<b>24.5150</b>	<b>24.5150</b>	<b>6.0000e-004</b>	<b>6.0000e-004</b>	<b>24.7081</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2024**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2343					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.6200e-003	7.0200e-003	0.0999	1.6000e-004		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	13.9152	13.9152	7.8000e-004	0.0000	13.9348
<b>Total</b>	<b>0.2359</b>	<b>7.0200e-003</b>	<b>0.0999</b>	<b>1.6000e-004</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>		<b>2.2000e-004</b>	<b>2.2000e-004</b>	<b>0.0000</b>	<b>13.9152</b>	<b>13.9152</b>	<b>7.8000e-004</b>	<b>0.0000</b>	<b>13.9348</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.4000e-003	6.3800e-003	0.0902	2.6000e-004	0.0241	1.8000e-004	0.0242	6.5300e-003	1.7000e-004	6.7000e-003	0.0000	24.5150	24.5150	6.0000e-004	6.0000e-004	24.7081
<b>Total</b>	<b>8.4000e-003</b>	<b>6.3800e-003</b>	<b>0.0902</b>	<b>2.6000e-004</b>	<b>0.0241</b>	<b>1.8000e-004</b>	<b>0.0242</b>	<b>6.5300e-003</b>	<b>1.7000e-004</b>	<b>6.7000e-003</b>	<b>0.0000</b>	<b>24.5150</b>	<b>24.5150</b>	<b>6.0000e-004</b>	<b>6.0000e-004</b>	<b>24.7081</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2025**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5611					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3200	33.3200	1.8200e-003	0.0000	33.3654
<b>Total</b>	<b>0.5834</b>	<b>0.1495</b>	<b>0.2361</b>	<b>3.9000e-004</b>		<b>6.7200e-003</b>	<b>6.7200e-003</b>		<b>6.7200e-003</b>	<b>6.7200e-003</b>	<b>0.0000</b>	<b>33.3200</b>	<b>33.3200</b>	<b>1.8200e-003</b>	<b>0.0000</b>	<b>33.3654</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0188	0.0137	0.2014	6.1000e-004	0.0744	4.2000e-004	0.0748	0.0198	3.9000e-004	0.0201	0.0000	57.2695	57.2695	1.2900e-003	1.3400e-003	57.7002
<b>Total</b>	<b>0.0188</b>	<b>0.0137</b>	<b>0.2014</b>	<b>6.1000e-004</b>	<b>0.0744</b>	<b>4.2000e-004</b>	<b>0.0748</b>	<b>0.0198</b>	<b>3.9000e-004</b>	<b>0.0201</b>	<b>0.0000</b>	<b>57.2695</b>	<b>57.2695</b>	<b>1.2900e-003</b>	<b>1.3400e-003</b>	<b>57.7002</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2025**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5611					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.8800e-003	0.0168	0.2391	3.9000e-004		5.2000e-004	5.2000e-004		5.2000e-004	5.2000e-004	0.0000	33.3199	33.3199	1.8200e-003	0.0000	33.3654
<b>Total</b>	<b>0.5650</b>	<b>0.0168</b>	<b>0.2391</b>	<b>3.9000e-004</b>		<b>5.2000e-004</b>	<b>5.2000e-004</b>		<b>5.2000e-004</b>	<b>5.2000e-004</b>	<b>0.0000</b>	<b>33.3199</b>	<b>33.3199</b>	<b>1.8200e-003</b>	<b>0.0000</b>	<b>33.3654</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0188	0.0137	0.2014	6.1000e-004	0.0576	4.2000e-004	0.0580	0.0156	3.9000e-004	0.0160	0.0000	57.2695	57.2695	1.2900e-003	1.3400e-003	57.7002
<b>Total</b>	<b>0.0188</b>	<b>0.0137</b>	<b>0.2014</b>	<b>6.1000e-004</b>	<b>0.0576</b>	<b>4.2000e-004</b>	<b>0.0580</b>	<b>0.0156</b>	<b>3.9000e-004</b>	<b>0.0160</b>	<b>0.0000</b>	<b>57.2695</b>	<b>57.2695</b>	<b>1.2900e-003</b>	<b>1.3400e-003</b>	<b>57.7002</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2026**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5611					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3200	33.3200	1.8200e-003	0.0000	33.3654
<b>Total</b>	<b>0.5834</b>	<b>0.1495</b>	<b>0.2361</b>	<b>3.9000e-004</b>		<b>6.7200e-003</b>	<b>6.7200e-003</b>		<b>6.7200e-003</b>	<b>6.7200e-003</b>	<b>0.0000</b>	<b>33.3200</b>	<b>33.3200</b>	<b>1.8200e-003</b>	<b>0.0000</b>	<b>33.3654</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0177	0.0124	0.1893	5.9000e-004	0.0744	4.0000e-004	0.0748	0.0198	3.7000e-004	0.0201	0.0000	55.9838	55.9838	1.1700e-003	1.2600e-003	56.3884
<b>Total</b>	<b>0.0177</b>	<b>0.0124</b>	<b>0.1893</b>	<b>5.9000e-004</b>	<b>0.0744</b>	<b>4.0000e-004</b>	<b>0.0748</b>	<b>0.0198</b>	<b>3.7000e-004</b>	<b>0.0201</b>	<b>0.0000</b>	<b>55.9838</b>	<b>55.9838</b>	<b>1.1700e-003</b>	<b>1.2600e-003</b>	<b>56.3884</b>



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2026**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5611					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.8800e-003	0.0168	0.2391	3.9000e-004		5.2000e-004	5.2000e-004		5.2000e-004	5.2000e-004	0.0000	33.3199	33.3199	1.8200e-003	0.0000	33.3654
<b>Total</b>	<b>0.5650</b>	<b>0.0168</b>	<b>0.2391</b>	<b>3.9000e-004</b>		<b>5.2000e-004</b>	<b>5.2000e-004</b>		<b>5.2000e-004</b>	<b>5.2000e-004</b>	<b>0.0000</b>	<b>33.3199</b>	<b>33.3199</b>	<b>1.8200e-003</b>	<b>0.0000</b>	<b>33.3654</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0177	0.0124	0.1893	5.9000e-004	0.0576	4.0000e-004	0.0580	0.0156	3.7000e-004	0.0160	0.0000	55.9838	55.9838	1.1700e-003	1.2600e-003	56.3884
<b>Total</b>	<b>0.0177</b>	<b>0.0124</b>	<b>0.1893</b>	<b>5.9000e-004</b>	<b>0.0576</b>	<b>4.0000e-004</b>	<b>0.0580</b>	<b>0.0156</b>	<b>3.7000e-004</b>	<b>0.0160</b>	<b>0.0000</b>	<b>55.9838</b>	<b>55.9838</b>	<b>1.1700e-003</b>	<b>1.2600e-003</b>	<b>56.3884</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2027**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3461					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0138	0.0922	0.1456	2.4000e-004		4.1500e-003	4.1500e-003		4.1500e-003	4.1500e-003	0.0000	20.5537	20.5537	1.1200e-003	0.0000	20.5817
<b>Total</b>	<b>0.3599</b>	<b>0.0922</b>	<b>0.1456</b>	<b>2.4000e-004</b>		<b>4.1500e-003</b>	<b>4.1500e-003</b>		<b>4.1500e-003</b>	<b>4.1500e-003</b>	<b>0.0000</b>	<b>20.5537</b>	<b>20.5537</b>	<b>1.1200e-003</b>	<b>0.0000</b>	<b>20.5817</b>

