

## CHAPTER 12 ECONOMIC CONSIDERATIONS

This chapter describes the economic considerations associated with implementation of the Pathogen Indicator Bacteria Total Maximum Daily Load (TMDL) for the Russian River Watershed, as drafted in the TMDL Action Plan. The triggers for Regional Water Board consideration of economics or costs in basin planning include:

- Establishing water quality objectives that ensure the reasonable protection of beneficial uses.
- Compliance with the California Environmental Quality Act (CEQA)<sup>1</sup> when Regional Water Boards amend their basin plans. CEQA, and the regulations implementing CEQA, require that the Boards identify the reasonably foreseeable methods of compliance with draft performance standards and treatment requirements.<sup>2</sup> This process must include discussion of economic factors.

Chapter 10 of this staff report (CEQA Substitute Environmental Analysis) discusses the potential environmental impacts, as required under CEQA, associated with adopting an amendment to the Water Quality Control Plan for the North Coast Region (Basin Plan) to include an implementation plan for the Pathogen Indicator Bacteria Total Maximum Daily Load (TMDL) for the Russian River Watershed, known as a TMDL Action Plan. Chapter 10 identifies the reasonably foreseeable compliance measures necessary to achieve compliance with the TMDL Action Plan. Compliance measures include treatment technologies and management practices most likely to be implemented to achieve compliance with TMDL load allocations, waste load allocations, and the water quality objectives for bacteria contained in the Basin Plan. There are no new water quality objectives proposed for adoption as part of this TMDL.

This chapter considers the potential costs of implementing the reasonably foreseeable compliance measures without considering whether compliance measures are currently part of the existing regulatory baseline. The costs are generally given as a range, and are dependent on the specific characteristics of the land or operation to which given management practices are applied. A list of potential funding sources is also presented below.

Although the Regional Water Board is required to consider economics during the Basin Plan amendment (TMDL Action Plan) process, it is not obligated to consider the balance of costs and benefits associated with implementation of the amendment. The Regional Water Board is obligated to consider the costs of compliance and potential sources of funding and may adopt a Basin Plan amendment even if the costs are considered to be significant<sup>3</sup>. For CEQA purposes, the economic and social impacts of the draft proposed project are

---

<sup>1</sup> Pub. Resources Code § 21000 *et seq.*

<sup>2</sup> Cal.Code Regs., tit., 23 § 3777 subdivision (b).

<sup>3</sup> See *California Assn. of Sanitation Agencies v. State Water Resources Control Board* (2012) 208 Cal.App. 4th 1438, 1466.

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

---

considered to determine if they will cause or contribute to an adverse environmental impact, not whether the costs of the measures themselves are significant or will cause an economic hardship.

Anticipating costs with precision is challenging for several reasons. Many of the actions, such as review, revision, and development of policies and ordinances by a governmental agency, could incur no significant costs beyond the program budgets of those agencies. However, other actions, such as establishing an ordinance to require property owners to inspect and repair their private sewer laterals carries discrete costs. Cost estimates are further complicated by the fact that some implementation actions are currently part of the baseline condition as they are already required by other regulatory requirements (e.g., NPDES Storm Water) or are actions anticipated regardless of TMDL adoption. Therefore assigning all of these costs to TMDL implementation would be inaccurate.

While the below text discusses the cost of various control measures aimed at improving water quality, it does not discuss the effects (costs) of *not* improving water quality such as impacts to public health.

## **12.1 ESTIMATED COST OF COMPLIANCE**

The majority of costs identified in this chapter were derived from the following sources of information:

- U.S. Environmental Protection Agency (USEPA) Technology Fact Sheets  
<http://water.epa.gov/scitech/wastetech/mtbfact.cfm>
- Water Environment Research Foundation (WERF). Performance & Cost of Decentralized Unit Processes. Final Report, 2010.  
<http://ndwrcdp.werf.org/documents/DEC2R08/DEC2R08web.pdf>
- San Francisco Bay Regional Water Quality Control Board, Staff Report for Pathogens in the Napa River Watershed Total Maximum Daily Load (TMDL).  
[http://www.waterboards.ca.gov/sanfranciscobay/water\\_issues/programs/TMDLs/napapathogens/item8napapathsappb.pdf](http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/napapathogens/item8napapathsappb.pdf)
- Federal Remediation Technologies Roundtable Screening Matrix and Reference Guide (FRTR) <http://www.frtr.gov/default.htm>;
- Natural Resource Conservation Service (NRCS) Field Office Technical Guide (FOTG) <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/fotg/>;
- CDFW Coho Salmon Recovery Strategy <http://www.dfg.ca.gov/fish/Resources/Coho/CohoRecovery.asp>; and
- California Department of Transportation (Caltrans) 2013 contract proposal award information [http://www.dot.ca.gov/hq/esc/oe/project\\_ads\\_addenda/](http://www.dot.ca.gov/hq/esc/oe/project_ads_addenda/).

The cost information provided in the U.S. EPA guidance are available to assist the public and publicly owned treatment works, referred to here as wastewater treatment facilities (WWTFs), in understanding the necessary components and costs involved with

implementing particular technologies. Many of the cost breakdowns are based on a variety of example sites throughout the county over the last two decades. Therefore, it can be generally assumed that these costs have increased with inflation, although some compliance measures have become more affordable as improvements in technologies are made.

The cost information provided in the NRCS FOTG is a national dataset to assist local NRCS Districts in setting cost shares for implementing conservation practices. Cost estimates are provided at the county level and the data used for this analysis are specific to Northern California as described in their Fiscal Year 2014 Payment Schedule. The FOTG represents the NRCS estimate of costs to implement such practices.

The costs included in the CDFG Manual are described as upslope erosion inventory and sediment control guidance. The numbers are based on estimates provided by Pacific Watershed Associates, a consulting firm specializing in erosion control work. Actual costs can vary considerably depending on operator skill and experience, equipment types, local site conditions, and regional location.

### **12.1.1 POTENTIAL COSTS FOR TREATMENT PLANT UPGRADES AT EXISTING WWTFs**

#### *Disinfection Improvements*

All municipal wastewater treatment facilities within the Russian River Watershed are required to comply with effluent disinfection requirements contained in waste discharge requirements. No new capital costs are anticipated as a result of implementing this TMDL for WWTFs that are in compliance with effluent limitations for bacteria and disinfection requirements in their waste discharge permits. Permitted wastewater treatment facilities will incur increased costs associated with additional effluent and receiving water bacteria monitoring, so as to demonstrate compliance with this TMDL. In particular, those facilities that discharge treated and disinfected effluent to a holding pond prior to discharge to a surface water, will be required to demonstrate that any regrowth of *e. coli* or total coliform bacteria in the holding pond (including bacteria contributions from bird life) does not otherwise indicate the presence of human pathogens. But these costs are not included here as an economic consideration associated with implementation.

In cases where a municipal wastewater treatment facility does not consistently meet bacteria effluent limitations in its waste discharge permit or cannot demonstrate that discharges from wastewater holding ponds are in compliance with this TMDL, the municipality or special district may have to improve the reliability or upgrade its existing treatment facilities to implement this TMDL. It is anticipated that treatment systems consistent with disinfected tertiary treated water, as defined in title 22 of the California Code of Regulations, are the minimum acceptable processes that are capable of ensuring compliance with effluent limitations for bacteria, excluding consideration of the potential for bacterial regrowth in holding ponds. The costs for complying with effluent limitations

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

for bacteria through improvements in wastewater disinfection systems include capital costs and cost for routine operations and maintenance and are presented in Table 12.1.

<b>Table 12.1 Estimated Cost Range for Centralized Wastewater Treatment Compliance Measures Advanced Treatment and Disinfection</b>			
<b>Compliance Measures</b>	<b>Capital Costs</b>	<b>Annual O&amp;M Costs</b>	<b>Cost Source</b>
Membrane Bioreactors	\$7.00-\$20.00 / gpd capacity	\$1.00-\$2.00 /gallons treated	USEPA <sup>1</sup> , GWRMN
Chlorine Disinfection	1-2.5 mgd = \$1.1 to \$1.3 million 10-20 mgd = \$3.1 to \$4 million 100-175 mgd = \$14.3 to \$1.3 million	1-2.5 mgd = \$49K to \$76K 10-20 mgd = \$158K to \$380K 100-175 mgd = \$660K to \$1.3 million	USEPA <sup>1</sup>
Dechlorination	\$6,500 to \$383,000	\$9,900 to \$17,500 \$0.10 to \$10.00/1,000 gallons treated	USEPA <sup>1</sup>
Ultraviolet Light Disinfection	Lamps 1-5 mgd =\$400-\$1,375 5-10 mgd = \$345-\$595 19-100 mgd = \$275-\$590 Systems \$245k	\$19,200	USEPA <sup>1</sup>
Ozone Disinfection	Oxygen gas /compressor \$245K Contact vessel (500 gpm) \$4,000 - \$5,000 <b>Destruct unit:</b> Small (around 30 cfm) \$800 Large (around 120) \$1,000-1,200 Non-component costs \$35,000 Engineering \$12,000-15,000 Contingencies 30%	Labor \$12,000 Power 90 kW Other (filter replacements, compressor oil, spare dielectric, etc.) \$6,500	USEPA <sup>1</sup>
Reverse Osmosis	\$776k to \$81 million / 1.0 to 200 mgd		USEPA <sup>1</sup>
Wetland Treatment Systems	\$155,000 to \$260,00 /100,000 gpd \$359,000 to \$1,015,009 /acre of wetland treatment system Operations and maintenance costs	\$5,00 to \$8,323 /acre per year \$0.45 to \$1.36 /1,000 gallons over 10 to 30 year timeframe	FRTR, USEPA <sup>3</sup>
Advanced Ecologically Engineered Systems	40K gpd = \$985K to \$1.2 million 80K gpd = \$1.5 to \$1.9 million 1 million gpd = \$8.5 to \$10.5 million		USEPA <sup>1</sup>

gpm – gallons per minute / mgd – million gallons per day / gpd – gallons per day/ cy – cubic yard / ft<sup>2</sup>– square foot / lb – pound / ft- feet

