

Appendix A

Project Figures

Woodlake Stormbasin Project

Figure 1 - Regional Location

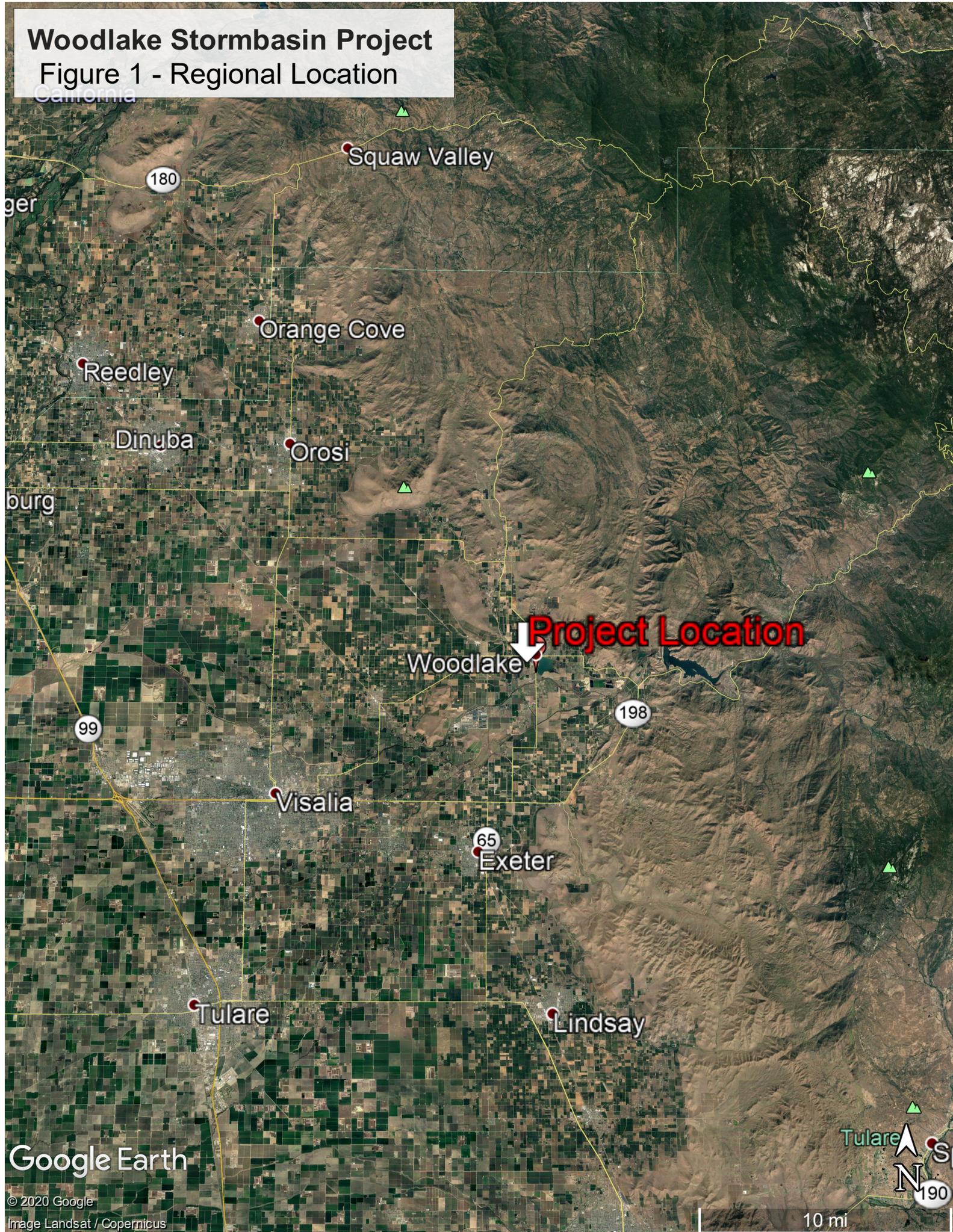


Figure 2 - Site Aerial



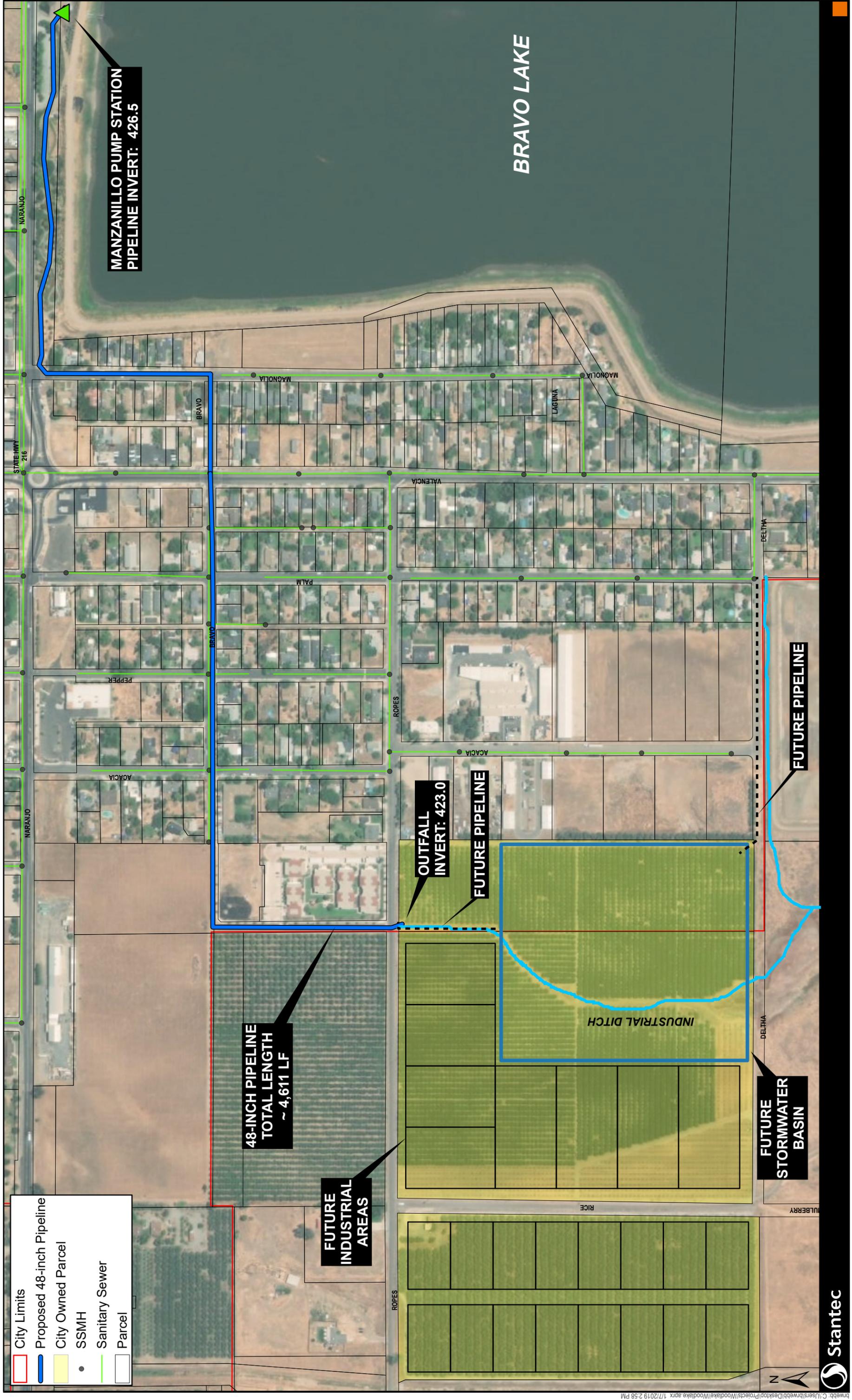


Figure 3 - Pipeline Alignment

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Appendix B

Air Emissions Estimates

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Woodlake Stormwater Basin Project
San Joaquin Valley Unified APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	17.00	Acre	17.00	740,520.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.7	Precipitation Freq (Days)	45
Climate Zone	3			Operational Year	2021

Utility Company

CO2 Intensity (lb/MW hr)	0	CH4 Intensity (lb/MW hr)	0	N2O Intensity (lb/MW hr)	0
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1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project includes the construction of a 17-acre stormwater basin.

Construction Phase - The project does not include the construction of any structures as it is the excavation of soil for a stormwater basin.

Grading - Excavation material will be spread on the remaining 21 acres of the 38-acre site.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	30.00	161.00
tblConstructionPhase	PhaseEndDate	6/16/2020	12/16/2020
tblGrading	AcresOfGrading	402.50	75.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

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2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.3886	4.2602	2.7521	5.3900e-003	0.6360	0.1861	0.8221	0.3260	0.1712	0.4973	0.0000	474.1043	474.1043	0.1478	0.0000	477.7987
Maximum	0.3886	4.2602	2.7521	5.3900e-003	0.6360	0.1861	0.8221	0.3260	0.1712	0.4973	0.0000	474.1043	474.1043	0.1478	0.0000	477.7987

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.3886	4.2602	2.7521	5.3900e-003	0.6360	0.1861	0.8221	0.3260	0.1712	0.4973	0.0000	474.1037	474.1037	0.1478	0.0000	477.7981
Maximum	0.3886	4.2602	2.7521	5.3900e-003	0.6360	0.1861	0.8221	0.3260	0.1712	0.4973	0.0000	474.1037	474.1037	0.1478	0.0000	477.7981

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	3-25-2020	6-24-2020	1.2130	1.2130
2	6-25-2020	9-24-2020	1.8024	1.8024
3	9-25-2020	9-30-2020	0.1175	0.1175
		Highest	1.8024	1.8024

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0633	0.0000	1.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-004	3.0000e-004	0.0000	0.0000	3.2000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0633	0.0000	1.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	3.0000e-004	3.0000e-004	0.0000	0.0000	3.2000e-004

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2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0633	0.0000	1.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-004	3.0000e-004	0.0000	0.0000	3.2000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0633	0.0000	1.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	3.0000e-004	3.0000e-004	0.0000	0.0000	3.2000e-004

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/22/2020	5/5/2020	5	10	
2	Grading	Grading	5/6/2020	12/16/2020	5	161	

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Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 17

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	2	8.00	158	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	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
Site Preparation	7	18.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

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3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0204	0.2121	0.1076	1.9000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505
Total	0.0204	0.2121	0.1076	1.9000e-004	0.0903	0.0110	0.1013	0.0497	0.0101	0.0598	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505

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	5.3000e-004	3.8000e-004	3.8000e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1300e-003	3.0000e-004	1.0000e-005	3.0000e-004	0.0000	0.9948	0.9948	3.0000e-005	0.0000	0.9955
Total	5.3000e-004	3.8000e-004	3.8000e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1300e-003	3.0000e-004	1.0000e-005	3.0000e-004	0.0000	0.9948	0.9948	3.0000e-005	0.0000	0.9955

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3.2 Site Preparation - 2020

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					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0204	0.2121	0.1076	1.9000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505
Total	0.0204	0.2121	0.1076	1.9000e-004	0.0903	0.0110	0.1013	0.0497	0.0101	0.0598	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505

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	5.3000e-004	3.8000e-004	3.8000e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1300e-003	3.0000e-004	1.0000e-005	3.0000e-004	0.0000	0.9948	0.9948	3.0000e-005	0.0000	0.9955
Total	5.3000e-004	3.8000e-004	3.8000e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1300e-003	3.0000e-004	1.0000e-005	3.0000e-004	0.0000	0.9948	0.9948	3.0000e-005	0.0000	0.9955

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3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5246	0.0000	0.5246	0.2708	0.0000	0.2708	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3582	4.0409	2.5726	4.9900e-003		0.1750	0.1750		0.1610	0.1610	0.0000	438.5986	438.5986	0.1419	0.0000	442.1449
Total	0.3582	4.0409	2.5726	4.9900e-003	0.5246	0.1750	0.6996	0.2708	0.1610	0.4318	0.0000	438.5986	438.5986	0.1419	0.0000	442.1449

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	9.4800e-003	6.8500e-003	0.0681	2.0000e-004	0.0200	1.4000e-004	0.0202	5.3200e-003	1.3000e-004	5.4400e-003	0.0000	17.7956	17.7956	4.9000e-004	0.0000	17.8079
Total	9.4800e-003	6.8500e-003	0.0681	2.0000e-004	0.0200	1.4000e-004	0.0202	5.3200e-003	1.3000e-004	5.4400e-003	0.0000	17.7956	17.7956	4.9000e-004	0.0000	17.8079

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3.3 Grading - 2020

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					0.5246	0.0000	0.5246	0.2708	0.0000	0.2708	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3582	4.0409	2.5726	4.9900e-003		0.1750	0.1750		0.1610	0.1610	0.0000	438.5980	438.5980	0.1419	0.0000	442.1443
Total	0.3582	4.0409	2.5726	4.9900e-003	0.5246	0.1750	0.6996	0.2708	0.1610	0.4318	0.0000	438.5980	438.5980	0.1419	0.0000	442.1443

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	9.4800e-003	6.8500e-003	0.0681	2.0000e-004	0.0200	1.4000e-004	0.0202	5.3200e-003	1.3000e-004	5.4400e-003	0.0000	17.7956	17.7956	4.9000e-004	0.0000	17.8079
Total	9.4800e-003	6.8500e-003	0.0681	2.0000e-004	0.0200	1.4000e-004	0.0202	5.3200e-003	1.3000e-004	5.4400e-003	0.0000	17.7956	17.7956	4.9000e-004	0.0000	17.8079

4.0 Operational Detail - Mobile

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4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

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

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.506092	0.032602	0.169295	0.124521	0.019914	0.005374	0.021664	0.110051	0.001797	0.001623	0.005307	0.000969	0.000792

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5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

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5.3 Energy by Land Use - Electricity

Unmitigated

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

Mitigated

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

6.0 Area Detail

6.1 Mitigation Measures Area

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0633	0.0000	1.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-004	3.0000e-004	0.0000	0.0000	3.2000e-004
Unmitigated	0.0633	0.0000	1.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-004	3.0000e-004	0.0000	0.0000	3.2000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0155					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0479					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-004	3.0000e-004	0.0000	0.0000	3.2000e-004
Total	0.0633	0.0000	1.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-004	3.0000e-004	0.0000	0.0000	3.2000e-004

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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	0.0155					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0479					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-004	3.0000e-004	0.0000	0.0000	3.2000e-004
Total	0.0633	0.0000	1.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-004	3.0000e-004	0.0000	0.0000	3.2000e-004

7.0 Water Detail

7.1 Mitigation Measures Water

Woodlake Stormwater Basin Project - San Joaquin Valley Unified APCD Air District, Annual

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

7.2 Water by Land Use

Unmitigated

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

Woodlake Stormwater Basin Project - San Joaquin Valley Unified APCD Air District, Annual

7.2 Water by Land Use

Mitigated

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

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

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

Woodlake Stormwater Basin Project - San Joaquin Valley Unified APCD Air District, Annual

8.2 Waste by Land Use

Unmitigated

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

Mitigated

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

9.0 Operational Offroad

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

Woodlake Stormwater Basin Project - San Joaquin Valley Unified APCD Air District, Annual

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

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Woodlake Stormwater Pipeline														
Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	1.31	10.95	13.75	5.60	0.60	5.00	1.57	0.53	1.04	0.02	2,317.66	0.59	0.05	2,347.26
Grading/Excavation	6.23	49.12	69.48	8.04	3.04	5.00	3.79	2.75	1.04	0.10	9,822.75	2.88	0.13	9,932.71
Drainage/Utilities/Sub-Grade	3.72	31.53	37.21	6.81	1.81	5.00	2.72	1.68	1.04	0.06	5,840.05	1.22	0.08	5,895.78
Paving	1.79	18.57	18.96	1.01	1.01	0.00	0.90	0.90	0.00	0.03	2,973.65	0.76	0.06	3,010.14
Maximum (pounds/day)	6.23	49.12	69.48	8.04	3.04	5.00	3.79	2.75	1.04	0.10	9,822.75	2.88	0.13	9,932.71
Total (tons/construction project)	0.29	2.34	3.06	0.42	0.14	0.28	0.19	0.13	0.06	0.00	452.10	0.12	0.01	457.03

Notes: Project Start Year -> 2020
 Project Length (months) -> 6
 Total Project Area (acres) -> 1
 Maximum Area Disturbed/Day (acres) -> 1
 Water Truck Used? -> Yes

Phase	Total Material Imported/Exported Volume (yd ³ /day)		Daily VMT (miles/day)			
	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	320	40
Grading/Excavation	0	0	0	0	920	40
Drainage/Utilities/Sub-Grade	0	0	0	0	680	40
Paving	0	0	0	0	520	40

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
 Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
 CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1, 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Woodlake Stormwater Pipeline														
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.01	0.07	0.09	0.04	0.00	0.03	0.01	0.00	0.01	0.00	15.30	0.00	0.00	14.05
Grading/Excavation	0.19	1.46	2.06	0.24	0.09	0.15	0.11	0.08	0.03	0.00	291.74	0.09	0.00	267.62
Drainage/Utilities/Sub-Grade	0.07	0.62	0.74	0.13	0.04	0.10	0.05	0.03	0.02	0.00	115.63	0.02	0.00	105.90
Paving	0.02	0.18	0.17	0.01	0.01	0.00	0.01	0.01	0.00	0.00	29.44	0.01	0.00	27.03
Maximum (tons/phase)	0.19	1.46	2.06	0.24	0.09	0.15	0.11	0.08	0.03	0.00	291.74	0.09	0.00	267.62
Total (tons/construction project)	0.29	2.34	3.06	0.42	0.14	0.28	0.19	0.13	0.06	0.00	452.10	0.12	0.01	414.62

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
 Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.
 CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1, 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.
 The CO2e emissions are reported as metric tons per phase.

Appendix C

Biological Resource
Assessment

Biological Resource Assessment

Woodlake Stormwater Basin Project

Tulare County, California



PREPARED FOR:

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March 2020

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Executive Summary

The City of Woodlake (City) proposes to (1) construct a 17-acre stormwater basin on a 38-acre site southeast of the intersection of Ropes Avenue and Mulberry Street; (2) install 4611 linear feet of 48-inch pipeline from the new basin north to the Bravo Avenue alignment, east along Bravo Avenue to Magnolia Street, north on Magnolia Street to just south of Avenue 344, then east along the north edge of Bravo Lake to the Manzanillo Pump Station; and (3) install about 930 linear feet of pipeline from the new basin along the Deltha Avenue alignment to Palm Street. The purpose of this project (Project) is to improve capacity for stormwater collection in the City. Because the Project is expected to receive state and federal funding, it must meet environmental documentation and review requirements under the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

To evaluate whether the Project may affect biological resources under CEQA and NEPA purview, we (1) obtained lists from the California Department of Fish and Wildlife and the United States Fish and Wildlife Service of special-status species and designated and proposed critical habitat, (2) reviewed other relevant background information such as aerial images and topographic maps, and (3) conducted a field reconnaissance survey of the Project site.

This biological resource assessment summarizes existing biological conditions on the Project site, the potential for special-status species and regulated habitats to occur on or near the Project site, the potential effects of the Project on biological resources and regulated habitats, and measures to reduce those potential effects to a less-than-significant level under CEQA and NEPA.

We concluded the Project could impact two non-listed, special-status species and nesting migratory birds, but effects can be reduced to less-than-significant levels with mitigation. We also concluded the Project could impact Industrial Ditch and its associated semi-permanent wetland, a habitat regulated by the United States Army Corps of Engineers, the California Department of Fish and Wildlife, and the State Water Resources Control Board.

Abbreviations

Abbreviation	Definition
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
CNDDDB	California Natural Diversity Data Base
CNPS	California Native Plant Society
EFH	Essential Fish Habitat
EPA	Environmental Protection Agency
FE	Federally listed as Endangered
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FP	Fully Protected
FT	Federally listed as Threatened
MBTA	Migratory Bird Treaty Act
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration
SE	State-listed as Endangered
SSSC	State Species of Special Concern
ST	State-listed as Threatened
SWRCB	State Water Resources Control Board
USACE	United States Army Corps of Engineers
USC	United States Code
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1.0 Introduction

1.1 Background

The City of Woodlake (City) proposes to (1) construct a 17-acre stormwater basin on a 38-acre site southeast of the intersection of Ropes Avenue and Mulberry Street; (2) install 4611 linear feet of 48-inch pipeline from the new basin north to the Bravo Avenue alignment, east along Bravo Avenue to Magnolia Street, north on Magnolia Street to just south of Avenue 344, then east along the north edge of Bravo Lake to the Manzanillo Pump Station; and (3) install about 930 linear feet of pipeline from the new basin along the Deltha Avenue alignment to Palm Street. The Project site currently supports a citrus orchard. The City will fund this Project through the Community Development Block Grant Program. This Project will help the City improve capacity for stormwater collection in accordance with the phased improvements plan as described in the City of Woodlake Stormwater Master Plan.

