

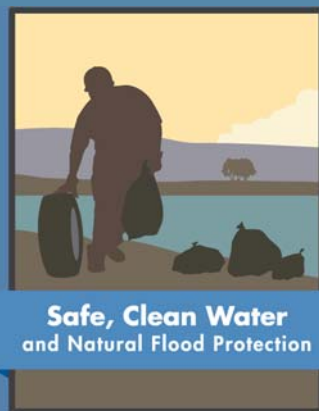


## **SANTA CLARA VALLEY WATER DISTRICT**

### **Safe Clean Water and Natural Flood Protection Program**

#### **Prioritization and Implementation of Pollution Prevention and Reduction Activities Plan to Address Impaired Water Bodies in Santa Clara County**

**Revision: June 2017**

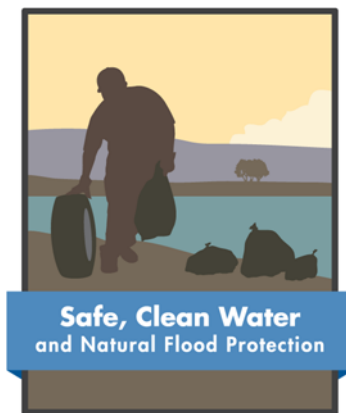


Prepared By:

SANTA CLARA VALLEY WATER DISTRICT Environmental Planning Unit



# **Prioritization and Implementation of Pollution Prevention and Reduction Activities Plan to Address Impaired Water Bodies in Santa Clara County**



**Revision: June 2017**

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## TABLE OF CONTENTS

<b>Introduction</b>	<b>1</b>
<b>Background</b>	<b>2</b>
<b>Regulatory Requirements</b>	<b>3</b>
<b>Pollution Prevention</b>	<b>5</b>
<b>Prioritization Approach</b>	<b>7</b>
<b>Planned Pollution Prevention and Reduction Activities</b>	<b>9</b>
<b>Next Steps</b>	<b>9</b>
<b>Attachment A: Prioritization Plan Data Analysis</b>	

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## Introduction

### **Safe, Clean Water and Natural Flood Protection Program**

The Safe, Clean Water and Natural Flood Protection Program (Safe, Clean Water Program) is a 15-year program to secure the present and future water resources of Santa Clara County. On November 6, 2012, voters approved the Safe, Clean Water Program as a countywide special parcel tax for 15 years with a sunset date of June 30, 2028.

The Safe, Clean Water Program addresses the following needs, values, and priorities as identified by Santa Clara County stakeholders:

**Priority A:** Ensure a Safe, Reliable Water Supply

**Priority B:** Reduce Toxins, Hazards and Contaminants, in our Waterways

**Priority C:** Protect our Water Supply from Earthquakes and Natural Disasters

**Priority D:** Restore Wildlife Habitat and Provide Open Space

**Priority E:** Provide Flood Protection to Homes, Businesses, Schools, and Highways

Under Priority B is the Impaired Water Bodies Improvement Project (B1), which helps the Santa Clara Valley Water District (District) meet surface water quality standards and reduces pollutants in streams, groundwater, lakes and reservoirs.

The Key Performance Indicators (KPIs) for Project B1 are:

1. Operate and maintain existing treatment systems in 4 reservoirs to remediate regulated contaminants, including mercury.
2. Prepare plan for the prioritization of pollution prevention and reduction activities.
3. Implement priority pollution prevention and reduction activities identified in the plan in 10 creeks.

## **Background**

To address KPI 2, a Pollution Prevention Prioritization Plan was completed in January 2015 and set the foundation for determining the first of the pollution prevention activities. The Plan was developed with the intent that it would be updated based on additional data, field observations, and updates to the Environmental Protection Agency's 303(d) list of impaired water bodies. This revised plan serves as the first update to the 2015 plan.