OWTS – Onsite Wastewater Treatment System

SWRCB 1 – State Water Resources Control Board Onsite Wastewater Treatment System Policy Final SED June 19, 2012

FRTR – Federal Remediation Technologies Roundtable

GWRTAC – Groundwater Remediation Technologies Analysis Center, Technology Overview Report TO-97-03

U.S. EPA 1 – US Environmental Protection Agency Technology Fact Sheets <http://water.epa.gov/scitech/wastetech/mtbfact.cfm>

U.S. EPA 2 – US Environmental Protection Agency Technologies and Cost for Removal of Arsenic from Drinking Water

U.S. EPA 3 – US Environmental Protection Agency Technology Fact Sheet Free Surface Water Wetland & Constructed Wetland Treatment of Municipal Wastewaters

GWRMN- Groundwater Remediation and Management for Nitrate Report – Addressing Nitrate in California’s Drinking Water AFCEE –

EN- Eco-Nomic Septic System design Page [http://www.eco-nomic.com/indexsdd.htm#Industrial or Non-Residential Wastewater](http://www.eco-nomic.com/indexsdd.htm#Industrial%20or%20Non-Residential%20Wastewater)

*Expansion of Collection, Treatment, and Disposal or Recycled Water Systems*

To accommodate new connections, WWTFs may need to evaluate whether flow from new

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

---

customers will require expansion of its wastewater collection, treatment and disposal systems. Wastewater collection costs are generally the largest component of costs for expansion of the complete system, but the cost of land purchase is often significant when land suitable for waste management functions is scarce and expensive. Cost estimates for expanding the wastewater collection system for new connections are highly variable depending on terrain and other site constraints, method of collection, and design flow. As part of a 2007 assessment by the City of Los Altos Hills in Santa Clara County, for example, it was estimated that a proposed extension of an existing municipal sewer line to 40 nearby residences would cost approximately \$1.5 million (Moody Sewer Extension), and another proposed extension to 57 residences would cost approximately \$1.01 million (Robleda Sewer Extension). Both proposed extension were rejected by City staff as too expensive to residents in the targeted subdivisions.

Unit costs for expansion of baseline capacity for treatment unit processes to accommodate additional flow from new customers outside the established service area are highly variable and dependent on many factors and estimating the cost for such an expansion would require a project level evaluation beyond the scope of this TMDL. Consequently, estimating the cost for possible construction costs for treatment plan expansion scenarios would be speculative and inaccurate. The average operation and maintenance costs for wastewater treatment are generally lower for a facility that increases design volume. This is a result of an economy of scale for secondary and tertiary wastewater treatment systems.

In cases where a municipality or special district chooses to comply with this TMDL by expanding effluent storage so that the need to discharge to surface water is eliminated, the capital cost may include costs for land acquisition, permitting, pond excavation and earthwork, pond liner, pumping and pumping appurtenances, and electrical systems. The total cost of construction or expansion of effluent storage will vary greatly depending on site constraints, land availability, and level of public support. Two recent examples illustrate the range of costs: In 1999, the Russian River County Sanitation District (Guerneville, CA) evaluated a project to construct a \$5.7 million gallon equalization basin to increase wastewater treatment capacity at its Guerneville Treatment Plant. Although the project was never completed, the estimated cost of the expansion was \$1.5 million. More recently, the Sonoma Valley Sanitation District (Sonoma, CA) is proposing to construct a 37 million gallon recycled water storage reservoir to reduce its discharge to Shell Slough and San Pablo Bay and provide recycled water for irrigation purposes. Construction of the reservoir is expected to cost approximately \$2.3 million. Where discharge to a pond is designed to use percolation to groundwater as the method of disposal, costs associated with ongoing operation and maintenance, as well as groundwater monitoring will also apply.

In order to avoid TMDL implementation requirements for discharges to surface waters, municipalities and special districts that treat municipal wastewater may also expand existing or implement new water recycling programs. Total capital costs will vary depending on site conditions, land acquisition requirements, and public support. In 1999, the Russian River County Sanitation District evaluated expansion of its treated wastewater

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

---

disposal capacity. Among the alternatives evaluated was expansion of spray irrigation on the Burch Property, which is located adjacent to the Guerneville Treatment Plant and a portion of which is currently leased for spray irrigation of treated wastewater. This alternative was estimated to cost approximately \$4.0 million (including purchase of the Burch Property). Other alternatives for this project included extension of the pipelines and spray irrigation to Green Valley and to the Guerneville and Westside Road areas. These projects were estimated at \$6.5 to \$12 million and \$3 to 12.5 million, respectively. Annual O&M costs for the Green Valley alternative was estimated at \$50,000 to \$350,000, and may be considered typical for similar projects, for the purpose of this TMDL. These projects are designed to use vegetative uptake as the primary mechanism for wastewater removal, depending on agronomic rates of wastewater application. Proper operation and maintenance should also include the cost of monitoring to ensure proper application.

### **12.1.2 POTENTIAL COST FOR SANITARY SEWER SYSTEMS**

Sanitary sewer systems greater than one mile in length within the Russian River Watershed are required under the existing General Permit for Sanitary Sewer Systems to be designed, operated, and maintained in such a way as to prevent or minimize sanitary sewer overflows. No new costs to prevent sanitary sewer overflows are anticipated as a result of this TMDL. In the event that public entities that own sanitary sewer systems enact new ordinances or programs to require or promote private property owners to inspect their private sewer laterals, costs to develop the ordinances or programs will be incurred. The cost of developing and implementing a program will depend on the nature and complexity of the local program and are not estimated here.

### **12.1.3 POTENTIAL COSTS FOR INDIVIDUAL AND DECENTRALIZED ONSITE WASTEWATER TREATMENT SYSTEMS**

#### *Individual OWTS Cost Considerations*

As outlined in the TMDL Action Plan, certain existing, new, and replacement OWTS in the Russian River Watershed are required to utilize supplemental treatment and meet performance requirements to achieve load allocations for pathogen indicator bacteria. The supplemental treatment components necessary to comply with performance requirements will vary depending on type and age of the existing OWTS, site conditions and constraints, the availability of and proximity to the individual OWTS to community sewer systems, and the availability of financial assistance to private property owners to fund OWTS upgrades. Cost estimates for new OWTS and for supplemental treatment components for new and replacement OWTS are presented in Table 12.2.

In the absence of a TMDL, existing OWTS that do not meet requirements in the statewide Conditional Waiver of Waste Discharge Requirements or the conditions and requirements set forth in an approved LAMP may be required to submit a report of waste discharge, obtain waste discharge requirements, and pay an annual fee for their OWTS. The cost of preparing a complete report of waste discharge will vary depending whether the report will be prepared by the property owner or a qualified professional, how much information

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

is available to characterize the discharge and site conditions, site conditions and constraints, and the proposed supplemental treatment system to be used to meet performance requirements. The cost for a general site evaluation to obtain local agency approvals for a new or replacement OWTS is approximately \$1,000. The cost for preparation of a report of waste discharge by a qualified professional could range from \$2,000 to \$6,000 (Ted Walker, personal communication). The application fee and first annual fee submitted to the Regional Water Board for waste discharge requirements is currently \$2,088 (Fiscal Year 2014-15).

**Table 12.2  
Estimated Cost Range for Wastewater Treatment Compliance Measures  
Individual OWTS**

<b>Compliance Measures</b>	<b>Capital Costs</b>	<b>O&amp;M Costs</b>	<b>Cost Source</b>
Septic System for single home	Tank replacement: \$2,500 - \$4,500 Leachfield replacement: \$3,300 - \$7,400	\$44-\$400/yr	USEPA <sup>1</sup> , EN, SWRCB <sup>1</sup>
	Whole new OWTS: \$5,600-\$10,000		
	With supplemental treatment: \$17,600 - \$26,000		
Septic System for a Restaurant (approximately 200 meals per day)	Tank replacement: \$4,500 - \$13,800 Leachfield replacement: \$29,500 - \$66,000	\$44-\$400/yr	USEPA <sup>1</sup> , EN, SWRCB <sup>1</sup>
	Whole new OWTS: \$34,000-\$80,000		
	With supplemental treatment: \$104,000 - \$151,000		
Septic System for a School (Approximately 700 students)	Tank replacement: \$4,500 - \$13,000 Leachfield replacement: \$50,000 - \$200,000	\$44-\$400/yr	USEPA, EN, SWRCB
	Whole new OWTS \$55,600-\$212,000		
	With supplemental treatment: \$104,000 - \$151,000		
Aerobic Pretreatment	500-1,500 gpd = \$2,500 to \$9,000	\$350/yr	USEPA
Chlorine Disinfection	\$325 - \$4,200 /unit	Tablets \$69-\$280 (45lb. pail)	USEPA
UV Disinfection	\$2,500 - 4,700/unit	Lamp Replacement: \$40-\$80 Power: 200-300 kWh/yr	USEPA Levernize
Control Panels	\$1,500 - \$3,000 /unit	-0-	USEPA
Septic Tank Effluent Screen	\$70 - \$300 per unit, not including installation	Minimal	USEPA
Sand/Gravel Filters	Range: \$4,000 - \$15,000  1,500-gallon single compartment septic/pump tank @ \$0.57/gallon: \$850  ISF complete equipment package (includes dual simplex panel, pump	Labor @ \$65/hr. (2 hrs./yr.)= \$130/yr  Power @10 cents/kWh  Sludge disposal=\$25/yr	USEPA, EN

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

**Table 12.2  
Estimated Cost Range for Wastewater Treatment Compliance Measures  
Individual OWTS**

Compliance Measures	Capital Costs	O&M Costs	Cost Source
	pkg., tank risers, lids, liner, lateral kit, orifice shields, etc.): \$3,200  Non-component costs: \$750  Engineering (soil evaluation, siting, design, and construction): \$2,000		
Low Pressure Pipe System	\$1,500 - \$5,000	Distribution line and filter flushing: \$0 Power: Variable depending on pumping rate, volume per dose pumped, and pump wattage.	USEPA, EN
Pressure Systems	\$4,000 - \$6,500	Distribution line and filter flushing: \$0 Power: Variable depending on pumping rate, volume per dose pumped, and pump wattage.	USEPA, EN
Mound Systems	\$9,000 to \$20,000	\$100/yr	USEPA, EN
Granular Activated Carbon Absorption	\$0.80 - \$6.30 /1,000 gallons treated	Carbon \$0.50 to \$1.20 /lb	USEPA
Replace/Upgrade Sewer laterals	Burst Pipe: \$40-\$80 per linear foot Sliplining: \$80-\$170 per linear foot Cured In Place Pipe: \$25-\$65 per linear foot Modified Cross Section: \$18-\$50 per linear foot		USEPA
Composting Toilets	Household of four: \$1,200 - \$6,000 Seasonal Usage: \$700 - \$1,500 Large Capacity/ Public Facility: \$20,000	Electric (fan): 120 Wh/day Leachate disposal: variable Bulking agents: variable Compost Disposal: variable	USEPA
Incinerating Toilet	Electric: \$2,300 - \$2,700 Propane: \$2,550	Electric: \$2,748/yr Propane: \$383.60/yr	

gpm – gallons per minute / mgd – million gallons per day / gpd – gallons per day/ cy – cubic yard / ft<sup>2</sup> – square foot / lb – pound / ft- feet  
SWRCB 1 – State Water Resources Control Board Onsite Wastewater Treatment System Policy Final Substitute Environmental Document  
June 19, 2012

U.S. EPA 1 – US Environmental Protection Agency Technology Fact Sheets <http://water.epa.gov/scitech/wastetech/mtbfact.cfm>  
EN- Eco-Nomic Septic System design Page [http://www.eco-nomic.com/indexsdd.htm#Industrial or Non-Residential Wastewater](http://www.eco-nomic.com/indexsdd.htm#Industrial%20or%20Non-Residential%20Wastewater)  
[Leverenz, Harold, J. Darby, and G. Tchobanoglous, 2006. Evaluation of Disinfection Units for Onsite Wastewater Treatment Systems. http://www.waterboards.ca.gov/water\\_issues/programs/owts/docs/disinfection.pdf](http://www.waterboards.ca.gov/water_issues/programs/owts/docs/disinfection.pdf)

***Decentralized OWTS Cost Considerations***

An alternative for some small communities, where neither individual OWTS nor connection



**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

to an existing centralized municipal sewer system work well, is the establishment of a decentralized onsite waste treatment and disposal system. There is a range of available collection, treatment, and effluent dispersal technologies for a community-owned decentralized OWTS that may be used individually or in combination. Cost estimates for individual property owners to connect to a community-owned decentralized OWTS via a local sewer system (not including connection fees or other related costs) are presented in Table 12.3. Table 12.4 presents estimates for the cost of operating a decentralized OWTS, based on common technologies for waste flows ranging from 5,000 to 50,000.

<b>Compliance Measures</b>	<b>Capital Costs for building sewer and connection to sewer main</b>	<b>Annual O&amp;M Costs</b>	<b>Cost Source</b>
Private Laterals	\$20-\$30/ft (excluding surface restoration) \$50-\$100/ft (for paved streets)	Electricity: \$0 O&M: \$0	CCCSD <sup>1</sup>
Gravity Sewer Systems	Materials and Installation: \$1,800 - \$2,700	Electricity: \$0 O&M: \$16 - \$24	WERF <sup>2</sup>
Pressure Sewer Systems	Materials and Installation: \$4,800 - \$7,200	Electricity: \$44 - \$66 O&M: \$120 - \$240	WERF
Effluent (STEP) Sewer Systems	Materials and Installation: \$3,000 - \$5,000	Electricity: \$24 - \$36 O&M: \$56 - \$84	WERF

<sup>1</sup> Central Contra Costa County Sanitary District (CCCSD) website: <http://www.centrialsan.org/index.cfm?navid=27>

<sup>2</sup> Water Environment Research Foundation (WERF). Performance & Cost of Decentralized Unit Processes. Final Report, 2010.

<b>Compliance Measures</b>	<b>Cost Factors</b>	<b>Wastewater Volume (gpd)</b>		
		<b>5,000 gpd (or 20 homes)</b>	<b>10,000 gpd (or 40 homes)</b>	<b>50,000 gpd (or 200 homes)</b>
Gravity Sewers	Materials and Installation	\$210,000-\$315,000	\$419,000-\$629,000	\$2,182,000-\$3,273,000
	Annual O&M	\$6,400-\$9,600	\$12,800-\$19,200	\$65,000-\$97,000
Pressure Sewers	Materials and Installation	\$33,000-\$49,000	\$65,000-\$98,000	\$344,000-\$516,000
	Annual O&M	\$6,400-\$9,600	\$13,000-\$19,000	\$56,000-\$84,000
Effluent Sewers	Materials and Installation	\$32,000-\$48,000	\$65,000-\$97,000	\$340,000-\$510,000
	Annual O&M	\$6,000-\$9,000	\$12,000-\$18,000	\$61,000-\$91,000
Extended Aeration	Materials and Installation	\$100,000-\$150,000	\$148,000-\$223,000	\$410,000-\$616,000
	Annual Electrical	\$900-\$1,400	\$1,800-\$2,700	\$9,000-\$14,000
	Annual O&M	\$5,300-\$8,000	\$9,000-\$13,000	\$34,000-\$51,000
Fixed-growth Media Filter	Materials and Installation	\$30,000-\$46,000	\$98,000-\$147,000	\$287,000-\$431,000
	Annual Electrical	\$350-\$500	\$900-\$1,400	\$4,600-\$6,900
	Annual O&M	\$4,100-\$6,000	\$7,300-\$11,000	\$30,000-\$44,000
Wastewater Lagoons	Materials and Installation	\$314,000-\$471,000	\$628,000-\$942,000	\$3,141,000-\$4,711,000
	Annual Electrical	-0-	-0-	-0-

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

**Table 12.4  
Estimated Cost Range for Wastewater Treatment Compliance Measures<sup>2</sup>  
Decentralized OWTS – Cost to Wastewater Utility**

Compliance Measures	Cost Factors	Wastewater Volume (gpd)		
		5,000 gpd (or 20 homes)	10,000 gpd (or 40 homes)	50,000 gpd (or 200 homes)
	Annual O&M	\$2,400-\$3,500	\$4,700-\$7,100	\$24,000-\$35,000
Chlorine Disinfection	Materials and Installation	\$3,100-\$5,400	\$3,100-\$5,400	\$3,100-\$5,400
	Annual Electrical	\$40-\$50	\$50-\$80	\$3,100-\$4,700
	Annual O&M	\$900-\$1,400	\$1,700-\$2,500	\$7,900-\$12,000
UV Disinfection	Materials and Installation	\$1,700-\$2,500	\$2,300-\$3,400	\$5,200-\$7,800
	Annual Electrical	\$14-\$20	\$28-\$40	\$130-\$190
	Annual O&M	\$480-\$720	\$700-\$1,100	\$2,600-\$3,900
Gravity Distribution	Materials and Installation	\$54,000-\$81,000	\$105,000-\$158,000	\$517,000-\$776,000
	Annual Electrical	\$80-\$120	\$160-\$230	\$750-\$1,100
	Annual O&M	\$2,300-\$3,400	\$4,400-\$6,600	\$21,000-\$31,500
Drip Distribution	Materials and Installation	\$37,000-\$56,000	\$85,000-\$127,000	\$329,000-\$494,000
	Annual Electrical	\$240-\$360	\$480-\$720	\$2,400-\$3,600
	Annual O&M	\$3,300-\$5,000	\$6,900-\$10,000	\$31,000-\$47,000
Spray Distribution	Materials and Installation	\$138,000-\$206,000	\$265,000-\$397,000	\$1,260,000-1,890,000
	Annual Electrical	\$240-\$360	\$460-\$690	\$2,300-\$3,500
	Annual O&M	\$2,200-\$3,400	\$4,300-\$6,500	\$21,000-\$31,000

<sup>1</sup>Water Environment Research Foundation (WERF). Performance & Cost of Decentralized Unit Processes. Final Report, 2010.

*Local Oversight Agency Costs*

As described in Chapter 5 (Source Analysis), Section 5.4.1 (Onsite Waste Treatment Systems), effective pathogen removal in OWTS is dependent on proper siting and installation of the OWTS components, proper maintenance, and operation of the system within design specifications. Local agencies have been performing OWTS design review and approval for decades. According to the well and septic fees adopted by Sonoma County for the 2015/2016 fiscal year, inspections and field clearance reports range from \$400-\$1,100 per inspection/plan check. For existing OWTS requiring certification, the cost of a qualified contractor to perform the inspection and generate a report could range from \$350 to \$1,500.

As a general rule, the local agencies that issue a building permit are often the same entities that oversee the installation and construction of most of the OWTS, as well. In many cases, local agencies have worked with their respective regional water boards to integrate the necessary OWTS-related requirements into the building permit process, allowing one permitting and inspection agency to oversee both programs. Estimating the cost associated complying with the OWTS-related requirements of a building permit, is difficult and speculative, given the combined requirements.

Tier 2 of the Basin Plan’s OWTS Policy is written to allow variability in local programs while retaining comparable standards to maintain the function of OWTS for the purpose of

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

---

protecting the environment and human health through institutional controls and management. This is achieved by requiring regional water board approval of a Local Agency Management Plan (LAMP) developed under Tier 2 of the Basin Plan's OWTS Policy. Conceptually, Tier 2 Programs (approved LAMPs) will include varying degrees of change to the local programs and practices currently in place. An OWTS managed under an approved LAMP may be allowed a variety of technological designs for both the wastewater treatment and effluent dispersal system. The selection of the technology would be made to accommodate site constraints, in order to ensure that the design provides adequate protection given the site's slope, groundwater level, soil conditions, topographic location, and other natural barriers to effective treatment.

There may be additional cost to the local agencies for developing and administering a local agency management program (LAMP). But, that will depend on the extent to which the existing programs and practices require upgrading to meet the goals and requirements of the Basin Plan's OWTS policy. It is expected that some or all of any such additional costs will be passed on to the owners of OWTS in the form of permit fees.

Tier 3 of the Basin Plan's OWTS Policy represents a departure from current practice. It may require that OWTS be upgraded to meet performance standards for nitrogen, pathogens or both where discharges from OWTS have been determined to be contributing to surface water pollution. Compliance with performance standards may require the use of supplemental treatment systems. An assessment of the site, assuming it includes groundwater monitoring with three wells to assess whether the OWTS is contributing to the impairment (by determining pollutant concentrations in the groundwater and groundwater flow direction), could cost as much as \$5,000. Assuming that such testing confirmed the need for advanced treatment, Tier 3 costs for inspection and upgrade of the septic tank to a supplemental treatment system could cost \$22,000 for a three bedroom home or more, where the OWTS is larger or more complex.

Tier 4 of the Basin Plan's OWTS Policy requires that OWTS owners replace their failing OWTS (e.g. collapsed septic tank, overflowing leachfield) with a new component that will operate correctly and in compliance with conditions and requirements of the OWTS Policy. Replacement components (e.g. septic tank or drainfield) would have to meet the new standards, rather than out of date standards. (See Tables 12.2 and 12.3 for costs associated with individual OWTS)

#### **12.1.4 POTENTIAL COSTS OF ADDRESSING HOMELESS AND FARMWORKER ENCAMPMENTS, ILLEGAL CAMPING, AND RECREATIONAL WATER USE**

##### *Homeless and Farmworker Encampments and Illegal Camping*

It is anticipated that for the control of waste discharges from homeless and farmworker encampments and illegal camping that responsible parties will employ a combination of non-structural and structural BMPs. Non-structural BMPs include community outreach and public information to reduce the homeless population within the Russian River Watershed, thereby reducing the need for illegal camping and formation of encampments. Many of

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

these efforts are voluntary and are already in development or underway in both Mendocino County and Sonoma County. Cost estimates for these initiatives are not considered as part of this TMDL.

The TMDL also encourages counties, municipalities, and special districts to construct public restroom facilities that are accessible to homeless individuals. Cost estimates for the construction of public restroom facilities is presented in Table 12.5, and are based on nationwide case studies and a local project in the community Guerneville in Sonoma County. These costs also apply to the construction of public restroom facilities at recreational beaches and trailheads in close proximity to the Russian River and its tributaries.

*Recreational Water Use*

The control of pathogenic waste due to recreational water use primarily relies on the availability of adequate restroom facilities at places of significant recreational water use. These include both private and public recreational beaches. Table 12.5 provides estimates of the cost for construction of restroom facilities. In addition, cities, counties, and special districts may limit the availability of public parking near places of recreational water use, so as to accommodate only as many recreational water users as the facilities can safely support. Estimating costs for these site-specific measures are difficult to determine with the existing baseline of parking and trespassing enforcement during the peak tourism season. Additionally, minor cost may be incurred for posting additional signage informing recreators of such facility limits.

<b>Table 12.5 Estimated Cost for Construction of Public Restroom Facilities</b>					
<b>Location/Manufacturer</b>	<b>(1) Room</b>	<b>(2) Room</b>	<b>(4) Room</b>	<b>(6) Room</b>	<b>Source</b>
Salt Lake City 1700 South River Park	N/A	N/A	158,264	N/A	1
Roseburg, OR ROMTEC, Inc.	82,571	N/A	149,293	204,523	1
Spokane, WA CXT Concrete Buildings	78,614	N/A	199,370	127,030	1
LeGrange, KY Hunter Kneppshield Co.	93,702	N/A	181,266	222,047	1
Reno, NV Restroom Facilities Ltd	148,460	N/A	351,483	491,646	1
Reno, NV Public Restroom Co.	117,281	N/A	205,111	247,378	1
Portland, OR Portland Loo	156,000	N/A	N/A	N/A	1
Salt Lake City American Ready Kontainer	N/A	N/A	217,750	N/A	1
Guerneville, CA	N/A	250,000	N/A	N/A	
Durham, NC	N/A	165-200,000	N/A	N/A	2

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

**Table 12.5  
Estimated Cost for Construction of Public Restroom Facilities**

Location/Manufacturer	(1) Room	(2) Room	(4) Room	(6) Room	Source
Range	\$78-156,000	\$165-250,000	\$150-351,000	\$127-492,000	

N/A – Not Available

<sup>1</sup> Staff report to City Council, Salt Lake City, “Cost of Building Public Restrooms.”(Jan 15, 2013)

<sup>2</sup> “Going Public: An Assessment of Restroom Facilities in City of Durham Parks” (Jan 15, 2014)

### **12.1.5 POTENTIAL COSTS TO CONTROL URBAN STORM WATER RUNOFF**

#### *Local Agency Program Costs*

As described in Chapter 5 (Source Analysis) Section 5.3.3 (Storm Water), urban storm water runoff and non-storm water runoff from MS4<sup>4</sup>s located in urban areas within the Russian River Watershed are regulated under conditions in the Phase I MS4 Permit for the City of Santa Rosa, County of Sonoma, and the Sonoma County Water Agency. Under terms of the Phase I MS4 Permit, permittees are required to develop and implement a Storm Water Management Plan and Monitoring Program that identifies tasks and programs to reduce the discharge of pollutants in storm water to the maximum extent practicable in a manner designed to achieve compliance with water quality standards and objectives. The Storm Water Management Plan and Monitoring Program includes ongoing costs for operations and maintenance, inspections, enforcement, staff training, public education and outreach, illicit connections and discharges response and abatement, and effectiveness monitoring. The costs for implementing the Storm Water Management Plan and Monitoring Program are baseline program costs, and will be incurred by MS4 Permittees with or without additional, incremental costs associated with a specific program to control pathogen indicator bacteria.

The Implementation Plan for the control of urban storm water and non-storm water runoff requires the establishment of effluent limitations and monitoring requirements to attain wasteload allocations for *E. coli* and enterococci bacteria. It is anticipated that MS4 Permittees will comply with effluent limitation by developing specific structural and/or nonstructural BMPs to control the sources of bacteria within the MS4 boundary. Potential control measures are unknown at this time. However, in the California Regional Water Quality Control Board, San Francisco Bay Region’s *Pathogens in the Napa River Watershed Total Maximum Daily Load*, it was estimated that additional pathogen-specific measures for Napa County would result in a two to 15 percent increase to the annual MS4 program budget based on information for a similar MS4 program in Marin County. Using this estimate, staff estimates a range of incremental costs of implementing MS4 bacteria-control measures between a two percent annual increase (minimum) and a 15 percent annual increase (maximum). As an example of potential added costs for two MS4 Permittees in the Russian River Watershed, the cost calculations for the City of Santa Rosa and the County of

<sup>4</sup> Municipal Separate Storm Sewer System (MS4) is a conveyance or system of conveyances owned by a public entity and designed for collecting and conveying storm water, including roads, drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains.

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

Sonoma are shown in Table 12.6. Staff expects that MS4 Permittees that are already addressing pathogen indicator bacteria issues would fall at the low end of incremental cost increases.

<b>Table 12.6 Estimated Cost Range for Incremental Costs for Bacteria Control Measures Municipal Separate Storm Sewer Systems (MS4s)</b>			
	<b>Annual Program Cost</b>	<b>2% Incremental Cost Increase associated with Bacteria Control Program</b>	<b>15% Incremental Cost Increase associated with Bacteria Control Program</b>
Santa Rosa (FY 13/14) <sup>1</sup>	\$1,983,913	\$39,678	\$297,587
Santa Rosa (FY 14/15,est.) <sup>1</sup>	\$2,251,609	\$45,032	\$337,741
Sonoma County (FY 13/14) <sup>2</sup>	\$775,949	\$15,519	\$116,392

<sup>1</sup> City of Santa Rosa, December 2014. City of Santa Rosa's 2013-2014 Annual Report of Compliance with Order No. R1-2009-0050

<sup>2</sup> County of Sonoma, December 2014. NPDES Phase I Annual Report: July 1, 2013 – June 30, 2014, Term 3, Year Five

*Costs for Storm Water Controls for Caltrans*

In the North Coast Region (Caltrans District 4), BMPs installed to comply with Caltrans' statewide NPDES Permit conditions currently are focused on activities to prevent and minimize erosion and sediment discharges from Caltrans right-of-way. Effective erosion control will reduce the migration of pollutants, including human pathogens and pathogen indicator bacteria, to surface waters.

Proactive bridge design is a cost-effective method to prevent the creation of tempting encampment sites for homeless persons. For retrofitting existing bridge underpasses, security fencing and other exclusionary structures are effective BMP to discourage the formation of homeless encampments under bridges within the Caltrans right-of-way. As an example of potential costs, in 2014, the City of Santa Rosa installed exclusion structures designed to exclude access to flat areas at the base of old bridge abutments that have been used for camping at three road crossings within the Russian River Watershed. The cost estimate for the project was \$38,960, plus \$1,170 for inspection of the three sites. In Pennsylvania, the Pennsylvania Department of Transportation spent an average of \$24,000 per location to fences bridges and highway ramps to deter homeless. Based on available information, the cost estimate per location for exclusionary fencing is from \$13,000 to \$24,000, depending on site conditions.

*General Storm Water Compliance Measures Costs*

Structural controls for nonpoint sources divert, store, treat, and/or infiltrate storm water to prevent the discharge of waste material to the river with storm water runoff. Structural controls for point sources can be implemented to treat waste before discharge and/or prevent the direct discharge of waste into a waterbody, as highlighted in Table 12.7.

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

<b>Table 12.7 Estimated Costs of Reasonably Foreseeable Compliance Measures Associated with Storm Water Control</b>			
<b>Reasonably Foreseeable Compliance Measure</b>	<b>Practice Name</b>	<b>Range of Practice Costs</b>	<b>NRCS Practice Code or Source</b>
Sediment/Bacteria Controls	Fiber roll / Straw Wattle	\$1.20- 20.00/Lft	Home Depot/ Caltrans 2013
Sediment/Bacteria Controls	Sand Filters	\$6,000 -\$18,500 /acre	U.S. EPA
Bioretention	Green Roofs, Rain Gardens, vegetated strips, and bioswales	\$500-\$7,000/per unit	U.S. EPA

**12.1.6 POTENTIAL COSTS FOR OWNERS OF NON-DAIRY LIVESTOCK AND FARM ANIMALS**

Activities associated with raising, feeding, and maintaining non-dairy livestock and farm animals occur throughout the North Coast Region both on private and public lands. Best management practices are recommended to prevent the migration of animal waste to surface waters. Estimates of potential cost to the grazing community are derived from NRCS Fiscal Year 2013 Payment Schedule, as depicted in Table 12.8.

<b>Table 12.8 Estimated Cost Range for Incremental Costs for Bacteria Control Measures Owners of Non-dairy Livestock and Farm Animals</b>			
<b>Reasonably Foreseeable Compliance Measure</b>	<b>Practice Name</b>	<b>Range of Practice Costs</b>	<b>NRCS Practice Code or Source</b>
Use Exclusion	Forage exclusion	\$0.64-\$1.32/ft	#472
Vegetated filter strips	Filter strip	\$210-\$448/acre	#393
Stream buffer areas/Field borders	Field Borders: Riparian tree & shrub establishment; Non-native or native seedbed preparation	\$211-\$1,617/acre	#386
Fencing	NA	\$3-\$12/ft	CDFW Coho Recovery Plan

Owners of non-dairy livestock and farm animals who fail to implement these or substantially similar best management practices will be required to submit a report of waste discharge for possible establishment of waste discharge requirements for the discharge of waste. The cost for preparing a report of waste discharge, or Notice of Intent, will vary depending whether the report will be prepared by the property owner or a qualified professional, how much information is available to characterize the discharge and site conditions, and site conditions and constraints. The application fee and first annual fee

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

---

for waste discharge requirements for small-scale animal operations is approximately \$455 (FY 2013-14).

### **12.1.7 POTENTIAL COSTS FOR PET WASTE MANAGEMENT PROGRAMS**

A successful pet waste management program is dependent of the participation and cooperation of individual pet owners. The cost of a public education program depends on the type of materials produced and the method of distribution. Implementation of a pet waste management program is an existing program under the MS4 permit for the City of Santa Rosa, the County of Sonoma, and Sonoma County Water Agency. No new costs are anticipated to continue implementing this program beyond the installation of new trash receptacles and pet waste bag dispensers. The cost of a bag dispenser is approximately \$60 (Washington State Department of Ecology).

### **12.1.8 POTENTIAL COSTS FOR DAIRIES**

The structural BMPs to reduce and prevent discharges of animal waste associated with the operation of cow dairies are similar to practices identified in section 12.1.6 for non-dairy livestock and farm animals. Cost estimates for bacteria control measures for these BMPs are presented in Table 12.8. Where the structural BMP involves the construction of a new manure storage pond or enlargement of an existing manure storage pond, costs depend on the required design storm and the resulting required pond volume. Average national installation costs for livestock ponds is 2.2 cents per gallon for ponds with a capacity less than 1 million gallons, 1.8 cents per gallon for capacities from 1 million to 3 million gallons, and 1.5 cents per gallon for capacities greater than 3 million gallons (USDA)<sup>5</sup>. Increasing capacity in existing ponds by raising the levels of pond berms would cost considerably less.

### **12.1.9 POTENTIAL COSTS FOR BIOSOLID APPLICATION**

Current options for managing wastewater biosolids include both beneficial reuse technologies (such as land application, landfilling with biogas recovery, and energy recovery through incineration) and non-reuse options, including landfilling. While implementing some type of beneficial reuse is the preferred method for managing wastewater biosolids, this is not always practical. For example, land acquisition constraints or poor material quality may limit beneficial reuse options. Composting is one of several methods for treating biosolids to create a marketable end product that is easy to handle, store, and use.

---

<sup>5</sup> **USDA Natural Resources Conservation Service (Rhode Island). Comprehensive Nutrient Management Plans (CNMP): Costs Associated with Development and Implementation of Comprehensive Nutrient Management Plans - Part I—Nutrient Management, Land Treatment, Manure and Wastewater Handling and Storage, and Recordkeeping.** [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ri/technical/dma/?cid=nrcs143\\_014041](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ri/technical/dma/?cid=nrcs143_014041)



**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

---

Recycling biosolids through land application serves several purposes. It improves soil properties, such as texture and water holding capacity, which make conditions more favorable for root growth and increases the drought tolerance of vegetation. Biosolids application also supplies nutrients essential for plant growth, including nitrogen and phosphorous, as well as some essential micronutrients such as nickel, zinc, and copper. Biosolids can also serve as an alternative or substitute for expensive chemical fertilizers.

Cost for controlling biosolid application as related to this pathogen TMDL are associated with the development of erosion control plans and the implementation of erosion and sediment control measures. If a facility already has a water pollution control plan in place, modification to address storm water contamination concerns will require minimal cost. If a facility will be developing a site plan for the first time, the initial cost will depend on the type of material at the facility, the facility size, and other related parameters. Costs for structural containment devices will also need to be identified for each facility. The need to control erosion is an existing regulatory requirement and the cost of site assessment and plan development range from \$500 to \$7,000 (the average construction site range is \$2,000-\$3,500 per plan). Structural erosion and sediment control measures that also address potential pathogens from biosolid application are identified in Tables 12.7 and 12.8.

## **12.2 SOURCES OF FUNDING**

Potential sources of funding include monies from private and public sources. Public financing includes, but is not limited to: grant funds, as described below; single-purpose appropriations from federal, state, and/or local legislative bodies; and bond indebtedness and loans from government institutions.

### **12.2.1 SUMMARY OF PERTINENT STATE FUNDING PROGRAMS**

There are several potential sources of public financing through grant and loan funding programs administered, at least in part, by the Regional Water Board and the State Water Board. The Division of Financial Assistance (DFA) administers the implementation of the State Water Board financial assistance programs that include loan and grant funding for construction of municipal sewage and water recycling facilities, remediation for underground storage tank releases, watershed protection projects, and nonpoint source pollution control projects.

The resources available through these programs vary over time depending upon federal and state budgets and ballot propositions approved by voters. State funding programs pertinent to this TMDL and Basin Plan Amendment are summarized and described below. Additional information can be found on the State Water Resources Control Board webpage. ([http://www.waterboards.ca.gov/water\\_issues/programs/grants\\_loans/](http://www.waterboards.ca.gov/water_issues/programs/grants_loans/)).

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

---

Clean Water State Revolving Fund

The Federal Water Pollution Control Act (Clean Water Act or CWA), as amended in 1987, provides for establishment of a Clean Water State Revolving Fund (CWSRF) program. The program is funded by federal grants, State funds, and Revenue Bonds. The purpose of the CWSRF program is to implement the CWA and various State laws by providing financial assistance for the construction of facilities or implementation of measures necessary to address water quality problems and to prevent pollution of the waters of the State, including federal waters.

The CWSRF Loan Program provides low-interest loan funding for construction of publicly-owned wastewater treatment facilities, local sewers, sewer interceptors, water recycling facilities, as well as, expanded use projects such as implementation of nonpoint source (NPS) projects or programs, development and implementation of estuary Comprehensive Conservation and Management Plans, and storm water treatment. Additional information can be found on the State Water Resources Control Board webpage [http://www.waterboards.ca.gov/water\\_issues/programs/grants\\_loans/srf/](http://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/)

Onsite Wastewater Treatment Systems – Mini-Loan Program

Local agencies designated under the OWTS Policy may apply to the State Water Board for loans from the CWSRF for use in mini-loan programs that provide for low interest loan assistance to private property owners with costs associated with complying with the OWTS Policy. Technical and administrative program requirements are established by the public agency and the State Water Board Department of Financial Assistance. Low interest rates will be set by the State Water Board. Typical types of projects include: abandonment of OWTS on private property, installation and connection of laterals to main sewer line on private property, and OWTS repair or replacement on private property.

With a Mini-Loan Program, the CWSRF Program provides financing to a local public agency (i.e., city, county, or district). Private parties are not eligible for direct assistance from the CWSRF Program; however, financing provided through the CWSRF Program may be made available to private parties through a Mini-Loan Program. The local public agency:

- Administers loans to private parties in their service area
- Is responsible for promoting the program, inspecting the work, reporting, and invoicing
- May hire a loan management firm to administer the loans

The interest rate charged to private entities is the State Water Board interest rate, plus additional interest points to cover administration costs. Interest rate: ½ the most recent General Obligation bond sale (typically 2.5 to 3 percent). Other features of the CWSRF Program include:

- Financing term: Standard is 20 years
- Extended terms of 30 years are possible for small, disadvantaged communities
- Repayments: due annually, starting one year after completion of construction

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

---

- Disbursements are typically limited to \$50 million per agency per year

The CWSRF Program commonly funds construction of publicly-owned wastewater facilities, but also makes funding available for Expanded Use Projects, including:

- Implementation of nonpoint source (NPS) projects or programs, or
- Development and implementation of one of three Estuary Comprehensive Conservation
- Management Plans (CCMPs) - San Francisco, Morro Bay, or Santa Monica

Additional information can be found on the State Water Resources Control Board webpage [http://www.waterboards.ca.gov/water\\_issues/programs/grants\\_loans/](http://www.waterboards.ca.gov/water_issues/programs/grants_loans/)

#### Linked Deposit Program

In a linked deposit program, a local public agency typically applies to the State Water Board to establish “linked deposit loans” to address a specific water quality problem in its area. The State Water Board arranges with local banks to provide loans to individual property owners for the specific water quality projects or actions. The CWSRF agrees to buy a Certificate of Deposit (CD) at below market rate. In exchange, the bank agrees to provide reduced interest rate loans to private property owners for eligible projects that were reviewed and approved by the local public agency.

#### Safe Drinking Water State Revolving Fund

The Safe Drinking Water Act, as amended in 1996, established the Drinking Water State Revolving Fund (DWSRF) to make funds available to drinking water systems to finance infrastructure improvements. A noted priority of the program is to provide funds to small and disadvantaged communities and to programs that encourage pollution prevention as a tool for ensuring safe drinking water. The fund provides low interest loans, grants, and other assistance to public water systems for the purpose of infrastructure improvements to correct system deficiencies and improve water quality. Detailed information on the program can be found in the annual Intended Use Plan.

<http://www.cdph.ca.gov/services/funding/Pages/SRF.aspx>

#### Proposition 50

[Proposition 50](#), the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Water Code Section 79500, et seq.) was passed by California voters in the November 2002 general election. DDW is responsible for portions of the Act that deal with water security, safe drinking water, and treatment technology. DDW currently has funding available for projects designed to remove contaminants from drinking water supplies and/or install UV or ozone disinfection.

#### Proposition 84

[Proposition 84](#), the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Act of 2006 (Public Resources Code Section 75001, et seq.), was passed by California voters in the November 2006 general election. DDW is responsible for

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

---

portions of the Act that deal with safe drinking water supplies, including emergency and urgent funding, infrastructure improvements, and groundwater quality. The Integrated Regional Water Management program from DWR has funding available under Proposition 84 for projects that address critical drinking water supply or water quality needs for Disadvantaged Communities. Funding is also available for Urban Water Suppliers implementing leak detection and repair and installation of water meters as Best Management Practices.

Integrated Regional Water Management Grants

Integrated Regional Water Management (IRWM) is a collaborative effort to manage all aspects of water resources in a region. IRWM crosses jurisdictional, watershed, and political boundaries; involves multiple agencies, stakeholders, individuals, and groups; and attempts to address the issues and differing perspectives of all the entities involved through mutually beneficial solutions. DWR has a number of IRWM grant program funding opportunities. Current IRWM grant programs include: planning, implementation, and storm water flood management. DWR's IRWM Grant Programs are managed within DWR's Division of IRWM by the Financial Assistance Branch with assistance from the Regional Planning Branch and regional offices.

Proposition 84 Storm Water Grant Program

The Public Resources Code (PRC) requires that the Proposition 84 Storm Water Grant Program (SWGPs) funds be used to provide matching grants to local public agencies for the reduction and prevention of storm water contamination of rivers, lakes, and streams. The Legislature may enact legislation to further define this grant program.

AB 739 requires the development of project selection and evaluation guidelines for the Proposition 84 SWGP, and provides additional information regarding types of projects eligible for funding. AB 739 also requires creation of a Storm Water Advisory Task Force that will provide advice to the State Water Board on its Storm Water Management Program that may include program priorities, funding criteria, project selection, and interagency coordination of State programs that address storm water management.

Clean Beaches Initiative Grant Program

The Clean Beaches Initiative (CBI) Grant Program provides funding for projects that restore and protect the water quality and the environment of coastal waters, estuaries, bays, and near shore waters. The CBI Grant Program was initiated in response to the poor water quality and significant exceedances of bacterial indicators revealed by Assembly Bill (AB) 411 (Stats. 1997, Ch. 765) monitoring at California's beaches. Scientific studies have shown that water with high bacteria levels can cause infections rashes, and gastrointestinal and respiratory illnesses.

The CBI Grant Program has provided about \$100 million from voter-approved bonds for approximately 100 projects since it was started under the 2001 Budget Act. Typical projects include the construction of disinfecting facilities, diversions that prevent polluted

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

---

storm water from reaching the beach, and scientific research that will enable early notification of unhealthy swimming conditions.

Agricultural Drainage Program

The Agricultural Drainage Loan Program was created by the Water Conservation and Water Quality Bond Act of 1986 to address treatment, storage, conveyance, or disposal of agricultural drainage water that threatens waters of the State. Loan repayments are for a period of up to 20 years. Eligible applicants include any city, county, district, joint powers authority or other political subdivision of the State involved with water management. Projects must address treatment, storage, conveyance or disposal of agricultural drainage that threaten waters of the State.

### **12.2.2 SUMMARY OF PERTINENT FEDERAL FUNDING PROGRAMS**

Several federal agencies, including but not limited to the U.S. EPA, NOAA Fisheries, U.S. Fish and Wildlife Service, and USDA Natural Resources Conservation Service also provide grants and other funding opportunities. Table 12.9 presented below provides a summary of the pertinent federal funding programs.

The U.S. EPA provides access through its webpage to a catalog of federal funding opportunities: [http://water.epa.gov/grants\\_funding/shedfund/databases.cfm](http://water.epa.gov/grants_funding/shedfund/databases.cfm)

The U.S. Department of Agriculture – Natural Resource Conservation Service has a wide variety of agricultural/timber financial support programs. The Environmental Quality Incentives Program (EQIP) is a voluntary program that provides financial and technical assistance to agricultural producers through contracts up to a maximum term of ten years in length. These contracts provide financial assistance to help plan and implement conservation practices that address natural resource concerns and for opportunities to improve soil, water, plant, animal, air and related resources on agricultural land and non-industrial private forestland. In addition, one purpose of EQIP is to help producers meet Federal, State, Tribal and local environmental regulations. The financial assistance programs include:

- Agricultural Management Assistance
- Agricultural Water Enhancement Program
- Air Quality Initiative
- Cooperative Conservation Partnership Initiative
- Conservation Innovation Grants
- Conservation Stewardship Program
- Environmental Quality Incentives Program
- Emergency Watershed Protection Program
- Wildlife Habitat Incentive Program
- For additional agriculture specific grants:

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

<http://www.grants.gov/search-grants.html?fundingCategories%3DAG%7CAgriculture>  
<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/cig/>

<b>Table 12.9 Summary of Federal Funding Programs</b>		
<b>Funding Program</b>	<b>Programs Description</b>	<b>2014 Funding</b>
<b>Agency : National Fish and Wildlife Foundation (A non-profit organization created by Congress in 1984 to implement conservation grant funding through public/private partnerships under the leadership of the Secretary of the Interior)</b>		
<a href="#">Environmental Solutions for Communities</a>	In 2012, Wells Fargo and the National Fish and Wildlife Foundation launched the Environmental Solutions for Communities initiative, designed to support projects that link economic development and community well-being to the stewardship and health of the environment. This 5-year initiative is supported through a \$15 million contribution from Wells Fargo that will be used to leverage other public and private investments with an expected total impact of over \$37.5 million. Funding priorities for this program include: (1) supporting sustainable agricultural practices and private lands stewardship; (2) conserving critical land and water resources and improving local water quality; (3) restoring and managing natural habitat, species and ecosystems that are important to community livelihoods; (4) facilitating investments in green infrastructure, renewable energy and energy efficiency; and (5) encouraging broad-based citizen participation in project implementation.	\$3 million (est.)
<a href="#">Pulling Together Initiative</a>	The National Fish and Wildlife Foundation's Pulling Together Initiative (PTI) provides a means for federal agencies to partner with state and local agencies, private landowners, and other interested parties to develop long-term weed management projects within the scope of an integrated pest management strategy. The goals of PTI are: (1) to prevent, manage, or eradicate invasive and noxious plants through a coordinated program of public/private partnerships; and (2) to increase public awareness of the adverse impacts of invasive and noxious plants. PTI provides support on a competitive basis for the formation of local weed management area (WMA) partnerships, allowing them to demonstrate successful collaborative efforts and develop permanent funding sources for the maintenance of WMAs from the involved parties. Successful projects will serve to increase public awareness and interest in future partnership projects.	TBD
<b>Agency : National Oceanic and Atmospheric Administration</b>		
<a href="#">Coastal Services Center Cooperative Agreements</a>	The National Oceanic and Atmospheric Administration (NOAA) guides the conservation and management of coastal resources through a variety of mechanisms, including collaboration with the coastal resource management programs of the nation's states and territories. The mission of the NOAA Coastal Services Center (CSC) is to support the environmental, social, and economic well-being of the coast by linking people, information, and technology. The vision of the NOAA Coastal Services Center is to be the most useful government organization to those who manage and care for our nation's coasts.	\$3.21million
<b>Agency : U.S. Department of Agriculture</b>		
<a href="#">Conservation Reserve Program</a>	The Conservation Reserve Program (CRP) is a voluntary program for agricultural landowners. Through CRP, you can receive annual rental	\$1.965 billion

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

<b>Table 12.9 Summary of Federal Funding Programs</b>		
<b>Funding Program</b>	<b>Programs Description</b>	<b>2014 Funding</b>
	payments and cost-share assistance to establish long-term, resource conserving covers on eligible farmland.	
<a href="#"><u>Farm and Ranch Lands Protection Program (FRPP)</u></a>	The USDA Natural Resources Conservation Service's Farmland Protection Program (FPP) is a voluntary program that helps farmers and ranchers to keep their land in agriculture and prevents conversion of agricultural land to non-agricultural uses. The program provides matching funds to agencies and organizations with existing farmland protection programs that enable them to purchase conservation easements. These cooperating entities purchase easements from landowners in exchange for a lump sum payment. The Federal contribution cannot to exceed 50 percent of the appraised fair market value of the land's development rights. The easements are for perpetuity unless prohibited by state law. Eligible land is land on a farm or ranch that has prime, unique, statewide, or locally important soil, that contains historical or archaeological resources; or that supports the policy of a State or local farm and ranch land protection policy; is subject to a pending offer by an eligible entity; and includes cropland, rangeland, grassland, pasture land, forest land and other incidental land that is part of an agricultural operation.	\$142.5 million (for technical and financial assistance) (est.)
<a href="#"><u>Agricultural Management Assistance</u></a>	Agricultural Management Assistance (AMA) provides cost share assistance to agricultural producers to voluntarily address issues such as water management, water quality, and erosion control by incorporating conservation into their farming operations. Producers may construct or improve water management structures or irrigation structures; plant trees for windbreaks or to improve water quality; and mitigate risk through production diversification or resource conservation practices, including soil erosion control, integrated pest management, or transition to organic farming.	\$2.5 million
<a href="#"><u>USDA's Small Business Innovation Research</u></a>	To stimulate technological innovation in the private sector, strengthen the role of small businesses in meeting Federal research and development needs, increase private sector commercialization of innovations derived from USDA-supported research and development efforts, and foster and encourage participation, by women-owned and socially disadvantaged small business firms in technological innovation. The selected areas for research are Forests and Related Resources; Plant Production and Protection-Biology; Plant Production and Protection - Engineering; Animal Production and Protection; Air, Water and Soils; Food Science and Nutrition; Rural and Community Development; Aquaculture; Biofuels and Biobased Products; and Small and Mid-size Farms.	\$20.5 million (est.)
<a href="#"><u>Sustainable Agriculture Research and Education</u></a>	The Sustainable Agriculture Research and Education (SARE) program of the U.S. Department of Agriculture National Institute of Food and Agriculture (NIFA) works to advance farming systems that are productive, profitable, environmentally sound and good for communities through a regional grants program. SARE funds research and extension activities to reduce the use of chemical pesticides, fertilizers, and toxic materials in agricultural production; to improve management of on-farm resources to enhance productivity, profitability, and competitiveness; to promote crop, livestock, and	\$22.7 million

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

<b>Table 12.9 Summary of Federal Funding Programs</b>		
<b>Funding Program</b>	<b>Programs Description</b>	<b>2014 Funding</b>
	enterprise diversification and to facilitate the research of agricultural production systems in areas that possess various soil, climatic, and physical characteristics; to study farms that are managed using farm practices that optimize on-farm resources and conservation practices; and to promote partnerships among farmers, nonprofit organizations, agribusiness, and public and private research and extension institutions. Click on program name and check the link in the Primary Internet box for more information about grant opportunities and program results.	
<a href="#">Wetlands Reserve Program</a>	Through this voluntary program, the USDA Natural Resources Conservation Service (NRCS) provides landowners with financial incentives to restore and protect wetlands in exchange for retiring marginal agricultural land. To participate in the program landowners may sell a conservation easement or enter into a cost-share restoration agreement (landowners voluntarily limit future use of the land, but retain private ownership). Landowners and the NRCS jointly develop a plan for the restoration and maintenance of the wetland.	\$230.5 million (est.)
<a href="#">Environmental Quality Incentives Program</a>	The USDA Natural Resources Conservation Service's Environmental Quality Incentives Program (EQIP) was established to provide a voluntary conservation program for agricultural producers to address significant natural resource needs and objectives. Through a competitive process, EQIP offers financial assistance contracts with a maximum term of ten years, to help implement eligible conservation practices. Persons or legal entities, who are owners of land under agricultural production or who are engaged in livestock or agricultural production on eligible land, including private non-industrial forest land, or Indian Tribes may participate in EQIP. Conservation practices implemented through EQIP are subject to NRCS technical standards adapted for local conditions. NRCS or Technical Service Providers (TSPs) help applications develop a plan of operations which identifies practices needed to address natural resource concerns and support the EQIP contract. EQIP-related programs include Conservation Innovation Grants (CIG), Resource Conservation Partnership Program (RCPP), and the National Water Quality Initiative (NWQI).	\$981.7 million (Cost Share)
<a href="#">National Integrated Water Quality Program (NIWQP)</a>	The National Integrated Water Quality Program (NIWQP) provides funding for research, education, and extension projects aimed at improving water quality in agricultural and rural watersheds. The NIWQP has identified eight "themes" that are being promoted in research, education and extension. The eight themes are (1) Animal manure and waste management (2) Drinking water and human health (3) Environmental restoration (4) Nutrient and pesticide management (5) Pollution assessment and prevention (6) Watershed management (7) Water conservation and agricultural water management (8) Water policy and economics. Awards are made in four program areas - National Projects, Regional Coordination Projects, Extension Education Projects, and Integrated Research, Education and Extension Projects. Please note that funding is only available to universities.	Not available



**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

<b>Table 12.9 Summary of Federal Funding Programs</b>		
<b>Funding Program</b>	<b>Programs Description</b>	<b>2014 Funding</b>
<b>Agency : U.S. Department of Housing and Urban Development</b>		
<a href="#"><u>Community Development Block Grants/Entitlement Grants</u></a>	The objective of this program is to develop viable urban communities, by providing decent housing and a suitable living environment, and by expanding economic opportunities, principally for persons of low and moderate income. Recipients may undertake a wide range of activities directed toward neighborhood revitalization, economic development and provision of improved community facilities and services.	\$1.95 billion (est.)
<b>Agency : U.S. Environmental Protection Agency</b>		
<a href="#"><u>Source Reduction Assistance Grant Program</u></a>	The Source Reduction Assistance Grant Program provides grants and cooperative agreements to fund pollution prevention (source reduction and resource conservation) activities. Specifically, the Agency is interested in funding projects that help reduce hazardous substances, pollutants, or contaminants entering waste streams or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, disposal or energy recovery activities.	\$1.0 million (est.)
<a href="#"><u>Clean Water State Revolving Fund</u></a>	The EPA's Clean Water State Revolving Fund (CWSRF) program provides a permanent source of low-cost financing for a wide range of water quality infrastructure projects. These projects include traditional wastewater treatment and collection, nonpoint source pollution controls, and estuary management. Funds to capitalize the program are provided annually through federal grants and state matching funds (equal to 20 percent of federal grants). Monies are loaned to assistance recipients at below-market rates. In addition, states also have the ability to customize loan terms to benefit small and disadvantaged communities. Loan repayments are recycled back into the programs to fund additional projects. Since its inception, the CWSRF has provided over \$95.4 billion in assistance to eligible borrowers, including communities of all sizes, farmers, small businesses, and nonprofit organizations. More information on the CWSRF program can be obtained at <a href="http://www.epa.gov/owm/cwfinance/cwsrf/">http://www.epa.gov/owm/cwfinance/cwsrf/</a>	\$1.1 billion (est.)
<a href="#"><u>Nonpoint Source Implementation Grants (319 Program)</u></a>	Through its 319 program, U.S. EPA provides formula grants to the states, territories and tribes to implement nonpoint source programs and projects and programs in accordance with section 319 of the Clean Water Act (CWA). Nonpoint source pollution projects can be used for a wide range of activities including agriculture, forestry, construction, and urban challenges. When set as priorities within a state's Nonpoint source management program, projects may also be used to protect source water areas and high quality waters. Examples of previously funded projects include installation of best management practices (BMPs) for animal waste; design and implementation of BMP systems for stream, lake, and estuary watersheds; and basin-wide landowner education programs. Most states provide opportunities for 3rd parties to apply for funds under a state request for proposal.	\$159.3 million
<a href="#"><u>Urban Waters Small Grants</u></a>	EPA's Urban Waters Program protects and restores America's urban waterways. EPA's funding priority is to achieve the goals and commitments established in the Agency's Urban Waters Strategic	\$2.08 (est.)

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

<b>Table 12.9 Summary of Federal Funding Programs</b>		
<b>Funding Program</b>	<b>Programs Description</b>	<b>2014 Funding</b>
	Framework ( <a href="http://www2.epa.gov/urbanwaters/urban-waters-strategic-framework">www2.epa.gov/urbanwaters/urban-waters-strategic-framework</a> ). This program has an emphasis on engaging communities with environmental justice concerns. The objective of the Urban Waters Small Grants is to fund projects that will foster a comprehensive understanding of local urban water issues, identify and address these issues at the local level, and educate and empower the community. In particular, the Urban Waters Small Grants seek to help restore and protect urban water quality and revitalize adjacent neighborhoods by engaging communities in activities that increase their connection to, understanding of, and stewardship of local urban waterways.	
<a href="#">Pollution Prevention Grant Program</a>	The Pollution Prevention Grant Program provides grants and cooperative agreements to state agencies, instrumentalities of a state and federally recognized tribes to implement pollution prevention projects that provide technical assistance to businesses. The program requires applicants to work towards reducing pollution, conserving energy and water, and saving dollars through P2 efforts; as identified in EPA's Strategic Plan under Goal 4: Ensuring Safety of Chemicals and Preventing Pollution, Objective 4.2: Promote Pollution Prevention.	\$4.1 million (est.)
<a href="#">Science to Achieve Results</a>	The Science to Achieve Results (STAR) program is designed to improve the quality of science used in EPA's decision-making process. STAR funds are provided for research in the following priority areas: (1) Air, Climate and Energy: Anthropogenic Influences on Organic Aerosol Formation and Regional Climate Implications; Measurements and Modeling for Quantifying Air Quality and Climatic Impacts of Residential Biomass or Coal Combustion for Cooking, Heating, and Lighting. (2) Chemical Safety and Sustainability: Center for Sustainable Molecular Design; Center for Material Life Cycle Safety; Human Exposure to Chemicals in Consumer Products and Indoor Environments; Development and Use of Adverse Outcome Pathways that Predict Adverse Developmental Neurotoxicity. (3) Safe and Sustainable Water Resources: Sustainable Chesapeake: A Community-Based Approach to Stormwater Management Using Green Infrastructure; Performance and Effectiveness of Green Infrastructure Stormwater Management Approaches in the Urban Context: A Philadelphia Case Study; High Priority Water Quality and Availability Research. (4) Safe and Healthy Communities: Research with Children's Health; Children's Environmental Health and Disease Prevention Research Centers (with NIEHS); Science for Sustainable and Healthy Tribes; Healthy and Sustainable Schools: Environmental Factors, Children's Health and Performance, and Sustainable Building Practices. In addition to the solicitations identified above, other solicitations may be announced in the coming year. Please check the NCER website for an updated listing of all solicitations.	\$61.1 million (est.)
<a href="#">Five-Star Restoration Program</a>	The U.S. EPA supports the Five-Star Restoration Program by providing funds to the National Fish and Wildlife Foundation and its partners, the National Association of Counties, NOAA's Community-based Restoration Program and the Wildlife Habitat Council. These groups then make subgrants to support community-based wetland and	TBD

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

<b>Table 12.9 Summary of Federal Funding Programs</b>		
<b>Funding Program</b>	<b>Programs Description</b>	<b>2014 Funding</b>
	riparian restoration projects. Competitive projects will have a strong on-the-ground habitat restoration component that provides long-term ecological, educational, and/or socioeconomic benefits to the people and their community. Preference will be given to projects that are part of a larger watershed or community stewardship effort and include a description of long-term management activities. Projects must involve contributions from multiple and diverse partners, including citizen volunteer organizations, corporations, private landowners, local conservation organizations, youth groups, charitable foundations, and other federal, state, and tribal agencies and local governments. Each project would ideally involve at least five partners who are expected to contribute funding, land, technical assistance, workforce support, or other in-kind services that are equivalent to the federal contribution.	
<a href="#">Regional Agricultural IPM Grants</a>	The objective is to support Integrated Pest Management (IPM) implementation and approaches that reduce the risks associated with agricultural pesticide use in the United States. Regional Agricultural IPM Grants will support the implementation of IPM approaches to reduce pesticide risk in agricultural settings in the United States. Projects must address the national pesticide program stewardship priorities related to pest management needs and IPM program implementation stated in the announcement.	TBD
<b>Agency : U.S. Fish and Wildlife Service</b>		
<a href="#">Partners for Fish and Wildlife Program</a>	The Partners for Fish and Wildlife Program provides technical and financial assistance to private landowners to restore fish and wildlife habitats on their lands via cooperative agreements. Since 1987, the program has partnered with more than 37,700 landowners to restore 765,400 acres of wetlands; over 1.9 million acres of grasslands and other upland habitats; and 6,560 miles of in-stream and streamside habitat. In addition, the program restores stream habitat for fish and other aquatic species by removing barriers to passage.	\$20 million
<a href="#">Cooperative Endangered Species Conservation Fund</a>	The U.S. Fish and Wildlife Service's (USFWS) Cooperative Endangered Species Conservation Fund provides financial assistance to states and territories that have entered into cooperative agreements with the USFWS to assist in the development of programs for the conservation of endangered and threatened species. The assistance provided to the state or territorial wildlife agency can include animal, plant, and habitat surveys; research; planning; monitoring; habitat protection, restoration, management, and acquisition; and public education. The Fund is dispersed to the states and territories through four programs: Conservation Grants, Habitat Conservation Planning Assistance Grants, Habitat Conservation Plan Land Acquisition Grants, and Recovery Land Acquisition Grants. Although not directly eligible for these grants, third parties such as nonprofit organizations and local governments may work with their state or territorial wildlife agency to apply for these funds.	\$62 million (est.)
<a href="#">North American Wetlands Conservation Act</a>	The U.S. Fish and Wildlife Service's Division of Bird Habitat Conservation administers this matching grants program to carry out wetlands and associated uplands conservation projects in the United	\$70 million (est.)

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

<b>Table 12.9 Summary of Federal Funding Programs</b>		
<b>Funding Program</b>	<b>Programs Description</b>	<b>2014 Funding</b>
<a href="#">Grants Program</a>	States, Canada, and Mexico. Grant requests must be matched by a partnership with nonfederal funds at a minimum 1:1 ratio. Conservation activities supported by the Act in the United States and Canada include habitat protection, restoration, and enhancement. Mexican partnerships may also develop training, educational, and management programs and conduct sustainable-use studies. Project proposals must meet certain biological criteria established under the Act. Visit the program web site for more information. (Click on the hyperlinked program name to see the listing for "Primary Internet".)	

[https://ofmpub.epa.gov/apex/watershedfunding/?p=109:1:0::NO:RP::#search\\_results](https://ofmpub.epa.gov/apex/watershedfunding/?p=109:1:0::NO:RP::#search_results)

**References**

- U.S. Environmental Protection Agency (USEPA) Technology Fact Sheets <http://water.epa.gov/scitech/wastetech/mtbfact.cfm>
- Federal Remediation Technologies Roundtable Screening Matrix and Reference Guide (FRTR) <http://www.frtr.gov/default.htm>;
- SWRCB 1 – State Water Resources Control Board Onsite Wastewater Treatment System Policy Final Substitute Environmental Document June 19, 2012
- U.S. EPA 1 – US Environmental Protection Agency Technology Fact Sheets <http://water.epa.gov/scitech/wastetech/mtbfact.cfm>
- EN- Eco-Nomic Septic System design Page <http://www.economic.com/indexsdd.htm#Industrial or Non-Residential Wastewater>
- Leverenz, Harold, J. Darby, and G. Tchobanoglous, 2006. Evaluation of Disinfection Units for Onsite Wastewater Treatment Systems. [http://www.waterboards.ca.gov/water\\_issues/programs/owts/docs/disinfection.pdf](http://www.waterboards.ca.gov/water_issues/programs/owts/docs/disinfection.pdf)
- Central Contra Costa County Sanitary District (CCCSD) website: <http://www.centrsan.org/index.cfm?navid=27>
- Water Environment Research Foundation (WERF). Performance & Cost of Decentralized Unit Processes. Final Report, 2010.
- Staff report to City Council, Salt Lake City, “Cost of Building Public Restrooms.” (Jan 15, 2013)
- “Going Public: An Assessment of Restroom Facilities in City of Durham Parks” (Jan 15, 2014)
- City of Santa Rosa, December 2014. City of Santa Rosa’s 2013-2014 Annual Report of Compliance with Order No. R1-2009-0050
- County of Sonoma, December 2014. NPDES Phase I Annual Report: July 1, 2013 – June 30, 2014, Term 3, Year Five
- State Water Board Onsite Wastewater Treatment System Policy Final Substitute Environmental Document, June 19, 2012

**Draft Staff Report  
for the Action Plan for the Russian River Pathogen TMDL**

---

- New Jersey Agricultural Experiment Station: Rutgers Cooperative Research & Extension Jan. 2005. Fact Sheet: Onsite Wastewater Treatment Systems: Alternative Technologies. [http://www.water.rutgers.edu/Fact\\_Sheets/fs530.pdf](http://www.water.rutgers.edu/Fact_Sheets/fs530.pdf)