Because the Project is expected to receive state and federal funding, it must meet environmental documentation and review requirements under the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

The purpose of this biological resource assessment is to determine whether the Project will affect state- or federally protected resources pursuant to CEQA and NEPA guidelines. Such resources include species of plants or animals listed or proposed for listing under the Federal Endangered Species Act (FESA) or the California Endangered Species Act (CESA), as well as those covered under the federal Migratory Bird Treaty Act (MBTA), the California Native Plant Protection Act, and various other sections of the California Fish and Game Code. Biological resources considered here also include designated or proposed critical habitat recognized under the FESA. This biological resource assessment also addresses Project-related impacts to regulated habitats, which are those under the jurisdiction of the United States Army Corps of Engineers (USACE), State Water Resources Control Board (SWRCB), or California Department of Fish and Wildlife (CDFW), as well as those addressed under the Wild and Scenic Rivers Act, Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), and Executive Order 11988 pertaining to floodplain management.

1.2 Project Description

The Project will involve constructing a 17-acre stormwater basin (roughly 800 feet by 1000 feet) on a 38-acre site southeast of the intersection of Ropes Avenue and Mulberry Street; the installation of 4611 linear feet of 48-inch pipeline from the new basin north to the Bravo Avenue alignment, east along Bravo Avenue to Magnolia Street, north on Magnolia Street to just south of Avenue 344, then east along the north edge of Bravo Lake to the Manzanillo Pump Station; and the installation of about 930 linear feet of pipeline from the new basin along the Deltha

Avenue alignment to Palm Street. The new stormwater basin will retain stormwater pumped from the Manzanillo Pump Station through the new pipeline and from runoff from Industrial Ditch and the new Deltha Avenue pipeline.

The new stormwater basin is designed to accommodate a rainfall intensity that corresponds to the 10-day storm event with 25-year occurrence frequency. In the case that a higher intensity storm is encountered, the excess stormwater will be allowed to overflow into the existing Industrial Ditch that flows to the south and feeds Little Bravo Lake. The basin bottom will be designed to allow for water percolation into the ground.

1.3 Project Location

The new stormwater basin site is a 38-acre parcel bounded by Ropes Avenue to the north, Acacia Avenue to the east, Deltha Avenue to the south, and Rice Avenue to the west, in the City of Woodlake, Tulare County, California (Figure 1). The new 48-inch pipelines will connect the new stormwater basin to the Manzanillo Pump Station on the north edge of Bravo Lake and to existing infrastructure at Deltha Avenue at its intersection with Palm Avenue (Figure 2). The 38-acre parcel currently supports a citrus orchard. It also supports Industrial Ditch, a highly disturbed intermittent ditch that flows north to south through the middle-western portion of the parcel. The ditch forms a small semi-permanent wetland at the southern end of the site of the new stormwater basin before eventually draining to Little Bravo Lake to the south (Figure 2). The new stormwater basin site is bordered by orchards and industrial development to the north and west, industrial development and a fallow disked field to the east, and a disturbed field that supports nonnative annual grassland and Little Bravo Lake to the south. The new pipeline will be installed largely in existing paved roadways except for a 280-foot section that will be installed in a dirt road that runs through a fallow field with nonnative ruderal vegetation at the western terminus of Bravo Avenue. The two new pipeline segments are surrounded by agricultural, industrial, and residential development (Figure 2). The Project site is at an elevation of 430 feet above mean sea level in the San Joaquin Valley at the western foot of the Sierra Nevada.



Figure 1. Project Site vicinity map.

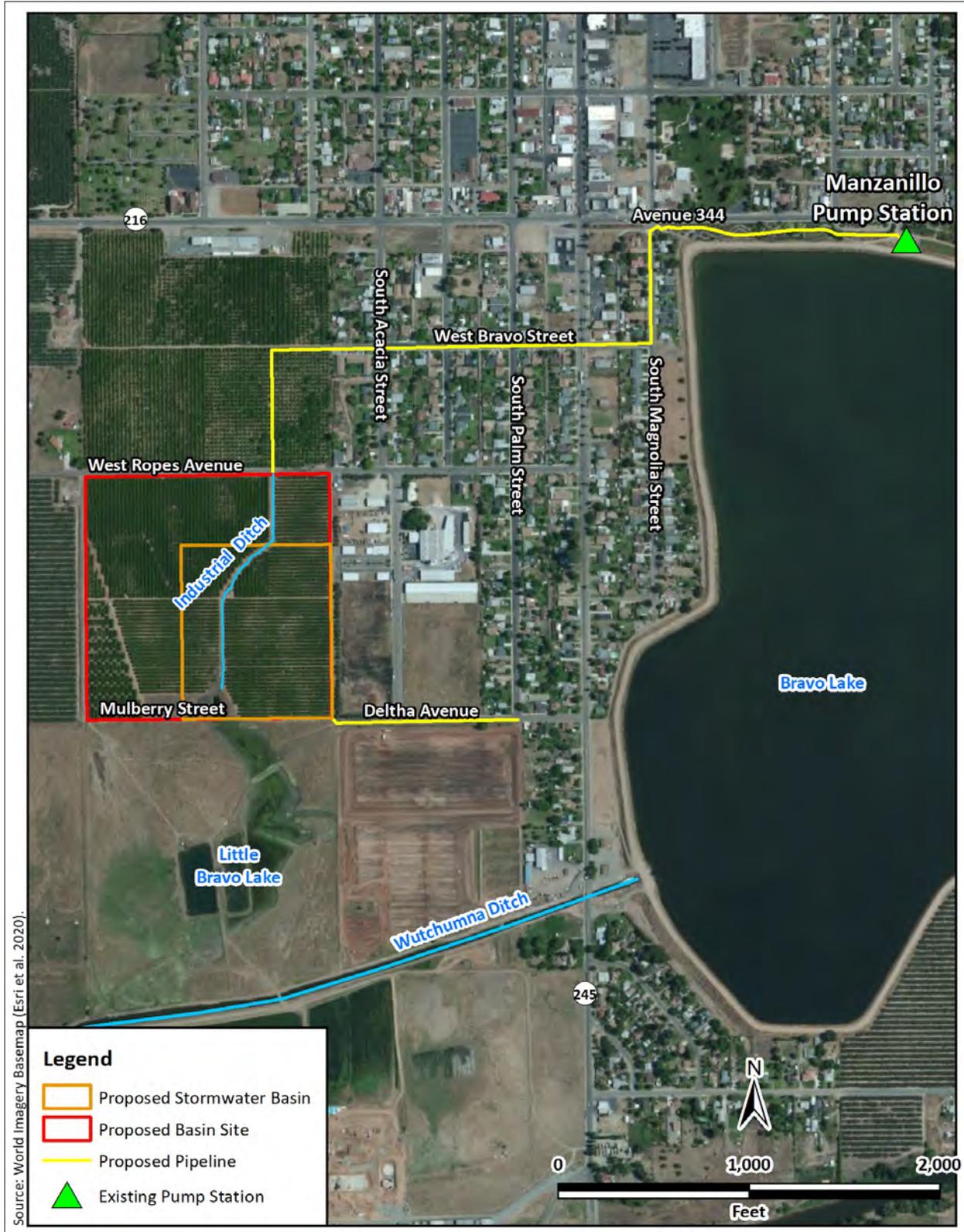


Figure 2. Project site map.

1.4 Purpose and Need

The purpose of the Project is to increase stormwater collection capacity in the City as part of the phased improvements plan described in the City of Woodlake Stormwater Master Plan. The Project is needed because the current stormwater collection capacity is inadequate.

1.5 Consultation History

Lists of all species listed or proposed for listing as threatened or endangered and all designated or proposed critical habitat under the FESA that could occur near the Project site were obtained by Colibri Associate Scientist Joe Medley from the United States Fish and Wildlife Service (USFWS) website (<https://ecos.fws.gov/ipac/>) on 25 February 2020 (Appendix A).

1.6 Regulatory Framework

The relevant federal and state regulatory requirements and policies that guide the effects analysis of the Project are summarized below.

1.6.1 Federal Requirements

Federal Endangered Species Act. The USFWS and the National Oceanographic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) enforce the provisions stipulated in the Federal Endangered Species Act of 1973 (FESA, 16 United States Code [U.S.C.] § 1531 et seq.). Threatened and endangered species on the federal list (50 Code of Federal Regulations [C.F.R.] 17.11 and 17.12) are protected from take unless a Section 10 permit is granted to an entity other than a federal agency or a Biological Opinion with incidental take provisions is rendered to a federal lead agency via a Section 7 consultation. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct. Pursuant to the requirements of the FESA, an agency reviewing a proposed action within its jurisdiction must determine whether any federally listed species may be present in the proposed action area and determine whether the proposed action may affect such species. Under the FESA, habitat loss is considered an effect to a species. In addition, the agency is required to determine whether the proposed action is likely to jeopardize the continued existence of any species that is listed or proposed for listing under the FESA or result in the destruction or adverse modification of critical habitat proposed or designated for such species (16 U.S.C. § 1536[3], [4]). Therefore, proposed action-related effects to these species or their habitats would be considered significant and would require mitigation.

National Environmental Policy Act. The purposes of the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. §§ 4321–4347), including all relevant subsequent guidelines and regulations, include encouraging "harmony between [humans] and their

environment and promoting efforts which will prevent or eliminate damage to the environment... and stimulate the health and welfare of [humanity]". The purposes of NEPA are accomplished by evaluating the effects of federal actions. The results of these evaluations are presented to the public, federal agencies, and public officials in document format (e.g., Environmental Assessments and Environmental Impact Statements) for consideration prior to taking official action or making official decisions. Environmental documents prepared pursuant to NEPA must be completed before federal actions can be implemented. The NEPA process requires careful evaluation of the need for action, and that federal actions be considered alongside all reasonable alternatives, including the No Action alternative. NEPA also requires that the potential impacts on the human environment be considered for each alternative. Detailed implementing regulations for NEPA are contained in 40 C.F.R. 1500 et seq.

Migratory Bird Treaty Act. The federal Migratory Bird Treaty Act (MBTA) (16 U.S.C. § 703, Supp. I, 1989) prohibits killing, possessing, trading, or other forms of take of migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. "Take" is defined as the pursuing, hunting, shooting, capturing, collecting, or killing of birds, their nests, eggs, or young (16 U.S.C. § 703 and § 715n). This act encompasses whole birds, parts of birds, and bird nests and eggs. The MBTA specifically protects migratory bird nests from possession, sale, purchase, barter transport, import, and export, and take. For nests, the definition of take per 50 C.F.R. 10.12 is to collect. The MBTA does not include a definition of an "active nest." However, the "Migratory Bird Permit Memorandum" issued by the USFWS in 2003 clarifies the MBTA in that regard and states that the removal of nests, without eggs or birds, is legal under the MBTA, provided no possession (which is interpreted as holding the nest with the intent of retaining it) occurs during the destruction (USFWS 2003).

United States Army Corps of Engineers Jurisdiction. Areas meeting the regulatory definition of "waters of the United States" (jurisdictional waters) are subject to the jurisdiction of the United States Army Corps of Engineers (USACE) under provisions of Section 404 of the Clean Water Act (1972) and Section 10 of the Rivers and Harbors Act (1899). These waters may include all waters used, or potentially used, for interstate commerce, including all waters subject to the ebb and flow of the tide, all interstate waters, all other waters (intrastate lakes, rivers, streams, mudflats, sandflats, playa lakes, natural ponds, etc.), all impoundments of waters otherwise defined as waters of the United States, tributaries of waters otherwise defined as waters of the United States, the territorial seas, and wetlands adjacent to waters of the United States (33 C.F.R. part 328.3). Wetlands on non-agricultural lands are identified using the *Corps of Engineers Wetlands Delineation Manual* and related Regional Supplement (USACE 1987 and 2008). Construction activities, including direct removal, filling, hydrologic disruption, or other means in jurisdictional waters are regulated by the USACE. The placement of dredged or fill material into such waters must comply with permit requirements of the USACE. No USACE permit will be effective in the absence of state water quality certification pursuant to Section 401 of the Clean Water Act. The State Water Resources Control Board is the state agency (together with the Regional Water Quality Control Boards) charged with implementing water quality certification in California.

Wild and Scenic Rivers Act. The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. § 1271 et seq.) to preserve certain rivers with significant natural, cultural, and recreational values in a free-flowing condition. The Act safeguards the special character of these rivers, while also recognizing the potential for their appropriate use and development.

Magnuson-Stevens Fishery Conservation and Management Act. The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (Public law 94-265; Statutes at Large 90 Stat. 331; 16 U.S.C. ch. 38 § 1801 et seq.) establishes a management system for national marine and estuarine fishery resources. This legislation requires that all federal agencies consult the NMFS regarding all actions or proposed actions permitted, funded, or undertaken that may adversely affect “essential fish habitat (EFH).” EFH is defined as “waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” The Magnuson-Stevens Act states that migratory routes to and from anadromous fish spawning grounds are considered EFH. The phrase “adversely affect” refers to any effect that reduces the quality or quantity of EFH. Federal activities that occur outside of EFH, but which may affect EFH must also be considered. The Act applies to salmon species, groundfish species, highly migratory species such as tuna, and coastal pelagic species such as anchovies.

Executive Order 11988: Floodplain Management. Executive Order 11988 (42 Federal Register 26951, 3 C.F.R., 1977 Comp., p. 117) requires federal agencies to avoid to the extent possible the long-term and short-term adverse effects associated with occupying and modifying flood plains and to avoid direct and indirect support of developing floodplains wherever there is a practicable alternative.

1.6.2 State Requirements

California Endangered Species Act. The California Endangered Species Act (CESA) of 1970 (Fish and Game Code § 2050 et seq. and California Code of Regulations (C.C.R.) Title 14, Subsection 670.2, 670.51) prohibits the take of species listed under CESA (14 C.C.R. Subsection 670.2, 670.5). Take is defined as hunt, pursue, catch, capture, or kill or attempt to hunt, pursue, catch, capture, or kill. Under CESA, state agencies are required to consult with the California Department of Fish and Wildlife when preparing CEQA documents. Consultation ensures that proposed projects or actions do not have a negative effect on state-listed species. During consultation, CDFW determines whether take would occur and identifies “reasonable and prudent alternatives” for the project and conservation of special-status species. CDFW can authorize take of state-listed species under Sections 2080.1 and 2081(b) of Fish and Game Code in those cases where it is demonstrated that the impacts are minimized and mitigated. Take authorized under section 2081(b) must be minimized and fully mitigated. A CESA permit must be obtained if a project will result in take of listed species, either during construction or over the life of the project. Under CESA, CDFW is responsible for maintaining a list of threatened and endangered species designated under state law (Fish and Game Code § 2070). CDFW also maintains lists of species

of special concern, which serve as “watch lists.” Pursuant to the requirements of CESA, a state or local agency reviewing a proposed project within its jurisdiction must determine whether the proposed project will have a potentially significant impact upon such species. Project-related impacts to species on the CESA list would be considered significant and would require mitigation. Impacts to species of concern or fully protected species would be considered significant under certain circumstances.

California Environmental Quality Act. The California Environmental Quality Act (CEQA) of 1970 (Subsections 21000–21178) requires that CDFW be consulted during the CEQA review process regarding impacts of proposed projects on special-status species. Special-status species are defined under CEQA Guidelines subsection 15380(b) and (d) as those listed under FESA and CESA and species that are not currently protected by statute or regulation but would be considered rare, threatened, or endangered under these criteria or by the scientific community. Therefore, species considered rare or endangered are addressed in this biological resource evaluation regardless of whether they are afforded protection through any other statute or regulation. The California Native Plant Society (CNPS) inventories the native flora of California and ranks species according to rarity (CNPS 2017). Plants with Rare Plant Ranks 1A, 1B, 2A, or 2B are considered special-status species under CEQA.

Although threatened and endangered species are protected by specific federal and state statutes, CEQA Guidelines Section 15380(d) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if it can be shown to meet certain specified criteria. These criteria have been modeled after the definition in the FESA and the section of the California Fish and Game Code dealing with rare and endangered plants and animals. Section 15380(d) allows a public agency to undertake a review to determine if a significant effect on species that have not yet been listed by either the USFWS or CDFW (i.e., candidate species) would occur. Thus, CEQA provides an agency with the ability to protect a species from the potential impacts of a project until the respective government agency has an opportunity to designate the species as protected, if warranted.

California Native Plant Protection Act. The California Native Plant Protection Act of 1977 (California Fish and Game Code §§ 1900–1913) requires all state agencies to use their authority to carry out programs to conserve endangered and otherwise rare species of native plants. Provisions of the act prohibit the taking of listed plants from the wild and require the project proponent to notify CDFW at least 10 days in advance of any change in land use, which allows CDFW to salvage listed plants that would otherwise be destroyed.

Nesting birds. California Fish and Game Code Subsections 3503, 3503.5, and 3800 prohibit the possession, incidental take, or needless destruction of birds, their nests, and eggs. California Fish and Game Code Section 3511 lists birds that are “Fully Protected” as those that may not be taken or possessed except under specific permit.

California Department of Fish and Wildlife Jurisdiction. The CDFW has regulatory jurisdiction over lakes and streams in California. Activities that divert or obstruct the natural flow of a stream; substantially change its bed, channel, or bank; or use any materials (including vegetation) from the streambed, may require that the project applicant enter into a Streambed Alteration Agreement with the CDFW in accordance with California Fish and Game Code Section 1602.

2.0 Methods

2.1 Desktop Review

As a framework for the evaluation and reconnaissance survey, we obtained a USFWS species list for the Project site (USFWS 2020, Appendix A). In addition, we searched the California Natural Diversity Data Base (CNDDDB, CNDDDB 2020) and the California Native Plant Society's Inventory of Rare and Endangered Plants (CNPS 2020) for records of special-status plant and animal species near the Project site. Regional lists of special-status species were compiled using USFWS, CNDDDB, and CNPS database searches confined to the Woodlake 7.5-minute United States Geological Survey (USGS) topographic quad, which encompasses the Project site, and the eight surrounding quads (Auckland, Chickencoop Canyon, Exeter, Ivanhoe, Kaweah, Rocky Hill, Shadequarter Mtn., and Stokes Mtn.). Local lists of special-status species were compiled using CNDDDB records from within 5 miles of the Project site. Species that lack a special-status designation by state or federal regulatory agencies were omitted from the final list. Species for which the Project site does not provide habitat were eliminated from further consideration. We also reviewed aerial imagery from Google Earth (Google 2020) and other sources, USGS topographic maps, the Web Soil Survey (NRCS 2020), and relevant literature.

2.2 Reconnaissance Survey

Associate Scientist Joe Medley and Field Scientists Jacob Smith and Wendy Murillo conducted a field reconnaissance survey of the Project site on 27 February 2020. The Project site and a 50-foot buffer surrounding the Project site (Figure 3) were walked and thoroughly inspected to evaluate and document the potential for the area to support federally or state-protected resources. All plants except those under cultivation or planted in residential areas and all animals (vertebrate wildlife species) observed within the survey area were identified and documented. The survey area was evaluated for the presence of regulated habitats, including lakes, streams, and other waters using methods described in the *Wetlands Delineation Manual* and regional supplement (USACE 1987, 2008) and as defined by the CDFW (<https://www.wildlife.ca.gov/conservation/lisa>). The survey area also included a 0.5-mile buffer around the Project site to evaluate the presence of potential nest trees for special-status raptors (Figure 3).

2.3 Effects Analysis and Significance Criteria

2.3.1 Effects Analysis

Factors considered in evaluating the effects of the Project on special-status species included the (1) presence of designated or proposed critical habitat in the survey area, (2) potential for the

survey area to support special-status species, (3) dependence of any such species on specific habitat components that would be removed or modified, (4) the degree of impact to habitat, (5) abundance and distribution of the habitat in the region, (6) distribution and population levels of the species, (7) cumulative effects of the Project and any future activities in the area, and (8) the potential to mitigate any adverse effects.

Factors considered in evaluating the effects of the Project on migratory birds included the potential for the Project to result in (1) mortality of migratory birds or (2) loss of migratory bird nests containing viable eggs or nestlings.

Factors considered in evaluating the effects of the Project on regulated habitats included the (1) presence of features comprising or potentially comprising waters of the United States, Wild and Scenic Rivers, essential fish habitat (EFH), floodplains, and lakes or streams within the survey area, and (2) potential for the Project to affect such habitats.