Pollution prevention projects already implemented based on the 2015 plan as part of the B1 project are:

- Guadalupe River: trash accumulation point mapping and removal.
- Coyote Creek and Guadalupe River: funding patrol and enforcement services from San Jose City Park Rangers and California Department of Fish and Wildlife Officers to prevent reestablishment of homeless encampments.

Also under Priority B is the Interagency Urban Runoff Program Project (B2) which includes a KPI to support 5 pollution prevention activities to improve surface water quality in Santa Clara County, either independently or collaboratively with South County organizations. This Prioritization Plan also serves to inform the B2 pollution prevention projects. The first B2 pollution prevention activity was to collaborate with South County on the Pajaro River Pathogen study. This study identified pathogen pollution hotspots and presented recommendations for remediation.



## Regulatory Requirements

Section 303(d) of the Federal Clean Water Act requires the State and Regional Water Boards to assess water quality data for California's waters every two years to determine if they contain pollutants at levels that exceed protective water quality criteria and standards. This review generates the 303(d) list of impaired water bodies, which is then approved by the U.S. Environmental Protection Agency (USEPA). Placement of a water body and its relevant pollutant(s) on the 303(d) list may initiate the development of a Total Maximum Daily Load (TMDL). A TMDL determines the value of the maximum amount of a pollutant that a body of water can receive while still meeting water quality standards. The TMDL then establishes allocations typically in the form of load limits or other regulatory measures to the pollutant sources with the ultimate goal of reducing the amount of the pollutant entering the water body to meet water quality standards. See the map below for the County's impaired water bodies.

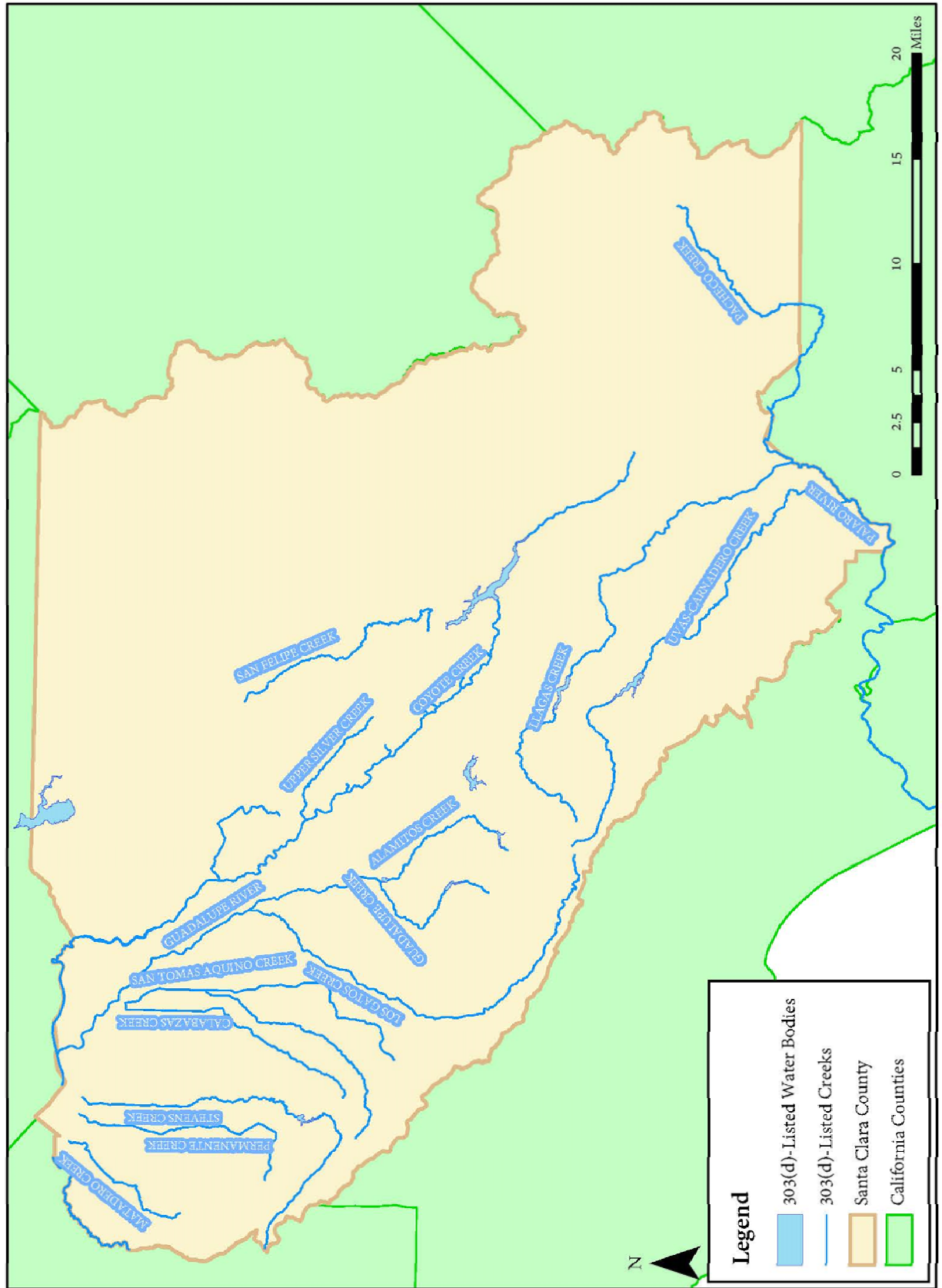
The Municipal Regional Stormwater Permit (MRP), which names the District as a permittee along with over 70 other local agencies in the Bay Area, implements TMDLs for Polychlorinated Biphenyls (PCBs)<sup>1</sup> and mercury in the San Francisco Bay and Guadalupe River. The Bay mercury TMDL also includes requirements to reduce the risk for humans consuming San Francisco Bay Fish contaminated with PCBs and mercury. Requirements to reduce trash by 100% from the storm drain system by 2022 are also included in the MRP; however, no TMDL was established.