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0103	7.0200e-003	0.1104	3.5000e-004	0.0459	2.3000e-004	0.0461	0.0122	2.1000e-004	0.0124	0.0000	33.8354	33.8354	6.6000e-004	7.4000e-004	34.0716
<b>Total</b>	<b>0.0103</b>	<b>7.0200e-003</b>	<b>0.1104</b>	<b>3.5000e-004</b>	<b>0.0459</b>	<b>2.3000e-004</b>	<b>0.0461</b>	<b>0.0122</b>	<b>2.1000e-004</b>	<b>0.0124</b>	<b>0.0000</b>	<b>33.8354</b>	<b>33.8354</b>	<b>6.6000e-004</b>	<b>7.4000e-004</b>	<b>34.0716</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**3.6 Architectural Coating - 2027**

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3461					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.3900e-003	0.0104	0.1475	2.4000e-004		3.2000e-004	3.2000e-004		3.2000e-004	3.2000e-004	0.0000	20.5537	20.5537	1.1200e-003	0.0000	20.5817
<b>Total</b>	<b>0.3485</b>	<b>0.0104</b>	<b>0.1475</b>	<b>2.4000e-004</b>		<b>3.2000e-004</b>	<b>3.2000e-004</b>		<b>3.2000e-004</b>	<b>3.2000e-004</b>	<b>0.0000</b>	<b>20.5537</b>	<b>20.5537</b>	<b>1.1200e-003</b>	<b>0.0000</b>	<b>20.5817</b>

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0103	7.0200e-003	0.1104	3.5000e-004	0.0355	2.3000e-004	0.0358	9.6500e-003	2.1000e-004	9.8600e-003	0.0000	33.8354	33.8354	6.6000e-004	7.4000e-004	34.0716
<b>Total</b>	<b>0.0103</b>	<b>7.0200e-003</b>	<b>0.1104</b>	<b>3.5000e-004</b>	<b>0.0355</b>	<b>2.3000e-004</b>	<b>0.0358</b>	<b>9.6500e-003</b>	<b>2.1000e-004</b>	<b>9.8600e-003</b>	<b>0.0000</b>	<b>33.8354</b>	<b>33.8354</b>	<b>6.6000e-004</b>	<b>7.4000e-004</b>	<b>34.0716</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

**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	tons/yr										MT/yr					
Mitigated	2.0043	2.2145	20.6124	0.0456	5.1306	0.0331	5.1637	1.3689	0.0307	1.3996	0.0000	4,354.0687	4,354.0687	0.2902	0.1822	4,415.6131
Unmitigated	2.0043	2.2145	20.6124	0.0456	5.1306	0.0331	5.1637	1.3689	0.0307	1.3996	0.0000	4,354.0687	4,354.0687	0.2902	0.1822	4,415.6131

**4.2 Trip Summary Information**

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Condo/Townhouse High Rise	1,884.75	1,884.75	1,884.75	6,440,477	6,440,477
Health Club	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Recreational Swimming Pool	0.00	0.00	0.00		
Single Family Housing	2,110.92	2,110.92	2,110.92	7,213,334	7,213,334
<b>Total</b>	<b>3,995.67</b>	<b>3,995.67</b>	<b>3,995.67</b>	<b>13,653,811</b>	<b>13,653,811</b>

**4.3 Trip Type Information**

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Condo/Townhouse High Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	52	39	9
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Recreational Swimming Pool	16.60	8.40	6.90	33.00	48.00	19.00	52	39	9
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
City Park	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Condo/Townhouse High Rise	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Health Club	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Parking Lot	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Recreational Swimming Pool	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Single Family Housing	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318

**5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

**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	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	422.0222	422.0222	0.0356	4.3200e-003	424.1994
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	422.0222	422.0222	0.0356	4.3200e-003	424.1994
Natural Gas Mitigated	0.0403	0.3451	0.1508	2.2000e-003		0.0279	0.0279		0.0279	0.0279	0.0000	398.9570	398.9570	7.6500e-003	7.3100e-003	401.3278
Natural Gas Unmitigated	0.0403	0.3451	0.1508	2.2000e-003		0.0279	0.0279		0.0279	0.0279	0.0000	398.9570	398.9570	7.6500e-003	7.3100e-003	401.3278

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

**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**

**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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	2.28665e+006	0.0123	0.1054	0.0448	6.7000e-004		8.5200e-003	8.5200e-003		8.5200e-003	8.5200e-003	0.0000	122.0245	122.0245	2.3400e-003	2.2400e-003	122.7497
Health Club	193070	1.0400e-003	9.4600e-003	7.9500e-003	6.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004	0.0000	10.3030	10.3030	2.0000e-004	1.9000e-004	10.3642
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.99645e+006	0.0269	0.2302	0.0980	1.4700e-003		0.0186	0.0186		0.0186	0.0186	0.0000	266.6295	266.6295	5.1100e-003	4.8900e-003	268.2139
<b>Total</b>		<b>0.0403</b>	<b>0.3451</b>	<b>0.1508</b>	<b>2.2000e-003</b>		<b>0.0279</b>	<b>0.0279</b>		<b>0.0279</b>	<b>0.0279</b>	<b>0.0000</b>	<b>398.9570</b>	<b>398.9570</b>	<b>7.6500e-003</b>	<b>7.3200e-003</b>	<b>401.3278</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

**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	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	2.28665e+006	0.0123	0.1054	0.0448	6.7000e-004		8.5200e-003	8.5200e-003		8.5200e-003	8.5200e-003	0.0000	122.0245	122.0245	2.3400e-003	2.2400e-003	122.7497
Health Club	193070	1.0400e-003	9.4600e-003	7.9500e-003	6.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004	0.0000	10.3030	10.3030	2.0000e-004	1.9000e-004	10.3642
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.99645e+006	0.0269	0.2302	0.0980	1.4700e-003		0.0186	0.0186		0.0186	0.0186	0.0000	266.6295	266.6295	5.1100e-003	4.8900e-003	268.2139
<b>Total</b>		<b>0.0403</b>	<b>0.3451</b>	<b>0.1508</b>	<b>2.2000e-003</b>		<b>0.0279</b>	<b>0.0279</b>		<b>0.0279</b>	<b>0.0279</b>	<b>0.0000</b>	<b>398.9570</b>	<b>398.9570</b>	<b>7.6500e-003</b>	<b>7.3200e-003</b>	<b>401.3278</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**5.3 Energy by Land Use - Electricity**