2.3.2 Significance Criteria

CEQA defines “significant effect on the environment” as “a substantial, or potentially substantial, adverse change in the environment.” (Pub. Res. Code, § 21068). Under CEQA Guidelines Section 15065, a project's effects on biological resources are deemed significant where the project would do the following:

- a) Substantially reduce the habitat of a fish or wildlife species
- b) Cause a fish or wildlife population to drop below self-sustaining levels
- c) Threaten to eliminate a plant or animal community, or
- d) Substantially reduce the number or restrict the range of a rare or endangered plant or animal

In addition to the Section 15065 criteria, Appendix G within the CEQA Guidelines includes six additional impacts to consider when analyzing the effects of a project. Under Appendix G, which also satisfy significance criteria identified under NEPA, a project's effects on biological resources are deemed significant where the project would do the following:

- e) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or the USFWS.
- f) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS.

- g) Have a substantial adverse effect on state and federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- h) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- i) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- j) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

These criteria were used to determine whether the potential effects of the Project on biological resources qualify as significant.

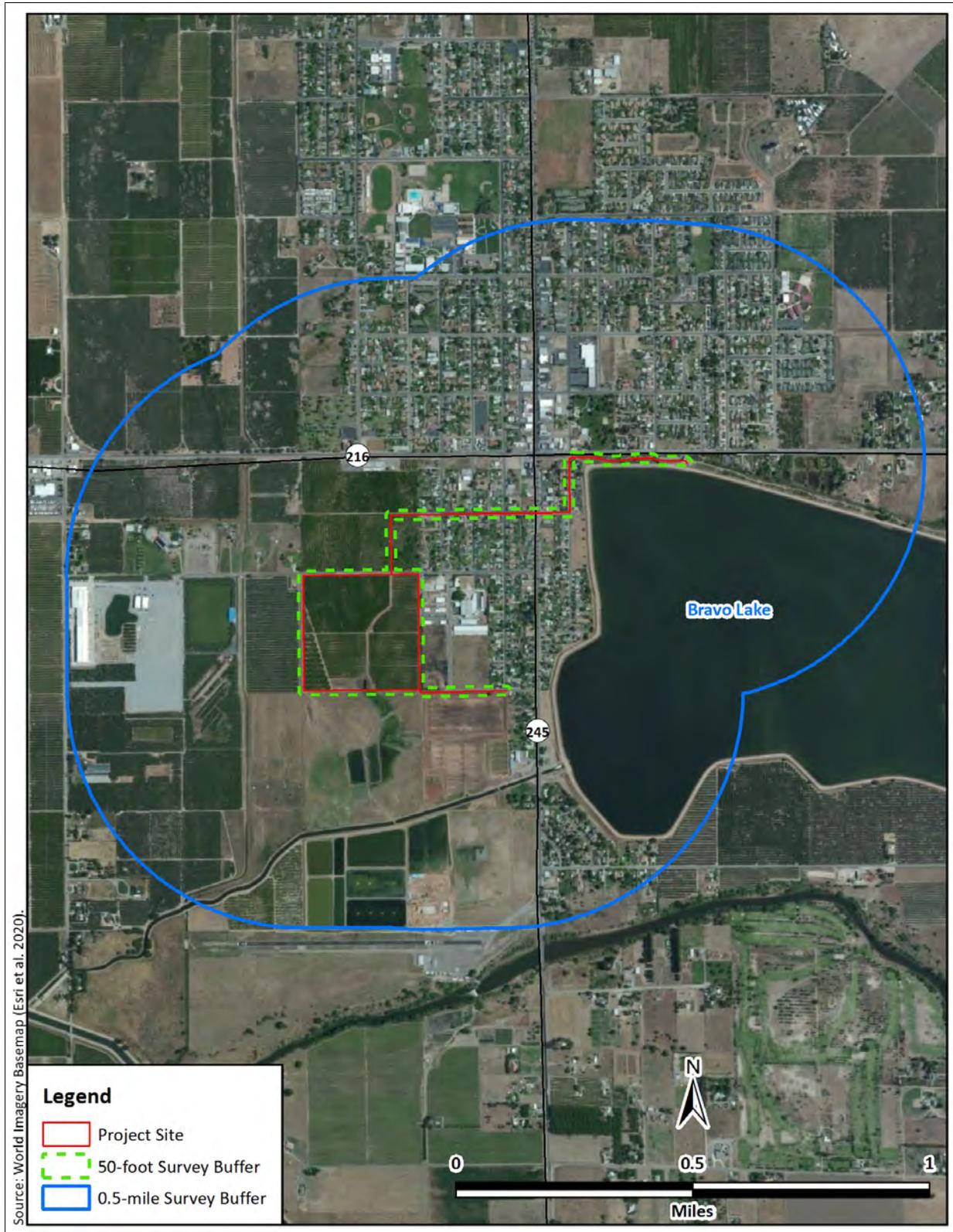


Figure 3. Reconnaissance survey area map.

3.0 Results

3.1 Desktop Review

The USFWS species list for the Project (USFWS 2020a, Table 1, Appendix A) included 11 species listed as threatened or endangered under the FESA. Those species include the endangered Greene's tuctoria (*Tuctoria greenei*), the threatened San Joaquin adobe sunburst (*Psuedobahia peirsonii*), the threatened San Joaquin orcutt grass (*Orcuttia inaequalis*), the endangered Conservancy fairy shrimp (*Branchinecta conservatio*), the threatened Delta smelt (*Hypomesus transpacificus*), the endangered blunt-nosed leopard lizard (*Gambelia silus*), the threatened California red-legged frog (*Rana draytonii*), the threatened California tiger salamander (*Ambystoma californiense*), the threatened giant garter snake (*Thamnophis gigas*), the endangered California condor (*Gymnogyps californianus*), and the endangered San Joaquin kit fox (*Vulpes macrotis mutica*). None of these species could occur on or near the Project site because the area lacks habitat for these species or is outside their current known range (Table 1). As identified in the USFWS species list (USFWS 2020a, Appendix A), the Project site does not occur in USFWS-designated Critical Habitat for any species.

Searching the CNDDDB (CNDDDB 2020) for records of special-status species from within the Woodlake 7.5-minute USGS topographic quad and the eight surrounding quads produced 196 records of 44 species (Table 1, Appendix B). Of those species, five are not considered further because state or federal regulatory agencies do not recognize them through special designation (Appendix A). Of the remaining 39 special-status species, 17 are known from within 5 miles of the property (Table 1, Figure 3). Of those 17 species, one could occur on or near the property. One additional species known from outside the 5-mile radius from the property could occur on or near the property based on the presence of habitat that could support the species (Table 1). All other special-status species are considered absent because the property is outside their current known range, the property lacks habitat for them, they were not detected during the reconnaissance survey, or a combination thereof.

Searching the CNPS inventory of rare and endangered plants of California yielded 19 species with a CRPR (CNPS 2020, Appendix C), 16 of which have of a rank of 1B (Table 1). Of those 19 species, one could occur on or near the Project site. The remaining species are not expected to occur on or near the Project site due to a lack of habitat or a lack of records from within 5 miles (Table 1).

The property is underlain by San Joaquin loam 0-9% slopes and Porterville clay 0-2% slopes (NRCS 2020).

Table 1. Special-status species, their listing status, habitat requirements, and potential to occur on or near the Project site.

Species	Status ¹	Habitat	Potential Occur ²
Federally and State-Listed Endangered or Threatened Species			
Green's tuctoria ³ (<i>Tuctoria greenei</i>)	FE, SR, 1B.1	Vernal pools below 3445 feet elevation.	None. Habitat lacking; no vernal pools on or near the Project site.
Hoover's spurge (<i>Euphorbia hooveri</i>)	FT, 1B.2	Vernal pools from sea level to 820 feet elevation.	None. Habitat lacking; no vernal pools on or near the Project site.
Kaweah brodiaea ³ (<i>Brodiaea insignis</i>)	SE, 1B.2	Granitic soil or clay in foothill woodland at 656–1640 feet elevation.	None. Habitat lacking; the Project site is below known elevation range.
San Joaquin Valley Orcutt grass ³ (<i>Orcuttia inaequalis</i>)	FT, SE, 1B.1	Vernal pools at or below 2625 feet elevation.	None. Habitat lacking; no vernal pools on or near the Project site.
San Joaquin adobe sunburst ³ (<i>Pseudobahia peirsonii</i>)	FT, SE, 1B.1	Grassland with bare, dark clay soils at 328–2953 feet elevation.	None. Habitat lacking; no grassland on the Project site.
Striped adobe-lily (<i>Fritillaria striata</i>)	ST, 1B.1	Adobe clay soils in the southern Sierra Nevada foothills below 3280 feet elevation.	None. Habitat lacking; Project site is outside current known range and lacks adobe clay soils.
Crotch bumble bee ³ (<i>Bombus crotchii</i>)	SCT	Open grassland and scrub where it forages on a wide range of floral resources, especially those with open flowers and short corollas; like most bumble bees, it likely nests underground.	None. Habitat lacking; no grassland on the Project site. Although this species was historically common in the Central Valley, it is now apparently mostly absent.
Vernal pool fairy shrimp ³ (<i>Branchinecta lynchi</i>)	FT	Vernal pools; some artificial depressions, stock ponds, vernal swales, ephemeral drainages, and seasonal wetlands.	None. Habitat lacking; no vernal pools or seasonal wetlands on the Project site; Project site is highly disturbed.

Species	Status ¹	Habitat	Potential Occur ²
Vernal pool tadpole shrimp (<i>Lepidurus packardii</i>)	FE	Vernal pools, clay flats, alkaline pools, and ephemeral stock tanks.	None. Habitat lacking; no vernal pools on the Project site.
Valley elderberry longhorn beetle ³ (<i>Desmocerus californicus dimorphus</i>)	FT	Elderberry (<i>Sambucus</i> sp.) plants having basal stem diameter greater than 1" at ground level.	None. The Project site is outside the current known range of this species.
California tiger salamander (<i>Ambystoma californiense</i>)	FT, ST	Vernal pools or seasonal ponds for breeding; small mammal burrows for upland refugia.	None. Habitat lacking; no records from within 5 miles; the Project site lacks vernal pools and is highly disturbed.
Foothill yellow-legged frog ³ (<i>Rana boylei</i>)	SCT, SSSC	Perennial rocky streams and rivers with rocky substrates; open, sunny banks in forests, chaparral, and woodlands.	None. Habitat lacking; no perennial streams on the Project site.
California condor (<i>Gymnogyps californianus</i>)	FE, SE, FP	Mountain and foothill rangeland with cliffs for nesting and grassland and open woodland for foraging.	None. Habitat lacking; the Project site is about 2 miles west of potential foothill habitat.
Bald eagle (<i>Haliaeetus leucocephalus</i>)	SE, FP	Large trees for nesting near permanent water.	None. While large trees near the Project site could support nesting, and a permanent water body (Bravo Lake) is immediately south of the Manzanillo Pump Station, disturbance associated with nearby residential and agricultural development likely precludes this species.
Tricolored blackbird ³ (<i>Agelaius tricolor</i>)	ST	Freshwater emergent wetlands, agricultural fields, irrigated pastures, grassland,	None. The Project site supports a small semi-permanent freshwater wetland at the southern

Species	Status ¹	Habitat	Potential Occur ²
		and silage fields near dairies.	boundary; however, this wetland lacks dense cattail and bulrush thickets required by this species for nesting.
Willow flycatcher (<i>Empidonax traillii</i>)	SE	Riparian forest and wet meadow habitats in the Sierra Nevada mountains at 2000–8000 feet elevation.	None. Habitat lacking; Project site is below known elevation range.
San Joaquin kit fox ³ (<i>Vulpes macrotis mutica</i>)	FE, ST	Grassland and upland scrub.	None. Habitat lacking; Project site is highly disturbed and outside current known range.
State Species of Special Concern			
Northern California legless lizard (<i>Anniella pulchra</i>)	SSSC	Moist, warm loose sand with vegetative cover.	None. Habitat lacking; no sandy soils on the Project site.
Northern leopard frog (<i>Lithobates pipiens</i>)	SSSC	Wet meadows, canals, bogs, marshes, and reservoirs in grassland, forest, and woodland.	None. The Project site is outside the current known native range for this species; an introduced population is known from far northwestern Tulare County.
Northwestern pond turtle (<i>Actinemys marmorata</i>)	SSSC	Ponds, rivers, marshes, streams, and irrigation ditches, usually with aquatic vegetation. Need basking sites and suitable upland habitat for egg laying.	Low. Bravo Lake, immediately south of the Manzanillo Pump Station, and a small semi-permanent wetland at the southern boundary of the Project site could support this species.
Western spadefoot ³ (<i>Spea hammondi</i>)	SSSC	Open areas with sandy or gravelly soil that allow rain pools to gather for breeding.	None. Habitat lacking; Project site is heavily disturbed and lacks soils that support seasonal rain pools.
Burrowing owl (<i>Athene cunicularia</i>)	SSSC	Grassland and upland scrub with friable soil; some agricultural or	None. While several ground squirrel burrows were present on the

Species	Status ¹	Habitat	Potential Occur ²
		other developed and disturbed areas with ground squirrel burrows.	margins of the Project site, habitat is lacking on the Project site due to agricultural and residential development. Nonnative annual grassland immediately south of the Project site is unlikely to support this species due to highly disturbed site conditions.
American badger (<i>Taxidea taxus</i>)	SSSC	Variable. Open, dry areas with friable soils and small mammal populations in grassland, conifer forest, and desert.	None. Surrounding residential and agricultural development likely precludes this species from occurring on the Project site.
Pallid bat (<i>Antrozous pallidus</i>)	SSSC	Arid or semi-arid locations in rocky areas and sparsely vegetated grassland near water. Rock crevices, caves, mine shafts, bridges, buildings, and tree hollows for roosting.	None. Although marginal foraging habitat is present immediately south of Project site, the Project site lacks roosting habitat required by this species.
Western mastiff bat ³ (<i>Eumops perotis californicus</i>)	SSSC	Rock crevices in cliff faces, large boulders, granite slabs, or columnar basalt.	None. Habitat lacking; no rock outcrops or crevice habitat present on the Project site.
California Rare Plants			
American manna grass (<i>Glyceria grandis</i>)	2B.3	Wet places, meadows, lake and stream margins below 6890 feet elevation.	None. Project site is outside current known range; not detected during reconnaissance survey.
Calico monkeyflower ³ (<i>Diplaucus pictus</i>)	1B.2	Bare, sunny, shrubby areas around granite outcrops in the southern Sierra Nevada mountains at	None. Habitat lacking; Project site is below elevation range; no granite outcrops.

Species	Status ¹	Habitat	Potential Occur ²
		442–4101 feet elevation.	
Coulter's goldfields (<i>Lasthenia glabrata</i> ssp. <i>coulteri</i>)	1B.1	Saline areas and vernal pools below 3280 feet elevation.	None. Habitat lacking; no saline areas or vernal pools on the Project site. Not known from within 5 miles.
Earlimart orache (<i>Atriplex cordulata</i> var. <i>erecticaulis</i>)	1B.2	Saline or alkaline soils in the Central Valley below 230 feet elevation.	None. Project site lacks the saline or alkaline soils this species requires, is above known elevation range, and is more than 5 miles from the nearest known occurrence.
Kaweah monkeyflower (<i>Erythranthe norrisii</i>)	1B.3	Marble crevices in the Kaweah River and Kings River drainages at 1969–4265 feet elevation.	None. Habitat lacking; the Project site is outside the known elevation range for this species.
Lesser saltscale (<i>Atriplex minuscula</i>)	1B.1	Saline or alkaline soils in the San Joaquin Valley below 328 feet elevation.	None. Project site lacks the saline or alkaline soils this species requires and is more than 5 miles from the nearest known occurrence.
Madera leptosiphon (<i>Leptosiphon serrulatus</i>)	1B.2	Woodland and chaparral openings at 984–4265 feet elevation.	None. Habitat lacking; Property is below known elevation range.
Mouse buckwheat (<i>Eriogonum nudum</i> var. <i>murinum</i>)	1B.2	Sandy soils in the Kaweah River drainage at 1312–2297 feet elevation.	None. Habitat lacking; Project site is below known elevation range for this species.
Recurved larkspur ³ (<i>Delphinium recurvatum</i>)	1B.2	Poorly drained, fine, alkaline soils in grassland and saltbush scrub at 98–1969 feet elevation.	None. Habitat lacking; Project site lacks alkaline soils, grassland, and saltbush scrub.
Sanford's arrowhead ³ (<i>Sagittaria sanfordii</i>)	1B.2	Ponds and ditches at sea level to 650 feet elevation.	Low. Industrial Ditch and the small semi-permanent wetland at the southern

Species	Status ¹	Habitat	Potential Occur ²
			border of the Project site could support this species.
Sierra Nevada monkeyflower (<i>Erythranthe sierrae</i>)	4.2	Granitic soils in vernal wet depressions and edges of creeks at 656–6889 feet elevation.	None. Habitat lacking; the Project site is below the known elevation range for this species.
Spiny-sepaled button-celery ³ (<i>Eryngium spinosepalum</i>)	1B.2	Vernal pools, swales, and roadside ditches in valley and foothill grassland at 328–4166 feet elevation.	None. Habitat lacking; Project site lacks vernal pools and grassland.
Vernal barley (<i>Hordeum intercedens</i>)	3.2	Vernal pools and dry, saline streambeds and alkaline flats below 1640 feet elevation.	None. Habitat lacking; Project site lacks vernal pools, saline streambeds, and alkaline flats.
Vernal pool smallscale (<i>Atriplex persistens</i>)	1B.2	Alkaline vernal pools in the Central Valley below 377 feet elevation.	None. Habitat lacking; Project site lacks vernal pools and is more than 5 miles from the nearest known occurrence.
Winter's sunflower ³ (<i>Helianthus winteri</i>)	1B.2	Steep, south-facing grassy slopes, rock outcrops, and road cuts at 590–1509 feet elevation.	None. Habitat lacking; the Project site is flat and below the known elevation range for this species.

CNDDDB (2020), CNPS (2020).

Status ¹	Potential to Occur ²
CNDDB = Recognized by the CNDDB, other state or federal agencies, or conservation groups as rare or imperiled.	None: Species or sign not observed; conditions unsuitable for occurrence.
FE = Federally listed Endangered	Low: Species or sign not observed; conditions marginal for occurrence.
FT = Federally listed Threatened	
FP = State Fully Protected	
SCT = State Candidate for listing as Threatened	
SE = State-listed Endangered	
SR = State-designated as Rare	
ST = State-listed Threatened	
SSSC = State Species of Special Concern	

CNPS California Rare Plant Rank:	Threat Ranks:
1B – plants rare, threatened, or endangered in California and elsewhere.	0.1 – seriously threatened in California (> 80% of occurrences).
2B – plants rare, threatened, or endangered in California but more common elsewhere.	0.2 – moderately threatened in California (20-80% of occurrences).
3 – plants about which more information is needed.	0.3 – not very threatened in California (<20% of occurrences).
4 – plants of limited distribution.	

3.2 Reconnaissance Survey

3.2.1 Land Use and Habitats

The Project site consists of a citrus orchard that is routinely sprayed with herbicides, dirt and paved surface streets, and a paved walking trail (Figures 5 through 13) surrounded by agricultural, industrial, and residential development. The new stormwater basin will be constructed in the citrus orchard, which is bordered to the north by citrus orchards and residential development, to the east by industrial development and a recently disked fallow field that supported ruderal vegetation, to the south by a previously disturbed field that supported nonnative annual grassland, and to the west by citrus orchards and industrial development. The northern section of new pipeline will run under paved surface streets (Figure 6), under a previously disturbed dirt road at the western terminus of Bravo Avenue (Figure 7), and eventually under a paved walking path leading east to the Manzanillo Pump Station (Figures 8 and 9). Bravo Lake, a permanent, leveed waterbody is immediately south of the Manzanillo Pump Station and about 0.3 miles east of the new stormwater basin site (Figure 9). The southern section of new pipeline will be installed under dirt (Figure 10) and paved roads (Figure 11). It is bordered to the north by a recently disked fallow field that supports ruderal vegetation and residential development, to the east by residential development and Bravo Lake, to the south by a large detention basin, and to the west

by a previously disturbed field that supported nonnative annual grassland. Industrial Ditch, a highly disturbed, dirt-lined intermittent drainage largely devoid of vegetation, carries water from north to south through the middle-western portion of the Project site, where the new stormwater basin will be installed, and forms a small semi-permanent wetland at the southern boundary of the Project site (Figures 12 and 13).



Figure 5. Photograph of the Project site, looking west, showing a citrus orchard where the new stormwater basin will be constructed.



Figure 6. Photograph of the Project site, looking north, showing the alignment of the northern section of new pipeline that will be installed under paved surface streets.



Figure 7. Photograph of the Project site, looking southwest, showing the alignment of the northern section of new pipeline that will be installed under a dirt road.



