

APPENDIX A

SRF Evaluation Form for Environmental Review and Federal Coordination

State Water Resources Control Board (State Water Board)
Clean Water State Revolving Fund Program

Federal Cross-cutting Environmental Regulations
Evaluation Form for Environmental Review and Federal Coordination

1. **Federal Endangered Species Act, Section 7:**

Does the project involve any direct effects from construction activities, or indirect effects such as growth inducement that may affect federally listed threatened or endangered species that are known, or have a potential, to occur on-site, in the surrounding area, or in the service area?

No. Discuss why the project will not impact any federally listed special status species:

See the initial study analysis of biological resources in this IS/MND on page 3-20.

Yes. Include information on federally listed species that could potentially be affected by this project and any proposed avoidance and compensation measures so that the State Water Board can initiate informal/formal consultation with the applicable federally designated agency. Document any previous ESA consultations that may have occurred with the project.

Attach project-level biological surveys, evaluations analyzing the project's direct and indirect effects on special-status species, and a current species list for the project area.

See the initial study analysis of biological resources in this IS/MND on page 3-20 and Appendix C in this IS/MND.

2. **National Historic Preservation Act, Section 106:**

Identify the Area of Potential Effects (APE), including construction, staging areas, and depth of any excavation. (Note that the APE is three dimensional and includes all areas that may be affected by the project, including the surface area and extending below ground to the depth of any project excavations.)

See the initial study analysis of cultural resources in this IS/MND on page 3-4.

Attach a current records search with maps showing all sites and surveys drawn in relation to the project area, and records of Native American consultation.

3. **Clean Air Act: Is the project subject to a State Implementation Plan (SIP) conformity determination?**

No. The project is in an attainment or unclassified area.

Yes. The project is in a nonattainment area or attainment area subject to maintenance plans. Include information to indicate the nonattainment designation (e.g. moderate, serious or severe), if applicable. If estimated emissions (below) are above the federal de minimis levels, but the project is sized to meet only the needs of current population projections that are used in the approved SIP for air quality, then quantitatively indicate how the proposed capacity increase was calculated using population projections.

Air Basin Name: Mountain Counties Air Basin

Provide the estimated project construction and operational air emissions (in tons per year) in the chart below. See the initial study analysis of air quality and Appendix D in this IS/MND.

Attach any air quality studies that may have been done for the project.

See the initial study analysis of air quality on page 3-10 and Appendix B in this IS/MND.

Pollutant	Status (Attainment, Nonattainment or Unclassified)	Threshold of Significance for the Area (if applicable)	Construction Emissions (Tons/Year)	Operation Emissions (Tons/Year)
Carbon Monoxide (CO)	Attainment	N/A	N/A	N/A
Ozone (O ₃)	Non-attainment	N/A	N/A	N/A
Oxides of Nitrogen (NO _x)	N/A	82 lbs/day	69.6	N/A
Particulate Matter (PM ₁₀)	Non-attainment	82 lbs/day	3.5	N/A
Reactive Organic Gases (ROG)	N/A	82 lbs/day	8.5	N/A
Sulfur Dioxide (SO ₂)	Attainment	N/A	N/A	N/A
Volatile Organic Compounds (VOC)	Attainment	N/A	N/A	N/A

4. Coastal Zone Management Act:

Is any portion of the project site located within the coastal zone?

No. The project is not within the coastal zone.

Yes. Describe the project location with respect to coastal areas, and the status of the coastal zone permit:

5. Farmland Protection Policy Act:

Is any portion of the project site located on important farmland?

No. The project will not impact farmland.

Yes. Include information on the acreage that would be converted from important farmland to other uses. Indicate if any portion of the project site is located within Williamson Act control and the amount of affected acreage:

See the initial study analysis of agricultural and forest resources on page 3-7 in this IS/MND.

6. Flood Plain Management – Executive Order Number 11988:

Is any portion of the project site located within a 100-year floodplain as depicted on a floodplain map or otherwise designated by the Federal Emergency Management Agency?

No. Provide a description of the project location with respect to streams and potential floodplains:

See the initial study analysis for hydrology and water quality on page 3-61 in this IS/MND.

Yes. Describe the floodplain, and include a floodplain map and a floodplains/wetlands assessment. Describe any measures and/or project design modifications that would minimize or avoid flood damage by the project:

7. Migratory Bird Treaty Act:

Will the project affect protected migratory birds that are known, or have a potential, to occur on-site, in the surrounding area, or in the service area?

No.

Yes. Discuss the impacts (such as noise and vibration impacts, modification of habitat) to migratory birds that may be directly or indirectly affected by the project and mitigation measures to reduce or eliminate these impacts. Include a list of all migratory birds that could occur where the project is located:

8. Protection of Wetlands – Executive Order Number 11990:

Does any portion of the project area contain areas that should be evaluated for wetland delineation or require a permit from the U.S. Army Corps of Engineers?

No. Provide the basis for such a determination:

Yes. Describe the impacts to wetlands, potential wetland areas, and other surface waters, and the avoidance, minimization, and mitigation measures to reduce such impacts. Provide the status of the permit and information on permit requirements:

See the initial study analysis of biological resources on page 3-20 in this IS/MND.

9. Wild and Scenic Rivers Act:

Is any portion of the project located within a wild and scenic river?

No. The project will not impact a wild and scenic river.

Yes. Identify the wild and scenic river watershed and project location relative to the affected wild and scenic river:

See the initial study analysis for aesthetics on page 3-4 in this IS/MND.

Identify watershed where the project is located: Coon Creek Watershed

10. Source Water Protection:

Is the project located in an area designated by the U.S. Environmental Protection Agency, Region 9, as a Sole Source Aquifer? (For more information, please visit <http://www.epa.gov/region09/water/groundwater/ssa.html>.)

No. The project is not within the boundaries of a sole source aquifer.

Yes. Identify the aquifer (e.g., Santa Margarita Aquifer, Scott's Valley, the Fresno County Aquifer, the Campo/Cottonwood Creek Aquifer or the Ocotillo-Coyote Wells Aquifer):

APPENDIX B

Air Quality Modeling Calculations

Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name: C:\Documents and Settings\weirichj\Desktop\SMD-1 Emissions.urb924

Project Name: Placer WWTP SMD-1

Project Location: Placer County APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2012 TOTALS (tons/year unmitigated)	0.63	5.15	3.70	0.00	0.47	0.26	0.73	0.10	0.24	0.34	703.36
2013 TOTALS (tons/year unmitigated)	0.21	1.71	2.21	0.00	0.01	0.09	0.10	0.01	0.08	0.08	465.02
2014 TOTALS (tons/year unmitigated)	0.20	1.54	2.07	0.00	0.01	0.08	0.09	0.01	0.07	0.07	465.07

**Placer County WWTP SMD-1 Stationary Source Greenhouse Gas Emissions Inventory
2010, 2034**

Methane Influent Emissions

Facility	Year of Data	Facility-Specific Data										Default Emission Factor (kg CH4/kg BOD)	CH4 Correction Factor	Adjusted Emission Factor (kg CH4/kg BOD)	Conversion of kg CH4 to tonnes CO2e
		Capacity (MGD)	Capacity (G/yr)	Influent (MGD)	Influent (G/yr)	Influent BOD (mg/L)	BOD (Kg/Gal)	BOD (kg/yr)	Adjusted Emission Factor (kg CH4/kg BOD)	kg CH4/yr	tonnes CO2e/yr				
Placer Co SMD-1	2010	2.18	795,700,000	1.70	620,500,000	275	0.0010	612,577	0.12	73,509	1,691	0.6	0.2	0.12	0.023
	2034	2.70	985,500,000	2.70	985,500,000	275	0.0010	1,112,571	0.12	133,509	3,071				
											Total 2010		1,783		
											Total 2034		3,213		

*Used 10% above ADWF per comments from City of Roseville

Source:
Intergovernmental Panel on Climate Change 2006. IPCC Guidelines for National Greenhouse Gas Inventories; Chapter 6: Wastewater Treatment and Discharge
MCF of 0.2 is the EF representing the lowest end of the "poorly managed centralized aerobic treatment plant" range.

Conversion Factors:		Linear extrapolation for population growth
Liter	Gallon	2008 population = 109,154
	1	GP projection for 2015 = 133,680
		2010 2034
Year	Days	37186 55035.28
	1	
		annual population growth 743.72
Kg	mg	percent growth per year 0.02 46110.64
	1	
MG	G	
	1	

N2O Effluent Emissions

Facility	Year of Data	Facility-Specific Data										Default Emission Factor (kg N2O-N/kg N)	N2O Correction Factor	Adjusted Emission Factor (kg N2O/kg N)	Conversion of kg N2O to tonnes CO2e
		Effluent (MGD)	Effluent (G/yr)	Effluent N (mg/L)	N (Kg/Gal)	N (kg/yr)	Adjusted Emission Factor (kg N2O-N/kg N)	kg N2O/yr	tonnes CO2e/yr						
Placer Co SMD-1	2010	-	1.70	620,500,000	10	0.0000	23,488	0.01	185	55	0.005	1.571428571	0.007857143	0.296	
	2034		2.70	985,500,000	10	0.0000	37,305	0.01	293	87					

South Placer Regional Wastewater and Recycled Water Systems Evaluation Updated Final Report, December, 2009: < 10 mg/L N is the design target

N2O Emissions for Advanced Nitrification/Denitrification

Facility	Year of Data	Facility-Specific Data						
		Population	kg N2O/yr	tonnes CO2e/yr	Conversion Factor	Adjusted Emission Factor (kg N2O/yr)	Conversion of kg N2O to tonnes CO2e	
Placer Co SMD-1	2010	37,186.00	126	37	1.0625	0.0032	0.296	
	2034	55035.28	187	55				

South Placer Regional
Wastewater
and Recycled Water
Systems
Evaluation
Updated Final Report,
December, 2009: < 10
mg/L N is the design
target

Methane Cogeneration Plant Turbine Carbon Dioxide Emissions

		Facility-Specific Data									
Facility	Year of Data		kg CH4/yr	Turbine Efficiency	Atomic Mass Ratio	kg CO2/yr)			tonnes CO2e/yr		
Placer Co SMD-1	2010		73,509.19	100%	2.75	202,150			202		
	2034		133,508.52	100%	2.75	367,148			367		

FEDERAL AIR CONFORMITY APPLICABILITY ANALYSIS

The following air conformity applicability analysis was prepared to determine whether the proposed Placer County Sewer Maintenance District 1 wastewater treatment plant would cause or contribute to new violations of the National Ambient Air Quality Standards (NAAQS); increase the frequency or severity of existing NAAQS violations; or delay attainment of the NAAQS.

The EPA designates regions around the country as attainment or nonattainment based on the compliance with NAAQS. The EPA also further rates nonattainment areas as marginal, moderate, serious, severe, or extreme. In addition, Federal Register Section 51.853 establishes *de minimis* thresholds that are used as a screening procedure to determine whether a federally funded action would be subject to a full general conformity determination. Table 1, outlines the attainment status of Placer County for each pollutant, *de minimis* threshold established for that pollutant, and the regional emissions budget.

In addition to meeting *de minimis* thresholds, pollutant emissions must also be determined not to be regionally significant. Regionally significant is defined as exceeding 10% of the total emissions inventory for a particular region, in this case the Sacramento Metropolitan Federal Nonattainment Area. If 10% of the emissions inventory is exceeded by project emissions, the project would be subject to general conformity rules.

If an area is in attainment for a NAAQS, no general conformity requirements would be applicable to the project and no further applicability analysis is required.

Table 1 Placer County Attainment Status and Applicable <i>de minimis</i> Thresholds			
Pollutant	Placer County Attainment Status	<i>de minimis</i> threshold (TPY)	Emissions Inventory (10% of TBD)
Ozone (NO _x)	Severe Nonattainment	25	14.7
Ozone (VOC/ROG)	Severe Nonattainment	25	13.1
PM ₁₀	Attainment	-	-
PM _{2.5}	Nonattainment (Western Placer County)	100	3.0
CO	Attainment	-	-
Lead	Attainment	-	-
SO ₂	Attainment	-	-
NO ₂	Attainment	-	-

Notes: TPY = tons per year; 10% of TBD = Ten percent of tons per day; NO_x = oxides of nitrogen; VOC/ROG = volatile organic compounds/reactive organic compounds; PM₁₀ = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; PM_{2.5} = fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less; CO = carbon monoxide; SO₂ = sulfur dioxide; NO₂ = nitrogen dioxide
Source: ARB 2010, CFR 2010, ARB 2007, SCAQMD 2008

Because the project is located in Federal nonattainment areas, a general applicability analysis is required to determine whether general conformity would apply. Evaluations for both construction and operational emissions of ROG, NO_x, and PM₁₀ are required to comply with *de minimis* thresholds and regional significance quantities.

Project-Related Construction Emissions

As described under Checklist items IIIa, IIIb, and IIIc, construction related emissions (Table 2) would result in approximately 8.5 lbs/day ROG, 69.6 lbs/day NO_x, and 5.2 lbs/day of PM_{2.5}. This translates into approximately 1.3 tons per year (TPY) and 0.004 tons per day (TPD) of ROG; 10.9 TPY and 0.035 TPD of NO_x; and 0.8 TPY and 0.003 TPD of PM_{2.5} assuming 6-day work weeks (313 work days per year).

Table 2 Summary of Modeled Maximum Short-Term Construction-Generated Emissions				
Source	ROG (lb/day)	NO _x (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)
Construction Activities (2012)				
Mobile Equipment Exhaust ¹	8.5	69.6	3.5	3.3
Fugitive Dust	–	–	9.2	1.9
Construction Activities (2013)				
Mobile Equipment Exhaust ¹	1.6	13.1	0.8	0.6
Fugitive Dust	–	–	0.0	0.0
Construction Activities (2014)				
Mobile Equipment Exhaust ¹	1.5	11.8	0.7	0.5
Fugitive Dust	–	–	0.0	0.0
Total Maximum Daily Unmitigated	8.5	69.6	12.7	5.2
Notes: lb/day = pounds per day; NO _x = oxides of nitrogen; PM ₁₀ = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; PM _{2.5} = fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less; ROG = reactive organic gases ¹ Accounts for employee commute trips, on-site heavy-duty construction equipment operations, and material transport (e.g., soil and aggregate base). See Appendix B for modeling results and assumptions. Source: Data modeled by AECOM in 2010				

Comparing the construction emissions to the *de minimis* thresholds and regional significance levels shown in the table above; shows that project-generated construction emissions would not approach or exceed any applicability analysis *de minimis* thresholds or 10% of emission inventory levels. Therefore, no general conformity analysis would be required for construction emissions.

Project-Related Operational Emissions

As described under Checklist items IIIa, IIIb, and IIIc, operational related emissions would be minimal and regulated by the PCAPCD Rule 502 “New Source Review.”

Rule 502 restricts emissions of VOC/ROG and NO_x to 10 lbs/day and emissions of PM_{2.5} to 80 lbs/day before requiring BACT to reduce emission levels. This translates into approximately 1.8 TPY and 0.005 TPD of ROG; 1.8 TPY and 0.005 TPD of NO_x; and 14.6 TPY and 0.04 TPD of PM_{2.5} assuming 7-day work weeks (365 work days per year).

Mobile source emissions from the project would be generated by the additional 8.5 additional vehicle trips per day. Area source emissions would result from landscaping, natural gas consumption, and architectural coatings. Combined emissions from mobile and area sources were modeled using URBEMIS2007 v.9.2.4. Mobile and Area source emissions would result in approximately 0.3 lbs/day ROG, 0.9 lbs/day NO_x, and 0.0 lbs/day of PM_{2.5}. This

translates into approximately 0.05 TPY and 0.0001 TPD of ROG; 0.16 TPY and 0.0005 TPD of NO_x; and 0.0TPY and 0.0 TPD of PM_{2.5} assuming 7-day work weeks (365 work days per year).

Comparing the operational emissions to the *de minimis* thresholds and regional significance levels shown in Table 1; shows that project-generated operational emissions would not approach or exceed any applicability analysis *de minimis* thresholds or 10% of emission inventory levels. Therefore, no general conformity analysis would be required for operational emissions.

References

- California Air Resources Board. 2010. Federal Attainment Designation Maps. Available:
<http://www.arb.ca.gov/desig/adm/adm.htm> Last Updated: September 2010. Accessed: February 28, 2011.
- Code of Federal Regulations. 2010 (July). 40 CFR Chapter 1 Section 51.853 “Applicability”. Washington D.C.
- California Air Resources Board. 2007 (December). *Nonattainment Area Designations for the Revised Federal PM_{2.5} 24-hour Standard – Enclosure 3*. Sacramento, CA
- Sacramento Air Quality Management District. 2008 (December). *Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan*. Sacramento, CA

APPENDIX C

California Natural Diversity Database Outputs

**Table C1
CNDDDB List**

<i>Scientific Name</i>	Common Name	Federal Status	State Status	DFG Status	CNPS List	Quad Name
	Northern Volcanic Mud Flow Vernal Pool	None	None			Rocklin
<i>Agelaius tricolor</i>	Tricolored blackbird	None	None	SSC		Coloma Pilot Hill
<i>Allium jepsonii</i>	Jepson's onion	None	None		1B.2	Auburn
<i>Ammonitella yatesii</i>	Tight coin (=Yates' snail)	None	None			Auburn
<i>Andrena subapasta</i>	A vernal pool andrenid bee	None	None			Auburn
<i>Balsamorhiza macrolepis var. macrolepis</i>	Big-scale balsamroot	None	None		1B.2	Pilot Hill
<i>Banksula californica</i>	Alabaster Cave harvestman	None	None			Pilot Hill
<i>Banksula galilei</i>	Galile's cave harvestman	None	None			Auburn
<i>Branchinecta lynchi</i>	Vernal pool fairy shrimp	Threatened	None			Rocklin
<i>Calystegia stebbinsii</i>	Stebbins' morning-glory	Endangered	Endangered		1B.1	Coloma Pilot Hill
<i>Ceanothus roderickii</i>	Pine Hill ceanothus	Endangered	Rare		1B.2	Pilot Hill
<i>Chlorogalum grandiflorum</i>	Red Hills soaproot	None	None		1B.2	Colfax Coloma Pilot Hill
<i>Clarkia biloba ssp. brandegeae</i>	Brandegee's clarkia	None	None		1B.2	Auburn Colfax Coloma Gold Hill Greenwood Lake Combie Pilot Hill Rocklin Wolf
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	None	None	SSC		Gold Hill
<i>Desmocerus californicus dimorphus</i>	Valley elderberry longhorn beetle	Threatened	None			Pilot Hill Rocklin
<i>Elanus leucurus</i>	White-tailed kite	None	None	FP		Rocklin
<i>Emys marmorata</i>	Western pond turtle	None	None	SSC		Coloma Gold Hill Greenwood Lake Combie Pilot Hill
<i>Fritillaria eastwoodiae</i>	Butte County fritillary	None	None		3.2	Auburn Greenwood
<i>Galium californicum ssp. Sierrae</i>	El Dorado bedstraw	Endangered	Rare		1B.2	Pilot Hill
<i>Gratiola heterosepala</i>	Boggs Lake hedge-hyssop	None	Endangered		1B.2	Rocklin
<i>Haliaeetus leucocephalus</i>	Bald eagle	Delisted	Endangered	FP		Pilot Hill
<i>Helianthemum suffrutescens</i>	Bisbee Peak rush-rose	None	None		3.2	Pilot Hill

**Table C1
CNDDDB List**

<i>Scientific Name</i>	Common Name	Federal Status	State Status	DFG Status	CNPS List	Quad Name
<i>Laterallus jamaicensis coturniculus</i>	California black rail	None	Threatened	FP		Gold Hill Rocklin Wolf
<i>Linderiella occidentalis</i>	California linderiella	None	None			Rocklin
<i>Martes pennanti (pacifica) DPS</i>	Pacific fisher	Candidate	Candidate Threatened	SSC		Colfax Coloma
<i>Packera layneae</i>	Layne's ragwort	Threatened	Rare		1B.2	Coloma Pilot Hill
<i>Pandion haliaetus</i>	Osprey	None	None	WL		Rocklin
<i>Phrynosoma blainvillii</i>	Coast horned lizard	None	None	SSC		Colfax
<i>Progne subis</i>	Purple martin	None	None	SSC		Rocklin
<i>Rana boylei</i>	Foothill yellow-legged frog	None	None	SSC		Colfax Coloma Greenwood Lake Combie
<i>Viburnum ellipticum</i>	Oval-leaved viburnum	None	None		2.3	Auburn Greenwood
<i>Wyethia reticulata</i>	El Dorado County mule ears	None	None		1B.2	Coloma Pilot Hill

Actinemys marmorata

western pond turtle

Element Code: ARAAD02030

Status	NDDDB Element Ranks	Other Lists
Federal: None	Global: G3G4	CDFG Status: SC
State: None	State: S3	

Habitat Associations

General: A THOROUGHLY AQUATIC TURTLE OF PONDS, MARSHES, RIVERS, STREAMS & IRRIGATION DITCHES WITH AQUATIC VEGETATION BELOW 6000 F
Micro: NEED BASKING SITES AND SUITABLE (SANDY BANKS OR GRASSY OPEN FIELDS) UPLAND HABITAT UP TO 0.5 KM FROM WATER FOR EGG-LAYIN

Occurrence No. 1	Map Index: 22879	EO Index: 7838	Dates Last Seen
Occ Rank: Unknown			Element: 1993-02-12
Origin: Natural/Native occurrence			Site: 1993-02-12
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1993-03-15

Quad Summary: Gold Hill (3812182/527B)
County Summary: Placer

Lat/Long: 38.88899° / -121.21885°	Township: 12N
UTM: Zone-10 N4305965 E654479	Range: 07E
Area:	Section: 17
Elevation: 280 ft	Meridian: M
Mapping Precision: NON-SPECIFIC	Qtr: SE
Symbol Type: POLYGON	

Location: JUST WEST OF FOWLER ROAD, 0.2 MILE NORTH OF HWY 193, 4 MILES WNW OF NEWCASTLE.
Ecological: HABITAT CONSISTS OF A 1-2 ACRE RESERVOIR, SURROUNDED BY OAK SAVANNAH, OAK WOODLAND, AND RIPARIAN.
General: ONE ADULT OBSERVED ON A ROCK NEAR THE MIDDLE OF THE RESERVOIR. POND TURTLES HAVE BEEN KNOWN FROM THIS SITE SINCE THE 1970'S.
Owner/Manager: UNKNOWN

Occurrence No. 444	Map Index: 32822	EO Index: 1134	Dates Last Seen
Occ Rank: Unknown			Element: XXXX-XX-XX
Origin: Natural/Native occurrence			Site: XXXX-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1996-01-17

Quad Summary: Garden Valley (3812077/526D), Coloma (3812078/526C)
County Summary: El Dorado

Lat/Long: 38.78172° / -120.84922°	Township: 11N
UTM: Zone-10 N4294751 E686820	Range: 10E
Area:	Section: 22
Elevation: 800 ft	Meridian: M
Mapping Precision: NON-SPECIFIC	Qtr: XX
Symbol Type: POLYGON	

Location: NORTH OF PLACERVILLE ON SOUTH FORK AMERICAN RIVER, VICINITY OF COLOMA.
General: COLLECTION MADE BY G. FELLERS, DATE AND NUMBERS OF SPECIMENS UNKNOWN.
Owner/Manager: UNKNOWN

Occurrence No. 445	Map Index: 32823	EO Index: 1470	Dates Last Seen
Occ Rank: Unknown			Element: 1988-08-18
Origin: Natural/Native occurrence			Site: 1988-08-18
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1996-01-17

Quad Summary: Greenwood (3812088/526B)
County Summary: El Dorado

Lat/Long: 38.89450° / -120.92887°	Township: 12N
UTM: Zone-10 N4307108 E679617	Range: 09E
Radius: 1/5 mile	Section: 13
Elevation: 1,520 ft	Meridian: M
Mapping Precision: NON-SPECIFIC	Qtr: \NW
Symbol Type: POINT	

Location: ESE OF PENOBSCOT FARM; PENOBSCOT CREEK, 0.9 MILES SOUTH OF HIGHWAY 193.
General: 3 CAPTURED AND RETAINED BY D.C. HOLLAND ON 18 AUGUST 1988.
Owner/Manager: UNKNOWN

Actinemys marmorata

western pond turtle

Element Code: ARAAD02030

Status	NDDB Element Ranks	Other Lists
Federal: None State: None	Global: G3G4 State: S3	CDFG Status: SC

Habitat Associations

General: A THOROUGHLY AQUATIC TURTLE OF PONDS, MARSHES, RIVERS, STREAMS & IRRIGATION DITCHES WITH AQUATIC VEGETATION BELOW 6000 F
Micro: NEED BASKING SITES AND SUITABLE (SANDY BANKS OR GRASSY OPEN FIELDS) UPLAND HABITAT UP TO 0.5 KM FROM WATER FOR EGG-LAYIN

Occurrence No. 467	Map Index: 32843	EO Index: 9232	Dates Last Seen
Occ Rank: Unknown			Element: 1988-08-18
Origin: Natural/Native occurrence			Site: 1988-08-18
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1996-02-23

Quad Summary: Lake Combie (3912111/542D)
County Summary: Nevada

Lat/Long: 39.05732° / -121.09198°	Township: 14N
UTM: Zone-10 N4324870 E665091	Range: 08E
Area:	Mapping Precision: NON-SPECIFIC
Elevation: 1,260 ft	Section: 21 Qtr: XX
	Meridian: M
	Symbol Type: POLYGON

Location: WOLF CREEK ABOVE WOLF ROAD; NORTHWEST OF LAKE OF THE PINES.
General: 4 CAPTURED, 1 RELEASED AND 3 RETAINED BY D.C. HOLLAND ON 18 AUGUST 1988.
Owner/Manager: UNKNOWN

Occurrence No. 608	Map Index: 56206	EO Index: 56222	Dates Last Seen
Occ Rank: Good			Element: 2004-05-08
Origin: Natural/Native occurrence			Site: 2004-05-08
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2004-07-26

Quad Summary: Pilot Hill (3812171/527D)
County Summary: Placer

Lat/Long: 38.79413° / -121.10850°	Township: 11N
UTM: Zone-10 N4295631 E664268	Range: 08E
Radius: 80 meters	Mapping Precision: SPECIFIC
Elevation: 475 ft	Section: 20 Qtr: NE
	Meridian: M
	Symbol Type: POINT

Location: 1.5 MILES SE OF THE INTERSECTION OF HORSESHOE BAR ROAD AND AUBURN-FOLSOM ROAD, ON THE WEST EDGE OF FOLSOM LAKE
Ecological: HABITAT CONSISTS OF A SMALL POND CREATED BY A STONE WALL BUILT ACROSS A SMALL RAVINE ON THE EDGE OF FOLSOM LAKE.
General: 1 JUVENILE OBSERVED ON 8 MAY 2004.
Owner/Manager: DPR-FOLSOM LAKE SRA

* SENSITIVE *	Occurrence No. 1217	Map Index: 78643	EO Index: 79570	Dates Last Seen
	Occ Rank: Excellent			Element: 2010-04-19
	Origin: Natural/Native occurrence			Site: 2010-04-19
	Presence: Presumed Extant			
	Trend: Unknown			Record Last Updated: 2010-04-29

Quad Summary: Gold Hill (3812182/527B)
County Summary: Placer

* SENSITIVE *	Lat/Long:	Township:
	UTM:	Range:
	Radius:	Mapping Precision:
	Elevation:	Section: Qtr:
		Meridian:
		Symbol Type:

Location: *SENSITIVE* Location information suppressed.
Location Detail: Please contact the California Natural Diversity Database, California Department of Fish and Game, for more information:
 (916) 324-3812.
Ecological: HABITAT CONSISTS OF BLUE OAK WOODLAND WITH A NETWORK OF PONDS AND SEASONAL CREEKS.
Threat: THREATS INCLUDE RURAL RESIDENTIAL USE AND POSSIBLE PESTICIDE USE IN ORCHARD UPSTREAM.
Owner/Manager:

Agelaius tricolor

tricolored blackbird

Element Code: ABPBXB0020

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G2G3	CDFG Status: SC
State: None	State: S2	

Habitat Associations

General: HIGHLY COLONIAL SPECIES, MOST NUMEROUS IN CENTRAL VALLEY & VICINITY. LARGELY ENDEMIC TO CALIFORNIA.
Micro: REQUIRES OPEN WATER, PROTECTED NESTING SUBSTRATE, & FORAGING AREA WITH INSECT PREY WITHIN A FEW KM OF THE COLONY.

Occurrence No. 102	Map Index: 12177	EO Index: 24726	Dates Last Seen
Occ Rank: Fair			Element: 1971-05-31
Origin: Natural/Native occurrence			Site: 1992-06-30
Presence: Presumed Extant			
Trend: Decreasing			Record Last Updated: 1992-07-13

Quad Summary: Pilot Hill (3812171/527D)
County Summary: El Dorado

Lat/Long: 38.79072° / -121.01967°	Township: 11N
UTM: Zone-10 N4295415 E671991	Range: 09E
Radius: 1 mile	Section: 19
Elevation: 1,080 ft	Meridian: M
Mapping Precision: NON-SPECIFIC	Qtr: XX
Symbol Type: POINT	

Location: SALMON FALLS ROAD, 3.9 MI SOUTH OF PILOT HILL.
Ecological: NESTING SUBSTRATE CONSISTS OF BLACKBERRIES.
General: SITE VISITED IN 1971; 400 BIRDS PRESENT. IN A 1992 SITE VISIT; HABITAT WAS PRESENT, BUT NO BIRDS WERE FOUND.
Owner/Manager: UNKNOWN

Occurrence No. 103	Map Index: 12562	EO Index: 24725	Dates Last Seen
Occ Rank: Unknown			Element: 19XX-XX-XX
Origin: Natural/Native occurrence			Site: 1992-06-30
Presence: Presumed Extant			
Trend: Decreasing			Record Last Updated: 1992-07-13

Quad Summary: Placerville (3812067/510A), Coloma (3812078/526C), Garden Valley (3812077/526D)
County Summary: El Dorado

Lat/Long: 38.76237° / -120.86305°	Township: 11N
UTM: Zone-10 N4292575 E685668	Range: 10E
Radius: 1 mile	Section: 33
Elevation: 1,720 ft	Meridian: M
Mapping Precision: NON-SPECIFIC	Qtr: XX
Symbol Type: POINT	

Location: ONE MILE EAST ON GOLD HILL ROAD, NEAR THE INTERSECTION OF HIGHWAY 49, GOLDHILL.
Ecological: NESTING SUBSTRATE IS CATTAILS.
General: COLONY OF APPROXIMATELY 75 OBSERVED; DATE UNKNOWN. SITE CHECKED ON 30 JUN 1992; HABITAT STILL PRESENT, BUT NO BIRDS OBSERVED.
Owner/Manager: UNKNOWN

Allium jepsonii

Jepson's onion

Element Code: PMLIL022V0

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G1	CNPS List: 1B.2
State: None	State: S1.2	

Habitat Associations

General: CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.

Micro: ON SERPENTINE SOILS IN SIERRA FOOTHILLS, VOLCANIC SOIL ON TABLE MTN. ON SLOPES AND FLATS; USU IN AN OPEN AREA. 450-1130M

Occurrence No. 18	Map Index: 61016	EO Index: 61052	Dates Last Seen
Occ Rank: Good			Element: 2003-06-22
Origin: Natural/Native occurrence			Site: 2003-06-22
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2005-04-19

Quad Summary: Auburn (3812181/527A)

County Summary: Placer

Lat/Long: 38.96233° / -121.08918°	Township: 13N
UTM: Zone-10 N4314333 E665554	Range: 08E
Radius: 80 meters	Section: 21
Elevation: 1,320 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: SW
Symbol Type: POINT	

Location: CORNER OF DRY CREEK ROAD AND BLUE GRASS DRIVE; NORTH OF AUBURN AND EAST OF HIGHWAY 49.

Location Detail: EAST SIDE OF INTERSECTION. NE 1/4 OF SW 1/4 OF SECTION 21.

Ecological: FOOTHILL WOODLAND ON SERPENTINE SOIL. PLANTS GROWING ON SERPENTINE OUTCROP NEAR A SEEP.

Threat: MAY BE PART OF A BUFFER BETWEEN DRY CREEK ROAD AND HOUSING. RURAL RESIDENTIAL SURROUNDS.

General: APPROX 50 INDIVIDUALS OBSERVED IN 2003.

Owner/Manager: UNKNOWN

Ammonitella yatesii

tight coin (=Yates' snail)

Element Code: IMGASB0010

_____ **Status** _____ **NDDB Element Ranks** _____ **Other Lists** _____
 Federal: None Global: G1 CDFG Status:
 State: None State: S1

_____ **Habitat Associations** _____

General: INHABITS LIMESTONE CAVES AND OUTCROPPINGS; FAVORS NORTH-FACING SLOPES.
Micro: FOUND IN HUMUS IN LIMESTONE OUTCROPPINGS.

Occurrence No. 6 **Map Index:** 12187 **EO Index:** 23096 **Dates Last Seen** _____
Occ Rank: Unknown **Element:** XXXX-XX-XX
Origin: Natural/Native occurrence **Site:** XXXX-XX-XX
Presence: Presumed Extant
Trend: Unknown **Record Last Updated:** 2005-12-05

Quad Summary: Auburn (3812181/527A)
County Summary: El Dorado

Lat/Long: 38.90073° / -121.01550° **Township:** 12N
UTM: Zone-10 N4307632 E672088 **Range:** 09E
Radius: 1/5 mile **Mapping Precision:** NON-SPECIFIC **Section:** 07 **Qtr:** SE
Elevation: 1,360 ft **Symbol Type:** POINT **Meridian:** M

Location: PIONEER CAVE.
Ecological: FOUND IN HUMUS AROUND LIMESTONE OUTCROPPINGS; FAVORS NORTH-FACING SLOPES.
Threat: THREATENED FROM POSSIBLE OVERCOLLECTING.
General: A RELICT GENUS, THOUGH COMMON AT PRESENT, WHERE FOUND.
Owner/Manager: PVT

Andrena subapasta

A vernal pool andrenid bee

Element Code: IHHYM35050

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G1G3	CDFG Status:
State: None	State: S1S3	

Habitat Associations

General: COLLECTS POLLEN PRIMARILY FROM ARENARIA CALIFORNICA BUT ALSO ORTHOCARPUS ERIANTHUS & LASTHENIA SP.
Micro: NESTS IN UPLANDS NEAR VERNAL POOLS.

Occurrence No. 1	Map Index: 59350	EO Index: 59386	Dates Last Seen
Occ Rank: Unknown			Element: 1964-03-29
Origin: Natural/Native occurrence			Site: 1964-03-29
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2005-03-21

Quad Summary: Auburn (3812181/527A)
County Summary: El Dorado

Lat/Long: 38.88714° / -121.01592°	Township: 12N
UTM: Zone-10 N4306123 E672084	Range: 09E
Radius: 1/5 mile	Section: 18
Elevation: 1,525 ft	Meridian: M
Mapping Precision: NON-SPECIFIC	Qtr: XX
Symbol Type: POINT	

Location: COOL.
Ecological: FEMALES OF THIS SPECIES COLLECT POLLEN PRIMARILY FROM ARENARIA, BUT ALSO ORTHOCARPUS ERIANTHUS AND LASTHENIA SP.
General: HOLOTYPE FEMALE AND ALLOTYPE MALE (SAME LOCALITY BUT COLLECTED 21 MAR 1962) TAKEN AT FLOWERS OF ARENARIA CALIFORNICA & DEPOSITED AT CAS. 2 ADDITIONAL MALES FROM THE SAME LOCALITY 21 MAR 1942 AND 4 APR 1964 ARE DEPOSITED AT UCB AND RWT.
Owner/Manager: UNKNOWN

Occurrence No. 2	Map Index: 59351	EO Index: 59387	Dates Last Seen
Occ Rank: Unknown			Element: XXXX-XX-XX
Origin: Natural/Native occurrence			Site: XXXX-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2005-01-14

Quad Summary: Auburn (3812181/527A)
County Summary: El Dorado, Placer

Lat/Long: 38.90211° / -121.07070°	Township: 12N
UTM: Zone-10 N4307683 E667297	Range: 08E
Radius: 1 mile	Section: 10
Elevation: 1,325 ft	Meridian: M
Mapping Precision: NON-SPECIFIC	Qtr: XX
Symbol Type: POINT	

Location: AUBURN.
Ecological: FEMALES OF THIS SPECIES COLLECT POLLEN PRIMARILY FROM ARENARIA, BUT ALSO ORTHOCARPUS ERIANTHUS AND LASTHENIA SP.
General: AN UNKNOWN NUMBER OF FEMALES COLLECTED, DATE UNKNOWN.
Owner/Manager: UNKNOWN

Balsamorhiza macrolepis var. macrolepis

big-scale balsamroot

Element Code: PDAST11061

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3G4T2	CNPS List: 1B.2
State: None	State: S2.2	

Habitat Associations

General: VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND.
Micro: SOMETIMES ON SERPENTINE. 35-1000M.

Occurrence No. 14	Map Index: 37777	EO Index: 32784	Dates Last Seen
Occ Rank: None			Element: XXXX-XX-XX
Origin: Natural/Native occurrence			Site: XXXX-XX-XX
Presence: Possibly Extirpated			
Trend: Unknown			Record Last Updated: 1997-12-29

Quad Summary: Pilot Hill (3812171/527D)
County Summary: Placer, El Dorado

Lat/Long: 38.82507° / -121.09660°	Township: 11N
UTM: Zone-10 N4299085 E665230	Range: 08E
Radius: 1 mile	Section: 09 Qtr: XX
Elevation: 600 ft	Meridian: M
Mapping Precision: NON-SPECIFIC	
Symbol Type: POINT	

Location: RATTLESNAKE BEND, PLACER COUNTY.

Location Detail: UNABLE TO LOCATE "RATTLESNAKE BEND". OCCURRENCE MAPPED AT SITE OF HISTORICAL RATTLESNAKE BAR ALONG THE NORTH FORK AMERICAN RIVER. THIS SITE WAS INUNDATED BY FOLSOM LAKE.

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IN UNDATED COLLECTION BY A. KING. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Banksula californica

Alabaster Cave harvestman

Element Code: ILARA14020

Status _____ NDDB Element Ranks _____ Other Lists _____
 Federal: None Global: GH CDFG Status:
 State: None State: SH

Habitat Associations _____

General: KNOWN ONLY FROM THE TYPE LOCALITY, ALABASTER CAVE, EL DORADO COUNTY.

Micro: THE TYPE LOCALITY HAS BEEN PARTLY DESTROYED BY MINING AND THE SPECIES MAY BE EXTINCT.

Occurrence No. 1 Map Index: 58628 EO Index: 58664 Dates Last Seen _____
 Occ Rank: None Element: XXXX-XX-XX
 Origin: Natural/Native occurrence Site: XXXX-XX-XX
 Presence: Possibly Extirpated
 Trend: Unknown Record Last Updated: 2004-12-15

Quad Summary: Pilot Hill (3812171/527D)

County Summary: El Dorado

Lat/Long: 38.81003° / -121.07538° Township: 11N
 UTM: Zone-10 N4297455 E667107 Range: 08E
 Radius: 2/5 mile Mapping Precision: NON-SPECIFIC Section: 15 Qtr: XX
 Elevation: 650 ft Symbol Type: POINT Meridian: M

Location: ALABASTER CAVE, 5.5 MILES WEST OF PILOT HILL ALONGSIDE RATTLESNAKE BAR RD.

Location Detail: SPECIES WAS DESCRIBED BY BANKS IN 1900 & IS KNOWN ONLY FROM ALABASTER CAVE, WHICH HAS SINCE BEEN PARTIALLY DESTROYED BY MINING & VANADALISM; REMAINING PORTIONS HAVE BEEN SEALED OFF WITH CONCRETE, SO SPECIES MAY NOT EXIST HERE ANYMORE.

Owner/manager: UNKNOWN

Banksula galilei

Galilei's cave harvestman

Element Code: ILARA14040

Status _____ NDDB Element Ranks _____ Other Lists _____
 Federal: None Global: G1 CDFG Status:
 State: None State: S1

Habitat Associations _____

General: KNOWN ONLY FROM THE TYPE LOCALITY, LIME ROCK CAVES, EL DORADO COUNTY.
Micro: SPECIES IS TROGLOBITIC.

Occurrence No. 1 **Map Index:** 58629 **EO Index:** 58665 **Dates Last Seen** _____
Occ Rank: Unknown **Element:** 1966-12-21
Origin: Natural/Native occurrence **Site:** 1966-12-21
Presence: Presumed Extant
Trend: Unknown **Record Last Updated:** 2004-12-15

Quad Summary: Auburn (3812181/527A)
County Summary: Placer

Lat/Long: 38.94833° / -121.00955° **Township:** 13N
UTM: Zone-10 N4312926 E672488 **Range:** 09E
Radius: 1/5 mile **Mapping Precision:**NON-SPECIFIC **Section:** 30 **Qtr:** SE
Elevation: 1,450 ft **Symbol Type:**POINT **Meridian:** M

Location: LIME ROCK CAVES, SOUTH OF CLIPPER GAP AND NORTH OF NORTH FORK OF THE AMERICAN RIVER.
Location Detail: ACCORDING TO HALLIDAY'S "CAVES OF CALIFORNIA," CAVE SYSTEM CONSISTS OF 5 SMALL CAVES AND ONE LARGER CAVE (ROBBER'S CAVE) IN A LIMESTONE PINNACLE.
Ecological: HOLOTYPE MALE COLLECTED UNDER BREAKDOWN IN PIT ROOM.
General: KNOWN FROM 9 TYPE SPECIMENS COLLECTED FROM 2 JUN TO 21 DEC 1966, DEPOSITORY NOT GIVEN. TWO OF THE PARATYPES WERE COLLECTED FROM LIME ROCK CAVE #3.
Owner/Manager: UNKNOWN

Branchinecta lynchi

vernal pool fairy shrimp

Element Code: ICBRA03030

Status

NDDB Element Ranks

Other Lists

Federal: Threatened

Global: G3

CDFG Status:

State: None

State: S2S3

Habitat Associations

General: ENDEMIC TO THE GRASSLANDS OF THE CENTRAL VALLEY, CENTRAL COAST MTNS, AND SOUTH COAST MTNS, IN ASTATIC RAIN-FILLED POOLS.

Micro: INHABIT SMALL, CLEAR-WATER SANDSTONE-DEPRESSION POOLS AND GRASSED SWALE, EARTH SLUMP, OR BASALT-FLOW DEPRESSION POOLS.

Occurrence No. 229

Map Index: 42058

EO Index: 42058

Dates Last Seen

Occ Rank: Good

Element: 1998-12-22

Origin: Natural/Native occurrence

Site: 1998-12-22

Presence: Presumed Extant

Trend: Unknown

Record Last Updated: 2004-10-29

Quad Summary: Rocklin (3812172/527C)

County Summary: Placer

Lat/Long: 38.76584° / -121.23825°

Township: 11N

UTM: Zone-10 N4292265 E653059

Range: 07E

Radius: 80 meters

Mapping Precision: SPECIFIC

Section: 31

Qtr: NW

Elevation: 320 ft

Symbol Type: POINT

Meridian: M

Location: 0.2 MILE SW OF ROSEVILLE RES, 1.1 MILES S OF JCT TAYLOR RD & SUNSET BLVD, 2.2 MILES SW OF SIERRA COLLEGE, ROSEVILLE.

Location Detail: OLYMPUS OAKS PROJECT SITE, AKT DEVELOPMENT.

Ecological: VERNAL POOL COMMUNITY

Threat: DEVELOPMENT

General: 100'S OBSERVED IN 1998

Owner/Manager: PVT-AKT DEVELOPMENT

Occurrence No. 230

Map Index: 42059

EO Index: 42059

Dates Last Seen

Occ Rank: Good

Element: 1998-12-22

Origin: Natural/Native occurrence

Site: 1998-12-22

Presence: Presumed Extant

Trend: Unknown

Record Last Updated: 1999-12-22

Quad Summary: Rocklin (3812172/527C)

County Summary: Placer

Lat/Long: 38.76264° / -121.24694°

Township: 11N

UTM: Zone-10 N4291896 E652311

Range: 07E

Radius: 80 meters

Mapping Precision: SPECIFIC

Section: 31

Qtr: NW

Elevation: 260 ft

Symbol Type: POINT

Meridian: M

Location: 0.8 MILE SW OF ROSEVILLE RES, 1.3 MILES S OF JCT TAYLOR RD & SUNSET BLVD, 2.6 MILES SW OF SIERRA COLLEGE, ROSEVILLE.

Location Detail: OLYMPUS OAKS PROJECT SITE, AKT DEVELOPMENT.

Ecological: VERNAL POOL COMMUNITY

Threat: DEVELOPMENT

General: 100'S OBSERVED IN 1998

Owner/Manager: PVT-AKT DEVELOPMENT

Calystegia stebbinsii

Stebbins' morning-glory

Element Code: PDCON040H0

Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G1	CNPS List: 1B.1
State: Endangered	State: S1.1	

Habitat Associations

General: CHAPARRAL, CISMONTANE WOODLAND.

Micro: ON RED CLAY SOILS OF THE PINE HILL FORMATION; GABBRO OR SERPENTINE; OPEN AREAS. 180-725M.

Occurrence No. 2	Map Index: 54107	EO Index: 4344	Dates Last Seen
Occ Rank: Excellent			Element: 1994-06-15
Origin: Natural/Native occurrence			Site: 1994-06-15
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-12-09

Quad Summary: Pilot Hill (3812171/527D), Coloma (3812078/526C)

County Summary: El Dorado

Lat/Long: 38.76312° / -121.02584°	Township: 11N
UTM: Zone-10 N4292341 E671521	Range: 08E
Area: 343.0 acres	Section: 36
Elevation: 1,000 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: XX
Symbol Type: POLYGON	

Location: SOUTH FORK AMERICAN RIVER, FROM SALMON FALLS RD EAST TO WEBER CREEK, N OF MORMON HILL.

Location Detail: MAPPED BY CNDDB AS 17 POLYGONS MOSTLY IN SECTIONS 30, 31, 36, & W 1/2 OF SECTION 32.

Ecological: IN GABBRO, ASSOCIATED WITH ADENOSTOMA FASCICULATUM, ARCTOSTAPHYLOS VISCIDA, SALVIA SONOMENSIS, LEPECHINIA CALYCINA, RHAMNUS CALIFORNICA, CEANOTHUS RODERICKII, WYETHIA RETICULATA, CHLOROGALUM GRANDIFLORUM, HELIANTHEMUM SUFFRUCTESCENS, ETC.

Threat: JEEP TRAILS, ORVS, DEVELOPMENT, TRASH DUMPING, TARGET SHOOTING, ROAD MAINTENANCE WORK, HERBICIDE SPRAYING ARE THREATS.

General: <2000 IN 1984, 300+ IN 1986, 1300+ IN 1987, UNK # IN 1989, 20-35 IN 1990, 320 IN 1994. LONG LINEAR POLY IN E PART OF EO: >>1000 IN 1992, <1.5 MILL IN 1993 & ~300 IN 1994. E-MOST POLY: 17 IN 1992. INCL FORMER EO #S 9-12, 14-17, & 23.

Owner/Manager: PVT, BLM-FOLSOM RA, DFG

Ceanothus roderickii

Pine Hill ceanothus

Element Code: PDRHA04190

Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.1	

Habitat Associations

General: CHAPARRAL, CISMONTANE WOODLAND.

Micro: GABBROIC SOILS; OFTEN IN "HISTORICALLY DISTURBED" AREAS WITH AN ENSEMBLE OF OTHER RARE PLANTS. 260-630M.

Occurrence No. 5	Map Index: 12162	EO Index: 4345	Dates Last Seen
Occ Rank: Excellent			Element: 1994-06-16
Origin: Natural/Native occurrence			Site: 1994-06-16
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-10-31

Quad Summary: Pilot Hill (3812171/527D)

County Summary: El Dorado

Lat/Long: 38.76374° / -121.02803°	Township: 11N
UTM: Zone-10 N4292406 E671329	Range: 08E
Area: 413.0 acres	Section: 36
Elevation: 950 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: XX
Symbol Type: POLYGON	

Location: N & S OF SOUTH FORK AMERICAN RIVER, MOSTLY BETWEEN SALMON FALLS ROAD & WEBER CREEK, EAST OF FOLSOM LAKE.

Location Detail: SOME INFORMATION USED FOR MAPPING WAS FOR MULTIPLE RARE PLANTS AND C. RODERICKII MAY NOT BE PRESENT THROUGHOUT EACH POLYGON

Ecological: ON RESCUE GABBROIC SOILS IN CHAPARRAL. ASSOCIATED WITH WYETHIA RETICULATA, CALYSTEGIA STEBBINSII, CHLOROGALUM GRANDIFLORUM AND HELIANTHEMUM SUFFRUTESCENS. OTHER ASSOCIATES INCLUDE ARCTOSTAPHYLOS VISCIDA, ADENOSTOMA FASCICULATUM, ETC.

Threat: ORV ACTIVITY, RECREATIONAL TARGET SHOOTING, DEVELOPMENT, DUMPING, EROSION FROM RDS THAT CUT THROUGH HABITAT THREATENS.

General: <2000 PLANTS SEEN IN 1984; 500+ IN 1986; UNKNOWN # IN 1987, 1989, 1990; >1000 IN 1993; 12,000 IN 1994. INCLUDES FORMER OCCURRENCES #S 7, 8, 12, 13, & 15.

Owner/Manager: BLM, CDFG, PVT

Chlorogalum grandiflorum

Red Hills soaproot

Element Code: PMLILOG020

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G2	CNPS List: 1B.2
State: None	State: S2	

Habitat Associations

General: CISMONTANE WOODLAND, CHAPARRAL, LOWER MONTANE CONIFEROUS FOREST.
Micro: OCCURS FREQUENTLY ON SERPENTINE OR GABBRO, BUT ALSO ON NON-ULTRAMAFIC SUBSTRATES; OFTEN ON "HISTORICALLY DISTURBED" SITE

Occurrence No. 22	Map Index: 12168	EO Index: 7486	Dates Last Seen
Occ Rank: Good			Element: 1984-XX-XX
Origin: Natural/Native occurrence			Site: 1984-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-08-02

Quad Summary: Pilot Hill (3812171/527D)
County Summary: El Dorado

Lat/Long: 38.76476° / -121.02780°	Township: 11N
UTM: Zone-10 N4292519 E671347	Range: 08E
Area: 70.0 acres	Section: 36 Qtr: XX
Elevation: 1,000 ft	Meridian: M
Mapping Precision: SPECIFIC	
Symbol Type: POLYGON	

Location: ROUGHLY 1/2 AIR MILE EAST OF SALMON FALLS ROAD, SOUTH OF SOUTH FORK AMERICAN RIVER.
Location Detail: SIX COLONIES, RUNNING ROUGHLY SSW TO NNE FROM NEAR THE CENTER OF THE SOUTHERN EDGE OF SECTION 36 TO THE SW 1/4 OF THE SW 1/4 OF SECTION 30.
Ecological: OPEN AREAS IN CHAPARRAL, WHERE SHRUBS ARE LOW AND SCATTERED. OFTEN ON BANKS OF SMALL EVANESCENT STREAMLETS. ON ROCKY GABBRO SOILS WITH WYETHIA BOLANDERI, CEANOTHUS RODERICKII, CEANOTHUS LEMMONII, AND ADENOSTOMA FASCICULATUM.
Threat: NO VISIBLE THREATS. AWAY FROM TRAILS.
General: INCLUDES FORMER OCCURRENCES #23, 24, AND 25.
Owner/Manager: BLM-FOLSOM RA, PVT

Occurrence No. 26	Map Index: 12180	EO Index: 7480	Dates Last Seen
Occ Rank: Good			Element: 1994-06-15
Origin: Natural/Native occurrence			Site: 1994-06-15
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-08-02

Quad Summary: Pilot Hill (3812171/527D)
County Summary: El Dorado

Lat/Long: 38.76512° / -121.01309°	Township: 11N
UTM: Zone-10 N4292586 E672624	Range: 09E
Area: 55.0 acres	Section: 31 Qtr: XX
Elevation: 800 ft	Meridian: M
Mapping Precision: SPECIFIC	
Symbol Type: POLYGON	

Location: ON BOTH SIDES OF SOUTH FORK AMERICAN RIVER, JUST WEST OF THE MOUTH OF WEBER CREEK.
Location Detail: THREE COLONIES IN THE SE 1/4 OF SECTION 30 AND THE NORTH HALF OF SECTION 31.
Ecological: OPEN AREAS IN CHAPARRAL, WHERE SHRUBS ARE LOW AND SCATTERED. OFTEN ON BANKS OF SMALL EVANESCENT STREAMLETS. ON ROCKY GABBRO SOILS WITH WYETHIA BOLANDERI, CEANOTHUS RODERICKII, CEANOTHUS LEMMONII, AND ADENOSTOMA FASCICULATUM.
Threat: NO VISIBLE THREATS. AWAY FROM TRAILS. APPEARS TO BE A VERY SMALL AMOUNT OF ORV ACTIVITY IN THE AREA.
General: APPROXIMATELY 100 PLANTS OBSERVED IN THE SOUTHERN PORTION OF THE FAR NE COLONY IN 1993. 500 PLANTS OBSERVED IN FAR SW COLONY IN 1994. INCLUDES FORMER OCCURRENCES #27 AND 31.
Owner/Manager: PVT, DFG, BLM

Chlorogalum grandiflorum

Red Hills soaproot

Element Code: PMLIL0G020

Status	NDDB Element Ranks	Other Lists
Federal: None State: None	Global: G2 State: S2	CNPS List: 1B.2

Habitat Associations

General: CISMONTANE WOODLAND, CHAPARRAL, LOWER MONTANE CONIFEROUS FOREST.
Micro: OCCURS FREQUENTLY ON SERPENTINE OR GABBRO, BUT ALSO ON NON-ULTRAMAFIC SUBSTRATES; OFTEN ON "HISTORICALLY DISTURBED" SITE

Occurrence No. 56	Map Index: 51019	EO Index: 51019	Dates Last Seen
Occ Rank: Good			Element: 2000-06-21
Origin: Natural/Native occurrence			Site: 2000-06-21
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2003-04-17

Quad Summary: Colfax (3912018/541C)
County Summary: Placer

Lat/Long: 39.04014° / -120.87841°	Township: 14N
UTM: Zone-10 N4323372 E683617	Range: 10E
Area: 5.8 acres	Section: 20
Elevation: 2,100 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: SW
Symbol Type: POLYGON	

Location: MEXICAN GULCH, ALONG THE ROAD FROM YANKEE JIM'S TO WEIMAR/COLFAX, ABOUT 1.6 ROAD MILES WNW OF YANKEE HILL.
Location Detail: MAPPED WITHIN THE SOUTH HALF OF THE SW 1/4 OF SECTION 20.
Ecological: CLEARED ROADSIDE. ADJACENT VEGETATION IS DENSE ARCTOSTAPHYLOS VISCIDA CHAPARRAL. SOILS APPARAENTLY SHALLOW. ASSOCIATES INCLUDE QUERCUS CHRYSOLEPIS, CHAMAEBATIA FOLIOLOSA, ERIOPHYLLUM LANATUM, DICHELOSTEMMA MULTIFLORUM, MONARDELLA, ET AL.
Threat: ROAD CONSTRUCTION REMOVED SOME POTENTIAL HABITAT. BRUSH CLEARING.
General: MORE THAN 300 PLANTS SEEN BY FRANKLIN IN 2000.
Owner/Manager: BLM

Occurrence No. 67	Map Index: 70870	EO Index: 71851	Dates Last Seen
Occ Rank: Fair			Element: 2007-06-07
Origin: Natural/Native occurrence			Site: 2007-06-07
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-10-31

Quad Summary: Colfax (3912018/541C)
County Summary: Placer

Lat/Long: 39.11718° / -120.94254°	Township: 15N
UTM: Zone-10 N4331796 E677871	Range: 09E
Radius: 80 meters	Section: 26
Elevation: 2,200 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: SW
Symbol Type: POINT	

Location: 1.3 ROAD MILES NNE OF COLFAX, ALONG INTERSTATE 80.
Location Detail: AT A PULL OUT ON EASTBOUND I-80. PLANTS FOUND IN PULLOUT, ALONG AN OLD ROADBED, AND IN A SMALL, DRY DITCH.
Ecological: AREAS OF PARTIAL TO FULL SHADE IN OPENINGS IN FOREST WITH SOME GRASS AND HERB COVER. OVERSTORY OF LITHOCARPUS DENSIFLORUS, QUERCUS CHRYSOLEPIS, PSEUDOTSUGA MENZIESII. SOME CEANOTHUS INTEGERRIMUS. SOILS APPEAR SHALEY, SUBSTRATE DRY.
Threat: SITE COULD EASILY BE DISTURBED BY ROAD CONSTRUCTION. TRASH AND DEBRIS ALSO THREATEN.
General: 47 PLANTS OBSERVED IN 2007.
Owner/Manager: CALTRANS ROW

Chlorogalum grandiflorum

Red Hills soaproot

Element Code: PMLILOG020

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G2	CNPS List: 1B.2
State: None	State: S2	

Habitat Associations

General: CISMONTANE WOODLAND, CHAPARRAL, LOWER MONTANE CONIFEROUS FOREST.
Micro: OCCURS FREQUENTLY ON SERPENTINE OR GABBRO, BUT ALSO ON NON-ULTRAMAFIC SUBSTRATES; OFTEN ON "HISTORICALLY DISTURBED" SITE

Occurrence No.: 72	Map Index: 73023	EO Index: 73610	Dates Last Seen
Occ Rank: Fair			Element: 2007-03-26
Origin: Natural/Native occurrence			Site: 2007-03-26
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-12-01

Quad Summary: Coloma (3812078/526C)
County Summary: El Dorado

Lat/Long: 38.76025° / -120.93939°	Township: 11N
UTM: Zone-10 N4292188 E679040	Range: 09E
Radius: 80 meters	Section: 35
Elevation: 1,115 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: SE
Symbol Type: POINT	

Location: E SIDE OF SPRINGVALE RD BETWEEN ROSSLER RD AND LAKEVIEW DR, SW OF FOUR CORNERS.
Location Detail: MAPPED BY CNDDB ACCORDING TO A 2007 WILSON MAP.
Ecological: CHAPARRAL WITHIN MIXED OAK WOODLAND. ASSOCIATED WITH CEANOTHUS CUNEATUS ON SERPENTINE SOIL, SW ASPECT. PACKERA LAYNEAE ALSO AT THIS SITE.
Threat: THIS PARCEL IS BEING SUBDIVIDED INTO 5-ACRE LOTS.
General: 200 PLANTS SEEN IN 2007.
Owner/Manager: PVT

Clarkia biloba ssp. brandegeeeae

Brandegee's clarkia

Element Code: PDONA05053

Status: Federal: None, State: None
 NDDB Element Ranks: Global: G4G5T3, State: S3
 Other Lists: CNPS List: 1B.2

Habitat Associations: General: CHAPARRAL, CISMONTANE WOODLAND.
 Micro: OFTEN IN ROADCUTS. 295-885M.