**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	719077	127.5251	0.0108	1.3000e-003	128.1829
Health Club	116745	20.7042	1.7500e-003	2.1000e-004	20.8110
Parking Lot	3682.7	0.6531	6.0000e-005	1.0000e-005	0.6565
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.54016e+006	273.1399	0.0231	2.7900e-003	274.5489
<b>Total</b>		<b>422.0222</b>	<b>0.0356</b>	<b>4.3100e-003</b>	<b>424.1994</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**5.3 Energy by Land Use - Electricity**

**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	719077	127.5251	0.0108	1.3000e-003	128.1829
Health Club	116745	20.7042	1.7500e-003	2.1000e-004	20.8110
Parking Lot	3682.7	0.6531	6.0000e-005	1.0000e-005	0.6565
Recreational Swimming Pool	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.54016e+006	273.1399	0.0231	2.7900e-003	274.5489
<b>Total</b>		<b>422.0222</b>	<b>0.0356</b>	<b>4.3100e-003</b>	<b>424.1994</b>

**6.0 Area Detail**

**6.1 Mitigation Measures Area**

Use only Natural Gas Hearths



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

**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	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.2410	0.1133	3.8523	6.4000e-004		0.0268	0.0268		0.0268	0.0268	0.0000	86.4323	86.4323	7.5200e-003	1.4700e-003	87.0585
Unmitigated	3.4481	0.1403	6.1812	6.2200e-003		0.3755	0.3755		0.3755	0.3755	39.4073	81.9778	121.3851	0.1235	2.6700e-003	125.2698

**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	0.1703					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.9478					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.2152	0.0962	2.3584	6.0200e-003		0.3543	0.3543		0.3543	0.3543	39.4073	75.7273	115.1345	0.1175	2.6700e-003	118.8696
Landscaping	0.1148	0.0440	3.8228	2.0000e-004		0.0212	0.0212		0.0212	0.0212	0.0000	6.2505	6.2505	5.9900e-003	0.0000	6.4002
<b>Total</b>	<b>3.4481</b>	<b>0.1403</b>	<b>6.1812</b>	<b>6.2200e-003</b>		<b>0.3755</b>	<b>0.3755</b>		<b>0.3755</b>	<b>0.3755</b>	<b>39.4073</b>	<b>81.9778</b>	<b>121.3851</b>	<b>0.1235</b>	<b>2.6700e-003</b>	<b>125.2698</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

**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	0.1703					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.9478					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	8.1000e-003	0.0692	0.0295	4.4000e-004		5.6000e-003	5.6000e-003		5.6000e-003	5.6000e-003	0.0000	80.1818	80.1818	1.5400e-003	1.4700e-003	80.6583
Landscaping	0.1148	0.0440	3.8228	2.0000e-004		0.0212	0.0212		0.0212	0.0212	0.0000	6.2505	6.2505	5.9900e-003	0.0000	6.4002
<b>Total</b>	<b>2.2410</b>	<b>0.1133</b>	<b>3.8523</b>	<b>6.4000e-004</b>		<b>0.0268</b>	<b>0.0268</b>		<b>0.0268</b>	<b>0.0268</b>	<b>0.0000</b>	<b>86.4323</b>	<b>86.4323</b>	<b>7.5300e-003</b>	<b>1.4700e-003</b>	<b>87.0585</b>

**7.0 Water Detail**

**7.1 Mitigation Measures Water**

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

**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	104.3667	0.8352	0.0205	131.3584
Unmitigated	104.3667	0.8352	0.0205	131.3584

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**7.2 Water by Land Use**

**Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 3.15743	6.2211	5.3000e-004	6.0000e-005	6.2532
Condo/Townhouse High Rise	11.402 / 7.18819	44.1099	0.3750	9.1900e-003	56.2213
Health Club	0.635789 / 0.389677	2.4377	0.0209	5.1000e-004	3.1129
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0.572506 / 0.350891	2.1950	0.0188	4.6000e-004	2.8031
Single Family Housing	12.7702 / 8.05077	49.4030	0.4199	0.0103	62.9679
<b>Total</b>		<b>104.3667</b>	<b>0.8352</b>	<b>0.0205</b>	<b>131.3584</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

**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			
City Park	0 / 3.15743	6.2211	5.3000e-004	6.0000e-005	6.2532
Condo/Townhouse High Rise	11.402 / 7.18819	44.1099	0.3750	9.1900e-003	56.2213
Health Club	0.635789 / 0.389677	2.4377	0.0209	5.1000e-004	3.1129
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	0.572506 / 0.350891	2.1950	0.0188	4.6000e-004	2.8031
Single Family Housing	12.7702 / 8.05077	49.4030	0.4199	0.0103	62.9679
<b>Total</b>		<b>104.3667</b>	<b>0.8352</b>	<b>0.0205</b>	<b>131.3584</b>

**8.0 Waste Detail**

---

**8.1 Mitigation Measures Waste**

Institute Recycling and Composting Services



Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	43.3579	2.5624	0.0000	107.4173
Unmitigated	86.7157	5.1248	0.0000	214.8345

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

**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			
City Park	0.23	0.0467	2.7600e-003	0.0000	0.1157
Condo/Townhouse High Rise	80.5	16.3408	0.9657	0.0000	40.4836
Health Club	61.27	12.4373	0.7350	0.0000	30.8128
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	55.18	11.2010	0.6620	0.0000	27.7501
Single Family Housing	230.01	46.6900	2.7593	0.0000	115.6724
<b>Total</b>		<b>86.7157</b>	<b>5.1248</b>	<b>0.0000</b>	<b>214.8345</b>

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

**8.2 Waste by Land Use**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.115	0.0233	1.3800e-003	0.0000	0.0578
Condo/Townhouse High Rise	40.25	8.1704	0.4829	0.0000	20.2418
Health Club	30.635	6.2186	0.3675	0.0000	15.4064
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Recreational Swimming Pool	27.59	5.6005	0.3310	0.0000	13.8751
Single Family Housing	115.005	23.3450	1.3797	0.0000	57.8362
<b>Total</b>		<b>43.3579</b>	<b>2.5624</b>	<b>0.0000</b>	<b>107.4173</b>

**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**

Bouquet Canyon Project Addendum\_Mitigated - Los Angeles-South Coast County, Annual