Figure 8. Photograph of the Project site, looking east, showing the alignment of the northern section of new pipeline that will be installed under a paved walking trail that leads to the Manzanillo Pump Station.



Figure 9. Panoramic photograph of the Project site, looking west, showing Bravo Lake (left), the alignment of the northern section of new pipeline that will be installed under a paved walking trail (right of levee), and Manzanillo Pump Station (right).



Figure 10. Photograph of the Project site, looking east, showing the alignment of the southern section of new pipeline that will be installed under a dirt road immediately east of the new stormwater basin.



Figure 11. Photograph of the Project site, looking west, showing the alignment of the southern section of the new pipeline that will be installed under a paved road, surrounding residential development (right), and an existing detention basin (left).



Figure 12. Photograph of the Project site, looking northeast, showing Industrial Ditch and a citrus orchard where the new stormwater basin will be constructed.



Figure 13. Photograph of the Project site, looking north, showing a small semi-permanent wetland and surrounding citrus orchard at the southern Project site boundary where the new stormwater basin will be constructed.

3.2.2 Plant and Animal Species Observed

The margins of the Project site supported native and nonnative ruderal herbaceous plants including field hedge parsley (*Torilis arvensis*), tumbleweed (*Amaranthus albus*), bull thistle (*Cirsium vulgare*), Canada horseweed (*Erigeron canadensis*), prickly lettuce (*Lactuca serriola*), and common fiddleneck (*Amsinckia intermedia*). The small semi-permanent wetland at the southern Project site boundary supported hydrophytic plants including tule (*Schoenoplectus acutus*), Common bog rush (*Juncus effusus* ssp. *effusus*), and seep monkeyflower (*Erythranthe guttata*). In all, 47 plant species (13 native, 34 nonnative) were found during the survey (Table 2). A total of two reptile species, 25 bird species, and four mammal species were also detected (Table 2).

Table 2. Plant and animal species observed during the reconnaissance survey.

Common Name	Scientific Name	Status
Plants		
Family Amarananthaceae		
Tumbleweed	<i>Amaranthus albus</i>	Nonnative
Family Apiaceae		
Field hedge parsley	<i>Torilis arvensis</i>	Nonnative
Family Arecaceae		
Date palm	<i>Phoenix dactylifera</i>	Nonnative
Family Asteraceae		
Bull thistle	<i>Cirsium vulgare</i>	Nonnative
Canada horseweed	<i>Erigeron canadensis</i>	Native
Common dandelion	<i>Taraxacum officinale</i>	Nonnative
Common groundsel	<i>Senecio vulgaris</i>	Nonnative
Common sow thistle	<i>Sonchus oleraceus</i>	Nonnative
Milk thistle	<i>Silybum marianum</i>	Nonnative
Prickly lettuce	<i>Lactuca serriola</i>	Nonnative
Rough cocklebur	<i>Xanthium strumarium</i>	Native
Sow thistle	<i>Sonchus asper</i>	Nonnative
Yarrow	<i>Achillea millefolium</i>	Native
Family Boraginaceae		
Common fiddleneck	<i>Amsinckia intermedia</i>	Native
Family Brassicaceae		
Black mustard	<i>Brassica nigra</i>	Nonnative
Charlock	<i>Sinapsis arvensis</i>	Nonnative
Wild raddish	<i>Raphanus sativus</i>	Nonnative
Shepherd's purse	<i>Capsella bursa-pastoris</i>	Nonnative
Family Crassulaceae		
Sand pygmy weed	<i>Crassula connata</i>	Native
Family Cyperaceae		

Common Name	Scientific Name	Status
Tall cyperus	<i>Cyperus eragrostis</i>	Native
Tule	<i>Schoenoplectus acutus</i>	Native
Family Euphorbiaceae		
Dove weed	<i>Croton setiger</i>	Native
Family Fabaceae		
Annual yellow sweetclover	<i>Melilotus indicus</i>	Nonnative
Burclover	<i>Medicago polymorpha</i>	Nonnative
Narrow-leaved vetch	<i>Vicia sativa ssp. nigra</i>	Nonnative
White clover	<i>Trifolium repens</i>	Nonnative
Family Geraniaceae		
Broadleaf filaree	<i>Erodium botrys</i>	Nonnative
Carolina geranium	<i>Geranium carolinianum</i>	Nonnative
Cutleaf geranium	<i>Geranium dissectum</i>	Nonnative
Redstem stork's bill	<i>Erodium cicutarium</i>	Nonnative
Family Juncaceae		
Common bog rush	<i>Juncus effusus ssp. effusus</i>	Native
Family Lamiaceae		
Cheeseweed	<i>Malva parviflora</i>	Nonnative
Henbit deadnettle	<i>Lamium amplexicaule</i>	Nonnative
White horehound	<i>Marrubium vulgare</i>	Nonnative
Family Onagraceae		
Fringed willowherb	<i>Epilobium ciliatum</i>	Native
Family Phrymaceae		
Seep monkeyflower	<i>Erythranthe guttata</i>	Native
Family Poaceae		
Annual beardgrass	<i>Polypogon monspeliensis</i>	Nonnative
Annual bluegrass	<i>Poa annua</i>	Nonnative
Bermuda grass	<i>Cynodon dactylon</i>	Nonnative
Dallis grass	<i>Paspalum dilatatum</i>	Nonnative
Italian ryegrass	<i>Festuca perennis</i>	Nonnative
Johnsongrass	<i>Sorghum halepense</i>	Nonnative
Ripgut brome	<i>Bromus diandrus</i>	Nonnative
Saltgrass	<i>Distichlis spicata</i>	Native
Family Polygonaceae		
Curly dock	<i>Rumex crispus</i>	Nonnative
Family Solanaceae		
Jimson weed	<i>Datura wrightii</i>	Native
White horse-nettle	<i>Solanum elaeagnifolium</i>	Nonnative
Reptiles		
Family Phrynosomatidae		

Common Name	Scientific Name	Status
Common side-blotched lizard	<i>Uta stansburiana</i>	None
Western fence lizard	<i>Sceloporus occidentalis</i>	None
Birds		
Family Accipitridae		
Red-shouldered hawk	<i>Buteo lineatus</i>	MBTA, CFGC
Red-tailed hawk	<i>Buteo jamaicensis</i>	MBTA, CFGC
Sharp-shinned hawk	<i>Accipiter striatus</i>	MBTA, CFGC
Family Aegithalidae		
Bushtit	<i>Psaltriparus minimus</i>	MBTA, CFGC
Family Anatidae		
Ruddy duck	<i>Oxyura jamaicensis</i>	MBTA, CFGC
Family Ardeidae		
Great egret	<i>Ardea alba</i>	MBTA, CFGC
Family Bombycillidae		
Cedar waxwing	<i>Bombycilla cedrorum</i>	MBTA, CFGC
Family Cathartidae		
Turkey vulture	<i>Cathartes aura</i>	MBTA, CFGC
Family Columbidae		
Mourning dove	<i>Zenaida macroura</i>	MBTA, CFGC
Rock pigeon	<i>Columba livia</i>	None
Family Corvidae		
American crow	<i>Corvus brachyrhynchos</i>	MBTA, CFGC
California scrub-jay	<i>Aphelocoma californica</i>	MBTA, CFGC
Family Fringillidae		
House finch	<i>Haemorhous mexicanus</i>	MBTA, CFGC
Family Icteridae		
Brewer's blackbird	<i>Euphagus cyanocephalus</i>	MBTA, CFGC
Family Mimidae		
Northern mockingbird	<i>Mimus polyglottos</i>	MBTA, CFGC
Family Podicipedidae		
Eared grebe	<i>Podiceps nigricollis</i>	MBTA, CFGC
Western grebe	<i>Aechmophorus occidentalis</i>	MBTA, CFGC
Family Parulidae		
Yellow-rumped warbler	<i>Setophaga coronata</i>	MBTA, CFGC
Family Passerellidae		
California towhee	<i>Melospiza crissalis</i>	MBTA, CFGC
White-crowned sparrow	<i>Zonotrichia leucophrys</i>	MBTA, CFGC
Family Passeridae		
House sparrow	<i>Passer domesticus</i>	None
Family Picidae		

Common Name	Scientific Name	Status
Nuttall's woodpecker	<i>Dryobates nuttallii</i>	MBTA, CFGC
Family Trochilidae		
Anna's hummingbird	<i>Calypte anna</i>	MBTA, CFGC
Family Turdidae		
Western bluebird	<i>Sialia mexicana</i>	MBTA, CFGC
Family Tyrannidae		
Black phoebe	<i>Sayornis nigricans</i>	MBTA, CFGC
Mammals		
Family Didelphidae		
Virginia opossum	<i>Didelphis virginiana</i>	None
Family Leporidae		
Desert cottontail	<i>Sylvilagus audubonii</i>	None
Family Mephitidae		
Striped skunk	<i>Mephitis mephitis</i>	None
Family Sciuridae		
California ground squirrel	<i>Otospermophilus beecheyi</i>	None

MBTA = Protected under the Migratory Bird Treaty Act (16 U.S.C. § 703 et seq.); CFGC = Protected under the California Fish and Game Code (FGC § 3503 and 3513).

3.2.3 Special-Status Species

Two special-status species could occur on or near the Project site based on the presence of habitat and/or CNDDDB occurrence records from within 5 miles (Table 1). These two species are described below.

Sanford's arrowhead (*Sagittaria sanfordii*) (CRPR 1B.2). Sanford's arrowhead is an aquatic, rhizomatous perennial herb in the family Alismataceae with a CRPR of 1B.2. It is endemic to the Central Valley of California where it occupies ponds and ditches below 984 feet elevation; it flowers May–October (Turner et al. 2012).

One CNDDDB record, from 2018, is known from within 5 miles of the Project site (CNDDDB 2020). Although this species was not detected during the reconnaissance survey, which was conducted outside of the blooming period, aquatic habitat on the property could support this species. Due to low habitat quality, however, its probability of occurrence is low.

Northwestern pond turtle (*Actinemys marmorata*) (SSSC). Northwestern pond turtle (family Emydidae) is California's only native freshwater turtle. It is recognized as a Species of Special Concern by the CDFW (CDFW 2019). This species is long-lived, diurnal, and aquatic (Nafis 2020). It occurs in ponds, lakes, rivers, creeks, marshes, and irrigation ditches and requires exposed banks, logs, rocks, or cattail mats for basking (Nafis 2020). Commercial harvesting beginning in the 19th century, wetland destruction and degradation in the early 20th century, and introduction

of nonnative species including other turtle species and bullfrogs are the primary contributors to population declines (Nafis 2020). Mating occurs in April and May, after which females travel onto land to dig a nest, usually along stream or pond banks (Nafis 2020).

Although there are no CNDDDB records known from within 5 miles of the Project site (CNDDDB 2020), Bravo Lake and the small semi-permanent wetland along Industrial Ditch on the Project site provide potential aquatic habitat, and the nonnative grassland south of the Project site could represent potential nesting habitat. Due to low habitat quality, however, its probability of occurrence is low.

3.2.4 Nesting Birds and the Migratory Bird Treaty Act

Migratory birds could nest on or near the Project site. Species that may nest on or near the Project site include but are not limited to California scrub-jay (*Aphelocoma californica*), house finch (*Haemorhous mexicanus*), and northern mockingbird (*Mimus polyglottos*).

3.2.5 Regulated Habitats

Two potentially regulated habitats (Industrial Ditch and an unnamed irrigation canal) were found on or within 50 feet of the Project site. Industrial Ditch is a constructed intermittent drainage that flows north to south through the middle-western portion of the Project site where the new stormwater basin will be constructed (Figures 12 and 13). It forms a small semi-permanent wetland at the southern Project site boundary, then drains to Little Bravo Lake, Wutchumna Ditch, and eventually the St. Johns River. Industrial Ditch is likely under the jurisdiction of the USACE, SWRCB, and CDFW. Industrial Ditch and its associated semi-permanent wetland will be impacted by the Project. An unnamed, excavated irrigation canal associated with a large detention basin was 10 feet south of the southern segment of new pipeline alignment that will connect the new stormwater basin to existing infrastructure along the Deltha Avenue alignment. However, construction of the new pipeline will be confined to existing dirt and paved roads. Therefore, no impacts to this feature are anticipated.

According to the Wild and Scenic Rivers Act, no waterways on or near the Project site retain a wild and scenic classification (USFWS 2020b).

No marine or estuarine fishery resources or migratory routes to and from anadromous fish spawning grounds were present in the survey area. In addition, no EFH, defined by the Magnuson-Stevens Act as those resources necessary for fish spawning, breeding, feeding, or growth to maturity, were present in the survey area.

The Project site is within a FEMA-designated flood zone classified as Zone X, otherwise described as "Other Flood Areas". Parcels within Zone X have either (1) a 0.2% annual chance of flood during a 100-year flood event, (2) a 1% annual chance of flood (during a 100-year flood event)

with average depths of < 1 foot or with drainage areas less than 1 square mile, or (3) areas protected by levees from a 1% annual chance of flooding during a 100-year flood event (FEMA 2020). The semi-permanent wetland along Industrial Ditch is classified as Zone A. Parcels within Zone A are without base flood elevation and subject to inundation by the 1-percent-annual-chance flood (FEMA 2020).

4.0 Environmental Effects

4.1 Effects Determinations

4.1.1 Critical Habitat

We conclude the Project will have **no effect** on critical habitat as no critical habitat has been designated or proposed in the survey area.

4.1.2 Special-Status Species

We conclude the Project **may affect but is not likely to adversely affect** two special-status species: Sanford's arrowhead and northwestern pond turtle. The Project is not expected to affect any other special-status species due to the lack of habitat or known occurrence records for those species near the Project site.

4.1.3 Migratory Birds

We conclude the Project **may affect but is not likely to adversely affect** nesting migratory birds.

4.1.4 Regulated Habitats

We conclude the Project **may affect and is likely to adversely affect** one regulated habitat. This habitat consists of Industrial Ditch and its associated semi-permanent wetland at the southern boundary of the Project site.

4.2 Significance Determinations

This Project, which will result in permanent and temporary impacts to developed and disturbed land cover, a channelized ditch and a small semi-permanent wetland will not: (1) substantially reduce the habitat of a fish or wildlife species (criterion a) as disturbed land cover is regionally abundant and ubiquitous; (2) cause a fish or wildlife population to drop below self-sustaining levels (criterion b) as no such potentially vulnerable population is known from the area; (3) threaten to eliminate a plant or animal community (criterion c) as no such potentially vulnerable communities are known from the area; (4) substantially reduce the number or restrict the range of a rare or endangered plant or animal (criterion d) as no such potentially vulnerable species are known from the area; (5) have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS (criterion f) as no riparian habitat or other sensitive natural community was

present in the survey area; (6) conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (criterion i) as no native or heritage trees or biologically sensitive areas will be impacted; or (7) conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or state habitat conservation plan (criterion j) as no such plan has been adopted. Thus, these significance criteria are not analyzed further.

The remaining statutorily defined criteria provided the framework for criteria BIO1 through BIO3 below. These criteria are used to assess the impacts to biological resources stemming from the Project and provide the basis for determinations of significance:

- Criterion BIO1: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS (significance criterion e).
- Criterion BIO2: Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites (significance criterion h).
- Criterion BIO3: Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means (significance criterion g).

4.2.1 Direct and Indirect Impacts

4.2.1.1 Potential Impact #1: Have a Substantial Effect on any Special-Status Species (Criterion BIO1)

The Project could substantially impact two special-status species: Sanford's arrowhead (CNPS CRPR 1B.2) northwestern pond turtle, a California Species of Special Concern. Construction disturbance could result in the incidental loss of Sanford's arrowhead or northwestern pond turtle. Such loss could constitute a significant impact. We recommend that Mitigation Measures B1–B2 (below) be included in the conditions of approval to reduce the potential impact to a less-than-significant level.

Mitigation Measure B1. Protect northwestern pond turtle.

1. A pre-construction clearance survey shall be conducted by a qualified biologist to ensure that northwestern pond turtle will not be impacted during Project

construction. The pre-construction clearance survey shall be conducted no more than 14 days prior to the start of construction activities. During this survey, the qualified biologist shall search all aquatic habitat and all potential nesting habitat on the Project site for active turtle nests. If a turtle is found, it will be allowed to leave the area on its own. If an active turtle nest is found, the qualified biologist shall determine the extent of a construction-free buffer to be established and maintained around the nest for the duration of the nesting cycle. The biologist shall then work with construction personnel to install wildlife exclusion fencing along the buffer. This fencing should be a minimum of 36 inches tall and toed-in 6 inches below ground prior to construction activities. If fencing cannot be toed-in, the bottom of the fence will be weighted down with a continuous line of long, narrow sand bags or similar, to ensure there are no gaps under the fencing where wildlife could enter. One-way exit funnels directed away from construction activities will be installed to allow turtles and other small wildlife to exit the fenced enclosure.

Mitigation Measure B2. Protect Sanford's arrowhead.

2. A rare plant survey for Sanford's arrowhead shall be conducted by a qualified biologist during the appropriate season (May to October). If this species is detected, implement a minimum 50-foot avoidance buffer and avoid impacts to the extent practicable. If impacts are unavoidable, salvage and relocate the plants in consultation with CDFW.

4.2.1.2 Potential Impact #2: Interfere Substantially with Native Wildlife Movements, Corridors, or Nursery Sites (Criterion BIO2)

The Project has the potential to impede the use of nursery sites for native birds protected under the MBTA and CFGC. Migratory birds are expected to nest on and near the Project site. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. Disturbance that causes nest abandonment or loss of reproductive effort can be considered take under the MBTA and CFGC. Loss of fertile eggs or nesting birds, or any activities resulting in nest abandonment, could constitute a significant effect if the species is particularly rare in the region. Construction activities such as excavating, trenching, and grading that disturb a nesting bird on the Project site or immediately adjacent to the construction zone could constitute a significant effect. We recommend that the mitigation measure B3 (below) be included in the conditions of approval to reduce the potential effect to a less-than-significant level.

Mitigation Measure B3. Protect nesting birds.

3. To the extent practicable, construction shall be scheduled to avoid the nesting season, which extends from February through August.

4. If it is not possible to schedule construction between September and January, a pre-construction clearance survey for nesting birds shall be conducted by a qualified biologist to ensure that no active nests will be disturbed during the implementation of the Project. A pre-construction clearance survey shall be conducted no more than 14 days prior to the start of construction activities. During this survey, the qualified biologist shall inspect all potential nest substrates in and immediately adjacent to the impact areas, including within 250 feet in the case of raptor nests. If an active nest is found close enough to the construction area to be disturbed by these activities, the qualified biologist shall determine the extent of a construction-free buffer to be established around the nest. If work cannot proceed without disturbing the nesting birds, work may need to be halted or redirected to other areas until nesting and fledging are completed or the nest has failed for non-construction related reasons.

4.2.1.3 Potential Impact #3: Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means (Criterion BIO3)

The Project will permanently impact Industrial Ditch and its associated semi-permanent wetland at the southern Project site boundary. As Industrial Ditch is hydrologically connected to the St. Johns River, a navigable water, Industrial Ditch and its associated semi-permanent wetland are under the jurisdiction of the USACE and therefore subject to provisions of the Clean Water Act (CWA). Construction of the new stormwater basin will permanently impact roughly 1000 linear feet of Industrial Ditch, including roughly 120 linear feet of semi-permanent state and federally protected wetland. Such loss could constitute a significant impact. We recommend that the mitigation measure B4 (below) be included in the conditions of approval to reduce the potential impact to a less-than-significant level.

Mitigation Measure B4. Obtain permits from the USACE and the SWRCB for impacts to jurisdictional waters.

5. Obtain a CWA Section 404 Nationwide Permit in consultation with the USACE for work impacting Industrial Ditch and its associated semi-permanent wetland.

6. Obtain a CWA Section 401 water quality certification from the SWRCB for work impacting Industrial Ditch and its associated semi-permanent wetland.

4.2.2 Cumulative Effects

The Project involves constructing a new stormwater basin and pipeline infrastructure to meet the growing needs of the community. Implementing the Project will likely facilitate development in similar areas of the City. However, as such development will likely occur in areas previously developed for agriculture or industry, the cumulative effects on biological resources are expected to be negligible.

4.2.3 Unavoidable Significant Adverse Effects

No unavoidable significant adverse effects on biological resources would occur from implementing the Project.

5.0 Literature Cited

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Appendix A. USFWS list of threatened and endangered species and critical habitats.