Occurrence No. 1 Map Index: 43396 EO Index: 43396 Dates Last Seen: Element: 1947-06-10, Site: 1947-06-10
 Occ Rank: Unknown
 Origin: Natural/Native occurrence
 Presence: Presumed Extant
 Trend: Unknown
 Record Last Updated: 2000-08-11

Quad Summary: Coloma (3812078/526C), Garden Valley (3812077/526D)
 County Summary: El Dorado

Lat/Long: 38.78599° / -120.87889° Township: 11N
 UTM: Zone-10 N4295165 E684231 Range: 10E
 Radius: 1/5 mile Mapping Precision: NON-SPECIFIC Section: 20 Qtr: SW
 Elevation: 1,080 ft Symbol Type: POINT Meridian: M

Location: 1.7 MILES SOUTH OF COLOMA POST OFFICE ALONG HIGHWAY 49.
 General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1947 COLLECTION BY LEWIS AND LEWIS; NEEDS FIELDWORK.
 Owner/Manager: UNKNOWN

Occurrence No. 2 Map Index: 43397 EO Index: 43397 Dates Last Seen: Element: 1947-06-10, Site: 1947-06-10
 Occ Rank: Unknown
 Origin: Natural/Native occurrence
 Presence: Presumed Extant
 Trend: Unknown
 Record Last Updated: 2000-08-11

Quad Summary: Coloma (3812078/526C)
 County Summary: El Dorado

Lat/Long: 38.82915° / -120.98448° Township: 11N
 UTM: Zone-10 N4299747 E674954 Range: 09E
 Radius: 1/5 mile Mapping Precision: NON-SPECIFIC Section: 04 Qtr: SW
 Elevation: 900 ft Symbol Type: POINT Meridian: M

Location: 2.3 MILES SOUTH OF PILOT HILL ALONG HIGHWAY 49.
 General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1947 COLLECTION BY LEWIS AND LEWIS; NEEDS FIELDWORK.
 Owner/Manager: UNKNOWN

Occurrence No. 3 Map Index: 43398 EO Index: 43398 Dates Last Seen: Element: XXXX-XX-XX, Site: XXXX-XX-XX
 Occ Rank: Unknown
 Origin: Natural/Native occurrence
 Presence: Presumed Extant
 Trend: Unknown
 Record Last Updated: 2000-08-11

Quad Summary: Coloma (3812078/526C)
 County Summary: El Dorado

Lat/Long: 38.82789° / -120.97206° Township: 11N
 UTM: Zone-10 N4299631 E676035 Range: 09E
 Radius: 1/5 mile Mapping Precision: NON-SPECIFIC Section: 04 Qtr: SE
 Elevation: 900 ft Symbol Type: POINT Meridian: M

Location: 3.1 MILES SOUTH OF PILOT HILL ALONG HIGHWAY 49.
 General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS AN UNDATED ANONYMOUS COLLECTION CITED BY LEWIS AND LEWIS IN "THE GENUS CLARKIA"; NEEDS FIELDWORK.
 Owner/Manager: UNKNOWN

Clarkia biloba ssp. brandegeeeae

Brandegee's clarkia

Element Code: PDONA05053

Status _____ **NDDDB Element Ranks** _____ **Other Lists** _____
Federal: None **Global:** G4G5T3 **CNPS List:** 1B.2
State: None **State:** S3

Habitat Associations _____
General: CHAPARRAL, CISMONTANE WOODLAND.
Micro: OFTEN IN ROADCUTS. 295-885M.

Occurrence No. 4 **Map Index:** 43399 **EO Index:** 43399 **Dates Last Seen** _____
Occ Rank: Good **Element:** 2007-05-25
Origin: Natural/Native occurrence **Site:** 2007-05-25
Presence: Presumed Extant
Trend: Unknown **Record Last Updated:** 2008-12-10

Quad Summary: Clarksville (3812161/511A), Pilot Hill (3812171/527D)
County Summary: El Dorado

Lat/Long: 38.75175° / -121.05054° **Township:** 10N
UTM: Zone-10 N4291033 E669402 **Range:** 08E
Area: 12.0 acres **Mapping Precision:** SPECIFIC **Section:** 01 **Qtr:** N
Elevation: 560 ft **Symbol Type:** POLYGON **Meridian:** M

Location: FROM SWEETWATER OVERCROSSING WEST FOR ABOUT 0.25 MILE, ALONG SOUTH SIDE OF SALMON FALLS ROAD, EAST OF FOLSOM LAKE.
Location Detail: NW POLY MAPPED ACCORDING TO A 2002 BURMESTER MAP. SE POLY MAPPED ACCORDING TO A 2007 JANEWAY & CASTRO COLLECTION FROM 125 METERS S OF SALMON FALLS RD ALONG LITTLE USED DIRT ROAD ON E SIDE OF SWEETWATER CREEK."

Ecological: NW POLY FOUND IN WEED INFESTED ROADFILL WITH CHONDRILLA JUNCEA, LACTUCA SERRIOLA, AND TORILIS NODOSA ADJACENT TO RIPARIAN AREA WITH AESCULUS CALIFORNICA, QUERCUS WISLIZENII, AND ALSO ON ROADCUT WITH LITTLE VEGETATION ADJACENT TO CHAPARRAL.

Threat: POTENTIALLY INVASIVE WEEDS; HERBICIDE USED IN ROAD MAINTENANCE.

General: NW POLY: 500 EST IN 2002. SE POLY: "COMMON" IN 2007. A 1947 COLL BY LEWIS & LEWIS FROM "PILOT HILLS-SALMON FALLS RD" & 3 1907-1908 BRANDEGEE COLLECTIONS FROM "SIMPSON'S RANCH, SWEETWATER RIVER" ATTRIB HERE; UNABLE TO LOCATE SIMPSON'S RANCH.

Owner/Manager: UNKNOWN

Occurrence No. 5 **Map Index:** 43400 **EO Index:** 43400 **Dates Last Seen** _____
Occ Rank: Unknown **Element:** XXXX-XX-XX
Origin: Natural/Native occurrence **Site:** XXXX-XX-XX
Presence: Presumed Extant
Trend: Unknown **Record Last Updated:** 2004-08-04

Quad Summary: Auburn (3812181/527A)
County Summary: Placer

Lat/Long: 38.88109° / -121.11338° **Township:** 12N
UTM: Zone-10 N4305273 E663644 **Range:** 08E
Area: **Mapping Precision:** NON-SPECIFIC **Section:** 20 **Qtr:** XX
Elevation: 1,000 ft **Symbol Type:** POLYGON **Meridian:** M

Location: HIGHWAY 40, 1.1 MILES EAST OF NEWCASTLE.
Location Detail: MAPPED AS BEST GUESS ALONG OPHIR ROAD (OLD HWY 40), 1.1 MILES EAST OF NEWCASTLE, ACCORDING TO INFORMATION PROVIDED BY B. ANDERSON.

General: SITE BASED ON AN UNDATED COLLECTION BY LEWIS AND LEWIS. ANDERSON HAS SEEN CLARKIAS ALONG THIS STRETCH OF ROAD, BUT AT AN UNKNOWN DATE.

Owner/Manager: UNKNOWN

Clarkia biloba ssp. brandegeeeae

Brandegee's clarkia

Element Code: PDONA05053

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4G5T3	CNPS List: 1B.2
State: None	State: S3	

Habitat Associations

General: CHAPARRAL, CISMONTANE WOODLAND.
 Micro: OFTEN IN ROADCUTS. 295-885M.

Occurrence No. 6	Map Index: 43401	EO Index: 43401	Dates Last Seen
Occ Rank: Unknown			Element: 2004-06-12
Origin: Natural/Native occurrence			Site: 2004-06-12
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2005-05-03

Quad Summary: Colfax (3912018/541C)
County Summary: Placer

Lat/Long: 39.09022° / -120.91930°	Township: 14N
UTM: Zone-10 N4328849 E679950	Range: 09E
Area:	Section: 01 Qtr: SE
Elevation:	Meridian: M
	Mapping Precision: NON-SPECIFIC
	Symbol Type: POLYGON

Location: 4 MILES EAST OF COLFAX.
Location Detail: MAPPED AS BEST GUESS 4 MI EAST ON IOWA HILL ROAD FROM HWY 80; EAST OF NORTH FORK AMERICAN RIVER NEAR WINDY POINT.
Ecological: GROWING IN YELLOW PINE AND OAK BELT IN RED CLAY SOIL.
General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1917 COLLECTION BY HELLER; NEEDS FIELDWORK.
Owner/Manager: UNKNOWN

Occurrence No. 7	Map Index: 43404	EO Index: 43404	Dates Last Seen
Occ Rank: Excellent			Element: 2003-05-26
Origin: Natural/Native occurrence			Site: 2003-05-26
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2004-08-05

Quad Summary: Foresthill (3912017/541D), Colfax (3912018/541C)
County Summary: Placer

Lat/Long: 39.04178° / -120.88849°	Township: 14N
UTM: Zone-10 N4323534 E682739	Range: 10E
Area:	Section: 19 Qtr: S
Elevation: 1,600 ft	Meridian: M
	Mapping Precision: NON-SPECIFIC
	Symbol Type: POLYGON

Location: ALONG YANKEE JIM'S ROAD FROM NORTH FORK AMERICAN RIVER ABOUT 1 MILE WEST & ABOUT 1.3 MILES EAST TO SHIRTTAIL CANYON RD.
Location Detail: ALONG HILLSIDE AND CUT BANK ADJACENT TO YANKEE JIM ROAD, EAST AND WEST OF THE NORTH FORK AMERICAN RIVER.
Ecological: STEEP MOSS AND FERN COVERED ROAD CUT. QUERCUS CHRYSOLEPIS FOREST BURNED OVER IN 2001. MANY GRASSES AND FORBS.
Threat: RECREATION.
General: IN 1998 1000-2000 PLANTS WERE OBSERVED; PLANTS WERE ABUNDANT. 1 MILLION PLANTS SEEN IN 2003. A 1959 COLLECTION BY MOSQUIN FROM "7.7 MILES FROM FORESTHILL ON ROAD TO COLFAX" ATTRIBUTED TO THIS SITE.
Owner/Manager: PVT, DPR

Occurrence No. 9	Map Index: 43411	EO Index: 43411	Dates Last Seen
Occ Rank: Unknown			Element: 1916-06-04
Origin: Natural/Native occurrence			Site: 1916-06-04
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-12-10

Quad Summary: Lake Combie (3912111/542D)
County Summary: Placer, Nevada

Lat/Long: 39.01523° / -121.09552°	Township: 14N
UTM: Zone-10 N4320192 E664883	Range: 08E
Radius: 1 mile	Section: 33 Qtr: XX
Elevation: 1,400 ft	Meridian: M
	Mapping Precision: NON-SPECIFIC
	Symbol Type: POINT

Location: BEAR RIVER. WEST OF MCCARTHY FLAT, BOTH SIDES OF HIGHWAY 49, NEVADA COUNTY.
Location Detail: LOCATION VAGUE: GIVEN AS "BEAR RIVER, NEVADA COUNTY, 1400 FEET". MAPPED AS BEST GUESS BY CNDDDB ALONG THE BEAR RIVER WEST OF MCCARTHY FLAT ON BOTH SIDES OF HIGHWAY 49.
Ecological: UPPER SONORAN ZONE.
General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1916 COLLECTION BY HALL; NEEDS FIELDWORK.
Owner/Manager: UNKNOWN

Clarkia biloba ssp. brandegeeeae

Brandegee's clarkia

Element Code: PDONA05053

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4G5T3	CNPS List: 1B.2
State: None	State: S3	

Habitat Associations
 General: CHAPARRAL, CISMONTANE WOODLAND.
 Micro: OFTEN IN ROADCUTS. 295-885M.

Occurrence No. 10	Map Index: 43413	EO Index: 43413	Dates Last Seen
Occ Rank: Unknown			Element: XXXX-XX-XX
Origin: Natural/Native occurrence			Site: XXXX-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2000-08-14

Quad Summary: Wolf (3912112/542C)
County Summary: Nevada

Lat/Long: 39.06087° / -121.15425°	Township: 14N
UTM: Zone-10 N4325153 E659695	Range: 07E
Radius: 2/5 mile	Section: 14
Elevation: 1,400 ft	Meridian: M
Mapping Precision: NON-SPECIFIC	Qtr: XX
Symbol Type: POINT	

Location: 1 MILE WEST OF WOLF ON GARDEN BAR ROAD.
Location Detail: MAPPED ABOUT 1 MILE SOUTHWEST OF PINE HILL, EAST OF CAMP FAR WEST RESERVOIR.
General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1973 CHECKLIST OF PLANTS OCCURRING IN NEVADA COUNTY (TRUE); NEEDS FIELDWORK.
Owner/Manager: UNKNOWN

Occurrence No. 26	Map Index: 56255	EO Index: 56271	Dates Last Seen
Occ Rank: Excellent			Element: 2002-06-19
Origin: Natural/Native occurrence			Site: 2002-06-19
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2004-07-29

Quad Summary: Pilot Hill (3812171/527D)
County Summary: El Dorado

Lat/Long: 38.76136° / -121.00794°	Township: 11N
UTM: Zone-10 N4292179 E673081	Range: 09E
Radius: 80 meters	Section: 31
Elevation: 740 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: SE
Symbol Type: POINT	

Location: SOUTH FORK AMERICAN RIVER, JUST DOWNSTREAM FROM CONFLUENCE OF WEBER CREEK, EAST OF PINE HILL PRESERVE.
Location Detail: MOSTLY ON ROAD CUT ABOVE DIRT ROAD ON THE WAY TO WEBER CREEK.
Ecological: FOOTHILL PINE SERIES, WITH PINUS SABINIANA, QUERCUS KELLOGII, Q. WISLIZENII, AESCULUS CALIFORNICA, AND TOXICODENDRON. GROWING IN OPENING ON CUT SLOPE ABOVE DIRT ROAD.
Threat: NONE APPARENT IN 2002.
General: 200 PLANTS SEEN IN 2002.
Owner/Manager: BLM

Occurrence No. 27	Map Index: 56256	EO Index: 56272	Dates Last Seen
Occ Rank: Good			Element: 2006-06-14
Origin: Natural/Native occurrence			Site: 2006-06-14
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-08-28

Quad Summary: Auburn (3812181/527A), Greenwood (3812088/526B)
County Summary: Placer

Lat/Long: 38.93560° / -121.01927°	Township: 13N
UTM: Zone-10 N4311496 E671677	Range: 09E
Area:	Section: 31
Elevation: 1,300 ft	Meridian: M
Mapping Precision: NON-SPECIFIC	Qtr: XX
Symbol Type: POLYGON	

Location: ALONG LAKE CLEMENTINE RD MOSTLY BEFORE LAKE CLEMENTINE TRAIL, SOUTH OF LAKE CLEMENTINE ALONG THE N. FORK AMERICAN RIVER.
Ecological: MIXED CONIFER FOREST. ROADSIDE GRASSY CLEARINGS WITH PHILADELPHUS LEWISII, QUERCUS CHRYSOLEPIS, STYRAX OFFICINALIS, CEANOTHUS SPP.
Threat: ROAD MAINTENANCE AND FIRE CLEARING.
General: ABOUT 30 PLANTS ESTIMATED IN 2004. POLYGON SUPPLIED SEEMS TOO LONG TO ONLY ACCOMODATE 30 PLANTS. NEEDS FIELDWORK TO PIN DOWN COLONIES. A 1973 YUNGERT COLLECTION AND A 2006 HELMKAMP COLLECTION ALSO ATTRIBUTED TO THIS OCCURRENCE.
Owner/Manager: STATE

Clarkia biloba ssp. brandegeeeae

Brandegee's clarkia

Element Code: PDONA05053

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4G5T3	CNPS List: 1B.2
State: None	State: S3	

Habitat Associations

General: CHAPARRAL, CISMONTANE WOODLAND.
 Micro: OFTEN IN ROADCUTS. 295-885M.

Occurrence No. 28	Map Index: 56257	EO Index: 56273	Dates Last Seen
Occ Rank: Good			Element: 2003-06-20
Origin: Natural/Native occurrence			Site: 2003-06-20
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2004-07-30

Quad Summary: Colfax (3912018/541C)
County Summary: Placer

Lat/Long: 39.06487° / -120.94692°	Township: 14N
UTM: Zone-10 N4325982 E677624	Range: 09E
Area:	Mapping Precision: NON-SPECIFIC
Elevation: 2,000 ft	Section: 14 Qtr: /W
	Meridian: M
	Symbol Type: POLYGON

Location: ALONG CANYON WAY FROM YANKEE JIM'S ROAD TO 0.3 MILE NORTH, AND ALONG YANKEE JIM'S ROAD SOUTH FOR 1.3 MILES.
Location Detail: ROAD CUT BANKS IN SUNNY LOCATIONS.
Ecological: ROAD CUT BANKS.
Threat: ROAD MAINTENANCE.
General: 10,000 PLANTS SEEN IN 2003.
Owner/Manager: PVT

Occurrence No. 43	Map Index: 61079	EO Index: 61115	Dates Last Seen
Occ Rank: Good			Element: 2006-05-22
Origin: Natural/Native occurrence			Site: 2006-05-22
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-12-11

Quad Summary: Greenwood (3812088/526B)
County Summary: Placer

Lat/Long: 38.96605° / -120.97436°	Township: 13N
UTM: Zone-10 N4314960 E675494	Range: 09E
Area: 4.0 acres	Mapping Precision: SPECIFIC
Elevation: 1,000 ft	Section: 21 Qtr: NE
	Meridian: M
	Symbol Type: POLYGON

Location: EAST SIDE OF NORTH FORK LAKE, 0.5 MILE SOUTHWEST OF LONG POINT.
Location Detail: CANYON SLOPE ABOVE NORTH FORK AMERICAN RIVER. MAPPED AS 5 POLYGONS BY CNDDDB ACCORDING TO A 2004 YOUNG MAP AND A 2006 DEAN MAP. MOSTLY IN THE S1/2 OF THE NE1/4 SEC 21.
Ecological: SURROUNDING HABITAT IS A MIXTURE OF PINE/OAK WOODLAND AND CHAPARRAL W/ SOME MIXED EVERGREEN FOREST IN MOIST AREAS. ASSOCIATES SPECIES ON ROAD CUT INCLUDE PENTAGRAMMA TRIANGULARIS, TORILIS ARVENSIS, CYNOSURUS ECHINATUS, BROMUS DIANDRUS, ETC.
Threat: RECREATIONAL USE, PROPOSED TRAIL PROJECT.
General: 2 INDIVIDUALS OBSERVED IN 2004 IN S-MOST POLY. THE 4 N-MOST POLYS HAD 300 PLANTS IN 2006.
Owner/Manager: UNKNOWN

Clarkia biloba ssp. *brandegeeeae*

Brandegee's clarkia

Element Code: PDONA05053

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4G5T3	CNPS List: 1B.2
State: None	State: S3	

Habitat Associations

General: CHAPARRAL, CISMONTANE WOODLAND.
 Micro: OFTEN IN ROADCUTS. 295-885M.

Occurrence No. 46	Map Index: 61207	EO Index: 61243	Dates Last Seen
Occ Rank: Excellent			Element: 2004-06-12
Origin: Natural/Native occurrence			Site: 2004-06-12
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2005-05-03

Quad Summary: Colfax (3912018/541C)
County Summary: Placer

Lat/Long: 39.09589° / -120.93898°	Township: 14N
UTM: Zone-10 N4329440 E678234	Range: 09E
Area:	Mapping Precision: NON-SPECIFIC
Elevation: 1,800 ft	Section: 02 Qtr: E
	Symbol Type: POLYGON
	Meridian: M

Location: ABOUT 0.7 MILE EAST OF COLFAX ALONG IOWA HILL ROAD.
Location Detail: ABOUT 1 MILE EAST FROM JUNCTION OF IOWA HILL RD AND CANYON WAY TO ABOUT 2 MILES EAST OF JUNCTION.
Ecological: ROADSIDES AND OUTCROPS IN LOWER CONIFEROUS FOREST. FOUND WITH PSUEDOTSUGA MENZIESII, QUERCUS WISLIZENII, AESCULUS CALIFORNICA, SEDUM SPATHULIFOLIUM, CLARKIA PURPUREA SSP. VIMINEA, CLARKIA UNGUICULATA, AND MELICA CALIFORNICA.
General: "HUNDREDS" OF INDIVIDUALS SEEN IN 2004.
Owner/Manager: UNKNOWN

Occurrence No. 48	Map Index: 65011	EO Index: 65090	Dates Last Seen
Occ Rank: Unknown			Element: 2005-06-16
Origin: Natural/Native occurrence			Site: 2005-06-16
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-08-28

Quad Summary: Lake Combie (3912111/542D), Grass Valley (3912121/542A)
County Summary: Nevada

Lat/Long: 39.12255° / -121.02809°	Township: 15N
UTM: Zone-10 N4332228 E670462	Range: 09E
Area: 13.2 acres	Mapping Precision: SPECIFIC
Elevation: 1,656 ft	Section: 30 Qtr: SW
	Symbol Type: POLYGON
	Meridian: M

Location: CLOVER VALLEY ROAD, ALTA SIERRA SUBDIVISION.
Location Detail: MAPPED AT TWO LOCATIONS ALONG CLOVER VALLEY ROAD IN THE SW 1/4 OF SECTION 30 AND THE NE 1/4 OF SECTION 25.
Ecological: TYPICAL HABITAT OF OPEN, EXPOSED SLOPES AND ROAD BANKS/CUTS.
Threat: DEVELOPMENT.
General: OVER 1,000 PLANTS SEEN IN 2005.
Owner/Manager: UNKNOWN

Occurrence No. 49	Map Index: 65012	EO Index: 65091	Dates Last Seen
Occ Rank: Good			Element: 2005-06-16
Origin: Natural/Native occurrence			Site: 2005-06-16
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-08-27

Quad Summary: Lake Combie (3912111/542D)
County Summary: Nevada

Lat/Long: 39.11553° / -121.04005°	Township: 15N
UTM: Zone-10 N4331426 E669445	Range: 08E
Radius: 80 meters	Mapping Precision: SPECIFIC
Elevation: 1,594 ft	Section: 36 Qtr: NW
	Symbol Type: POINT
	Meridian: M

Location: ALONG WEST SIDE OF BREWER ROAD, ALTA SIERRA SUBDIVISION.
Location Detail: MAPPED JUST WEST OF ROAD, ABOUT 0.21 MILE SOUTH OF ALTA SIERRA SCHOOL ON TOPO MAP.
Ecological: TYPICAL HABITAT, GROWING ALONG ROAD BANK IN RED CLAY SOILS.
Threat: HERBICIDES. RESIDENTIAL AREAS NEARBY.
General: APPROXIMATELY 150 PLANTS SEEN IN 2005.
Owner/Manager: UNKNOWN

Clarkia biloba ssp. brandegeeeae

Brandegee's clarkia

Element Code: PDONA05053

Status	NDDDB Element Ranks	Other Lists
Federal: None	Global: G4G5T3	CNPS List: 1B.2
State: None	State: S3	

Habitat Associations

General: CHAPARRAL, CISMONTANE WOODLAND.
 Micro: OFTEN IN ROADCUTS. 295-885M.

Occurrence No. 61	Map Index: 59351	EO Index: 65132	Dates Last Seen
Occ Rank: Unknown			Element: 1928-06-12
Origin: Natural/Native occurrence			Site: 1928-06-12
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2006-07-21

Quad Summary: Auburn (3812181/527A)
County Summary: El Dorado, Placer

Lat/Long: 38.90211° / -121.07070°	Township: 12N
UTM: Zone-10 N4307683 E667297	Range: 08E
Radius: 1 mile	Section: 10
Elevation: 1,325 ft	Meridian: M
Mapping Precision: NON-SPECIFIC	Qtr: XX
Symbol Type: POINT	

Location: AUBURN.
Location Detail: EXACT LOCATION UNKNOWN; MAPPED AS BEST GUESS BY CNDDDB IN THE VICINITY OF THE AUBURN POST OFFICE.
Ecological: IN CHAPARRAL.
General: A 1928 KECK COLLECTION IS THE ONLY SOURCE FOR THIS SITE. NEEDS FIELDWORK.
Owner/Manager: UNKNOWN

Occurrence No. 62	Map Index: 65061	EO Index: 65140	Dates Last Seen
Occ Rank: Unknown			Element: 1933-05-06
Origin: Natural/Native occurrence			Site: 1933-05-06
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2006-07-11

Quad Summary: Rocklin (3812172/527C), Gold Hill (3812182/527B)
County Summary: Placer

Lat/Long: 38.87639° / -121.14465°	Township: 12N
UTM: Zone-10 N4304695 E660943	Range: 07E
Area:	Section: 24
Elevation: 600 ft	Meridian: M
Mapping Precision: NON-SPECIFIC	Qtr: XX
Symbol Type: POLYGON	

Location: NEAR NEWCASTLE.
Location Detail: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDDB WITHIN T12N R7E SECTION 24. COLLECTOR PROBABLY LISTED R8E INCORRECTLY.
General: A 1933 CLAR COLLECTION IS THE ONLY SOURCE FOR THIS SITE. NEEDS FIELDWORK.
Owner/Manager: UNKNOWN

Occurrence No. 64	Map Index: 69810	EO Index: 70632	Dates Last Seen
Occ Rank: Good			Element: 2007-04-01
Origin: Natural/Native occurrence			Site: 2007-04-01
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-12-10

Quad Summary: Lake Combie (3912111/542D)
County Summary: Nevada

Lat/Long: 39.10477° / -121.04003°	Township: 15N
UTM: Zone-10 N4330232 E669473	Range: 08E
Area: 1.0 acres	Section: 36
Elevation: 1,700 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: SW
Symbol Type: POLYGON	

Location: ALONG WOLF CREEK RD, 0.3 ROAD MILES EAST OF BREWER RD, 0.9 AIR MILES SOUTH OF ALTA SIERRA SCHOOL.
Location Detail: MAPPED BY CNDDDB IN THE SE 1/4 OF THE SW 1/4 OF SECTION 36 ACCORDING TO A 2006 MORAN MAP.
Ecological: NEXT TO ROAD AND ON SLOPE ABOVE ROAD. NON-NATIVE GRASSLAND W/NATIVE AND NON-NATIVE HERBS. THIS AREA IS SPRAYED WITH HERBICIDES FOR FIRE SAFETY BY NEVADA COUNTY AND PLANT COULD BE EXTIRPATED FROM THIS SITE.
Threat: COUNTY SPRAY PROGRAM, MOWING, WEED WACKING AND CLEARING.
General: APPROXIMATELY 75-100 PLANTS OBSERVED IN 2006. UNKNOWN NUMBER OF PLANTS SEEN IN 2007.
Owner/Manager: PVT

Clarkia biloba ssp. brandegeeeae

Brandegee's clarkia

Element Code: PDONA05053

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4G5T3	CNPS List: 1B.2
State: None	State: S3	

Habitat Associations

General: CHAPARRAL, CISMONTANE WOODLAND.
Micro: OFTEN IN ROADCUTS. 295-885M.

Occurrence No. 73	Map Index: 70886	EO Index: 71863	Dates Last Seen
Occ Rank: Good			Element: 2007-06-23
Origin: Natural/Native occurrence			Site: 2007-06-23
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-12-10

Quad Summary: Chicago Park (3912028/541B), Colfax (3912018/541C)
County Summary: Placer

Lat/Long: 39.12216° / -120.94020°	Township: 15N
UTM: Zone-10 N4332353 E678061	Range: 09E
Area: 16.0 acres	Section: 26
Elevation: 2,300 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: XX
Symbol Type: POLYGON	

Location: ON BOTH SIDES OF INTERSTATE 80, ABOUT 1.7 ROAD MILES NNE OF COLFAX.
Location Detail: MAPPED BY CNDDDB AS SEVEN COLONIES ALONG ROADWAYS IN THE VICINITY OF THE LONG RAVINE RAILROAD CROSSING ACCORDING TO 2007 HILLAIRE MAP INFORMATION.
Ecological: ALONG ROADCUTS AND IN OPEN DRY AREAS. ASSOC WITH PINUS PONDEROSA, QUERCUS KELLOGGII, PSEUDOTSUGA MENZIESII, ARCTOSTAPHYLOS MANZANITA, CEANOTHUS CUNEATUS, TOXICODENDRON DIVERSILOBUM, COLLINSIA TINCTORIA, BROMUS RUBENS, B. HORDEACEUS, ETC.
Threat: THREATENED BY RAILROAD MAINTENANCE, ROAD MAINTENANCE, AND OVERSHADING.
General: POPULATION NUMBERS OBSERVED IN 2007 RELATIVE TO I-80 AND THE LONG RAVINE CROSSING: ~350 PLANTS ON THE NW, ~650 ON THE NE, ~275 ON THE SW, AND 180 PLANTS ON THE SE.
Owner/Manager: CALTRANS ROW, UNKNOWN

Occurrence No. 76	Map Index: 73124	EO Index: 74055	Dates Last Seen
Occ Rank: Fair			Element: 2008-05-22
Origin: Natural/Native occurrence			Site: 2008-05-22
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-12-15

Quad Summary: Coloma (3812078/526C)
County Summary: El Dorado

Lat/Long: 38.82083° / -120.94636°	Township: 11N
UTM: Zone-10 N4298897 E678284	Range: 09E
Radius: 80 meters	Section: 11
Elevation: 660 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: NW
Symbol Type: POINT	

Location: BETWEEN CLARK MOUNTAIN RD & THE SOUTH FORK AMERICAN RIVER, NE OF CLARK MTN.
Location Detail: MAPPED BY CNDDDB IN THE NW1/4 OF SECTION 11 ACCORDING TO A 2008 WILLSON MAP.
Ecological: VALLEY-FOOTHILL RIPARIAN PLANT COMMUNITY ON PLACER DIGGINGS SOIL (RIVER RUBBLE). PLANTS WERE ON E SIDE OF SHADING SALIX EXIGUA OR BENEATH QUERCUS LOBATA.
Threat: RIVER IS HEAVILY USED BY RECREATIONAL/COMMERCIAL RAFTERS; PARCEL IS BEING SUBDIVIDED INTO FOUR 12-48 ACRE LOTS.
General: 4 PLANTS SEEN BETWEEN THIS SITE AND EO #77 IN 2008.
Owner/Manager: PVT

Clarkia biloba ssp. *brandegeae*

Brandegee's clarkia

Element Code: PDONA05053

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4G5T3	CNPS List: 1B.2
State: None	State: S3	

Habitat Associations

General: CHAPARRAL, CISMONTANE WOODLAND.
Micro: OFTEN IN ROADCUTS. 295-885M.

Occurrence No.: 77	Map Index: 73125	EO Index: 74056	Dates Last Seen
Occ Rank: Fair			Element: 2008-05-22
Origin: Natural/Native occurrence			Site: 2008-05-22
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-12-15

Quad Summary: Coloma (3812078/526C)
County Summary: El Dorado

Lat/Long: 38.82486° / -120.94222°	Township: 11N
UTM: Zone-10 N4299353 E678632	Range: 09E
Radius: 80 meters	Section: 11
Elevation: 660 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: N
Symbol Type: POINT	

Location: NE SIDE OF PETERSON LANE ALONG THE S SIDE OF THE SOUTH FORK AMERICAN RIVER, NE OF CLARK MTN.
Location Detail: MAPPED BY CNNDDB IN THE NW1/4 OF SECTION 11 ACCORDING TO A 2008 WILLSON MAP.
Ecological: VALLEY-FOOTHILL RIPARIAN PLANT COMMUNITY ON PLACER DIGGINGS SOIL (RIVER RUBBLE). PLANTS WERE ON E SIDE OF SHADING SALIX EXIGUA OR BENEATH QUERCUS LOBATA.
Threat: RIVER IS HEAVILY USED BY RECREATIONAL/COMMERCIAL RAFTERS; PARCEL IS BEING SUBDIVIDED INTO FOUR 12-48 ACRE LOTS.
General: 4 PLANTS SEEN BETWEEN THIS SITE AND EO #76 IN 2008.
Owner/Manager: PVT

Corynorhinus townsendii

Townsend's big-eared bat

Element Code: AMACC08010

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4	CDFG Status: SC
State: None	State: S2S3	

Habitat Associations

General: THROUGHOUT CALIFORNIA IN A WIDE VARIETY OF HABITATS. MOST COMMON IN MESIC SITES.
Micro: ROOSTS IN THE OPEN, HANGING FROM WALLS & CEILINGS. ROOSTING SITES LIMITING. EXTREMELY SENSITIVE TO HUMAN DISTURBANCE.

Occurrence No. 149	Map Index: 62603	EO Index: 62640	Dates Last Seen
Occ Rank: Unknown			Element: 2003-10-22
Origin: Natural/Native occurrence			Site: 2003-10-22
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2005-09-19

Quad Summary: Gold Hill (3812182/527B)
County Summary: Placer

Lat/Long: 38.88144° / -121.17777°	Township: 12N
UTM: Zone-10 N4305198 E658058	Range: 07E
Radius: 80 meters	Section: 22
Elevation: 725 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: NE
Symbol Type: POINT	

Location: ABANDONED MINE IN THE HILLS BETWEEN DUTCH RAVINE AND BOULDER RIDGE, JUST WEST OF HWY 193.
Ecological: FOUND IN ABANDONED MINE WITH SEVERAL AUDITS. MINE WILL BE BAT GATED.
General: 6 INDIVIDUALS OBSERVED ROOSTING IN MINE ON 22 OCT 2003.
Owner/Manager: PVT

Desmocerus californicus dimorphus

valley elderberry longhorn beetle

Element Code: IICOL48011

Status	NDDB Element Ranks	Other Lists
Federal: Threatened	Global: G3T2	CDFG Status:
State: None	State: S2	

Habitat Associations

General: OCCURS ONLY IN THE CENTRAL VALLEY OF CALIFORNIA, IN ASSOCIATION WITH BLUE ELDERBERRY (SAMBUCUS MEXICANA).

Micro: PREFERS TO LAY EGGS IN ELDERBERRIES 2-8 INCHES IN DIAMETER; SOME PREFERENCE SHOWN FOR "STRESSED" ELDERBERRIES.

Occurrence No. 82	Map Index: 33014	EO Index: 3784	Dates Last Seen
Occ Rank: Poor			Element: 1991-06-11
Origin: Natural/Native occurrence			Site: 1991-06-11
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-08-11

Quad Summary: Pilot Hill (3812171/527D)

County Summary: El Dorado

Lat/Long: 38.77641° / -121.09388°	Township: 11N
UTM: Zone-10 N4293690 E665579	Range: 08E
Radius: 80 meters	Section: 28
Elevation: 840 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: NW
Symbol Type: POINT	

Location: ANDERSON CREEK, TRIBUTARY TO NORTH FORK AMERICAN RIVER/FOLSOM LAKE, ALONG RATTLESNAKE BAR ROAD, SSW OF PILOT HILL.

Location Detail: REPORT ON: TAXONOMY; DISTRIBUTION; LIFE HISTORY; HABITAT; FIELD TECHNIQUES & OBSERVATIONS; BEETLE RECOVERY.

Ecological: HABITAT CONSISTS OF ONE UNHEALTHY-LOOKING CLUMP (MORE DEAD THAN LIVE BRANCHES) OF ELDERBERRY, SURROUNDED BY OAK WOODLAND.

Threat: ALTHOUGH UNDEVELOPED, THIS SITE APPEARS TO HAVE BEEN MINED OR QUARRIED PREVIOUSLY.

General: MANY EXIT HOLES OBSERVED; SOME POSSIBLY RECENT.

Owner/Manager: PVT

Occurrence No. 83	Map Index: 33015	EO Index: 3783	Dates Last Seen
Occ Rank: Fair			Element: 1991-06-11
Origin: Natural/Native occurrence			Site: 1991-06-11
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-08-11

Quad Summary: Pilot Hill (3812171/527D)

County Summary: El Dorado

Lat/Long: 38.77044° / -121.09753°	Township: 11N
UTM: Zone-10 N4293021 E665276	Range: 08E
Radius: 80 meters	Section: 28
Elevation: 760 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: SW
Symbol Type: POINT	

Location: NE SHORE OF FOLSOM LAKE, ALONG RATTLESNAKE BAR ROAD, JUST NORTH OF PENINSULA CAMPGROUND ENTRANCE, FOLSOM LAKE SRA.

Location Detail: LOCATED WITHIN THE STATE PARK, BUT LOCATED JUST OUTSIDE THE ENTRANCE GATE. REPORT ON: TAXONOMY; DISTRIBUTION; LIFE HISTORY; HABITAT; FIELD TECHNIQUES & OBSERVATIONS; BEETLE RECOVERY.

Ecological: HABITAT CONSISTS OF 4 ELDERBERRY CLUMPS IN A WET DITCH ALONG THE ROADSIDE, SURROUNDED BY OAK WOODLAND.

General: 4 ELDERBERRY CLUMPS CONTAINED MANY OLD AND NEW EXIT HOLES. PLANTS HAD BEEN SEVERELY TRIMMED AND PRUNED, WITH EVEN MAJOR TRUNKS CUT OUT, ALTHOUGH NOT RECENTLY.

Owner/Manager: DPR-FOLSOM LAKE SRA

Occurrence No. 84	Map Index: 33016	EO Index: 3788	Dates Last Seen
Occ Rank: Poor			Element: 1991-04-25
Origin: Natural/Native occurrence			Site: 1991-04-25
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-08-11

Quad Summary: Rocklin (3812172/527C)

County Summary: Placer

Lat/Long: 38.79843° / -121.13298°	Township: 11N
UTM: Zone-10 N4296064 E662132	Range: 08E
Radius: 80 meters	Section: 18
Elevation: 480 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: SW
Symbol Type: POINT	

Location: MINERS RAVINE, BRIDGE AT FOLSOM-AUBURN ROAD (TRIB TO DRY CREEK), 0.50 MILE SOUTH OF TUDSBURY ROAD, GRANITE BAY.

Location Detail: REPORT ON: TAXONOMY; DISTRIBUTION; LIFE HISTORY; HABITAT; FIELD TECHNIQUES & OBSERVATIONS; BEETLE RECOVERY.

Ecological: HABITAT CONSISTS OF 2 LARGE ROADSIDE ELDERBERRY CLUMPS.

Threat: THREATENED BY ROADSIDE CLEARANCE/CUTTING.

General: 2 RECENT EXIT HOLES OBSERVED ON 1 OF THE 2 CLUMPS.

Owner/Manager: UNKNOWN

Desmocerus californicus dimorphus

valley elderberry longhorn beetle

Element Code: IICOL48011

Status	NDDB Element Ranks	Other Lists
Federal: Threatened	Global: G3T2	CDFG Status:
State: None	State: S2	

Habitat Associations

General: OCCURS ONLY IN THE CENTRAL VALLEY OF CALIFORNIA, IN ASSOCIATION WITH BLUE ELDERBERRY (SAMBUCUS MEXICANA).

Micro: PREFERS TO LAY EGGS IN ELDERBERRIES 2-8 INCHES IN DIAMETER; SOME PREFERENCE SHOWN FOR "STRESSED" ELDERBERRIES.

Occurrence No. 85	Map Index: 33017	EO Index: 3785	Dates Last Seen
Occ Rank: Excellent			Element: 1991-04-25
Origin: Natural/Native occurrence			Site: 1991-04-25
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-08-11

Quad Summary: Rocklin (3812172/527C)

County Summary: Placer

Lat/Long: 38.77103° / -121.15473°	Township: 11N
UTM: Zone-10 N4292985 E660304	Range: 07E
Radius: 80 meters	Section: 25
Elevation: 410 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: SW
Symbol Type: POINT	

Location: MINERS RAVINE, TRIB TO DRY CREEK, WEST SIDE OF AUBURN-FOLSOM ROAD, 0.25 MILE NE OF CAVITT/STALLMAN ROAD, GRANITE BAY.

Location Detail: REPORT ON: TAXONOMY; DISTRIBUTION; LIFE HISTORY; HABITAT; FIELD TECHNIQUES & OBSERVATIONS; BEETLE RECOVERY.

Ecological: HABITAT CONSISTS OF OAK WOODLAND, WITH SCATTERED ELDERBERRIES AND LOTS OF POISON OAK; HILLY AND ROCKY SUBSTRATE.

General: ELDERBERRIES WERE SCATTERED, BUT COMMON; ONLY 2 CLUMPS WERE FOUND WITH EXIT HOLES. MANY EXIT HOLES, 1 POSSIBLY RECENT. DEAD WOOD SAMPLE WITH A PROBABLE VELB TUNNEL COLLECTED.

Owner/Manager: PVT

Occurrence No. 86	Map Index: 33018	EO Index: 3787	Dates Last Seen
Occ Rank: Excellent			Element: 1991-04-10
Origin: Natural/Native occurrence			Site: 1991-04-10
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-08-11

Quad Summary: Rocklin (3812172/527C)

County Summary: Placer

Lat/Long: 38.79410° / -121.21122°	Township: 11N
UTM: Zone-10 N4295448 E655347	Range: 07E
Radius: 80 meters	Section: 20
Elevation: 320 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: NE
Symbol Type: POINT	

Location: SECRET RAVINE, TRIBUTARY TO DRY CREEK, ALONG THE SIERRA COLLEGE NATURE TRAIL, ROCKLIN.

Location Detail: REPORT ON: TAXONOMY; DISTRIBUTION; LIFE HISTORY; HABITAT; FIELD TECHNIQUES & OBSERVATIONS; BEETLE RECOVERY.

Ecological: HABITAT CONSISTS OF OAK WOODLAND, WITH SPARSE/SCATTERED ELDERBERRIES GROWING WITH OAKS, BUCKEYES, AND POISON OAK.

General: ALTHOUGH THE ELDERBERRIES WERE FEW AND WIDELY-SCATTERED, MOST HAD OLD, CLEAN-CUT EXIT HOLES.

Owner/Manager: LOS RIOS COMM COLLEGE DIST

Occurrence No. 137	Map Index: 39384	EO Index: 34386	Dates Last Seen
Occ Rank: Unknown			Element: 2002-05-XX
Origin: Natural/Native occurrence			Site: 2002-05-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2003-01-03

Quad Summary: Pilot Hill (3812171/527D)

County Summary: Placer

Lat/Long: 38.80228° / -121.11592°	Township: 11N
UTM: Zone-10 N4296522 E663605	Range: 08E
Radius: 1/5 mile	Section: 17
Elevation: 640 ft	Meridian: M
Mapping Precision: NON-SPECIFIC	Qtr: SW
Symbol Type: POINT	

Location: STERLING POINTE ESTATES, END OF LOMIDA LANE, ~0.8 MILE EAST OF ALBURN-FOLSOM ROAD, LOOMIS.

Location Detail: LOT 1 IS A 1.84 ACRE ELDERBERRY MITIGATION AREA

Ecological: ELDERBERRY WITH LIVE OAK. ELDERBERRY SEEDLINGS AND OTHER NATIVE TREE SEEDLINGS ARE TO BE PLANTED TO INSURE A SURVIVAL RATE OF 80% AT THE END OF 10 YEARS.

Threat: CONSTRUCTION AROUND THE SITE, EQUESTIAN TRAIL MAINTENANCE. 2002: LOT 1 HAS HAD SOME CLEARING AND HERBICIDE SPRAYING.

General: 4 EMERGENCE HOLES OBSERVED 1993; 3 IN 1994; 2 IN 1995; 2 IN 1996; 1 IN 1997; 3 IN 1999; 2 ON SAME ELDERBERRY IN BOTH 2001 & 2002; NO OBSERVED ADULTS NOTED.

Owner/Manager: UNKNOWN

Elanus leucurus

white-tailed kite

Element Code: ABNKC06010

Status

NDDB Element Ranks

Other Lists

Federal: None

Global: G5

CDFG Status:

State: None

State: S3

Habitat Associations

General: ROLLING FOOTHILLS AND VALLEY MARGINS WITH SCATTERED OAKS & RIVER BOTTOMLANDS OR MARSHES NEXT TO DECIDUOUS WOODLAND.

Micro: OPEN GRASSLANDS, MEADOWS, OR MARSHES FOR FORAGING CLOSE TO ISOLATED, DENSE-TOPPED TREES FOR NESTING AND PERCHING.

Occurrence No. 74

Map Index: 52426

EO Index: 52426

Dates Last Seen

Occ Rank: Good

Element: 2003-07-XX

Origin: Natural/Native occurrence

Site: 2003-07-XX

Presence: Presumed Extant

Trend: Unknown

Record Last Updated: 2003-09-11

Quad Summary: Rocklin (3812172/527C)

County Summary: Placer

Lat/Long: 38.85073° / -121.20688°

Township: 12N

UTM: Zone-10 N4301740 E655600

Range: 07E

Radius: 80 meters

Mapping Precision: SPECIFIC

Section: 33

Qtr: NW

Elevation: 400 ft

Symbol Type: POINT

Meridian: M

Location: TRAYLOR RANCH, BETWEEN DELMAR AVENUE AND COLWELL AVENUE, SOUTH OF LINCOLN WAY, 2 MILES WEST OF PENRYN

Ecological: HABITAT CONSISTS OF OAK WOODLAND/RIPARIAN ASSOCIATED WITH ANTELOPE CREEK; DOMINATED BY BLUE OAKS. THIS 240-ACRE SITE IS SURROUNDED BY SMALLER (5-20 ACRE) RANCHETTES.

General: ADULT OBSERVED CARRYING A PREY ITEM TO THE HIDDEN NEST IN JUN 2003; 5 NEWLY-FLEDGED YOUNG OBSERVED IN EARLY JUL 2003 SITTING IN THE NEST TREE AND AN ADJACENT TREE, WATCHING ADULTS HUNTING AND OCCASIONALLY TAKING SHORT FLIGHTS WITH

Owner/Manager: SIERRA FOOTHILLS AUDUBON

Fritillaria eastwoodiae

Butte County fritillary

Element Code: PMLILOV060

Status: _____ NDDB Element Ranks: _____ Other Lists: _____
 Federal: None Global: G3Q CNPS List: 3.2
 State: None State: S3

Habitat Associations

General: CHAPARRAL, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.
 Micro: USUALLY ON DRY SLOPES BUT ALSO FOUND IN WET PLACES; SOILS CAN BE SERPENTINE, RED CLAY, OR SANDY LOAM. 40-1500M.

Occurrence No. 101 Map Index: 42638 EO Index: 42638 Dates Last Seen: _____
 Occ Rank: Unknown Element: 1967-04-01
 Origin: Natural/Native occurrence Site: 1967-04-01
 Presence: Presumed Extant
 Trend: Unknown Record Last Updated: 2000-03-28

Quad Summary: Greenwood (3812088/526B)
 County Summary: Placer, El Dorado

Lat/Long: 38.94538° / -120.90981° Township: 13N
 UTM: Zone-10 N4312793 E681140 Range: 10E
 Radius: 3/5 mile Mapping PrecisionNON-SPECIFIC Section: 30 Qtr: SW
 Elevation: 1,500 ft Symbol Type:POINT Meridian: M

Location: SPANISH DRY DIGGINGS, ABOUT 3.4 AIRMILES NORTH OF GREENWOOD, MIDDLE FORK AMERICAN RIVER CANYON.
 Location Detail: LOCATION UNCERTAIN; LOCATION GIVEN AS "SPANISH DIGGINGS, CA. 5 MILES SE OF AUBURN". MAPPED AS BEST GUESS BY CNDDDB AT SPANISH DRY DIGGINGS WHICH IS ABOUT 8.5 MILES NNE OF AUBURN.
 General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS 1967 COLLECTION BY RODERICK. TAXONOMIC STATUS UNCERTAIN; ORIGINALLY COLLECTED AS FRITILLARIA PHAEANTHERA.

Owner/Manager: UNKNOWN

Occurrence No. 102 Map Index: 42639 EO Index: 42639 Dates Last Seen: _____
 Occ Rank: Unknown Element: 1967-04-01
 Origin: Natural/Native occurrence Site: 1967-04-01
 Presence: Presumed Extant
 Trend: Unknown Record Last Updated: 2000-03-28

Quad Summary: Auburn (3812181/527A)
 County Summary: El Dorado, Placer

Lat/Long: 38.91291° / -121.04260° Township: 12N
 UTM: Zone-10 N4308933 E669709 Range: 08E
 Radius: 3/5 mile Mapping PrecisionNON-SPECIFIC Section: 12 Qtr: XX
 Elevation: 900 ft Symbol Type:POINT Meridian: M

Location: AMERICAN RIVER CANYON, NEAR CONFLUENCE OF MIDDLE AND NORTH FORKS AMERICAN RIVER, EAST OF AUBURN.
 Location Detail: LOCATION UNCERTAIN; DIRECTIONS GIVEN AS "ON THE OLD AUBURN TOLL TOAD, AMERICAN CANYON, CA. 1 MILE SOUTH TO SOUTHEAST OF AUBURN." MAPPED AS BEST GUESS BY CNDDDB ON THE AMERICAN RIVER CANYON ABOUT 1.5 MILES ENE OF AUBURN ON HWY 49.
 Ecological: AROUND AND UNDER SCATTERED DECIDUOUS OAKS AND SHRUBS. ON RED GRITTY CLAY SOILS WITH MUCH HUMUS.
 General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS 1967 COLLECTION BY RODERICK. LOCATION VERY UNCLEAR; NEEDS FIELDWORK. TAXONOMIC STATUS UNCERTAIN; ORIGINALLY COLLECTED AS FRITILLARIA PHAEANTHERA.

Owner/Manager: UNKNOWN

Galium californicum ssp. sierrae

El Dorado bedstraw

Element Code: PDRUB0N0E7

Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G5T1	CNPS List: 1B.2
State: Rare	State: S1.2	

Habitat Associations

General: CISMONTANE WOODLAND, CHAPARRAL, LOWER MONTANE CONIFEROUS FOREST.
Micro: MORE OFTEN IN PINE-OAK WOODLAND THAN IN CHAPARRAL; RESTRICTED TO GABBROIC SOILS. 100-585M.