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

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

**User Defined Equipment**

Equipment Type	Number
----------------	--------

**11.0 Vegetation**

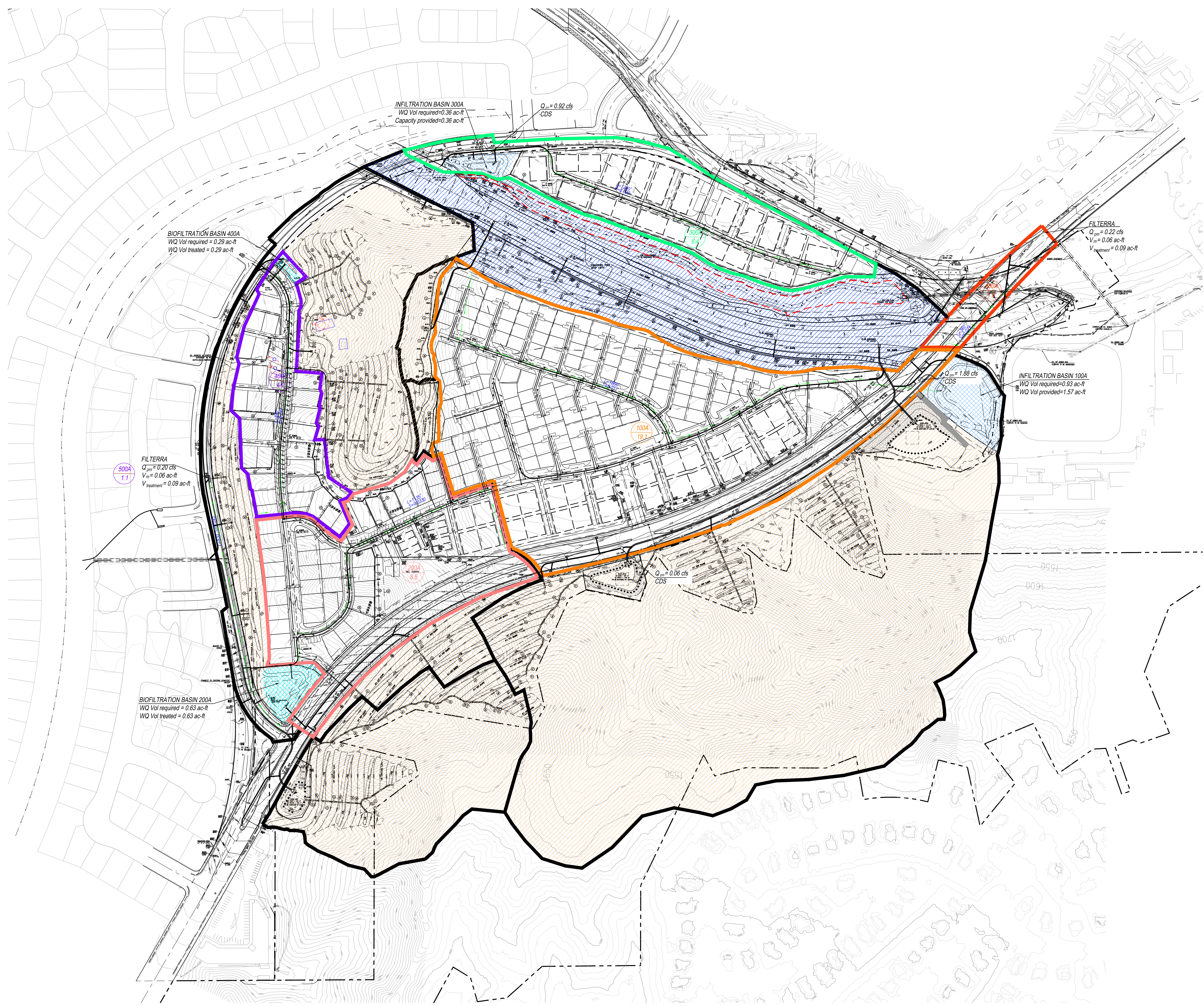
---

# **Appendix F**

---

## Urban Stormwater Mitigation Plan





INFILTRATION BASIN 300A  
WQ Vol required=0.36 ac-ft  
Capacity provided=0.36 ac-ft

$Q_{in} = 0.92$  cfs  
CDS

BIOFILTRATION BASIN 400A  
WQ Vol required = 0.29 ac-ft  
WQ Vol treated = 0.29 ac-ft

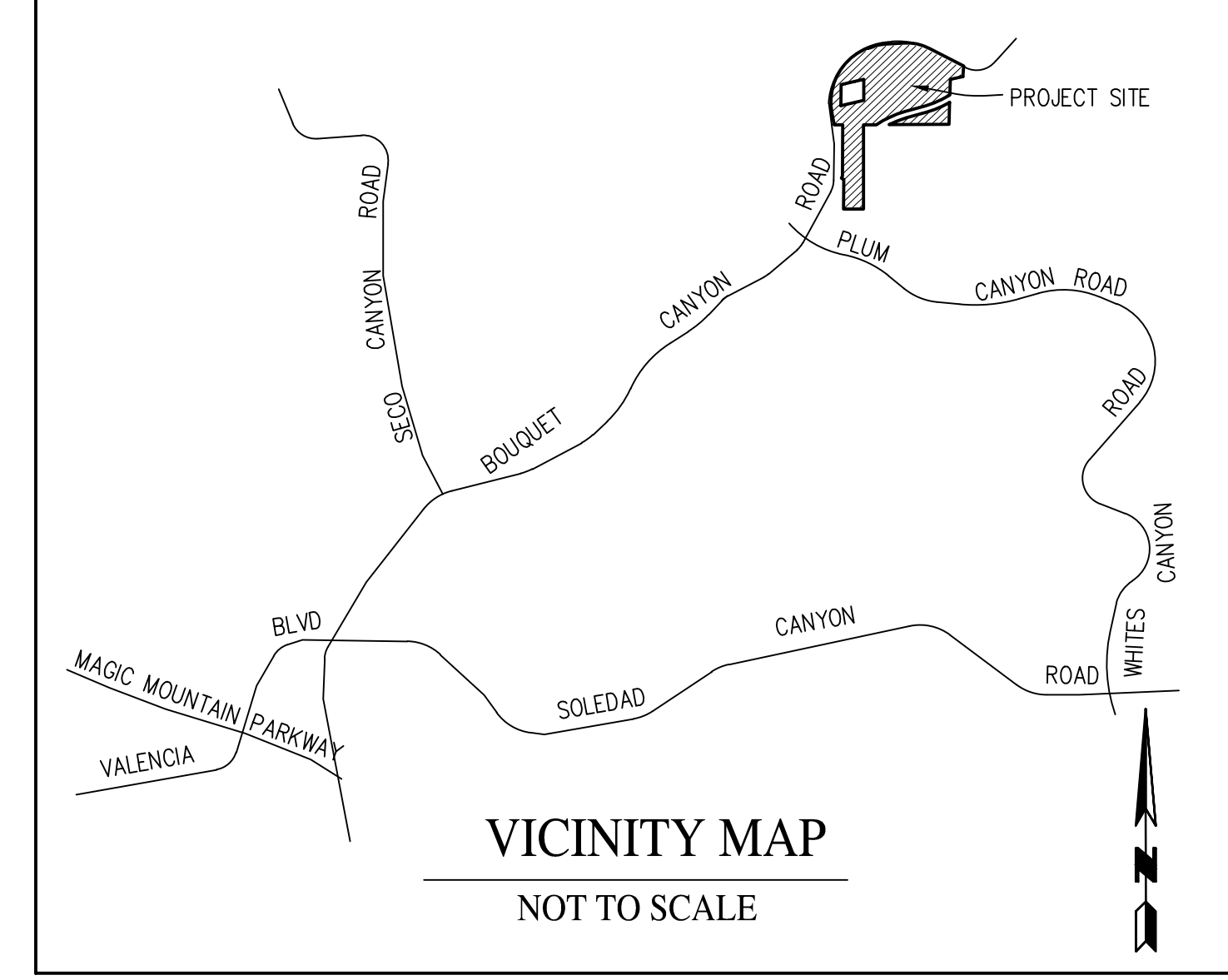
FILTERRA  
 $Q_{in} = 0.22$  cfs  
 $V_{in} = 0.06$  ac-ft  
 $V_{treatment} = 0.09$  ac-ft