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To:

February 24, 2020

Consultation Code: 08ESMF00-2020-SLI-1137

Event Code: 08ESMF00-2020-E-03632

Project Name: Woodlake stormwater basin

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office

Federal Building

2800 Cottage Way, Room W-2605

Sacramento, CA 95825-1846

(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2020-SLI-1137

Event Code: 08ESMF00-2020-E-03632

Project Name: Woodlake stormwater basin

Project Type: WATER SUPPLY / DELIVERY

Project Description: The City of Woodlake proposes to (1) construct a 17-acre stormwater basin on a 38-acre site southeast of the intersection of Ropes Avenue and Mulberry Street; (2) install 4611 linear feet of 48-inch pipeline from the new basin north to the Bravo Avenue alignment, east along Bravo Avenue to Magnolia Street, north on Magnolia Street to just south of Avenue 344, then east along the north edge of Bravo Lake to the Manzanillo Pump Station; and (3) install about 930 linear feet of pipeline from the new basin along the Deltha Avenue alignment to Palm Street.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/36.40984283833346N119.10301307337312W>



Counties: Tulare, CA

Endangered Species Act Species

There is a total of 11 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
San Joaquin Kit Fox <i>Vulpes macrotis mutica</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2873	Endangered

Birds

NAME	STATUS
California Condor <i>Gymnogyps californianus</i> Population: U.S.A. only, except where listed as an experimental population There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8193	Endangered

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard <i>Gambelia silus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/625	Endangered
Giant Garter Snake <i>Thamnophis gigas</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog <i>Rana draytonii</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891 Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/205/office/11420.pdf	Threatened
California Tiger Salamander <i>Ambystoma californiense</i> Population: U.S.A. (Central CA DPS) There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt <i>Hypomesus transpacificus</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp <i>Branchinecta conservatio</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered

Flowering Plants

NAME	STATUS
Greene's Tuctoria <i>Tuctoria greenei</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1573	Endangered
San Joaquin Adobe Sunburst <i>Pseudobahia peirsonii</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2931	Threatened
San Joaquin Orcutt Grass <i>Orcuttia inaequalis</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5506	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Appendix B. CNDDDB occurrence records.



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad (Woodlake (3611941) OR Auckland (3611951) OR Chickencoop Canyon (3611838) OR Exeter (3611932) OR Ivanhoe (3611942) OR Kaweah (3611848) OR Rocky Hill (3611931) OR Shadequarter Mtn. (3611858) OR Stokes Mtn. (3611952)) AND Taxonomic Group (Fish OR Amphibians OR Reptiles OR Birds OR Mammals OR Mollusks OR Arachnids OR Crustaceans OR Insects OR Ferns OR Gymnosperms OR Monocots OR Dicots OR Lichens OR Bryophytes OR Fungi)

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Agelaius tricolor</i> tricolored blackbird	G2G3 S1S2	None Threatened	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_EN-Endangered NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern	505 540	955 S:2	0	0	0	0	0	2	0	2	2	0	0
<i>Ambystoma californiense</i> California tiger salamander	G2G3 S2S3	Threatened Threatened	CDFW_WL-Watch List IUCN_VU-Vulnerable	345 347	1231 S:2	0	1	1	0	0	0	1	1	2	0	0
<i>Anniella pulchra</i> northern California legless lizard	G3 S3	None None	CDFW_SSC-Species of Special Concern USFS_S-Sensitive	377 1,000	375 S:2	1	0	0	0	0	1	1	1	2	0	0
<i>Antrozous pallidus</i> pallid bat	G5 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive WBWG_H-High Priority	368 368	420 S:1	1	0	0	0	0	0	0	1	1	0	0
<i>Ardea herodias</i> great blue heron	G5 S4	None None	CDF_S-Sensitive IUCN_LC-Least Concern	500 500	155 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Athene cunicularia</i> burrowing owl	G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	343 343	1989 S:1	1	0	0	0	0	0	0	1	1	0	0
<i>Atriplex cordulata var. erecticaulis</i> Earlimart orache	G3T1 S1	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	335 335	21 S:1	1	0	0	0	0	0	0	1	1	0	0



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Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Atriplex minuscula</i> lesser saltscale	G2 S2	None None	Rare Plant Rank - 1B.1	335 335	52 S:1	0	1	0	0	0	0	0	1	1	0	0
<i>Atriplex persistens</i> vernal pool smallscale	G2 S2	None None	Rare Plant Rank - 1B.2	345 355	41 S:2	2	0	0	0	0	0	0	2	2	0	0
<i>Batrachoseps regius</i> Kings River slender salamander	G2 S2S3	None None	IUCN_VU-Vulnerable USFS_S-Sensitive	2,000 5,500	14 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Bombus crotchii</i> Crotch bumble bee	G3G4 S1S2	None Candidate Endangered		450 1,000	234 S:5	0	0	0	0	0	5	5	0	5	0	0
<i>Branchinecta lynchi</i> vernal pool fairy shrimp	G3 S3	Threatened None	IUCN_VU-Vulnerable	335 950	770 S:19	2	3	0	0	0	14	6	13	19	0	0
<i>Brodiaea insignis</i> Kaweah brodiaea	G1 S1	None Endangered	Rare Plant Rank - 1B.2 BLM_S-Sensitive USFS_S-Sensitive	560 3,300	27 S:11	2	4	2	0	0	3	10	1	11	0	0
<i>Chrysis tularensis</i> Tulare cuckoo wasp	G1G2 S1S2	None None		450 450	5 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Delphinium recurvatum</i> recurved larkspur	G2? S2?	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_SBBG-Santa Barbara Botanic Garden	340 440	120 S:4	0	0	0	0	1	3	2	2	3	0	1
<i>Desmocerus californicus dimorphus</i> valley elderberry longhorn beetle	G3T2 S2	Threatened None		405 960	271 S:2	0	0	1	0	0	1	2	0	2	0	0
<i>Diplacus pictus</i> calico monkeyflower	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_RSABG-Rancho Santa Ana Botanic Garden	600 600	73 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Empidonax traillii</i> willow flycatcher	G5 S1S2	None Endangered	IUCN_LC-Least Concern USFS_S-Sensitive USFWS_BCC-Birds of Conservation Concern	570 570	90 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Emys marmorata</i> western pond turtle	G3G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable USFS_S-Sensitive	70 1,000	1385 S:3	0	0	0	0	0	3	3	0	3	0	0



Summary Table Report
California Department of Fish and Wildlife
California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Eriogonum nudum var. murinum</i> mouse buckwheat	G5T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	1,280 3,400	11 S:4	0	0	0	0	0	4	4	0	4	0	0
<i>Eryngium spinosepalum</i> spiny-sepaled button-celery	G2 S2	None None	Rare Plant Rank - 1B.2	335 2,000	108 S:20	3	9	2	0	1	5	11	9	19	1	0
<i>Erythranthe norrisii</i> Kaweah monkeyflower	G2 S2	None None	Rare Plant Rank - 1B.3 BLM_S-Sensitive SB_RSABG-Rancho Santa Ana Botanic Garden USFS_S-Sensitive	1,200 2,700	8 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Eumops perotis californicus</i> western mastiff bat	G5T4 S3S4	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern WBWG_H-High Priority	450 940	296 S:5	0	0	0	0	0	5	5	0	5	0	0
<i>Euphorbia hooveri</i> Hoover's spurge	G1 S1	Threatened None	Rare Plant Rank - 1B.2	335 345	29 S:2	0	0	2	0	0	0	0	2	2	0	0
<i>Fritillaria striata</i> striped adobe-lily	G1 S1	None Threatened	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_RSABG-Rancho Santa Ana Botanic Garden SB_USDA-US Dept of Agriculture USFS_S-Sensitive		23 S:1	0	0	0	0	1	0	1	0	0	0	1
<i>Glyceria grandis</i> American manna grass	G5 S3	None None	Rare Plant Rank - 2B.3		10 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Gymnogyps californianus</i> California condor	G1 S1	Endangered Endangered	CDF_S-Sensitive CDFW_FP-Fully Protected IUCN_CR-Critically Endangered NABCI_RWL-Red Watch List	1,000 1,000	13 S:1	0	0	0	0	0	1	1	0	1	0	0



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California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Haliaeetus leucocephalus</i> bald eagle	G5 S3	Delisted Endangered	BLM_S-Sensitive CDF_S-Sensitive CDFW_FP-Fully Protected IUCN_LC-Least Concern USFS_S-Sensitive USFWS_BCC-Birds of Conservation Concern	912 912	327 S:1	0	1	0	0	0	0	0	1	1	0	0
<i>Helianthus winteri</i> Winter's sunflower	G2? S2?	None None	Rare Plant Rank - 1B.2	460 2,500	55 S:32	6	20	4	1	0	1	0	32	32	0	0
<i>Lasthenia glabrata ssp. coulteri</i> Coulter's goldfields	G4T2 S2	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_RSABG-Rancho Santa Ana Botanic Garden SB_SBBG-Santa Barbara Botanic Garden	350 350	111 S:1	0	0	0	0	0	1	0	1	1	0	0
<i>Lepidurus packardii</i> vernal pool tadpole shrimp	G4 S3S4	Endangered None	IUCN_EN-Endangered	340 345	325 S:2	0	1	0	0	0	1	1	1	2	0	0
<i>Leptosiphon serrulatus</i> Madera leptosiphon	G3 S3	None None	Rare Plant Rank - 1B.2 USFS_S-Sensitive	1,000 3,500	27 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Lithobates pipiens</i> northern leopard frog	G5 S2	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern		19 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Lytta moesta</i> moestan blister beetle	G2 S2	None None		1,000 1,000	12 S:1	0	0	0	0	0	1	1	0	0	1	0
<i>Lytta morrisoni</i> Morrison's blister beetle	G1G2 S1S2	None None		960 960	10 S:1	0	0	0	0	0	1	1	0	0	1	0
<i>Orcuttia inaequalis</i> San Joaquin Valley Orcutt grass	G1 S1	Threatened Endangered	Rare Plant Rank - 1B.1	515 515	47 S:1	0	0	0	0	1	0	1	0	0	0	1
<i>Pseudobahia peirsonii</i> San Joaquin adobe sunburst	G1 S1	Threatened Endangered	Rare Plant Rank - 1B.1 SB_RSABG-Rancho Santa Ana Botanic Garden	600 1,420	51 S:3	0	0	0	1	0	2	3	0	3	0	0



Summary Table Report

California Department of Fish and Wildlife California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Rana boylei</i> foothill yellow-legged frog	G3 S3	None Candidate Threatened	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened USFS_S-Sensitive	520 2,211	2468 S:10	0	0	0	0	10	0	10	0	0	0	10
<i>Sagittaria sanfordii</i> Sanford's arrowhead	G3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	400 400	126 S:1	0	0	1	0	0	0	0	1	1	0	0
<i>Spea hammondi</i> western spadefoot	G3 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened	0 743	1247 S:29	0	26	1	0	0	2	2	27	29	0	0
<i>Talanites moodyae</i> Moody's gnaphosid spider	G1G2 S1S2	None None		400 1,200	6 S:4	0	0	0	0	0	4	4	0	4	0	0
<i>Taxidea taxus</i> American badger	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	370 370	592 S:1	0	0	1	0	0	0	1	0	1	0	0
<i>Tuctoria greenei</i> Greene's tuctoria	G1 S1	Endangered Rare	Rare Plant Rank - 1B.1	450 450	50 S:1	0	0	0	0	1	0	1	0	0	0	1
<i>Vulpes macrotis mutica</i> San Joaquin kit fox	G4T2 S2	Endangered Threatened		345 720	1018 S:7	0	0	0	0	0	7	7	0	7	0	0

Appendix C. CNPS plant list.

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

Plant List

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

Search Criteria

Found in Quads 3611952, 3611951, 3611858, 3611942, 3611941, 3611848, 3611932 3611931 and 3611838;

[Modify Search Criteria](#) [Export to Excel](#) [Modify Columns](#) [Modify Sort](#) [Display Photos](#)

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Atriplex cordulata var. erecticaulis	Earlimart orache	Chenopodiaceae	annual herb	Aug-Sep(Nov)	1B.2	S1	G3T1
Atriplex minuscula	lesser saltscale	Chenopodiaceae	annual herb	May-Oct	1B.1	S2	G2
Atriplex persistens	vernal pool smallscale	Chenopodiaceae	annual herb	Jun,Aug,Sep,Oct	1B.2	S2	G2
Brodiaea insignis	Kaweah brodiaea	Themidaceae	perennial bulbiferous herb	Apr-Jun	1B.2	S1	G1
Delphinium recurvatum	recurved larkspur	Ranunculaceae	perennial herb	Mar-Jun	1B.2	S2?	G2?
Diplacus pictus	calico monkeyflower	Phrymaceae	annual herb	Mar-May	1B.2	S2	G2
Eriogonum nudum var. murinum	mouse buckwheat	Polygonaceae	perennial herb	Jun-Nov	1B.2	S2	G5T2
Eryngium spinosepalum	spiny-sepaed button-celery	Apiaceae	annual / perennial herb	Apr-Jun	1B.2	S2	G2
Erythranthe norrisii	Kaweah monkeyflower	Phrymaceae	annual herb	Mar-May	1B.3	S2	G2
Erythranthe sierrae	Sierra Nevada monkeyflower	Phrymaceae	annual herb	Mar-Jul	4.2	S2	G2
Euphorbia hooveri	Hoover's spurge	Euphorbiaceae	annual herb	Jul-Sep(Oct)	1B.2	S1	G1
Glyceria grandis	American manna grass	Poaceae	perennial rhizomatous herb	Jun-Aug	2B.3	S3	G5
Helianthus winteri	Winter's sunflower	Asteraceae	perennial shrub	Jan-Dec	1B.2	S2?	G2?
Hordeum intercedens	vernal barley	Poaceae	annual herb	Mar-Jun	3.2	S3S4	G3G4
Leptosiphon serrulatus	Madera leptosiphon	Polemoniaceae	annual herb	Apr-May	1B.2	S3	G3
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	Poaceae	annual herb	Apr-Sep	1B.1	S1	G1
Pseudobahia peirsonii	San Joaquin adobe sunburst	Asteraceae	annual herb	Feb-Apr	1B.1	S1	G1

Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May-Oct(Nov)	1B.2	S3	G3
Tuctoria greenei	Greene's tuctoria	Poaceae	annual herb	May-Jul(Sep)	1B.1	S1	G1

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Questions and Comments

rareplants@cnps.org

Appendix D

Cultural Resources
Assessment

**CLASS III INVENTORY/PHASE I SURVEY,
WOODLAKE STORMWATER BASIN PROJECT, CITY
OF WOODLAKE, TULARE COUNTY, CALIFORNIA**

Prepared for:

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March 2020

PN 34550.00

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MANAGEMENT SUMMARY

An intensive Class III cultural resources inventory/Phase I survey was conducted for the Woodlake Stormwater Basin Project (Project), which involves the removal of an existing orchard, the excavation of a new stormwater basin and the construction of an associated 48-inch diameter pipeline. The Project area of potential effect (APE) is located in Woodlake, west of Bravo Lake, Tulare County, California. ASM Affiliates, Inc., conducted this study, with David S. Whitley, Ph.D., RPA, serving as principal investigator. The study was undertaken to assist with compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, and the California Environmental Quality Act.

The APE for the Project consists of the area of potential ground surface disturbance resulting from the excavation of the stormwater basin and trenching for 4,611-feet (ft) of 48" pipeline, including lay-down and staging areas. The horizontal APE for the stormwater basin is 17-acres (ac) in size; the APE for the pipeline trench, using a 15-meter (m) buffer on both sides of the route, is 13-ac, yielding a total horizontal APE of 30-ac. The vertical APE is the maximum limit of ground surface excavation, estimated at 10-feet.

A record search of site files and maps was conducted at the Southern San Joaquin Valley Archaeological Information Center (IC), California State University, Bakersfield. A Sacred Lands File Request was also submitted to the Native American Heritage Commission (NAHC). These investigations determined that small portions of the Project APE had been previously surveyed, and that segments of two historic structures, both rail grades, are known to exist within it.

The Class III inventory/Phase I survey fieldwork was conducted on 16 March 2020 with parallel transects spaced at 15-meter intervals walked across the approximately 30-acre APE. Because the APE involves a pipeline along existing paved roads, both sides of the roads were surveyed. Orchard rows were walked within the proposed stormwater basin portion of the APE. The two previously identified cultural resources, segments of the Visalia Electric and Atchison Topeka and Santa Fe Railroad grades, were relocated. Both linear resources segments had been destroyed within the Project APE. They thus lack integrity of design, setting, materials, workmanship and feeling and are recommended as not National Register of Historic Places (NRHP) or California Register of Historical Resources (CRHR) eligible or significant.

No additional cultural resources were identified within the Project APE. Based on these findings, the proposed Woodlake Stormwater Basin Project does not have the potential to result in adverse impacts or effects to historical resources or historic properties, and a determination of no significant impact under CEQA and no adverse effect under Section 106 is recommended. In the unlikely event that cultural resources are identified during the project, work should be halted within a 100-foot radius of the find. It is recommended that a qualified archaeologist be contacted to evaluate the newly discovered resource.

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1. INTRODUCTION AND REGULATORY CONTEXT

ASM Affiliates, Inc., was retained by Crawford & Bowen Planning to conduct an intensive Class III inventory/Phase I cultural resources survey for the Woodlake Stormwater Basin Project. This Project is located in the City of Woodlake, Tulare County, California (Figure 1). The study was undertaken to assist with compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and the California Environmental Protection Act (CEQA). The investigation was conducted, specifically, to ensure that significant impacts or adverse effects to historical resources or historic properties do not occur as a result of project construction.

This current study included:

- A background records search and literature review to determine if any known cultural resources were present in the project zone and/or whether the area had been previously and systematically studied by archaeologists;
- An on-foot, intensive inventory of the study area to identify and record previously undiscovered cultural resources and to examine known sites; and
- A preliminary assessment of any such resources found within the subject property.

David S. Whitley, Ph.D., RPA, served as principal investigator and Robert Azpitarte, B.A., ASM Associate Archaeologist, conducted the fieldwork.

This document constitutes a report on the Class III inventory/Phase I survey. Subsequent chapters provide background to the investigation, including historic context studies; the findings of the archival records search; Native American outreach; a summary of the field surveying techniques employed; and the results of the fieldwork. We conclude with management recommendations for the study area.

1.1 PROJECT LOCATION

The Woodlake Stormwater Basin Project is located within the city limits of Woodlake, California. This places the Project on the open flats of the San Joaquin Valley, a short distance west of the foothills of the Sierra Nevada foothills. Elevation within the Project area, which is flat, is approximately 430-ft above mean sea level for the stormwater basin, which lies immediately west of Mulberry Street and is in an active orchard, west of Bravo Lake. The pipeline route runs from the proposed basin north along South Oak Street to West Bravo Avenue. It turns east heading to South Magnolia Street where it again turns and continues north to Avenue 344 (Hwy. 216). The pipeline then extends along the south side of this road to the Manzanillo Pump Station, immediately north of Bravo Lake.

1.2 PROJECT DESCRIPTION AND APE

The Woodlake Stormwater Basin Project will comprise the excavation of a new stormwater basin and the construction of an associated 48-inch diameter pipeline connecting to an existing pump station adjacent to Bravo Lake. The Project APE consists of the area of potential ground surface disturbance resulting from the excavation of the stormwater basin and trenching for 4,611-feet (ft) of 48" pipeline, including lay-down and staging areas. The horizontal APE for the stormwater basin is 17-acres (ac) in size; the APE for the pipeline trench, using a 15-meter (m) buffer on both sides of the route, is 13-ac, yielding a total horizontal APE of 30-ac. The vertical APE is the maximum limit of ground surface excavation, estimated at 10-feet.

1.3 REGULATORY CONTEXT

1.3.1 CEQA

CEQA is applicable to discretionary actions by state or local lead agencies. Under CEQA, lead agencies must analyze impacts to cultural resources. Significant impacts under CEQA occur when "historically significant" or "unique" cultural resources are adversely affected, which occurs when such resources could be altered or destroyed through project implementation. Historically significant cultural resources are defined by eligibility for or by listing in the California Register of Historical Resources (CRHR). In practice, the federal NRHP criteria (below) for significance applied under Section 106 are generally (although not entirely) consistent with CRHR criteria (see PRC § 5024.1, Title 14 CCR, Section 4852 and § 15064.5(a)(3)).

Significant cultural resources are those archaeological resources and historical properties that:

- (A) Are associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- (B) Are associated with the lives of persons important in our past;
- (C) Embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possess high artistic values; or
- (D) Have yielded, or may be likely to yield, information important in prehistory or history.

Unique resources under CEQA, in slight contrast, are those that represent:

An archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- (1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
- (2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.

- (3) Is directly associated with a scientifically recognized important prehistoric or historic event or person (PRC § 21083.2(g)).

Preservation in place is the preferred approach under CEQA to mitigating adverse impacts to significant or unique cultural resources.