Occurrence No. 1	Map Index: 12104	EO Index: 17316	Dates Last Seen
Occ Rank: Unknown			Element: XXXX-XX-XX
Origin: Natural/Native occurrence			Site: XXXX-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-04-25

Quad Summary: Pilot Hill (3812171/527D)
County Summary: El Dorado

Lat/Long: 38.75434° / -121.05799°	Township: 10N
UTM: Zone-10 N4291306 E668748	Range: 08E
Radius: 1/5 mile	Mapping Precision: NON-SPECIFIC
Elevation: 440 ft	Section: 01 Qtr: NW
	Symbol Type: POINT Meridian: M

Location: NEAR CONFLUENCE OF SWEETWATER CREEK SOUTH FORK AMERICAN RIVER AT FOLSOM LAKE.
General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1980 CNPS MAP; UNKNOWN WHEN PLANTS WERE SEEN. NEEDS FIELDWORK.
Owner/Manager: UNKNOWN

Occurrence No. 4	Map Index: 12130	EO Index: 17311	Dates Last Seen
Occ Rank: Unknown			Element: 1958-05-29
Origin: Natural/Native occurrence			Site: 1958-05-29
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-12-05

Quad Summary: Pilot Hill (3812171/527D)
County Summary: El Dorado

Lat/Long: 38.76794° / -121.03883°	Township: 11N
UTM: Zone-10 N4292851 E670381	Range: 08E
Radius: 1/5 mile	Mapping Precision: NON-SPECIFIC
Elevation: 800 ft	Section: 36 Qtr: NW
	Symbol Type: POINT Meridian: M

Location: APPROX 0.5 MILE SOUTH OF NEW SALMON FALLS BRIDGE, SOUTH FORK AMERICAN RIVER, ABOUT 10 MILES NORTHEAST OF FOLSOM.
General: SITE BASED ON AN UNDATED CRAMPTON COLLECTION & A 1958 SMITH OBSERVATION. NEEDS FIELDWORK.
Owner/Manager: PVT

Occurrence No. 5	Map Index: 16272	EO Index: 8129	Dates Last Seen
Occ Rank: Good			Element: 1994-06-15
Origin: Natural/Native occurrence			Site: 1994-06-15
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2002-10-23

Quad Summary: Pilot Hill (3812171/527D)
County Summary: El Dorado

Lat/Long: 38.76259° / -121.01869°	Township: 11N
UTM: Zone-10 N4292295 E672144	Range: 09E
Area: 33.4 acres	Mapping Precision: SPECIFIC
Elevation: 900 ft	Section: 31 Qtr: NW
	Symbol Type: POLYGON Meridian: M

Location: RAVINE OPENING INTO SOUTH FORK AMERICAN RIVER, 2 MILES EAST OF SALMON FALLS BRIDGE, EAST OF FOLSOM LAKE
Location Detail: 3 COLONIES MAPPED BY CNDDB. EASTERN COLONY ALONG NORTH-FACING SLOPE WITHIN THE PROPOSED PLANT PRESERVE AREA. FOUND IN SOMEWHAT SHELTERED AREAS SOUTH OF THE DRAINAGE UP TO THE MIDDLE OF THE SLOPE.
Ecological: WESTERN COLONIES ON STEEP NORTH-FACING SLOPE, IN SMALL GROVE OF PINUS PONDEROSA. RESCUE SOILS. SOME SCOTCH BROOM PRESENT. E COLONY ON RESCUE STONY LOAM SOILS, IN A MODERATELY DENSE STAND OF GABBROIC NORTHERN MIXED CHAPARRAL.
General: TWO WESTERN COLONIES BASED ON 1976 COLLECTIONS BY STEBBINS. 1000 PLANTS SEEN AT EASTERN COLONY BY FRASER AND CRAIG IN 1994. INCLUDES FORMER OCCURRENCE #6.
Owner/Manager: PVT

Galium californicum ssp. sierrae

El Dorado bedstraw

Element Code: PDRUB0N0E7

Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G5T1	CNPS List: 1B.2
State: Rare	State: S1.2	

Habitat Associations

General: CISMONTANE WOODLAND, CHAPARRAL, LOWER MONTANE CONIFEROUS FOREST.
Micro: MORE OFTEN IN PINE-OAK WOODLAND THAN IN CHAPARRAL; RESTRICTED TO GABBROIC SOILS. 100-585M.

Occurrence No. 12	Map Index: 49114	EO Index: 49114	Dates Last Seen
Occ Rank: Excellent			Element: 1994-06-16
Origin: Natural/Native occurrence			Site: 1994-06-16
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2002-10-23

Quad Summary: Pilot Hill (3812171/527D), Clarksville (3812161/511A)
County Summary: El Dorado

Lat/Long: 38.74609° / -121.03649°	Township: 10N
UTM: Zone-10 N4290431 E670636	Range: 09E
Area: 12.8 acres	Section: 06
Elevation: 1,050 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: /
Symbol Type: POLYGON	

Location: RIDGE BETWEEN SWEETWATER & CRACKER CREEKS, NORTH OF CLARKSVILLE, EAST OF FOLSOM LAKE.
Location Detail: 5 COLONIES MAPPED AS 4 POLYGONS FROM TOP OF 1361' PEAK & ALONG THE E EDGE OF RIDGE, EXTENDING DOWN A SEASONAL DRAINAGE FOR 1000 FT TO ABOUT 100 FT ABOVE CRACKER CRK. MAPPED WITHIN THE W 1/2 OF SEC 6 & THE NE 1/4 OF THE NW 1/4 OF SEC 7.
Ecological: ON OPEN RESCUE STONY LOAM SOILS, GROWING AMONGST ROCKS AND BOULDERS IN THE GABBROIC NORTHERN MIXED CHAPARRAL PLANT COMMUNITY. ASSOCIATES INCLUDE ADENOSTOMA FASCICULATUM, ARCTOSTAPHYLOS VISCIDA SSP. VISCIDA, ERIODICTYON CALIFORNICUM, ET AL.
Threat: PROPOSED HOUSING DEVELOPMENT.
General: 5 COLONIES OBSERVED BY WOOD AND FRASER IN 1994. FROM NORTH TO SOUTH, NUMBER OF PLANTS AT EACH COLONY: 100, 1, 3, 30, AND 1. SITE SHOULD BE PRESERVED AS OPEN SPACE.
Owner/Manager: PVT-KANAKA VALLEY RANCH

Gratiola heterosepala

Boggs Lake hedge-hyssop

Element Code: PDSCR0R060

Status	NDDB Element Ranks	Other Lists
Federal: None State: Endangered	Global: G3 State: S3.1	CNPS List: 1B.2

Habitat Associations

General: MARSHES AND SWAMPS (FRESHWATER), VERNAL POOLS.

Micro: CLAY SOILS; USUALLY IN VERNAL POOLS, SOMETIMES ON LAKE MARGINS. 5-2400M.

Occurrence No. 15	Map Index: 11792	EO Index: 17776	Dates Last Seen
Occ Rank: Fair			Element: 1987-04-17
Origin: Natural/Native occurrence			Site: 1987-04-17
Presence: Presumed Extant			
Trend: Decreasing			Record Last Updated: 2009-04-15

Quad Summary: Rocklin (3812172/527C)

County Summary: Placer

Lat/Long: 38.76123° / -121.24390°	Township: 11N
UTM: Zone-10 N4291744 E652578	Range: 07E
Area: 1.4 acres	Section: 31
Elevation: 290 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: NW
Symbol Type: POLYGON	

Location: JOHNSON RANCH, APPROX 0.75 MILE SOUTH OF HWY 80 BETWEEN ROCKLIN & ROSEVILLE.

Location Detail: MAPPED AS 2 POLYGONS IN SW1/4 OF NW1/4 SEC 31.

Ecological: NORTHERN MUDFLOW VERNAL POOL IN OPEN ANNUAL GRASSLAND NEAR EDGE OF OAK WOODLAND. GRATIOLA EBRACTEATA ALSO FOUND IN DEEPER VERNAL POOLS IN THE AREA.

Threat: LAND USE FOR LIVESTOCK, DEVELOPMENT.

General: MORE THAN 500 PLANTS IN 1986. SOUTHERN POLYGON IS PROBABLY EXTIRPATED ACCORDING TO WITHAM'S AERIAL PHOTO INTERPRETATION; A HOUSING DEVELOPMENT NOW EXISTS THERE.

Owner/Manager: PVT

Haliaeetus leucocephalus

bald eagle

Element Code: ABNKC10010

Status	NDDB Element Ranks	Other Lists
Federal: Delisted	Global: G5	CDFG Status:
State: Endangered	State: S2	

Habitat Associations

General: OCEAN SHORE, LAKE MARGINS, & RIVERS FOR BOTH NESTING & WINTERING. MOST NESTS WITHIN 1 MI OF WATER.
Micro: NESTS IN LARGE, OLD-GROWTH, OR DOMINANT LIVE TREE W/OPEN BRANCHES, ESPECIALLY PONDEROSA PINE. ROOSTS COMMUNALLY IN WINTER

Occurrence No. 272	Map Index: 71321	EO Index: 72225	Dates Last Seen
Occ Rank: Good			Element: 2010-02-XX
Origin: Natural/Native occurrence			Site: 2010-02-XX
Presence: Presumed Extant			
Trend: Stable			Record Last Updated: 2010-02-24

Quad Summary: Pilot Hill (3812171/527D)
County Summary: El Dorado

Lat/Long: 38.79240° / -121.10377°	Township: 11N
UTM: Zone-10 N4295447 E664682	Range: 08E
Radius: 80 meters	Section: 20 Qtr: NE
Elevation: 475 ft	Meridian: M
Mapping Precision: SPECIFIC	
Symbol Type: POINT	

Location: ALONG N FORK AMERICAN RIVER, ANDERSON ISLAND NATURAL PRESERVE, FOLSOM RESERVOIR, ABOUT 0.7 MI SSE OF STERLING POINTE CT.

Location Detail: NEST IN GRAY PINE IN MIDDLE OF NORTH SIDE OF ANDERSON ISLAND. ROOST SITES ON EAST SIDE OF LAKE & ON 2 GRAY PINES ON SOUTH SIDE OF ISLAND.

Ecological: RECREATION LAKE SURROUNDED BY MIXED STANDS OF OAKS, GRAY PINES & CALIF BUCKEYE. UNDERSTORY CONSISTED OF POISON OAK & ANNUAL GRASSES. NEST PREVIOUSLY USED BY EGRETS & HERONS. GREAT BLUE HERON ROOKERY ALSO IN VICINITY.

Threat: BOATERS, BUT ISLAND ACCESS IS RESTRICTED. COYOTE PREDATION. EROSION OF NEST TREE BASE. FUTURE DEVELOPMENT (EAST).

General: 1ST RECORDED NESTING OF BALD EAGLES AT FOLSOM LAKE. NEST ACTIVE IN 2005 & 2006. 2 FLEDGED YOUNG OBS ON 20 JUN 2008. 1 FLEDGED YOUNG OBS ON 24 JUN 2009. NEST ACTIVE W/ 1 EGG, FEB 2010.

Owner/Manager: DPR-FOLSOM LAKE SRA, BOR

Helianthemum suffrutescens

Bisbee Peak rush-rose

Element Code: PDCIS020F0

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G2Q	CNPS List: 3.2
State: None	State: S2.2	

Habitat Associations

General: CHAPARRAL.
 Micro: OFTEN ON SERPENTINE, GABBROIC, OR IONE FORMATION SOILS; IN OPENINGS IN CHAPARRAL. 45-610M.

Occurrence No. 18	Map Index: 12208	EO Index: 8133	Dates Last Seen
Occ Rank: Unknown			Element: 1984-XX-XX
Origin: Natural/Native occurrence			Site: 1984-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1993-02-19

Quad Summary: Pilot Hill (3812171/527D)
County Summary: El Dorado

Lat/Long: 38.75679° / -121.00610°	Township: 11N
UTM: Zone-10 N4291675 E673252	Range: 09E
Area: 8.4 acres	Mapping Precision: SPECIFIC
Elevation: 960 ft	Symbol Type: POLYGON
	Section: 32 Qtr: SW
	Meridian: M

Location: SOUTH OF SOUTH FORK AMERICAN RIVER, NORTH OF WILDCAT CANYON, 0.4 AIR MILES NORTH OF 1482 FOOT ELEVATION HILL.
Ecological: ASSOCIATED WITH SENECIO LAYNEAE AND WYETHIA RETICULATA, BOTH RARE PLANTS.
General: SEEN 1981-1984.
Owner/Manager: BLM-FOLSOM RA

Occurrence No. 19	Map Index: 12181	EO Index: 8135	Dates Last Seen
Occ Rank: Good			Element: 1984-XX-XX
Origin: Natural/Native occurrence			Site: 1984-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1993-02-19

Quad Summary: Pilot Hill (3812171/527D)
County Summary: El Dorado

Lat/Long: 38.77819° / -121.01750°	Township: 11N
UTM: Zone-10 N4294029 E672210	Range: 09E
Area: 21.7 acres	Mapping Precision: SPECIFIC
Elevation: 950 ft	Symbol Type: POLYGON
	Section: 30 Qtr: NW
	Meridian: M

Location: NORTH OF SOUTH FORK AMERICAN RIVER APPROXIMATELY ONE AIR MILE ENE OF SALMON FALLS ROAD CROSSING.
Ecological: ASSOCIATED WITH OTHER RARE PLANTS: CALYSTEGIA STEBBINSII AND WYETHIA RETICULATA.
General: SEEN 1981-1984.
Owner/Manager: BLM-FOLSOM RA

Occurrence No. 20	Map Index: 12156	EO Index: 7482	Dates Last Seen
Occ Rank: Excellent			Element: 1994-06-16
Origin: Natural/Native occurrence			Site: 1994-06-16
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2003-03-07

Quad Summary: Pilot Hill (3812171/527D), Clarksville (3812161/511A)
County Summary: El Dorado

Lat/Long: 38.76331° / -121.02948°	Township: 11N
UTM: Zone-10 N4292355 E671205	Range: 08E
Area:	Mapping Precision: NON-SPECIFIC
Elevation: 1,000 ft	Symbol Type: POLYGON
	Section: 36 Qtr: E
	Meridian: M

Location: SOUTH OF S FORK AMERICAN RIVER, ABOUT 0.4 MILE EAST OF SALMON FALLS RD EXTENDING EAST ABOUT 1.5 MI, WEST OF FOLSOM LAKE.
Location Detail: HILLS SOUTH OF S FORK AMERICAN BETWEEN SALMON FALLS RD AND KANAKA VALLEY. WITHIN SE 1/4 SE 1/4 SECTION 25, SOUTH HALF OF SW 1/4 SECTION 30, EAST HALF OF SECTION 36, NORTH HALF OF SECTION 31, WEST HALF OF SECTION 6, AND NW 1/4 SECTION 7.
Ecological: CHAPARRAL DOMINATED BY ARCTOSTAPHYLOS VISCIDA AND ADENOSTOMA FASCICULATUM. ASSOCIATED WITH ERIODICTYON CALIFORNICUM, BACCHARIS PILUARIS SPP. CONSANGUINEA, SALVIA SONOMENSIS, CALYSTEGIA STEBBINSII, CEANOTHUS RODERICKII, ET AL.
Threat: RECREATIONAL USE: TARGET SHOOTING, ORVS, PROPOSED HOUSING DEVELOPMENT.
General: SEEN 1981-1984, 1987. 682 PLANTS SEEN AT SCATTERED SITES IN 1994. SITE SHOULD BE PRESERVED. RARE ASSOCIATES INCLUDE CALYSTEGIA STEBBINSII, CEANOTHUS RODERICKII, SENECIO LAYNEAE, AND WYETHIA RETICULATA. INCLUDES FORMER OCCURRENCE #17.
Owner/Manager: PVT

Helianthemum suffrutescens

Bisbee Peak rush-rose

Element Code: PDCIS020F0

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G2Q	CNPS List: 3.2
State: None	State: S2.2	

Habitat Associations

General: CHAPARRAL.
 Micro: OFTEN ON SERPENTINE, GABBROIC, OR IONE FORMATION SOILS; IN OPENINGS IN CHAPARRAL. 45-610M.

Occurrence No. 24	Map Index: 17323	EO Index: 7225	Dates Last Seen
Occ Rank: Unknown			Element: 1989-XX-XX
Origin: Natural/Native occurrence			Site: 1989-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2003-03-07

Quad Summary: Pilot Hill (3812171/527D)
County Summary: El Dorado

Lat/Long: 38.77070° / -121.00928°	Township: 11N
UTM: Zone-10 N4293213 E672942	Range: 09E
Area:	Mapping Precision: NON-SPECIFIC
Elevation: 1,100 ft	Section: 30 Qtr: SE
	Symbol Type: POLYGON
	Meridian: M

Location: 0.8 KM (0.5 MI) NORTH OF MOUTH OF WEBER CREEK, NORTH OF AMERICAN RIVER.
Location Detail: MAPPED ON KNOLL IN SE 1/4 OF SE 1/4 OF SECTION 30 AS DESCRIBED BY SOURCE.
Ecological: GROWING WITHIN GABBRO CHAPARRAL PLANT ASSOCIATION WITH CALYSTEGIA STEBBINSII, WYETHIA RETICULATA, CHLOROGALUM GRANDIFLORUM, AND CEANOTHUS RODERICKII.
General: SITE IS WITHIN THE BLM FOLSOM RESOURCE AREA.
Owner/Manager: BLM-FOLSOM RA

Occurrence No. 34	Map Index: 42838	EO Index: 42838	Dates Last Seen
Occ Rank: Good			Element: 1987-06-26
Origin: Natural/Native occurrence			Site: 1987-06-26
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2000-04-28

Quad Summary: Pilot Hill (3812171/527D)
County Summary: El Dorado

Lat/Long: 38.76427° / -121.04338°	Township: 11N
UTM: Zone-10 N4292436 E669995	Range: 08E
Area: 7.4 acres	Mapping Precision: SPECIFIC
Elevation: 750 ft	Section: 36 Qtr: NW
	Symbol Type: POLYGON
	Meridian: M

Location: SALMON FALLS ROAD, ABOUT 0.7 MILE SOUTH OF SALMON FALLS CROSSING, SOUTH OF SOUTH FORK OF THE AMERICAN RIVER.
Location Detail: TWO COLONIES: WEST COLONY ON BOTH SIDES OF THE ROAD. EASTERN COLONY ON SLOPE OF SMALL HILL TO THE EAST. MAPPED WITHIN THE SW 1/4 NW 1/4 OF SECTION 36 AND THE SE 1/4 NE 1/4 OF SECTION 35.
Ecological: CHAPARRAL DOMINATED BY ARCTOSTAPHYLOS VISCIDA & ADENOSTOMA FASCICULATUM. RESCUE SOILS SERIES. ASSOCIATES: SALVIA SONOMENSIS, LEPECHINIA CALYCINA, RHAMNUS CALIFORNICUM, HETEROMELES ARBUTIFOLIA, CALYSTEGIA STEBBINSII, & CEANOTHUS RODERICKII.
Threat: ORV USE, TURNOUTS, TRASH DUMPINGS, ADJACENT TO ROAD.
General: UNKNOWN NUMBER OF PLANTS OBSERVED IN 1987. SITE IS STAGING AREA FOR ORV USE NEAR HIGHWAY. RARE ASSOCIATES: CALYSTEGIA STEBBINSII AND CEANOTHUS RODERICKII.
Owner/Manager: PVT

Helianthemum suffrutescens

Bisbee Peak rush-rose

Element Code: PDCIS020F0

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G2Q	CNPS List: 3.2
State: None	State: S2.2	

Habitat Associations

General: CHAPARRAL.

Micro: OFTEN ON SERPENTINE, GABBROIC, OR IONE FORMATION SOILS; IN OPENINGS IN CHAPARRAL. 45-610M.

Occurrence No. 36	Map Index: 69700	EO Index: 70486	Dates Last Seen
Occ Rank: Unknown			Element: 2006-07-28
Origin: Natural/Native occurrence			Site: 2006-07-28
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-07-31

Quad Summary: Pilot Hill (3812171/527D)

County Summary: El Dorado

Lat/Long: 38.75896° / -121.04568°	Township: 11N
UTM: Zone-10 N4291842 E669807	Range: 08E
Area: 13.0 acres	Section: 35
Elevation: 600 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: SE
Symbol Type: POLYGON	

Location: WEST SIDE OF SALMON FALLS ROAD, NEAR THE INTERSECTION WITH HIDDEN BRIDGE ROAD, SOUTH OF SOUTH FORK AMERICAN RIVER.

Ecological: GABBROIC NORTHERN MIXED CHAPARRAL.

Threat: THREATENED BY RESIDENTIAL DEVELOPMENT; CHAPARRAL CLEARED RECENTLY.

General: APPROXIMATELY 600 PLANTS OBSERVED IN 2006.

Owner/Manager: PVT

Laterallus jamaicensis coturniculus

California black rail

Element Code: ABNME03041

Status	NDDB Element Ranks	Other Lists
Federal: None State: Threatened	Global: G4T1 State: S1	CDFG Status:

Habitat Associations

General: INHABITS FRESHWATER MARTSHES, WET MEADOWS & SHALLOW MARGINS OF SALTWATER MARSHES BORDERING LARGER BAYS.
Micro: NEEDS WATER DEPTHS OF ABOUT 1 INCH THAT DOES NOT FLUCTUATE DURING THE YEAR & DENSE VEGETATION FOR NESTING HABITAT.

Occurrence No. 134	Map Index: 65182	EO Index: 65261	Dates Last Seen
Occ Rank: Excellent			Element: 2006-06-09
Origin: Natural/Native occurrence			Site: 2006-06-09
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-10-08

Quad Summary: Rocklin (3812172/527C)

County Summary: Placer

Lat/Long: 38.83449° / -121.22509°	Township: 11N
UTM: Zone-10 N4299907 E654054	Range: 07E
Radius: 1/10 mile	Section: 05
Elevation: 360 ft	Meridian: M
Mapping Precision: NON-SPECIFIC	Qtr: NW
Symbol Type: POINT	

Location: CLOVER CREEK, IN CLOVER VALLEY, ABOUT 2.2 MI EAST OF TELEGRAPH HILL, ABOUT 2 MILES NW OF LOOMIS.
Location Detail: TEC: COORDS PROVIDED. RIC: GENERAL LOC PROVIDED VIA MAP (INDICATES SAME APPROX LOC, AND MAY REFER TO SAME DETECTION); OUTSIDE OF CORE STUDY AREA. MAPPED TO TEC LOCATION.
Ecological: LARGE, TYPHA-DOMINATED WETLAND SURROUNDING CLOVER CREEK; FIRM SUBSTRATE, UNSATURATED MUD WITH ALMOST NO STANDING WATER ELSEWHERE IN THE WETLAND. NO WATER FLOW WAS OBSERVED, BUT INFLOW IS AT NORTH END.
Threat: THREATENED BY RESIDENTIAL DEVELOPMENT, INCLUDING A ROAD-CROSSING NEAR THE 2006 DETECTION SITE.
General: 1 RAIL (PROBABLE TERRITORIAL MALE) RESPONDED TO TAPED CALL ON 9 JUN 2006; LIKELY THE DETECTION NOTED IN RIC08A. RECENT DETECTIONS IN N PLA CO & NEARBY INDICATE THIS AS IMPORTANT S EXTENSION OF THE PATCHY INLAND DISTRIBUTION OF THE CA BLRA.

Owner/Manager: PVT

Occurrence No. 173	Map Index: 70475	EO Index: 71368	Dates Last Seen
Occ Rank: Unknown			Element: 2006-06-16
Origin: Natural/Native occurrence			Site: 2006-06-16
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-09-24

Quad Summary: Wolf (3912112/542C)

County Summary: Nevada

Lat/Long: 39.12231° / -121.24828°	Township: 15N
UTM: Zone-10 N4331811 E651427	Range: 06E
Radius: 80 meters	Section: 25
Elevation: 686 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: SE
Symbol Type: POINT	

Location: 0.5 MILE EAST OF THE INTERSECTION OF HATCHET CREEK ROAD AND SPENCEVILLE ROAD, SPENCEVILLE WILDLIFE AREA.
Location Detail: SITE 256-05. WITHIN THE CORE SURVEY AREA.
Ecological: HABITAT CONSISTS OF A PALUSTRINE EMERGENT MARSH. SURVEY MARSHES WERE GENERALLY SMALL, GENTLY SLOPED, DENSELY VEGETATED & HIGHLY FRAGMENTED (SURROUNDED BY UNSUITABLE HABITAT). OCCURRENCE REPRESENTS A METAPOPULATION IN THE SIERRA FOOTHILLS.
General: AT LEAST 1 RAIL DETECTED VIA CALL-PLAYBACK ON 16 JUN 2006; SURVEYED 1 JUN - 31 AUG 2006. PART OF A YEAR-ROUND RESIDENT BREEDING POPULATION IN THE SIERRA FOOTHILLS, DISCONTINUOUS WITH THE SF BAY-DELTA POPULATION.

Owner/Manager: DFG-SPENCEVILLE WA

Laterallus jamaicensis coturniculus

California black rail

Element Code: ABNME03041

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4T1	CDFG Status:
State: Threatened	State: S1	

Habitat Associations

General: INHABITS FRESHWATER MARTSHES, WET MEADOWS & SHALLOW MARGINS OF SALTWATER MARSHES BORDERING LARGER BAYS.
Micro: NEEDS WATER DEPTHS OF ABOUT 1 INCH THAT DOES NOT FLUCTUATE DURING THE YEAR & DENSE VEGETATION FOR NESTING HABITAT.

Occurrence No. 210	Map Index: 76058	EO Index: 77058	Dates Last Seen
Occ Rank: Unknown			Element: 2005-04-11
Origin: Natural/Native occurrence			Site: 2005-04-11
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-08-03

Quad Summary: Gold Hill (3812182/527B)

County Summary: Placer

Lat/Long: 38.97373° / -121.21194°	Township: 13N
UTM: Zone-10 N4315381 E654893	Range: 07E
Radius: 80 meters	Section: 17
Elevation: 480 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: SE
Symbol Type: POINT	

Location: VICINITY OF COON CREEK, ABOUT 1.9 MI EAST OF KILAGA SPRINGS & 2.9 MI WSW OF BIG HILL. SPEARS AND DIDION RANCH PARKS.
Location Detail: LOCATION DESCRIBED AS 200M AT 265 DEGREES FROM WETLAND STATION #1, WITH COORDINATES PROVIDED FOR THE STATION. MAPPED TO A POINT ABOUT 200M AT 265 DEGREES FROM THE STATION COORDINATES.
Ecological: VALLEY-FOOTHILL RIPARIAN WETLAND HABITAT. VIRGINIA RAIL ALSO DETECTED FROM STATION #1.
General: 1 INDIVIDUAL DETECTED AT 8:55 AM ON 11 APR 2005 DURING A RAIL PLAYBACK SURVEY.
Owner/Manager: PVT

Occurrence No. 267	Map Index: 76683	EO Index: 77629	Dates Last Seen
Occ Rank: Unknown			Element: XXXX-XX-XX
Origin: Natural/Native occurrence			Site: XXXX-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-09-23

Quad Summary: Wolf (3912112/542C), Camp Far West (3912113/543D)

County Summary: Nevada

Lat/Long: 39.09217° / -121.24631°	Township: 14N
UTM: Zone-10 N4328469 E651662	Range: 07E
Radius: 2/5 mile	Section: 06
Elevation: 670 ft	Meridian: M
Mapping Precision: NON-SPECIFIC	Qtr: SW
Symbol Type: POINT	

Location: ABOUT 2.2 MI NW OF BUSHY MOUNTAIN & 4.1 MI WSW OF BALD MOUNTAIN, E OF SPENCEVILLE WILDLIFE AREA. VICINITY OF NICHOLS RD.
Location Detail: MAPPED BY GEOREFERENCING FIGURE 2 IN RICHMOND 2008. WITHIN THE CORE SURVEY AREA.
Ecological: SURVEY MARSHES GENERALLY SMALL, GENTLY SLOPED, DENSELY VEGETATED & HIGHLY FRAGMENTED (SURROUNDED BY UNSUITABLE HABITAT). WATER SOURCES PRIMARILY FROM IRRIGATION DITCHES. OCCURRENCE REPRESENTS PART OF A METAPOPULATION IN THE SIERRA FOOTHILLS
General: CA BLACK RAILS DETECTED BY RICHMOND ET AL AT 1 SITE DURING AT LEAST 1 PHASE OF CALL-PLAYBACK SURVEYS IN 1994-2006. PART OF A YEAR-ROUND RESIDENT BREEDING POPULATION IN THE SIERRA FOOTHILLS, DISCONTINUOUS WITH THE SF BAY-DELTA POPULATION.
Owner/Manager: UNKNOWN

Occurrence No. 268	Map Index: 76684	EO Index: 77630	Dates Last Seen
Occ Rank: Unknown			Element: XXXX-XX-XX
Origin: Natural/Native occurrence			Site: XXXX-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-09-23

Quad Summary: Camp Far West (3912113/543D), Wolf (3912112/542C)

County Summary: Nevada, Yuba

Lat/Long: 39.04606° / -121.26589°	Township: 14N
UTM: Zone-10 N4323319 E650066	Range: 06E
Area:	Section: 23
Elevation: 530 ft	Meridian: M
Mapping Precision: NON-SPECIFIC	Qtr: SE
Symbol Type: POLYGON	

Location: VICINITY OF PERIMETER RD ABOUT 0.5 TO 2.7 RD MI EAST OF MCCOURTNEY RD, EAST OF CAMP FAR WEST RESERVOIR.
Location Detail: MAPPED BY GEOREFERENCING FIGURE 2 IN RICHMOND 2008. WITHIN THE CORE SURVEY AREA.
Ecological: SURVEY MARSHES GENERALLY SMALL, GENTLY SLOPED, DENSELY VEGETATED & HIGHLY FRAGMENTED (SURROUNDED BY UNSUITABLE HABITAT). WATER SOURCES PRIMARILY FROM IRRIGATION DITCHES. OCCURRENCE REPRESENTS PART OF A METAPOPULATION IN THE SIERRA FOOTHILLS
General: CA BLACK RAILS DETECTED BY RICHMOND ET AL AT 4 SITES DURING AT LEAST 1 PHASE OF CALL-PLAYBACK SURVEYS IN 1994-2006. PART OF A YEAR-ROUND RESIDENT BREEDING POPULATION IN THE SIERRA FOOTHILLS, DISCONTINUOUS WITH THE SF BAY-DELTA POPULATION.
Owner/Manager: UNKNOWN

Laterallus jamaicensis coturniculus

California black rail

Element Code: ABNME03041

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4T1	CDFG Status:
State: Threatened	State: S1	

Habitat Associations

General: INHABITS FRESHWATER MARTSHES, WET MEADOWS & SHALLOW MARGINS OF SALTWATER MARSHES BORDERING LARGER BAYS.
Micro: NEEDS WATER DEPTHS OF ABOUT 1 INCH THAT DOES NOT FLUCTUATE DURING THE YEAR & DENSE VEGETATION FOR NESTING HABITAT.

Occurrence No. 269	Map Index: 76685	EO Index: 77631	Dates Last Seen
Occ Rank: Unknown			Element: XXXX-XX-XX
Origin: Natural/Native occurrence			Site: XXXX-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-09-23

Quad Summary: Wolf (3912112/542C)

County Summary: Nevada

Lat/Long: 39.04418° / -121.21311°	Township: 14N
UTM: Zone-10 N4323199 E654638	Range: 07E
Area:	Mapping Precision: NON-SPECIFIC
Elevation: 940 ft	Section: 20
	Meridian: M
	Qtr: SE
	Symbol Type: POLYGON

Location: ABOUT 1.0 TO 1.9 MI SE OF ROCK MOUNTAIN & 5.0 TO 5.8 MI SSW OF BALD MOUNTAIN, EAST OF CAMP FAR WEST RESERVOIR.

Location Detail: MAPPED BY GEOREFERENCING FIGURE 2 IN RICHMOND 2008. WITHIN THE CORE SURVEY AREA.

Ecological: SURVEY MARSHES GENERALLY SMALL, GENTLY SLOPED, DENSELY VEGETATED & HIGHLY FRAGMENTED (SURROUNDED BY UNSUITABLE HABITAT). WATER SOURCES PRIMARILY FROM IRRIGATION DITCHES. OCCURRENCE REPRESENTS PART OF A METAPOPULATION IN THE SIERRA FOOTHILLS

General: CA BLACK RAILS DETECTED BY RICHMOND ET AL AT 2 SITES DURING AT LEAST 1 PHASE OF CALL-PLAYBACK SURVEYS IN 1994-2006. PART OF A YEAR-ROUND RESIDENT BREEDING POPULATION IN THE SIERRA FOOTHILLS, DISCONTINUOUS WITH THE SF BAY-DELTA POPULATION.

Owner/Manager: UNKNOWN

Occurrence No. 270	Map Index: 76686	EO Index: 77632	Dates Last Seen
Occ Rank: Unknown			Element: XXXX-XX-XX
Origin: Natural/Native occurrence			Site: XXXX-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-09-23

Quad Summary: Wolf (3912112/542C)

County Summary: Nevada

Lat/Long: 39.05134° / -121.19831°	Township: 14N
UTM: Zone-10 N4324018 E655903	Range: 07E
Area:	Mapping Precision: NON-SPECIFIC
Elevation: 1,030 ft	Section: 21
	Meridian: M
	Qtr: E
	Symbol Type: POLYGON

Location: VICINITY OF LITTLE WOLF CR & TRIBUTARY & RAB RAVINE, FROM JUNTION OF PERIMETER RD & GRIZZLY BEAR DR SOUTH ABOUT 2 MILES.

Location Detail: MAPPED BY GEOREFERENCING FIGURE 2 IN RICHMOND 2008. WITHIN THE CORE SURVEY AREA.

Ecological: SURVEY MARSHES GENERALLY SMALL, GENTLY SLOPED, DENSELY VEGETATED & HIGHLY FRAGMENTED (SURROUNDED BY UNSUITABLE HABITAT). WATER SOURCES PRIMARILY FROM IRRIGATION DITCHES. OCCURRENCE REPRESENTS PART OF A METAPOPULATION IN THE SIERRA FOOTHILLS

General: CA BLACK RAILS DETECTED BY RICHMOND ET AL AT 6 SITES DURING AT LEAST 1 PHASE OF CALL-PLAYBACK SURVEYS IN 1994-2006. PART OF A YEAR-ROUND RESIDENT BREEDING POPULATION IN THE SIERRA FOOTHILLS, DISCONTINUOUS WITH THE SF BAY-DELTA POPULATION.

Owner/Manager: UNKNOWN

Laterallus jamaicensis coturniculus

California black rail

Element Code: ABNME03041

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4T1	CDFG Status:
State: Threatened	State: S1	

Habitat Associations

General: INHABITS FRESHWATER MARTSHES, WET MEADOWS & SHALLOW MARGINS OF SALTWATER MARSHES BORDERING LARGER BAYS.
Micro: NEEDS WATER DEPTHS OF ABOUT 1 INCH THAT DOES NOT FLUCTUATE DURING THE YEAR & DENSE VEGETATION FOR NESTING HABITAT.

Occurrence No. 271	Map Index: 76687	EO Index: 77633	Dates Last Seen
Occ Rank: Unknown			Element: XXXX-XX-XX
Origin: Natural/Native occurrence			Site: XXXX-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-09-23

Quad Summary: Wolf (3912112/542C)
County Summary: Nevada

Lat/Long: 39.07137° / -121.16351°	Township: 14N
UTM: Zone-10 N4326301 E658870	Range: 07E
Radius: 2/5 mile	Section: 14
Elevation: 1,400 ft	Meridian: M
Mapping Precision: NON-SPECIFIC	Qtr: N
Symbol Type: POINT	

Location: VICINITY OF CLAYTON RD BETWEEN RESTIVE WAY JUNTIONS, ABOUT 1.2 MI WEST OF PINE HILL.
Location Detail: MAPPED BY GEOREFERENCING FIGURE 2 IN RICHMOND 2008. WITHIN THE CORE SURVEY AREA.
Ecological: SURVEY MARSHES GENERALLY SMALL, GENTLY SLOPED, DENSELY VEGETATED & HIGHLY FRAGMENTED (SURROUNDED BY UNSUITABLE HABITAT). WATER SOURCES PRIMARILY FROM IRRIGATION DITCHES. OCCURRENCE REPRESENTS PART OF A METAPOPULATION IN THE SIERRA FOOTHILLS
General: CA BLACK RAILS DETECTED BY RICHMOND ET AL AT 1 SITE DURING AT LEAST 1 PHASE OF CALL-PLAYBACK SURVEYS IN 1994-2006. PART OF A YEAR-ROUND RESIDENT BREEDING POPULATION IN THE SIERRA FOOTHILLS, DISCONTINUOUS WITH THE SF BAY-DELTA POPULATION.
Owner/Manager: UNKNOWN

Linderiella occidentalis

California linderiella

Element Code: ICBRA06010

Status

NDDB Element Ranks

Other Lists

Federal: None
 State: None

Global: G3
 State: S2S3

CDFG Status:

Habitat Associations

General: SEASONAL POOLS IN UNPLOWED GRASSLANDS WITH OLD ALLUVIAL SOILS UNDERLAIN BY HARDPAN OR IN SANDSTONE DEPRESSIONS.
 Micro: WATER IN THE POOLS HAS VERY LOW ALKALINITY, CONDUCTIVITY, AND TDS.

Occurrence No. 378

Map Index: 75254

EO Index: 76278

Dates Last Seen

Occ Rank: Unknown
 Origin: Natural/Native occurrence
 Presence: Presumed Extant
 Trend: Unknown

Element: 2007-10-09
 Site: 2007-10-09

Record Last Updated: 2009-05-27

Quad Summary: Rocklin (3812172/527C)

County Summary: Placer

Lat/Long: 38.77344° / -121.21016°
 UTM: Zone-10 N4293157 E655483
 Radius: 80 meters
 Elevation: 520 ft

Mapping Precision: SPECIFIC
 Symbol Type: POINT

Township: 11N
 Range: 07E
 Section: 28
 Meridian: M
 Qtr: N

Location: ALONG SIERRA COLLEGE BLVD; ABOUT 0.4 MI WSW OF SIERRA COLLEGE BLVD AT BOARDMAN CANAL, SE OF ROCKLIN.

Location Detail: BASIN 16 MAPPED TO PROVIDED MARKING ON MAP.

General: 45 BASINS WERE IDENTIFIED AS POTENTIAL HABITAT AND SAMPLED BOTH DRY-SEASON AND WET-SEASON FOR BRANCHIPODS. 1 CYST WAS OBSERVED IN A SOIL SAMPLE COLLECTED DURING DRY-SEASON SAMPLING ON 9 OCT 2007 AT BASIN 16.

Owner/Manager: UNKNOWN

Martes pennanti (pacific) DPS

Pacific fisher

Element Code: AMAJF01021

Status	NDDB Element Ranks	Other Lists
Federal: Candidate	Global: G5	CDFG Status: SC
State: unknown code...	State: S2S3	

Habitat Associations

General: INTERMEDIATE TO LARGE-TREE STAGES OF CONIFEROUS FORESTS & DECIDUOUS-RIPARIAN AREAS WITH HIGH PERCENT CANOPY CLOSURE.
Micro: USES CAVITIES, SNAGS, LOGS & ROCKY AREAS FOR COVER & DENNING. NEEDS LARGE AREAS OF MATURE, DENSE FOREST.

Occurrence No. 397	Map Index: 37957	EO Index: 32964	Dates Last Seen
Occ Rank: Unknown			Element: 1973-XX-XX
Origin: Natural/Native occurrence			Site: 1973-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-01-22

Quad Summary: Foresthill (3912017/541D), Dutch Flat (3912027/541A), Chicago Park (3912028/541B), Colfax (3912018/541C)

County Summary: Placer

Lat/Long: 39.11363° / -120.88231°	Township: 15N
UTM: Zone-10 N4331521 E683089	Range: 10E
Radius: 1 mile	Section: 29
Elevation: 2,400 ft	Meridian: M
Mapping Precision: NON-SPECIFIC	Qtr: XX
Symbol Type: POINT	

Location: AMERICAN RIVER CANYON NEAR IOWA HILL.

General: MANY VISITS, ONE ADULT OBSERVED IN 1973.

Owner/Manager: BLM

Occurrence No. 700	Map Index: 78087	EO Index: 78967	Dates Last Seen
Occ Rank: Unknown			Element: 1916-07-XX
Origin: Natural/Native occurrence			Site: 1916-07-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2010-02-08

Quad Summary: Camino (3812066/509B), Slate Mtn. (3812076/525C), Shingle Springs (3812068/510B), Garden Valley (3812077/526D), Placerville (3812067/510A), Coloma (3812078/526C)

County Summary: El Dorado

Lat/Long: 38.72948° / -120.79835°	Township: 10N
UTM: Zone-10 N4289058 E691378	Range: 11E
Radius: 5 mile	Section: 07
Elevation: 2,000 ft	Meridian: M
Mapping Precision: NON-SPECIFIC	Qtr: XX
Symbol Type: POINT	

Location: NEAR PLACERVILLE.

General: FIVE FISHERS WERE KILLED FOR THEIR PELTS NEAR PLACERVILLE DURING JULY 1916.

Owner/Manager: UNKNOWN

Northern Volcanic Mud Flow Vernal Pool

Element Code: CTT44132CA

Status		NDDB Element Ranks		Other Lists	
Federal:	None	Global:	G1		
State:	None	State:	S1.1		
Habitat Associations					
General:					
Micro:					

Occurrence No. 1	Map Index: 11782	EO Index: 16218	Dates Last Seen		
Occ Rank: Unknown			Element:	1982-XX-XX	
Origin: Natural/Native occurrence			Site:	1982-XX-XX	
Presence: Presumed Extant			Record Last Updated: 1998-07-16		
Trend: Unknown					

Quad Summary: Roseville (3812173/528D), Citrus Heights (3812163/512A), Rocklin (3812172/527C), Folsom (3812162/511B)

County Summary: Placer

Lat/Long: 38.75189° / -121.25431°	Township: 10N	
UTM: Zone-10 N4290690 E651693	Range: 07E	
Area: 432.3 acres	Section: 06	Qtr: XX
Elevation: 240 ft	Mapping Precision: SPECIFIC	Meridian: M
	Symbol Type: POLYGON	

Location: BETWEEN DOUGLAS BLVD & MINERS RAVINE JUST EAST OF ROSEVILLE.

Ecological: DIVERSITY OF POOL TAXA PRESENT INCLUDES DICHELOSTEMMA LACUNA-VERNALIS. MOST OF THIS LARGE AREA IS ON VOLCANIC SUBSTRATE. <50 ACRES IN THE NW PORTION OF THE BOUNDED AREA IS LOW TERRACE FORMATION W/HARDPAN VERNAL POOLS.

General: UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO

Owner/Manager: UNKNOWN

Occurrence No. 2	Map Index: 11828	EO Index: 16215	Dates Last Seen		
Occ Rank: Unknown			Element:	1986-04-14	
Origin: Natural/Native occurrence			Site:	1986-04-14	
Presence: Presumed Extant			Record Last Updated: 1998-07-16		
Trend: Unknown					

Quad Summary: Rocklin (3812172/527C)

County Summary: Placer

Lat/Long: 38.76550° / -121.22509°	Township: 11N	
UTM: Zone-10 N4292250 E654204	Range: 07E	
Area: 346.4 acres	Section: 32	Qtr: NW
Elevation: 400 ft	Mapping Precision: SPECIFIC	Meridian: M
	Symbol Type: POLYGON	

Location: RIDGE BETWEEN MINERS RAVINE & SECRET RAVINE, VICINITY OF ROCKLIN-ROSEVILLE CORPORATE BOUNDARIES.

Location Detail: WESCO SURVEYED 70 AC W/IN ROSEVILLE CITY LIMITS BUT TOTAL POOL AREA MUCH LARGER (ALONG SIERRA COLLEGE BLVD).

Ecological: POOLS ON VOLCANIC SUBSTRATE. MANY POOL TAXA PRESENT INCL DICHELOSTEMMA LACUNA-VERNALIS. UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO.

Threat: ROSEVILLE PORTION ZONED FOR AGRICULTURE W/2 AC MIN IN 1977 GENERAL PLAN.

Owner/Manager: UNKNOWN

Occurrence No. 3	Map Index: 11798	EO Index: 13419	Dates Last Seen		
Occ Rank: Unknown			Element:	1982-XX-XX	
Origin: Natural/Native occurrence			Site:	1982-XX-XX	
Presence: Presumed Extant			Record Last Updated: 1998-07-16		
Trend: Unknown					

Quad Summary: Rocklin (3812172/527C)

County Summary: Placer

Lat/Long: 38.76842° / -121.24127°	Township: 11N	
UTM: Zone-10 N4292547 E652791	Range: 07E	
Area: 141.8 acres	Section: 30	Qtr: S
Elevation: 280 ft	Mapping Precision: SPECIFIC	Meridian: M
	Symbol Type: POLYGON	

Location: N & W OF ROSEVILLE RESERVOIR, SE OF SECRET RAVINE, ROSEVILLE-ROCKLIN CORPORATE BOUNDARY.

Location Detail: BOUNDARY INCL 2 POOL AREAS; ONE AREA HAS 48 ACRES OF POOLS (WESCO, 1982); THE OTHER AREA HAS 30 ACRES OF LOWER QUALITY POOLS.

Ecological: ON VOLCANIC SUBSTRATE. UNABLE TO CONVERT TO FLORISTIC CLASSIFICATION, LACKS SPP. INFO

Threat: BOTH AREAS ZONED FOR AGRICULTURE.

Owner/Manager: UNKNOWN

Packera layneae

Layne's ragwort

Element Code: PDAST8H1V0

Status	NDDB Element Ranks	Other Lists
Federal: Threatened	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.1	

Habitat Associations

General: CHAPARRAL, CISMONTANE WOODLAND.
Micro: ULTRAMAFIC SOIL; OCCASIONALLY ALONG STREAMS. 200-1000M.

Occurrence No. 27	Map Index: 12415	EO Index: 16854	Dates Last Seen
Occ Rank: Unknown			Element: 1984-03-XX
Origin: Natural/Native occurrence			Site: 1984-03-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-11-26

Quad Summary: Coloma (3812078/526C), Shingle Springs (3812068/510B)
County Summary: El Dorado

Lat/Long: 38.74737° / -120.93223°	Township: 10N
UTM: Zone-10 N4290773 E679694	Range: 09E
Radius: 1/5 mile	Section: 01
Elevation: 1,000 ft	Meridian: M
Mapping Precision: NON-SPECIFIC	Qtr: SE
Symbol Type: POINT	

Location: EAST SIDE OF LOTUS RD NORTH OF BRIDGE, APPROX 2.0 AIRMI W OF FUNNY BUG MINE.
Location Detail: GROWING IN CUTBANK ON THE E SIDE OF LOTUS RD; "CROSS BRIDGE GOING N AND LOOK TO RIGHT." MAPPED BY CNDDB AS BEST GUESS AT THE INTERSECTION OF LOTUS RD & CREEK IN THE SE1/4 OF SECTION 1.
Ecological: THIN SERPENTINE SOIL OVER SERPENTINE ROCK ON CUT ROAD BANK.
Threat: ROAD WIDENING, REALIGNMENT, OR MAINTENANCE MAY THREATEN.
General: LESS THAN 50 PLANTS SEEN IN 1984. NEEDS FIELDWORK.
Owner/Manager: PVT

Occurrence No. 29	Map Index: 12208	EO Index: 8132	Dates Last Seen
Occ Rank: Unknown			Element: 1984-XX-XX
Origin: Natural/Native occurrence			Site: 1984-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1993-02-19

Quad Summary: Pilot Hill (3812171/527D)
County Summary: El Dorado

Lat/Long: 38.75679° / -121.00610°	Township: 11N
UTM: Zone-10 N4291675 E673252	Range: 09E
Area: 8.4 acres	Section: 32
Elevation: 960 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: SW
Symbol Type: POLYGON	

Location: SOUTH OF THE SOUTH FORK AMERICAN RIVER, NORTH OF WILDCAT CANYON, 0.4 AIRMI NORTH OF 1482 FT ELEVATION MARKER ON HILL.
Ecological: ASSOCIATED WITH WYETHIA RETICULATA, HELIANTHEMUM SUFFRUTESCENS.
General: SEEN 1981-1984. LARGE POPULATION.
Owner/Manager: BLM-FOLSOM RA

Occurrence No. 30	Map Index: 12172	EO Index: 8130	Dates Last Seen
Occ Rank: Good			Element: 1993-05-16
Origin: Natural/Native occurrence			Site: 1993-05-16
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-07-19

Quad Summary: Pilot Hill (3812171/527D)
County Summary: El Dorado

Lat/Long: 38.76712° / -121.02217°	Township: 11N
UTM: Zone-10 N4292791 E671831	Range: 09E
Radius: 80 meters	Section: 31
Elevation: 1,120 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: NW
Symbol Type: POINT	

Location: SOUTH OF SOUTH FORK AMERICAN RIVER NEAR TOP OF RIDGE EAST OF SALMON FALLS ROAD CROSSING.
Ecological: CHAPARRAL DOMINATED BY ARCTOSTAPHYLOS VISCIDA AND ADENOSTOMA FASCICULATUM. ASSOCIATED WITH CALYSTEGIA STEBBINSII. RESCUE SOIL SERIES.
Threat: THERE IS HEAVY ORV USE AND MANY ROADS THAT CRISSCROSS THROUGHOUT ENTIRE AREA. EROSION AND DUMPING ARE ALSO THREATS.
General: LARGE POPULATION SEEN 1981-1984. POPULATION SIGHTED AGAIN IN 1987 DURING SURVEY FOR CALYSTEGIA STEBBINSII. SIZE AND SPECIFICS OF POPULATION ARE UNKNOWN. COLLECTED IN THIS VICINITY BY AYRES IN 1993.
Owner/Manager: PVT

Packera layneae

Layne's ragwort

Element Code: PDAST8H1V0

Status	NDDB Element Ranks	Other Lists
Federal: Threatened	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.1	

Habitat Associations

General: CHAPARRAL, CISMONTANE WOODLAND.
Micro: ULTRAMAFIC SOIL; OCCASIONALLY ALONG STREAMS. 200-1000M.

Occurrence No. 31	Map Index: 12142	EO Index: 8115	Dates Last Seen
Occ Rank: Unknown			Element: 1984-XX-XX
Origin: Natural/Native occurrence			Site: 1984-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1993-02-19

Quad Summary: Pilot Hill (3812171/527D)
County Summary: El Dorado

Lat/Long: 38.75659° / -121.03253°	Township: 11N
UTM: Zone-10 N4291604 E670956	Range: 08E
Radius: 80 meters	Section: 36
Elevation: 1,100 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: SE
Symbol Type: POINT	

Location: SOUTH OF SOUTH FORK AMERICAN RIVER, EAST OF SALMON FALLS RD.
Location Detail: MAPPED 0.5 AIRMILE NE OF 1361 FT ELEVATION MARK ON HILL.
General: SEEN 1981-1984.
Owner/Manager: PVT

Occurrence No. 32	Map Index: 12119	EO Index: 8120	Dates Last Seen
Occ Rank: Unknown			Element: 1984-XX-XX
Origin: Natural/Native occurrence			Site: 1984-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1993-02-19

Quad Summary: Pilot Hill (3812171/527D)
County Summary: El Dorado

Lat/Long: 38.76419° / -121.04430°	Township: 11N
UTM: Zone-10 N4292425 E669915	Range: 08E
Radius: 80 meters	Section: 35
Elevation: 680 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: NE
Symbol Type: POINT	

Location: JUST W OF SALMON FALLS RD, 0.75 MI S OF BRIDGE OVER SOUTH FORK AMERICAN RIVER.
Location Detail: MAPPED ON KNOLL TO THE NORTH OF DIRT ROAD WEST OF SALMON FALLS ROAD.
Ecological: SEVERAL OTHER SENSITIVE PLANTS IN THE AREA INCLUDING CALYSTEGIA STEBBINSII AND CEANOTHUS RODERICKII.
General: SEEN 1981-1984.
Owner/Manager: PVT

Occurrence No. 39	Map Index: 22741	EO Index: 8306	Dates Last Seen
Occ Rank: Unknown			Element: 1986-XX-XX
Origin: Natural/Native occurrence			Site: 1986-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1993-02-19

Quad Summary: Coloma (3812078/526C)
County Summary: El Dorado

Lat/Long: 38.81997° / -120.88014°	Township: 11N
UTM: Zone-10 N4298933 E684035	Range: 10E
Radius: 80 meters	Section: 08
Elevation: 1,760 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: NE
Symbol Type: POINT	

Location: 2 KM (1.5 MI) NORTH OF COLOMA, 1.3 KM (0.8 MI) NORTH OF MURPHY MOUNTAIN SUMMIT, JUST WEST OF ROAD.
General: MAP DETAIL IS ONLY SOURCE OF INFORMATION FOR THIS SITE; UNKNOWN NUMBER OF PLANTS SEEN IN 1986. NEEDS FIELDWORK.
Owner/Manager: UNKNOWN

Packera layneae

Layne's ragwort

Element Code: PDAST8H1V0

Status	NDDB Element Ranks	Other Lists
Federal: Threatened	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.1	

Habitat Associations

General: CHAPARRAL, CISMONTANE WOODLAND.
Micro: ULTRAMAFIC SOIL; OCCASIONALLY ALONG STREAMS. 200-1000M.

Occurrence No. 47	Map Index: 44952	EO Index: 44952	Dates Last Seen
Occ Rank: Unknown			Element: 2000-09-28
Origin: Natural/Native occurrence			Site: 2000-09-28
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2001-02-20

Quad Summary: Coloma (3812078/526C)
County Summary: El Dorado

Lat/Long: 38.78723° / -120.98366°	Township: 11N
UTM: Zone-10 N4295096 E675128	Range: 09E
Area: 1.7 acres	Section: 21
Elevation: 780 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: SW
Symbol Type: POLYGON	

Location: WEST SIDE OF CANYON OF SOUTH FORK OF AMERICAN RIVER, 0.35 MILE SOUTH OF CONFLUENCE WITH NORTON RAVINE, WSW OF COLOMA.
Location Detail: ON BOTH SIDES OF ROAD (NOT ON TOPO MAP) ALONG SOUTH FORK AMERICAN RIVER FROM EQUESTRIAN WAY NORTHWEST & NORTH (UPSTREAM) TO NORTON RAVINE, APPROX 0.5 MILE SOUTH OF WHERE ROAD REACHES NORTON RAVINE. MAPPED AT CENTER OF SW 1/4 OF SECTION 21.
Ecological: GROWING ON SURFACE & CUT SLOPE OF DIRT ROAD IN TRANSITION OF CHAPARRAL TO PONDEROSA PINE FOREST. ASSOCIATES: QUERCUS WISLIZENII, PINUS PONDEROSA, ARCTOSTAPHYLOS VISCIDA, LUPINUS ALBIFRONS, & ERIOPHYLLUM LANATUM. AUBURN ROCKY SILT LOAM.
Threat: ROADSIDE OCCURRENCE; ROAD WILL LIKELY BE CLOSED TO VEHICLE TRAFFIC IN FUTURE, CURRENTLY IMPASSABLE FROM SOUTHERN END.
General: APPROXIMATELY 120 PLANTS SEEN IN 2000, IN AN AREA OF LESS THAN 0.1 ACRE. SITE IS DISTURBED BUT PLANTS APPEAR TO BE DOING FINE. THIS LAND IS A RELATIVELY NEW ACQUISITION BY BLM; A PLANNING PROCESS FOR THE AREA IS CURRENTLY UNDERWAY.