INFILTRATION BASIN 100A  
WQ Vol required=0.93 ac-ft  
WQ Vol provided=1.57 ac-ft

$Q_{in} = 0.06$  cfs  
CDS

FILTERRA  
 $Q_{in} = 0.20$  cfs  
 $V_{in} = 0.06$  ac-ft  
 $V_{treatment} = 0.09$  ac-ft

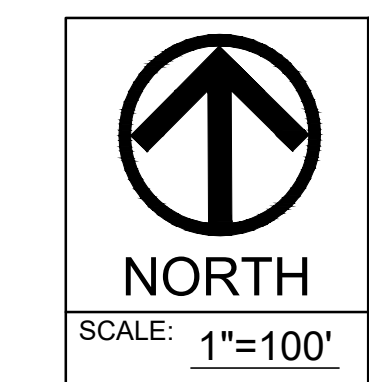
BIOFILTRATION BASIN 200A  
WQ Vol required = 0.63 ac-ft  
WQ Vol treated = 0.63 ac-ft



**LEGEND**

- MAIN DRAINAGE BOUNDARY
- SUB-AREA BOUNDARY
- FLOW LINE
- TRACT BOUNDARY
- PROPOSED STORM DRAIN PIPE
- LOW FLOW STORM DRAIN
- CDS UNIT
- FILTERRA
- INFILTRATION BASIN PER RET-2
- BIOFILTRATION BASIN PER BIC-1
- PERVIOUS AREA INCLUDING NATIVE AND MANUFACTURED SLOPES (NOT SUBJECT TO LID REQUIREMENTS)
- DRAINAGE FACILITIES INCLUDING COUNTY MAINTAINED CHANNEL, LOW FLOW CHANNEL, AND BRIDGE (NOT SUBJECT TO LID REQUIREMENTS)
- RIPARIAN / WETLAND AREAS IN BOUQUET CREEK TO BE REPLACED INCLUDING BUFFER AREA

USMP EXHIBIT  
TENTATIVE TRACT NO. 82126  
IN THE CITY OF SANTA CLARITA

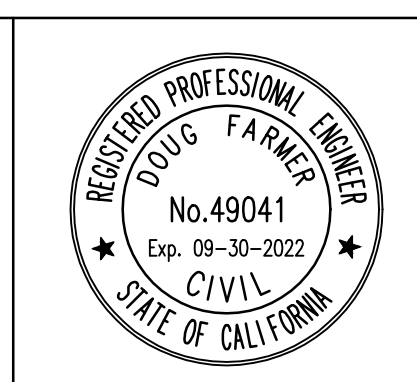


PREPARED FOR:  
Lennar Homes of California, LLC  
2000 Five Point, Suite 365  
Irvine, CA 92618