1.3.2 NHPA Section 106

NHPA Section 106 is applicable to federal undertakings, including projects financed or permitted by federal agencies regardless of whether the activities occur on federally managed or privately-owned land. Its purpose is to determine whether adverse effects will occur to significant cultural resources, defined as “historical properties” that are listed in or determined eligible for listing in the National Register of Historic Places (NRHP). The criteria for NRHP eligibility are defined at 36 CFR § 60.4 as follows:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that:

- (A) are associated with events that have made a significant contribution to the broad patterns of our history; or
- (B) are associated with the lives of persons significant in our past; or
- (C) embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- (D) have yielded or may be likely to yield, information important in prehistory or history.

There are, however, restrictions on the kinds of historical properties that can be NRHP listed. These have been identified by the Advisory Council on Historic Preservation (ACHP), as follows:

Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

- (a) A religious property deriving primary significance from architectural or artistic distinction or historical importance; or

- (b) A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
- (c) A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life.
- (d) A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or
- (e) A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or
- (f) A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or
- (g) A property achieving significance within the past 50 years if it is of exceptional importance. (<http://www.achp.gov/nrcriteria.html>).

Federal guidelines provide additional directions for evaluating resources. Following *National Register Bulletin 15, How to Apply the National Register Criteria for Evaluation* (National Park Service 1995), significant cultural resources must maintain integrity:

“Integrity is the ability of a property to convey its significance. To be listed in the National Register of Historic Places, a property must not only be shown to be significant under the National Register criteria, but it also must have integrity” (ibid:44).

Seven aspects or qualities of cultural resources, in various combinations, define integrity. Significant cultural resources possess several, usually most, of these seven qualities. The seven qualities of integrity are location, design, setting, materials, workmanship, feeling, and/or association (ibid). Which aspects of integrity are pertinent to the significance-determination of a specific resource depends on the criterion under which it may be eligible. For example, location would not be an important quality of integrity for a historic ship, nor would workmanship be critical for an archaeological site.

The National Park Service then further specifies that:

“Archeological sites eligible under Criteria A and B must be in overall good condition with excellent preservation of features, artifacts, and spatial relationships to the extent that these remains are able to convey important associations with events or persons...Archeological sites eligible under Criterion C ...[must have] remains [that] are able to illustrate a site type, time period, method of construction, or work of a master...under Criterion D, integrity is based upon the property’s potential to yield specific data that addresses important research questions” (ibid:46).

Note that, for archaeological sites, under Criterion D “only the *potential* to yield information is required,” whereas for Criteria A, B and C, “the site must have demonstrated its ability to convey its significance” (ibid:48; emphasis in original).

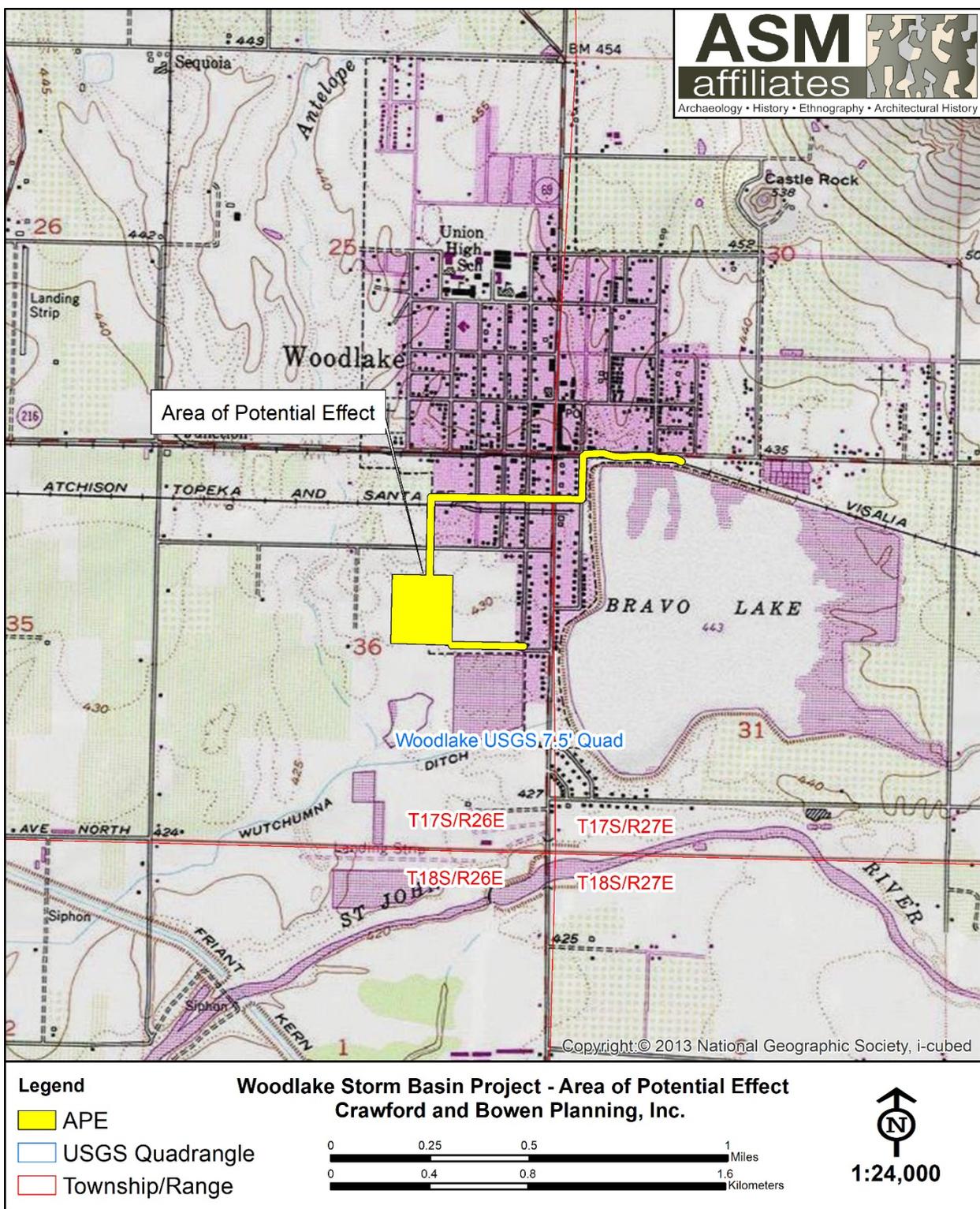


Figure 1. Location of the Woodlake Stormwater Basin Project, Tulare County, California.

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2. ENVIRONMENTAL AND CULTURAL BACKGROUND

2.1 GEOARCHAEOLOGICAL SENSITIVITY AND ENVIRONMENTAL BACKGROUND

As noted above, the 30-ac APE is located on the open flats of the San Joaquin Valley, west of the Sierra Nevada foothills. The so-called Antelope Valley is immediately to the north. Bravo Lake, a natural pond, is located east of the proposed stormwater basin. The dry St. John's riverbed is located roughly a half-mile south of the basin. This drainage is an offshoot tributary of the Kaweah River, located further to the south.

According to the geoarchaeological model developed by Meyer et al. (2010), the Project APE, located north of the St. John's River, has a Very Low potential for buried archaeological deposits. Meyer et al.'s study involved first determining the location and ages of late Pleistocene (>25,000 years old) landforms in the southern San Joaquin Valley. These were identified by combining a synthesis of 2,400 published paleontological, soils and archaeological chronometric dates with geoarchaeological field testing. The ages of surface landforms were then mapped to provide an assessment for the potential for buried archaeological deposits. These ages were derived primarily from the Soil Survey Geographic Database (SSURGO) and the State Soils Geographic (STATSGO) database. A series of maps were created from this information that ranked locations in 7 ordinal classes for sensitivity for buried soils, from Very Low to Very High. Buried sites and cultural resources are therefore considered to be unlikely within the Project APE.

Prior to the appearance of agriculture, starting in the nineteenth century, this location would have been prairie grasslands, grading into tree savannas as one continued into the foothills to the east (Preston 1981; Schoenherr 1992). Historically, and likely prehistorically, riparian environments would have been present along the Kaweah River and around Bravo Lake. St. John's River, in contrast, appears to have been seasonal. The study area and immediate surroundings have been farmed and grazed for many years and little to no native vegetation is present. Perennial bunchgrasses such as purple needlegrass and nodding needlegrass most likely would have been the dominant plant cover in the study area prior to cultivation.

2.2 ETHNOGRAPHIC BACKGROUND

Penutian-speaking Yokuts tribal groups occupied the southern San Joaquin Valley region and much of the nearby Sierra Nevada. Ethnographic information about the Yokuts was collected primarily by Powers (1971, 1976 [originally 1877]), Kroeber (1925), Gayton (1930, 1948), Driver (1937), Latta (1977) and Harrington (n.d.). For a variety of historical reasons, existing research information emphasizes the central Yokuts tribes who occupied both the valley and particularly the foothills of the Sierra. The northernmost tribes suffered from the influx of Euro-Americans during the Gold Rush and their populations were in substantial decline by the time ethnographic studies began in the early twentieth century. In contrast, the southernmost tribes were partially removed by the Spanish to missions and eventually absorbed into multi-tribal communities on the

Sebastian Indian Reservation (on Tejon Ranch), and later the Tule River Reservation and Santa Rosa Rancheria to the north. The result is an unfortunate scarcity of ethnographic detail on southern Valley tribes, especially in relation to the rich information collected from the central foothills tribes where native speakers of the Yokuts dialects are still found. Regardless, the general details of indigenous life-ways were similar across the broad expanse of Yokuts territory, particularly in terms of environmentally influenced subsistence and adaptation and with regard to religion and belief, which were similar everywhere.

Following Kroeber (1925: Plate 47), the project location most likely lies in *Wukchamni Yokuts* territory. A series of historical named sites are located in the Project vicinity:

- *Pachakish*, a bedrock mortar station, is located north of Lemon Cove along the toe slopes of the Sierra Nevada foothills (Latta 1977: 184-5).
- The village of *Hoganu* (also called *Hawcunu* or *Diapnushu*; see Gayton 1930:378, 1948: 56, 58-59, 129; Latta 1977:185) is located at the bridge across the Kaweah River, roughly 0.5-mi north of the Project area.
- Two pictograph sites at Steve Barton Point, on the north site of the Kaweah River, were known as *Moiyak*, which translates as “whirlwind place” (Whitley 2006).

The Yokuts settlement pattern was largely consistent, regardless of specific tribe involved. Winter villages were typically located along lakeshores and major stream courses (as these existed circa AD 1800), with dispersal phase family camps located at elevated spots on the valley floor and near gathering areas in the foothills.

The Yokuts settlement pattern was largely consistent, regardless of specific tribe involved. Winter villages were typically located along lakeshores and major stream courses (as these existed circa AD 1800), with dispersal phase family camps located at elevated spots on the valley floor and near gathering areas in the foothills.

Most Yokuts groups, again regardless of specific tribal affiliation, were organized as a recognized and distinct tribelet; a circumstance that almost certainly pertained to the tribal groups noted above. Tribelets were land-owning groups organized around a central village and linked by shared territory and descent from a common ancestor. The population of most tribelets ranged from about 150 to 500 peoples (Kroeber 1925).

Each tribelet was headed by a chief who was assisted by a variety of assistants, the most important of whom was the *winatum*, a herald or messenger and assistant chief. A shaman also served as religious officer. While shamans did not have any direct political authority, as Gayton (1930) has illustrated, they maintained substantial influence within their tribelet.

Shamanism is a religious system common to most Native American tribes. It involves a direct and personal relationship between the individual and the supernatural world enacted by entering a trance or hallucinatory state (usually based on the ingestion of psychotropic plants, such as jimsonweed or more typically native tobacco). Shamans were considered individuals with an unusual degree of supernatural power, serving as healers or curers, diviners, and controllers of natural phenomena (such as rain or thunder). Shamans also produced the rock art of this region,

depicting the visions they experienced in vision quests believed to represent their spirit helpers and events in the supernatural realm (Whitley 1992, 2000).

The centrality of shamanism to the religious and spiritual life of the Yokuts was demonstrated by the role of shamans in the yearly ceremonial round. The ritual round, performed the same each year, started in the spring with the jimsonweed ceremony, followed by rattlesnake dance and (where appropriate) first salmon ceremony. After returning from seed camps, fall rituals began in the late summer with the mourning ceremony, followed by first seed and acorn rites and then bear dance (Gayton 1930:379). In each case, shamans served as ceremonial officials responsible for specific dances involving a display of their supernatural powers (Kroeber 1925).

Subsistence practices varied from tribelet to tribelet based on the environment of residence. Throughout Native California, and Yokuts territory in general, the acorn was a primary dietary component, along with a variety of gathered seeds. Valley tribes augmented this resource with lacustrine and riverine foods, especially fish and wildfowl. As with many Native California tribes, the settlement and subsistence rounds included the winter aggregation into a few large villages, where stored resources (like acorns) served as staples, followed by dispersal into smaller camps, often occupied by extended families, where seasonally available resources would be gathered and consumed.

Although population estimates vary and population size was greatly affected by the introduction of Euro-American diseases and social disruption, the Yokuts were one of the largest, most successful groups in Native California. Cook (1978) estimates that the Yokuts region contained 27 percent of the aboriginal population in the state at the time of contact; other estimates are even higher. Many Yokuts people continue to reside in the southern San Joaquin Valley today.

2.3 PRE-CONTACT ARCHAEOLOGICAL BACKGROUND

The San Joaquin Valley region has received minimal archaeological attention compared to other areas of the state. In part this is because the majority of California archaeological work has concentrated in the Sacramento Delta, Santa Barbara Channel, and central Mojave Desert areas (see Moratto 1984). Although knowledge of the region's pre is limited, enough is known to determine that the archaeological record is broadly similar to south-central California as a whole (see Gifford and Schenk 1926; Hewes 1941; Wedel 1941; Fenenga 1952; Elsasser 1962; Fredrickson and Grossman 1977; Schiffman and Garfinkel 1981). Based on these sources, the general prehistory of the region can be outlined as follows.

Initial occupation of the region occurred at least as early as the *Paleoindian Period*, or prior to about 10,000 years before present (YBP). Evidence of early use of the region is indicated by characteristic fluted and stemmed points found around the margin of Tulare Lake, in the foothills of the Sierra, and in the Mojave Desert proper.

Both fluted and stemmed points are particularly common around lake margins, suggesting a terminal Pleistocene/early Holocene lakeshore adaptation similar to that found throughout the far west at the same time; little else is known about these earliest peoples. Over 250 fluted points have been recovered from the Witt Site (CA-KIN-32), located along the western shoreline of ancient

Tulare Lake west of the study area, demonstrating the importance of this early occupation in the San Joaquin Valley specifically (see Fenenga 1993). Additional finds consist of a Clovis-like projectile point discovered in a flash-flood cut-bank near White Oak Lodge in 1953 on Tejon Ranch (Glennan 1987a, 1987b). More recently, a similar fluted point was found near Bakersfield (Zimmerman et al. 1989). Although human occupation of the state is well-established during the Late Pleistocene, relatively little can be inferred about the nature and distribution of this occupation with a few exceptions. First, little evidence exists to support the idea that people at that time were big-game hunters, similar to those found on the Great Plains. Second, the western Mojave Desert evidence suggests small, very mobile populations that left a minimal archaeological signature. The evidence from the ancient Tulare Lake shore, in contrast, suggests much more substantial population and settlements which, instead of relying on big game hunting, were tied to the lacustrine lake edge. Variability in subsistence and settlement patterns is thus apparent in California, in contrast to the Great Plains.

Substantial evidence for human occupation across California, however, first occurs during the middle Holocene, roughly 7,500 to 4,000 YBP. This period is known as the *Early Horizon*, or alternatively as the Early Millingstone along the Santa Barbara Channel. In the south, populations concentrated along the coast with minimal visible use of inland areas. Adaptation emphasized hard seeds and nuts with tool-kits dominated by mullers and grindstones (manos and metates). Additionally, little evidence for Early Horizon occupation exists in most inland portions of the state, partly due to a severe cold and dry paleoclimatic period occurring at this time, although a site deposit dating to this age has been identified along the ancient Buena Vista shoreline in Kern County to the south (Rosenthal et al. 2007). Regardless of specifics, Early Horizon population density was low with a subsistence adaptation more likely tied to plant food gathering than hunting.

Environmental conditions improved dramatically after about 4,000 YBP during the *Middle Horizon* (or Intermediate Period). This period is known climatically as the Holocene Maximum (circa 3,800 YBP) and was characterized by significantly warmer and wetter conditions than previously experienced. It was marked archaeologically by large population increase and radiation into new environments along coastal and interior south-central California and the Mojave Desert (Whitley 2000). In the Delta region to the north, this same period of favorable environmental conditions was characterized by the appearance of the Windmill culture which exhibited a high degree of ritual elaboration (especially in burial practices) and perhaps even a rudimentary mound-building tradition (Meighan, personal communication, 1985). Along with ritual elaboration, Middle Horizon times experienced increasing subsistence specialization, perhaps correlating with the appearance of acorn processing technology. Penutian speaking peoples (including the Yokuts) are also posited to have entered the state roughly at the beginning of this period and, perhaps to have brought this technology with them (cf. Moratto 1984). Likewise, it appears the so-called "Shoshonean Wedge" in southern California, the Takic speaking groups that include the Gabrielino/Fernandeño, Tataviam and Kitanemuk, may have moved into the region at that time (Sutton 2009, rather than at about 1500 YBP as first suggested by Kroeber (1925).

Evidence for Middle Horizon occupation of interior south-central California is substantial. For example, in northern Los Angeles County along the upper Santa Clara River, to the south of the San Joaquin Valley, the Agua Dulce village complex indicates occupation extending back to the Intermediate Period, when the population of the village may have been 50 or more people (King

et al n.d.). Similarly, inhabitation of the Hathaway Ranch region near Lake Piru, and the Newhall Ranch near Valencia, appears to date to the Intermediate Period (W & S Consultants 1994). To the west, little or no evidence exists for pre-Middle Horizon occupation in the upper Sisquoc and Cuyama River drainages; populations first appear there at roughly 3,500 YBP (Horne 1981). The Carrizo Plain, the valley immediately west of the San Joaquin, experienced a major population expansion during the Middle Horizon (W & S Consultants 2004; Whitley et al. 2007), and recently collected data indicates the Tehachapi Mountains region was first significantly occupied during the Middle Horizon (W & S Consultants 2006). A parallel can be drawn to the inland Ventura County region where a similar pattern has been identified (Whitley and Beaudry 1991), as well as the western Mojave Desert (Sutton 1988a, 1988b), the southern Sierra Nevada (W & S Consultants 1999), and the Coso Range region (Whitley et al. 1988). In all of these areas a major expansion in settlement, the establishment of large site complexes and an increase in the range of environments exploited appear to have occurred sometime roughly around 4,000 years ago. Although most efforts to explain this expansion have focused on local circumstances and events, it is increasingly apparent this was a major southern California-wide occurrence and any explanation must be sought at a larger level of analysis (Whitley 2000). Additionally, evidence from the Carrizo Plain suggests the origins of the tribelet level of political organization developed during this period (W & S Consultants 2004; Whitley et al. 2007). Whether this same demographic process holds for the southern San Joaquin Valley, including the study area, is yet to be determined.

The beginning of the *Late Horizon* is set variously at 1,500 and 800 YBP, with a growing archaeological consensus for the shorter chronology. Increasing evidence suggests the importance of the Middle-Late Horizons transition (AD 800 to 1200) in the understanding of south-central California prehistory. This corresponds to the so-called Medieval Climatic Anomaly, followed by the Little Ice Age, and this general period of climatic instability extended to about A.D. 1860. It included major droughts matched by intermittent “mega-floods,” and resulted in demographic disturbances across much of the west (Jones et al. 1999). It is believed to have resulted in major population decline and abandonments across south-central California, involving as much as 90% of the interior populations in some regions, including the Carrizo Plain (Whitley et al. 2007). It is not clear whether site abandonment was accompanied by a true reduction in population or an agglomeration of the same numbers of peoples into fewer but larger villages in more favorable locations. Population along the Santa Barbara coast appears to have spiked at about the same time that it collapsed on the Carrizo Plain (ibid). Along Buena Vista Lake, in Kern County, population appears to have been increasingly concentrated towards the later end of the Medieval Climatic Anomaly (Culleton 2006), and population intensification also appears to have occurred in the well-watered Tehachapi Mountains during this same period (W & S Consultants 2006).

What is then clear is that Middle Period villages and settlements were widely dispersed across the south-central California landscape, including in the Sierras and the Mojave Desert. Many of these sites are found at locations that lack existing or known historical fresh water sources. Late Horizon sites, in contrast, are typically concentrated in areas where fresh water was available during the historical period, if not currently.