Water Quality Standards are set based on the beneficial uses assigned to a water body. Such uses include freshwater habitat (cold/warm), water supply (agricultural, municipal and domestic), recreation (contact and non-contact), fishing, and wildlife habitat.

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<sup>1</sup> PCBs are a group of man-made organic chemicals which were widely used, including in electrical and hydraulic equipment as well as insulation, due to their non-flammability, chemical stability, high boiling point and electrical insulating properties. Their manufacture was banned in the U.S. in 1979 due to their environmental toxicity and persistence in the environment (U.S. EPA).

# Santa Clara County 303(d) Listed Impaired Water Bodies



## Pollution Prevention

According to the U.S. EPA<sup>2</sup>, pollution prevention is any practice that reduces, eliminates, or prevents pollution at its source. Pollutants enter our creeks and rivers when rain water washes pollutants from the land into storm drains or directly into the creeks. Preventing pollution from reaching creeks can occur through constructed projects that provide treatment or interception of polluted water (structural) or best practices that prevent water from being polluted (nonstructural). Structural practices include stormwater green infrastructure, restoration, re-vegetation, bank repair, buffer strips, and treatment. Nonstructural includes best management practices, education/behavior change, chemical management practices, pet waste programs, excavation of soil, and trash removal/clean ups. Other potential activities could include legislation to restrict use or ban chemicals or litter-prone products or incentive programs to encourage structural or nonstructural practices.

Pollutants for which water bodies are listed as impaired and their potential sources are listed in the following table:

Pollutant	Potential Sources
<b>Boron</b>	urban runoff, agriculture, waste water, salt water intrusion, detergents, soaps
<b>Chlordane</b>	insecticide now only used for fire ant control in power transformers, can be related to agricultural practice or urban runoff
<b>Chloride</b>	salt farming, inorganic fertilizers, landfill leachates, septic tank effluents, animal feeds, industrial effluents, irrigation drainage, road salt, waste water, seawater, natural sources
<b>Chlorpyrifos</b>	insecticide, sources include agricultural application, urban runoff
<b>DDD (Dichlorodiphenyl dichloroethane)</b>	former insecticide (persistent in environment) related to agricultural practice or urban runoff
<b>Diazinon</b>	agricultural application, cattle ear tags, urban runoff, prior to 2004 household use
<b>Dieldrin</b>	former insecticide in agriculture, all uses of dieldrin were banned in the United State in 1985 except for subsurface termite control, dipping of nonfood roots and tops, and moth-proofing in a closed manufacturing process, can be found near wood structures treated for termites.
<b>Electrical Conductivity</b>	agriculture, urban runoff, industry, road salt, sewage treatment plants, and salt water intrusion
<b>Escherichia coli (E. coli)</b>	agriculture application, septic systems, natural sources, urban runoff, animal waste including from animal feed lots and pasture grazing, and homeless encampments

<sup>2</sup> <https://www.epa.gov/p2/learn-about-pollution-prevention>

<b>Fecal Coliform</b>	agriculture application, septic systems, natural sources, urban runoff, animal waste including from animal feed lots and pasture grazing, and homeless encampments
<b>Low Dissolved Oxygen (DO)</b>	agriculture, urban runoff, habitat modification, municipal point sources, grazing, natural sources
<b>Pollutant</b>	<b>Potential Sources</b>
<b>Mercury</b>	natural sources, mining, air deposition
<b>Nitrate</b>	agricultural fertilizer, animal waste including from animal feed lots and pasture grazing, septic systems, urban runoff, homeless encampments
<b>Nutrients</b>	agriculture, hydromodification (channelization), removal of riparian vegetation, animal feed lots, septic systems, grazing, urban runoff, land disposal of wastewater
<b>PCBs (Polychlorinated biphenyls)</b>	former chemical no longer used for transformers, plasticizers, paints, oils
<b>pH</b>	agriculture, urban runoff
<b>Sedimentation/Siltation</b>	agriculture, logging, construction projects habitat modification, hydromodification, grazing, road runoff, surface mining, urban runoff
<b>Selenium, Total</b>	mines, petroleum and metals refineries and natural sources
<b>Sodium</b>	agricultural (fertilizers), urban runoff, road salt, sewage effluent, industrial sites, saltwater intrusion
<b>Temperature, water</b>	channelization, habitat modification, removal of riparian vegetation, urban runoff, cooling tower and industrial discharges
<b>Total Dissolved Solids</b>	agriculture, urban runoff, industry, road salt, and sewage treatment plants, industrial sites, salt water intrusion
<b>Toxicity</b>	natural and industrial sources, including pesticides
<b>Toxicity, additive</b>	natural and industrial sources, including pesticides
<b>Toxicity, sediment</b>	natural and industrial sources, including pesticides
<b>Trash</b>	illegal dumping, urban runoff, homeless encampments, wind
<b>Turbidity</b>	agriculture, grazing, urban runoffs, removal of riparian vegetation, phytoplankton, algae growth

Note: Additive Toxicity in this table is the combined toxicity for both chlorpyrifos and diazinon

## Prioritization Approach

In order to prioritize pollution prevention projects, the prioritization approach first considered the following criteria using equal weight to prioritize the creeks listed as impaired water bodies:

Prioritization Criteria	Explanation
Number of impairments (i.e. pollutants listed)	Creeks with more impairments rank higher
Number of impaired beneficial uses	Creeks with more beneficial uses impaired rank higher
Stream order i.e. relative size of streams. First order streams are the smallest tributaries. Numeric order is assigned based on hierarchy of tributaries	Higher order i.e. larger streams rank higher because the larger streams
Length of how much of the stream overlaps with biological habitat (e.g. steelhead, California Tiger Salamander, California Red-legged Frog)	Creeks with more biological habitat overlap rank higher

Data sources used for this analysis include the 2010 Integrated Report ([http://www.waterboards.ca.gov/water\\_issues/programs/tmdl/integrated2010.shtml](http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml)), Santa Clara Valley Water District creek shapefile and biological habitat information from the District, California Department of Fish and Wildlife, and State Water Resources Control Board. Based on this analysis, Santa Clara County top-ranking impaired water bodies are:

Water Body	Pollutants
Pajaro River	Boron, Chloride, Chlordane, Chlorpyrifos, DDD, Dieldrin, <i>E. coli</i> , fecal coliform, low dissolved oxygen, Nitrate, nutrients, PCBs, sediment, Sodium, pH, turbidity
Coyote Creek	Diazinon, trash
Llagas Creek (below Chesbro Reservoir)	Chloride, Chlorpyrifos, conductivity, <i>E. coli</i> , fecal coliform, TDS
Guadalupe River	Diazinon, Mercury, trash
Carnadero Creek (also known as Uvas-Carnadero Creek)	<i>E. coli</i> , fecal coliform, low DO, nitrate, pH, turbidity
Pacheco Creek	Fecal coliform, low DO, turbidity
San Francisquito Creek	Diazinon, sediment, trash
Stevens Creek	Diazinon, temperature, toxicity, trash
Llagas (above Chesbro Reservoir)	pH, temperature
San Felipe Creek	Diazinon
Uvas Creek (below Uvas Reservoir)	Low DO, turbidity

For a complete list of pollutants, impaired uses, and ranking of all impaired water bodies, please see Attachment A. In addition to the creeks, District reservoirs are listed as impaired water bodies, most of them listed or proposed for listing for mercury.

Selection of pollution prevention activities will focus on the water bodies with the highest priority as a guide, but also consider additional factors such as:

- Potential costs
- Feasibility
- Multiple benefits and synergy with other District projects (including benefits to habitat and special status species)
- Opportunities to address multiple pollutants or water bodies
- Opportunities to collaborate with other agencies
- Ability to measure progress
- Concerns, including access and environmental concerns (such as impacts to special status species).

Each selected activity will be implemented as an independent project with a project plan created prior to implementation. This plan presents a recommendation as a guide; however, as knowledge of conditions change, both the plan and implementation are considered flexible. The plan will be updated with new information such as regulatory actions and water quality data as needed.

## **Planned Pollution Prevention and Reduction Activities**

Based on the prioritization and consideration of additional factors, the following additional pollution prevention and reduction activities are being suggested for B1:

1. Coyote Creek: Trash Accumulation Point mapping and removal – 2017/18
2. Guadalupe River Watershed reservoirs and other reservoirs listed as impaired – Survey and development of additional outreach, if needed, to educate people fishing in District reservoirs about mercury pollution of fish
3. Creeks impaired by trash: Collect information on impacts of homeless encampments
4. Creeks impaired by trash: Evaluate additional trash booms
5. Uvas Creek below Uvas Dam: pollution prevention activity to address sediment/turbidity
6. Uvas-Carnadero Creek: pesticide related education and BMPs
7. Upper watersheds: proactive fire response strategy to address sediment pollution
8. Multiple creeks and pollutants: Support green stormwater infrastructure efforts that will reduce erosion and pollutants.

The following pollution prevention activities are being suggested for B2:

1. Pajaro River: Nutrient analysis and identification of projects on District property and/or outreach
2. Coyote Creek: Pathogen study

## **Next Steps**

Since the plan and the implementation of activities are over a 15-year-period, potential new information may affect the basis for this plan, such as: new regulations, new 303(d) listings, new TMDLs, new technologies, new studies, and stakeholder input including the public. As our knowledge of conditions change, the plan and implementation should be flexible and will be updated as needed.





## **Attachment A: Prioritization Plan Data Analysis**

## **Safe, Clean Water Priority B1 Prioritization**

### **Purpose:**

This analysis prioritizes 303(d) listed creeks for consideration in implementing Safe, Clean Water Priority B1 pollution prevention activities. Furthermore, it amends the 2015 draft Prioritization Plan that fulfills a key performance indicator for the project. Water bodies are prioritized on a complete scale. Further analysis is needed to determine project scope and location.

### **Criteria (equal weight):**

1. # of Impairments
2. # of Impaired Uses
3. Stream Order
4. Length of intersection of biological habitat (Steelhead, CTS, CRLF)

### **Data Sources**

**1, 2, 5)** 2010 Integrated Report: Clean Water Act Section 303(d) List / 305(b) Report (State Water Resources Control Board)

**3)** SCVWD Creeks Shapefile

**4)** Biological Habitat (California DFW, District, SWRCB)



Table 2: Impaired Beneficial Uses

Impaired Water Bodies	Total Impaired Beneficial Uses	Impaired Beneficial Uses Ranking	Commercial or recreational collection of fish, shellfish, or organisms	Cold Freshwater Habitat	Wildlife Habitat	Warm Freshwater Habitat	Contact Recreation	Non-Contact Recreation	Agricultural Supply	Municipal and Domestic Supply
Alameda Creek	1	1		X						
Alamitos Creek	1	1	X							
Almaden Lake	1	1	X							
Almaden Reservoir	1	1	X							
Anderson Reservoir	1	1	X							
Arroyo Del Valle	1	1		X						
Arroyo Mocho	2	2		X	X					
Calabazas Creek	1	1		X						
Calaveras Reservoir	1	1	X							
Calero Reservoir	1	1	X							
Carnadero Creek	5	4		X		X	X	X		X
Chesbro Reservoir	1	1	X							
Coyote Creek (Santa Clara Co.)	3	3		X	X			X		
Furlong Creek	5	4		X		X	X	X		X
Guadalupe Creek	1	1	X							
Guadalupe Reservoir	1	1	X							
Guadalupe River	4	3	X		X	X		X		
Llagas Creek (above Chesbro Reservoir)	6	5		X		X	X	X	X	X
Llagas Creek (below Chesbro Reservoir)	6	5		X		X	X	X	X	X
Los Gatos Creek (R2)	1	1		X						
Matadero Creek	2	2		X	X					
Pacheco Creek	4	3		X		X	X	X		
Pajaro River	6	5		X		X	X	X	X	X
Permanente Creek	2	2		X	X					
San Felipe Creek	1	1		X						
San Francisquito Creek	3	3		X	X			X		
San Tomas Aquinas Creek	1	1			X					
Saratoga Creek	2	2		X	X					
Silver Creek (Santa Clara County)	1	1			X					
Stevens Creek	3	3		X	X	X				
Stevens Creek Reservoir	1	1	X							
Uvas Creek (above Uvas Reservoir)	4	3		X			X	X		X
Uvas Creek (below Uvas Reservoir)	2	2		X		X				
Uvas Reservoir	1	1	X							

**Table 3: Stream Order of Impaired Water Bodies**

<b>Impaired Water Bodies</b>	<b>Stream Order</b>	<b>Stream Order Ranking</b>
Alameda Creek	2	3
Alamitos Creek	2	3
Almaden Lake*	2	3
Almaden Reservoir*	2	3
Anderson Reservoir*	3	5
Arroyo Del Valle	2	3
Arroyo Mocho	1	1
Calabazas Creek	2	3
Calaveras Reservoir*	0	0
Calero Reservoir*	2	3
Carnadero Creek	2	3
Chesbro Reservoir*	2	3
Coyote Creek (Santa Clara Co.)	3	5
Furlong Creek/ Jones Creek	1	1
Guadalupe Creek	2	3
Guadalupe Reservoir*	2	3
Guadalupe River	3	5
Llagas Creek (above Chesbro Reservoir)	2	3
Llagas Creek (below Chesbro Reservoir)	2	3
Los Gatos Creek (R2)	2	3
Matadero Creek	2	3
Pacheco Creek	2	3
Pajaro River	3	5
Permanente Creek	2	3
San Felipe Creek	2	3
San Francisquito Creek	2	3
San Tomas Aquinas Creek	2	3
Saratoga Creek	2	3
Silver Creek (Santa Clara County)	2	3
Stevens Creek	2	3
Stevens Creek Reservoir*	2	3
Uvas Creek (above Uvas Reservoir)	2	3
Uvas Creek (below Uvas Reservoir)	2	3
Uvas Reservoir*	2	3

\*Lake= order of stream it discharges to

Table 4: Length of Biological Habitat intersection with Impaired Water Bodies

Impaired Water Bodies	CTS	CTS2	CRLF	CRLF2	CC Steelhead	SCC Steelhead	Total Habitat Length (ft)	Ranking
Alameda Creek							0	0
Alamitos Creek	167.444062						167.444062	1
Almaden Lake							0	0
Almaden Reservoir							0	0
Anderson Reservoir							0	0
Arroyo Del Valle							0	0
Arroyo Mocho							0	0
Calabazas Creek							0	0
Calaveras Reservoir							0	0
Calero Reservoir							0	0
Carnadero Creek						14944.8	14944.8	1
Chesbro Reservoir							0	0
Coyote Creek (Santa Clara Co.)	4376.632293		14923.66873	2109.089297	219408.36		240817.7503	5
Furlong Creek							0	0
Guadalupe Creek							0	0
Guadalupe Reservoir							0	0
Guadalupe River					61247.53		61247.53	2
Llagas Creek (above Chesbro Reservoir)							0	0
Llagas Creek (below Chesbro Reservoir)						100494.35	100494.35	3
Los Gatos Creek (R2)							0	0
Matadero Creek							0	0
Pacheco Creek			9983.276683			98988.92	108972.1967	3
Pajaro River	4256.117926		37368.67919			167538.17	209162.9671	4
Permanente Creek							0	0
San Felipe Creek	20058.49398	1991.691724	78264.94493				100315.1306	3
San Francisquito Creek					62144.61		62144.61	2
San Tomas Aquinas Creek							0	0
Saratoga Creek							0	0
Silver Creek (Santa Clara County)							0	0
Stevens Creek					63585.5		63585.5	2
Stevens Creek Reservoir							0	0
Uvas Creek (above Uvas Reservoir)							0	0
Uvas Creek (below Uvas Reservoir)						74534.6	74534.6	2
Uvas Reservoir							0	0

Table 5: Final Ranking of 303 (d) Listed Water Bodies

Water Body	Impairments Ranking	Impaired Uses Ranking	Stream Order Ranking	Bio Habitat	Total Score	Ranking
Pajaro River	5	5	5	4	19	1
Coyote Creek (Santa Clara Co.)	2	3	5	5	15	2
Llagas Creek (below Chesbro Reservoir)	4	5	3	2	14	3
Guadalupe River	3	3	5	2	13	4
Carnadero Creek	4	4	3	1	12	5
Pacheco Creek	3	3	3	2	11	6
San Francisquito Creek	3	3	3	2	11	6
Stevens Creek	3	3	3	2	11	6
Llagas Creek (above Chesbro Reservoir)	2	5	3	0	10	7
San Felipe Creek	1	1	3	5	10	7
Uvas Creek (below Uvas Reservoir)	2	2	3	3	10	7
Furlong Creek	4	4	1	0	9	8
Permanente Creek	3	2	3	0	8	9
Uvas Creek (above Uvas Reservoir)	2	3	3	0	8	9
Guadalupe Creek	1	1	3	2	7	10
Matadero Creek	2	2	3	0	7	10
Saratoga Creek	2	2	3	0	7	10
Alamitos Creek	1	1	3	1	6	11
Alameda Creek	1	1	3	0	5	12
Arroyo Del Valle	1	1	3	0	5	12
Arroyo Mocho	2	2	1	0	5	12
Calabazas Creek	1	1	3	0	5	12
Los Gatos Creek (R2)	1	1	3	0	5	12
San Tomas Aquinas Creek	1	1	3	0	5	12
Silver Creek (Santa Clara County)	1	1	3	0	5	12

Prepared By:

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