DATE: 3/8/2022 W.O. NO.: 5117-006-02

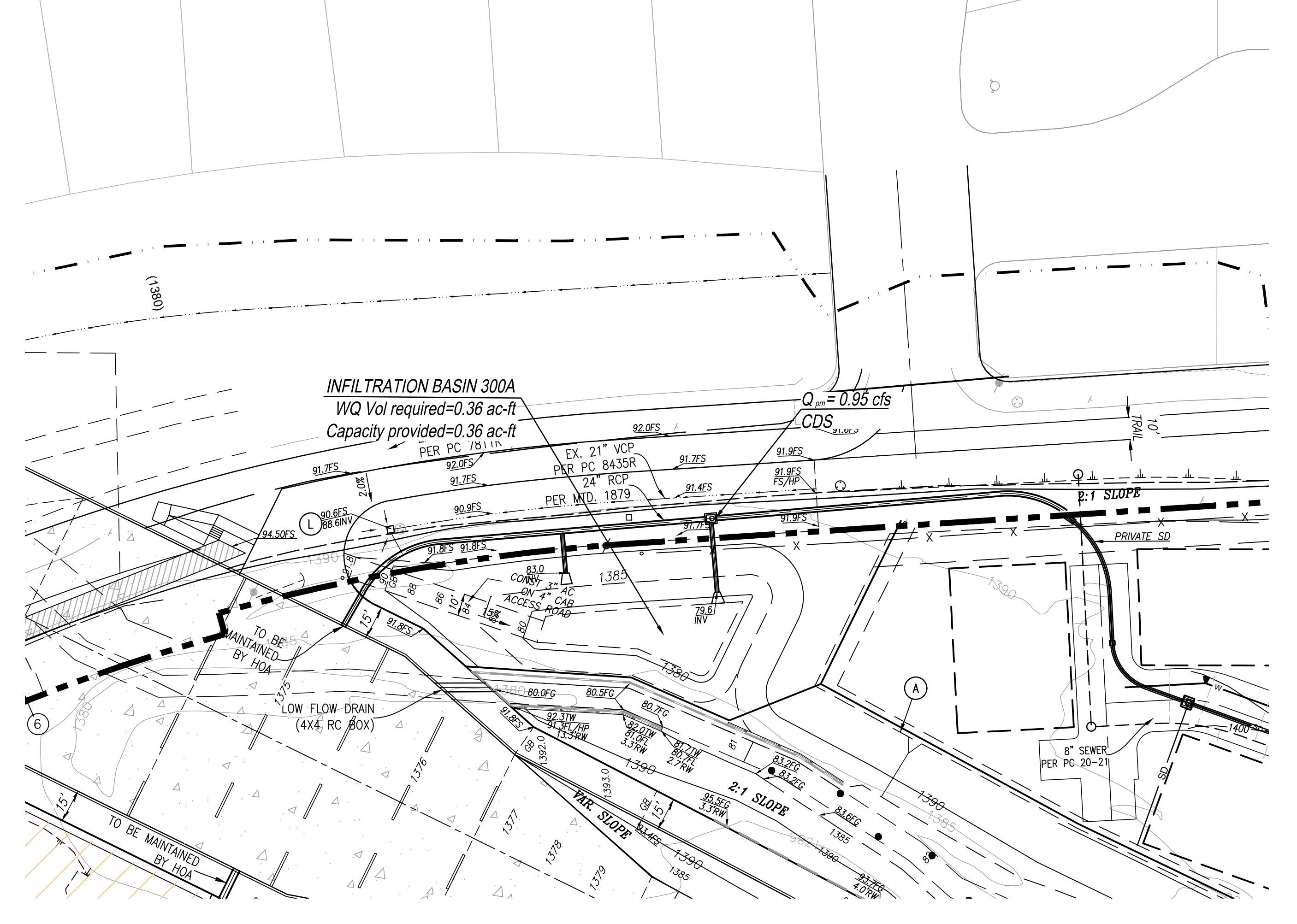
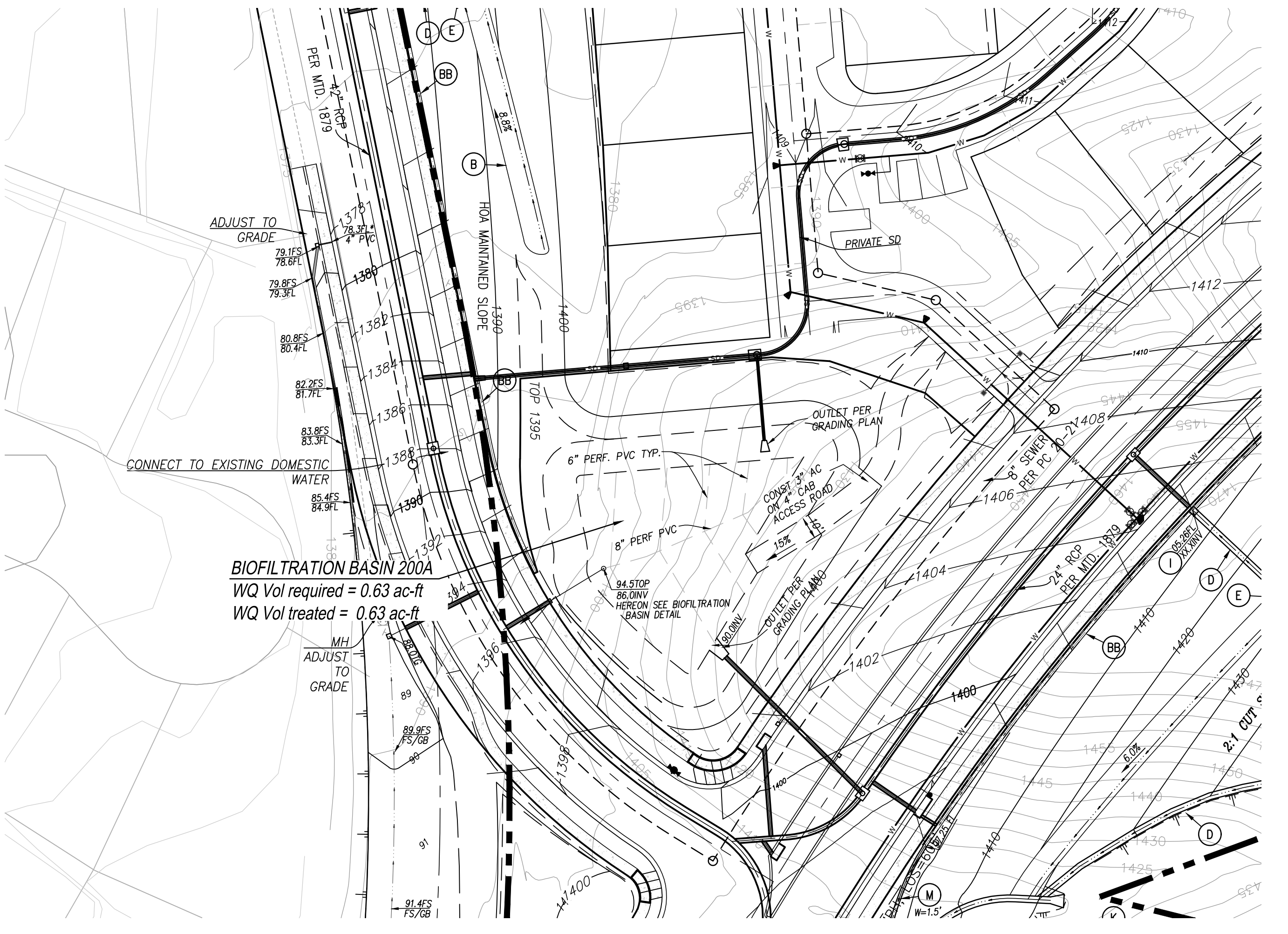
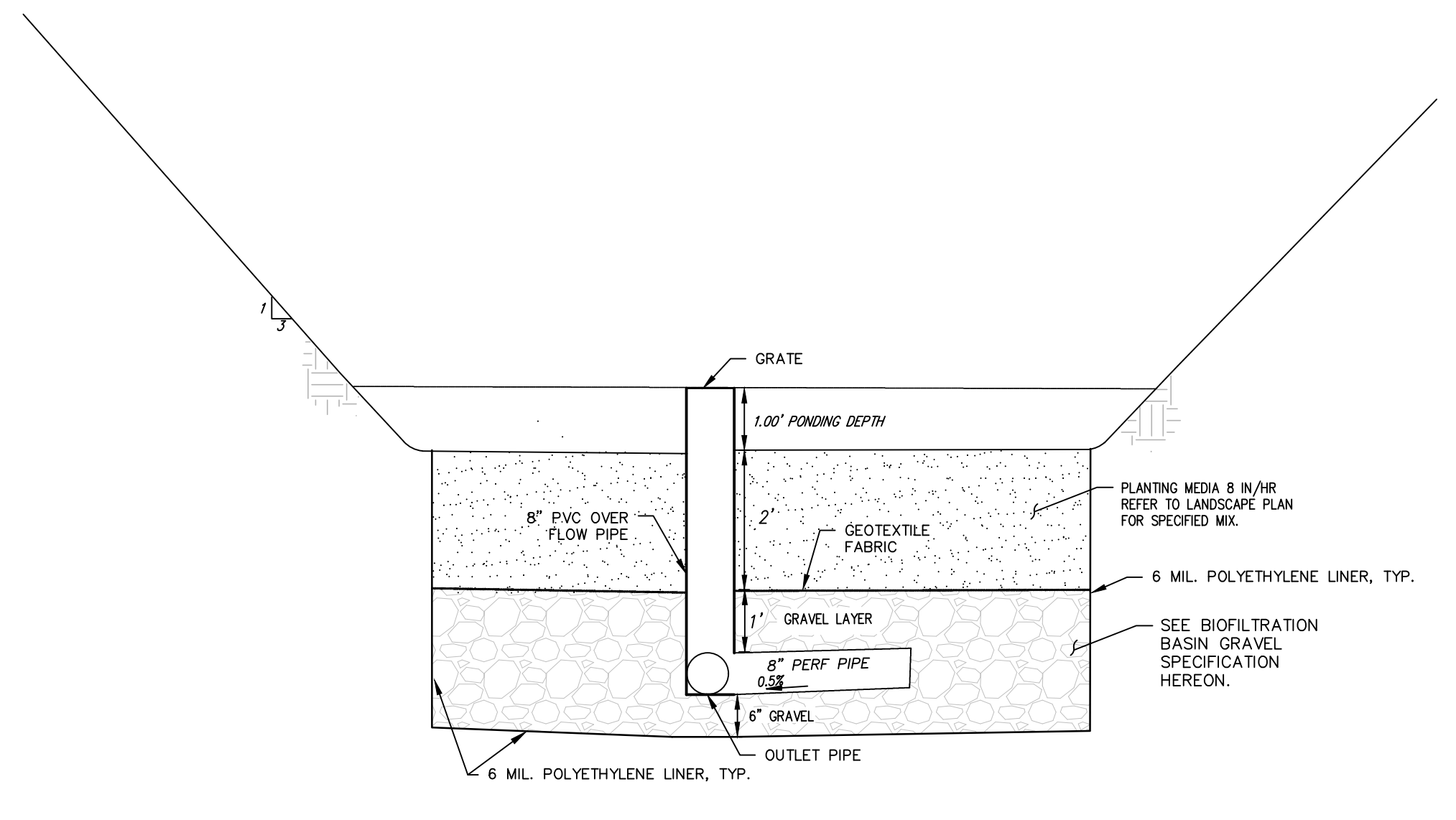
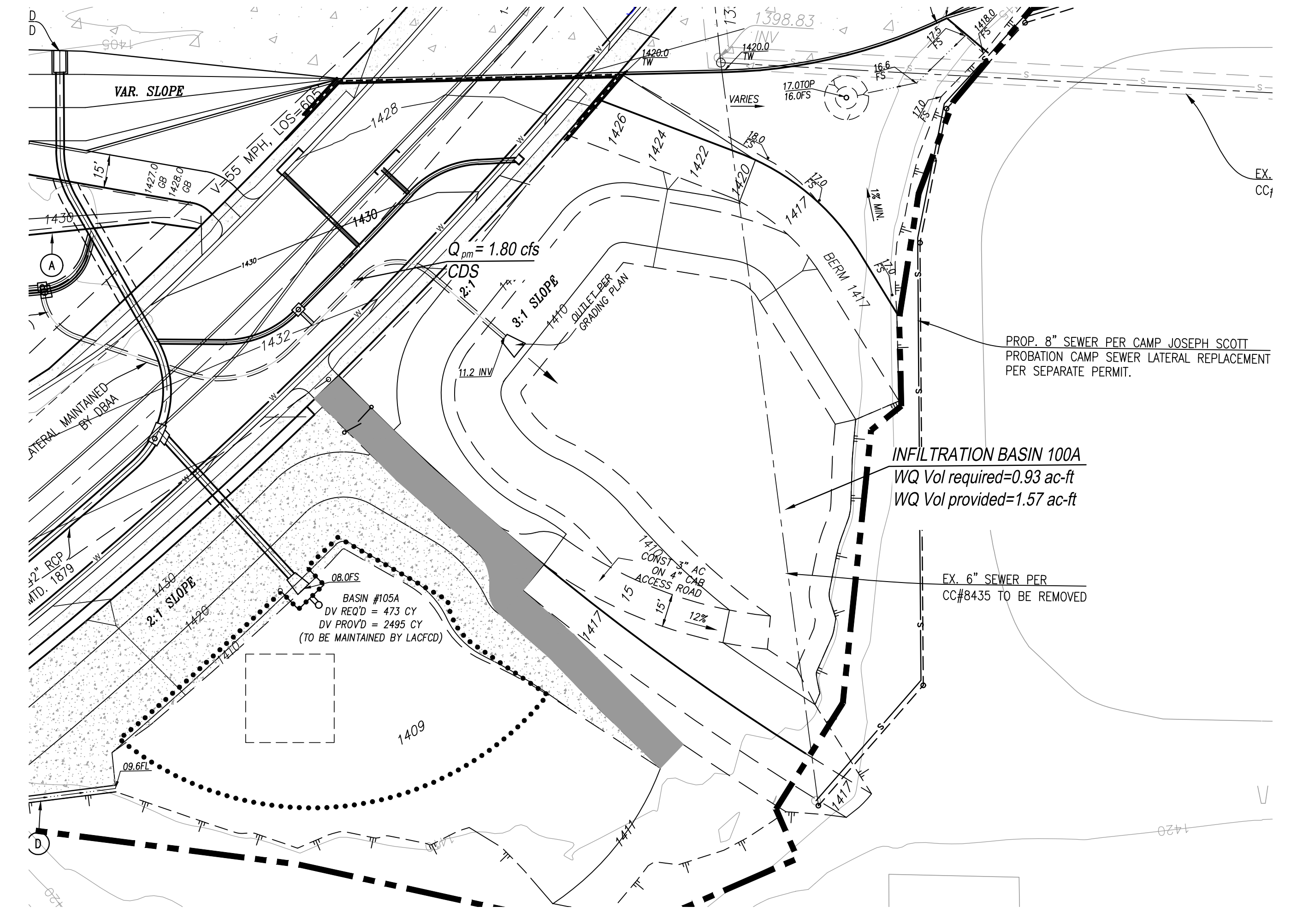
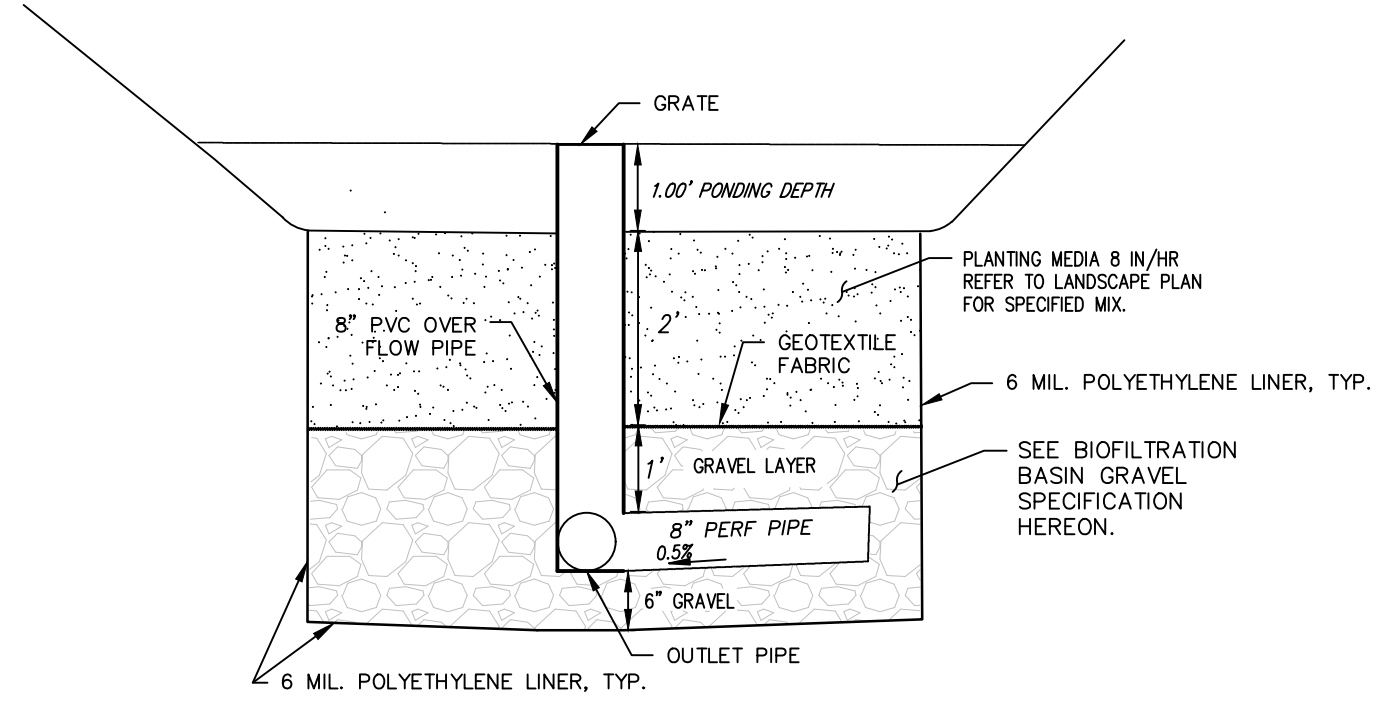
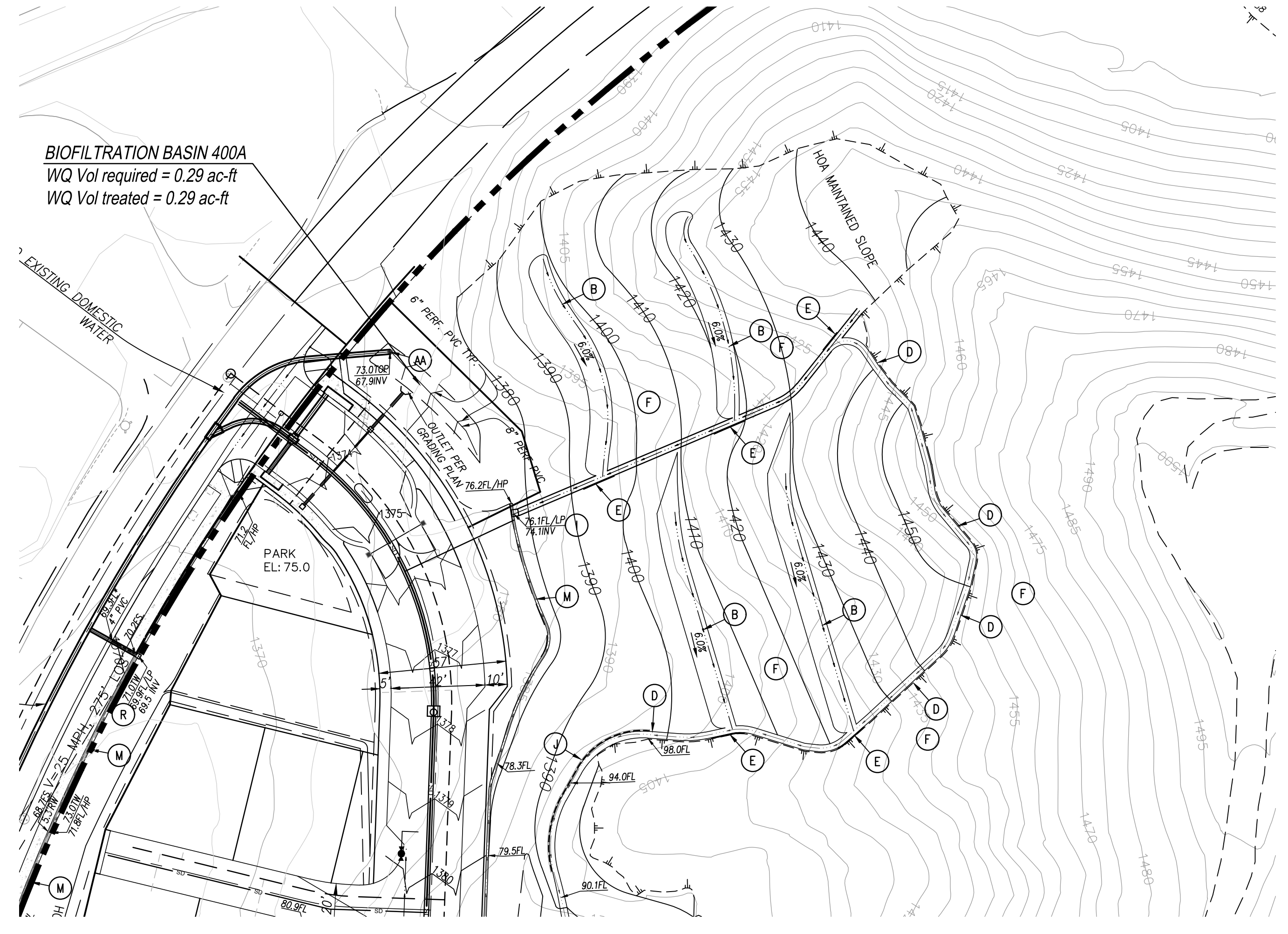
PREPARED BY:  
**SIKAND**  
Engineering | Planning | Surveying

15230 Burbank Blvd #100, Van Nuys, CA 91411  
Phone: (818) 787-8556 Fax: (818) 901-7451  
www.sikand.com E-mail: info@sikand.com



SHEET  
**1**  
OF 1 SHEETS





USMP EXHIBIT  
 TENTATIVE TRACT NO. 82126  
 IN THE CITY OF SANTA CLARITA