One extensively studied site that shows evidence of intensive occupation during the Middle-Late Horizons transition (~1,500 – 500 YBP) is the Redtfeldt Mound (CA-KIN-66/H), located northwest of the current study area, near the north shore of ancient Tulare Lake. There, Siefkin

(1999) reported on human burials and a host of artifacts and ecofacts excavated from a modest-sized mound. He found that both Middle Horizon and Middle-Late Horizons transition occupations were more intensive than Late Horizon occupations, which were sporadic and less intensive (Siefkin 1999:110-111).

The Late Horizon can then be understood as a period of recovery from a major demographic collapse. One result is the development of regional archaeological cultures as the precursors to ethnographic Native California; suggesting that ethnographic life-ways recorded by anthropologists extend roughly 800 years into the past.

The position of southern San Joaquin Valley prehistory relative to patterns seen in surrounding areas is still somewhat unknown. The presence of large lake systems in the valley bottoms appears to have mediated some of the desiccation seen elsewhere. But, as the reconstruction of Soda Lake in the nearby Carrizo Plain demonstrates (see Whitley et al. 2007) environmental perturbations had serious impacts on lake systems too. Identifying certain of the prehistoric demographic trends for the southern San Joaquin Valley, and determining how these trends (if present) correlate with those seen elsewhere, is a current important research objective.

2.4 HISTORICAL BACKGROUND

Spanish explorers first visited the San Joaquin Valley in 1772, but its lengthy distance from the missions and presidios along the Pacific Coast delayed permanent settlement for many years, including during the Mexican period of control over the Californian region. In the 1840s, Mexican rancho owners along the Pacific Coast allowed their cattle to wander and graze in the San Joaquin Valley (JRP Historical Consulting 2009). The Mexican government granted the first ranchos in the southern part of the San Joaquin Valley in the early 1840s, but these did not result in permanent settlement. It was not until the annexation of California in 1848 that the exploitation of the southern San Joaquin Valley began (Pacific Legacy 2006).

The discovery of gold in northern California in 1848 resulted in a dramatic increase of population, consisting in good part of fortune seekers and gold miners, who began to scour other parts of the state. After 1851, when gold was discovered in the Sierra Nevada Mountains in eastern Kern County, the population of the area grew rapidly. Some new immigrants began ranching in the San Joaquin Valley to supply the miners and mining towns. Ranchers grazed cattle and sheep, and farmers dry-farmed or used limited irrigation to grow grain crops, leading to the creation of small agricultural communities throughout the valley (JRP Historical Consulting 2009).

After the American annexation of California, the southern San Joaquin Valley became significant as a center of food production for this new influx of people in California. The expansive unfenced and principally public foothill spaces were well suited for grazing both sheep and cattle (Boyd 1997). As the Sierra Nevada gold rush presented extensive financial opportunities, ranchers introduced new breeds of livestock, consisting of cattle, sheep and pig (Boyd 1997).

With the increase of ranching in the southern San Joaquin came the dramatic change in the landscape, as non-native grasses more beneficial for grazing and pasture replaced native flora (Preston 1981). After the passing of the Arkansas Act in 1850, efforts were made to reclaim small

tracts of land in order to create more usable spaces for ranching. Eventually, as farming supplanted ranching as a more profitable enterprise, large tracts of land began to be reclaimed for agricultural use, aided in part by the extension of the railroad in the 1870s (Pacific Legacy 2006).

Following the passage of state wide ‘No-Fence’ laws in 1874, ranching practices began to decline, while farming expanded in the San Joaquin Valley in both large land holdings and smaller, subdivided properties. As the farming population grew, so did the demand for irrigation. Settlers began reclamation of swampland in 1866. Grants were given subsequently to individuals who had both the resources and the finances to undertake land reclamation. Three competing partnerships developed during this period which had a great impact on control of water, land reclamation and ultimately agricultural development in the San Joaquin Valley: Livermore and Chester, Haggin and Carr, and Miller and Lux, perhaps the most famous of the enterprises. Livermore and Chester were responsible, among other things, for developing the large Hollister plow (three feet wide by two feet deep), pulled by a 40-mule team, which was used for ditch digging. Haggin and Carr were largely responsible for reclaiming the beds of the Buena Vista and Kern lakes, and for creating the Calloway Canal, which drained through Bakersfield to Goose Lake (Morgan 1914). Miller and Lux ultimately became one of the biggest private property holders in the country, controlling the rights to over 22,000 square miles. They recognized early-on that control of water would have important economic implications, and they played a major role in the water development of the state. They controlled, for example, over 100 miles of the San Joaquin River with the San Joaquin and Kings River Canal and Irrigation System. They were also embroiled for many years in litigation against Haggin and Carr over control of the water rights to the Kern River. Descendants of Henry Miller continue to play a major role in California water rights, with his great grandson, George Nickel, Jr., the first to develop the concept of water banking, thus creating a system to buy and sell water (<http://exiledonline.com/california-class-war-history-meet-the-oligarch-family-thats-been-scamming-taxpayers-for-150-years-and-counting/>).

The nearby town of Visalia, originally called Four Creeks, was founded in 1852 and is believed to be the earliest settlement in the San Joaquin Valley between Los Angeles and the Stockton area. It was made the county seat of Tulare County in 1853 and became a stop on the Butterfield Overland Mail stage route, which ran from Los Angeles to Stockton, in 1858. The Kaweah Delta area was the initial emphasis of settlement in the San Joaquin but, as irrigation and intensive agricultural developed, the focus of settlement shifted to the Kings Delta, especially the Mussel Sloughs area. By 1879, there were 61,200-ac irrigated by the Kings River, 22,000-ac by the Kaweah and only 4,500-ac by the Tule.

Woodlake was established by Gilbert F. Stevenson, a southern California developer, in 1912, through his “Woodlake Townsite Company.” He had optioned 13,000-acres in the immediate area, hoping to establish citrus orchards and, through active marketing, a town. He also donated three miles of right-of-way to the Visalia Electric Railway, connecting the townsite to Visalia to the west. Stevenson built levees around the Bravo Lake (also sometimes called Wood Lake) along with recreational facilities to help attract new residents. Stevenson lost his fortune during the Depression but Woodlake continued to grow. It was incorporated in 1940 and continues to be primarily an agricultural community (<http://www.cityofwoodlake.com/our-mission/>; accessed 3/18/2020).

With increasing farming demand in the twentieth century, the Central Valley Project (CVP) was developed to supply water to Fresno, Tulare, and Kern counties. Terminus Dam, which created Lake Kaweah, was completed as part of the CVP in 1962 and is a short distance east of Woodlake. It supplies water for the Friant-Kern Canal. The Friant-Kern Canal was constructed between 1945 and 1951 and is approximately 152 miles in length (Preston 1981).

2.5 RESEARCH DESIGN

2.5.1 Pre-Contact Archaeology

Previous research and the nature of the pre-contact archaeological record suggest two significant NRHP themes, both of which fall under the general Pre-Contact Archaeology area of significance. These are the Expansion of Pre-Contact Populations and Their Adaptation to New Environments; and Adaptation to Changing Environmental Conditions.

The Expansion of Pre-Contact Populations and Their Adaptation to New Environments theme primarily concerns the Middle Horizon/Holocene Maximum. Its period of significance runs from about 4,000 to 1,500 YBP. It involves a period during which the prehistoric population appears to have expanded into a variety of new regions, developing new adaptive strategies in the process.

The Adaptation to Changing Environmental Conditions theme is partly related to the Holocene Maximum, but especially to the Medieval Climatic Anomaly. The period of significance for this theme, accordingly, extends from about 4,000 to 800 YBP. This theme involves the apparent collapse of many inland populations, presumably with population movements to better environments such as the coast. It is not yet known whether the southern San Joaquin Valley, with its system of lakes, sloughs and swamps, experienced population decline or, more likely, population increase due to the relatively favorable conditions of this region during this period of environmental stress.

The range of site types that are present in this region include:

- Villages, primarily located on or near permanent water sources, occupied by large groups during the winter aggregation season;
- Seasonal camps, again typically located at water sources, occupied during other parts of the year tied to locally and seasonally available food sources;
- Special activity areas, especially plant processing locations containing bedrock mortars (BRMs), commonly (though not exclusively) near existing oak woodlands, and invariably at bedrock outcrops or exposed boulders;
- Stone quarries and tool workshops, occurring in three general contexts: at or below naturally occurring chert exposures on the eastern front of the Temblor Range; at quartzite cobble exposures, often on hills or ridges; and, for soapstone in the western Sierra Nevada foothills, at exposures of steatite-grade talc-schist;
- Ritual sites, most commonly pictographs (rock art) found at rockshelters or large exposed boulders, and cemeteries, both commonly associated with villages; and

- A variety of small lithic scatters (low density surface scatters of stone tools).

The first requisites in any research design are the definition of site age/chronology and site function. The ability to determine either of these basic kinds of information may vary between survey and test excavation projects, and due to the nature of the sites themselves. BRM sites without associated artifacts, for example, may not be datable beyond the assumption that they post-date the Early Horizon and are thus less than roughly 4,000 years old.

A second fundamental issue involves the place of site in the settlement system, especially with respect to water sources. Because the locations of the water sources have sometimes changed over time, villages and camps are not exclusively associated with existing (or known historical) water sources (W&S Consultants 2006). The size and locations of the region's lakes, sloughs and delta channels, to cite the most obvious example, changed significantly during the last 12,000 years due to major paleoclimatic shifts. This altered the area's hydrology and thus prehistoric settlement patterns. The western shoreline of Tulare Lake was relatively stable, because it abutted the Kettleman Hills. But the northern, southern and eastern shorelines comprised the near-flat valley floor. Relatively minor fluctuations up or down in the lake level resulted in very significant changes in the areal expression of the lake on these three sides, and therefore the locations of villages and camps. Although perhaps not as systematic, similar changes occurred with respect to stream channels and sloughs, and potential site locations associated with them. This circumstance has implications for predicting site locations and archaeological sensitivity. Site sensitivity is then hardest to predict in the open valley floor, where changes in stream courses and lake levels occurred on numerous occasions.

Nonetheless, the position of San Joaquin Valley prehistory relative to the changing settlement and demographic patterns seen in surrounding areas is still somewhat unknown (cf. Siefkin 1999), including to the two NRHP themes identified above. The presence of large lake systems in the valley bottoms can be expected to have mediated some of the effects of desiccation seen elsewhere. But, as the reconstruction of Soda Lake in the nearby Carrizo Plain demonstrates (see Whitley et al. 2007), environmental perturbations had serious impacts on lake systems too. Identifying certain of the prehistoric demographic trends for the southern San Joaquin Valley, and determining how these trends (if present) correlate with those seen elsewhere, is another primary regional research objective.

Archaeological sites would primarily be evaluated for NRHP eligibility under Criterion D, research potential.

2.5.2 Historical Archaeology: Native American

Less research has been conducted on the regional historical archaeological record, both Native American and Euro-American. For Native American historical sites, the ethnographic and ethnohistoric periods in the southern San Joaquin Valley extended from first Euro-American contact, in AD 1772, to circa 1900, when tribal populations were first consolidated on reservations. The major significant historic NRHP themes during this period of significance involve the related topics of Historic-Aboriginal Archaeology, and Native American Ethnic Heritage. More

specifically, these concern the Adaptation of the Indigenous Population to Euro-American Encroachment and Settlement, and their Acculturation to Western Society. These processes included the impact of missionization on the San Joaquin Valley (circa 1800 to about 1845); the introduction of the horse and the development of a San Joaquin Valley “horse culture,” including raiding onto the coast and Los Angeles Basin (after about 1810); the use of the region as a refuge for mission neophyte escapees (after 1820); responses to epidemics from introduced diseases (especially in the 1830s); armed resistance to Euro-American encroachment (in the 1840s and early 1850s); the origins of the reservation system and the development of new tribal organizations and ethnic identities; and, ultimately, the adoption of the Euro-American society’s economic system and subsistence practices, and acculturation into that society.

Site types that have been identified in the region dating to the ethnographic/ethnohistoric period of significance primarily include villages and habitations, some of which contain cemeteries and rock art (including pictographs and cupules). Dispersed farmsteads, dating specifically from the reservation period or post-1853, would also be expected. The different social processes associated with this historical theme may be manifest in the material cultural record in terms of changing settlement patterns and village organization (from traditional nucleated villages to single family dispersed farmsteads); the breakdown of traditional trading networks with their replacement by new economic relationships; changing subsistence practices, especially the introduction of agriculture initially via escaped mission neophytes; the use of Euro-American artifacts and materials rather than traditional tools and materials; and, possibly, changing mortuary practices.

Inasmuch as culture change is a primary intellectual interest in archaeology, ethnographic villages and habitations may be NRHP eligible under Criterion D, research potential. Rock art sites, especially pictographs, may be eligible under Criterion C as examples of artistic mastery. They may also be eligible under Criterion A, association with events contributing to broad patterns of history. Ethnographic sites, further, may be NRHP eligible as Traditional Cultural Properties due to potential continued connections to tribal descendants, and their resulting importance in traditional practices and beliefs, including their significance for historical memory, tribal- and self-identity formation, and tribal education.

For Criteria A, C and D, eligibility requires site integrity (including the ability to convey historical association for Criterion A). These may include intact archaeological deposits for Criterion D, as well as setting and feel for Criteria C and A. Historical properties may lack physical integrity, as normally understood in heritage management, but still retain their significance to Native American tribes as Traditional Cultural Properties if they retain their tribal associations and uses.

2.5.3 Historical Archaeology: Euro-American

Approaches to historical Euro-American archaeological research relevant to the region have been summarized by Caltrans (1999, 2000, 2007, 2008). These concern the general topics of historical landscapes, agriculture and farming, irrigation (water conveyance systems), and mining. Caltrans has also identified an evaluation matrix aiding determinations of eligibility. The identified research issues include site structure and land-use (lay-out, land use, feature function); economics (self-sufficiency, consumer behavior, wealth indicators); technology and science (innovations, methods); ethnicity and cultural diversity (religion, race); household composition and lifeways

(gender, children); and labor relations. Principles useful for determining the research potential of an individual site or feature are conceptualized in terms of the mnemonic AIMS-R, as follows:

1. *Association* refers to the ability to link an assemblage of artifacts, ecofacts, and other cultural remains with an individual household, an ethnic or socioeconomic group, or a specific activity or property use.
2. *Integrity* addresses the physical condition of the deposit, referring to the intact nature of the archaeological remains. In order for a feature to be most useful, it should be in much the same state as when it was deposited. However, even disturbed deposits can yield important information (e.g., a tightly dated deposit with an unequivocal association).
3. *Materials* refers to the number and variety of artifacts present. Large assemblages provide more secure interpretations as there are more datable items to determine when the deposit was made, and the collection will be more representative of the household, or activity. Likewise, the interpretive potential of a deposit is generally increased with the diversity of its contents, although the lack of diversity in certain assemblages also may signal important behavioral or consumer patterns.
4. *Stratigraphy* refers to the vertically or horizontally discrete depositional units that are distinguishable. Remains from an archaeological feature with a complex stratigraphic sequence representative of several events over time can have the added advantage of providing an independent chronological check on artifact diagnosis and the interpretation of the sequence of environmental or sociocultural events.
5. *Rarity* refers to remains linked to household types or activities that are uncommon. Because they are scarce, they may have importance even in cases where they otherwise fail to meet other thresholds of importance (Caltrans 2007:209).

For agricultural sites, Caltrans (2007) has identified six themes to guide research: Site Structure and Land Use Pattern; Economic Strategies; Ethnicity and Cultural Adaptation; Agricultural Technology and Science; Household Composition and Lifeways; and Labor History. Expected site types would include farm and ranch homesteads and facilities, line camps, and refuse dumps. In general terms, historical Euro-American archaeological sites would be evaluated for NRHP eligibility under Criterion D, research potential. However, they also potentially could be eligible under Criteria A and B for their associate values with major historical trends or individuals. Historical landscapes might also be considered.

Historical structures, which are most likely to be pertinent to the current study area, are typically evaluated for NRHP eligibility under Criteria A and/or B, for their associate values with major historical trends or individuals, and C for potential design or engineering importance. Water conveyance systems comprise a particular sub-set of historical structures that warrant discussion in light of the known presence of one such resource within the Project APE.

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3. ARCHIVAL RECORDS SEARCH

3.1 ARCHIVAL RECORDS SEARCH

In order to determine whether the Woodlake Stormwater Basin Project APE had been previously surveyed for cultural resources, and/or whether any such resources were known to exist on any of them, an archival records search was conducted by the staff of the Southern San Joaquin Valley Information Center (IC) on 2 March 2020 (Confidential Appendix A). The records search was completed to determine: (i) if prehistoric or historical archaeological sites had previously been recorded within the study areas; (ii) if the project area had been systematically surveyed by archaeologists prior to the initiation of this field study; and/or (iii) whether the region of the field project was known to contain archaeological sites and to thereby be archaeologically sensitive. Records examined included archaeological site files and maps, the NRHP, Historic Property Data File, California Inventory of Historic Resources, and the California Points of Historic Interest.

According to the IC record search, four previous archaeological surveys had been completed that covered portions of the pipeline route (Table 1); the stormwater basin had not been previously surveyed. As a result of these studies, two historic structures had been identified within the pipeline APE: segments of the Visalia Electric (P-54-004034) and the Atchison Topeka and Santa Fe Railroad (P-54-004632) grades. A third resource, the Bravo Lake berm (P-54-004033), built by Gilbert F. Stevenson, is immediately outside of the pipeline route APE. An additional nine previous archaeological surveys had been conducted within 0.5 mi of the APE as a whole (Table 2). These studies resulted in the recording of one additional cultural resource, the historical Wutchumna Ditch (P-54-004875), south of Bravo Lake.

Table 1. Survey Reports within the Study Area

Report No.	Year	Author (s)/Affiliation	Title
TU-00423	1994	J Miller/Peak Associates, Inc.	& Cultural Resources Assessment of the Proposed Woodlake Valley Apartments I and II, Woodlake, Tulare County, California
TU-01013	1999	K Hovey and Tackett/ Caltrans	W Negative Archaeological Survey Report to Construct an Asphalt Concrete Overlay and Shoulder Backing on State Route 245 from State Route 198 to State Route 201 In Tulare County, California
TU-01445	2010	S Hudlow/ Hudlow Cultural Resource Associates	A Phase I Cultural Resource Survey for Woodlake Village II, City of Woodlake, California
TU-01813	2017	KD Thomas / Helix Environmental	Cultural Resources Records Search and Site Visit Results for AT&T Mobility, LLC Candidate CVL03488 (Acacia Street), 353 South Acacia Street, Woodlake, Tulare County, California (/ebI Project # 6117002307

Table 2. Survey Reports within 0.5-miles of the Study Area

Report No.	Year	Author (s)/Affiliation	Title
TU-00008	1997	JS Kus /California State University, Fresno	Negative Archaeological Survey Report for the Woodlake Self-Help Project
TU-00014	1996	JS Kus and CA Mader /California State University, Fresno	Negative Archaeological Survey Report for the Woodlake HOME-95 Project
TU-00015	1995	JS Kus and CA Mader /California State University, Fresno	Negative Archaeological Survey Report for the Proposed Development of a Parcel of Land at 248 Valencia Blvd. (State Highway 65) in the City of Woodlake, Tulare County, California
TU-00016	1996	JS Kus and CA Mader /California State University, Fresno	Negative Archaeological Survey Report for the Woodlake BEGIN Project
TU-00409	1981	D O'Connor / Caltrans	Archaeological Survey Report for Grade Raising Project Between Road 204 and Cypress Street, Near Woodlake, Tulare County, California
TU-01196	2004	JS Kus / James S. Kus & Associates	Negative Archaeological Survey Report for the Woodlake Wastewater Treatment Facility Expansion
TU-01389	2009	RE Parr / Cal Heritage	Cultural Resource Assessment for the Replacement of Seven Deteriorated Power Poles on the Southern California Edison Company Aurora, Elk, Merryman, Milk, Redbanks, and Sargent 12kV Circuits, Tulare County, California
TU-01392	2009	AM Greenwald and K Goetter / LSA Associates, Inc.	Cultural and Paleontological Resources Study for the Woodlake Wastewater Treatment Facility Project, Woodlake, Tulare County, California
TU-01394	2009	RE Parr / Cal Heritage	Cultural Resource Assessment for the Replacement of Eleven Deteriorated Power Poles on the Southern California Edison Company Bravo, Cairns, Campbell, Homer, Merryman, and Redbanks 12 kV Circuits Tulare County, California

A records search was also conducted at the Native American Heritage Commission (NAHC) Sacred Lands File (Confidential Appendix A). No sacred sites or tribal cultural resources were known in or in the vicinity of the APE. Outreach letters were then sent to the tribal contact list provided by the NAHC by the City of Woodlake.

Based on the record search results, the Project APE was considered to have low archaeological sensitivity.