Owner/Manager: BLM

Occurrence No. 48	Map Index: 44955	EO Index: 44955	Dates Last Seen
Occ Rank: Unknown			Element: 1962-05-30
Origin: Natural/Native occurrence			Site: 1962-05-30
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2001-02-20

Quad Summary: Coloma (3812078/526C)
County Summary: El Dorado

Lat/Long: 38.76881° / -120.92544°	Township: 11N
UTM: Zone-10 N4293165 E680231	Range: 09E
Radius: 2/5 mile	Section: 36
Elevation: 1,500 ft	Meridian: M
Mapping Precision: NON-SPECIFIC	Qtr: XX
Symbol Type: POINT	

Location: 2.8 MILES WEST OF GOLD HILL.
Location Detail: EXACT LOCATION UNKNOWN. MAPPED AS BEST GUESS BY CNDDB AT 2.8 MILES WEST OF GOLD HILL ALONG GOLD HILL ROAD IN VICINITY OF FOUR CORNERS. ELEVATION ON HERB LABEL GIVEN AS 1500'.
Ecological: HABITAT IN SERPENTINE.
Threat: NONE KNOWN.
General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS 1962 COLLECTION BY BACIGALUPI & HECKARD. NEEDS FIELDWORK.
Owner/Manager: UNKNOWN

Packera layneae

Layne's ragwort

Element Code: PDAST8H1V0

Status	NDDB Element Ranks	Other Lists
Federal: Threatened	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.1	

Habitat Associations

General: CHAPARRAL, CISMONTANE WOODLAND.
Micro: ULTRAMAFIC SOIL; OCCASIONALLY ALONG STREAMS. 200-1000M.

Occurrence No. 61	Map Index: 73023	EO Index: 73941	Dates Last Seen
Occ Rank: Fair			Element: 2007-03-26
Origin: Natural/Native occurrence			Site: 2007-03-26
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-12-01

Quad Summary: Coloma (3812078/526C)
County Summary: El Dorado

Lat/Long: 38.76025° / -120.93939°	Township: 11N
UTM: Zone-10 N4292188 E679040	Range: 09E
Radius: 80 meters	Section: 35
Elevation: 1,115 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: SE
Symbol Type: POINT	

Location: E SIDE OF SPRINGVALE RD JUST N OF THE SPILLWAY, NNW OF SPRINGVALE SCHOOL.
Location Detail: MAPPED BY CNDDB ACCORDING TO A 2007 WILLSON MAP IN THE NW1/4 OF THE SE1/4 SEC 35.
Ecological: CHAPARRAL WITHIN MIXED OAK WOODLAND. ASSOCIATED WITH CEANOTHUS CUNEATUS ON SERPENTINE SOIL, SW ASPECT. CHLOROGALUM GRANDIFLORUM ALSO OCCURS AT THIS SITE.
Threat: THE PARCEL IS BEING SUBDIVIDED INTO 5-ACRE LOTS.
General: 300 PLANTS SEEN IN 2007.
Owner/Manager: PVT

Pandion haliaetus

osprey

Element Code: ABNKC01010

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5	CDFG Status:
State: None	State: S3	

Habitat Associations

General: OCEAN SHORE, BAYS, FRESH-WATER LAKES, AND LARGER STREAMS.

Micro: LARGE NESTS BUILT IN TREE-TOPS WITHIN 15 MILES OF A GOOD FISH-PRODUCING BODY OF WATER.

Occurrence No. 446	Map Index: 76581	EO Index: 77561	Dates Last Seen
Occ Rank: Fair			Element: 2008-06-11
Origin: Natural/Native occurrence			Site: 2008-06-11
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-09-16

Quad Summary: Rocklin (3812172/527C)

County Summary: Placer

Lat/Long: 38.85499° / -121.23054°	Township: 12N
UTM: Zone-10 N4302173 E653537	Range: 07E
Radius: 80 meters	Section: 30
Elevation: 575 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: SE
Symbol Type: POINT	

Location: NORTHWEST EDGE OF "TWELVE BRIDGES GOLF COURSE POND", EAST OF CATTI VERDERA COUNTRY CLUB, LINCOLN.

Location Detail: NEST LOCATED ATOP WOODEN POLE. LOCATION MAPPED ACCORDING TO PROVIDED COORDINATES AND LOCATION SHOWN ON MAP.

Ecological: RESIDENTIAL BUILDOUT IS OCCURRING ALONG ADJACENT PARCELS.

Threat: POSSIBLY THREATENED BY RESIDENTIAL DEVELOPMENT AND NOISE.

General: NESTING PAIR OBSERVED ON 11 JUNE 2008.

Owner/Manager: PVT

Phrynosoma blainvillii

coast horned lizard

Element Code: ARACF12100

Status _____ **NDDB Element Ranks** _____ **Other Lists** _____
 Federal: None **Global:** G4G5 **CDFG Status:** SC
 State: None **State:** S3S4

Habitat Associations

General: FREQUENTS A WIDE VARIETY OF HABITATS, MOST COMMON IN LOWLANDS ALONG SANDY WASHES WITH SCATTERED LOW BUSHES.
Micro: OPEN AREAS FOR SUNNING, BUSHES FOR COVER, PATCHES OF LOOSE SOIL FOR BURIAL, & ABUNDANT SUPPLY OF ANTS & OTHER INSECTS.

Occurrence No. 597 **Map Index:** 39881 **EO Index:** 34883 **Dates Last Seen** _____
Occ Rank: Unknown **Element:** 1995-XX-XX
Origin: Natural/Native occurrence **Site:** 1995-XX-XX
Presence: Presumed Extant
Trend: Unknown **Record Last Updated:** 1998-10-01

Quad Summary: Colfax (3912018/541C)

County Summary: Placer

Lat/Long: 39.09546° / -120.95587° **Township:** 14N
UTM: Zone-10 N4329359 E676774 **Range:** 09E
Radius: 2/5 mile **Mapping Precision:**NON-SPECIFIC **Section:** 03 **Qtr:** XX
Elevation: 2,400 ft **Symbol Type:**POINT **Meridian:** M

Location: COLFAX, NEAR RAILROAD SWITCH STATION.

Ecological: OPEN SANDY AREAS. YELLOW PINE & BLACK OAK.

Threat: DEVELOPMENT.

General: 3 COLLECTIONS MADE AT THIS LOCATION. FIELDWORK DONE IN THE TIME PERIOD OF 1974 TO 1995.

Owner/Manager: UNKNOWN

Occurrence No. 600 **Map Index:** 39884 **EO Index:** 34886 **Dates Last Seen** _____
Occ Rank: Unknown **Element:** 1990-07-XX
Origin: Natural/Native occurrence **Site:** 1990-07-XX
Presence: Presumed Extant
Trend: Unknown **Record Last Updated:** 1998-10-01

Quad Summary: Colfax (3912018/541C), Chicago Park (3912028/541B)

County Summary: Placer

Lat/Long: 39.12367° / -120.95189° **Township:** 15N
UTM: Zone-10 N4332497 E677048 **Range:** 09E
Radius: 2/5 mile **Mapping Precision:**NON-SPECIFIC **Section:** 27 **Qtr:** XX
Elevation: 2,400 ft **Symbol Type:**POINT **Meridian:** M

Location: 560 OLD GRASS VALLEY RD, ~1.5 MILES NORTH OF COLFAX.

Location Detail: WOODPILE OF RESIDENCE

Ecological: GRAY PINE CHAPARRAL WITH SOME CEDARS.

General: 2 JUVENILES OBSERVED (~2.5 INCHES TOTAL LENGTH).

Owner/Manager: PVT

Progne subis

purple martin

Element Code: ABPAU01010

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5	CDFG Status: SC
State: None	State: S3	

Habitat Associations

General: INHABITS WOODLANDS, LOW ELEVATION CONIFEROUS FOREST OF DOUGLAS-FIR, PONDEROSA PINE, & MONTEREY PINE.
Micro: NESTS IN OLD WOODPECKER CAVITIES MOSTLY, ALSO IN HUMAN-MADE STRUCTURES. NEST OFTEN LOCATED IN TALL, ISOLATED TREE/SNAG.

Occurrence No. 27	Map Index: 70377	EO Index: 71268	Dates Last Seen
Occ Rank: Good			Element: 2007-05-23
Origin: Natural/Native occurrence			Site: 2007-05-23
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-10-31

Quad Summary: Roseville (3812173/528D), Rocklin (3812172/527C)

County Summary: Placer

Lat/Long: 38.77202° / -121.25187°	Township: 11N
UTM: Zone-10 N4292929 E651863	Range: 06E
Radius: 80 meters	Section: 25
Elevation: 216 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: SE
Symbol Type: POINT	

Location: HIGHWAY 65 OVERPASS OVER TAYLOR ROAD, ON THE SOUTH EDGE OF ROCKLIN.

Ecological: HABITAT SURROUNDING FREEWAYS CONSISTS OF NON-NATIVE GRASSLAND AND OAK WOODLAND.

General: 2 ADULTS (PAIR) OBSERVED NESTING IN OVERPASS DRAINAGE HOLE ON 23 MAY 2007.

Owner/Manager: CALTRANS, UNION PACIFIC ROW

Rana boylei

foothill yellow-legged frog

Element Code: AAABH01050

Status
 Federal: None
 State: None
 NDDB Element Ranks
 Global: G3
 State: S2S3
 Other Lists
 CDFG Status: SC

Habitat Associations

General: PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
 Micro: NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

Occurrence No. 301 Map Index: 45495 EO Index: 45495 Dates Last Seen
 Occ Rank: Excellent Element: 2000-04-20
 Origin: Natural/Native occurrence Site: 2000-04-20
 Presence: Presumed Extant
 Trend: Unknown Record Last Updated: 2001-08-03

Quad Summary: Colfax (3912018/541C)
 County Summary: Placer

Lat/Long: 39.04266° / -120.92382° Township: 14N
 UTM: Zone-10 N4323561 E679680 Range: 09E
 Radius: 80 meters Mapping PrecisionSPECIFIC Section: 24 Qtr: SE
 Elevation: 1,420 ft Symbol Type:POINT Meridian: M

Location: 2.75 AIR MILES EAST OF WEIMAR, NEAR BAUER MINE ALONG YANKEE JIM ROAD.
 Location Detail: WATERFALL ON SOUTH-FACING SLOPE ALONG YANKEE JIM ROAD.
 Ecological: AQUATIC HABITAT IN FOOTHILL WOODLAND: QUERCUS CHRYSOLEPIS, PINUS SABINIANA AND AESCULUS CALIFORNICA. SUBSTRATE IS A RED SHALE.
 General: 1 ADULT FOUND.
 Owner/Manager: DPR-AUBURN SRA

Occurrence No. 389 Map Index: 53198 EO Index: 53198 Dates Last Seen
 Occ Rank: Excellent Element: 2003-10-27
 Origin: Natural/Native occurrence Site: 2003-10-27
 Presence: Presumed Extant
 Trend: Unknown Record Last Updated: 2003-11-06

Quad Summary: Coloma (3812078/526C)
 County Summary: El Dorado

Lat/Long: 38.83467° / -120.90623° Township: 11N
 UTM: Zone-10 N4300513 E681732 Range: 10E
 Area: Mapping PrecisionNON-SPECIFIC Section: 06 Qtr: XX
 Elevation: 1,000 ft Symbol Type:POLYGON Meridian: M

Location: INDIAN CREEK, TRIBUTARY TO THE SOUTH FORK OF THE AMERICAN RIVER, 2 MILES NORTH OF LOTUS.
 Ecological: HABITAT CONSISTS OF A PERENNIAL STREAM WITH INTERMITTENT POOLS.
 General: >100 ADULTS AND JUVENILES OBSERVED ON 27 OCT 2003.
 Owner/Manager: BLM

Occurrence No. 392 Map Index: 53509 EO Index: 53509 Dates Last Seen
 Occ Rank: Good Element: 2007-08-23
 Origin: Natural/Native occurrence Site: 2007-08-23
 Presence: Presumed Extant
 Trend: Unknown Record Last Updated: 2009-04-01

Quad Summary: Greenwood (3812088/526B)
 County Summary: Placer, El Dorado

Lat/Long: 38.96194° / -120.92370° Township: 13N
 UTM: Zone-10 N4314604 E679894 Range: 09E
 Area: 10.0 acres Mapping PrecisionSPECIFIC Section: 24 Qtr: NE
 Elevation: 790 ft Symbol Type:POLYGON Meridian: M

Location: MIDDLE FORK AMERICAN RIVER AT PARADISE CANYON (TODD CREEK), NEAR AUBURN STATE REC AREA, ABOUT 4.4 MI N OF GREENWOOD.
 Location Detail: ALONG MIDDLE FORK AMERICAN RIVER (MAINSTEM) & TODD CREEK. SITE IS ACCESSED EAST OF AUBURN, FROM FORESTHILL ROAD, AT DRIVERS FLAT TRAILHEAD.
 Ecological: HABITAT CONSISTED OF WILLOW COTTONWOOD RIPARIAN CREEK WITH STEEP WATERSHED. VEGETATION INCLUDED SAND BAR & BLACK WILLOW, ALDER, BLACKBERRY, WILD GRAPE & WHITE ALDER; SURROUNDED BY INTERIOR LIVE OAK WOODLAND & FOOTHILL PINE HABITAT.
 Threat: NON-NATIVE PLANT INVASION (FIG TREE, TREE OF HEAVEN), GOLD DREDGING, RELEASE OF RAINBOW TROUT & UPSTREAM DEVELOPMENT.
 General: 1 SUB-ADULT (TORSO LENGTH = 1/2") FROG OBSERVED IN DAMP SPOT, 2 NOV 2003. 2007 (MAINSTEM): 1 ADULT OBS ON 17 MAY; 1 AD OBS ON 5 JUN; 5 AD OBS ON 23 AUG. 2007 (TODD CRK): 6 ADULTS, 4 JUV & 1 EGG MASS OBS 17 MAY; 1 AD OBS 5 JUN.
 Owner/Manager: BLM

Rana boylei

foothill yellow-legged frog

Element Code: AAABH01050

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CDFG Status: SC
State: None	State: S2S3	

Habitat Associations

General: PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
Micro: NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

Occurrence No. 393	Map Index: 53511	EO Index: 53511	Dates Last Seen
Occ Rank: Good			Element: 2007-08-23
Origin: Natural/Native occurrence			Site: 2007-08-23
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-05-13

Quad Summary: Greenwood (3812088/526B)
County Summary: El Dorado, Placer

Lat/Long: 38.96431° / -120.93277°	Township: 13N
UTM: Zone-10 N4314848 E679102	Range: 09E
Area: 14.0 acres	Section: 24
Elevation: 750 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: NW
Symbol Type: POLYGON	

Location: ALONG GAS CANYON CREEK AT MIDDLE FORK AMERICAN RIVER; ABOUT 3.9 MI SE OF APPLGATE, AUBURN STATE RECREATION AREA.
Location Detail: SITE IS ACCESSED EAST OF AUBURN FROM FORESHILL ROAD AT DRIVERS FLAT TRAILHEAD; WITHIN 300 FEET OF HIGH WATER OF MIDDLE FORK AMERICAN RIVER BOTH UP & DOWNSTREAM OF RUCKY CHUCK RD BRIDGE.
Ecological: HABITAT CONSISTED OF WILLOW COTTONWOOD RIPARIAN CREEK WITH STEEP WATERSHED. VEGETATION INCLUDED SAND BAR & BLACK WILLOW, ALDER, BLACKBERRY, WILD GRAPE & WHITE ALDER; SURROUNDED BY INTERIOR LIVE OAK WOODLAND & FOOTHILL PINE HABITAT.
Threat: NON-NATIVE PLANT INVASION (FIG TREE, TREE OF HEAVEN), GOLD DREDGING, RELEASE OF RAINBOW TROUT & UPSTREAM DEVELOPMENT.
General: 3 ADULTS CAPTURED & RELEASED (9 ADDITIONAL OBSERVED) ON 2 NOV 2003. IN 2007: 9 ADS, 4 JUV & 4 EGG MASSES OBS ON 17 MAY; 2 ADS & 4 JUV OBS 5 JUN; 7 ADS OBS 22 AUG; 1 AD OBS 23 AUG. SURROUNDING LAND USE: RECREATION, UPSTREAM WATERSHED.

Owner/Manager: BLM, DPR-AUBURN STATE RA

Occurrence No. 455	Map Index: 69653	EO Index: 70433	Dates Last Seen
Occ Rank: Good			Element: 2007-05-26
Origin: Natural/Native occurrence			Site: 2007-05-26
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-04-01

Quad Summary: Greenwood (3812088/526B), Colfax (3912018/541C)
County Summary: Placer

Lat/Long: 38.99965° / -120.94171°	Township: 13N
UTM: Zone-10 N4318753 E678239	Range: 09E
Area: 10.0 acres	Section: 11
Elevation: 840 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: NE
Symbol Type: POLYGON	

Location: NORTH FORK AMERICAN RIVER, JUST DOWNSTREAM FROM THE PONDEROSA WAY BRIDGE, 9 MILES NE OF AUBURN.
Location Detail: MAPPED TO PROVIDED COORDINATES.
Ecological: HABITAT CONSISTS OF AN AQUATIC SUBSTRATE DOMINATED BY BOULDER/COBBLE; LIMITED RIPARIAN SHADING (WILLOWS). AVERAGE WATER DEPTH WAS ~20-30CM. WATER TURBIDITY WAS LOW; WATER WAS CLEAR. A ROCK DAM WAS BUILT AT THE TOP OF THE SIDE CHANNEL.
General: 5 ADULTS AND 8 SUB-ADULTS OBSERVED ON 26 MAY 2007 WITHIN AND ALONG THE MARGINS OF A SIDE CHANNEL ALONG THE NORTH BANK. MORE THAN 10 ADULTS & MORE THAN 100 YOUNG-OF-YEAR OBSERVED ALONG NORTH FORK AMERICAN RIVER ON 4 OCT 2007.

Owner/Manager: DPR-AUBURN SRA

Rana boylei

foothill yellow-legged frog

Element Code: AAABH01050

Status _____ NDDB Element Ranks _____ Other Lists _____
 Federal: None Global: G3 CDFG Status: SC
 State: None State: S2S3

Habitat Associations

General: PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
 Micro: NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

Occurrence No. 457 Map Index: 69655 EO Index: 70435 Dates Last Seen _____
 Occ Rank: Excellent Element: 2008-05-09
 Origin: Natural/Native occurrence Site: 2008-05-09
 Presence: Presumed Extant
 Trend: Unknown Record Last Updated: 2009-04-28

Quad Summary: Colfax (3912018/541C)

County Summary: Placer

Lat/Long: 39.10493° / -120.92533° Township: 15N
 UTM: Zone-10 N4330470 E679391 Range: 09E
 Area: Mapping PrecisionNON-SPECIFIC Section: 36 Qtr: SW
 Elevation: 1,180 ft Symbol Type:POLYGON Meridian: M

Location: ALONG NORTH FORK AMERICAN RIVER; ~0.4 MILE NORTH (UPSTREAM) OF IOWA HILL ROAD CROSSING, ~1.4 MILES ENE OF COLFAX.
 Location Detail: NORTH FEATURE: BEACH LOCATED BESIDE TRAIL THAT HEADS NORTH OF IOWA HILL ROAD (SITE A). SOUTH FEATURE MAPPED TO PROVIDED COORDINATES (SITE B). FROGS AT SITE B OBS IN 40-45 METER SECTION OF CREEK UPSTREAM OF PENNYWEIGHT TRAIL CROSSING.
 Ecological: HABITAT CONSISTED OF RIVERINE, WITH EXPOSED, ROCKY BEACH (SITE A). MODERATE-STEEP GRADIENT CREEK WITH BEDROCK CASCADE/POOL HABITATS. SUBSTRATE IN POOLS INCLUDED BOULDER/BEDROCK OR COBBLE/GRAVEL (SITE B). SURROUNDING LAND USE: RECREATION.
 Threat: THREATENED BY RECREATING HUMANS AND DOGS. MINING ACTIVITY DISTURBED SOME EGG MASSES.
 General: 2 METAMORPHS OBSERVED ALONG THE WEST BANK, ON AN EXPOSED, ROCKY BEACH, ON 8 SEP 2006 AT SITE A. 20 ADULTS & 5 EGG MASSES OBSERVED ON 9 MAY 2008 AT SITE B.

Owner/Manager: BLM

Occurrence No. 472 Map Index: 69742 EO Index: 70552 Dates Last Seen _____
 Occ Rank: Fair Element: 2007-08-09
 Origin: Natural/Native occurrence Site: 2007-08-09
 Presence: Presumed Extant
 Trend: Unknown Record Last Updated: 2007-08-16

Quad Summary: Colfax (3912018/541C)

County Summary: Placer

Lat/Long: 39.11209° / -120.94084° Township: 15N
 UTM: Zone-10 N4331234 E678031 Range: 09E
 Radius: 80 meters Mapping PrecisionSPECIFIC Section: 35 Qtr: NW
 Elevation: 2,117 ft Symbol Type:POINT Meridian: M

Location: UNNAMED TRIBUTARY TO NORTH FORK AMERICAN RIVER, 1 MILE NE OF COLFAX.
 Location Detail: SITE IS LOCATED AT THE STEVENS TRAIL CROSSING.
 Ecological: HABITAT CONSISTS OF ALDER RIPARIAN SURROUNDING A SMALL TRIBUTARY CREEK; QUITE A BIT OF BLACKBERRY ALONG BANKS.
 Threat: POSSIBLE THREAT FROM SEDIMENTATION CREATED BY A STREAM CROSSING AND POLLUTION/DUMPING CREATED BY RECREATION UPSTREAM.
 General: 2 ADULTS OBSERVED ON 9 AUG 2007.

Owner/Manager: BLM

Rana boylei

foothill yellow-legged frog

Element Code: AAABH01050

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CDFG Status: SC
State: None	State: S2S3	

Habitat Associations

General: PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
Micro: NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

Occurrence No. 487	Map Index: 73915	EO Index: 74910	Dates Last Seen
Occ Rank: Excellent			Element: 2008-05-17
Origin: Natural/Native occurrence			Site: 2008-05-17
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-03-24

Quad Summary: Colfax (3912018/541C)
County Summary: Placer

Lat/Long: 39.03672° / -120.90312°	Township: 14N
UTM: Zone-10 N4322944 E681486	Range: 10E
Area: 16.0 acres	Section: 30
Elevation: 890 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: NW
Symbol Type: POLYGON	

Location: N FORK AMERICAN RIVER, BETWEEN SHIRTTAIL CANYON & BUNCH CANYON, ~1.1 MI ENE OF BIG JOHN HILL, ~4.5 MI SE OF COLFAX.
Location Detail: 3 SITES: IN SHIRTTAIL CREEK AT N FORK AMERICAN RIVER (SITE A); 0.25 MILES SOUTH OF BRIDGE (YANKEE JIMS RD) (B); & IN BUNCH CANYON AT N FORK AMERICAN RIVER (C). MAPPED TO PROVIDED COORDINATES.
Ecological: HABITAT AT (A): 2 POOLS APPROX 100 M UPSTREAM OF AM RIVER IN SHIRTTAIL CREEK. SW BANK OF POOLS SHADY & COOL; OPPOSITE BANK SUNNY & WARM. POOL SUBSTRATES LINED WITH BOULDERS & DOMINATED BY COBBLE. MAX DEPTH 5.5 FT. AMPLEXUS OBSERVED.
General: SITE A: 18 MAY, 4 JUN, 20 AUG 2007 = 115 ADULTS, 5334 NON-ADULTS, 16 EGG MASSES; 17 MAY 2008 = 11 ADULTS. SITE B: 18 MAY, 4 JUN, 20 AUG 07 = 48 AD, 713 NON-AD, 3 EGG MASSES. SITE C: 18 MAY, 4 JUN, 20 AUG 07 = 17 AD, 52 NON-AD, 0 EGG MASSES.

Owner/Manager: DPR-AUBURN SRA AND BLM

Occurrence No. 490	Map Index: 73919	EO Index: 74916	Dates Last Seen
Occ Rank: Good			Element: 2008-04-10
Origin: Natural/Native occurrence			Site: 2008-04-10
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-03-13

Quad Summary: Greenwood (3812088/526B)
County Summary: Placer

Lat/Long: 38.99713° / -120.95558°	Township: 13N
UTM: Zone-10 N4318446 E677044	Range: 09E
Radius: 80 meters	Section: 10
Elevation: 920 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: NE
Symbol Type: POINT	

Location: CODFISH FALLS, ABOUT 0.35 MI N OF CODFISH CREEK AND N FORK AMERICAN RIVER CROSSING, ABOUT 1.9 MI E OF APPEGATE.
Location Detail: MAPPED TO POINT ON PROVIDED MAP.
Ecological: CREEK CONTAINING POOLS AND SHADED BY RIPARIAN VEGETATION.
Threat: ORV ACTIVITIY NOTED JUST DOWNSTREAM OF THE FALLS.
General: 4 ADULTS (2-3 INCH SNOOUT-VENT-LENGTH) CASUALLY OBSERVED; MANY MORE LIKELY PRESENT.

Owner/Manager: DPR-AUBURN SRA

Occurrence No. 491	Map Index: 73921	EO Index: 74918	Dates Last Seen
Occ Rank: Unknown			Element: 2007-09-24
Origin: Natural/Native occurrence			Site: 2007-09-24
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-03-13

Quad Summary: Greenwood (3812088/526B)
County Summary: El Dorado, Placer

Lat/Long: 38.93512° / -120.94352°	Township: 13N
UTM: Zone-10 N4311588 E678244	Range: 09E
Area: 9.0 acres	Section: 35
Elevation: 650 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: NW
Symbol Type: POLYGON	

Location: POVERTY BAR, ALONG MIDDLE FORK AMERICAN RIVER, ABOUT 2.3 MI ESE OF STONY HILL, ABOUT 6.7 MI ENE OF AUBURN.
Location Detail: MAPPED TO PROVIDED COORDINATES IN SE1/4 OF NW1/4 SEC 35.
Ecological: MAINSTEM AND TRIBUTARY (AMERICAN CANYON) OF MIDDLE FORK AMERICAN RIVER.
General: ON 24 SEP 2007 3 ADULT FEMALES, 4 ADULTS (UNKNOWN SEX), 2 JUVENILES-SUBADULTS, 22 YOUNG-OF-YEAR OBSERVED.
Owner/Manager: DPR-AUBURN SRA

Rana boyllii

foothill yellow-legged frog

Element Code: AAABH01050

Status _____ NDDB Element Ranks _____ Other Lists _____
 Federal: None Global: G3 CDFG Status: SC
 State: None State: S2S3

Habitat Associations

General: PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.
 Micro: NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

Occurrence No. 526 Map Index: 74074 EO Index: 75066 Dates Last Seen _____
 Occ Rank: Unknown Element: 2008-06-15
 Origin: Natural/Native occurrence Site: 2008-06-15
 Presence: Presumed Extant
 Trend: Unknown Record Last Updated: 2009-03-20

Quad Summary: Colfax (3912018/541C)

County Summary: Placer, Nevada

Lat/Long: 39.10640° / -120.98789° Township: 15N
 UTM: Zone-10 N4330511 E673978 Range: 09E
 Area: 8.0 acres Mapping Precision: SPECIFIC Section: 32 Qtr: SE
 Elevation: 1,790 ft Symbol Type: POLYGON Meridian: M

Location: ALONG BEAR RIVER, ABOUT 1.8 MI WEST OF COLFAX, ABOUT 2.8 MI SSW OF CHICAGO PARK.
 Location Detail: MAPPED TO PROVIDED COORDINATES.
 Ecological: HABITAT CONSISTED OF SIDE CHANNEL & GLIDE. SUBSTRATE INCLUDED COBBLE, SILT, CLAY & MUD.
 General: ON 15 JUN 2008 3 JUVENILES OBSERVED.
 Owner/Manager: UNKNOWN

Occurrence No. 527 Map Index: 74075 EO Index: 75067 Dates Last Seen _____
 Occ Rank: Unknown Element: 2008-08-28
 Origin: Natural/Native occurrence Site: 2008-08-28
 Presence: Presumed Extant
 Trend: Unknown Record Last Updated: 2009-03-20

Quad Summary: Colfax (3912018/541C)

County Summary: Nevada, Placer

Lat/Long: 39.08419° / -120.98920° Township: 14N
 UTM: Zone-10 N4328044 E673918 Range: 09E
 Area: 40.0 acres Mapping Precision: SPECIFIC Section: 08 Qtr: NE
 Elevation: 1,740 ft Symbol Type: POLYGON Meridian: M

Location: ALONG BEAR RIVER, ABOUT 2 MI SW OF COLFAX, ABOUT 4.4 MI SSW OF CHICAGO PARK.
 Location Detail: MAPPED TO PROVIDED COORDINATES FROM MIDDLE OF SEC 8 NORTH ALONG RIVER INTO SE 1/4 SEC 5.
 Ecological: HABITAT CONSISTED OF LOW TO HIGH GRADIENT RIFFLES, RUNS, EDGWATER, SIDETCHANNEL & POOLS WITH EXPOSED & PROTECTED BANKS. SUBSTRATES INCLUDED BEDROCK, BOULDER, COBBLE, GRAVEL, SAND, SILT, MUD & CLAY.
 General: ON 9 JUN 2008 1 JUVENILE & 1 UNKNOWN AGE INDIVIDUAL OBSERVED. 24 JUN 2008 5 ADULTS & 3 JUVENILES OBSERVED. 28 AUG 2008 6 ADULTS OBSERVED.
 Owner/Manager: DFG-BEAR RIVER FA

Occurrence No. 528 Map Index: 74076 EO Index: 75068 Dates Last Seen _____
 Occ Rank: Unknown Element: 2008-06-15
 Origin: Natural/Native occurrence Site: 2008-06-15
 Presence: Presumed Extant
 Trend: Unknown Record Last Updated: 2009-03-23

Quad Summary: Lake Combie (3912111/542D)

County Summary: Placer, Nevada

Lat/Long: 39.05890° / -121.00687° Township: 14N
 UTM: Zone-10 N4325203 E672452 Range: 09E
 Area: 10.0 acres Mapping Precision: SPECIFIC Section: 18 Qtr: SE
 Elevation: 1,690 ft Symbol Type: POLYGON Meridian: M

Location: DOG BAR BRIDGE, ALONG BEAR RIVER, ABOUT 2 MI WSW OF HOWELL HILL, ABOUT 2.2 MI NW OF WEIMAR.
 Location Detail: MAPPED TO PROVIDED COORDINATES IN NE 1/4 SEC 9 AND SE 1/4 SEC 18.
 Ecological: HABITAT CONSISTED OF BACKWATER POOL, EDGWATER, GLIDE & RUN. SUBSTRATES INCLUDED COBBLE & BOULDER.
 General: ON 28 SEP 2007 2 JUVENILES OBSERVED. 2 JUN 2008 1 JUVENILE OBSERVED. 15 JUN 2008 1 JUVENILE OBSERVED.
 Owner/Manager: UNKNOWN

Rana boylei

foothill yellow-legged frog

Element Code: AAABH01050

Status

NDDB Element Ranks

Other Lists

Federal: None

Global: G3

CDFG Status: SC

State: None

State: S2S3

Habitat Associations

General: PARTLY-SHADED, SHALLOW STREAMS & RIFFLES WITH A ROCKY SUBSTRATE IN A VARIETY OF HABITATS.

Micro: NEED AT LEAST SOME COBBLE-SIZED SUBSTRATE FOR EGG-LAYING. NEED AT LEAST 15 WEEKS TO ATTAIN METAMORPHOSIS.

Occurrence No. 741

Map Index: 74896

EO Index: 75902

Dates Last Seen

Occ Rank: Excellent

Element: 2008-04-26

Origin: Natural/Native occurrence

Site: 2008-04-26

Presence: Presumed Extant

Trend: Unknown

Record Last Updated: 2009-05-11

Quad Summary: Colfax (3912018/541C)

County Summary: Placer

Lat/Long: 39.08551° / -120.91566°

Township: 14N

UTM: Zone-10 N4328333 E680277

Range: 09E

Radius: 80 meters

Mapping Precision: SPECIFIC

Section: 12

Qtr: NE

Elevation: 1,370 ft

Symbol Type: POINT

Meridian: M

Location: ALONG UNNAMED TRIBUTARY JUST NE OF NORTH FK AMERICAN RIVER CONFLUENCE; ~0.5 MI SSE OF DINNER TREE, ~2 MI ESE OF COLFAX.

Location Detail: MAPPED TO PROVIDED COORDINATES. "OBSERVATION NEAR WINDY POINT TRAIL CROSSING."

Ecological: HABITAT CONSISTED OF STEEP GRADIENT CREEK WITH MODERATE-DENSE RIPARIAN CANOPY. BOULDER DOMINATED SUBSTRATE WITH AUBNDANT PLUNGE POOLS. BOTH FEMALES OBSERVED GRAVID. SURROUNDING LAND USED FOR SOME RECREATION ASSOCIATED WITH HIKING TRAIL.

General: 2 GRAVID FEMALE ADULTS & 1 UNKNOWN ADULT OBSERVED ON 26 APR 2008.

Owner/Manager: BLM

Viburnum ellipticum

oval-leaved viburnum

Element Code: PDCPR07080

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5	CNPS List: 2.3
State: None	State: S2.3	

Habitat Associations

General: CHAPARRAL, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.
Micro: 215-1400M.

Occurrence No. 19	Map Index: 61070	EO Index: 61106	Dates Last Seen
Occ Rank: Good			Element: 2006-06-06
Origin: Natural/Native occurrence			Site: 2006-06-06
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-12-31

Quad Summary: Greenwood (3812088/526B), Auburn (3812181/527A)
County Summary: Placer

Lat/Long: 38.93872° / -121.00198°	Township: 13N
UTM: Zone-10 N4311875 E673167	Range: 09E
Radius: 80 meters	Section: 32
Elevation: 1,300 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: NW
Symbol Type: POINT	

Location: OFF OF LAKE CLEMENTINE ROAD, 0.3 MI SOUTH OF NORTH FORK LAKE; ABOUT 0.7 MI WEST OF SQUAW FLAT.
Location Detail: FROM FIRST PARKING LOT ON LAKE CLEMENTINE RD (NOT ON TOPO - OFF OF FOREST HILL RD), TAKE FOOTPATH DOWNHILL TO WIDE DIRT ACCESS ROAD. ABOUT 0.25 MI, JUST PAST ROCK OUTCROP ARE V. ELLIPTICUM, ON BOTH SIDES OF RD. SE 1/4 NW 1/4 OF SEC 32.
Ecological: SHADY, N-FACING SLOPES IN MIXED CONIFER FOREST. FOUND WITH ARBUTUS MENZIESII, PHILADELPHUS LEWISII, STYRAX OFFICINALIS, ADIANTUM JORDANII. OTHER RARE SPP: CLARKIA BILOBA SSP. BRANDEGEE ON LAKE CLEMENTINE RD.
Threat: TRAIL MAINTENANCE, FIRE CLEARING.
General: 5 PLANTS OBSERVED IN 2004. UNKNOWN NUMBER SEEN IN 2006.
Owner/Manager: DPR-AUBURN SRA

Occurrence No. 20	Map Index: 61072	EO Index: 61108	Dates Last Seen
Occ Rank: Good			Element: 2004-05-11
Origin: Natural/Native occurrence			Site: 2004-05-11
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2005-04-21

Quad Summary: Auburn (3812181/527A)
County Summary: Placer

Lat/Long: 38.93161° / -121.03055°	Township: 13N
UTM: Zone-10 N4311031 E670708	Range: 08E
Radius: 80 meters	Section: 36
Elevation: 1,300 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: SE
Symbol Type: POINT	

Location: ALONG LAKE CLEMENTINE ROAD, 0.5 MI SW OF NORTH FORK LAKE DAM; AUBURN STATE RECREATION AREA.
Location Detail: 0.25 MI ON LAKE CLEMENTINE TRAIL FROM LAKE CLEMENTINE RD, PLANTS ARE JUST PAST THE DRAINAGE/CULVERT PIPE ON LEFT. SE 1/4 OF SE 1/4 OF SECTION 36.
Ecological: SHADY, N-FACING SLOPES IN MIXED CONIFER FOREST. FOUND WITH ARBUTUS MENZIESII, PHILADELPHUS LEWISII, STYRAX OFFICINALIS, ADIANTUM JORDANII. OTHER RARE SPP: CLARKIA BILOBA SSP. BRANDEGEE ON LAKE CLEMENTINE RD.
Threat: TRAIL MAINTENANCE, FIRE CLEARING.
General: 3 PLANTS OBSERVED IN 2004.
Owner/Manager: DPR-AUBURN SRA

Wyethia reticulata

El Dorado County mule ears

Element Code: PDAST9X0D0

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G2	CNPS List: 1B.2
State: None	State: S2.2	

Habitat Associations

General: CHAPARRAL, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.
Micro: STONY RED CLAY AND GABBROIC SOILS; OFTEN IN OPENINGS IN GABBRO CHAPARRAL. 180-630M.

Occurrence No. 15	Map Index: 12126	EO Index: 7487	Dates Last Seen
Occ Rank: Unknown			Element: 1986-XX-XX
Origin: Natural/Native occurrence			Site: 1986-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-07-28

Quad Summary: Pilot Hill (3812171/527D)
County Summary: El Dorado

Lat/Long: 38.76701° / -121.04187°	Township: 11N
UTM: Zone-10 N4292743 E670119	Range: 08E
Area: 42.0 acres	Mapping Precision: SPECIFIC
Elevation: 680 ft	Section: 36
	Meridian: M
	Qtr: NW

Location: SOUTH OF SOUTH FORK AMERICAN RIVER, WEST OF SALMON FALLS, ALONG SALMON FALLS ROAD AND 4WD ROAD.
Location Detail: ABOUT 0.5 MILE SOUTH OF NATOMAS DIVERSION DAM. TWO COLONIES MAPPED MOSTLY WITHIN THE NW 1/4 OF SECTION 36 AND THE NE 1/4 OF SECTION 35.
General: UNKNOWN NUMBER OF PLANTS SEEN BY WILSON IN 1986. INCLUDES FORMER OCCURRENCE # 21.
Owner/Manager: UNKNOWN

Occurrence No. 16	Map Index: 12186	EO Index: 7479	Dates Last Seen
Occ Rank: Excellent			Element: 1994-06-15
Origin: Natural/Native occurrence			Site: 1994-06-15
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-07-26

Quad Summary: Coloma (3812078/526C), Pilot Hill (3812171/527D)
County Summary: El Dorado

Lat/Long: 38.76332° / -121.01471°	Township: 11N
UTM: Zone-10 N4292384 E672488	Range: 09E
Area: 142.0 acres	Mapping Precision: SPECIFIC
Elevation: 1,000 ft	Section: 31
	Meridian: M
	Qtr: XX

Location: BOTH SIDES OF SOUTH FORK AMERICAN RIVER, NEAR THE MOUTH OF WEBER CREEK.
Location Detail: MAPPED AS 11 COLONIES IN SECTIONS 30, 31, 32, AND 36.
Ecological: ON RESCUE SOILS IN CHAPARRAL. WITH ADENOSTOMA FASCICULATUM, ARCTOSTAPHYLOS VISCIDA, CEANOTHUS RODERICKII, ERIODICTYON CALIFORNICUM, HETEROMELES ARBUTIFOLIA, QUERCUS DURATA, SALVIA SONOMENSIS, CALYSTEZIA STEBBINSII, LOTUS
General: SCATTERED INDIVIDUALS IN 1984. UNKNOWN NUMBER OF PLANTS IN 1986, 1987, 1989, 1990, 1992, AND 1993. OVER 100,000 PLANTS SEEN IN 1994. INCLUDES FORMER OCCURRENCES #17, 18, 19, 20, AND 26. ONE OF THE BEST SITES.
Owner/Manager: PVT, DFG, BLM

Occurrence No. 22	Map Index: 12118	EO Index: 7484	Dates Last Seen
Occ Rank: Fair			Element: 2006-07-28
Origin: Natural/Native occurrence			Site: 2006-07-28
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-07-26

Quad Summary: Pilot Hill (3812171/527D)
County Summary: El Dorado

Lat/Long: 38.75881° / -121.04498°	Township: 11N
UTM: Zone-10 N4291827 E669868	Range: 08E
Area: 22.0 acres	Mapping Precision: SPECIFIC
Elevation: 400 ft	Section: 35
	Meridian: M
	Qtr: SE

Location: SOUTH OF SOUTH FORK AMERICAN RIVER, ON BOTH SIDES OF SALMON FALLS ROAD, 0.6 AIR MILE EAST OF CEMETERY.
Location Detail: THREE COLONIES.
Ecological: GABBROIC NORTHERN MIXED CHAPARRAL.
Threat: THREATENED BY DEVELOPMENT.
General: UNKNOWN NUMBERS OF PLANTS OBSERVED ON THE EAST SIDE OF THE ROAD SOMETIME BETWEEN 1981 AND 1984, AS WELL AS IN 1986. APPROXIMATELY 780 PLANTS OBSERVED ON THE WEST SIDE OF THE ROAD IN 2006.
Owner/Manager: PVT

Wyethia reticulata

El Dorado County mule ears

Element Code: PDAST9X0D0

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G2	CNPS List: 1B.2
State: None	State: S2.2	

Habitat Associations

General: CHAPARRAL, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.
Micro: STONY RED CLAY AND GABBROIC SOILS; OFTEN IN OPENINGS IN GABBRO CHAPARRAL. 180-630M.

Occurrence No. 35	Map Index: 51654	EO Index: 51654	Dates Last Seen
Occ Rank: Good			Element: 1994-06-16
Origin: Natural/Native occurrence			Site: 1994-06-16
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2003-06-27

Quad Summary: Pilot Hill (3812171/527D)
County Summary: El Dorado

Lat/Long: 38.75574° / -121.03418°	Township: 11N
UTM: Zone-10 N4291506 E670814	Range: 08E
Area: 13.2 acres	Section: 36
Elevation: 1,100 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: SE
Symbol Type: POLYGON	

Location: SOUTH OF THE SOUTH FORK AMERICAN RIVER, 1.25 AIR MILES JUST SSE OF SALMON FALLS ROAD CROSSING, SOUTH OF PILOT HILL.
Location Detail: WITHIN A FLAT THAT IS PART OF A GENTLY SLOPING DRAINAGE. MAPPED WITHIN THE SW 1/4 OF THE SE 1/4 OF SECTION 30.
Ecological: ON OPEN RESCUE STONY LOAM SOILS, IN A GENERALLY FLATA DRAINAGE DIVIDE, IN THE GABBROIC NORTHERN MIXED CHAPARRAL PLANT COMMUNITY. ASSOCIATES INCLUDE ADENOSTOMA FASCICULATUM, ARCTOSTAPHYLOS VISCIDA SSP. VISCIDA, CEANOETHUS RODERICKII, ET AL.
Threat: APPEARS TO BE A SMALL AMOUNT OF ORV ACTIVITY IN THE AREA OF THIS POPULATION.
General: 3000 PLANTS OBSERVED AT THIS SITE IN 1994. ALMOST ALL OF THIS POPULATION EXTENDS OUT OF THE PROPERTY TO THE NORTH (EVEN FURTHER THAN IS MAPPED), BUT THAT AREA WAS NOT EXTENSIVELY EXPLORED.

Owner/Manager: PVT

Occurrence No. 36	Map Index: 51655	EO Index: 51655	Dates Last Seen
Occ Rank: Unknown			Element: 1986-XX-XX
Origin: Natural/Native occurrence			Site: 1986-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2003-06-27

Quad Summary: Pilot Hill (3812171/527D)
County Summary: El Dorado

Lat/Long: 38.75150° / -121.04512°	Township: 10N
UTM: Zone-10 N4291015 E669873	Range: 08E
Radius: 80 meters	Section: 01
Elevation: 620 ft	Meridian: M
Mapping Precision: SPECIFIC	Qtr: NE
Symbol Type: POINT	

Location: SOUTHEAST OF SALMON FALLS ROAD AT 90 DEGREE CURVE, SOUTH OF THE SOUTH FORK AMERICAN RIVER AND PILOT HILL.
Location Detail: ON EAST SIDE OF ROAD ABOUT 0.1-0.2 MILE SOUTH OF TURNOFF TO SWEETWATER CREEK BRANCH OF FOLSOM LAKE. MAPPED NEAR THE CENTER OF THE NE 1/4 OF SECTION 1.
Ecological: ON GABBRO SOILS.
General: MAP DETAIL IS ONLY SOURCE OF INFORMATION FOR THIS SITE.
Owner/Manager: UNKNOWN

CNPS 9-QUAD SEARCH

<input type="checkbox"/>	<u>Allium jepsonii</u>	Jepson's onion	Liliaceae	List 1B.2
<input type="checkbox"/>	<u>Balsamorhiza macrolepis</u> var. <u>macrolepis</u>	big-scale balsamroot	Asteraceae	List 1B.2
<input type="checkbox"/>	<u>Calystegia stebbinsii</u>	Stebbins' morning-glory	Convolvulaceae	List 1B.1
<input type="checkbox"/>	<u>Ceanothus roderickii</u>	Pine Hill ceanothus	Rhamnaceae	List 1B.2
<input type="checkbox"/>	<u>Chlorogalum grandiflorum</u>	Red Hills soaproot	Liliaceae	List 1B.2
<input type="checkbox"/>	<u>Clarkia biloba</u> ssp. <u>brandegeae</u>	Brandegee's clarkia	Onagraceae	List 1B.2
<input type="checkbox"/>	<u>Fritillaria eastwoodiae</u>	Butte County fritillary	Liliaceae	List 3.2
<input type="checkbox"/>	<u>Galium californicum</u> ssp. <u>sierrae</u>	El Dorado bedstraw	Rubiaceae	List 1B.2
<input type="checkbox"/>	<u>Gratiola heterosepala</u>	Boggs Lake hedge-hyssop	Scrophulariaceae	List 1B.2
<input type="checkbox"/>	<u>Helianthemum suffrutescens</u>	Bisbee Peak rush-rose	Cistaceae	List 3.2
<input type="checkbox"/>	<u>Horkelia parryi</u>	Parry's horkelia	Rosaceae	List 1B.2
<input type="checkbox"/>	<u>Lathyrus sulphureus</u> var. <u>argillaceus</u>	dubious pea	Fabaceae	List 3
<input type="checkbox"/>	<u>Packera layneae</u>	Layne's ragwort	Asteraceae	List 1B.2
<input type="checkbox"/>	<u>Viburnum ellipticum</u>	oval-leaved viburnum	Adoxaceae	List 2.3
<input type="checkbox"/>	<u>Wyethia reticulata</u>	El Dorado County mule ears	Asteraceae	List 1B.2

Table C2
Special-Status Plant Species Known to Occur or with Potential to Occur on the Project Site

Species	Status ¹			Habitat and Blooming Period	Potential for Occurrence
	USFWS	DFG	CNPS Other		
Jepson's onion <i>Allium jepsonii</i>	–	–	1B.2	Chaparral, cismontane woodland, lower montane coniferous forest; often on serpentinite or volcanic soils; 984 to 4,330 feet elevation; blooms April-August.	Could occur. Oak woodland provides suitable habitat, though no serpentinite or volcanic soils documented on site. Documented occurrence approximately 1 mile east of project site (CNDDDB 2010; occ. no. 18).
Big-scale balsamroot <i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i>	–	–	1B.2	Chaparral, cismontane woodland, and valley and foothill grassland, often on serpentinite soils; 295 to 4,600 feet elevation; blooms March-June.	Could occur. Oak woodland and grassland provides suitable habitat, though no serpentine soils documented on site.
Stebbin's morning-glory <i>Calystegia stebbinsii</i>	E	E	1B.1	Chaparral, cismontane woodland; serpentinite or gabbroic soils; 607 to 2,395 feet elevation; blooms April-July.	Unlikely to occur. Oak woodland provides suitable habitat, but no serpentinite or gabbroic soils documented on site.
Pine Hill ceanothus <i>Ceanothus roderickii</i>	E	R	1B.2	Chaparral, cismontane woodland; serpentinite or gabbroic soils; 853 to 2,067 feet elevation; blooms April-June.	Unlikely to occur. Oak woodland provides suitable habitat, but no serpentinite or gabbroic soils documented on site.
Red Hills soaproot <i>Chlorogalum grandiflorum</i>	–	–	1B.2	Chaparral, cismontane woodland, lower montane coniferous forest; often on serpentinite, gabbroic or other soils; 804 to 4,068 feet elevation; blooms May-June.	Could occur. Oak woodland provides suitable habitat, though no serpentinite or gabbroic soils documented on site.
Brandegee's clarkia <i>Clarkia biloba</i> ssp. <i>brandegeae</i>	–	–	1B.2	Chaparral and cismontane woodland, often in roadcuts; 240 to 3,000 feet elevation; blooms May-July.	Could occur. Oak woodland provides suitable habitat.
El Dorado bedstraw <i>Galium californicum</i> ssp. <i>sierrae</i>	E	R	1B.2	Chaparral, cismontane woodland, lower montane coniferous forest; often on serpentinite, gabbroic or other soils; 328 to 1,919 feet elevation; blooms May-June.	Could occur. Oak woodland provides suitable habitat, though no serpentinite or gabbroic soils documented on site.
Bogg's Lake hedge hyssop <i>Gratiola heterosepala</i>	–	E	1B.2	Lake margin marshes and swamps, vernal pools, and other seasonal wetlands, primarily in clay soils; 30 to 8,000 feet elevation; blooms April-August.	Unlikely to occur. No suitable habitat on site.

**Table C2
Special-Status Plant Species Known to Occur or with Potential to Occur on the Project Site**

Species	Status ¹			Habitat and Blooming Period	Potential for Occurrence
	USFWS	DFG	CNPS Other		
Parry's horkelia <i>Horkelia parryi</i>	-	-	1B.2	Chaparral, cismontane woodland; often on lone formation and other soils; 262 to 3,396 feet elevation; blooms April-September.	Could occur. Oak woodland provides suitable habitat, though no lone formation soils documented on site.
Layne's ragwort <i>Packera layneae</i>	T	R	1B.2	Chaparral, cismontane woodland; often on serpentinite or gabbroic, rocky soils; 656 to 3,281 feet elevation; blooms April-August.	Could occur. Oak woodland provides suitable habitat, though no serpentinite or gabbroic soils documented on site.
Oval-leaved viburnum <i>Viburnum ellipticum</i>	-	-	2.3	Chaparral, cismontane woodland, lower montane coniferous forest; usually on n-facing slopes; 705 to 4,600 feet elevation; blooms May-June.	Could occur. Oak woodland provides suitable habitat.
El Dorado County mule ears <i>Wyethia reticulata</i>	-	-	1B.2	Chaparral, cismontane woodland, lower montane coniferous forest; clay or gabbroic soils; 607 to 2,066 feet elevation; blooms April-August.	Could occur. Oak woodland provides suitable habitat, though no clay or gabbroic soils documented on site.

Notes: CESA = California Endangered Species Act; CNPS = California Native Plant Society; DFG = California Department of Fish and Game;
¹ Legal Status Definitions

U.S. Fish and Wildlife Service: E Endangered (legally protected) T Threatened (legally protected)	California Native Plant Society Categories: 1B Plant species considered rare or endangered in California and elsewhere (protected under CEQA, but not legally protected under ESA or CESA)
California Department of Fish and Game: E Endangered (legally protected) T Threatened (legally protected) R Rare (legally protected)	2 Plant species considered rare or endangered in California but more common elsewhere (protected under CEQA, but not legally protected under ESA or CESA) CNPS Extensions: .1 Seriously endangered in California (>80% of occurrences are threatened and/or high degree and immediacy of threat) .2 Fairly endangered in California (20 to 80% of occurrences are threatened) .3 Not very endangered in California

Sources: CNDDB 2010; CNPS 2010; data compiled by AECOM in 2010.

APPENDIX D

Antidegradation Analysis



COUNTY OF PLACER FACILITY SERVICES DEPARTMENT

Phone 530-886-4900 Fax 530-889-6809
www.placer.ca.gov

JAMES DURFEE, DIRECTOR
MARY DIETRICH, ASSISTANT DIRECTOR
ALBERT RICHIE, DEPUTY DIRECTOR
WILL DICKINSON, DEPUTY DIRECTOR
JOEL SWIFT, DEPUTY DIRECTOR
VALERIE BAYNE, ADMIN. SVS. MANAGER

November 10, 2009

Ms. Diana Messina
Senior WRC Engineer, NPDES Permit Section
Regional Water Quality Control Board, Central Valley Region
11020 Sun Center Drive, 200
Rancho Cordova, CA 95670

SUBJECT: Antidegradation Analysis Report County of Placer Department of Facility Services Sewer Maintenance District 1 Wastewater Treatment Plant

Dear Ms. Messina:

Placer County (County) hereby transmits its Antidegradation Analysis Report (AAR) in support of the Report of Waste Discharge (ROWD) request for an increase in permitted capacity as part of the renewal of NPDES permit No. CA0079316 for the Sewer Maintenance District 1 (SMD 1) Wastewater Treatment Plant (WWTP).

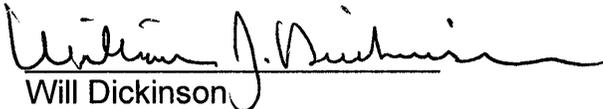
The County has conducted a review of planned growth within the service area that indicates a treatment capacity expansion is necessary for the SMD 1 WWTP to accommodate an average dry weather flow (ADWF) of 2.7 million gallons per day (mgd) by 2034. Additionally, substantial treatment process upgrades to the SMD 1 WWTP will be necessary to comply with the current and anticipated effluent limitations for turbidity, disinfection byproducts, ammonia and nitrate. The expansion is anticipated to include upgrades throughout most of the facility, including new biological nutrient removal facilities and a new ultra-violet (U.V.) disinfection system.

The enclosed AAR compares water quality effects on downstream waterbodies from the current plant at the currently permitted capacity (2.18 mgd ADWF) to that which would occur from the expanded discharge from the upgraded plant (2.7 mgd ADWF) on a constituent-by-constituent basis in compliance with current antidegradation policies. The AAR also includes an evaluation of whether the upgraded and expanded plant will meet best practicable treatment and control (BPTC). In addition, the AAR provides a socioeconomic analysis to evaluate the economic and social benefits of increasing plant capacity versus the water quality impacts and the cost and feasibility of alternatives.

11476 C Avenue Auburn CA 95603
Entrance at 2855 2nd Street

In closing, the County is committed to working with Regional Water Board staff to facilitate the expedited development of the renewed permit prior to March 2010. Please contact Dave Atkinson (530) 886-4968 of my staff if you have any questions about this submittal.

Sincerely,



Will Dickinson
Deputy Director

WD:KB:lm

cc: Mr. Jim Parker, P.G. Environmental
letter only
Dr. Michael Bryan; Robertson-Bryan, Inc.
Mr. Steve Herrera; OWEN PSOMAS

Enclosures: SMD1 WWTP Antidegradation Analysis Report



ANTIDEGRADATION ANALYSIS
FOR THE
PLACER COUNTY SMD1 WASTEWATER TREATMENT PLANT

Prepared for:

PLACER COUNTY

Prepared by:



October 2009



**ANTIDEGRADATION ANALYSIS
FOR THE
PLACER COUNTY SMD1 WASTEWATER TREATMENT PLANT**

Prepared for:

**COUNTY OF PLACER
DEPARTMENT OF FACILITY SERVICES
11476 C Avenue
Auburn, CA 95603
(530) 886-4900**

Prepared by:



9888 Kent Street
Elk Grove, CA 95624
(916) 714-1801

October 2009

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ACRONYMS AND ABBREVIATIONS

ADWF	average dry weather flow
APU	Administrative Procedure Update
Basin Plan	Water Quality Control Plan, Central Valley Region, Sacramento River and San Joaquin River Basins
BDCM	bromodichloromethane
BNR	biological nutrient removal
BOD	biochemical oxygen demand
BPTC	best practical treatment or control
CCC	criterion continuous concentration
CMC	criterion maximum concentration
CTR	California Toxics Rule
CVRWQCB	Central Valley Regional Water Quality Control Board
DAF	dissolved air flotation
DBCM	dibromochloromethane
DHS	Department of Health Services
DO	dissolved oxygen
EC	electrical conductivity (i.e., specific conductance at 25 °C)
MBAS	methylene blue active substances
MCL	maximum contaminant level
mgd	million gallons per day
NPDES	National Pollutant Discharge Elimination System
NTR	National Toxics Rule
NTU	Nephelometric Turbidity Unit
POTWs	publicly owned treatment works
RWQCB	Regional Water Quality Control Board
SWRCB	State Water Resources Control Board
TDS	total dissolved solids
U.S. EPA	United States Environmental Protection Agency
WER	water-effect ratio
WWTP	wastewater treatment plant

EXECUTIVE SUMMARY

Introduction

Placer County Department of Facility Services (County) owns and operates Sewer Maintenance District 1 Wastewater Treatment Plant (SMD1 WWTP). The plant is located in the north Auburn area, and discharges treated effluent to Rock Creek. Approximately 200 feet downstream, Rock Creek is tributary to Dry Creek. Currently, the County is designing upgrades to the plant to: 1) comply with effluent limitations in the existing and anticipated renewal NPDES Permit and Cease and Desist Order, and 2) expand capacity from 2.18 mgd to 2.7 mgd average dry weather flow (ADWF) to meet the needs of planned growth in the service area. The expansion is anticipated to include upgrades throughout most of the facility, including new biological nutrient removal facilities and a new ultra-violet (U.V.) disinfection system.

Because the County is seeking a renewed NPDES permit that would increase the SMD1 WWTP discharge capacity, the Central Valley Regional Water Quality Control Board (CVRWQCB) has requested an antidegradation analysis be performed in accordance with State and federal antidegradation policies. The primary objective of the State and federal antidegradation policies is to protect receiving water quality that is better than applicable water quality criteria and, if not better, to otherwise ensure beneficial uses are protected. The antidegradation analysis compares, constituent-by-constituent, the water quality effects on downstream waterbodies from the current plant at the currently permitted capacity to that which would occur with the expanded discharge from the upgraded plant. Furthermore, this report evaluates the significance of the water quality effects, the cost and feasibility of alternatives, and determines whether allowing the potential incremental degradation defined herein would be consistent with maximum benefit to the people of the State, given the socioeconomic benefits of increasing plant capacity.

Water Quality Analysis

The extent of impacts from SMD1 WWTP's proposed increased discharge capacity were primarily assessed on the basis of assimilative capacity utilization – on a mass balance approach for all constituents and, additionally for bioaccumulative constituents, on a mass loading basis. To calculate use of available assimilative capacity, the applicable criteria need to be defined, often based on site-specific characteristics. Generally, relevant water quality standards are concentration-based in order to prevent exceedances of concentration-based exposure thresholds. Thus, critical receiving water flows and representative water quality measurements were criteria-dependent (i.e., shorter representative averaging periods for acute effects as compared to long-term human health criteria). Furthermore, the nature of downstream water bodies may facilitate extended residence time or deposition of contaminants. Therefore, for bioaccumulative constituents, mass loadings were also considered in assessing potential lowering of water quality from increased SMD1 WWTP discharge.

Best Practicable Treatment and Control Analysis

The term “best practical treatment or control” (BPTC) appears in the State’s antidegradation policy (Resolution No. 68-16). However, nowhere in State regulations or policies has BPTC been defined in terms of specific treatment processes for specific constituents, or in terms of specific effluent quality. A review of Clean Water Act (CWA) requirements for publicly owned treatment works (POTWs) and non-POTWs was used to determine that, in the State and federal regulations, achievement of “best practical treatment or control” and “best practicable waste treatment technology” are defined in terms of plant performance and maintenance of water quality standards, rather than specific treatment technologies. Thus, an evaluation was made of the anticipated plant performance for the planned upgraded and expanded SMD1 WWTP and the anticipated ability of the plant to comply with applicable water quality standards.

Socioeconomic and Alternatives Analysis

The objective of the socioeconomic analysis is to determine if the lowering of Rock Creek and Dry Creek water quality is in the “best interest” of the people of the State. The socioeconomic evaluation considered: 1) the social benefits and costs based on the ability to accommodate socioeconomic development in the Placer County General Plan; 2) the magnitude of the water quality impacts, the change in water quality from existing conditions, and expected effects on beneficial uses of Rock and Dry creeks and downstream waters; 3) the feasibility and effectiveness of reducing the lowering of water quality by implementing alternatives to the proposed project; and 4) the economic costs for alternatives and a comparison of alternative costs to the current project expansion cost estimate of \$87 million, the increased cost for ratepayers, and the magnitude of the change in ratepayer costs.

The following six alternatives were evaluated for their ability to reduce or eliminate the lowering of water quality that would result from discharging an additional 0.52 mgd ADWF of treated effluent from the upgraded and expanded plant.

- Higher level of treatment using microfiltration
- Zero discharge (100%) recycling of additional plant capacity
- Flow restricted discharge
- Pollutant source minimization
- Connect to City of Lincoln Wastewater Treatment Plant
- Change in drinking water source

Findings and Conclusions

The water quality of Rock and Dry creeks, with respect to chemical constituents, pH, and turbidity would remain better than necessary to fully protect beneficial uses. Resulting temperature and DO conditions in Rock and Dry creeks are expected to remain at levels throughout the year that would be protective of beneficial uses. For all of the constituents

assessed, any lowering of receiving water quality would be minor and would use less than 10% of the available assimilative capacity. Thus, the incremental increase in discharge would not significantly lower water quality for any constituent in Rock and Dry creeks, relative to that which would occur under the current permitted capacity for the SMD1 WWTP.

The incremental increase in discharge would not lead to significant increase in mass loading of bioaccumulative constituents such as mercury or other conserved constituents such as total dissolved solids. Total dissolved solids are expected to decrease as the WWTP converts from a chlorine-based disinfection process to U.V. disinfection. In short, no beneficial uses of Rock Creek, Dry Creek, or downstream waters are anticipated to be adversely affected by the planned expansion.

The expansion of the SMD1 WWTP from its current 2.18 mgd ADWF permitted capacity to 2.7 mgd ADWF would accommodate planned and approved growth in the service area. Having new development in the region independently treat its wastewater in an effort to eliminate any incremental degradation of water quality in Rock and Dry creeks would not be cost-effective, may not reduce loadings to downstream portions of the watershed (e.g., Sacramento River), and may not improve water quality (from a constituent concentration basis) throughout Rock and Dry creeks.

Several alternatives were considered and found to be infeasible for cost or logistical reasons or both, when compared to the proposed action of increased SMD 1 WWTP discharge from an upgraded plant. The County will operate an upgraded treatment train that meets and exceeds BPTC of the discharge and will facilitate greater use of recycled water, upon demand for such water developing in the area. Placing connection bans on the SMD1 WWTP to prevent the non-significant degradation of water quality would have direct adverse effects on important socioeconomic development approved for the region, which, in turn, would adversely affect the County's future rate payer and tax base.

Based on the assessment contained herein, it is determined that the SMD1 WWTP upgrade and expansion project will operate to meet the highest statutory and regulatory NPDES requirements which result in BPTC necessary to assure that a water quality nuisance will not occur and that beneficial uses are fully protected. The limited degradation in receiving water quality that may occur as a result of planned discharge expansion is not significant and would accommodate important socioeconomic development in the service area while maintaining full protection of the Rock Creek and Dry Creek beneficial uses. An evaluation of several alternatives, and their effects on water quality impacts and beneficial use protection did not identify any feasible alternative control measure that more effectively would accommodate the planned and approved growth that would result from implementing the alternative, relative to implementing the planned upgrade/expansion project.

Based on the analysis contained herein, the anticipated water quality changes in Rock and Dry creeks will be consistent with State and federal antidegradation policies, will be to the important socioeconomic benefit to the people of the region, be to the maximum benefit of the people of the State, and will not result in water quality less than that prescribed in the policies that are required to prevent a nuisance or that are required to protect beneficial uses.

1 INTRODUCTION

1.1 Discharger Description

Placer County Department of Facility Services (County) owns and operates the Sewer Maintenance District 1 Wastewater Treatment Plant (SMD1 WWTP). The treatment plant is located in Auburn, approximately 40 miles northeast of Sacramento and provides service to the unincorporated area of North Auburn in Placer County, which serves a population of approximately 15,000 and includes much of the industrial area of Auburn. The plant discharges treated effluent to Rock Creek. Approximately 200 feet downstream, Rock Creek is tributary to Dry Creek, which merges with Orr Creek and is then called Coon Creek. Coon Creek splits into several channels (Main Canal, Markham, Bunkham, and East Side Canal), eventually entering the Natomas Cross Canal and subsequently the Sacramento River just below the confluence with the Feather River.

The treatment plant provides tertiary treatment when influent flows are 3.5 mgd or less and a mixture of secondary and tertiary treatment when flows are greater than 3.5 mgd. The plant consists of headworks including comminution and aerated grit removal, four primary clarifiers, three rotating biological contactors (RBCs), two trickling filters, four secondary clarifiers, six gravity filters with anthracite media, three chlorine contact chambers and dechlorination, primary and secondary digesters, belt press, and sludge drying beds. Dewatered sludge is disposed at a landfill.

Currently, the County is designing upgrades to the plant to: 1) comply with effluent limitations in the existing and anticipated renewed NPDES Permit and Cease and Desist Order, and 2) expand capacity from 2.18 mgd to 2.7 mgd ADWF to meet increasing flows from a growing number of customers in the collection system. The County has submitted a Report of Waste Discharge (ROWD) (Placer County 2009) for a renewed NPDES permit for the expanded capacity and upgraded facility. The expansion is anticipated to include upgrades and additional unit process throughout most of the facility, including new flow equalization facilities, new biological nutrient removal facilities, and a new ultraviolet (U.V.) disinfection system. The expansion is in the design phase and is expected to be completed in 2014.

1.2 Purpose of Analysis

The County has proposed increasing the discharge capacity of the SMD1 WWTP from 2.18 mgd to 2.7 mgd ADWF, and is seeking a renewed NPDES permit for discharges to Rock Creek. Hence, the Central Valley Regional Water Quality Control Board (CVRWQCB) has requested an antidegradation analysis be performed in accordance with State and federal antidegradation policies. This antidegradation analysis has been performed to assess the nature and degree to which increased discharge would result in a lowering of water quality in Rock Creek, and Dry Creek given its close proximity (i.e., approximately 200 feet downstream), whether resultant conditions would be protective of the creeks' beneficial uses, and whether allowing the potential incremental degradation defined herein would be consistent with maximum benefit to the people

of the State, given the economic and social benefits of increasing plant capacity versus the water quality impacts and the cost and feasibility of alternatives.

2 ANTIDegradation POLICY AND GUIDANCE

Antidegradation policies and guidance have been issued at both the federal and state level, as described in the following sections.

2.1 Federal Antidegradation Policy and Guidance

The federal antidegradation policy is designed to protect existing uses and the level of water quality necessary to protect existing uses, and provide protection for higher quality and outstanding national water resources. The federal policy directs states to adopt a policy that includes the following primary provisions; these provisions have since become used to classify water body quality as Tier 1, Tier 2, or Tier 3 waters (Title 40 of the Code of Federal Regulations, Section 131.12 (40 CFR 131.12)):

- (1) Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected. [Tier 1]*
- (2) Where the quality of waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control. [Tier 2]*
- (3) Where high quality waters constitute an outstanding national resource, such as waters of national and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected. [Tier 3]*
- (4) In those cases where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method shall be consistent with Section 316 of the Act.*

The United States Environmental Protection Agency (U.S. EPA), Region 9 published *Guidance on Implementing the Antidegradation Provisions of 40 CFR 131.12* (USEPA 1987). The document provides general program guidance for states in Region 9 on developing procedures for implementing antidegradation policies.

In August 2005, the U.S. EPA issued a memorandum discussing Tier 2 antidegradation reviews and significance thresholds (U.S. EPA 2005). The use of a 10% reduction in available assimilative capacity as a significance threshold was considered “to be workable and protective in identifying those significant lowerings of water quality that should receive a full Tier 2 antidegradation review, including public participation” (U.S. EPA 2005).

Given the different approaches states and tribes have taken recently to define significance, it is important to clarify that the most appropriate way to define a significance threshold is in terms of assimilative capacity...Further, given the importance of public participation and transparency, it is clear that a definition of significance that directly links to the resource to be protected (assimilative capacity) is more likely to be understood by the public (U.S. EPA 2005).

2.2 State Antidegradation Policy and Guidance

2.2.1 Resolution No. 68-16

The State Water Resources Control Board (SWRCB) has interpreted Resolution No. 68-16 to incorporate the federal antidegradation policy (CVRWQCB 1998). Resolution No. 68-16 states, in part:

1. *Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies.*
2. *Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.*

2.2.2 1987 Policy Memorandum

In 1987, the SWRCB issued a policy memorandum to the RWQCBs to provide guidance on the application of the federal antidegradation policy for SWRCB and RWQCB actions, including establishing water quality objectives, issuing NPDES permits, and adopting waivers and exceptions to water quality objectives or control measures. In conducting these actions, the RWQCBs must assure full protection of existing instream beneficial uses, that the lowering of water quality is necessary to accommodate important economic or social development, and that outstanding national resource waters be maintained and protected.

2.2.3 Administrative Procedures Update 90-004

In 1990, the SWRCB issued guidance as Administrative Procedures Update (APU) 90-004 to the RWQCBs for implementing Resolution No. 68-16 in NPDES permitting. APU 90-004 requires the RWQCBs to determine the need to make findings as to whether water quality degradation is permissible when balanced against benefit to the public. APU 90-004 describes two types of antidegradation analyses – a “simple” analysis and a “complete” analysis. Furthermore APU 90-004 identifies conditions when a complete antidegradation analysis must be performed.

Need for a Complete Antidegradation Analysis

A complete antidegradation analysis is required if the proposed activity results in:

1. *A substantial increase in mass emissions of a pollutant, even if there is no other indication that the receiving waters are polluted; or*
2. *Mortality or significant growth or reproductive impairment of resident species.*

In particular, an antidegradation finding [based on a complete analysis] should be made and, if necessary, an analysis should be conducted when performing the following permit activities:

1. *Issuance of a permit for any new discharge, including Section 401 certifications; or*
2. *Material and substantial alterations to the permitted facility, such as relocation of an existing discharge; or*
3. *Reissuance or modification of permits which would allow a significant increase in the concentration or mass emission of any pollutant in the discharge.*

A complete antidegradation analysis will not be required if:

1. *A Regional Board determines that the reduction of water quality will be spatially localized or limited with respect to the waterbody; e.g., confined to the mixing zone; or*
2. *A Regional Board determines the reduction in water quality is temporally limited and will not result in any long-term deleterious effects on water quality; e.g., will cease after a storm event is over; or*
3. *A Regional Board determines the proposed action will produce minor effects which will not result in a significant reduction of water quality; e.g., a POTW has a minor increase in the volume of discharge subject to secondary treatment; or*
4. *The Regional Board determines that the proposed activity, which may potentially reduce water quality, has been approved in the General Plan of a political subdivision and has been adequately subjected to the environmental and economic analyses in an environmental impact report (EIR) required under the California Environmental Quality Act (CEQA). If the Regional Board finds the EIR inadequate, the Regional Board must supplement this information to support the decision.*

The County is seeking reissuance of an NPDES permit for discharge of treated effluent from the SMD1 WWTP to Rock Creek, including an increase in allowable discharge capacity from 2.18 mgd to 2.7 mgd ADFW. This 59% increase in allowable discharge capacity is substantial; hence, a complete antidegradation analysis has been performed and is presented herein.

Elements of a Complete Antidegradation Analysis

APU 90-004 describes the procedure for a complete antidegradation analysis. There are three main elements to the complete antidegradation analysis, which are quoted below.

“1. Compare receiving water quality to the water quality objectives established to protect designated beneficial uses.

a. If baseline water quality is equal to or less than the quality as defined by the water quality objective, water quality shall be maintained or improved to a level that achieves the objectives. ... [Tier 1]

b. If baseline water quality is better than the water quality as defined by the water quality objective, the baseline water quality shall be maintained unless poorer water quality is necessary to accommodate important economic or social development and is considered to be of maximum benefit to the people of the State. [Tier 2]

2. Balancing the proposed action against the public interest.

a. Past, present, and probable beneficial uses of the water.

b. Economic and social cost, tangible and intangible, of the proposed discharge compared to benefits. ...

c. The environmental aspects of the proposed discharge must be evaluated.

d. The implementation of feasible alternative control measures

3. Report on the antidegradation analysis.

a. The water quality parameters and beneficial uses which will be affected by the proposed action and the extent of the impact.

b. The scientific rationale for determining that the proposed action will or will not lower water quality.

c. A description of the alternative measures that were considered.

d. A description of the socioeconomic evaluation.

e. The rationale for determining that the proposed action is or is not justified by socioeconomic considerations.”

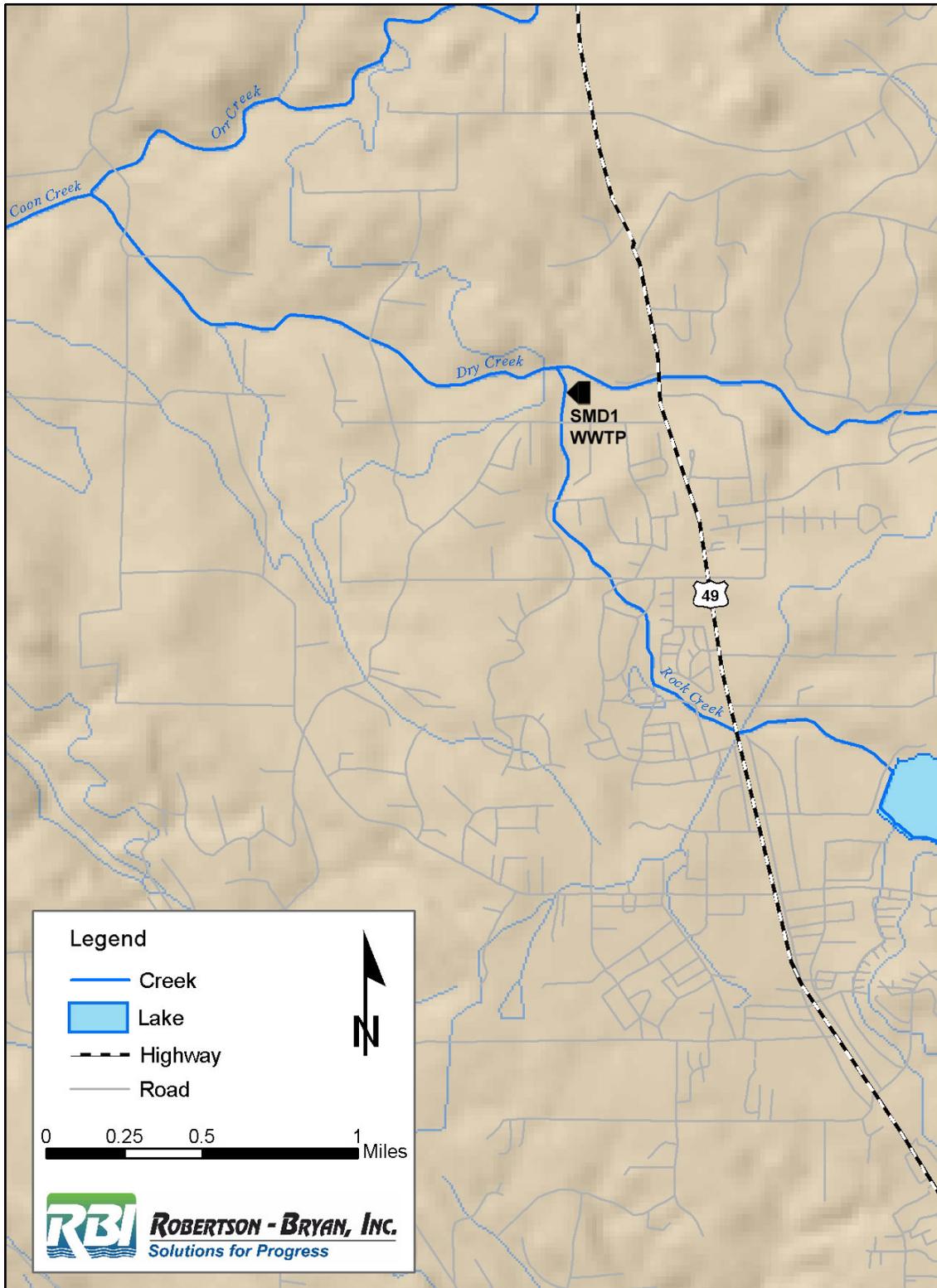


Figure 1. Location of the Placer County SMD1 Wastewater Treatment Plant northwest of the North Auburn area and north of Auburn, CA. Highway 49 intersects with interstate 80 south of the map at Auburn. The map also shows the water bodies downstream of the discharge (Rock and Dry creeks).

3 WATER QUALITY STANDARDS

A water quality standard consists of: 1) the designated beneficial uses of a water body to be protected; 2) adopted criterion designed to protect those uses; and 3) an antidegradation policy. The federal and State antidegradation policies are presented in Section 2. The following sections describe the beneficial uses and water quality criteria applicable to the receiving water, Rock Creek, and to Dry Creek.

3.1 Beneficial Uses

The beneficial uses of Rock Creek and Dry Creek are designated via the “tributary statement” in the *Water Quality Control Plan (Basin Plan), Central Valley Region, Sacramento River and San Joaquin River Basins* (CVRWQCB 2004). Because Rock Creek and Dry Creek are tributary to the Sacramento River, the beneficial uses of the Sacramento River between Colusa Drain and the I Street Bridge have been designated for Rock Creek and Dry Creek through application of the tributary statement of the Basin Plan. **Table 1** identifies the designated beneficial uses for surface water, while groundwater, unless otherwise designated, is considered as suitable or potentially suitable for the beneficial uses listed in **Table 2**.

Table 1. Surface water beneficial uses.

Beneficial Use	Abbreviation	Beneficial Use	Abbreviation
Municipal and domestic supply	MUN	Cold freshwater habitat	COLD
Agricultural supply (irrigation and stock watering)	AGR	Migration of aquatic organisms	MIGR
Contact water recreation	REC-1	Spawning, reproduction, and/or early development	SPWN
Non-contact water recreation	REC-2	Wildlife habitat	WILD
Warm freshwater habitat	WARM	Groundwater recharge	GWR

Table 2. Groundwater beneficial uses.

Beneficial Use	Abbreviation	Beneficial Use	Abbreviation
Municipal and domestic supply	MUN	Agricultural supply	AGR
Industrial service supply	IND	Industrial process supply	PRO

3.2 Criteria / Objectives

Applicable water quality criteria adopted by the State of California (called objectives) can be found in the Basin Plan (CVRWQCB 2004). The Basin Plan incorporates, by reference, the Department of Public Health (DPH) drinking water maximum contaminant levels (MCLs) as objectives for water bodies designated for use as domestic or municipal water supply. In

addition, the U.S. EPA promulgated numeric criteria for priority pollutants in the National Toxics Rule (NTR) and California Toxics Rule (CTR) (U.S. EPA 1992, 2000, 2001). The water quality standards contained in the Basin Plan, NTR/CTR, and MCLs have undergone agency, peer, and public review, and have been adopted by the relevant agencies (e.g., Regional Water Board, SWRCB, DPH, and U.S. EPA).

Numerous water quality “goals” exist in the literature that have not been adopted by the State or U.S. EPA as water quality “standards.” These include U.S. EPA recommended ambient water quality criteria for the protection of aquatic life and human health. The Regional Water Board sometimes uses U.S. EPA recommended ambient water quality criteria in determining reasonable potential and developing NPDES permit effluent limitations, particularly if no adopted water quality standard exists for a specific constituent when addressing the narrative toxicity objective in the Basin Plan. For example, California does not currently have a numeric standard for ammonia. Nevertheless, because ammonia can cause toxicity to aquatic life under certain conditions, the Regional Water Board commonly applies the U.S. EPA’s recommended ambient water quality criteria for ammonia as a means of upholding the Basin Plan’s narrative toxicity objective with regards to ammonia.

4 WATER QUALITY ASSESSMENT

The following sections identify the degree to which Rock Creek and Dry Creek water quality would be lowered by the proposed increase in effluent discharge, relative to that already permitted, and whether water quality would be protective of the creek’s beneficial uses.

4.1 Assessment Approach

This assessment identifies the incremental change in water quality that would occur in Rock Creek and Dry creeks due to an increase in the SMD1 WWTP discharge rate from 2.18 mgd ADWF, the current permitted discharge rate, to 2.7 mgd ADWF. The CVRWQCB previously made antidegradation findings stating that the discharge of 2.18 mgd (ADWF) from the SMD1 WWTP is consistent with the antidegradation policies. This approach is consistent with APU 90-004, which states, “...*the most recent water quality resulting from permitted action is the baseline water quality to be considered in any antidegradation analysis*” (SWRCB 1990).

The first element of a complete antidegradation analysis is to “[c]ompare receiving water quality to the water quality objectives” (SWRCB 1990). California’s guidance on antidegradation (APU 90-004) states: “*The baseline water quality should be representative of the water body, accounting for temporal and spatial variability*” (page 4). The Porter-Cologne Water Quality Control Act (2006) provides a definition of water quality as:

“Quality of the water’ refers to chemical, physical, biological, bacteriological, radiological, and other properties and characteristics of water which affect its use.”

Thus, to assess the water quality in Rock and Dry creeks, it is necessary to consider the beneficial uses and the objectives meant to protect those uses. Generally water quality standards are concentration-based in order to prevent exceedances of concentration-based exposure thresholds. It is also necessary to describe relevant exposure scenarios for the beneficial uses to

be protected. This requires defining criteria-dependent critical flows and the criteria-dependent representative averages for assessing water quality.

Although bioaccumulation is considered in the development of human health and aquatic life criteria, the nature of downstream water bodies may facilitate extended residence time or deposition of contaminants. Therefore, for bioaccumulative constituents, mass loadings were also considered in assessing potential lowering of water quality from increased SMD1 WWTP discharge.

4.2 Mass Balance Assessment of Water Quality

Priority pollutant data are available for Rock and Dry creeks upstream of the SMD1 WWTP outfall (R1 and R3 monitoring stations) and for the undiluted effluent, but not for Rock and Dry creeks downstream of the outfall at the downstream (R2 and R4) stations. Some parameters (e.g., dissolved oxygen, temperature, turbidity, pH) are measured at the R2 and R4 stations as part of monthly self-monitoring conducted for the NPDES permit. Therefore, the creek quality under the current and future permitted discharge capacities (i.e., creek quality at the downstream R2 and R4 stations) is represented by a steady-state, mass-balance of data collected on the effluent and creek at the upstream (R1 and R3) monitoring locations, unless measured data at the R2 and R4 monitoring location are available. The mass-balanced, downstream water quality in Rock Creek at R2 was determined from the following equation:

$$C_{R2} = \frac{C_{R1} \cdot Q_{R1} + C_{Effluent} \cdot Q_{Effluent}}{Q_{R1} + Q_{Effluent}}$$

where:

C = constituent concentration

Q = flow/discharge rate

The downstream water quality in Dry Creek at R4 is influenced by upstream conditions in Rock and Dry creeks as well as effluent quality. Thus, the mass-balanced, downstream water quality in Dry Creek at R4 is determined as follows:

$$C_{R4} = \frac{C_{R1} \cdot Q_{R1} + C_{R3} \cdot Q_{R3} + C_{Effluent} \cdot Q_{Effluent}}{Q_{R1} + Q_{R3} + Q_{Effluent}}$$

where:

C = constituent concentration

Q = flow/discharge rate

To assess the significance of any lowering of the water quality, the change in the assimilative capacity, on a constituent-specific basis, for Rock and Dry creeks was calculated. The assimilative capacity is the concentration increment between the ambient water quality and the water quality standard (WQS) and is calculated for Rock Creek as the change in constituent concentration at R2 (as a result of the plant expansion) divided by the difference between the WQS and R2 (under existing conditions; 2.18 mgd).

$$\text{Assimilative capacity}_{\text{Rock Creek}} = \text{WQS} - \frac{(C_{R1} \cdot Q_{R1} + C_{\text{Effluent}} \cdot Q_{\text{Effluent}})}{(Q_{R1} + Q_{\text{Effluent}})} \text{ (at 2.18 mgd)}$$

The utilization of assimilative capacity is the change in downstream receiving water concentration, measured at R2, divided by the assimilative capacity.

$$\% \text{ Assimilative Capacity used}_{\text{Rock Creek}} = 100 \cdot \frac{(R2_{2.7\text{mgd}} - R2_{2.18\text{mgd}})}{\text{Assimilative capacity}_{\text{Rock Creek}}}$$

To calculate the ambient water quality in Dry Creek downstream of the confluence with Rock Creek, the influence of Rock Creek, Dry Creek, and the effluent must be considered. Thus the assimilative capacity in Dry Creek is calculated as follows:

$$\text{Assimilative capacity}_{\text{Dry Creek}} = \text{WQS} - \frac{(C_{R1} \cdot Q_{R1} + C_{R3} \cdot Q_{R3} + C_{\text{Effluent}} \cdot Q_{\text{Effluent}})}{(Q_{R1} + Q_{R3} + Q_{\text{Effluent}})} \text{ (at 2.18 mgd)}$$

The utilization of assimilative capacity is the change in downstream receiving water concentration, measured at R2, divided by the assimilative capacity.

$$\% \text{ Assimilative Capacity used}_{\text{Dry Creek}} = 100 \cdot \frac{(R2_{2.7\text{mgd}} - R2_{2.18\text{mgd}})}{\text{Assimilative capacity}_{\text{Dry Creek}}}$$

4.2.1 Critical Flows for the Criteria-dependent Protection of Beneficial Uses

NPDES permit limitations assume a worst-case condition of no dilution (zero Rock Creek flow) degradation. However this would lead to the conclusion that when there is no Rock Creek flow, there would be no need for an antidegradation analysis as there would be no existing water quality to protect. Since the creek has some measurable flow during the period of discharge (**Appendix A**), an antidegradation analysis is thus necessary.

The Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Plan or SIP) addresses effluent and receiving water critical flow considerations in the context of the criteria, and thus beneficial uses to be protected (SWRCB 2005).

- Effluent flow (Q_{Effluent}) is assessed at 2.18 mgd ADWF, the current permitted capacity, and 2.7 mgd ADWF, the proposed future permitted capacity.

- Critical flow for acute aquatic life criteria, and acute human health effects, is 1Q10.
- Critical flow for chronic aquatic life criteria is 7Q10.
- Critical flow for long-term human health criteria and other long-term criteria (e.g. agriculture) is the harmonic mean (i.e., average of flow rate).

4.2.2 Criteria-dependent Representative Water Quality Measurements

Acute aquatic life criteria are typically based on 1-hour exposure which is far shorter than the typical monitoring frequency for many constituents. Chronic aquatic criteria are typically based on short-term, chronic 4-day exposures. To be protective to aquatic life beneficial use, the maximum, measured effluent and receiving water concentrations are used as a conservative measure of representative water quality.

Long-term human health effects and other long-term criteria (e.g., agriculture) are much less sensitive to short-term exceedances of the criteria. Thus, for long-term human health and other effects, the representative water quality is the mean of the measured effluent and receiving water concentrations which reflects the overall, long-term water quality and potential for degradation of beneficial uses.

Many constituents have “non-detect” values in the data set. For purposes of calculating average concentrations, one-half the reporting limit is used for non-detects. For long-term criteria only, if 80 percent or more of constituent’s data set is non-detect, then the constituent is not carried forward for further analysis because, at this detection level frequency, the constituent would not cause consistent lowering of water quality. Summary statistics for effluent quality, Rock Creek, and Dry Creek water quality are provided in **Appendix B**, **Appendix C**, and **Appendix D**, respectively.

4.2.3 Summary of Critical Flows and Representative Water Quality Measurements

Table 3 summarizes the critical flows and representative effluent and receiving water quality measurements used to assess potential lowering of water quality from increased SMD1 WWTP discharge.

Table 3. Summary of critical flows and representative water quality to be used for the criteria-dependent analysis.

Criteria/Beneficial Use	Critical Flow	Representative Rock Creek Flow from Existing Dataset	Representative Dry Creek Flow from Existing Dataset	Representative Effluent and Receiving Water Quality
Acute aquatic life Acute human health	1Q10	0.07 mgd, minimum measured flow	0.01 mgd, minimum measured flow	Maximum measured concentration
Chronic aquatic life	7Q10	0.07 mgd, minimum measured flow	0.01 mgd, minimum measured flow	Maximum measured concentration
Long-term human health Other long-term criteria	Harmonic mean	3.4 mgd	0.14 mgd	Mean of measured concentrations

4.3 Mass Loading Assessment of Water Quality

Although bioaccumulation is considered in the development of human health and aquatic life criteria, the nature of downstream water bodies may facilitate extended residence time or deposition of contaminants. This would lead to an accumulation of bioaccumulative constituents in downstream water bodies and/or sediments (see Figure 1). Therefore mass loadings also were considered in order to assess potential lowering of downstream water quality from bioaccumulative constituents in the increased SMD1 WWTP discharge.

The assessment of available mass loading assimilative capacity is the maximum mass load, downstream in Rock Creek at R2 with the project, that the water body could carry without exceeding the WQC/WQO minus the upstream load and previously permitted/existing loads.

$$\text{Available Mass Loading}_{\text{Rock Creek}} = WQS \cdot (Q_{R2,2.7\text{mgd}}) - (Q_{R1} \cdot C_{R1}) - (Q_{\text{Eff},2.18\text{mgd}} \cdot C_{\text{Eff},2.18\text{mgd}})$$

The mass loading use of assimilative capacity is the new load divided by the assimilative capacity.

$$\% \text{ Assimilative Capacity used}_{\text{Rock Creek}} = 100 \cdot \frac{(Load_{2.7\text{mgd}} - Load_{2.18\text{mgd}})}{\text{Assimilative mass loading capacity}_{\text{Rock Creek}}}$$

Similarly, the calculation of available mass loading assimilative capacity and mass loading use for Dry Creek downstream at R4 is as follows:

$$\text{Available Mass Loading}_{\text{Dry Creek}} = WQS \cdot (Q_{R4,2.7\text{mgd}}) - (Q_{R1} \cdot C_{R1}) - (Q_{R3} \cdot C_{R3}) - (Q_{\text{Eff},2.18\text{mgd}} \cdot C_{\text{Eff},2.18\text{mgd}})$$

$$\% \text{ Assimilative Capacity used}_{\text{Dry Creek}} = 100 \cdot \frac{(Load_{2.7\text{mgd}} - Load_{2.18\text{mgd}})}{\text{Assimilative mass loading capacity}_{\text{Dry Creek}}}$$

Table 4 lists the mean monthly flows for waterbodies downstream of the SMD1 WWTP discharge.

Table 4. Water bodies downstream of the Placer County SMD1 Wastewater Treatment Plant and mean flows.

Downstream Water Body	Mean Monthly Flow (mgd)	303(d) listed constituents	Proposed additions to 303(d) list
Rock Creek (upstream)	4.8 ¹	None	None
Dry Creek (upstream)	1.6 ²	None	None
Coon Creek	--	None	Chlorpyrifos, E. Coli, Unknown Toxicity
Main Canal	--	None	None
Bunkham Slough	--	None	None
Markham Ravine	--	None	None
East Side Canal	--	None	None
Sacramento River	12,611 ³	Mercury, Unknown Toxicity	Chlordane, DDT, Dieldrin, PCBs

Notes:
¹ Based on SMD1 WWTP R1 monitoring (7/1/2006 through 6/30/2009).
² Based on SMD1 WWTP R3 monitoring (7/1/2006 through 6/30/2009).
³ Based on USGS gauging station dataset at Verona (10/1988 through 09/2008).

4.4 Baseline Effluent and Receiving Water Quality

4.4.1 Existing Water Quality Monitoring Data

Effluent and creek water quality is characterized from monitoring data collected from April 2002 through March 2003 in response to CVRWQCB's request pursuant to California Water Code Section 13267 (RBI 2003), and Discharger Self-Monitoring Report data from July 2006 through June 2009 as contained in the ROWD (Placer County 2009). The current permit, authorizing 2.18 mgd ADWF discharge capacity, was issued in June 2005.

As reported in the ROWD, several outlier values were identified in the existing dataset (i.e., Table 3-5 of the ROWD). For the antidegradation analysis, the R2 pH values for June 2007 were excluded because of equipment malfunction that resulted in R2 pH substantially larger (i.e., 1.0 to 3.5 pH units higher) than R1 and effluent pH. Similarly, extreme outlier R2 temperature values of 115.1°C and 116°C were excluded from the dataset.

Initially, the outlier values for copper, lead, and zinc concentrations on January 4, 2008 were kept in the dataset. However for copper and lead, inclusion of the outlier values results in the existing discharge exceeding applicable water quality objectives and would result in the revised NPDES permit including copper and lead effluent limitations. Furthermore, given the low critical receiving water flows, inclusion of the outliers means the existing downstream condition is already degraded and the future discharge of effluent meeting applicable criteria would improve the downstream condition (i.e., there would be no assimilative capacity utilization and

no need for discharger-specific water-effect ratios and/or translators to be developed, which would re-define available assimilative capacity).

Conversely, if the copper and lead outliers are excluded and the next highest values used, then the existing downstream condition would have available assimilative capacity, and an assessment of the utilization of the available assimilative capacity by the increased discharge capacity can be made. This latter approach is more conservative and accurate, given the historical dataset, for an antidegradation analysis because it assesses the impact of the proposed upgrade/expansion on maintaining downstream water quality that is better than applicable criteria. This later approach was used for copper and lead assessments.

As identified in Footnote B to Table 3-3 in the ROWD, there have been no detects of bis (2-ethylhexylphthalate) in the effluent since the County implemented clean sampling techniques in January 2007.

For purposes of this analysis, future effluent quality is assumed to be the same as current effluent quality with the exception of: 1) trihalomethanes (THM) which, upon implementation of U.V. disinfection which will reduce all effluent THM concentrations to non-detects; 2) electrical conductivity (EC) and total dissolved solids (TDS) which will decrease when chlorine disinfection ceases (because the dissolved chlorine and sulfur dioxide gases increase the concentration of ions in the effluent) and biological nutrient removal is added to the process; 3) turbidity and total coliform for which compliance will be achieved by improved treatment efficiency via flow equalization and removal via new primary and secondary clarifiers and new tertiary filters (or new membrane bioreactor facilities); and 4) ammonia and nitrate for which compliance will be achieved by improved treatment efficiency through flow equalization and improved removal with the new aeration basins (which include anoxic and oxic selectors for biological nutrient removal).

The decrease in EC and TDS is due primarily to the conversion to U.V. disinfection. Since the existing chlorination/dechlorination process uses chlorine gas and sulfur dioxide gas, the switch to U.V. disinfection and elimination of chlorine and sulfur dioxide gas utilization is expected to appreciably decrease levels of EC and TDS in the effluent. Experience at another foothill plant upgrading from chlorine/sulfur dioxide to U.V. disinfection and biological nutrient removal has resulted in a decrease in EC of ~40% to date. Similarly, for a foothill plant upgrading from sodium hypochlorite/sodium bisulfite to U.V. disinfection, the decrease in EC has been ~40% from to ~750 $\mu\text{mhos/cm}$ to 450 $\mu\text{mhos/cm}$ (RBI 2007). For the purposes of this analysis, the anticipated reduction in EC and TDS for the upgraded and expanded SMD1 WWTP is conservatively set at 30%.

Phosphorus effluent levels are also expected to decrease in the upgraded and expanded SMD1 WWTP. However an accurate quantification of the expected decrease cannot be calculated at this time.

4.4.2 303(D) Listed and Other Non-High Quality Water Body Constituents

When existing baseline water quality exceeds water quality objectives, the water quality standards require improving the existing water quality to meet objectives. On a constituent-

specific basis, a balancing analysis of the proposed action and the public interest of the State, is not triggered if the receiving water is not high quality (i.e, better than the applicable criteria/objectives).

The SWRCB (2006) has listed one downstream waterbodies (a portion of the Sacramento River) as impaired, in accordance with Section 303(d) of the Clean Water Act. Thus, 303(D) listed waterbodies are not high quality with respect to listed constituents. As such, there is no analysis for antidegradation for listed constituents. However, as part of a TMDL process, the SMD1 WWTP would be held to meet existing objectives for listed constituents.

In particular, the Sacramento River from Knights Landing to the Delta is listed for unknown toxicity, mercury, and diazinon. The 2008 303(D) list has the following proposed changes: 1) add lower Coon Creek, (from Pacific Avenue to Main Canal, Sutter County) for chlorpyrifos, Escherichia coli (E. coli), and unknown toxicity; 2) for the Sacramento River from Knights Landing to the Delta: remove diazinon from the list and add chlordane, DDT, dieldrin, and PCBs; and 3) add Natomas Cross Canal for mercury.

The following constituents in the receiving water exceed water quality standards upstream of the discharge and thus do not trigger a balancing of the proposed action with public interest of the State:

- Aluminum,
- Bis (2-ethylhexyl) phthalate¹, and
- Iron.

For bis (2-ethylhexyl) phthalate, it is probable that the historical detects are due to contamination during sampling. As noted in the previous section, after the County implemented clean sampling techniques in January 2007, there were no detects for bis (2-ethylhexyl) phthalate in the effluent. There is no corresponding receiving water monitoring data for bis (2-ethylhexyl) phthalate after 2007.

The additional constituents, aluminum, bis (2-ethylhexyl) phthalate, and iron, are similarly not addressed further in this analysis. When the receiving water exceeds objectives and the constituent is detected in the effluent (Step 4 in the reasonable potential analysis outlined in the SIP), the SIP independently provides the means to prevent further degradation of the receiving water through the implementation of effluent monitoring for that constituent and may impose effluent limitations.

¹ For bis (2-ethylhexyl) phthalate, it is probable that the historical detects are due to contamination during sampling. As noted in the previous section, after the County implemented clean sampling techniques in January 2007, there were no detects for bis (2-ethylhexyl) phthalate in the effluent. There is no corresponding receiving water monitoring data for bis (2-ethylhexyl) phthalate after January 2007. Regardless of the accuracy of the receiving water bis (2-ethylhexyl) phthalate data, the non-detects in effluent mean that the existing or future effluent discharges are not expected to negatively affect bis (2-ethylhexyl) phthalate levels in the downstream receiving water.

4.5 Incremental Change in Rock Creek and Dry Creek Water Quality and Effects on Beneficial Uses

The following sections describe the incremental change in Rock Creek and Dry Creek water quality that would occur by increasing the SMD1 WWTP's permitted discharge rate from 2.18 mgd ADWF to 2.7 mgd ADWF, and the effect of that increase on water quality.

4.5.1 Mass Balance Constituents

The existing NPDES permit cites available information to determine that Rock Creek and Dry Creek are low-flow or intermittent streams in the absence of the SMD1 WWTP discharge or the upstream reservoirs. Therefore, under the NPDES permit's design flow scenario, in which Rock Creek and Dry Creek flow is zero, the creek quality is the same as the effluent quality, and the incremental change in constituent concentrations due to an increase in discharge from 2.18 mgd ADWF to 2.7 mgd ADWF would be zero; therefore, no degradation would occur from a constituent concentration basis due to the increased discharge rate.

When there is creek flow, however, there would be some change to creek water quality, downstream of the discharge, due to an increased discharge rate. **Table 5** presents the incremental change in Rock Creek water quality for detected effluent constituents. Table 5 also identifies the available assimilative capacity (criterion minus R2 concentration at 2.18 mgd discharge rate), and the percent of remaining assimilative capacity used by the 0.52 mgd ADWF incremental increase in discharge proposed. Similarly, **Table 6** presents the incremental change in Dry Creek water quality for detected effluent constituents.

For completeness, Table 5 and Table 6 show the potential effects for copper and lead with and without inclusion of the outlier values. As can be seen in the tables, inclusion of the outlier values results in no available assimilative capacity. Similarly, Table 5 and Table 6 show the potential effects of EC and TDS at existing levels and the effects at anticipated levels (i.e., at least 30% lower due, primarily, to the conversion to U.V. disinfection).

Table 5 and Table 6 show a decrease in downstream concentrations for aluminum, barium, chromium, cyanide, iron, manganese, mercury, nickel, the dioxin congener OCDD, and tributyltin because current and anticipated SMD1 WWTP effluent levels are less than upstream receiving water concentrations.

Constituents with long-term effects (e.g., human health constituents based on cancer risk associated with long-term exposures) that have a detection frequency less than 20% in effluent samples (see Section 4.2.2 for basis of this threshold) are not considered to cause a consistent or notable effect. The incremental change in water quality due to discharging these infrequently detected constituents with long-term effects is shown in **Appendix E**.

Table 5. Incremental mass balance change in Rock Creek water quality due to future 2.7 mgd ADWF discharge of constituents and comparison to applicable water quality standards.

Constituent	Units	Effluent Percent Detect	Concentration in Rock Creek downstream of WWTP outfall (R2)			Lowest Applicable Water Quality Criteria		Assimilative Capacity		Further Analysis
			@ Current (2.18 mgd) Discharge Rate	@ Future (2.7 mgd) Discharge Rate	Incremental Increase	Value	Basis	Available	Used by Expansion	
Aluminum	µg/L	92%	164	163.34	-0.310	200	EPA	NA ¹	NA	N
Ammonia	mg/l	69%	14.6	1.9508	-12.7	2.7	EPA	NA	NA ²	N
Antimony	µg/L	60%	0.179	0.196	0.0169	6	DHS MCL	5.82	0.3%	N
Arsenic	µg/L	100%	2.48	2.762	0.282	10	DHS MCL	7.52	3.7%	N
Atrazine	µg/L	19%	1.98	1.9848	0.00350	NA	NA	NA	NA	N
Barium	µg/L	100%	9.17	8.7953	-0.371	1000	USEPA Advisory	991	0.0%	N
Cadmium	µg/L	60%	0.0351	0.0353	0.000169	3.22	CTR	3.18	0.0%	N
Chloride	mg/L	100%	23.8	26.418	2.59	106	Basin	82.2	3.2%	N
Chloroform	µg/L	96%	9.37	ND	NA ³	5.7	NTR	NA	NA ²	N
Chromium (III)	µg/L	60%	0.413	0.3881	-0.0247	50	DHS MCL	49.6	0.0%	N
Chromium (IV)	µg/L	15%	0.968	0.9661	-0.00140	11	CTR	10.0	0.0%	N
Copper	µg/L	95%	21.3	21.4	0.109	12.51	CTR	NA	NA	N
Copper (w/o outlier)	µg/L	95%	9.89	9.93	0.0398	12.51	CTR	2.62	1.5%	N
Cyanide	µg/L	33%	0.103	0.0856	-0.0175	5.2	CTR	5.10	-0.3%	N
DBCM	µg/L	29%	0.214	ND	NA ³	0.4	CTR	0.186	NA ²	N
DCBM	µg/L	75%	1.38	ND	NA ³	0.56	CTR	NA	NA ²	N
Di-n-butyl phthalate	µg/L	20%	0.506	0.512	0.00556	2700	CTR	2,700	0.0%	N
Electrical conductivity (EC)	µmhos/cm	100%	316	344	28.5	700	Basin	384	7.4%	N
EC anticipated with upgraded/expanded plant	µmhos/cm	100%	316	258	-57.8	700	Basin	384	-15%	N
Fluoride	µg/L	58%	0.145	0.145	0.000381	2000	DHS MCL	2,000	0.0%	N

Table 5. Incremental mass balance change in Rock Creek water quality due to future 2.7 mgd ADFW discharge of constituents and comparison to applicable water quality standards.

Constituent	Units	Effluent Percent Detect	Concentration in Rock Creek downstream of WWTP outfall (R2)			Lowest Applicable Water Quality Criteria		Assimilative Capacity		Further Analysis
			@ Current (2.18 mgd) Discharge Rate	@ Future (2.7 mgd) Discharge Rate	Incremental Increase	Value	Basis	Available	Used by Expansion	
Iron	µg/L	100%	218	204	-13.7	300	DHS MCL	NA ¹	NA	N
Lead	µg/L	95%	24.4	24.6	0.145	4.48	CTR	NA	NA	N
Lead (w/o outlier)	µg/L	95%	1.21	1.22	0.00537	4.48	CTR	3.27	0.2%	N
Manganese	µg/L	100%	27.1	26.7	-0.498	50	DHS MCL	22.9	-2.2%	N
Mercury	µg/L	79%	0.0034	0.0033	-0.000160	0.05	CTR	0.0466	-0.3%	N
Methylene blue active substances	mg/L	92%	0.058	0.0636	0.00558	0.5	DHS MCL	0.442	1.3%	N
Molinate	µg/L	20%	2.23	2.25	0.0124	13	CDFG	10.8	0.1%	N
Nickel	µg/L	75%	2.71	2.71	-0.00128	69.8	CTR	67.1	0.0%	N
Nitrate	mg/L	100%	47.5	9.77	-37.7	10	DHS MCL	NA	NA ¹	N
OCDD		30%	11.9	11.5	-0.487	NA		NA	NA	N
Phosphorus	µg/L	100%	1.77	2.01	0.235 ⁴	10	USEPA-Nutrient	8.23	2.9% ⁴	N
Selenium	µg/L	50%	1.17	1.17	0.00630	5	CTR	3.83	0.2%	N
Silver	µg/L	5%	0.0198	0.0198	3.50E-05	3.36	CTR	3.34	0.0%	N
Sulfate	mg/L	100%	18.7	20.5	1.83	250	DHS 2°MCL	231	0.8%	N
TDS	mg/L	100%	184	200	16.2	450	Basin Plan	266	6.1%	N
TDS anticipated with upgraded/expended plant	mg/L	100%	184	150	-33.5	450	Basin Plan	266	-13%	N
Tributyltin	µg/L	9%	0.0025	0.0025	-1.5E-05	0.072	USEPA-AQ	0.0695	0.0%	N
Zinc	µg/L	100%	46.7	46.9	0.246	160.3	CTR	114	0.2%	N

Notes:
 CTR-AQ = California Toxics Rule criterion for the acute/chronic protection of aquatic life. Based on a minimum effluent hardness of 141 mg/L as CaCO₃.
 CTR-HH = California Toxics Rule criterion for the protection of human health (consumption of water and organisms).
 DHS MCL = Department of Health Services maximum contaminant level.

Table 5. Incremental mass balance change in Rock Creek water quality due to future 2.7 mgd ADWF discharge of constituents and comparison to applicable water quality standards.

Constituent	Units	Effluent Percent Detect	Concentration in Rock Creek downstream of WWTP outfall (R2)			Lowest Applicable Water Quality Criteria		Assimilative Capacity		Further Analysis
			@ Current (2.18 mgd) Discharge Rate	@ Future (2.7 mgd) Discharge Rate	Incremental Increase	Value	Basis	Available	Used by Expansion	
<p>DHS 2nd MCL= Department of Health Services secondary maximum contaminant level. Total Rec. = total recoverable. NA = not applicable and/or no assimilative capacity is available. ND = non-detect All effluent values expected to be non-detectable with UV disinfection. ¹ Currently there is no assimilative capacity because the upstream receiving water exceeds the applicable water quality criteria. ² Currently there is no assimilative capacity. However effluent from the upgraded/expanded plant and downstream receiving waters will meet applicable water quality criteria. ³ The anticipated decrease cannot be calculated since effluent levels are expected to be non-detect for the upgraded/expanded plant. ⁴ Phosphorus levels are anticipated to decrease in effluent form the upgraded/expanded plant. However, an accurate quantification of the anticipated decrease cannot be calculated at this time.</p>										

Table 6. Incremental mass balance change in Dry Creek water quality due to future 2.7 mgd ADWF discharge of constituents and comparison to applicable water quality standards.

Constituent	Units	Effluent Percent Detect	Concentration in Dry Creek downstream of WWTP and Rock Creek (R4)			Lowest Applicable Water Quality Criteria		Assimilative Capacity		Further Analysis
			@ Current (2.18 mgd) Discharge Rate	@ Future (2.7 mgd) Discharge Rate	Incremental Increase	Value	Basis	Available	Used by Expansion	
Aluminum	µg/L	92%	163	163	-0.49	200	EPA	NA ¹	NA	N
Ammonia	mg/l	69%	14.6	1.95	-12.6	2.7	EPA	NA	NA ²	N
Antimony	µg/L	60%	0.176	0.196	0.0199	6	DHS MCL	5.82	0.3%	N
Arsenic	µg/L	100%	2.43	2.76	0.334	10	DHS MCL	7.57	4.4%	N
Atrazine	µg/L	19%	1.98	1.98	0.0062	NA	NA	NA	NA	N
Barium	µg/L	100%	9.32	8.87	-0.448	1000	USEPA Advisory	991	0.0%	N
Cadmium	µg/L	60%	0.035	0.0353	0.0003	3.22	CTR	3.19	0.0%	N
Chloride	mg/L	100%	23.5	26.5	3.057	106	Basin	82.5	3.7%	N
Chloroform	µg/L	96%	9.14	ND	NA ³	5.7	NTR	NA	NA ²	N
Chromium (III)	µg/L	60%	0.426	0.396	-0.03	50	DHS MCL	49.6	-0.1%	N
Chromium (IV)	µg/L	15%	0.967	0.965	-0.002	11	CTR	10.0	0.0%	N
Copper	µg/L	95%	21.2	21.425	0.19	12.51	CTR	NA	NA	N
Copper (w/o outlier)	µg/L	95%	9.85	9.92	0.0709	12.51	CTR	2.66	2.7%	N
Cyanide	µg/L	33%	0.127	0.0938	-0.034	5.2	CTR	5.07	-0.7%	N
DBCM	µg/L	29%	0.211	ND	NA ³	0.4	CTR	0.189	NA ²	N
DCBM	µg/L	75%	1.343	ND	NA ³	0.56	CTR	NA	NA ²	N
Di-n-butyl phthalate	µg/L	20%	0.506	0.512	0.0066	2700	CTR	2,700	0.0%	N
Electrical conductivity (EC)	µmhos/cm	100%	313	347	33.5	700	Basin	387	8.7%	N
EC anticipated with upgraded/expanded plant	µmhos/cm	100%	316	260	-52.9	700	Basin	387	-14%	N
Fluoride	µg/L	58%	0.1428	0.143	0.0006	2000	DHS MCL	2,000	0.0%	N

Table 6. Incremental mass balance change in Dry Creek water quality due to future 2.7 mgd ADWF discharge of constituents and comparison to applicable water quality standards.

Constituent	Units	Effluent Percent Detect	Concentration in Dry Creek downstream of WWTP and Rock Creek (R4)			Lowest Applicable Water Quality Criteria		Assimilative Capacity		Further Analysis
			@ Current (2.18 mgd) Discharge Rate	@ Future (2.7 mgd) Discharge Rate	Incremental Increase	Value	Basis	Available	Used by Expansion	
Iron	µg/L	100%	224	207	-16.6	300	DHS MCL	NA ¹	NA	N
Lead	µg/L	95%	24.3	24.6	0.252	4.48	CTR	NA	NA	N
Lead (w/o outlier)	µg/L	95%	1.21	1.22	0.0094	4.48	CTR	3.27	0.3%	N
Manganese	µg/L	100%	27.7	27.0	-0.632	50	DHS MCL	22.3	-2.8%	N
Mercury	µg/L	79%	0.0034	0.00323	-2E-04	0.05	CTR	0.0466	-0.4%	N
Methylene blue active substances	mg/L	92%	0.057	0.0636	0.0066	0.5	DHS MCL	0.443	1.5%	N
Molinate	µg/L	20%	2.22	2.25	0.0216	13	CDFG	10.8	0.2%	N
Nickel	µg/L	75%	2.73	2.72	-0.008	69.8	CTR	67.1	0.0%	N
Nitrate	mg/L	100%	47.3	9.77	-37.5	10	DHS MCL	NA	NA	N
OCDD		30%	11.9	11.3	-0.563	NA		NA	N	N
Phosphorus	µg/L	100%	1.73	2.01	0.278 ⁴	10	USEPA-Nutrient	8.27	3.4% ⁴	N
Selenium	µg/L	50%	1.162	1.17	0.011	5	CTR	3.84	0.3%	N
Silver	µg/L	5%	0.0198	0.0198	7E-05	3.36	CTR	3.34	0.0%	N
Sulfate	mg/L	100%	18.4	20.5	2.15	250	DHS 2°MCL	232	0.9%	N
TDS	mg/L	100%	182	201	19.1	450	Basin Plan	268	7.1%	N
TDS anticipated with upgraded/expended plant	mg/L	100%	184	152	-30.6	450	Basin Plan	268	-11%	N
Tributyltin	µg/L	9%	0.0025	0.00247	-3E-05	0.072	USEPA-AQ	0.0695	0.0%	N
Zinc	µg/L	100%	46.5	46.9	0.426	160	CTR	114	0.4%	N

Notes:
 CTR-AQ= California Toxics Rule criterion for the acute/chronic protection of aquatic life. Based on a minimum effluent hardness of 141 mg/L as CaCO₃.
 CTR-HH = California Toxics Rule criterion for the protection of human health (consumption of water and organisms).
 DHS MCL = Department of Health Services maximum contaminant level.

Table 6. Incremental mass balance change in Dry Creek water quality due to future 2.7 mgd ADWF discharge of constituents and comparison to applicable water quality standards.

Constituent	Units	Effluent Percent Detect	Concentration in Dry Creek downstream of WWTP and Rock Creek (R4)			Lowest Applicable Water Quality Criteria		Assimilative Capacity		Further Analysis
			@ Current (2.18 mgd) Discharge Rate	@ Future (2.7 mgd) Discharge Rate	Incremental Increase	Value	Basis	Available	Used by Expansion	
<p>DHS 2nd MCL= Department of Health Services secondary maximum contaminant level. Total Rec. = total recoverable. NA = not applicable and/or no assimilative capacity is available. ND = non-detect All effluent values expected to be non-detectable with UV disinfection. ¹ Currently there is no assimilative capacity because the upstream receiving water exceeds the applicable water quality criteria. ² Currently there is no assimilative capacity, however effluent from the upgraded/expanded plant and downstream receiving waters will meet applicable water quality criteria. ³ The anticipated decrease cannot be calculated since effluent levels are expected to be non-detect for the upgraded/expanded plant. ⁴ Phosphorus levels are anticipated to decrease in effluent form the upgraded/expanded plant. However, an accurate quantification of the anticipated decrease cannot be calculated at this time.</p>										

For each constituent in Table 5 and Table 6, a determination has been made about the significance of the change in water quality. If further analysis is needed (i.e., if 10% or greater use of available assimilative capacity is expected to occur), it is so noted. In general, the results for both Rock Creek and Dry Creek are very similar. As shown in Table 5 and Table 6, expanding the discharge capacity would not result in lowered water quality at or above the 10% assimilative capacity threshold defined in EPA guidance.

Note that the assessment of assimilative capacity utilization for phosphorus is conservative because it is based on existing plant performance projected to a 2.7 mgd ADWF capacity while the upgraded and expanded plant will have greater capacity for biological nutrient removal. Thus, future effluent phosphorus levels are expected to be lower than existing levels.

4.5.2 Mass Loading Constituents

Bioaccumulative constituents detected in SMD1 WWTP effluent are listed in **Table 7**. For both mercury and selenium, the area with the greatest likelihood of contributing to existing concerns is in the Delta. Although the organic forms of mercury and selenium have the greatest potential to bioaccumulate, inorganic monitoring data is more readily available and can be indicative of potential impacts. Most “persistent, chlorinated pesticides” have significant potential to bioaccumulate and have a “non-detect” objective in the Basin Plan.

Table 7. Bioaccumulative and other constituents that have been detected in Placer County SMD1 WWTP effluent that will be analyzed for the potential to affect downstream water body concentration or accumulate in sediments.

Mercury ¹	Selenium	TDS (Total Dissolved Solids)
¹ On 2006 303(d) list of impaired water bodies for these constituents.		

Table 8 presents the incremental change in mass loading and the incremental use in available assimilative capacity for Rock Creek while **Table 9** shows the incremental increase in mass loading and incremental use in available assimilative capacity for Dry Creek downstream of the SMD1 WWTP. For completeness Table 8 and Table 9 show the potential effects of TDS at existing levels and the effects at anticipated levels (i.e., at least 30% lower due, primarily, to the conversion to U.V. disinfection).

For each constituent in Table 8 and Table 9, a determination has been made about the significance of the change in water quality. If further analysis is needed (i.e., if 10% or greater use of available assimilative capacity is expected to occur), it is so noted. In general, the results for both Rock Creek and Dry Creek are very similar. As shown in Table 8 and Table 9, expanding the discharge capacity would not result in lowered water quality at or above the 10% assimilative capacity threshold defined in EPA guidance.

Table 8. Incremental change in Rock Creek water quality, on a mass loading basis, due to future discharges of bioaccumulative constituents.

Constituent	Units	Effluent Percent Detect	Mass Loading to Rock Creek (lbs/day)			Lowest Applicable Water Quality Criteria		Assimilative Capacity		Further Analysis
			@ Current (2.18 mgd) Discharge Rate	@ Future (2.7 mgd) Discharge Rate	Net Loading Increase	Value lbs/day	Basis	Available lbs/day	Used by Expansion	
Mercury	µg/L	79%	2.81 x10 ⁻⁵	3.48 x10 ⁻⁵	0.67x10 ⁻⁵	0.00254	CTR-HH	0.00217	0.31%	N
Selenium	µg/L	50%	0.0218	0.0270	0.0052	0.116	CTR-AQ	0.0719	7.2%	N
TDS	mg/L	100%	6,800	8,430	1,620	22,900	Basin Plan	21,400	13%	N ¹
TDS anticipated with the upgraded/expanded plant	mg/L	100%	6,800	5,900	-905	22,900	Basin Plan	21,400	-7.3%	N

Notes:

CTR-AQ= California Toxics Rule criterion for the acute/chronic protection of aquatic life. Based on a minimum effluent hardness of 141 mg/L as CaCO₃.

CTR-HH = California Toxics Rule criterion for the protection of human health (consumption of water and organisms).

¹ The conversion to U.V. disinfection is expected to decrease TDS levels at least 30%.

Table 9. Incremental change in Dry Creek water quality, on a mass loading basis, due to future discharges of bioaccumulative constituents.

Constituent	Units	Effluent Percent Detect	Mass Loading to Dry Creek (lbs/day)			Lowest Applicable Water Quality Criteria		Assimilative Capacity		Further Analysis
			@ Current (2.18 mgd) Discharge Rate	@ Future (2.7 mgd) Discharge Rate	Net Loading Increase	Value lbs/day	Basis	Available lbs/day	Used by Expansion	
Mercury	µg/L	79%	2.19 x10 ⁻⁵	3.48 x10 ⁻⁵	1.29 x10 ⁻⁵	0.00260	CTR-HH	0.00222	0.30%	N
Selenium	µg/L	50%	0.0170	0.0270	0.0100	0.116	CTR-AQ	0.0723	7.2%	N
TDS	mg/L	100%	5,310	8,430	3,120	23,400	Basin Plan	21,500	13%	N ¹
TDS anticipated with the upgraded/expanded plant	mg/L	100%	6,800	5,900	-905	22,900	Basin Plan	21,400	-7.2%	N

Notes:

CTR-AQ= California Toxics Rule criterion for the acute/chronic protection of aquatic life. Based on a minimum effluent hardness of 141 mg/L as CaCO₃.

CTR-HH = California Toxics Rule criterion for the protection of human health (consumption of water and organisms).

¹ The conversion to U.V. disinfection is expected to decrease TDS levels at least 30%.

4.5.3 Effects of Receiving Water Quality Changes on Beneficial Uses

Ammonia

The existing facilities have been continually modified and expanded to improve ammonia removal. However, the monitoring data demonstrates that although effluent ammonia levels have decreased the current facilities can not consistently remove ammonia to a level fully protective of aquatic life beneficial uses. Difficulty in maintain nitrification with the existing rotating biological contactor (RBC) has been hampered by the capabilities of the RBC, particularly during cooler weather. As part of the expansion process, the County evaluated existing nitrification performance and identified the necessary operation plans to consistently achieve full nitrification year-round with the new aeration basins. As a result, the SMD1 WWTP effluent is expected to maintain effluent ammonia levels of less than 1 mg/L with maximum effluent ammonia levels of 2 mg/L.

Fixed ammonia water quality criteria at the discharge location, and consistent with the U.S. EPA's 1999 Ammonia Update, have been developed for SMD1 WWTP based on reasonable worst-case conditions from effluent monitoring data collected from July 2006 through June 2009. The criterion maximum concentration (CMC) for ammonia varies only with pH and was calculated with the maximum allowable pH (8.5) under the Basin Plan objective for pH in Rock and Dry creeks, and the CMC is 2.1 mg N/L as a 1-hour average. The maximum historical effluent pH for SMD1 WWTP is 7.7 which would result in a CMC of 9.6 mg/L. If the SMD1 WWTP elects to meet an effluent pH maximum (e.g., 8.2) more stringent than the Basin Plan, then the effluent ammonia limitations would be based on a reasonable worst-case condition rather than the unreasonable assumption of a maximum effluent pH of 8.5 given that the historical maximum effluent pH value is 7.7.

The criterion continuous concentration (CCC) for ammonia varies with pH and temperature. The 30-day average CCC is calculated using the temperature and pH of the effluent. First, the CCC was calculated for each day when temperature and pH were measured. Then, the 30-day CCC is calculated. U.S. EPA guidance for aquatic life protection requires that the applicable criteria are not to be exceeded at a frequency greater than once in three years. This requires that the 99.9% value in the monitoring dataset be at or below the applicable criteria. The lowest 99.9% 30-day average CCC was 2.70 mg/L as N during this period.

Using a reasonable worst-case maximum effluent pH of 8.2, the applicable effluent ammonia criteria to protect aquatic life beneficial uses would be an average monthly effluent limitation (AMEL) of 1.4 mg/L as N and a maximum daily effluent limitation (MDEL) of 3.8 mg/L as N. Thus, as stated above, the expected ammonia removal performance of the upgraded and expanded SMD1 WWTP will be a substantial improvement over current conditions and is more than adequate to ensure that applicable water quality objectives are met and aquatic life beneficial uses protected.

Dissolved Oxygen

The components of wastewater with the potential to affect dissolved oxygen (DO) concentrations include biochemical oxygen demand (BOD) and ammonia. The NPDES permit contains

monthly average (10 mg/L), weekly average (15 mg/L), and daily average (25 mg/L) effluent limits for BOD, and limits for ammonia, based on the U.S. EPA's recommended water quality criteria for aquatic life. The NPDES permit also has a DO limitation for Rock and Dry creeks that states the discharge shall not cause the DO to fall below 7.0 mg/L, which is derived from the Basin Plan objective for DO.

The SMD1 WWTP produces tertiary-treated effluent when influent flows are less than 3.5 mgd and provides a combination of secondary and tertiary treatment when influent flows are greater than 3.5 mgd. While effluent ammonia levels have been elevated (average of 2.4 mg/L) and variable (maximum of 15.1 mg/L), the effluent has been characterized by low concentrations of BOD (typically less than 4.7 mg/L, average of 2.8 mg/L). Re-aeration of downstream waters due to physical processes and photosynthesis tends to offset the oxygen demand of effluent as it flows downstream. As discharge rates increase in the future, the proportion of creek water constituted by effluent also would increase, thereby increasing the relative portion of BOD and ammonia load. Thus, the incremental increase in discharge, without improvement in effluent quality, could result in the lowering of water quality with respect to DO. As stated above, effluent ammonia levels are expected to decrease substantially to an average of <1 mg/L and a maximum of 2 mg/L.

The ROWD (Placer County 2009) indicates that historical discharge season DO monitoring in Rock Creek and Dry Creek downstream of the outfall between July 2006 and June 2009 indicates a 99% (1085 of 1096) compliance rate at both locations with the daily minimum DO limitation of 7.0 mg/L. **Table 10** identifies the concurrent R1/R2 and R3/R4 DO levels when either R2 or R4 DO levels are below 7.0 mg/L. For nine of the eleven occurrences when downstream DO levels in Dry Creek (R4) were below 7.0 mg/L, the upstream (R3) DO level was the same or lower. This indicates that when the effluent may cause a temporary DO sag in Rock or Dry Creek, the creek is re-aerated above 7.0 mg/L within 350 feet of the discharge location (the R4 monitoring location is 150 feet below the confluence of Rock and Dry creeks which is 200 feet downstream of the discharge location on Rock Creek). Thus, any incremental DO load that would potentially cause a "sag" in downstream DO concentrations would occur within Rock Creek or Dry Creek (within 350 feet of the discharge), and thus would not affect DO levels further downstream in Dry Creek, in Coon Creek, or other downstream waterbodies, including the Sacramento River, due to full assimilation of the DO demand within Rock and Dry creeks and to continued downstream re-aeration, photosynthesis, etc.

Table 10. Dissolved oxygen (DO) concentrations in Rock Creek (R2) and Dry Creek (R4) that were below 7.0 mg/L at the downstream monitoring station and concurrent upstream DO concentrations (R1 and R3, respectively).

Date	Dissolved Oxygen (mg/L)			
	R1	R2	R3	R4
7/21/2006	7.5	6.8	6.1	6.7
7/22/2006	8	6.8	6.7	6.9
7/23/2006	7.9	6.9	6.8	7.8
7/28/2006	8.4	6.3	7.5	7.4
8/4/2006	8	6	7.2	6.3
9/1/2006	8.2	5.9	7.5	6.2
8/2/2007	7.7	7.1	6.4	6.7
4/27/2008	8.6	7.4	7.1	6.9
5/16/2008	7.8	6.8	5.4	6.7
6/8/2008	7.8	6.9	6.8	6.8
7/12/2008	7.4	7.2	5.2	6.1
7/13/2008	7.1	6.9	5.5	7.2
7/23/2008	7	6.7	6.3	7.1
8/14/2008	7.8	7	6	6.5
9/9/2008	7	7	5.3	6.9
9/12/2008	6.7	6.8	5.7	6.9

Nitrate

The SMD1 WWTP does not currently include denitrification facilities. Historical effluent nitrate levels are seasonally near 30 mg/L and have been as high as 49 mg/L. The California Primacy maximum contaminant level (MCL) for nitrate is 10 mg/L as N. Planned improvements to increase ammonia removal will also result in increased conversion of ammonia to nitrate. Thus, the planned addition of denitrification capacity to the upgraded and expanded SMD1 WWTP will result in maximum effluent nitrate levels of 10 mg/L, which is a substantial improvement over existing conditions.

pH

The SMD1 WWTP NPDES permit has an effluent limitation that requires discharges to have a pH between 6.5 and 8.5. Of the 1096 effluent pH measurements measured from July 2006 through June 2009, only one pH value was less than 6.5 and no pH values were greater than 8.5. Based on the current science regarding pH requirements of freshwater aquatic life (the beneficial use of Rock and Dry creeks most sensitive to pH) the Regional Water Board has processed a Basin Plan amendment that removes the 0.5-unit change requirement of the current pH objective, leaving the component that requires controllable factors affecting water quality to maintain receiving water pH between 6.5 and 8.5 units (CVRWQCB 2002). Recently, the Regional Water Board received notification from USEPA that it has approved the pH Basin Plan amendment. Because the permit requires effluent discharged to Rock and Dry creeks to have a pH between

6.5 and 8.5, future discharges, regardless of volume, would not cause Rock and Dry creeks pH values to fall outside this range. Thus, the 0.52 mgd ADWF increase in discharge would not result in a lowering of water quality with respect to pH. As such, beneficial uses of Rock and Dry creeks and downstream waters will not be adversely affected by the incremental change in pH due to expanded capacity of the SMD1 WWTP.

Temperature

The temperature of Rock and Dry creeks downstream of the SMD1 WWTP outfall is dependent on upstream creek and effluent discharge flow rates and temperatures. The Basin Plan's temperature objective states, "*At no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5°F above natural receiving water temperature.*" While the SMD1 WWTP has a high degree of compliance with this objective, the objective is not well supported by the current science on the protection of aquatic life, nor is it consistent with U.S. EPA's recommendations for regulating thermal effects of discharges. It is the resulting downstream temperature regime within Rock and Dry creeks that is of interest in terms of assessing thermal effects of the discharge on downstream beneficial uses, the most sensitive of which is the aquatic life use.

Table 11 summarizes Rock and Dry creek water temperatures upstream and downstream of the discharge, under historic operations. Average temperatures in Rock Creek downstream of the outfall (R2) are higher than those upstream (R1), typically by 2°F, and always by less than 4°F. Likewise, R1/R2 and R3/R4 minimum and maximum temperatures are generally similar. Upstream temperatures on Dry Creek (R3) vary substantially from upstream temperatures on Rock Creek (R1) and range from over 2°F colder to over 7°F warmer.

The effect of the SMD1 discharge downstream on Dry Creek (R4) was determined by first predicting the downstream temperatures from upstream flows and temperatures (R1 and R3) with and without the effluent discharge. The monthly average flow values for the period July 2006–June 2009 used are summarized in **Table 12**. Predicted mean monthly downstream temperatures with effluent discharge (R4) differed from monitoring data by -0.4°F, on average (difference ranged from -1.0°F to 0.1°F). The net effect of the discharge is to increase mean monthly downstream Dry Creek temperatures by 1.5°F (effect ranged from 1.2–2.8°F). Current temperature conditions within the creek, based on available temperature data, indicate thermal effects at levels that would not be expected to adversely affect downstream beneficial uses, including aquatic life uses.

Table 11. Rock Creek and Dry Creek temperatures¹ upstream (R1/R3) and downstream (R2/R4) of the SMD1 Wastewater Treatment Plant outfall.

Statistic	Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Count	R1	93	85	93	90	93	90	93	93	90	93	90	93
	Effluent	93	85	93	90	93	90	93	93	90	93	90	93
	R2	92	84	93	90	90	90	92	91	90	90	89	93
	R3	93	85	93	90	93	90	93	93	90	93	90	93
	R4	93	85	93	90	93	90	93	93	90	93	90	93
Average	R1	44.18	47.71	51.92	55.18	60.51	63.69	68.47	69.43	66.72	59.07	54.62	46.66
	Effluent	57.13	57.86	60.71	63.55	68.80	72.18	75.62	75.96	74.08	68.39	65.04	59.28
	R2	47.99	50.51	54.53	57.10	62.43	65.48	70.45	71.37	67.93	61.17	57.49	50.48
	R3	42.70	47.66	54.12	59.92	66.78	71.07	74.58	73.07	66.66	56.64	52.44	44.51
	R4	46.93	49.81	54.64	58.02	63.14	66.44	70.83	71.57	68.02	61.10	56.83	49.66
Minimum	R1	35.6	39.74	44.96	46.94	49.46	55.94	58.64	62.06	61.52	51.8	44.6	41
	Effluent	50	53.96	53.06	59	61.7	68	71.6	71.6	68	64.22	59	53.6
	R2	40.46	41.54	48.2	48.56	49.64	56.48	59.36	62.6	62.6	55.22	50	42.98
	R3	34.52	39.74	45.32	53.06	55.58	63.68	61.16	66.02	58.64	48.02	41.9	38.84
	R4	37.94	41	46.76	50	35.78	57.56	60.08	62.6	62.42	55.04	48.92	43.7
Maximum	R1	51.98	54.5	59.18	66.38	70.16	74.84	79.7	76.64	78.8	65.48	60.8	53.24
	Effluent	62.78	61.34	64.76	69.8	80.6	76.64	81.86	81.32	81.5	74.3	68.54	64.4
	R2	53.42	56.84	61.16	67.46	71.42	77	81.14	78.26	79.52	66.56	64.04	57.38
	R3	50.72	55.04	63.14	73.04	78.98	78.98	83.12	79.34	80.24	64.94	59.54	53.42
	R4	53.24	56.48	61.7	68.54	71.96	78.08	81.14	78.8	79.7	66.74	64.22	55.76
¹ Temperature data collected daily from June 2006 through July 2009.													

Table 12. Mean monthly flows (mgd) for upstream Rock Creek (R1), effluent, and upstream Dry Creek (R3) for the period June 2006 through July 2009.

Location	Mean Monthly Flow (mgd)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Upstream Rock Creek (R1)	4.09	4.95	4.05	4.98	5.21	5.01	4.49	4.73	6.72	5.28	3.78	4.24
Effluent	1.72	2.23	1.70	1.46	1.47	1.37	1.37	1.41	1.40	1.41	1.41	1.67
Upstream Dry Creek (R3)	2.57	4.94	2.90	1.68	1.72	0.61	0.23	0.47	0.37	0.43	1.51	2.27

With an incremental increase in discharge, temperatures downstream of the outfall could further increase, relative to historic conditions. Whether resultant future downstream Rock or Dry Creek temperatures under a 2.7 mgd discharge scenario would adversely affect aquatic life beneficial uses cannot be definitively determined from available information. More detailed information on the aquatic communities within Rock and Dry creeks would be needed to definitively address effects on aquatic life beneficial uses. In addition, any future assessments/antidegradation determinations with regards to temperature should be consistent with Section 316 of the Act. Nevertheless, based on the relatively small temperature changes that have occurred historically and would be expected to occur under the expanded permitted capacity, no significant adverse thermal effects to aquatic life would be expected to occur.

5 EVALUATION OF BEST PRACTICAL TREATMENT OR CONTROL

5.1 Applicable Regulations

The term “best practical treatment or control” (BPTC) appears in the State’s antidegradation policy (Resolution No. 68-16):

“Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the state will be maintained.” [emphasis added]

However, nowhere in State regulations or policies has BPTC been defined in terms of specific treatment processes for specific constituents, or in terms of specific effluent quality.

Sections 301, 302, 306, and 307 of the Clean Water Act incorporates technology-based effluent limits according to "best practical control technology," "best available technology economically achievable," and "best conventional pollutant control technology economically achievable;" however, these terms are used in the context of regulating discharges from point sources other than publicly owned treatment works (POTWs).

For POTWs, Section 301(b)(1)(B) of the Clean Water Act requires that secondary treatment standards be met. Secondary treatment standards are defined by numeric effluent limitations for the pollutant parameters 5-day biological oxygen demand, suspended solids, and pH (40 CFR 133.102). More stringent limitations beyond those required to meet the definition of secondary treatment may be incorporated, if necessary, to achieve certain water quality standards [Section 301(b)(1)(C) of the Clean Water Act].

Furthermore NPDES permits contain the following technology-based treatment requirements in accordance with the following statutory deadlines (40 CFR 125.3(a)(1)):

- (i) *Secondary treatment--from date of permit issuance; and*
- (ii) *The best practicable waste treatment technology--not later than July 1, 1983.*

Best practicable waste treatment technology is defined as (40 CFR 35.2005):

The cost-effective technology that can treat wastewater, combined sewer overflows and non-excessive infiltration and inflow in publicly owned or individual wastewater treatment works, to meet the applicable provisions of:

- (i) *40 CFR part 133--secondary treatment of wastewater;*
- (ii) *40 CFR part 125, subpart G--marine discharge waivers;*
- (iii) *40 CFR 122.44(d)--more stringent water quality standards and State standards; or*
- (iv) *41 FR 6190 (February 11, 1976)--Alternative Waste Management Techniques for Best Practicable Waste Treatment (treatment and discharge, land application techniques and utilization practices, and reuse).*

Thus, in the State and federal regulations, achievement of “best practical treatment or control” and “best practicable waste treatment technology” are defined in terms of plant performance and maintenance of water quality standards, rather than specific treatment technologies.

5.2 Findings

The SMD1 WWTP is in the design stage of an upgrade and expansion project. Upgrades are anticipated to include new headworks with improved grit removal equipment, new primary clarifiers, biological nutrient removal facilities to reduce nitrogen and phosphorus compounds, new secondary clarifiers and tertiary filters, UV disinfection which should eliminate THMs and reduce chemical usage, and new or renovated solids handling facilities. These facilities are representative of industry-standards and will provide a high level of treatment. The upgraded and expanded facility is expected to produce treated effluent of a quality equivalent to the best WWTPs in the region.

With regard to salinity control, the measured levels of EC and TDS in the effluent are below the non-site specific numeric values the Regional Water Board has used for screening to interpret the

narrative Basin Plan to protect beneficial uses, including agriculture uses. Thus, there is no justification for the County to consider salinity control measures in order to achieve BPTC. In fact, at this time reverse osmosis is not considered BPTC, as the State Water Board, in Water Quality Order 2005-005 (for the City of Manteca), has stated:

“Construction and operation of reverse osmosis facilities to treat discharges...prior to implementation of other measures to reduce the salt load in the southern Delta, would not be a reasonable approach.”

Because the plant’s facilities and effluent quality meet or exceed the regulations discussed in Section 5.1, and because current and future expected operations of the plant will achieve compliance with NPDES permit requirements, thereby assuring a water quality nuisance will not occur and the highest water quality consistent with maximum benefit to the people of the region and the state will be maintained, and because the upgraded facility will produce an effluent quality equivalent to other state-of-the-art WWTPs in the region, it is determined that the planned future facilities and operations of the SMD1 WWTP are consistent with BPTC as it is defined and intended in Resolution No. 68-16.

6 SOCIOECONOMIC CONSIDERATIONS

6.1 Constituents Addressed in the Socioeconomic Analysis

To assess potential lowering of Rock Creek and Dry Creek water quality, a mass balance, and where appropriate, a mass loading assessment of the use of available assimilative capacity was made. When there is no assimilative capacity with either calculation, then there truly is no available assimilative capacity and no utility to a socioeconomic justification. When calculation of assimilative capacity is not relevant to the criteria (e.g., for temperature, pH, etc.), the need for a socioeconomic justification is driven by the significance of the impact to beneficial uses.

Based on the above considerations and the constituent-specific discussions in Section 4.5.3, no constituents were identified in Tables 5, 6, 8, and 9 that warrant further analysis based on substantial use of available assimilative capacity (i.e., exceeding the 10% assimilative capacity significance threshold). Thus, there are no constituents to be carried forward into the socioeconomic analysis. Nonetheless a socioeconomic analysis is provided to evaluate the justifications for the non-significant lowering of water quality in Rock Creek and Dry creeks.

6.2 Socioeconomic Assessment Approach

Placer County has estimated the cost of improvements necessary to expand and upgrade the SMD1 WWTP plant from 2.18 mgd ADWF to 2.7 ADWF mgd at \$87 million (Placer County 2009). The economic costs for alternatives will be assessed relative to the current project expansion cost estimate of \$87 million, the increased cost for ratepayers, and the magnitude of the change in ratepayer costs. Alternatives will also be assessed for feasibility of implementation and effectiveness at reducing the lowering of water quality. The social benefits and costs will be assessed based on the ability to accommodate important socioeconomic development in the

Placer County General Plan the change in water quality from existing conditions and the magnitude of the water quality impacts.

6.3 Benefits of Increased Discharge

From 2000-2008, the overall population of Placer County increased by 34%, the second highest growth rate of all counties in California over that period (California Department of Finance 2008). County population projections anticipate population growth of 23.3% from 2010 to 2020, and 61% from 2010 to 2034, the expected life of the planned WWTP upgrades (California Department of Finance 2007). The County's consulting engineer, Owen Psomas, evaluated census data for the County, Auburn, and the North Auburn census-designated place (CDP) to determine the average household population (Owen Psomas 2009a). Furthermore, Owen Psomas evaluated projected annual growth rates from the California Department of Finance and the Sacramento Area Council of Governments (SACOG) for both Placer County and Auburn to determine the projected annual growth rate for residential and commercial/industrial equivalent dwelling units (EDUs) in the SMD 1 WWTP service area (i.e., 1.9%). Also, the Auburn-Bowman Community Plan was used to develop the current limits of planned sewer service. Influent flow and BOD and TSS loadings for existing residential and commercial/industrial EDUs were scaled up based on the projected growth rates to determine the ADWF needed in 2034 (i.e., 2.7 mgd ADWF) and at buildout (4.0 mg ADWF).

The Placer County General Plan requires limiting expansion of urban communities to areas where community wastewater treatment systems can be provided to accommodate planned and approved growth (Placer County 1994). Anticipated future growth of these communities will thus be hindered if increased wastewater capacity is not provided.

6.4 Alternatives: Incremental Effects on Water Quality and Socioeconomic Development

Several alternatives were considered that would reduce or eliminate the lowering of water quality, for certain constituents, resulting from the additional 0.52 mgd of discharge capacity proposed with the plant expansion. These plant expansion alternatives are:

- (1) Higher level of treatment using microfiltration;
- (2) Zero discharge (100%) recycling of additional plant capacity;
- (3) Flow restricted discharge;
- (4) Pollutant source minimization;
- (5) Connect to other wastewater facilities in the region (i.e., regionalization); and
- (6) Change in drinking water source.

Each alternative was assessed for feasibility in implementation and effectiveness in reducing the lowering of water quality.

The costs to implement alternatives can be evaluated three ways: (1) relative to the current project cost estimate of \$87 million; (2) as the increased cost for ratepayers; (3) and the magnitude of the change in ratepayer costs. The generally higher costs to implement alternatives would be borne by both existing development and the new development that is requiring the plant expansion. These higher costs could possibly prohibit some of the socioeconomic growth for the area by making it economically impractical for the new development to occur in this area.

6.4.1 Higher Level of Treatment

During the initial design phase, the County and its consulting engineer, Owen Psomas, have not identified a need for advanced treatment in order to achieve compliance with applicable water quality objectives. Thus, there are no SMD1 WWTP-specific treatment costs estimates beyond the planned BPTC facility upgrades (i.e., new flow equalization facilities, new biological nutrient removal facilities, and a new UV disinfection system).

To provide an order of magnitude estimate for advanced treatment costs in addition to the proposed project, the experience of another discharger is provided here. Microfiltration is an advanced filtration technology that provides less contaminant removal than ultrafiltration and reverse osmosis but also at a lower cost. In 2007, the cost of a 4 mgd microfiltration plant was estimated to have construction costs of \$37 million and engineering and administration costs of \$7.4 million for total estimated costs of \$44.4 million while the annual operation and maintenance costs are estimated to be \$2.26 million (RBI 2007a). Since the expanded capacity of the SMD1 WWTP is 0.52 mgd, the use of microfiltration to mitigate any incremental degradation of the expansion on Rock and Dry creeks would be at least one eighth the costs referenced above (i.e., total cost of \$5.6 million with annual operation and maintenance costs of \$0.28 million). Note that these costs would be in addition to the planned upgrade/expansion project costs. This is a conservative estimate since the treatment cost for smaller plants are generally higher per mgd than for a larger plant, and because these cost estimates were made in 2007 rather than 2009.

6.4.2 Zero Discharge

Zero discharge through 100% recycling of the additional 0.52 mgd of plant capacity would require increased demand for recycled water and increased storage capacity during the non-irrigation season. A 1998 report on regionalization identified the southwest portion of Placer County (i.e., in the vicinity of the City of Lincoln) for water reuse because of the abundance of agricultural land requiring irrigation (CH2MHill 1998). However, no viable water reuse customers have been identified.

In 1993, the County investigated the possibility of reusing water for a hypothetical golf course irrigation project. The report estimated that irrigation requirements for a single 18-hole golf course would be approximately 1 mgd during the summer, and essentially nothing in the winter. Thus one golf course irrigation project and the associated storage and distribution facilities would be needed to accommodate the year-round planned plant capacity increase. However, it is understood that both water purveyors in the SMD1 WWTP vicinity (Nevada Irrigation District (NID) and Placer County Water Agency (PCWA)) have plentiful water supplies and can sell water much cheaper than SMD1 could provide it. That said, provided demand existed in the

vicinity of SMD1 WWTP, it is technically feasible to establish a water reuse project; however, it is highly likely that the County would have to sell the recycled water at a loss.

In 1993, the construction costs to deliver, not store, recycled water for a hypothetical golf course located one mile from the WWTP were estimated to be \$340,000 with annual operating costs of \$18,000. Using the Engineering News Report (ENR) Construction Cost Indices for 1993 and October 2009 (5210 and 8596, respectively), this corresponds to an estimated construction cost in 2009 of \$560,000 and annual operating costs of \$30,000. The majority of delivery construction costs are associated with the distribution pipeline. Thus, delivery construction costs for golf courses at greater distances would increase approximately proportionally with distance (Placer 1993).

Based on a recent economic analysis (Owen Psomas 2009b), the total project cost to store and deliver recycled water service to the two largest golf courses in the SMD1 WWTP area (approximately 150 irrigated acres each is roughly estimated at \$25 to \$30 million. The majority of the cost would be associated with the approximately 180 million gallon (MG) seasonal storage reservoir that would be needed to provide approximately 6 months of storage during the wet season. Constructing this additional storage is not possible within the limited footprint of the existing plant. This cost estimate does not include land acquisition costs² or right-of-way acquisition costs, which could be considerable. Furthermore, it does not include any additional cost to improved plant performance and certify the effluent meets Title 22 reuse standards. The annual operations and maintenance cost for the reservoir, pump station, pipelines is estimated at \$0.5 to \$1.0 million. These costs are in addition to the proposed project costs. Accordingly, zero discharge is infeasible due to a lack of recycled water demand, sufficient land to construct the storage reservoir, and cost.

6.4.3 Flow-restricted Discharge

Flow-restricted discharge was evaluated based on available dilution in the historic dataset for Rock Creek and further downstream (approximately 2 miles) in Coon Creek. Given the distance to Coon Creek, any available dilution in Coon Creek would only be applicable for water quality objectives protecting beneficial uses with longer term averaging periods (e.g, chronic human health and agricultural). While dilutions above 3:1 could not be evaluated because the maximum measurable flow was truncated at 8.2 mgd, the analysis summarized in **Table 13** showed that 3:1 dilution is available in both water bodies less than a third of the time. Thus, any potential dilution greater than 3:1 would occur infrequently. Table 13 also indicates that 1:1 dilution is available in both water bodies greater than 80% of the time.

Perhaps more importantly, a majority of the dates when 3:1 dilution was present in Rock Creek or Coon Creek were during the summer of 2007, indicating that irrigation flows being conveyed through Rock Creek was primarily responsible for the dilution. The County has indicated that flows of 5 cfs in the summer and 3 cfs in the winter from NID conveyed through Rock Creek have occurred in the past. There is no guarantee that these flows will always be present in the future, and in fact, they may be discontinued in the near future after completion of the

² The 181 million gallon reservoir with a depth of 10 feet would require 65 acres.

upgrade/expansion project. Therefore, available dilution in the future could be substantially lower than indicated in the historic data set.

Based on this information, it is unlikely that flow-restricted discharge would be a viable alternative to provide greater dilution and limit the use of available assimilative capacity. Implementation of any flow-restricted discharge would require finding additional land suitable for expanding storage capacity to accommodate periods of no discharge.

Table 13. Frequency of Dilution Ratios in Rock and Coon Creeks.

Water Body	Frequency of Dilution		
	3:1	2:1	1:1
Rock Creek	27%	34%	82%
Coon Creek	32%	43%	90%

6.4.4 Pollutant Source Minimization

Pollutant source minimization is an ongoing activity. The County submitted an Industrial Pretreatment Program (IPP) to monitor and control sources of industrial contaminants entering the SMD1 sewer collection system to the Regional Water Board and USEPA in September 2005.

6.4.5 Regionalization

Several options for regionalization were considered and presented in a report prepared by CH2MHill in 1998. These options included connections to a new regional facility southwest of the City of Lincoln, connections to the City of Lincoln’s facility, and connections to the Sacramento Regional Wastewater Treatment Plant. These options were evaluated in terms of costs, impact on local streams, reuse potential, and ease of implementation. The long-term recommendation from this study was to further consider regionalizing all of Placer County dischargers into three facilities: Roseville’s Dry Creek and Pleasant Grove WWTPs, and Lincoln’s WWTP (CH2MHill 1998).

A more detailed and recent regionalization assessment evaluated construction of a pumping station and wastewater storage facility and regional pipeline to connect to the City of Lincoln’s WWTP, and expansion of the Lincoln WWTP. This project would expand the capacity available to SMD1 to 2.05 mgd, with a total potential capacity up to 4.6 mgd allocated to SMD1 in the future. The total costs of this project are estimated at \$141 million and included costs for the City of Lincoln to expand their plant, costs for the County to reimburse the City for having oversized the Lincoln Collection system in order to accommodate potential regional wastewater flows. Annual operations and maintenance costs are estimated at \$11.2 million (Placer County 2008). The costs would be an alternative to the proposed project.

6.4.6 Change in Source Water Supply

The County’s current water source is surface water purchased through NID and Placer County Water Agency that originates as Sierra snowpack and is taken from the Yuba and Bear River watersheds or through Lake Spaulding. The source water quality is very high, with low turbidity and TDS. It is not feasible to find a better quality water source or to change water source as a means of controlling or improving post-expansion receiving water quality.

6.4.7 Rate Payer Cost Increases

To evaluate alternatives to expanding SMD1 WWTP’s discharge capacity, the County has calculated the average annual rate increase per customer in the service area. The rate increases also assumed a fixed average customer consumption rate, fixed financing rate and that no other funding sources were available to offset the rate increases. **Table 14** summarizes the plan elements for the proposed project and alternatives, construction and operations costs, and the annual rate increase associated with each of the alternatives discussed above.

Table 14. Summary of costs and annual rate increases for alternatives to expanding Placer County SMD1 discharge capacity.

Alternative	Plan Elements	Construction Cost	Operations Cost	Annual Rate Increase
Proposed Upgrade/expansion ¹	Flow equalization, biological nutrient removal, & UV disinfection system	\$87,000,000	\$10,321,000	\$432
Higher level of treatment	Microfiltration added to proposed project	\$5,600,000	\$280,000	\$468 (\$432+\$36)
Zero discharge	181 million gallon storage, 5 miles of pipeline, customers added to proposed project	\$37,200,000	\$960,000	\$689 (\$432+\$257)
Flow-restricted discharge	Flow conditions are too infrequent or unreliable to provide any significant benefit.			
Regionalization	Pipeline, reimbursements to City of Lincoln for WWTP expansion and collection system oversizing	\$141,000,000	\$11,199,095	\$816
Change in water supply	It is not possible to find a better quality water source than existing sources.			
Notes: ¹ Past cost estimates are based on expansion to 3.0 mgd while current plans are to expand to 2.7 mgd. Given the current costs for construction and financing, these past cost estimates for 3.0 mgd are representative of current anticipated costs for a 2.7 mgd expansion.				

6.5 Environmental Considerations

Having new development in the region independently treat its wastewater in an effort to eliminate any incremental degradation of water quality in Rock Creek or Dry Creek would not be cost-effective, may not reduce loadings to downstream portions of the watershed, and may not improve water quality (from a constituent concentration basis) throughout the creeks. Moreover,

disposal of the new developments' wastewater elsewhere would not eliminate the need to meet water quality objectives elsewhere in Rock Creek or Dry Creek, in another surface water body, or in groundwater. Installation of advanced treatment facilities designed to eliminate all incremental changes in downstream water quality (e.g., microfiltration or reverse osmosis for a significant portion of the plant's flow) would be very costly, and would result in new environmental concerns associated with increased energy use and brine disposal.

6.6 Socioeconomic Considerations

Placing connection bans on the SMD1 WWTP to prevent increased discharges, thereby eliminating any incremental change to Rock Creek and Dry Creek water quality, would have negative socioeconomic effects on the area and would not be in the best interest of the people of the region or the state, in light of the magnitude of incremental changes to water quality that are expected as a result of plant expansion from 2.18 to 2.7 mgd (ADWF) with concurrent treatment upgrades.

Should the incremental changes in Rock Creek and Dry Creek water quality characterized herein (which could occur as a result of accommodating planned and approved growth within the SMD1 WWTP service area) be disallowed, such action would: 1) force future developments to find alternative methods for disposing of wastewater, 2) require adding microfiltration or a reverse-osmosis treatment processes to a significant portion of flow at the SMD1 WWTP, and possibly other plant expansions/upgrades, to eliminate the increment for all constituents from the additional discharge rate, or 3) prohibit planned and approved development within and adjacent to the SMD1 WWTP service area.

The County will continue to operate a treatment plant that meets BPTC. Any potential for discharges to cause exceedances of adopted water quality criteria/objectives would be effectively addressed through the NPDES permit renewal process, thereby being addressed in a timely manner. Thus, resulting downstream water quality within Rock Creek and Dry Creek would not cause a nuisance and would continue to be protective of all beneficial uses under the proposed upgrade/expansion project.

7 ANTIDEGRADATION ANALYSIS FINDINGS

This section addresses each of the five items identified in state implementation guidance for antidegradation analysis for NPDES permits.

1. The water quality parameters and beneficial uses which will be affected by the proposed action and the extent of the impact.

Section 3.1 details the beneficial uses of Rock and Dry creeks. The extent of water quality impacts from the proposed plant upgrade/expansion project are assessed in Section 4.5, through tables and discussion, and summarized below.

The extent of impacts from SMD1 WWTP's proposed increased discharge capacity were primarily assessed on the basis of assimilative capacity utilization – on a mass balance

approach for all constituents and, additionally for bioaccumulative constituents, on a mass loading basis.

The water quality of Rock and Dry creeks, with respect to chemical constituents, pH, and turbidity would remain better than necessary to fully protect beneficial uses. Resulting temperature and DO conditions in Rock and Dry creeks are expected to remain at levels throughout the year that would be protective of beneficial uses; however, further assessment of these parameters may be warranted. For all of the constituents assessed, any lowering of Rock Creek and Dry Creek water quality would be minor and would use less than 10% of available assimilative capacity (Tables 5, 6, 8, and 9).

The incremental increase in discharge would not significantly lower water quality for any constituent in Rock and Dry creeks, relative to that which would occur under the current permitted capacity for the SMD1 WWTP. The incremental increase in discharge would not lead to significant increase in mass loading of bioaccumulative constituents such as mercury or other conserved constituents such as total dissolved solids. Total dissolved solids are expected to decrease as the WWTP converts from a chlorine-based disinfection process to U.V. disinfection. In short, no beneficial uses of Rock Creek, Dry Creek or downstream waters are anticipated to be adversely affected by the planned expansion.

2. The scientific rationale for determining that the proposed action will or will not lower water quality.

Sections 4.1 through 4.4 detail the scientific rationale for determining if lowering of water quality occurs. This rationale is based on federal (Section 2.1.1) and State (Section 2.2.3) guidance and tracks the use of assimilative capacity to link changes in water quality to the beneficial uses to be protected.

Generally, the relevant water quality standards are concentration-based in order to prevent exceedances of concentration-based exposure thresholds. Critical flows and representative water quality measurements were criteria-dependent (i.e. shorter representative averaging periods for acute effects as compared to long-term human health criteria).

The nature of downstream water bodies may facilitate extended residence time or deposition of contaminants. Therefore, for bioaccumulative constituents, mass loadings were also considered in assessing potential lowering of water quality from increased SMD1 WWTP discharge.

Incremental change in water quality that would occur in Rock and Dry creeks due to an increase in the SMD1 WWTP discharge rate from 2.18 mgd ADWF, the current permitted discharge rate, to 2.7 mgd ADWF were quantitatively identified.

3. A description of the alternative control measures that were considered.

Six alternatives were considered that would reduce or eliminate the lowering of water quality resulting from the additional 0.52 mgd of discharge capacity proposed with the

plant expansion. These plant expansion alternatives are listed below, and are described in detail in Section 6.2.

- Higher level of treatment using microfiltration
- Zero discharge (100%) recycling of additional plant capacity
- Flow restricted discharge
- Pollutant source minimization
- Connect to City of Lincoln Wastewater Treatment Plant
- Change in drinking water source

4. A description of the socioeconomic evaluation.

To assess potential lowering of Rock and Dry creeks water quality, a mass balance, and where appropriate, a mass loading assessment of the use of available assimilative capacity was made. No constituents exceeded the 10% significance threshold or, for other reasons, triggered a detailed socioeconomic analysis and consideration of alternatives to the potential water quality impacts. Nevertheless, a socioeconomic analysis was provided to facilitate weighing the benefits of the non-significant lowering of water quality that may occur. The objective of the socioeconomic analysis is to determine if the lowering of Rock Creek and Dry Creek water quality is in the “best interest” of the people of the State.

The socioeconomic evaluation considered:

- The social benefits and costs based on the ability to accommodate socioeconomic development in the Placer County General Plan.

Finding: Given the current infrastructure in place, future development in the service area also would rely on the County and the SMD1 WWTP for wastewater collection, treatment, and recycled water services. The expansion of the SMD1 WWTP from its current 2.18 mgd ADWF permitted capacity to 2.7 mgd ADWF would accommodate planned and approved growth in the surrounding areas. Placing connection bans on the SMD1 WWTP to prevent increased discharges, thereby eliminating any incremental change to Rock Creek and Dry Creek water quality, would have negative effects on important socioeconomic development in the area. Should the incremental changes in Rock Creek and Dry Creek water quality characterized herein be disallowed, such action would: 1) force future developments to find alternative methods for disposing of wastewater, 2) require adding microfiltration or a reverse-osmosis treatment processes to a significant portion of flow at the SMD1 WWTP, and possibly other plant expansions/upgrades, to eliminate the increment for all constituents from the additional discharge rate, or 3) prohibit planned and approved development within and adjacent to the SMD1 WWTP service area.

- The magnitude of the change in water quality from existing conditions, the water quality impacts, and expected effects on beneficial uses of Rock and Dry creeks and downstream waters.

Finding: No constituents formally triggered a detailed socioeconomic analysis since use of available assimilative capacity was less than ten percent. Furthermore, all applicable water quality criteria/objectives are anticipated to be met and all beneficial uses protected by the improved effluent quality of the upgraded and expanded plant. With the higher 2.7 mgd discharge rate, some constituents would have either an improvement (i.e., lowered creek concentration) or little to no change in creek concentrations or mass loading downstream of the discharge.

- The feasibility and effectiveness of reducing the lowering of water quality by implementing alternatives to lowering of Rock Creek and Dry Creek water quality.

Finding: An evaluation of several alternatives, and their effects on water quality impacts and beneficial use protection, did not identify any feasible alternative control measure that more effectively would accommodate the planned and approved growth that would result from implementing the alternative, relative to implementing the proposed project (i.e., planned upgrade/expansion). For example, regionalizing the entire discharge is the most effective alternative to prevent lowering of water quality in Rock and Dry creeks, but it comes with the greatest cost. Regionalization of the entire discharge would remove approximately 35% of the average monthly flow in Rock Creek and more than 25% of the average monthly flow in Dry Creek, move potential water quality impacts further downstream in the same watershed, and cost approximately 50% more than the estimated cost of the proposed increased discharge project.

- The economic costs for alternatives and assessed alternative costs against the current project expansion cost estimate of \$87 million, the increased cost for ratepayers, and the magnitude of the change in ratepayer costs.

Finding: In general, the cost to implement alternatives would be distributed to ratepayers based on need to address existing versus expansion-related water quality issues. New development, that requires plant expansion for capacity, and existing development, which requires increased treatment to meet applicable water quality objectives, would equally share costs associated with additional capacity, thereby possibly prohibiting some of the important socioeconomic growth for the area by making it economically impractical for the new development to occur and further increasing the cost to existing customers to upgrade the plant. The additional costs for implementing alternatives ranged up to 50% more than the estimated costs for the proposed expansion of discharge capacity. For the four viable alternatives, the annual rate increase for new and existing customers ranged from \$432 to \$816 as compared to the proposed project.

5. The rationale for determining that the proposed action is or is not justified by socioeconomic considerations.

The expansion of the SMD1 WWTP from its current 2.18 mgd ADWF permitted capacity to 2.7 mgd ADWF would accommodate planned and approved growth in the neighboring areas. Having new development in the region independently treat its wastewater in an effort to eliminate any incremental degradation of water quality in Rock and Dry creeks would not be cost-effective, may not reduce loadings to downstream portions of the watershed (e.g., Sacramento River), and may not improve water quality (from a constituent concentration basis) throughout Rock and Dry creeks. Moreover, disposal of the new development's wastewater elsewhere may simply cause similar and possibly new forms of degradation elsewhere in Rock and Dry creeks, in other surface waterbodies, or in groundwater.

The SMD1 WWTP has sought to identify customers for use of recycled water. Currently prospective customers can obtain water from NID at a cheaper cost, however, the County will continue to pursue potential recycled water use opportunities in the future, thereby minimizing discharges to surface waters. The County will continue to operate a treatment train that meets and exceeds BPTC and will facilitate greater use of recycled water, upon demand for such water developing in the area. Any potential for discharges to cause exceedances of adopted water quality criteria/objectives would be effectively addressed through the NPDES permit renewal process, thereby being addressed in a timely manner. Thus, resulting downstream water quality within Rock and Dry creeks would not cause a nuisance and would continue to be protective of all beneficial uses within the creek, as well as uses of downstream waters.

Section 6.2 considered several alternatives and found them infeasible for cost or logistic concerns or both, when compared to the proposed action of increased SMD 1 WWTP discharge. Installation of advanced treatment designed to eliminate all incremental changes in downstream water quality would be very costly, and would result in new environmental concerns associated with increased energy use and brine disposal. Placing connection bans on the SMD1 WWTP to prevent the non-significant degradation of water quality would have direct adverse effects on important socioeconomic development approved for the region, which, in turn, would adversely affect the County's future rate payer and tax base.

Based on the assessment contained herein, it is determined that the SMD1 WWTP upgrade and expansion project will operate to meet the highest statutory and regulatory NPDES requirements which result in the best practicable treatment and control of the discharge necessary to assure that a water quality nuisance will not occur and that beneficial uses are fully protected. The limited degradation in receiving water quality that may occur as a result of planned discharge expansion is not significant and would accommodate important socioeconomic development in the service area while maintaining full protection of the Rock Creek and Dry Creek beneficial uses. An evaluation of several alternatives, and their effects on water quality impacts and beneficial use protection did not identify any feasible alternative control measure that more effectively would accommodate the planned and approved growth that would result

from implementing the alternative, relative to implementing the planned upgrade/expansion project.

Based on the analysis contained herein, the anticipated water quality changes in Rock and Dry creeks will be consistent with state and federal antidegradation policies, will be to the important socioeconomic benefit to the people of the region, be to the maximum benefit of the people of the State, and will not result in water quality less than that prescribed in the policies that are required to prevent a nuisance or that are required to protect beneficial uses.

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Table 6. Incremental mass balance change in Dry Creek water quality due to future 2.7 mgd ADWF discharge of constituents and comparison to applicable water quality standards.

Constituent	Units	Effluent Percent Detect	Concentration in Dry Creek downstream of WWTP and Rock Creek (R4)			Lowest Applicable Water Quality Criteria		Assimilative Capacity		Further Analysis
			@ Current (2.18 mgd) Discharge Rate	@ Future (2.7 mgd) Discharge Rate	Incremental Increase	Value	Basis	Available	Used by Expansion	
<p>DHS 2nd MCL= Department of Health Services secondary maximum contaminant level. Total Rec. = total recoverable. NA = not applicable and/or no assimilative capacity is available. ND = non-detect All effluent values expected to be non-detectable with UV disinfection. ¹ Currently there is no assimilative capacity because the upstream receiving water exceeds the applicable water quality criteria. ² Currently there is no assimilative capacity, however effluent from the upgraded/expanded plant and downstream receiving waters will meet applicable water quality criteria. ³ The anticipated decrease cannot be calculated since effluent levels are expected to be non-detect for the upgraded/expanded plant. ⁴ Phosphorus levels are anticipated to decrease in effluent form the upgraded/expanded plant. However, an accurate quantification of the anticipated decrease cannot be calculated at this time.</p>										

Appendix A

Rock Creek, Effluent, and Dry Creek Flow Rates

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
7/1/2006	2.9	1.37	0.2
7/2/2006	2.8	1.28	0.5
7/3/2006	3	1.34	0.3
7/4/2006	3	1.25	0.3
7/5/2006	2.1	1.36	0.3
7/6/2006	1.4	1.36	0.3
7/7/2006	0.5	1.35	0.3
7/8/2006	3.2	1.32	0.04
7/9/2006	3	1.25	0.07
7/10/2006	3.4	1.35	0.1
7/11/2006	3	1.35 <	0.01
7/12/2006	2.9	1.39 <	0.01
7/13/2006	2.9	1.45 <	0.01
7/14/2006	3.3	1.41	0.1
7/15/2006	3.1	1.32	0.02
7/16/2006	3.2	1.3	0.03
7/17/2006	3	1.4 <	0.01
7/18/2006	3	1.41 <	0.01
7/19/2006	3	1.34 <	0.01
7/20/2006	3	1.35 <	0.01
7/21/2006	3	1.44	0.1
7/22/2006	3	1.43	0.02
7/23/2006	2.9	1.49	0.04
7/24/2006	3	1.44 <	0.01
7/25/2006	3	1.41 <	0.01
7/26/2006	3	1.45 <	0.01
7/27/2006	3	1.47 <	0.01
7/28/2006	3	1.47 <	0.01
7/29/2006	3	1.37 <	0.01
7/30/2006	2.2	1.34 <	0.01
7/31/2006	3	1.43 <	0.01
8/1/2006	2.1	1.43 <	0.01
8/2/2006	3	1.33 <	0.01
8/3/2006	2.5	1.4 <	0.01
8/4/2006	0.5	1.38 <	0.01
8/5/2006	2.3	1.42 <	0.01
8/6/2006	3	1.39 <	0.01
8/7/2006	3.4	1.48 <	0.01
8/8/2006	3	1.44	0.3
8/9/2006	3	1.51	0.3
8/10/2006	3	1.84	0.3
8/11/2006	3	1.45	0.3
8/12/2006	3	1.36	0.04
8/13/2006	3	1.35	0.04
8/14/2006	3.4	1.4 <	0.01

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
8/15/2006	3	1.44 <	0.01
8/16/2006	3	1.43 <	0.01
8/17/2006	0.3	1.41	0.1
8/18/2006	3	1.43	0.3
8/19/2006	2.2	1.4	0.02
8/20/2006	2.4	1.37	0.02
8/21/2006	3	1.43 <	0.01
8/22/2006	2.4	1.45 <	0.01
8/23/2006	2.5	1.45	0.3
8/24/2006	1.8	1.41	0.01
8/25/2006	1.8	1.36	0.01
8/26/2006	2.6	1.44	0.3
8/27/2006	2.5	1.41	0.3
8/28/2006	3	1.44	0.3
8/29/2006	2.9	1.4	0.3
8/30/2006	3.5	1.42	0.4
8/31/2006	3.9	1.4	0.3
9/1/2006	0.3	1.39	0.3
9/2/2006	3.4	1.44	0.3
9/3/2006	4.2	1.32	0.1
9/4/2006	3.9	1.36 <	0.01
9/5/2006	3.9	1.48	0.2
9/6/2006	3.9	1.36	0.1
9/7/2006	3.9	1.44 <	0.01
9/8/2006	3.9	1.47 <	0.01
9/9/2006	4.2	1.41 <	0.01
9/10/2006	3.9	1.38 <	0.01
9/11/2006	3.9	1.48	0.3
9/12/2006	3.9	1.39	0.1
9/13/2006	3.9	1.44	0.3
9/14/2006	3.9	1.45	0.1
9/15/2006	3.9	1.39	0.1
9/16/2006	3.4	1.35	0.5
9/17/2006	3.2	1.34	0.4
9/18/2006	3.9	1.44	0.1
9/19/2006	3.9	1.42	0.3
9/20/2006	3.9	1.38	0.1
9/21/2006	3.4	1.42	0.1
9/22/2006	4.4	1.41	0.27
9/23/2006	3.4	1.41	0.1
9/24/2006	4.4	1.33	0.1
9/25/2006	4.1	1.36	0.2
9/26/2006	4.4	1.45	0.3
9/27/2006	4.4	1.42	0.3
9/28/2006	3.9	1.41	0.3

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
9/29/2006	3	1.38	0.3
9/30/2006	4	1.36	0.3
10/1/2006	3.7	1.41	0.3
10/2/2006	3.9	1.42	0.3
10/3/2006	4.4	1.41	0.5
10/4/2006	3.4	1.39	1.1
10/5/2006	7	1.38	1
10/6/2006	4.4	1.41	0.8
10/7/2006	4	1.36	0.8
10/8/2006	3.9	1.31	0.8
10/9/2006	4.9	1.36	0.9
10/10/2006	7	1.45	0.8
10/11/2006	4.9	1.37	0.4
10/12/2006	5.1	1.39	0.3
10/13/2006	5.4	1.37	0.5
10/14/2006	3.4	1.31	0.3
10/15/2006	3.9	1.34	0.3
10/16/2006	2.1	1.41	0.3
10/17/2006	2.9	1.38	0.3
10/18/2006	3.4	1.33	0.3
10/19/2006	3.4	1.38	0.3
10/20/2006	3.4	1.31	0.3
10/21/2006	3.9	1.38	0.1
10/22/2006	1.8	1.36	0.1
10/23/2006	4.4	1.34	0.1
10/24/2006	3.9	1.4	0.1
10/25/2006	4.9	1.35	0.04
10/26/2006	7	1.36	0.1
10/27/2006	3.9	1.32	0.1
10/28/2006	3.9	1.31	3
10/29/2006	4.9	1.29	0.07
10/30/2006	4.4	1.31	0.1
10/31/2006	4.9	1.33	0.1
11/1/2006	4.7	1.36	0.1
11/2/2006	3.4	1.56	0.1
11/3/2006	3.9		0.3
11/4/2006	1.1	1.38	0.8
11/5/2006	0.1	1.37	0.3
11/6/2006	1.8	1.4	0.3
11/7/2006	0.8	1.37	0.3
11/8/2006	1.8	1.43	0.07
11/9/2006	0.8	1.34	0.1
11/10/2006	0.8	1.39	0.3
11/11/2006	0.8	1.39	0.3
11/12/2006	0.8	1.37	0.6

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
11/13/2006	1.8	1.45	0.6
11/14/2006	2.1	1.48	0.7
11/15/2006	2.5	1.4	0.8
11/16/2006	2.5	1.45	0.5
11/17/2006	2.5	1.42	0.3
11/18/2006	3.4	1.41	0.3
11/19/2006	2.1	1.38	0.3
11/20/2006	2.1	1.41	0.3
11/21/2006	2.5	1.37	0.3
11/22/2006	2.1	1.44	0.3
11/23/2006	3	1.32	0.5
11/24/2006	2.1	1.29	0.5
11/25/2006	2.5	1.33	0.3
11/26/2006	3.9	1.36	1.3
11/27/2006	5.4	1.38	0.3
11/28/2006	3.4	1.37	0.3
11/29/2006	2.5	1.36	0.3
11/30/2006	2.1	1.36	0.3
12/1/2006	2.1	1.37	0.3
12/2/2006	2.5	1.37	0.5
12/3/2006	2	1.35	0.3
12/4/2006	2.5	1.35	0.5
12/5/2006	2.5	1.3	0.3
12/6/2006	2	1.32	0.3
12/7/2006	2.5	1.31	0.5
12/8/2006	2.5	1.32	0.5
12/9/2006	8.2	1.8	3
12/10/2006	8.2	1.94	4.9
12/11/2006	3.4	1.66	2.5
12/12/2006	8.2	2.33	4.4
12/13/2006	8.2	2.36 >	8.2
12/14/2006	4.4	1.85	3
12/15/2006	6.5	1.8	2.5
12/16/2006	3.6	1.6	3
12/17/2006	3	1.51	1.4
12/18/2006	3	1.52	0.7
12/19/2006	2.8	1.46	0.8
12/20/2006	2.5	1.45	0.7
12/21/2006	6.5	1.74	1.1
12/22/2006	3.9	1.85	4.4
12/23/2006	3.9	1.65	2.5
12/24/2006	2.9	1.56	1.4
12/25/2006	3.4	1.37	1.1
12/26/2006	3	1.68	1.1
12/27/2006	8.2	2.84 >	8.2

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
12/28/2006	3	2	4.4
12/29/2006	4	1.74	2.5
12/30/2006	3	1.6	1.8
12/31/2006	2.5	1.54	1.3
1/1/2007	2.6	1.47	1.3
1/2/2007	3	1.53	1.3
1/3/2007	3.9	1.58	1.3
1/4/2007	8.2	2.07 >	8.2
1/5/2007	4.4	1.86	3.4
1/6/2007	5.9	1.7	2.5
1/7/2007	3	1.58	1.5
1/8/2007	3.4	1.64	1.5
1/9/2007	2.8	1.55	1.5
1/10/2007	3.4	1.58	0.8
1/11/2007	3.4	1.51	1.4
1/12/2007	3.4	1.44	1.1
1/13/2007	3	1.51	1.4
1/14/2007	3	1.47	1
1/15/2007	3	1.5	0.8
1/16/2007	3	1.44	1
1/17/2007	3	1.43	1.4
1/18/2007	3	1.42	2.5
1/19/2007	2.1	1.41	2.1
1/20/2007	3	1.44	1
1/21/2007	2.8	1.37	0.9
1/22/2007	2.7	1.35	0.8
1/23/2007	2.5	1.46	0.9
1/24/2007	3	1.57	0.8
1/25/2007	3	1.32	0.5
1/26/2007	3	1.35	0.5
1/27/2007	2.8	1.4	0.5
1/28/2007	3	1.32	0.8
1/29/2007	2.6	1.4	0.8
1/30/2007	3	1.37	0.8
1/31/2007	2.5	1.3	0.6
2/1/2007	3.4	1.36	0.8
2/2/2007	3.4	1.4	0.8
2/3/2007	3	1.36	0.8
2/4/2007	3	1.32	0.6
2/5/2007	2.6	1.39	0.6
2/6/2007	2.2	1.38	0.5
2/7/2007	2.1	1.54	0.3
2/8/2007	3	1.65	1.1
2/9/2007	8.2	2.82 >	8.2
2/10/2007	8.2	5.11 >	8.2

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
2/11/2007	8.2	5.13 >	8.2
2/12/2007	4.9	2.84 >	8.2
2/13/2007	7	3.03 >	8.2
2/14/2007	4.9	2.34	7.4
2/15/2007	4.4	2.08	4.4
2/16/2007	3	1.95	3.4
2/17/2007	2.8	1.83	2.5
2/18/2007	2.1	1.7	2.1
2/19/2007	3	1.72	2.1
2/20/2007	2.7	1.65	2.1
2/21/2007	3	1.62	1.8
2/22/2007	8.2	2.25 >	8.2
2/23/2007	5.4	2.11 >	8.2
2/24/2007	8.2	1.91	3.9
2/25/2007	8.2	3.32 >	8.2
2/26/2007	8.2	4.21 >	8.2
2/27/2007	8.2	3.28 >	8.2
2/28/2007	8.2	3.43 >	8.2
3/1/2007	7	2.7 >	8.2
3/2/2007	6.5	2.13	7.6
3/3/2007	5.9	2.08	5.9
3/4/2007	4.8	1.95	4.7
3/5/2007	1.4	1.88	3.4
3/6/2007	1	1.8	3
3/7/2007	4.9	1.76	2.5
3/8/2007	3.9	1.71	2.5
3/9/2007	3.9	1.73	2.1
3/10/2007	6.6	1.61	1.8
3/11/2007	7	1.6	1.8
3/12/2007	5.9	1.65	1.8
3/13/2007	4.3	1.63	1.8
3/14/2007	3.4	1.56	1.8
3/15/2007	5.4	1.56	2.5
3/16/2007	2.1	1.62	3
3/17/2007	1.8	1.51	3
3/18/2007	1.4	1.49	3.4
3/19/2007	5.4	1.5	1.8
3/20/2007	2.1	1.56	1.4
3/21/2007	2.5	1.53	1.4
3/22/2007	2.5	1.51	1.1
3/23/2007	2.1	1.54	1.1
3/24/2007	2.1	1.47	1.1
3/25/2007	2.1	1.5	0.9
3/26/2007	2	1.63	0.8
3/27/2007	2.5	1.56	2.5

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
3/28/2007	2.8	1.55	1.9
3/29/2007	3.4	1.5	2.1
3/30/2007	3.4	1.63	1.8
3/31/2007	3.1	1.6	3.9
4/1/2007	3.8	1.46	1.4
4/2/2007	4.4	1.5	1.8
4/3/2007	3.1	1.45	0.8
4/4/2007	8.2	1.48	1.1
4/5/2007	8.2	1.48	0.8
4/6/2007	8.2	1.49	0.8
4/7/2007	8.2	1.5	0.8
4/8/2007	8.2	1.37	0.7
4/9/2007	8.2	1.41	0.5
4/10/2007	7.6	1.43	0.5
4/11/2007	8.2	1.43	1.2
4/12/2007	8.2	1.41	1.1
4/13/2007	8.2	1.38	2.5
4/14/2007	8.2	1.48	2.5
4/15/2007	8.2	1.43	3
4/16/2007	8.2	1.45	2.1
4/17/2007	8.2	1.44	2.5
4/18/2007	7.4	1.33	1.1
4/19/2007	8.2	1.39	1.1
4/20/2007	8.2	1.34	0.8
4/21/2007	8.2	1.43	0.8
4/22/2007	8.2	2.62 >	8.2
4/23/2007	8.2	1.79	4.4
4/24/2007	8.2	1.63	2.1
4/25/2007	8.2	1.61	2.1
4/26/2007	8.2	1.54	2.1
4/27/2007	8.2	1.51	2.1
4/28/2007	8.2	1.59	1.8
4/29/2007	8.2	1.45	1.3
4/30/2007	8.2	1.5	1.1
5/1/2007	8.2	1.46	0.8
5/2/2007	8.2	1.63	2.9
5/3/2007	8.2	1.52	2.1
5/4/2007	8.2	1.58	2.1
5/5/2007	8.2	1.5	1.8
5/6/2007	8.2	1.39	0.8
5/7/2007	8.2	1.46	0.8
5/8/2007	8.2	1.44	0.8
5/9/2007	8.2	1.38	1.3
5/10/2007	7.6	1.4	0.8
5/11/2007	6.5	1.39	0.8

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
5/12/2007	8.2	1.47	0.8
5/13/2007	6.5	1.39	0.9
5/14/2007	7.7	1.37	1.1
5/15/2007	8.2	1.4	1.1
5/16/2007	7.6	1.41	1.1
5/17/2007	8.2	1.37	0.8
5/18/2007	8.2	1.34	0.8
5/19/2007	8.2	1.37	0.8
5/20/2007	7	1.33	0.7
5/21/2007	8.2	1.31	0.5
5/22/2007	7.6	1.39	0.8
5/23/2007	8.2	1.38	1.5
5/24/2007	7	1.39	1.1
5/25/2007	8.2	1.34	0.8
5/26/2007	8.2	1.42	0.3
5/27/2007	8.2	1.42	0.4
5/28/2007	8.2	1.43	0.5
5/29/2007	8.2	1.37	0.5
5/30/2007	8.2	1.37	0.3
5/31/2007	8.2	1.34	0.5
6/1/2007	8.2	1.38	0.5
6/2/2007	8.2	1.36	0.8
6/3/2007	7	1.29	0.7
6/4/2007	8.2	1.32	0.5
6/5/2007	8.2	1.35	0.3
6/6/2007	8.2	1.33	1
6/7/2007	7.6	1.39	0.8
6/8/2007	8.2	1.4	0.5
6/9/2007	8.2	1.37	0.5
6/10/2007	8.2	1.36	0.4
6/11/2007	8.2	1.34	0.3
6/12/2007	8.2	1.35	0.4
6/13/2007	8.2	1.34	0.3
6/14/2007	8.2	1.39	0.5
6/15/2007	8.2	1.33	0.3
6/16/2007	8.2	1.33	0.3
6/17/2007	8.2	1.27	0.2
6/18/2007	8.2	1.35	0.3
6/19/2007	8.2	1.43	0.3
6/20/2007	8.2	1.49	0.1
6/21/2007	8.2	1.35	0.2
6/22/2007	8.2	1.41	0.3
6/23/2007	8.2	1.34	0.3
6/24/2007	8.2	1.32	0.2
6/25/2007	8.2	1.33	0.1

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
6/26/2007	8.2	1.38	0.1
6/27/2007	8.2	1.37	0.1
6/28/2007	8.2	1.42	0.1
6/29/2007	8.2	1.4	0.5
6/30/2007	8.2	1.31	0.3
7/1/2007	8.2	1.29	0.3
7/2/2007	8.2	1.33	0.3
7/3/2007	8.2	1.38	0.3
7/4/2007	8.2	1.33	0.3
7/5/2007	8.2	1.41	0.3
7/6/2007	8.2	1.45	0.3
7/7/2007	8.2	1.37	0.8
7/8/2007	8.2	1.35	0.3
7/9/2007	8.2	1.37	0.01
7/10/2007	8.2	1.41	0.3
7/11/2007	8.2	1.43	0.5
7/12/2007	8.2	1.44	0.5
7/13/2007	8.2	1.41	0.6
7/14/2007	8.2	1.32	0.3
7/15/2007	8.2	1.25	0.3
7/16/2007	8.2	1.39	0.1
7/17/2007	8.2	1.4	0.1
7/18/2007	8.2	1.43	0.2
7/19/2007	8.2	1.4	0.1
7/20/2007	8.2	1.4	0.3
7/21/2007	8.2	1.37	0.1
7/22/2007	8.2	1.32	0.1
7/23/2007	8.2	1.28	0.1
7/24/2007	8.2	1.5	0.1
7/25/2007	8.2	1.42	0.3
7/26/2007	8.2	1.36	0.4
7/27/2007	8.2	1.35	0.8
7/28/2007	8.2	1.29	0.8
7/29/2007	8.2	1.34	0.8
7/30/2007	1.8	1.4	0.7
7/31/2007	1.9	1.4	0.8
8/1/2007	1.8	1.36	0.3
8/2/2007	2.1	1.43	0.3
8/3/2007	8.2	1.42	0.8
8/4/2007	8.2	1.35	1.1
8/5/2007	8.2	1.34	0.4
8/6/2007	8.2	1.39	0.6
8/7/2007	8.2	1.41	0.8
8/8/2007	8.2	1.41	1.1
8/9/2007	8.2	1.4	0.8

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
8/10/2007	8.2	1.4	0.8
8/11/2007	8.2	1.34	0.8
8/12/2007	8.2	1.31	0.6
8/13/2007	8.2	1.39	0.4
8/14/2007	8.2	1.39	0.3
8/15/2007	8.2	1.37	1.1
8/16/2007	8.2	1.36	0.8
8/17/2007	8.2	1.38	0.8
8/18/2007	8.2	1.35	0.8
8/19/2007	8.2	1.37	1.1
8/20/2007	8.2	1.44	0.8
8/21/2007	8.2	1.41	1.1
8/22/2007	8.2	1.43	0.8
8/23/2007	8.2	1.44	1.4
8/24/2007	8.2	1.42	1.1
8/25/2007	8.2	1.36	1.1
8/26/2007	8.2	1.37	1.1
8/27/2007	8.2	1.4	1
8/28/2007	8.2	1.44	1.1
8/29/2007	8.2	1.44	0.8
8/30/2007	8.2	1.47	0.5
8/31/2007	8.2	1.47	0.3
9/1/2007	8.2	1.41	0.3
9/2/2007	8.2	1.32	1.1
9/3/2007	8.2	1.41	0.8
9/4/2007	8.2	1.43	0.5
9/5/2007	8.2	1.39	0.4
9/6/2007	8.2	1.41	0.3
9/7/2007	8.2	1.41	0.5
9/8/2007	8.2	1.38	0.5
9/9/2007	8.2	1.39	0.5
9/10/2007	8.2	1.42	0.5
9/11/2007	8.2	1.42	0.5
9/12/2007	8.2	1.4	0.7
9/13/2007	8.2	1.46	0.8
9/14/2007	8.2	1.43	0.8
9/15/2007	8.2	1.42	0.8
9/16/2007	8.2	1.4	0.8
9/17/2007	8.2	1.46	0.8
9/18/2007	8.2	1.44	0.5
9/19/2007	8.2	1.43	0.4
9/20/2007	8.2	1.42	0.5
9/21/2007	8.2	1.39	0.5
9/22/2007	8.2	1.39	0.5
9/23/2007	8.2	1.4	0.8

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
9/24/2007	8.2	1.41	0.3
9/25/2007	8.2	1.38	0.5
9/26/2007	8.2	1.38	0.5
9/27/2007	8.2	1.39	0.2
9/28/2007	8.2	1.39	0.5
9/29/2007	8.2	1.33	0.3
9/30/2007	8.2	1.34	0.5
10/1/2007	8.2	1.39	0.3
10/2/2007	8.2	1.34	0.1
10/3/2007	8.2	1.39	0.4
10/4/2007	8.2	1.44	0.3
10/5/2007	8.2	1.4	0.3
10/6/2007	8.2	1.35	0.3
10/7/2007	8.2	1.34	0.3
10/8/2007	8.2	1.42	0.3
10/9/2007	8.2	1.41	0.3
10/10/2007	8.2	1.65	1.4
10/11/2007	8.2	1.46	0.8
10/12/2007	8.2	1.51	0.5
10/13/2007	8.2	1.45	0.5
10/14/2007	5.9	1.42	0.3
10/15/2007	3	1.44	0.3
10/16/2007	4.9	1.55	0.3
10/17/2007	3.7	1.48	0.3
10/18/2007	3.9	1.49	0.3
10/19/2007	3.4	1.66	0.3
10/20/2007	6.5	1.63	1.4
10/21/2007	3.9	1.44	0.3
10/22/2007	3	1.46	0.2
10/23/2007	3	1.48	0.2
10/24/2007	3.5	1.44	0.2
10/25/2007	4.4	1.37	0.3
10/26/2007	3	1.46	0.3
10/27/2007	3	1.42	0.3
10/28/2007	2.7	1.34	0.3
10/29/2007	2.1	1.48	0.3
10/30/2007	3	1.41	0.3
10/31/2007	5.9	1.41	0.8
11/1/2007	2.1	1.42	1.4
11/2/2007	2.1	1.39	1.4
11/3/2007	2.1	1.33	1.4
11/4/2007	2.1	1.32	5.9
11/5/2007	1.8	1.36	5.9
11/6/2007	1.8	1.46	5.9
11/7/2007	3	1.41	

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
11/8/2007	3	1.44	5.9
11/9/2007	8.2	1.42	
11/10/2007	8.2	1.47	
11/11/2007	8.2	1.94	
11/12/2007	8.2	1.66	
11/13/2007	3.4	1.49	
11/14/2007	3.4	1.44	
11/15/2007	4.4	1.5	
11/16/2007	4.4	1.41	
11/17/2007	4.4	1.37	
11/18/2007	8.2	1.33	
11/19/2007	8.2	1.41	
11/20/2007	8.2	1.39	
11/21/2007	8.2	1.4	
11/22/2007	8.2	1.28	
11/23/2007	8.2	1.29	
11/24/2007	8.2	1.33	
11/25/2007	8.2	1.36	
11/26/2007	8.2	1.42	
11/27/2007	8.2	1.39	
11/28/2007	4.4	1.36	
11/29/2007	3.4	1.34	
11/30/2007	4.9	1.35	
12/1/2007	4.4	1.34	
12/2/2007	3.9	1.37	
12/3/2007	4.4	1.41	
12/4/2007	5.4	1.47	
12/5/2007	3.3	1.4	
12/6/2007	8.2	1.67	
12/7/2007	8.2	3.44	8.2
12/8/2007	5.9	1.86	3.9
12/9/2007	4.9	1.61	1.1
12/10/2007	2.5	1.58	
12/11/2007	3.9	1.48	
12/12/2007	3.5	1.45	
12/13/2007	4.4	1.44	
12/14/2007	4.4	1.41	
12/15/2007	4.4	1.41	
12/16/2007	4.1	1.42	
12/17/2007	8.2	1.9	
12/18/2007	8.2	3.31	
12/19/2007	8.2	2.48	
12/20/2007	8.2	3.79	8.2
12/21/2007	6.5	2.24	7
12/22/2007	5.4	1.91	5.9

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
12/23/2007	4.1	1.75	2.3
12/24/2007	3.9	1.69	2.1
12/25/2007	5	1.4	
12/26/2007	4.9	1.59	
12/27/2007	4.9	1.56	
12/28/2007	4.9	1.54	
12/29/2007	4.9	1.66	
12/30/2007	4.3	1.72	
12/31/2007	4.4	1.65	
1/1/2008	5.4	1.5	
1/2/2008	4.7	1.55	
1/3/2008	4.9	1.65	
1/4/2008	8.2	3.35	
1/5/2008	8.2	3.94	8.2
1/6/2008	8.2	3.22	8.2
1/7/2008	7.8	2.59	8.2
1/8/2008	5.1	2.56	4.9
1/9/2008	8.2	2.67	8.2
1/10/2008	6.5	2.33	5.9
1/11/2008	4.9	2.1	3.9
1/12/2008	4.9	1.95	3.9
1/13/2008	4	1.78	3.1
1/14/2008	4.7	1.78	
1/15/2008	3.9	1.69	
1/16/2008	3.8	1.6	
1/17/2008	3.8	1.57	
1/18/2008	5.9	1.57	
1/19/2008	5.9	1.49	
1/20/2008	2.2	1.44	
1/21/2008	2.5	1.57	
1/22/2008	2.1	1.53	
1/23/2008	4.9	1.69	8.2
1/24/2008	8.2	2.18	
1/25/2008	5.9	1.95	8.2
1/26/2008	5.9	2.06	8.2
1/27/2008	7	2.36	
1/28/2008	6.5	2.36	
1/29/2008	6.2	2.46	
1/30/2008	4.4	2.42	
1/31/2008	3.9	2.63	
2/1/2008	8.2	3.37	8.2
2/2/2008	8.2	2.61	8.2
2/3/2008	8.2	3.75	
2/4/2008	7.1	2.89	
2/5/2008	4.9	2.31	8.2

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
2/6/2008	5.4	2.11	5.9
2/7/2008	4.4	1.98	4.4
2/8/2008	4.4	1.85	3.9
2/9/2008	3.4	1.75	3.4
2/10/2008	3.4	1.66	2.8
2/11/2008	3.5	1.69	2.5
2/12/2008	3.4	1.63	3.4
2/13/2008	2.6		2.5
2/14/2008	2.6	1.56	2.2
2/15/2008	3.4	1.54	2.2
2/16/2008	3.4	1.51	2.2
2/17/2008	2.5	1.44	
2/18/2008	2.6	1.52	
2/19/2008	2.6		
2/20/2008	5.9		
2/21/2008	3.4		
2/22/2008	5.4	1.88	
2/23/2008	4.9	1.86	
2/24/2008	8.2	2.78	
2/25/2008	5.8	2.54	
2/26/2008	4.9	2.09	
2/27/2008	4.2	1.94	
2/28/2008	4	1.86	
2/29/2008	3.4	1.85	
3/1/2008	3.4	1.69	
3/2/2008	2.9	1.66	
3/3/2008	2.7	1.68	
3/4/2008	2.5	1.59	
3/5/2008	2.5	1.57	
3/6/2008	2.3	1.56	
3/7/2008	3	1.53	
3/8/2008	2.8	1.53	
3/9/2008	2.8	1.52	
3/10/2008	3	1.54	
3/11/2008	3.4	1.54	
3/12/2008	2.5	1.53	
3/13/2008	2.8	1.52	
3/14/2008	3	1.52	
3/15/2008	3	1.47	
3/16/2008	3	1.44	
3/17/2008	3	1.49	
3/18/2008	4	1.48	
3/19/2008	4	1.5	
3/20/2008	4.9	1.49	
3/21/2008	4	1.5	

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
3/22/2008	3.7	1.45	
3/23/2008	4	1.2	
3/24/2008	3.4	1.5	
3/25/2008	2.5	1.49	
3/26/2008	3	1.48	
3/27/2008	2.7	1.45	
3/28/2008	3.4	1.48	
3/29/2008	8.2	1.62	
3/30/2008	2.5	1.49	
3/31/2008	2.5	1.49	
4/1/2008	3	1.49	
4/2/2008	2.6	1.46	
4/3/2008	2.7	1.94	
4/4/2008	2.5	1.47	
4/5/2008	2.5	1.44	
4/6/2008	2.5	1.44	
4/7/2008	7.1	1.46	
4/8/2008	7.1	1.45	
4/9/2008	3.1	1.47	
4/10/2008	2.1	1.45	
4/11/2008	3.4	1.41	
4/12/2008	3.4	1.27	
4/13/2008	2.6	1.39	
4/14/2008	2.5	1.45	
4/15/2008	2.5	1.42	
4/16/2008	2.5	1.41	
4/17/2008	3	1.45	
4/18/2008	3.1	1.45	
4/19/2008	2.3	1.35	
4/20/2008	3.1	1.34	
4/21/2008	3.1	1.43	
4/22/2008	3.8	1.45	
4/23/2008	3.9	1.48	
4/24/2008	3.9	1.35	
4/25/2008	3.9	1.36	
4/26/2008	3.9	1.35	
4/27/2008	3.1	1.34	
4/28/2008	2.7	1.43	
4/29/2008	2.5	1.36	
4/30/2008	3	1.32	
5/1/2008	3	1.33	
5/2/2008	3	1.36	
5/3/2008	2.8	1.34	
5/4/2008	2.6	1.31	
5/5/2008	2.5	1.41	

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
5/6/2008	2.8		
5/7/2008	3		
5/8/2008	0.8		
5/9/2008	0.8		
5/10/2008	3	1.38	
5/11/2008	3.4	1.34	
5/12/2008	3.4	1.4	
5/13/2008	3.7	1.36	
5/14/2008	4	1.39	
5/15/2008	3.6	1.46	
5/16/2008	3.4	1.45	
5/17/2008	3	1.43	
5/18/2008	3.4		
5/19/2008	3.1	1.46	
5/20/2008	3.4	1.44	
5/21/2008	3	1.42	
5/22/2008	3	1.43	
5/23/2008	3	1.41	
5/24/2008	4.4	1.4	
5/25/2008	3	1.32	
5/26/2008	3	1.41	
5/27/2008	3	1.42	
5/28/2008	2.9	1.42	
5/29/2008	3	1.42	
5/30/2008	3.4	1.38	
5/31/2008	3	1.4	
6/1/2008	3	1.38	
6/2/2008	3	1.4	
6/3/2008	3	1.42	
6/4/2008	3	1.4	
6/5/2008	0.8	1.38	
6/6/2008	3	1.4	
6/7/2008	4.9	1.33	
6/8/2008	3	1.33	
6/9/2008	3	1.4	
6/10/2008	3	1.42	
6/11/2008	0.8	1.44	
6/12/2008	2.3	1.42	
6/13/2008	2.5	1.34	
6/14/2008	3	1.33	
6/15/2008	3	1.35	
6/16/2008	3	1.39	
6/17/2008	2.8	1.39	
6/18/2008	3	1.41	
6/19/2008	3	1.39	

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
6/20/2008	3.4	1.38	
6/21/2008	3	1.37	
6/22/2008	3	1.34	
6/23/2008	3	1.28	
6/24/2008	3.1	1.5	
6/25/2008	2.1	1.45	
6/26/2008	4	1.42	
6/27/2008	3.4	1.43	
6/28/2008	2.5	1.36	
6/29/2008	2.1	1.36	
6/30/2008	2.3	1.36	
7/1/2008	2.1	1.37	
7/2/2008	2.1	1.44	
7/3/2008	3	1.4	
7/4/2008	4	1.3	
7/5/2008	3.5	1.24	
7/6/2008	2.1	1.33	
7/7/2008	2.1	1.4	
7/8/2008	2.5	1.42	
7/9/2008	3	1.38	
7/10/2008	2.1	1.41	
7/11/2008	3.4	1.46	
7/12/2008	3	1.36	
7/13/2008	2.1	1.32	
7/14/2008	2.1	1.43	
7/15/2008	3	1.37	
7/16/2008	3.4	1.36	
7/17/2008	3	1.43	
7/18/2008	3.4	1.34	
7/19/2008	3	1.35	
7/20/2008	2.3	1.32	
7/21/2008	3	1.32	
7/22/2008	3.4	1.38	
7/23/2008	3	1.37	
7/24/2008	3	1.37	
7/25/2008	3.4	1.37	
7/26/2008	3.7	1.34	
7/27/2008	3.1	1.33	
7/28/2008	3.1	1.36	
7/29/2008	3.1	1.47	
7/30/2008	3.1	1.39	
7/31/2008	0.9	1.38	
8/1/2008	3	1.3	
8/2/2008	3	1.5	
8/3/2008	3	1.3	

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
8/4/2008	3.4	1.34	
8/5/2008	3.4	1.34	
8/6/2008	3.1	1.36	
8/7/2008	3.1	1.41	
8/8/2008	3.9	1.43	
8/9/2008	3.1	1.37	
8/10/2008	3	1.34	
8/11/2008	3	1.44	
8/12/2008	3	1.44	
8/13/2008	3	1.46	
8/14/2008	2.7	1.49	
8/15/2008	3.2	1.45	
8/16/2008	4.4	1.41	
8/17/2008	4.9	1.43	
8/18/2008	4.7	1.31	
8/19/2008	4.4	1.36	
8/20/2008	4.9	1.41	
8/21/2008	4.9	1.49	
8/22/2008	3.5	1.39	
8/23/2008	3.9	1.36	
8/24/2008	3.4	1.38	
8/25/2008	3.1	1.55	
8/26/2008	3.1		
8/27/2008	3.1		
8/28/2008	3.1		
8/29/2008	3		
8/30/2008	8.2	1.33	
8/31/2008	7	1.53	
9/1/2008	8.2	1.34	
9/2/2008	8.2	1.39	
9/3/2008	8.2	1.39	
9/4/2008	8.2	1.36	
9/5/2008	8.2	1.34	
9/6/2008	8.2	1.34	
9/7/2008	8.2	1.38	
9/8/2008	8.2	1.38	
9/9/2008	8.2	1.35	
9/10/2008	8.2	1.37	
9/11/2008	8.2	1.4	
9/12/2008	8.2	1.4	
9/13/2008	8.2	1.34	
9/14/2008	8.2	1.36	
9/15/2008	8.2	1.37	
9/16/2008	8.2	1.4	
9/17/2008	8.2	1.39	

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
9/18/2008	8.2	1.36	
9/19/2008	8.2	1.38	
9/20/2008	8.2	1.38	
9/21/2008	8.2	1.36	
9/22/2008	8.2	1.39	
9/23/2008	8.2	1.39	
9/24/2008	8.2	1.41	
9/25/2008	8.2	1.48	
9/26/2008	8.2	1.45	
9/27/2008	8.2	1.42	
9/28/2008	8.2	1.42	
9/29/2008	8.2	1.48	
9/30/2008	8.2	1.45	
10/1/2008	8.2	1.46	
10/2/2008	8.2	2.22	
10/3/2008	8.2	1.46	
10/4/2008	8.2	1.55	
10/5/2008	8.2	1.43	
10/6/2008	8.2	1.48	
10/7/2008	6.5	1.45	
10/8/2008	6.5	1.41	
10/9/2008	7	1.41	
10/10/2008	6.5	1.41	
10/11/2008	6.5	1.39	
10/12/2008	6.5	1.38	
10/13/2008	5.9	1.42	
10/14/2008	5.9	1.39	
10/15/2008	5.9	1.39	
10/16/2008	7.6	1.41	
10/17/2008	5.9	1.39	
10/18/2008	4.7	1.37	
10/19/2008	4.1	1.34	
10/20/2008	4.1	1.39	
10/21/2008	3.9	1.37	
10/22/2008	4.1	1.34	
10/23/2008	3.9	1.37	
10/24/2008	4.4	1.36	
10/25/2008	3.9	1.34	
10/26/2008	3	1.33	
10/27/2008	3	1.38	
10/28/2008	5	1.34	
10/29/2008	5.9	1.35	0.3
10/30/2008	5	1.37	0.3
10/31/2008	8.2	1.45	
11/1/2008	8.2	2.12	

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
11/2/2008	6.5	1.99	
11/3/2008	2.9	1.77	3.9
11/4/2008	4.9	1.68	
11/5/2008	3.1	1.46	5.9
11/6/2008	3	1.51	6.5
11/7/2008	2.1	1.42	1.4
11/8/2008	2.5	1.43	3
11/9/2008	2.9	1.39	4.1
11/10/2008	8.2	1.43	2.6
11/11/2008	8.2	1.41	1.4
11/12/2008	5	1.37	0.3
11/13/2008	1.1	1.39	0.4
11/14/2008	2.1	1.37	0.5
11/15/2008	2.5	1.36	0.5
11/16/2008	1.4	1.34	0.3
11/17/2008	3.3	1.38	1.4
11/18/2008	3.7	1.37	6.6
11/19/2008	1.8	1.36	7
11/20/2008	3	1.38	7.1
11/21/2008	5.4	1.35	0.5
11/22/2008	5.4	1.3	0.3
11/23/2008	2.1	1.28	0.5
11/24/2008	2.4	1.33	0.3
11/25/2008	2.1	1.38	0.3
11/26/2008	2.1	1.45	0.3
11/27/2008	3	1.24	0.3
11/28/2008	2.5	1.29	0.8
11/29/2008	2.1	1.27	0.8
11/30/2008	2.1	1.28	0.3
12/1/2008	2.1	1.36	
12/2/2008	2.1	1.4	
12/3/2008	2.1	1.4	
12/4/2008	2.1	1.3	
12/5/2008	2.5	1.3	0.5
12/6/2008	2.5	1.26	0.5
12/7/2008	2.1	1.28	0.4
12/8/2008	2.7	1.32	0.4
12/9/2008	2.5	1.33	0.5
12/10/2008	2	1.31	0.5
12/11/2008	2	1.33	0.3
12/12/2008	3	1.33	0.3
12/13/2008	4	1.27	0.3
12/14/2008	2	1.28	0.3
12/15/2008	8.2	1.7	0.3
12/16/2008	3.4	1.46	1.4

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
12/17/2008	2.2	1.41	0.3
12/18/2008	2.5	1.4	0.8
12/19/2008	5.4	1.6	1.8
12/20/2008	3	1.44	0.8
12/21/2008	8.2	1.89	0.3
12/22/2008	6.1	2.36	8.2
12/23/2008	3.3	1.74	3.9
12/24/2008	5.9	1.83	2.1
12/25/2008	8.2	2.73	8.2
12/26/2008	5.9	1.95	3.9
12/27/2008	2.5	1.73	2.5
12/28/2008	2.1	1.59	1.4
12/29/2008	2.1	1.6	1.1
12/30/2008	2.1	1.55	1.1
12/31/2008	3	1.48	0.8
1/1/2009	3.1	1.39	1.4
1/2/2009	8.2	1.65	2.1
1/3/2009	2.5	1.55	1.8
1/4/2009	2.5	1.47	1.4
1/5/2009	2.9	1.52	1.4
1/6/2009	2.1	1.47	1.4
1/7/2009	2	1.44	0.8
1/8/2009	2.1	1.44	1.1
1/9/2009	3	1.39	0.8
1/10/2009	3	1.38	0.8
1/11/2009	2.1	1.37	0.8
1/12/2009	2.5	1.45	0.8
1/13/2009	2.5	1.38	1.1
1/14/2009	2.5	1.35	1.4
1/15/2009	3	1.39	1.1
1/16/2009	3	1.39	1.1
1/17/2009	2.5	1.34	1.1
1/18/2009	2.5	1.31	1.1
1/19/2009	2.5	1.38	1.1
1/20/2009	3	1.34	1.1
1/21/2009	2.1	1.33	1.1
1/22/2009	8.2	2.6	0.8
1/23/2009	8.2	2.16	8.2
1/24/2009	8.2	2.43	8.2
1/25/2009	8.2	2	8.2
1/26/2009	3.4	1.89	
1/27/2009	2.5	1.57	3.4
1/28/2009	2.5	1.56	
1/29/2009	4.4	1.55	
1/30/2009	2.5	1.51	

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
1/31/2009	2.5	1.49	
2/1/2009	2.5	1.42	1.4
2/2/2009	2.8	1.47	1.4
2/3/2009	3	1.44	
2/4/2009	2.8	1.43	
2/5/2009	3	1.55	
2/6/2009	3	1.51	
2/7/2009	3	1.43	
2/8/2009	2.8	1.45	
2/9/2009	5.7	1.7	
2/10/2009	3	1.52	
2/11/2009	4.9	1.81	
2/12/2009	7	1.77	
2/13/2009	8.2	2.83	> 8.2
2/14/2009	8.2	3.16	> 8.2
2/15/2009	8.2	2.42	> 8.2
2/16/2009	5	2.65	> 8.2
2/17/2009	8.2	4.03	> 8.2
2/18/2009	8.2	3.51	> 8.2
2/19/2009	5	2.46	> 8.2
2/20/2009	3.9	2.16	> 8.2
2/21/2009	3.4	1.95	
2/22/2009	8.2	2.57	
2/23/2009	8.2	4.53	
2/24/2009	8.2	3.41	
2/25/2009	5.9	2.5	
2/26/2009	6.9	2.34	> 8.2
2/27/2009	3.9	2	
2/28/2009	3.9	1.89	
3/1/2009	8.2	2.26	
3/2/2009	8.2	3.48	> 8.2
3/3/2009	8.2	4.33	> 8.2
3/4/2009	8.2	4.01	> 8.2
3/5/2009	7	3.16	> 8.2
3/6/2009	6.5	2.29	> 8.2
3/7/2009	5.4	2.02	
3/8/2009	4.1	1.9	
3/9/2009	3.7	1.78	3.9
3/10/2009	3	1.72	3.4
3/11/2009	2.7	1.65	3.3
3/12/2009	3	1.58	2.5
3/13/2009	3.6	1.57	2.1
3/14/2009	3.6	1.52	2.1
3/15/2009	6.2	1.5	1.8
3/16/2009	5.8	1.59	2.1

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
3/17/2009	3.7	1.53	1.5
3/18/2009	8.2	1.49	0.8
3/19/2009	8.2	1.79	0.82
3/20/2009	8.2	1.77	1.3
3/21/2009	5.9	1.46	2.1
3/22/2009	8.2	1.58	5.9
3/23/2009	4.9	1.53	1.5
3/24/2009	2.5	1.46	1.6
3/25/2009	3	1.44	1.4
3/26/2009	2.7	1.47	1.4
3/27/2009	3.1	1.43	0.8
3/28/2009	3	1.39	1.4
3/29/2009	2.5	1.37	1.4
3/30/2009	2.5	1.47	3
3/31/2009	8.2	1.43	1.2
4/1/2009	8.2	1.44	0.9
4/2/2009	6.1	1.41	0.8
4/3/2009	3.4	1.36	1.1
4/4/2009	3	1.34	1.1
4/5/2009	3	1.3	0.8
4/6/2009	3	1.37	0.8
4/7/2009	2.5	1.39	0.8
4/8/2009	5.1	1.61	1.1
4/9/2009	7	1.64	1.7
4/10/2009	5.9	1.69	5.9
4/11/2009	4.1	1.5	3.1
4/12/2009	3.1	1.39	1.7
4/13/2009	3	1.57	2.1
4/14/2009	4.2	1.49	1.4
4/15/2009	4.1	1.36	2.1
4/16/2009	3.9	1.46	1.4
4/17/2009	4.4	1.45	1.8
4/18/2009	3.9	1.39	1.8
4/19/2009	3	1.38	1.4
4/20/2009	3.9	1.44	1.9
4/21/2009	2.9	1.39	1.4
4/22/2009	3.6	1.47	1.1
4/23/2009	3.6	1.42	1.4
4/24/2009	3.7	1.33	2.1
4/25/2009	3.3	1.31	1.1
4/26/2009	3	1.31	1.3
4/27/2009	3	1.39	1.2
4/28/2009	3.9	1.32	1.4
4/29/2009	3.4		1.4
4/30/2009	3.9		1.4

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
5/1/2009	3.9		1.8
5/2/2009	8.2	1.94	8.2
5/3/2009	8.2	2.34	8.2
5/4/2009	6.5	2.09	5.4
5/5/2009	8.2	3.19	8.2
5/6/2009	5.9	2.12	7.4
5/7/2009	2.4	1.91	3.1
5/8/2009	1.8	1.71	3.9
5/9/2009	5.6	1.59	3.4
5/10/2009	4.9	1.54	1.8
5/11/2009	4.9	1.55	1.9
5/12/2009	4.9	1.51	2
5/13/2009	4.9	1.5	2
5/14/2009	4.7	1.51	1.7
5/15/2009	4.4	1.39	1.8
5/16/2009	5.1	1.4	1.4
5/17/2009	3.9	1.41	1
5/18/2009	3.9	1.53	0.8
5/19/2009	3.7	1.47	1
5/20/2009	4.4	1.28	1.1
5/21/2009	4.4	1.41	1.1
5/22/2009	4.4	1.42	1.1
5/23/2009	4.4	1.38	1.1
5/24/2009	3.9	1.27	1.1
5/25/2009	3.9	1.37	0.9
5/26/2009	3.9	1.37	1.1
5/27/2009	3.9		0.8
5/28/2009	3.9	1.35	0.8
5/29/2009	3.9	1.35	0.8
5/30/2009	3.9	1.33	0.8
5/31/2009	3.9	1.34	0.8
6/1/2009	3.9	1.4	0.8
6/2/2009	3.9	1.42	0.8
6/3/2009	3.9	1.45	0.8
6/4/2009	6.5	1.43	2.2
6/5/2009	4.4	1.47	1.8
6/6/2009	4.4	1.35	1.4
6/7/2009	3.9	1.29	1.4
6/8/2009	3.9	1.33	1.1
6/9/2009	3.9	1.35	0.8
6/10/2009	3.9	1.4	0.5
6/11/2009	3.9	1.36	0.5
6/12/2009	3.9	1.34	0.8
6/13/2009	3.9	1.3	1.1
6/14/2009	3.4	1.28	0.8

SMD1 Flows			
Date	Rock Ck R1-Daily (mgd)	Effluent Daily (mgd)	Dry Ck R3-Daily (mgd)
6/15/2009	3.4	1.35	0.8
6/16/2009	3.4	1.34	0.8
6/17/2009	3	1.36	0.8
6/18/2009	4.9	1.36	0.8
6/19/2009	4.4	1.36	0.5
6/20/2009	4.9	1.29	0.5
6/21/2009	4.4	1.24	0.8
6/22/2009	4.4	1.37	0.8
6/23/2009	3.9	1.35	0.8
6/24/2009	3.9	1.43	0.8
6/25/2009	3.9	1.36	0.8
6/26/2009	3.9	1.34	0.8
6/27/2009	4.4	1.3	0.5
6/28/2009	3.9	1.28	0.5
6/29/2009	3.9	1.32	0.5
6/30/2009	3.7	1.33	0.3

Appendix B

Effluent Quality Summary Statistics

Constituent	Percent Detects	Units	Location	Count	MinOfDate	MaxOfDate		Min		Max	Avg
1,1,1-Trichloroethane	0%	µg/L	Effluent	6	25-Oct-06	09-Oct-08	<	0.5	<	0.5	0.2500
1,1,2,2-Tetrachloroethane	0%	µg/L	Effluent	6	25-Oct-06	09-Oct-08	<	0.5	<	0.5	0.2500
1,1,2-Trichloroethane	0%	µg/L	Effluent	6	25-Oct-06	09-Oct-08	<	0.5	<	0.5	0.2500
1,1-Dichloroethane	0%	µg/L	Effluent	6	25-Oct-06	09-Oct-08	<	0.5	<	0.5	0.2500
1,1-Dichloroethylene	0%	µg/L	Effluent	5	25-Oct-06	09-Oct-08	<	0.5	<	0.5	0.2500
1,2,3,4,6,7,8 Hp CDD	0%	pg/L	Effluent	10	20-Sep-06	26-Mar-09	<	0.864	<	6.11	1.2277
1,2,3,4,7,8,9-Hp CDF	0%	pg/L	Effluent	10	20-Sep-06	26-Mar-09	<	0.485	<	3.32	0.6423
1,2,4-Trichlorobenzene	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.9100
1,2-Dichlorobenzene	0%	µg/L	Effluent	7	25-Oct-06	09-Oct-08	<	0.5	<	5	0.6786
1,2-Dichloroethane	0%	µg/L	Effluent	5	25-Oct-06	09-Oct-08	<	0.5	<	0.5	0.2500
1,2-Dichloropropane	0%	µg/L	Effluent	6	25-Oct-06	09-Oct-08	<	0.5	<	0.5	0.2500
1,2-Diphenylhydrazine	0%	µg/L	Effluent	3	25-Oct-06	08-Apr-09	<	1	<	5	1.1667
1,3-Dichlorobenzene	0%	µg/L	Effluent	7	25-Oct-06	09-Oct-08	<	0.5	<	5	0.6071
1,3-Dichloro-Propylene	0%	µg/L	Effluent	5	25-Oct-06	09-Oct-08	<	0.5	<	0.5	0.2500
1,4-Dichlorobenzene	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.2	<	5	0.7250
2,3,7,8-TCDD	0%	pg/L	Effluent	10	20-Sep-06	26-Mar-09	<	0.231	<	3.5	0.7242
2,4,5-TP (Silvex) (µg/L)	0%	µg/L	Effluent	9	25-Oct-06	08-Apr-09	<	0.5	<	1	0.4014
2,4,6-Trichlorophenol	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	10	1.6950
2,4-D (µg/L)	0%	µg/L	Effluent	9	25-Oct-06	08-Apr-09	<	0.4	<	10	2.4722
2,4-Dichlorophenol	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.9700
2,4-Dimethylphenol	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.8200
2,4-Dinitrophenol	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	30	3.7200
2,4-Dinitrotoluene	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.9700
2,6-Dinitrotoluene	0%	µg/L	Effluent	9	25-Oct-06	08-Apr-09	<	0.1	<	5	0.9667
2-Chloro-	0%	µg/L	Effluent	1	25-Oct-06	25-Oct-06	<	1	<	1	0.5000
2-Chloronaphthalene	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.9700
2-Chlorophenol	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.9700
2-Nitrophenol	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	10	1.6950
3,3-Dichlorobenzidine	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	1.1950
3,4 Benzo-	0%	µg/L	Effluent	6	25-Oct-06	02-Jan-08	<	0.1	<	5	1.0333
3,4 Benzo-Fluoranthene (Benzo(b)fluoranthene)	0%	µg/L	Effluent	4	09-Jul-08	08-Apr-09	<	1	<	2	0.8750

Constituent	Percent Detects	Units	Location	Count	MinOfDate	MaxOfDate		Min		Max	Avg
4,6-Dinitro-O-Cresol (4,6-Dinitro-2-Methylphenol) (ug/L)	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	30	3.4700
4-Bromophenyl	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.9700
4-Chlorophenyl	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.9700
4-Nitrophenol	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	10	1.4700
Acenaphthene	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.7700
Acenaphthylene	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.9700
Acrolein	0%	µg/L	Effluent	1	25-Oct-06	25-Oct-06	<	2	<	2	1.0000
Acrylonitrile	0%	µg/L	Effluent	1	25-Oct-06	25-Oct-06	<	2	<	2	1.0000
Alachlor (µg/L)	18%	µg/L	Effluent	22	10-Jul-06	08-Apr-09		0	<	1.25	0.1659
Ammonia	69%	mg/L	Effluent	1094	01-Jul-06	30-Jun-09		0.06		15.1	2.3952
Anthracene	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.9700
Antimony	60%	µg/L	Effluent	5	25-Oct-06	09-Apr-09		0.246		0.481	0.3770
Arochlor 1016 (µg/L)	0%	µg/L	Effluent	20	10-Jul-06	08-Apr-09	<	0.08	<	1	0.1408
Arochlor 1221 (µg/L)	0%	µg/L	Effluent	20	10-Jul-06	08-Apr-09	<	0.06	<	25	0.8090
Arochlor 1260 (µg/L)	0%	µg/L	Effluent	20	10-Jul-06	08-Apr-09	<	0.04	<	1	0.1398
Arsenic	100%	µg/L	Effluent	4	08-Nov-07	09-Apr-09		0.48		21.5	5.7875
Asbestos	0%	MFL	Effluent	9	19-Mar-02	20-Nov-02	<	0.021	<	2.071	0.13805556
Atrazine (µg/L)	19%	µg/L	Effluent	21	10-Jul-06	08-Apr-09		0	<	2	0.1500
Barium (total recoverable)	100%	ug/l	Effluent	12	14-Mar-02	04-Feb-03		3.31		9.2	4.8175
Benzene	0%	µg/L	Effluent	6	25-Oct-06	09-Oct-08	<	0.5	<	0.5	0.2500
Benzidine	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	10	1.2200
Benzo(A)Anthracene	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.9700
Benzo(a)Pyrene	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	10	1.2200
Benzo(GHI)Perylene)	0%	µg/L	Effluent	9	25-Oct-06	08-Apr-09	<	0.1	<	5	1.0722
Benzo(K)Fluoranthene	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	10	1.2200
Beryllium	0%	µg/L	Effluent	4	08-Nov-07	09-Apr-09	<	0.06	<	5	0.6475
Bis (2-Chloroethoxy)	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.9700
Bis (2-Chloroethyl)-	0%	µg/L	Effluent	9	25-Oct-06	08-Apr-09	<	0.1	<	5	0.7444
Bis (2-Chloroiso-Propyl)	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.8200
Bis (2-Ethylhexyl)	17%	µg/L	Effluent	23	10-Jul-06	08-Apr-09	<	0.1		18	2.0826

Constituent	Percent Detects	Units	Location	Count	MinOfDate	MaxOfDate		Min		Max	Avg
Bis (2-Ethylhexyl)–After 2007	17%	µg/L	Effluent	18	3-Jan-07	08-Apr-09	<	0.1	<	18	1.206
Bromoform	0%	µg/L	Effluent	6	25-Oct-06	09-Oct-08	<	0.5	<	0.5	0.2500
Butyl Benzyl Pthalate	0%	µg/L	Effluent	23	10-Jul-06	08-Apr-09	<	0.1	<	10	1.2978
Cadmium	60%	µg/L	Effluent	5	25-Oct-06	09-Apr-09		0.022		0.036	0.0297
Carbon Tetrachloride	0%	µg/L	Effluent	6	25-Oct-06	09-Oct-08	<	0.5	<	0.5	0.2500
Chloride	100%	mg/l	Effluent	12	19-Mar-02	05-Feb-03		42		65	54.25
Chlorine	0%	mg/L	Effluent	1095	01-Jul-06	30-Jun-09	<	0.01		7.5	0.0156
Chlorobenzene	8%	ug/l	Effluent	12	19-Mar-02	05-Feb-03	<	0.07		0.078	0.078
Chlorodibromo-	29%	µg/L	Effluent	7	25-Oct-06	09-Oct-08		0.5		0.97	0.3886
Chloroethane	0%	µg/L	Effluent	6	25-Oct-06	09-Oct-08	<	0.5	<	0.5	0.2500
Chloroform	96%	µg/L	Effluent	23	10-Jul-06	08-Apr-09	<	1		99	23.8609
Chloromethane	8%	ug/l	Effluent	12	19-Mar-02	05-Feb-03	<	0.14		0.19	0.10833333
Chromium	60%	µg/L	Effluent	5	30-Oct-06	09-Apr-09		0.1		0.16	0.1233
Chromium VI	15%	ug/l	Effluent	13	19-Mar-02	05-Feb-03	<	0.126		0.96	0.19792308
Chrysene	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.9700
Clorobenzene	0%	µg/L	Effluent	6	25-Oct-06	09-Oct-08	<	0.5	<	0.5	0.2500
Copper	95%	µg/L	Effluent	19	11-Jul-06	09-Apr-09		1.1		21.9	3.6905
Cyanide	33%	mg/L	Effluent	3	25-Oct-06	09-Oct-08	<	0.005		0.01	0.0100
Dalapon (µg/L)	0%	µg/L	Effluent	9	25-Oct-06	08-Apr-09	<	0.6	<	10	2.4972
DDE (µg/L)	0%	µg/L	Effluent	20	10-Jul-06	08-Apr-09	<	0.003	<	0.05	0.0100
delta-BHC (µg/L)	0%	µg/L	Effluent	21	10-Jul-06	08-Apr-09	<	0.003	<	0.05	0.0119
Dibenzo(A,H)	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	10	1.2200
Dichlorobromo	75%	µg/L	Effluent	24	10-Jul-06	08-Apr-09		0.5		14	3.4208
Diethyl Phthalate	0%	µg/L	Effluent	23	10-Jul-06	08-Apr-09	<	0.1	<	10	1.2957
Dimethyl Phthalate	0%	µg/L	Effluent	14	10-Jul-06	08-Apr-09	<	0.1	<	10	1.4250
Di-N-Butyl	0%	µg/L	Effluent	23	10-Jul-06	08-Apr-09	<	0.1	<	10	1.3022
Di-n-butyl phthalate	20%	ug/l	Effluent	5	19-Mar-02	05-Feb-03	<	0.93		1	0.572
Di-N-Octyl	4%	µg/L	Effluent	23	10-Jul-06	08-Apr-09	<	0.1		20	1.7478
Dinoseb (µg/L)	0%	µg/L	Effluent	9	25-Oct-06	08-Apr-09	<	0.4	<	2	0.6944
Effluent	100%	mg/L	Effluent	23	11-Jul-06	09-Apr-09		141		301	227.3043
Electrical Conductivity	100%	umhos/cm	Effluent	1095	01-Jul-06	30-Jun-09		332		1090	650.3005
Endosulfan I (µg/L)	0%	µg/L	Effluent	21	10-Jul-06	08-Apr-09	<	0.002	<	0.047	0.0093

Constituent	Percent Detects	Units	Location	Count	MinOfDate	MaxOfDate		Min		Max	Avg
Endosulfan II (µg/L)	0%	µg/L	Effluent	21	10-Jul-06	08-Apr-09	<	0.002	<	0.047	0.0070
Ethylbenzene	0%	µg/L	Effluent	6	25-Oct-06	09-Oct-08	<	0.5	<	0.5	0.2500
Fluoranthene	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.7700
Fluorene	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.9700
Fluoride	58%	mg/l	Effluent	12	19-Mar-02	05-Feb-03	<	0.06		0.28	0.14933333
gamma- Chlordane (µg/L)	0%	µg/L	Effluent	19	10-Jul-06	08-Apr-09	<	0.012	<	0.47	0.0910
Heptachlor epoxcide (µg/L)	0%	µg/L	Effluent	21	10-Jul-06	08-Apr-09	<	0.002	<	0.024	0.0059
Hexachlorethane	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.7700
Hexachlorobenzene	0%	µg/L	Effluent	19	25-Oct-06	08-Apr-09	<	0.1	<	5	0.5237
Hexachlorobutadiene	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.6200
Hexachlorocyclo-Pentadiene	0%	µg/L	Effluent	19	25-Oct-06	08-Apr-09	<	0.1	<	20	1.1789
Indeno(1,2,3-CD)	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	10	1.4450
Iron	100%	µg/L	Effluent	18	11-Jul-06	09-Apr-09		24.2		94	57.1167
Isophorone	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.7700
Lead	95%	µg/L	Effluent	19	11-Jul-06	09-Apr-09		0.194		25.2	2.0344
Manganese, Total Recoverable (µg/L)	100%	µg/L	Effluent	22	11-Jul-06	09-Apr-09		4.09		35.2	21.3086
Mercury	79%	ng/L	Effluent	14	11-Jul-06	09-Apr-09		0.87		3.23	1.5464
Methyl Bromide	0%	µg/L	Effluent	5	25-Oct-06	09-Oct-08	<	0.5	<	0.5	0.2500
Methyl Chloride	0%	µg/L	Effluent	5	25-Oct-06	09-Oct-08	<	0.5	<	5	0.7000
Methylene blue active substances	92%	mg/l	Effluent	12	19-Mar-02	05-Feb-03		0.068		0.22	0.12345455
Methylene Chloride	0%	µg/L	Effluent	6	25-Oct-06	09-Oct-08	<	0.5	<	5	1.7500
Molinate	20%	ug/l	Effluent	5	19-Mar-02	05-Feb-03	<	0.169		2.3	2.3
MTBE	0%	µg/L	Effluent	21	10-Jul-06	08-Apr-09	<	0.5	<	3	0.5833
Naphthalene	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.6950
Nickel	75%	µg/L	Effluent	4	08-Nov-07	09-Apr-09		2.1		2.7	2.4667
Nitrate plus Nitrite	100%	mg/L	Effluent	1094	01-Jul-06	30-Jun-09		4.3		49	17.4791
Nitrite	0%	mg/L	Effluent	1094	01-Jul-06	30-Jun-09		0.05		3.12	0.1851
Nitrobenzene	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.7700
N-Nitrosodi-	0%	µg/L	Effluent	30	25-Oct-06	08-Apr-09	<	0.1	<	5	0.9033
OCDD (pg/L)	30%	pg/L	Effluent	10	20-Sep-06	26-Mar-09	<	0.634		9.41	6.2233

Constituent	Percent Detects	Units	Location	Count	MinOfDate	MaxOfDate		Min		Max	Avg
OCDF (pg/L)	0%	pg/L	Effluent	10	20-Sep-06	26-Mar-09	<	0.497	<	10.6	1.7479
Oil and Grease	0%	mg/L	Effluent	17	10-Jul-06	08-Apr-09	<	4.9	<	10	3.6735
P-Chloro-	0%	µg/L	Effluent	9	25-Oct-06	08-Apr-09	<	0.1	<	5	0.9944
Pentachlorophenol	0%	µg/L	Effluent	11	25-Oct-06	08-Apr-09	<	0.1	<	5	0.7318
Phenanthrene	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.9700
Phenol	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.7700
Phosphorus (Total)	100%	mg/L	Effluent	3	25-Oct-06	09-Oct-08		1.7		8.58	4.5267
Pyrene	0%	µg/L	Effluent	10	25-Oct-06	08-Apr-09	<	0.1	<	5	0.9700
Selenium	50%	µg/L	Effluent	4	08-Nov-07	09-Apr-09	<	0.6		1.2	1.0500
Silver	5%	µg/L	Effluent	19	11-Jul-06	09-Apr-09		0.02		0.02	0.0200
Sulfate as SO4	100%	mg/l	Effluent	12	19-Mar-02	05-Feb-03	<	35		59	40.0666667
Tetrachloro-	0%	µg/L	Effluent	5	25-Oct-06	09-Oct-08	<	0.5	<	0.5	0.2500
Thallium	0%	µg/L	Effluent	4	25-Oct-06	09-Apr-09	<	0.005	<	20	2.5263
Toluene	0%	µg/L	Effluent	6	25-Oct-06	09-Oct-08	<	0.5	<	0.5	0.2500
Total Aluminum (µg/L)	92%	µg/L	Effluent	25	11-Jul-06	09-Apr-09		11.8		162	54.9600
Total Dissolved Solids	100%	mg/L	Effluent	39	05-Jul-06	03-Jun-09		54		486	374.2821
Total Phenolic	0%	µg/L	Effluent	11	25-Oct-06	08-Apr-09	<	0.1	<	30	3.4000
Trans-1,2-Dichloro-Ethylene	0%	µg/L	Effluent	5	25-Oct-06	09-Oct-08	<	0.5	<	0.5	0.2500
Tributyltin (µg/L)	9%	µg/L	Effluent	23	10-Jul-06	08-Apr-09		0.001		0.002	0.0018
Trichlorethylene	0%	µg/L	Effluent	6	25-Oct-06	09-Oct-08	<	0.5	<	0.5	0.2500
Vinyl Chloride	0%	µg/L	Effluent	6	25-Oct-06	09-Oct-08	<	0.5	<	0.5	0.2500
Zinc	100%	µg/L	Effluent	19	11-Jul-06	09-Apr-09		15.8		48	26.9263

Appendix C



Rock Creek Water Quality Summary Statistics

Location	Constituent	Units	Count	MinOfDate	MaxOfDate	Percent Detects	<	Min	<	Max	Avg
R-1	1,1,1-Trichloroethane	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.05	<	0.19	0.06541667
R-1	1,1,2,2-Tetrachloroethane	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.17	<	0.59	0.11875
R-1	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.05		0.07	0.07
R-1	1,1,2-Trichloroethane	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.08	<	0.43	0.08916667
R-1	1,1-Dichloroethane	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.04	<	0.22	0.065
R-1	1,1-Dichloroethene	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.06	<	0.24	0.075
R-1	1,2,3,4,6,7,8-HpCDD	pg/l	4	14-Mar-02	19-Nov-02	0%	<	2.37	<	3.05	1.355
R-1	1,2,3,4,6,7,8-HpCDF	pg/l	4	14-Mar-02	19-Nov-02	0%	<	2.57	<	3.57	1.535
R-1	1,2,3,4,7,8,9-HpCDF	pg/l	4	14-Mar-02	19-Nov-02	0%	<	2.38	<	3.13	1.3775
R-1	1,2,3,4,7,8-HxCDD	pg/l	4	14-Mar-02	19-Nov-02	0%	<	1.75	<	2.01	0.94
R-1	1,2,3,4,7,8-HxCDF	pg/l	4	14-Mar-02	19-Nov-02	0%	<	2.06	<	2.38	1.11
R-1	1,2,3,6,7,8-HxCDD	pg/l	4	14-Mar-02	19-Nov-02	0%	<	1.75	<	1.87	0.905
R-1	1,2,3,6,7,8-HxCDF	pg/l	4	14-Mar-02	19-Nov-02	0%	<	2.44	<	2.57	1.2525
R-1	1,2,3,7,8,9-HxCDD	pg/l	4	14-Mar-02	19-Nov-02	0%	<	2.71	<	3.95	1.665
R-1	1,2,3,7,8,9-HxCDF	pg/l	4	14-Mar-02	19-Nov-02	0%	<	2.04	<	2.31	1.0875
R-1	1,2,3,7,8-PeCDD	pg/l	4	14-Mar-02	19-Nov-02	0%	<	1.39	<	2.81	1.05
R-1	1,2,3,7,8-PeCDF	pg/l	4	14-Mar-02	19-Nov-02	0%	<	2.25	<	3.06	1.3275
R-1	1,2,4-Trichlorobenzene	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.1	<	0.41	0.10458333
R-1	1,2-Dibromo-3-chloropropane	ug/l	5	19-Mar-02	05-Feb-03	0%	<		<		
R-1	1,2-Dibromoethane	ug/l	5	19-Mar-02	05-Feb-03	0%	<		<		
R-1	1,2-Dichlorobenzene	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.11	<	0.31	0.08416667
R-1	1,2-Dichloroethane	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.08	<	0.42	0.08833333
R-1	1,2-Dichloropropane	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.07	<	0.32	0.06708333
R-1	1,2-Diphenylhydrazine	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.49	<	0.49	0.245
R-1	1,3-Dichlorobenzene	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.13	<	0.34	0.1
R-1	1,3-Dichloropropene	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.08	<	0.34	0.075
R-1	1,4-Dichlorobenzene	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.11	<	0.46	0.09541667
R-1	2,3,4,6,7,8-HxCDF	pg/l	4	14-Mar-02	19-Nov-02	0%	<	2.48	<	3.06	1.385
R-1	2,3,4,7,8-PeCDF	pg/l	4	14-Mar-02	19-Nov-02	0%	<	1.84	<	2.38	1.055
R-1	2,3,7,8-TCDD	pg/l	4	14-Mar-02	19-Nov-02	0%	<	0.637	<	0.847	0.371
R-1	2,3,7,8-TCDF	pg/l	4	14-Mar-02	19-Nov-02	0%	<	0.478	<	1.03	0.377
R-1	2,4,5-TP (Silvex)	ug/l	5	19-Mar-02	05-Feb-03	40%		0.021		0.37	0.0884

Location	Constituent	Units	Count	MinOfDate	MaxOfDate	Percent Detects		Min		Max	Avg
R-1	2,4,6-Trichlorophenol	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.91	<	0.91	0.455
R-1	2,4-D	ug/l	5	19-Mar-02	05-Feb-03	20%		0.056		0.056	0.056
R-1	2,4-Dichlorophenol	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1.07	<	1.07	0.535
R-1	2,4-Dimethylphenol	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1.96	<	1.96	0.98
R-1	2,4-Dinitrophenol	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.97	<	0.97	0.485
R-1	2,4-Dinitrotoluene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1.25	<	1.25	0.625
R-1	2,6-Dinitrotoluene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1.46	<	1.46	0.73
R-1	2-Chloroethyl vinyl ether	ug/l	11	19-Mar-02	05-Feb-03	0%	<	0.11	<	0.22	0.10045455
R-1	2-Chloronaphthalene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.83	<	0.83	0.415
R-1	2-Chlorophenol	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.71	<	0.71	0.355
R-1	2-Methyl-4,6-dinitrophenol	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1.51	<	1.51	0.755
R-1	2-Nitrophenol	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.8	<	0.8	0.4
R-1	3,3'-Dichlorobenzidine	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1.51	<	1.51	0.755
R-1	4,4'-DDD	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00992	<	0.00992	0.00496
R-1	4,4'-DDE	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.002	<	0.002	0.001
R-1	4,4'-DDT	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00104	<	0.00104	0.00052
R-1	4-Bromophenyl phenyl ether	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.64	<	0.64	0.32
R-1	4-Chloro-3-methylphenol	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1	<	1	0.5
R-1	4-Chlorophenyl phenyl ether	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.53	<	0.53	0.265
R-1	4-Nitrophenol	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1.03	<	1.03	0.515
R-1	Acenaphthene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.27	<	0.27	0.135
R-1	Acenaphthylene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.011	<	0.011	0.0055
R-1	Acrolein	ug/l	22	19-Mar-02	05-Feb-03	0%	<	0.7	<	1.8	1.0625
R-1	Acrylonitrile	ug/l	22	19-Mar-02	05-Feb-03	0%	<	0.26	<	1.1	0.70795455
R-1	Alachlor	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0674	<	0.0674	0.0337
R-1	Aldrin	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00156	<	0.00156	0.00078
R-1	alpha-BHC	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00164	<	0.00164	0.00082
R-1	Aluminum (dissolved)	ug/l	12	14-Mar-02	04-Feb-03	100%		8		48.6	18.7
R-1	Aluminum (total recoverable)	ug/l	12	14-Mar-02	04-Feb-03	100%		54.1		215	126.908333
R-1	Ammonia (as N)	mg/l	5	19-Mar-02	05-Feb-03	0%	<	0.052	<	0.055	0.0187
R-1	Anthracene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.029	<	0.029	0.0145
R-1	Antimony (dissolved)	ug/l	12	14-Mar-02	04-Feb-03	100%		0.033		0.11	0.0495
R-1	Antimony (total recoverable)	ug/l	12	14-Mar-02	04-Feb-03	100%		0.037		0.117	0.05233333

Location	Constituent	Units	Count	MinOfDate	MaxOfDate	Percent Detects		Min		Max	Avg
R-1	Aroclor 1016	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0648	<	0.0648	0.0324
R-1	Aroclor 1221	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0648	<	0.0648	0.0324
R-1	Aroclor 1232	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0648	<	0.0648	0.0324
R-1	Aroclor 1242	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0648	<	0.0648	0.0324
R-1	Aroclor 1248	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0648	<	0.0648	0.0324
R-1	Aroclor 1254	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0262	<	0.0262	0.0131
R-1	Aroclor 1260	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0262	<	0.0262	0.0131
R-1	Arsenic (dissolved)	ug/l	12	14-Mar-02	04-Feb-03	100%		0.192		0.397	0.2885
R-1	Arsenic (total recoverable)	ug/l	12	14-Mar-02	04-Feb-03	100%		0.251		0.502	0.35933333
R-1	Asbestos	MFL	10	19-Mar-02	18-Dec-02	20%	<	0.021		0.207	0.06325
R-1	Atrazine	ug/l	5	19-Mar-02	05-Feb-03	40%	<	0.0596		1.4	1.4
R-1	Barium (dissolved)	ug/l	12	14-Mar-02	04-Feb-03	100%		7.88		19.4	10.69
R-1	Barium (total recoverable)	ug/l	12	14-Mar-02	04-Feb-03	100%		8.96		21.1	11.9541667
R-1	Bentazon	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00762	<	0.00762	0.00381
R-1	Benzene	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.05	<	0.28	0.05666667
R-1	Benzidine	ug/l	5	19-Mar-02	05-Feb-03	0%	<	3.45	<	3.45	1.725
R-1	Benzo(a)anthracene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.023	<	0.023	0.0115
R-1	Benzo(a)pyrene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.03	<	0.03	0.015
R-1	Benzo(b)fluoranthene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.03	<	0.03	0.015
R-1	Benzo(g,h,i)perylene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.029	<	0.029	0.0145
R-1	Benzo(k)fluoranthene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.029	<	0.029	0.0145
R-1	Beryllium (dissolved)	ug/l	12	14-Mar-02	04-Feb-03	8%	<	0.002		0.005	0.005
R-1	Beryllium (total recoverable)	ug/l	12	14-Mar-02	04-Feb-03	25%		0.005		0.008	0.006
R-1	beta-BHC	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00176	<	0.00176	0.00088
R-1	Bis(2-chloroethoxy)methane	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.83	<	0.83	0.415
R-1	Bis(2-chloroethyl)ether	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.55	<	0.55	0.275
R-1	Bis(2-chloroisopropyl)ether	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.64	<	0.64	0.32
R-1	Bis(2-ethylhexyl)phthalate	ug/l	5	19-Mar-02	05-Feb-03	0%	<	3.21	<	3.21	1.605
R-1	Bromodichloromethane	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.05	<	0.25	0.06416667
R-1	Bromoform	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.11	<	0.18	0.08833333
R-1	Bromomethane	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.19	<	0.61	0.15625
R-1	Butyl benzyl phthalate	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1	<	1	0.5
R-1	Cadmium (dissolved)	ug/l	12	14-Mar-02	04-Feb-03	42%		0.001		0.004	0.003

Location	Constituent	Units	Count	MinOfDate	MaxOfDate	Percent Detects		Min		Max	Avg
R-1	Cadmium (total recoverable)	ug/l	12	14-Mar-02	04-Feb-03	42%		0.005		0.007	0.0062
R-1	Carbofuran	ug/l	4	19-Mar-02	20-Nov-02	0%	<	0.5	<	5	1.9375
R-1	Carbon tetrachloride	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.06	<	0.37	0.10833333
R-1	Chlordane	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.03388	<	0.03388	0.01694
R-1	Chloride	mg/l	12	19-Mar-02	05-Feb-03	100%	<	2.3		7.4	4.31666667
R-1	Chlorobenzene	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.07	<	0.32	0.06333333
R-1	Chloroethane	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.11	<	0.31	0.09416667
R-1	Chloroform	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.07	<	0.37	0.07125
R-1	Chloromethane	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.14	<	0.18	0.09833333
R-1	Chlorpyrifos	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0151	<	0.0151	0.00755
R-1	Chromium (dissolved)	ug/l	12	14-Mar-02	04-Feb-03	67%	<	0.02		0.34	0.12375
R-1	Chromium (total recoverable)	ug/l	12	14-Mar-02	04-Feb-03	100%		0.24		1.17	0.59833333
R-1	Chromium VI	ug/l	13	19-Mar-02	05-Feb-03	15%	<	0.126		1.2	0.221
R-1	Chrysene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.028	<	0.028	0.014
R-1	cis-1,2-Dichloroethene	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.09	<	0.31	0.07458333
R-1	Copper (dissolved)	ug/l	12	14-Mar-02	04-Feb-03	100%		0.87		2.31	1.325
R-1	Copper (total recoverable)	ug/l	12	14-Mar-02	04-Feb-03	100%		1.03		3.28	1.82166667
R-1	Cyanide	ug/l	12	19-Mar-02	05-Feb-03	0%	<	3	<	3	1.5
R-1	Dalapon	ug/l	5	19-Mar-02	05-Feb-03	40%	<	0.0124		4.7	1.22372
R-1	delta-BHC	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00136	<	0.00136	0.00068
R-1	Di(2-ethylhexyl)adipate	ug/l	6	19-Mar-02	05-Feb-03	0%	<	1.2	<	1.2	0.6
R-1	Diazinon	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0641	<	0.0641	0.03205
R-1	Dibenzo(a,h)anthracene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.027	<	0.027	0.0135
R-1	Dibromochloromethane	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.06	<	0.47	0.10166667
R-1	Dieldrin	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00184	<	0.00184	0.00092
R-1	Diethyl phthalate	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.63	<	0.63	0.315
R-1	Dimethyl phthalate	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1	<	1	0.5
R-1	Di-n-butyl phthalate	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.93	<	0.93	0.465
R-1	Di-n-octyl phthalate	ug/l	5	19-Mar-02	05-Feb-03	0%	<	2.72	<	2.72	1.36
R-1	Dinoseb	ug/l	5	19-Mar-02	05-Feb-03	20%		0.031		0.031	0.031
R-1	Diquat	ug/l	4	19-Mar-02	20-Nov-02	0%	<	4	<	4	2
R-1	Endosulfan I	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00168	<	0.00168	0.00084
R-1	Endosulfan II	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00092	<	0.00092	0.00046

Location	Constituent	Units	Count	MinOfDate	MaxOfDate	Percent Detects		Min		Max	Avg
R-1	Endosulfan sulfate	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00232	<	0.00232	0.00116
R-1	Endothall	ug/l	4	19-Mar-02	20-Nov-02	0%	<	45	<	45	22.5
R-1	Endrin	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00192	<	0.00192	0.00096
R-1	Endrin aldehyde	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.002	<	0.002	0.001
R-1	Ethylbenzene	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.1	<	0.24	0.07416667
R-1	Fluoranthene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.033	<	0.033	0.0165
R-1	Fluorene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.15	<	0.15	0.075
R-1	Fluoride	mg/l	12	19-Mar-02	05-Feb-03	8%	<	0.06		1.5	0.142
R-1	gamma-BHC (Lindane)	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00144	<	0.00144	0.00072
R-1	Glyphosate	ug/l	4	19-Mar-02	20-Nov-02	0%	<	25	<	25	12.5
R-1	Hardness (as CaCO3)	mg/l	10	19-Mar-02	05-Feb-03	100%		25		260	69.3
R-1	Heptachlor	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00176	<	0.00176	0.00088
R-1	Heptachlor epoxide	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00152	<	0.00152	0.00076
R-1	Hexachlorobenzene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.72	<	0.72	0.36
R-1	Hexachlorobutadiene	ug/l	17	19-Mar-02	05-Feb-03	0%	<	0.084	<	0.5	0.095
R-1	Hexachlorocyclopentadiene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1.18	<	1.18	0.59
R-1	Hexachloroethane	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1.46	<	1.46	0.73
R-1	Indeno(1,2,3-c,d)pyrene	ug/l	4	19-Mar-02	20-Nov-02	0%	<	0.035	<	0.035	0.0175
R-1	Iron (dissolved)	ug/l	12	14-Mar-02	04-Feb-03	100%		56.4		148	78.7833333
R-1	Iron (total recoverable)	ug/l	12	14-Mar-02	04-Feb-03	100%		181		480	321.083333
R-1	Isophorone	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.86	<	0.86	0.43
R-1	Lead (dissolved)	ug/l	12	14-Mar-02	04-Feb-03	67%		0.008		0.047	0.01866667
R-1	Lead (total recoverable)	ug/l	12	14-Mar-02	04-Feb-03	100%		0.051		0.32	0.15483333
R-1	Manganese (dissolved)	ug/l	12	14-Mar-02	04-Feb-03	100%		3.75		30.2	10.5
R-1	Manganese (total recoverable)	ug/l	12	14-Mar-02	04-Feb-03	100%		12.4		58.6	30.8916667
R-1	Mercury (dissolved)	ug/l	12	14-Mar-02	04-Feb-03	100%		0.00079		0.00543	0.00177
R-1	Mercury (total recoverable)	ug/l	12	14-Mar-02	04-Feb-03	100%		0.0015		0.012	0.00462583
R-1	Methoxychlor	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0024	<	0.0024	0.0012
R-1	Methyl tert-butyl ether	ug/l	12	19-Mar-02	05-Feb-03	25%		0.17		0.55	0.15875
R-1	Methylene blue active substances	mg/l	12	19-Mar-02	05-Feb-03	17%	<	0.02		0.025	0.01604167
R-1	Methylene chloride	ug/l	12	19-Mar-02	05-Feb-03	42%		0.13		2	0.992

Location	Constituent	Units	Count	MinOfDate	MaxOfDate	Percent Detects		Min		Max	Avg
R-1	Molinate	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.169	<	0.169	0.0845
R-1	Naphthalene	ug/l	17	19-Mar-02	05-Feb-03	0%	<	0.1	<	0.93	0.17
R-1	Nickel (dissolved)	ug/l	12	14-Mar-02	04-Feb-03	100%		0.38		2.15	0.91583333
R-1	Nickel (total recoverable)	ug/l	12	14-Mar-02	04-Feb-03	100%	<	0.83		2.92	1.61083333
R-1	Nitrate as N	mg/l	12	19-Mar-02	05-Feb-03	92%	<	0.06		0.92	0.19983333
R-1	Nitrite as N	mg/l	12	19-Mar-02	05-Feb-03	0%	<	0.043	<	0.1	0.01279167
R-1	Nitrobenzene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.76	<	0.76	0.38
R-1	N-Nitrosodimethylamine	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.67	<	0.67	0.335
R-1	N-Nitroso-di-n-propylamine	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.86	<	0.86	0.43
R-1	N-Nitrosodiphenylamine	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.57	<	0.57	0.285
R-1	OCDD	pg/l	4	14-Mar-02	19-Nov-02	75%	<	9.67		18.4	15.6
R-1	OCDF	pg/l	4	14-Mar-02	19-Nov-02	0%	<	4.26	<	6.17	2.6075
R-1	Oxamyl	ug/l	4	19-Mar-02	20-Nov-02	0%	<	0.61	<	20	7.57625
R-1	Pentachlorophenol	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00508	<	0.00508	0.00254
R-1	Phenanthrene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.012	<	0.012	0.006
R-1	Phenol	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.52	<	0.52	0.26
R-1	Phosphorus, total	mg/l	12	19-Mar-02	05-Feb-03	17%	<	0.0056		0.013	0.00751667
R-1	Picloram	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00762	<	0.00762	0.00381
R-1	Pyrene	ug/l	4	19-Mar-02	20-Nov-02	0%	<	0.04	<	0.04	0.02
R-1	Selenium (dissolved)	ug/l	12	14-Mar-02	04-Feb-03	75%	<	0.026		0.105	0.047125
R-1	Selenium (total recoverable)	ug/l	12	14-Mar-02	04-Feb-03	58%	<	0.026		0.121	0.04154167
R-1	Silver (dissolved)	ug/l	12	14-Mar-02	04-Feb-03	33%		0.001		0.01	0.00375
R-1	Silver (total recoverable)	ug/l	12	14-Mar-02	04-Feb-03	33%		0.002		0.014	0.005
R-1	Simazine	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0641	<	0.0641	0.03205
R-1	Specific Conductivity @ 25 C	umhos/cm	12	19-Mar-02	05-Feb-03	100%		57		220	101.416667
R-1	Styrene	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.09	<	0.33	0.08125
R-1	Sulfate as SO4	mg/l	12	19-Mar-02	05-Feb-03	92%	<	0.33		16	4.93875
R-1	Sulfide	mg/l	12	24-Apr-02	05-Feb-03	8%	<	0.14		0.67	0.105
R-1	Sulfite	mg/l	13	19-Mar-02	05-Feb-03	0%	<		<		
R-1	Tetrachloroethene	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.08	<	0.44	0.07875
R-1	Thallium (dissolved)	ug/l	12	14-Mar-02	04-Feb-03	42%		0.001		0.003	0.002
R-1	Thallium (total recoverable)	ug/l	12	14-Mar-02	04-Feb-03	50%		0.002		0.005	0.00258333
R-1	Thiobencarb	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0924	<	0.0924	0.0462

Location	Constituent	Units	Count	MinOfDate	MaxOfDate	Percent Detects		Min		Max	Avg
R-1	Toluene	ug/l	12	19-Mar-02	05-Feb-03	8%	<	0.07		0.58	0.58
R-1	Total dissolved solids	mg/l	12	19-Mar-02	05-Feb-03	100%	<	29		130	61.6666667
R-1	Toxaphene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.052	<	0.052	0.026
R-1	trans-1,2-Dichloroethene	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.09	<	0.26	0.07291667
R-1	Tributyltin	ug/l	10	19-Mar-02	18-Dec-02	0%	<	0.005	<	0.005	0.0025
R-1	Trichloroethene	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.06	<	0.36	0.085
R-1	Trichlorofluoromethane	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.07	<	0.42	0.10791667
R-1	Vinyl chloride	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.06	<	0.16	0.07083333
R-1	Xylenes, total	ug/l	12	19-Mar-02	05-Feb-03	0%	<	0.21	<	0.48	0.16375
R-1	Zinc (dissolved)	ug/l	12	14-Mar-02	04-Feb-03	100%		0.86		3.95	1.96
R-1	Zinc (total recoverable)	ug/l	12	14-Mar-02	04-Feb-03	100%		1.94		5.81	3.64

Appendix D



Dry Creek Water Quality Summary Statistics

Location	Constituent	Units	Count	MinOfDate	MaxOfDate	Percent Detects		Min		Max	Avg
R-3	1,1,1-Trichloroethane	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.05	<	0.19	0.062
R-3	1,1,2,2-Tetrachloroethane	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.17	<	0.59	0.126
R-3	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.05	<	0.25	0.058
R-3	1,1,2-Trichloroethane	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.08	<	0.43	0.091
R-3	1,1-Dichloroethane	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.04	<	0.22	0.062
R-3	1,1-Dichloroethene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.06	<	0.24	0.072
R-3	1,2,3,4,6,7,8-HpCDD	pg/l	4	14-Mar-02	19-Nov-02	0%	<	2.37	<	3.05	1.355
R-3	1,2,3,4,6,7,8-HpCDF	pg/l	4	14-Mar-02	19-Nov-02	0%	<	2.57	<	3.57	1.535
R-3	1,2,3,4,7,8,9-HpCDF	pg/l	4	14-Mar-02	19-Nov-02	0%	<	2.38	<	3.13	1.3775
R-3	1,2,3,4,7,8-HxCDD	pg/l	4	14-Mar-02	19-Nov-02	0%	<	1.75	<	2.01	0.94
R-3	1,2,3,4,7,8-HxCDF	pg/l	4	14-Mar-02	19-Nov-02	0%	<	2.06	<	2.38	1.11
R-3	1,2,3,6,7,8-HxCDD	pg/l	4	14-Mar-02	19-Nov-02	0%	<	1.75	<	1.87	0.905
R-3	1,2,3,6,7,8-HxCDF	pg/l	4	14-Mar-02	19-Nov-02	0%	<	2.44	<	2.57	1.2525
R-3	1,2,3,7,8,9-HxCDD	pg/l	4	14-Mar-02	19-Nov-02	0%	<	2.71	<	3.95	1.665
R-3	1,2,3,7,8,9-HxCDF	pg/l	4	14-Mar-02	19-Nov-02	0%	<	2.04	<	2.31	1.0875
R-3	1,2,3,7,8-PeCDD	pg/l	4	14-Mar-02	19-Nov-02	0%	<	1.39	<	2.81	1.05
R-3	1,2,3,7,8-PeCDF	pg/l	4	14-Mar-02	19-Nov-02	0%	<	2.25	<	3.06	1.3275
R-3	1,2,4-Trichlorobenzene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.1	<	0.41	0.104
R-3	1,2-Dibromo-3-chloropropane	ug/l	5	19-Mar-02	05-Feb-03	0%	<		<		
R-3	1,2-Dibromoethane	ug/l	5	19-Mar-02	05-Feb-03	0%	<		<		
R-3	1,2-Dichlorobenzene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.11	<	0.31	0.085
R-3	1,2-Dichloroethane	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.08	<	0.42	0.09
R-3	1,2-Dichloropropane	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.07	<	0.32	0.069
R-3	1,2-Diphenylhydrazine	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.49	<	0.49	0.245
R-3	1,3-Dichlorobenzene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.13	<	0.34	0.1
R-3	1,3-Dichloropropene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.08	<	0.34	0.069
R-3	1,4-Dichlorobenzene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.11	<	0.46	0.099
R-3	2,3,4,6,7,8-HxCDF	pg/l	4	14-Mar-02	19-Nov-02	0%	<	2.48	<	3.06	1.385
R-3	2,3,4,7,8-PeCDF	pg/l	4	14-Mar-02	19-Nov-02	0%	<	1.84	<	2.38	1.055
R-3	2,3,7,8-TCDD	pg/l	4	14-Mar-02	19-Nov-02	0%	<	0.637	<	0.847	0.371
R-3	2,3,7,8-TCDF	pg/l	4	14-Mar-02	19-Nov-02	0%	<	0.478	<	1.03	0.377
R-3	2,4,5-TP (Silvex)	ug/l	5	19-Mar-02	05-Feb-03	40%		0.019		0.61	0.136
R-3	2,4,6-Trichlorophenol	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.91	<	0.91	0.455

Location	Constituent	Units	Count	MinOfDate	MaxOfDate	Percent Detects		Min		Max	Avg
R-3	2,4-D	ug/l	5	19-Mar-02	05-Feb-03	20%		0.049		0.049	0.049
R-3	2,4-Dichlorophenol	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1.07	<	1.07	0.535
R-3	2,4-Dimethylphenol	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1.96	<	1.96	0.98
R-3	2,4-Dinitrophenol	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.97	<	0.97	0.485
R-3	2,4-Dinitrotoluene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1.25	<	1.25	0.625
R-3	2,6-Dinitrotoluene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1.46	<	1.46	0.73
R-3	2-Chloroethyl vinyl ether	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.11	<	0.22	0.105
R-3	2-Chloronaphthalene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.83	<	0.83	0.415
R-3	2-Chlorophenol	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.71	<	0.71	0.355
R-3	2-Methyl-4,6-dinitrophenol	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1.51	<	1.51	0.755
R-3	2-Nitrophenol	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.8	<	0.8	0.4
R-3	3,3'-Dichlorobenzidine	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1.51	<	1.51	0.755
R-3	4,4'-DDD	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00992	<	0.00992	0.00496
R-3	4,4'-DDE	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.002	<	0.002	0.001
R-3	4,4'-DDT	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00104	<	0.00104	0.00052
R-3	4-Bromophenyl phenyl ether	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.64	<	0.64	0.32
R-3	4-Chloro-3-methylphenol	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1	<	1	0.5
R-3	4-Chlorophenyl phenyl ether	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.53	<	0.53	0.265
R-3	4-Nitrophenol	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1.03	<	1.03	0.515
R-3	Acenaphthene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.27	<	0.27	0.135
R-3	Acenaphthylene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.011	<	0.011	0.0055
R-3	Acrolein	ug/l	9	19-Mar-02	05-Feb-03	0%	<	0.7	<	1.8	1.111111
R-3	Acrylonitrile	ug/l	9	19-Mar-02	05-Feb-03	0%	<	0.26	<	1.1	0.748889
R-3	Alachlor	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0674	<	0.0674	0.0337
R-3	Aldrin	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00156	<	0.00156	0.00078
R-3	alpha-BHC	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00164	<	0.00164	0.00082
R-3	Aluminum (dissolved)	ug/l	5	14-Mar-02	04-Feb-03	100%		6.2		38.8	14.22
R-3	Aluminum (total recoverable)	ug/l	5	14-Mar-02	04-Feb-03	100%	<	39.3		178	102.82
R-3	Ammonia (as N)	mg/l	5	19-Mar-02	05-Feb-03	40%	<	0.052		0.43	0.26
R-3	Anthracene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.029	<	0.029	0.0145
R-3	Antimony (dissolved)	ug/l	5	14-Mar-02	04-Feb-03	100%		0.049		0.079	0.0592
R-3	Antimony (total recoverable)	ug/l	5	14-Mar-02	04-Feb-03	100%		0.054		0.083	0.0612
R-3	Aroclor 1016	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0648	<	0.0648	0.0324

Location	Constituent	Units	Count	MinOfDate	MaxOfDate	Percent Detects		Min		Max	Avg
R-3	Aroclor 1221	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0648	<	0.0648	0.0324
R-3	Aroclor 1232	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0648	<	0.0648	0.0324
R-3	Aroclor 1242	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0648	<	0.0648	0.0324
R-3	Aroclor 1248	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0648	<	0.0648	0.0324
R-3	Aroclor 1254	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0262	<	0.0262	0.0131
R-3	Aroclor 1260	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0262	<	0.0262	0.0131
R-3	Arsenic (dissolved)	ug/l	5	14-Mar-02	04-Feb-03	100%		0.263		0.577	0.366
R-3	Arsenic (total recoverable)	ug/l	5	14-Mar-02	04-Feb-03	100%		0.321		0.729	0.4764
R-3	Asbestos	MFL	4	19-Mar-02	20-Nov-02	0%	<	0.021	<	0.207	0.03625
R-3	Atrazine	ug/l	5	19-Mar-02	05-Feb-03	40%	<	0.0596		1.3	0.53788
R-3	Barium (dissolved)	ug/l	5	14-Mar-02	04-Feb-03	100%		9.02		17.8	14.304
R-3	Barium (total recoverable)	ug/l	5	14-Mar-02	04-Feb-03	100%		10		20.6	15.48
R-3	Bentazon	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00762	<	0.00762	0.00381
R-3	Benzene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.05	<	0.28	0.058
R-3	Benzidine	ug/l	5	19-Mar-02	05-Feb-03	0%	<	3.45	<	3.45	1.725
R-3	Benzo(a)anthracene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.023	<	0.023	0.0115
R-3	Benzo(a)pyrene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.03	<	0.03	0.015
R-3	Benzo(b)fluoranthene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.03	<	0.03	0.015
R-3	Benzo(g,h,i)perylene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.029	<	0.029	0.0145
R-3	Benzo(k)fluoranthene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.029	<	0.029	0.0145
R-3	Beryllium (dissolved)	ug/l	5	14-Mar-02	04-Feb-03	0%	<	0.004	<	0.02	0.0074
R-3	Beryllium (total recoverable)	ug/l	5	14-Mar-02	04-Feb-03	20%		0.006		0.006	0.006
R-3	beta-BHC	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00176	<	0.00176	0.00088
R-3	Bis(2-chloroethoxy)methane	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.83	<	0.83	0.415
R-3	Bis(2-chloroethyl)ether	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.55	<	0.55	0.275
R-3	Bis(2-chloroisopropyl)ether	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.64	<	0.64	0.32
R-3	Bis(2-ethylhexyl)phthalate	ug/l	5	19-Mar-02	05-Feb-03	20%	<	3.21		64	14.084
R-3	Bromodichloromethane	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.05	<	0.25	0.063
R-3	Bromoform	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.11	<	0.18	0.084
R-3	Bromomethane	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.19	<	0.61	0.158
R-3	Butyl benzyl phthalate	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1	<	1	0.5
R-3	Cadmium (dissolved)	ug/l	5	14-Mar-02	04-Feb-03	40%		0.003		0.003	0.003
R-3	Cadmium (total recoverable)	ug/l	5	14-Mar-02	04-Feb-03	40%		0.005		0.006	0.0055

Location	Constituent	Units	Count	MinOfDate	MaxOfDate	Percent Detects		Min		Max	Avg
R-3	Carbofuran	ug/l	4	19-Mar-02	20-Nov-02	0%	<	0.5	<	5	1.9375
R-3	Carbon tetrachloride	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.06	<	0.37	0.103
R-3	Chlordane	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.03388	<	0.03388	0.01694
R-3	Chloride	mg/l	6	19-Mar-02	05-Feb-03	100%	<	10		12	10.13333
R-3	Chlorobenzene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.07	<	0.32	0.066
R-3	Chloroethane	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.11	<	0.31	0.093
R-3	Chloroform	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.07	<	0.37	0.074
R-3	Chloromethane	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.14	<	0.18	0.094
R-3	Chlorpyrifos	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0151	<	0.0151	0.00755
R-3	Chromium (dissolved)	ug/l	5	14-Mar-02	04-Feb-03	80%	<	0.07		0.54	0.329
R-3	Chromium (total recoverable)	ug/l	5	14-Mar-02	04-Feb-03	100%	<	0.57		1.59	0.966
R-3	Chromium VI	ug/l	6	19-Mar-02	05-Feb-03	17%	<	0.126		0.74	0.175833
R-3	Chrysene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.028	<	0.028	0.014
R-3	cis-1,2-Dichloroethene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.09	<	0.31	0.076
R-3	Copper (dissolved)	ug/l	5	14-Mar-02	04-Feb-03	100%		1.01		1.49	1.236
R-3	Copper (total recoverable)	ug/l	5	14-Mar-02	04-Feb-03	100%		1.19		1.87	1.558
R-3	Cyanide	ug/l	5	19-Mar-02	05-Feb-03	20%	<	3		5.6	5.6
R-3	Dalapon	ug/l	5	19-Mar-02	05-Feb-03	40%	<	0.0124		1.9	1.04
R-3	delta-BHC	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00136	<	0.00136	0.00068
R-3	Di(2-ethylhexyl)adipate	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1.2	<	1.2	0.6
R-3	Diazinon	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0641	<	0.0641	0.03205
R-3	Dibenzo(a,h)anthracene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.027	<	0.027	0.0135
R-3	Dibromochloromethane	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.06	<	0.47	0.101
R-3	Dieldrin	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00184	<	0.00184	0.00092
R-3	Diethyl phthalate	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.63	<	0.63	0.315
R-3	Dimethyl phthalate	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1	<	1	0.5
R-3	Di-n-butyl phthalate	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.93	<	0.93	0.465
R-3	Di-n-octyl phthalate	ug/l	5	19-Mar-02	05-Feb-03	0%	<	2.72	<	2.72	1.36
R-3	Dinoseb	ug/l	5	19-Mar-02	05-Feb-03	20%		0.021		0.021	0.021
R-3	Diquat	ug/l	4	19-Mar-02	20-Nov-02	0%	<	4	<	4	2
R-3	Endosulfan I	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00168	<	0.00168	0.00084
R-3	Endosulfan II	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00092	<	0.00092	0.00046
R-3	Endosulfan sulfate	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00232	<	0.00232	0.00116

Location	Constituent	Units	Count	MinOfDate	MaxOfDate	Percent Detects		Min		Max	Avg
R-3	Endothall	ug/l	4	19-Mar-02	20-Nov-02	0%	<	45	<	45	22.5
R-3	Endrin	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00192	<	0.00192	0.00096
R-3	Endrin aldehyde	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.002	<	0.002	0.001
R-3	Ethylbenzene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.1	<	0.24	0.074
R-3	Fluoranthene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.033	<	0.033	0.0165
R-3	Fluorene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.15	<	0.15	0.075
R-3	Fluoride	mg/l	6	19-Mar-02	05-Feb-03	17%	<	0.06		0.29	0.061333
R-3	gamma-BHC (Lindane)	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00144	<	0.00144	0.00072
R-3	Glyphosate	ug/l	4	19-Mar-02	20-Nov-02	0%	<	25	<	25	12.5
R-3	Hardness (as CaCO3)	mg/l	6	19-Mar-02	05-Feb-03	100%		81		120	98.16667
R-3	Heptachlor	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00176	<	0.00176	0.00088
R-3	Heptachlor epoxide	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00152	<	0.00152	0.00076
R-3	Hexachlorobenzene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.72	<	0.72	0.36
R-3	Hexachlorobutadiene	ug/l	10	19-Mar-02	05-Feb-03	0%	<	0.084	<	0.5	0.0815
R-3	Hexachlorocyclopentadiene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1.18	<	1.18	0.59
R-3	Hexachloroethane	ug/l	5	19-Mar-02	05-Feb-03	0%	<	1.46	<	1.46	0.73
R-3	Indeno(1,2,3-c,d)pyrene	ug/l	4	19-Mar-02	20-Nov-02	0%	<	0.035	<	0.035	0.0175
R-3	Iron (dissolved)	ug/l	5	14-Mar-02	04-Feb-03	100%		121		206	167.4
R-3	Iron (total recoverable)	ug/l	5	14-Mar-02	04-Feb-03	100%		307		701	460.8
R-3	Isophorone	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.86	<	0.86	0.43
R-3	Lead (dissolved)	ug/l	5	14-Mar-02	04-Feb-03	80%		0.003		0.056	0.0261
R-3	Lead (total recoverable)	ug/l	5	14-Mar-02	04-Feb-03	100%		0.074		0.28	0.1484
R-3	Manganese (dissolved)	ug/l	5	14-Mar-02	04-Feb-03	100%		23.2		39.6	29.36
R-3	Manganese (total recoverable)	ug/l	5	14-Mar-02	04-Feb-03	100%	<	35.8		58.1	48.52
R-3	Mercury (dissolved)	ug/l	5	14-Mar-02	04-Feb-03	100%		0.0011		0.00759	0.002836
R-3	Mercury (total recoverable)	ug/l	5	14-Mar-02	04-Feb-03	100%		0.00232		0.0036	0.003036
R-3	Methoxychlor	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0024	<	0.0024	0.0012
R-3	Methyl tert-butyl ether	ug/l	5	19-Mar-02	05-Feb-03	20%		0.29		0.29	0.29
R-3	Methylene blue active substances	mg/l	5	19-Mar-02	05-Feb-03	20%	<	0.02		0.025	0.0164
R-3	Methylene chloride	ug/l	5	19-Mar-02	05-Feb-03	40%	<	0.23		1.3	0.535
R-3	Molinate	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.169	<	0.169	0.0845
R-3	Naphthalene	ug/l	10	19-Mar-02	05-Feb-03	0%	<	0.1	<	0.93	0.1485
R-3	Nickel (dissolved)	ug/l	5	14-Mar-02	04-Feb-03	100%		3.02		4.26	3.7

Location	Constituent	Units	Count	MinOfDate	MaxOfDate	Percent Detects		Min		Max	Avg
R-3	Nickel (total recoverable)	ug/l	5	14-Mar-02	04-Feb-03	100%		4.41		7.16	5.104
R-3	Nitrate as N	mg/l	6	19-Mar-02	05-Feb-03	100%	<	0.14		0.55	0.217833
R-3	Nitrite as N	mg/l	6	19-Mar-02	05-Feb-03	17%	<	0.043		0.2	0.038583
R-3	Nitrobenzene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.76	<	0.76	0.38
R-3	N-Nitrosodimethylamine	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.67	<	0.67	0.335
R-3	N-Nitroso-di-n-propylamine	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.86	<	0.86	0.43
R-3	N-Nitrosodiphenylamine	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.57	<	0.57	0.285
R-3	OCDD	pg/l	4	14-Mar-02	19-Nov-02	50%	<	6.96		12.7	10.03
R-3	OCDF	pg/l	4	14-Mar-02	19-Nov-02	0%	<	4.26	<	6.17	2.6075
R-3	Oxamyl	ug/l	4	19-Mar-02	20-Nov-02	0%	<	0.61	<	20	7.57625
R-3	Pentachlorophenol	ug/l	5	19-Mar-02	05-Feb-03	20%	<	0.00508		0.0063	0.003292
R-3	Phenanthrene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.012	<	0.012	0.006
R-3	Phenol	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.52	<	0.52	0.26
R-3	Phosphorus, total	mg/l	5	19-Mar-02	05-Feb-03	20%	<	0.0056		0.0092	0.0084
R-3	Picloram	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.00762	<	0.00762	0.00381
R-3	Pyrene	ug/l	4	19-Mar-02	20-Nov-02	0%	<	0.04	<	0.04	0.02
R-3	Selenium (dissolved)	ug/l	5	14-Mar-02	04-Feb-03	80%		0.026		0.054	0.037
R-3	Selenium (total recoverable)	ug/l	5	14-Mar-02	04-Feb-03	100%		0.033		0.05	0.0406
R-3	Silver (dissolved)	ug/l	5	14-Mar-02	04-Feb-03	40%		0.001		0.003	0.002
R-3	Silver (total recoverable)	ug/l	5	14-Mar-02	04-Feb-03	40%		0.002		0.007	0.0045
R-3	Simazine	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0641	<	0.0641	0.03205
R-3	Specific Conductivity @ 25 C	umhos/cm	5	19-Mar-02	05-Feb-03	100%	<	200		250	210
R-3	Styrene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.09	<	0.33	0.082
R-3	Sulfate as SO4	mg/l	6	19-Mar-02	05-Feb-03	100%	<	7.3		11	7.466667
R-3	Sulfide	mg/l	3	16-May-02	20-Nov-02	0%	<		<		
R-3	Sulfite	mg/l	4	19-Mar-02	20-Nov-02	0%	<		<		
R-3	Tetrachloroethene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.08	<	0.44	0.083
R-3	Thallium (dissolved)	ug/l	5	14-Mar-02	04-Feb-03	40%		0.001		0.001	0.001
R-3	Thallium (total recoverable)	ug/l	5	14-Mar-02	04-Feb-03	40%		0.002		0.002	0.002
R-3	Thiobencarb	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.0924	<	0.0924	0.0462
R-3	Toluene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.07	<	0.32	0.093
R-3	Total dissolved solids	mg/l	6	19-Mar-02	05-Feb-03	100%		97		130	119.5
R-3	Toxaphene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.052	<	0.052	0.026

Location	Constituent	Units	Count	MinOfDate	MaxOfDate	Percent Detects		Min		Max	Avg
R-3	trans-1,2-Dichloroethene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.09	<	0.26	0.073
R-3	Tributyltin	ug/l	4	19-Mar-02	20-Nov-02	0%	<	0.005	<	0.005	0.0025
R-3	Trichloroethene	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.06	<	0.36	0.084
R-3	Trichlorofluoromethane	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.07	<	0.42	0.105
R-3	Vinyl chloride	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.06	<	0.16	0.066
R-3	Xylenes, total	ug/l	5	19-Mar-02	05-Feb-03	0%	<	0.21	<	0.48	0.161
R-3	Zinc (dissolved)	ug/l	5	14-Mar-02	04-Feb-03	100%		0.62		2.31	1.178
R-3	Zinc (total recoverable)	ug/l	5	14-Mar-02	04-Feb-03	100%	<	0.94		6.47	2.446

Appendix E

Incremental Water Quality Changes for Infrequently Detected Long-term Constituents

Table E-1. Incremental mass balance change in Rock Creek water quality due to future 2.7 mgd ADWF discharge of infrequently detected constituents and comparison to applicable water quality standards.

Constituent	Units	Effluent Percent Detected	Concentration in Rock Creek downstream of WWTP outfall (R2)			Lowest Applicable Water Quality Criteria		Assimilative Capacity		Further Analysis
			@ Current (2.18 mgd) Discharge Rate	@ Future (2.7 mgd) Discharge Rate	Incremental Increase	Value	Basis	Available	Used by Expansion	
Chlorobenzene	µg/L	8%	0.0691	0.0698	0.000762	680	CTR-HH	680	0.0%	N
Chloromethane	µg/L	8%	0.102	0.103	0.000519	3	USEPA-HH	2.90	0.0%	N
Di-octyl phthalate	µg/L	4%	1.51	1.53	0.0201		NA	NA	NA	N

Notes:

CTR-AQ = California Toxics Rule criterion for the acute/chronic protection of aquatic life. Based on a minimum effluent hardness of 141 mg/L as CaCO₃.

CTR-HH = California Toxics Rule criterion for the protection of human health (consumption of water and organisms).

DHS MCL = Department of Health Services maximum contaminant level.

DHS 2nd MCL= Department of Health Services secondary maximum contaminant level.

Total Rec. = total recoverable.

NA = not applicable and/or no assimilative capacity is available.

ND = non-detect

All effluent values expected to be non-detectable with UV disinfection.

Table E-2. Incremental mass balance change in Dry Creek water quality due to future 2.7 mgd ADWF discharge of infrequently detected constituents and comparison to applicable water quality standards.

Constituent	Units	Effluent Percent Detected	Concentration in Rock Creek downstream of WWTP outfall (R2)			Lowest Applicable Water Quality Criteria		Assimilative Capacity		Further Analysis
			@ Current (2.18 mgd) Discharge Rate	@ Future (2.7 mgd) Discharge Rate	Incremental Increase	Value	Basis	Available	Used by Expansion	
Chlorobenzene	µg/L	8%	0.0690	0.0698	0.0009	680	CTR	680	0.0%	N
Chloromethane	µg/L	8%	0.102	0.103	0.0006	3	USEPA-HH	2.90	0.0%	N
Di-octyl phthalate	µg/L	4%	1.51	1.53	0.0239	0	NA	NA	NA	N

Notes:
 CTR-AQ = California Toxics Rule criterion for the acute/chronic protection of aquatic life. Based on a minimum effluent hardness of 141 mg/L as CaCO₃.
 CTR-HH = California Toxics Rule criterion for the protection of human health (consumption of water and organisms).
 DHS MCL = Department of Health Services maximum contaminant level.
 DHS 2nd MCL= Department of Health Services secondary maximum contaminant level.
 Total Rec. = total recoverable.
 NA = not applicable and/or no assimilative capacity is available.
 ND = non-detect
 All effluent values expected to be non-detectable with UV disinfection.

APPENDIX E

Traffic Noise Modeling Data

Appendix E
Traffic Noise Prediction Model, (FHWA RD-77-108)
Model Input Sheet

Project Name : Placer Co WWTP SMD-1
Project Number :
Modeling Condition : Existing
Ground Type : Soft
Metric (L_{eq}, L_{dn}, CNEL) : CNEL

K Factor :
Traffic Desc. (Peak or ADT) : ADT

Segment	Roadway	From	Segment To	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	Offset (dB)
1	State Route 49	Dry Creek	Lorenson	28000	55	50	94.7643	3.9714	1.2643	85	5	10	0
2	Joeger Rd	SR-49	Project Site	8000	40	50	94.7643	3.9714	1.2643	85	5	10	0

Appendix E
Traffic Noise Prediction Model, (FHWA RD-77-108)
Predicted Noise Levels

Project Name : Placer Co WWTP SMD-1
Project Number :
Modeling Condition : Existing
Metric (Leq, Ldn, CNEL) : CNEL

Segment	Roadway	Segment		Noise Levels, dB CNEL				Distance to Traffic Noise Contours, Feet				
		From	To	Auto	MT	HT	Total	70 dB	65 dB	60 dB	55 dB	50 dB
1	State Route 49	Dry Creek	Lorenson	72.2	65.5	64.5	73.6	87	187	403	867	1868
2	Joeger Rd	SR-49	Project Site	62.8	57.9	57.8	64.9	23	49	106	229	493