4. METHODS AND RESULTS

4.1 FIELD METHODS

An intensive Class III inventor/Phase I survey of the APE was conducted by Robert Azpitarte, B.A., ASM Associate Archaeologist on 16 March 2020. The field methods employed included intensive pedestrian examination of the ground surface for evidence of archaeological sites in the form of artifacts, surface features (such as bedrock mortars, historical mining equipment), and archaeological indicators (e.g., organically enriched midden soil, burnt animal bone); the identification and location of any discovered sites, should they be present; tabulation and recording of surface diagnostic artifacts; site sketch mapping; preliminary evaluation of site integrity; and site recording, following the California Office of Historic Preservation Instructions for Recording Historic Resources, using DPR 523 forms. Parallel survey transects spaced at 15-m apart were employed for the inventory. These covered the entirety of the approximately 30-ac stormwater basin APE. Because the pipeline route APE will follow existing paved roads, both sides of these roads were surveyed. Where grass lawns or other alterations were present, open/exposed areas in the immediate vicinity were purposely examined to ensure ground surface visibility, with transect spacing reduced in these locations. Visibility overall was moderate to good, and adequate for Phase I survey/Class III inventory standards.

4.2 SURVEY RESULTS

The Project APE includes both existing citrus orchards, in the stormwater basin area (Figure 2), and developed city streets for most of the pipeline route (Figure 3). The eastern terminus of the pipeline is the existing Manzanillo Pumping Station, itself within a park bordering the north shore of Bravo Lake (Figure 4). The locations of the segments of two previously recorded cultural resources were identified within the APE and their existing site records were updated (Confidential; Appendix B). No other cultural resources of any kind are present within the project APE.

The two previously recorded historical structures are described below.

4.2.1 Previously Recorded Resources

P-54-004034 (Visalia Electric Railroad)

P-54-004034 consists of the early 20th century Visalia Electric Railroad grade. The resource was originally recorded by Caltrans in 1999, with other portions of the rail grade subsequently recorded in the last 21 years. According to Preston (1981), the railroad operated from 1905 to 1924, when the rise of automobile ownership made it obsolete.

According to the IC records, a short segment of the rail grade, measuring approximately 1,400-ft (east-west) in length, was located within the APE. This mapping was likely based on the plotted location of the grade on the 1952 USGS Woodlake 1: 24,000 topographical quadrangle. No evidence of this historical structure was in fact present within the APE. All elements of the rail grade had been removed (i.e. ballast base, rail ties, cross beams) within the APE. The mapped location of this rail grade has been turned into a botanical garden and park walkways for the community, alongside Bravo Lake. The segment of the resource within the APE no longer exists and will not be affected by proposed construction.

P-54-004632 (Atchison Topeka and Santa Fe Railroad)

P-54-004632 consists of the Atchison Topeka and Santa Fe (ATSF) Railroad grade, an early 20th century structure. The resource was originally recorded by William Self Associates in 1995, with other portions of the rail grade subsequently recorded in the last 25 years. According to JRP Consulting (2009), construction of the rail grade began around 1915 specifically for orange grower transportation. The ATSF began abandoning the line in 1969 and it is now out of service.

During the current study a short segment of the rail grade, measuring approximately 100-ft (east-west) in length at the north end of S. Oaks Street, had been mapped by the IC within the APE, again likely following earlier plotted map locations. No evidence of the rail grade was however observed at this location. All elements of the rail grade have been removed (i.e., ballast base, rail ties, cross beams) and the location within the APE now consists of an asphalt road and orange grove. The segment of the resource no longer exists and will not be affected by proposed construction.



Figure 2. Approximate center of the proposed stormwater basin, looking west.



Figure 3. Pipeline corridor at corner of Bravo Avenue and Oak Street, looking south.



Figure 4. Eastern terminus of the pipeline route at the Manzanillo Pump Station. APE runs through center-left of photo; historic Bravo Lake berm and Bravo Lake, both outside of APE, to right.

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5. CONCLUSIONS AND RECOMMENDATIONS

5.1 SUMMARY

An intensive Class III inventory/Phase I cultural resources survey was conducted for the Woodlake Stormwater Basin Project, City of Woodlake, Tulare County, California. which involves the removal of an existing orchard, the excavation of a new stormwater basin and the construction of an associated 48-inch diameter pipeline that extends approximately 4,900-ft north and east to an existing pump station; and approximately 960-ft east from the southeast corner of the basin to an existing man hole.

A Class III inventory/Phase I was completed using 15-m transects covering the stormwater basin APE, with 15-m transects walked on both sides of the roads following the pipeline route APE. Two historical structures, both rail grades, had been recorded within the pipeline portion of the APE. Both linear resources segments had been destroyed within the Project APE. They thus lack integrity of design, setting, materials, workmanship and feeling and are recommended as not National Register of Historic Places (NRHP) or California Register of Historical Resources (CRHR) eligible or significant.

No additional cultural resources were identified within the Project APE.

5.2 RECOMMENDATIONS

The proposed Project, accordingly, does not have the potential to result in adverse impacts or effects to significant or unique historical resources or historic properties. No additional cultural resources studies are recommended for this Project. In the unlikely event that cultural resources are uncovered during the construction of this Project, however, it is recommended that an archaeologist be contacted to assess the discovery.

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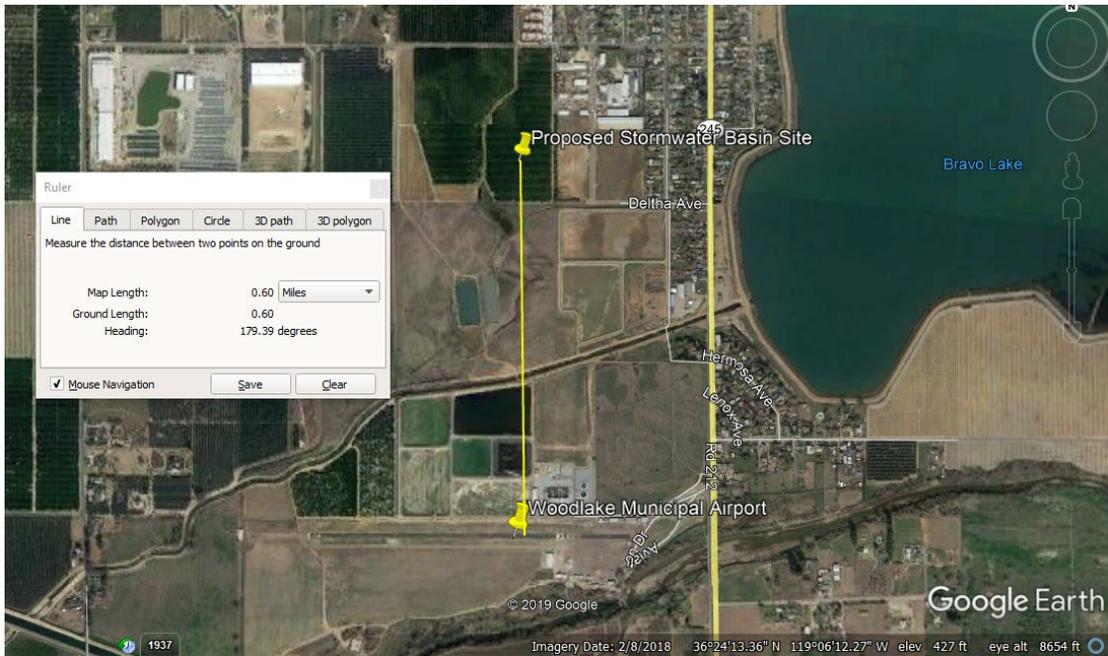
CONFIDENTIAL APPENDICES:

Appendix E

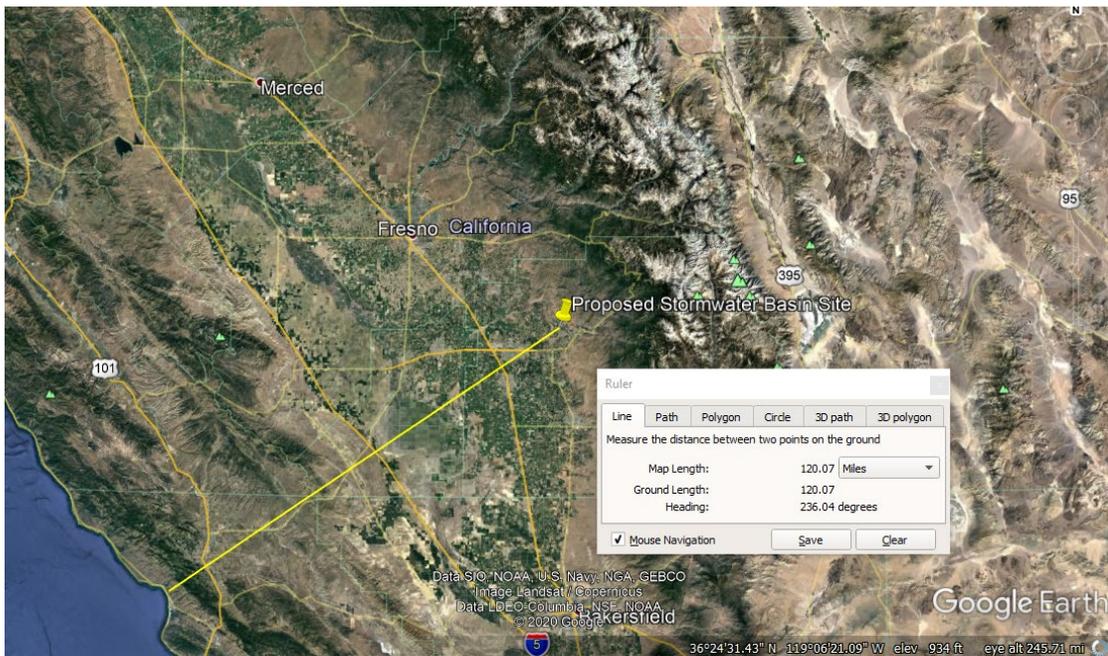
Reference Maps

Appendix E – Reference Maps

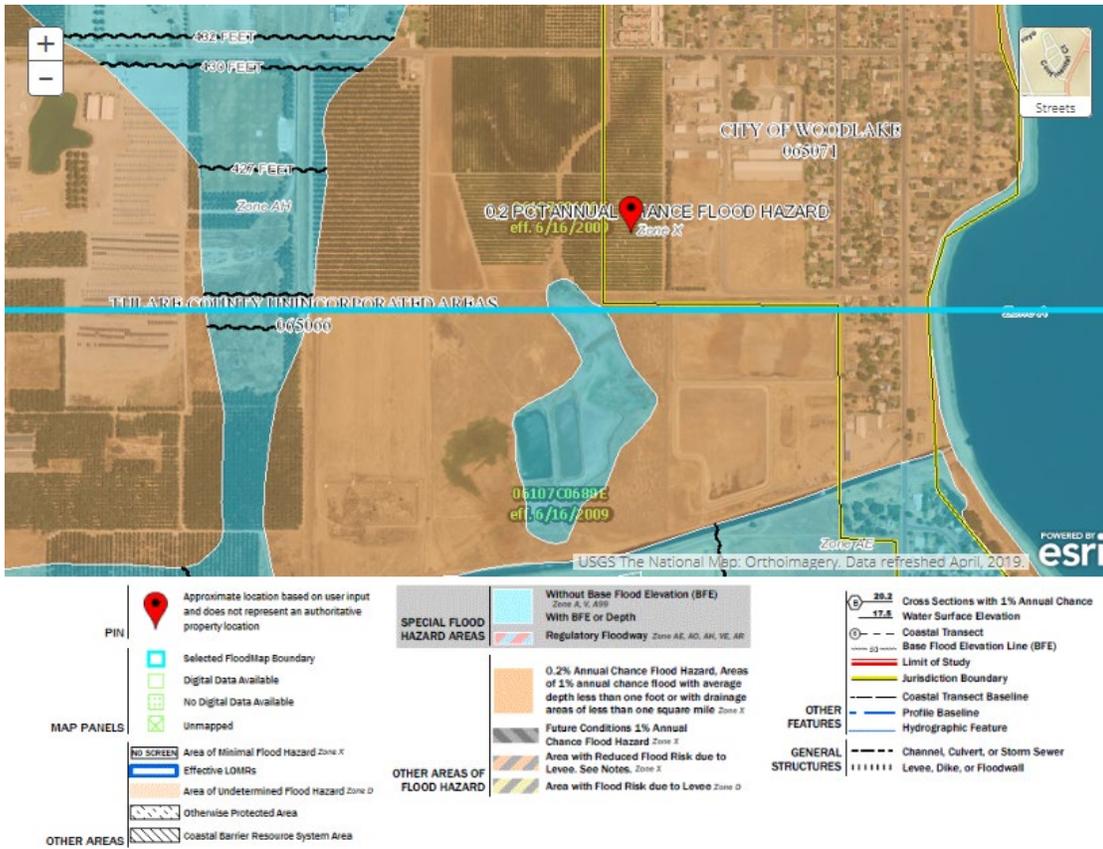
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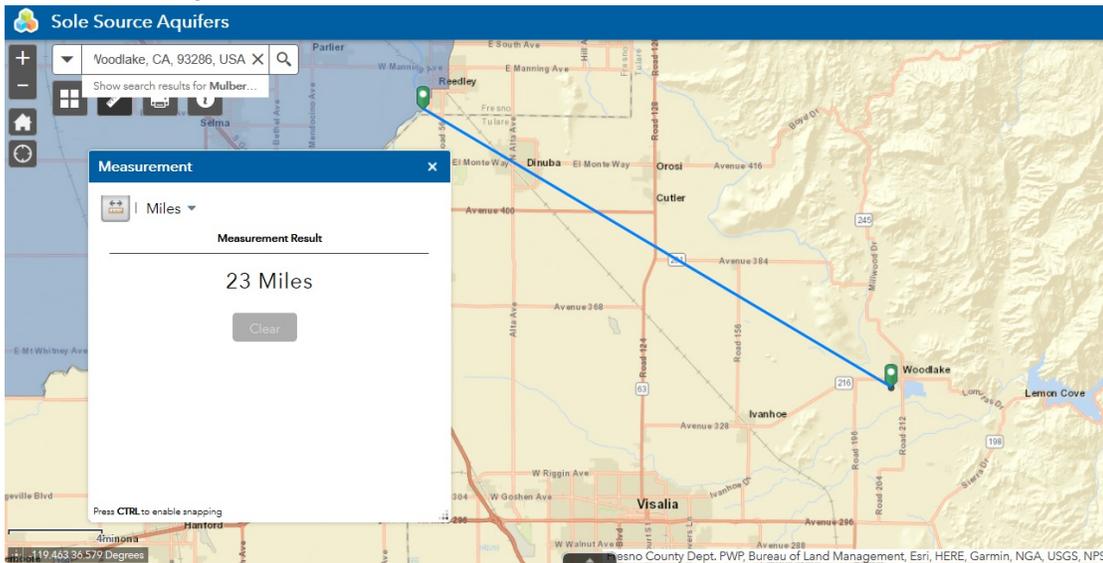
B- Coastal Barrier Resources



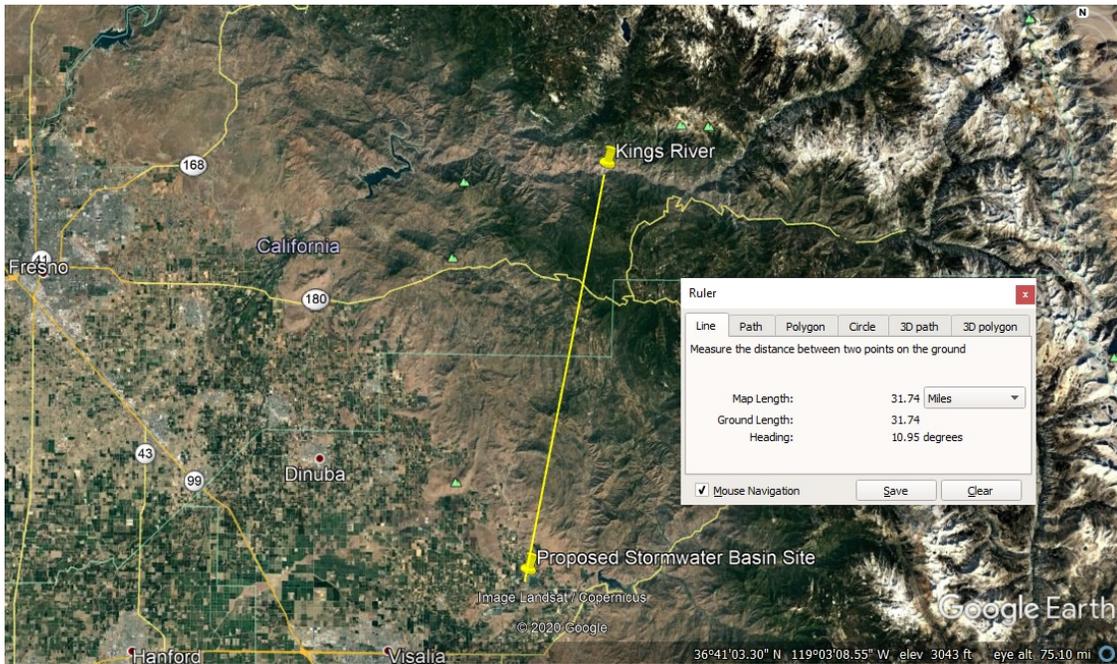
C- Flood Insurance



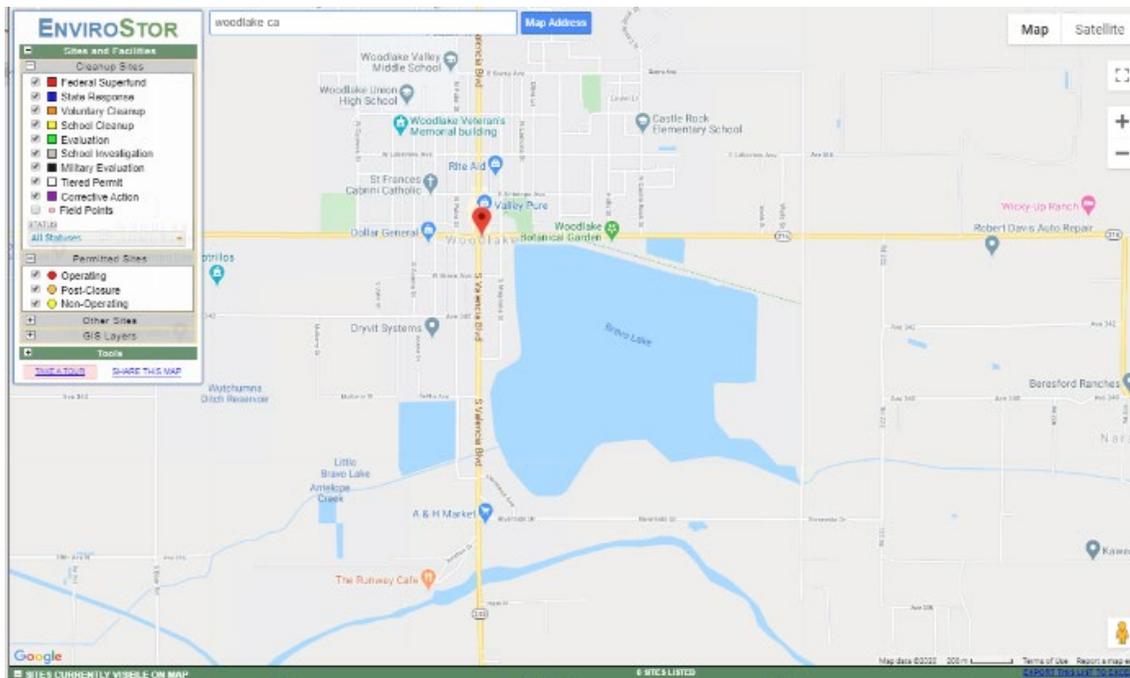
D- Sole Source Aquifer



E- Wild and Scenic Rivers



F – Hazards



G – Important Farmland Finder

California Department of Conservation

CA Farmland Conservancy Conservation Districts Farmland Mapping Education Williamson Act

California Important Farmland Finder Polygon Buffer Tool

Input Output

Area of Interest
The result is drawn on the map. ... X

Area Statistics
... X

DESCRIPTION	ACRES	PERCENT
Urban and Built-up Land	0.0	0.0
Non-agricultural or Natural Vegetation	1.0	2.8
Farmland of Statewide Importance	34.5	96.6
Vacant or Disturbed Land	0.2	0.6

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F – National Wetland Inventory

U.S. Fish and Wildlife Service
National Wetlands Inventory

Little Bravo Lake NWI Map

March 31, 2020

1:10,963
0 0.075 0.15 0.3 mi
0 0.15 0.3 0.6 km

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper