SAN FRANCISCO BAY WATER QUALITY IMPROVEMENT FUND

Six-Year Progress Report (2008 – 2014)

U.S. Environmental Protection Agency
Pacific Southwest/Region 9

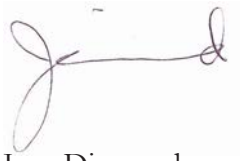
Dear Readers,

San Francisco Bay is recognized around the world for its natural beauty and ecological significance. The bay and its tributary streams, situated in an urban area with more than seven million people, provide crucial fish and wildlife habitat at the heart of the larger Bay-Delta Estuary which drains almost half of California's watersheds via the Sacramento and San Joaquin Rivers.

The bay's users and nearby residents are all affected by threats to its ecological health, including legacy pollutants like PCBs and mercury, polluted stormwater, and the challenges of drought and climate change.

Over the past six years, EPA has partnered with organizations across the nine Bay Area counties through the San Francisco Bay Water Quality Improvement Fund, using more than $36 million in EPA funding to leverage $145 million in additional funds for 54 projects that are making a difference by restoring streams, wetlands, and water quality from the Napa River in the North Bay to the salt ponds in the South Bay.

In this report, you'll find a summary of the grants, recipients, and results of our regional partnerships. We hope this assessment inspires you to pursue related projects in support of a healthy San Francisco Bay.



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Director, Water Division
EPA Pacific Southwest Region

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South Bay Salt Pond A 17 mudscape. Photo: Cris Benton.

(Cover photos: Top – Breuner Marsh wetland restoration, 2014. Photo: Syd Temple, Questa Engineering; Bottom – Sandpipers and dowitchers at low tide, South Bay Salt Ponds, 2012. Photo: Judy Irving).

The San Francisco Bay Water Quality Improvement Fund (SFBWQIF) was established in 2008 by congressional appropriation. Since that time EPA has awarded over $36 million in 29 grants to 16 recipients supporting 54 projects. These recipients represent a network of partners in the Bay Area committed to improving water quality with projects that restore wetlands and habitat complexity; reduce polluted runoff; control invasive species; design, construct and monitor Low-Impact Development (LID); and engage local governments. Each project is documenting its progress towards achieving environmental results and meeting water quality goals in San Francisco Bay.

Purpose

EPA is sharing this progress report as part of our continued effort to stimulate smart investments in protecting and restoring SF Bay and its watersheds. The primary purpose of this document is to highlight program investments and related environmental results (2008 - 2014), and to identify lessons learned. The report's secondary purpose is to inform the larger community working to protect and restore SF Bay by providing information on developing and carrying out effective projects, funding, project successes and related challenges. The document is based on existing written materials including solicitations, grant applications, work plans, progress reports and final reports. Additional information is included from ongoing discussions with grant applicants, recipients and other stakeholders.

Funding

The SFBWQIF budget is determined by congressional appropriation each year. The program began in 2008 as a congressional budget item, and, as of 2010, the President's Budget also included funding to support a SF Bay competitive grant program.

Once EPA Region 9 receives the annual allocation, the Agency announces funding opportunities through a "Request for Proposals" (RFP). The RFP review, evaluation, and funding decision process generally takes up to nine months. In 2008 through 2011, the match requirement for recipients was 25% with evaluation criteria to leverage additional resources. Beginning in 2012, the match requirement increased to 50%, or a one-to-one match, and the RFPs stopped including evaluation criteria for additional leveraged resources.

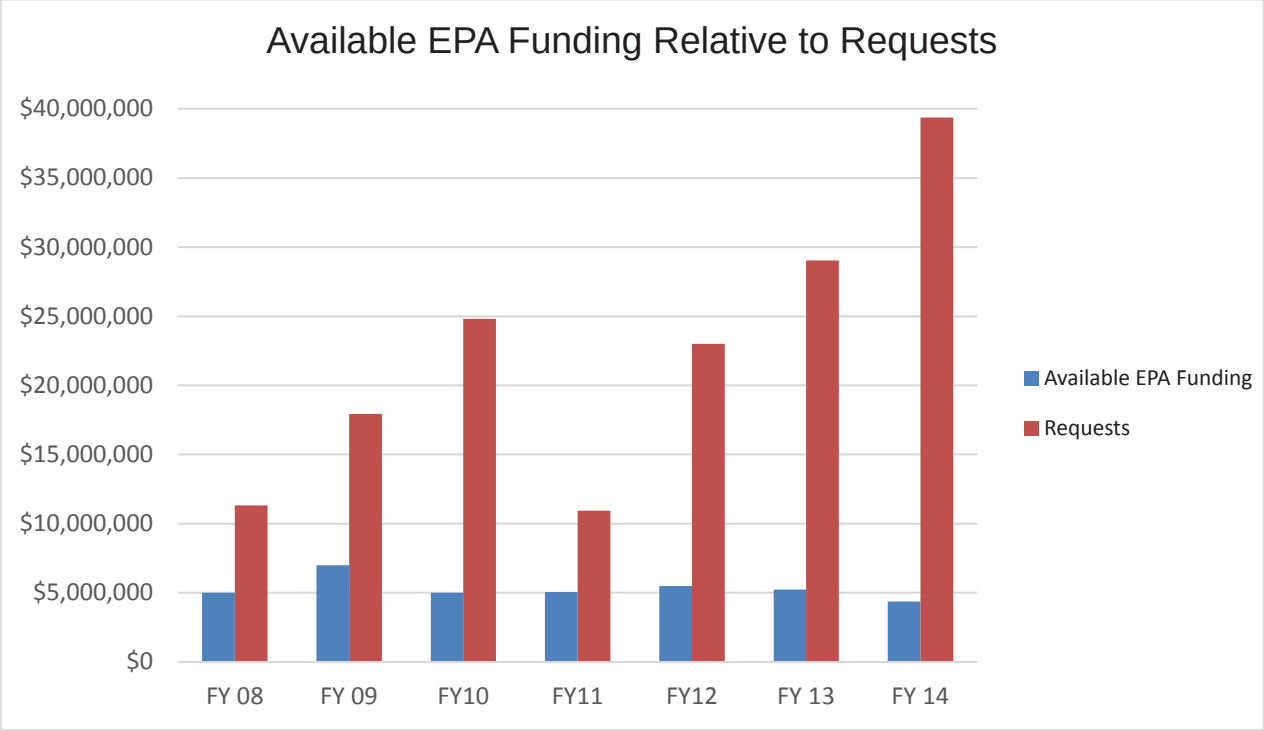


Figure 1: Total Requests Relative to Available Funding. Requests have more than tripled between 2008 and 2014, while available annual funding has remained at approximately $5 million.

Partners

SFBWQIF partners include government agencies, resource conservation districts, land trusts, watershed groups, and non-profit organizations. These partnerships have leveraged an additional $145 million, resulting in $182 million invested in restoring water quality and wetlands, and greening development in the San Francisco Bay and its watersheds (Figure 2).

Eligible grant applicants are local and state government agencies, and non-profit organizations proposing projects in the nine Bay Area counties: Marin, Napa, Sonoma, Solano, Contra Costa, Alameda, Santa Clara, San Mateo, and San Francisco. In some instances multiple organizations have formed partnerships and named a fiduciary to oversee the grant award. By partnering, recipients can combine resources to meet non-federal match requirements and complete projects that impact a larger portion of the SF Bay watershed. Many of the grant recipients are active in identifying and investing additional resources, or leveraging, even above and beyond required non-federal matching funds.

South Bay Salt Ponds, Pond A17 levee breach-opening to tidal flow to restore tidal wetlands (October 31, 2012). Photo: Judy Irving.

Twenty-nine grants have been awarded between 2008 – 2014 (Table 1). Table 2 provides a list of the recipients, with their grant, match and leveraged fund totals during the history of the program. Descriptions of all of the grant funded projects can be found in Appendix A.

Wetland Restoration Partners

Save The Bay
Bay Conservation and Development Commission
Marin Audubon Society
California State Parks Foundation
Invasive Spartina Project
Center for Research on Aquatic Bioinvasions
Urban Creeks Council
Alameda County Resource Conservation District
California State Coastal Conservancy
Ducks Unlimited
San Mateo Resource Conservation District
Audubon California
San Francisco Estuary Partnership
Golden Gate National Parks Conservancy
Sonoma Land Trust
East Bay Regional Park District

Greening Development Partners

City of Fremont
City of Richmond
City of San Francisco
San Francisco Estuary Partnership
Community Conservation International

Restoring Water Quality Partners

Santa Clara County Parks
California Land Stewardship Institute
USGS
County of Marin
Napa Resource Conservation District
Sonoma Ecology Center
Waterways Restoration Institute
Save The Bay
Sonoma Resource Conservation District
BASMAA
San Francisco Estuary Institute
City of San Jose
Napa County
Clean Water Fund
Alameda County Resource Conservation District
California State Coastal Conservancy
San Francisco Estuary Partnership
East Bay Municipal Utility District
City of St. Helena

Figure 2: Grant recipients contributing to wetland restoration, restoring water quality and reducing polluted runoff.

Table 1: San Francisco Bay Water Quality Improvement Fund Projects by Federal Fiscal Year

ID	Year	Recipient	Title	Grant Amount
1	2008	San Francisco Estuary Partnership	Estuary 2100, Phase 1: Resilient Watersheds for a Changing Climate – 16 projects	$4,922,000
2	2009	Bay Area Stormwater Management Agencies Association (BASMAA)	Clean Watersheds for a Clean Bay	$5,000,000
3	2009	City and County of San Francisco	Cesar Chavez Street LID Pilot	$1,200,000
4	2009	San Francisco Estuary Partnership	Estuary 2100, Phase 2: Building Partnerships for Resilient Watersheds – 10 projects	$3,613,704
5	2010	California State Coastal Conservancy	South Bay Salt Pond A17 Tidal Marsh Restoration	$725,000
6	2010	City of San Jose	Coyote Creek Trash Reduction Project	$680,000
7	2011	Napa County	Napa River Sediment TMDL Implementation and Habitat Enhancement Plan	$1,500,000
8	2011	California State Coastal Conservancy	Dutch Slough, Emerson Parcel Tidal Marsh Restoration	$1,400,000
9	2011	Ducks Unlimited	Cullinan Ranch Tidal Marsh Restoration Project	$1,400,000
10	2011	San Francisco Estuary Partnership	San Pablo Avenue Stormwater Spine	$307,646
11	2011	San Francisco Estuary Partnership	Pesticide Reduction Campaign: Greener Pesticides for Cleaner Waterways	$250,000
12	2011	San Mateo Resource Conservation District	San Francisquito Creek Stabilization at Bonde Weir	$75,000
13	2011	Audubon California	San Pablo Bay Tidal Marsh Enhancement & Water Quality Improvement	$235,884
14	2011	Clean Water Fund	Rethink Disposable: Packaging Waste Source Reduction Pilot	$257,293
15	2011	Alameda County Resource Conservation District	Alameda Creek Healthy Watersheds	$181,823
16	2012	San Francisco Estuary Partnership	Rebuilding Habitat and Shoreline Resilience through Improved Flood Control Channel Design and Management	$1,552,059
17	2012	Golden Gate National Parks Conservancy	Quartermaster Reach Restoration	$1,000,000
18	2012	Napa County	Napa River Restoration: Rutherford Reach Completion and Oakville to Oak Knoll Reach, Group C Sites 11 – 14	$1,500,000
19	2012	Sonoma Land Trust	Sears Point Tidal Marsh Restoration: Phase I	$941,941
20	2012	California State Coastal Conservancy	South Bay Salt Pond Mercury Studies	$500,000
21	2013	San Francisco Estuary Partnership	Removing Mercury in the Guadalupe Watershed	$800,000
22	2013	East Bay Regional Park District	Breuner Marsh Restoration	$1,500,000
23	2013	Napa County	Napa River Restoration: Oakville to Oak Knoll Reach, Group A Sites 21-23	$1,218,000
24	2013	EBMUD	Reducing Nutrients in SF Bay through WWTP Sidestream Treatment	$517,650
25	2013	California State Coastal Conservancy	South Bay Salt Ponds Restoration Project: Revegetation and Phase 2 Planning	$866,021
26	2014	Sonoma Land Trust	Sears Point Restoration Project: Phase II	$1,500,000
27	2014	Napa County	Napa River Restoration: Oakville to Oak Knoll Reach, Group C Site 14	$894,324
28	2014	California State Coastal Conservancy	South Bay Salt Pond Restoration Project: Phase II Construction at Ravenswood	$1,000,000
29	2014	City of St. Helena	Upper York Creek Dam Removal, Fish Passage, and Ecosystem Restoration	$987,876

Summaries describing the projects and activities of each of these grants can be found in Appendix A.

Table 2: San Francisco Bay Water Quality Improvement Fund Recipient Grant, Match, and Leveraged Totals

	Recipient	Number of Grants	SFBWQIF Funding Total	Match & Leveraged Total^
1	San Francisco Estuary Partnership*	6	$11,445,409	$44,953,596
2	Napa County	4	$5,112,324	$23,881,706
3	BASMAA	1	$5,000,000	$1,940,000
4	California State Coastal Conservancy	5	$4,491,021	$18,969,721
5	Sonoma Land Trust	2	$2,441,941	$5,241,941
6	East Bay Regional Park District	1	$1,500,000	$10,500,000
7	Ducks Unlimited	1	$1,400,000	$12,875,327
8	City and County of San Francisco	1	$1,200,000	$1,040,000
9	Golden Gate National Parks Conservancy	1	$1,000,000	$17,000,000
10	City of St. Helena	1	$987,876	$4,804,225
11	City of San Jose	1	$680,000	$382,417
12	EBMUD	1	$517,650	$517,650
13	Clean Water Fund	1	$257,293	$1,085,764
14	Audubon California	1	$235,884	$1,139,120
15	Alameda County Resource Conservation District	1	$181,823	$395,162
16	San Mateo Resource Conservation District	1	$75,000	$210,900
Program Totals			$36,526,221	$144,937,529

*Two of six grants include project management of multiple partners in various counties.
^Leveraged funds include mandatory match obligations, ranging from 25% to 50% of the project, and additional resources secured by the recipient.

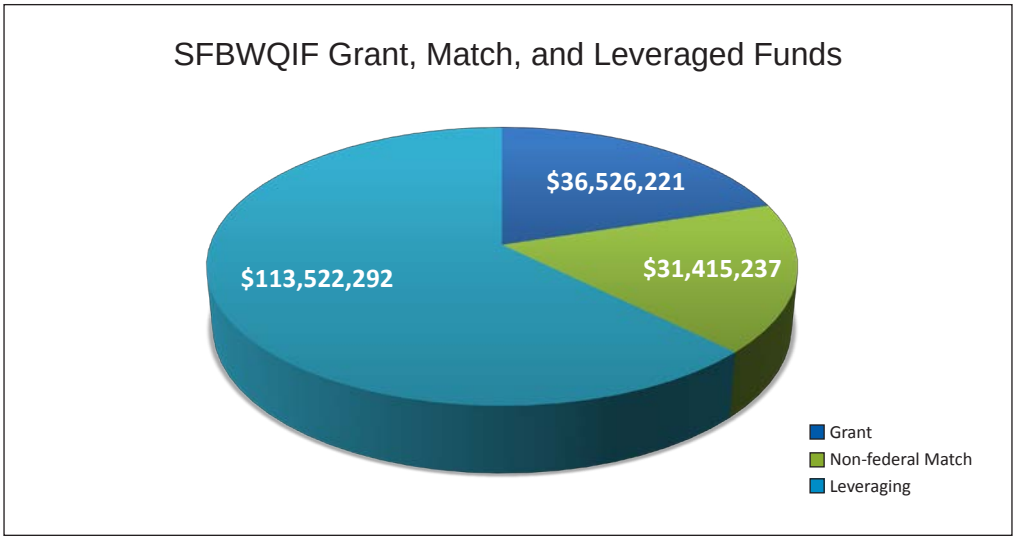


Figure 3: Grant, match, and leveraged funds 2008-2014.

Geographic Distribution

Projects throughout San Francisco Bay have been awarded funding. Figure 4 provides the locations of projects, as well as the grant funding distribution per county. For projects that have site activities located in multiple counties under one grant award, the funding has been divided among project sites to assess the distribution of funds per county. Figure 5 (next page) shows locations of projects and fund distribution.

County	EPA Funding ($)	Number Project Sites
Napa County	$6,704,575	12
Santa Clara County	$6,441,057	11
Contra Costa County	$5,486,648	7
Alameda County	$3,858,262	16
Sonoma County	$3,398,675	5
San Francisco County	$3,325,793	6
San Mateo County	$2,389,873	4
Marin County	$1,717,815	7
Solano County	$1,400,000	1
Total	$36,526,221	69

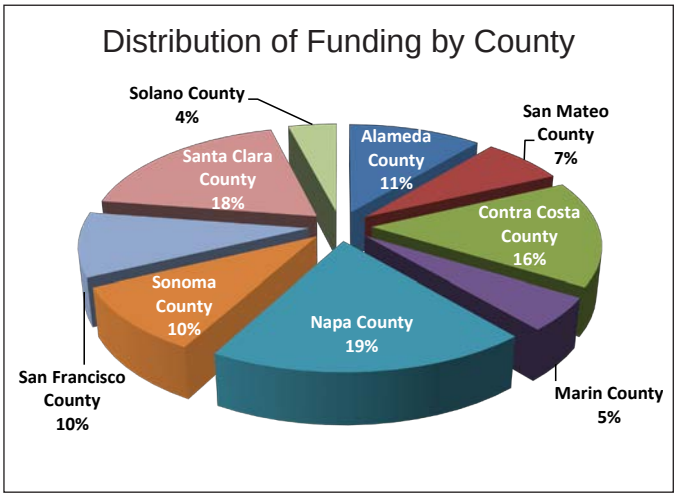
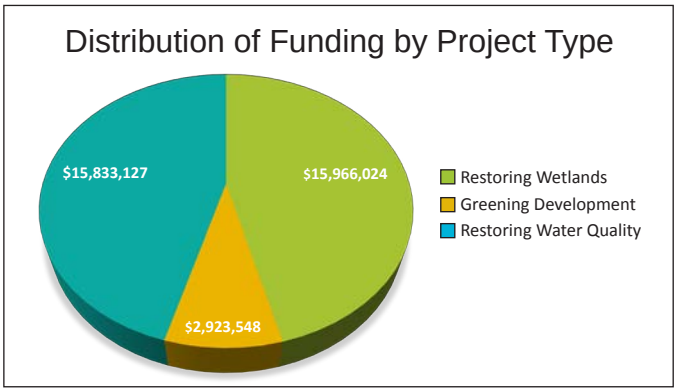


Figure 4: Distribution of EPA funding by county and number of project sites per county.

Funding Priorities & Project Types

The SFBWQIF priorities are to support projects that reduce polluted run-off, restore impaired waters, and enhance aquatic habitat. Since the inception of the SFBWQIF, emphasis has been on achieving significant on-the-ground environmental results. To maximize the likelihood of achieving significant results, funded activities are most often based on thorough assessments and plans, including watershed plans and Total Maximum Daily Loads (TMDLs). While most funds support on-the-ground implementation, EPA has also supported projects undertaking thoughtful planning processes essential for future implementation to be successful.

Consistent with program priorities, projects are tracked in three categories: restoring wetlands, restoring water quality, and greening development. Of the 54 projects funded to date, 26 are wetland restoration; 22 are described as restoring water quality; and six are greening development (e.g. Low Impact Development). Figure 6 illustrates the funding distribution of the project types.



Note: Additional funding, totaling $1,803,522, has been awarded for Bay-wide activities, including monitoring, GIS/mapping, technical assistance, public outreach, and grant administration.

Figure 5: SFBWQIF funding distribution by project type.

More than $180 million has been invested by the SFBWQIF and its partners to achieve environmental results aligned with US EPA's Strategic Plan Goal 2, Protecting America's Waters. Specifically, Objective 2.2 is to "Protect and Restore Watersheds and Aquatic Ecosystems. Protect, restore, and sustain the quality of rivers, lakes, streams, and wetlands on a watershed basis, and sustainably manage and protect coastal and ocean resources and ecosystems." Specifically, the

[1] Some grants include more than one project. See Table 1, page 4.

Figure 6: SFBWQIF project locations.

SFBWQIF tracks progress toward two key EPA's Strategic Measures – "Improve Water Quality on a Watershed Basis" and "Increase Wetlands."

Funded projects also take anticipated climate change impacts into account, reflecting EPA's Strategic Plan goal to "Address Climate Change: Minimize the threats posed by climate change by reducing greenhouse gas emissions and taking actions that help to protect human health and help communities and ecosystems become more sustainable and resilient to the effects of climate change." In addition, recipients are required to demonstrate how they will address one or more of the objectives and actions listed in the San Francisco Estuary Partnership's Comprehensive Conservation and Management Plan (CCMP). This stems from Clean Water Act Section 320, which gives EPA the authority to award SFBWQIF grants while aligning our goals with the CCMP.

Napa River Rutherford Reach 6 Restoration, 2014. Photo: Jeremy Sarrows.

Environmental Results

Achieving significant environmental results is the top priority of the program. To maximize the benefits of these public investments, applicants are asked to clearly define anticipated environmental results, also known as outcomes, to be achieved by the proposed project. The most successful proposals begin with desired outcomes and plan activities to best achieve those outcomes, thereby assuring a wise investment of public funds. Clearly defined outcomes based on technically sound plans (e.g. Watershed Plans, TMDLs, etc.) are most likely to achieve significant water quality results. All proposals are evaluated for how well they describe the environmental results to be achieved.

San Francisquito Creek after Bonde Weir removal, 2013. Photo: Joe Issel.

One challenge of the program has been for applicants to identify short and long term environmental results for their projects, and moreover, quantify the anticipated outcomes. To determine the success of the program to date, work plans for each of the 54 projects were evaluated. All work plans provided environmental results; 25 provided quantifiable outcomes and eight specified long and short term time frames.

Workplans developed relatively recently generally include more quantifiable outcomes than those developed at the program's outset. This may be the result of EPA improving its communication with applicants to clarify the expected environmental results.

EPA recommends applicants use a Logic Model to conceptualize anticipated environmental outcomes. The Logic Model is a planning tool to help identify activities needed to achieve desired outcomes. The model is a thought process by which one starts with the "big picture" environmental results desired and then works backwards in time to list specific activities needed to achieve those results. This list can then be broken down further to show what is achieved in the short term and how it contributes to longer term objectives. While it is not always possible to measure significant environmental outcomes within the life of a typical grant, it is essential to show how an individual project or grant contributes to achieving long term objectives. Logic Model tables with outputs and

What is invested	Project Activities	Project Participants	Short Term	Long Term
	(What we do)	*(Whom we reach)*		
•Staff •Money •Time •Volunteers •Partners •Equipment •Materials	•Technical Assistance •Fieldwork •Studies •Workshops •Conferences •Trainings •Public outreach •Media outreach	•Industry •Scientists •Citizens •Private Sector •Agencies •Planners •Students •Regulated Community •Local Governments	•Policies •Industry Action •Habitat Restoration •BMP Implementation •Knowledge Gained •Behavior Change	•Recovery of Ecological Services •Meeting Water Quality Standards •Species Recovery •Urban Creek Restoration

Figure 7: Example of the Logic Model.

environmental results for each SFBWQIF project can be found in Appendix B.

Highlights of Environmental Results

The majority of SFBWQIF projects are still in progress so the environmental results will accrue during the coming years. The following are highlights of the expected results for each of the three project types.

Restoring Wetlands

San Francisco Bay is home to major wetlands restoration efforts. Since 1998, over 20,000 acres of wetlands are on their way to being restored. While this is significant, it is only the beginning of restoration efforts aimed at eventually reaching the restoration goal set by the Baylands Ecosystem Habitat Goals Report: to restore approximately 100,000 acres of tidal wetlands which represents only half of the tidal marsh extent prior to 1800. The SFBWQIF has invested almost $16 million in 26 projects to restore over 4,000 acres of wetlands around the Bay. Key expected environmental results include:

- Restore over 4,000 acres of tidal and seasonal wetlands around SF Bay
- Restore or improve riparian and aquatic habitat in more than 12 creeks and streams around SF Bay
- Remove an instream barrier on San Francisquito Creek to open up 40 miles of spawning habitat to steelhead in the upper watershed
- Daylight over 1,050 feet of stream channel in San Francisco's Presidio
- Enhance ecological services and shoreline protection by restoring oyster and eelgrass habitat off the Hayward and San Rafael shorelines
- Improve understanding of mercury uptake in restored tidal marshes and minimize mercury impacts in future tidal restorations in the South Bay Salt Ponds
- Increase re-use of millions of cubic yards of dredged sediments for beneficial purposes, such as marsh restoration at the mouths of Walnut and Novato Creeks
- Improve shoreline resilience to sea level rise and storm surges
- Increase native plant distribution to benefit endangered species

[2] Monroe M, Olofson PR, Collins JN, Grossinger RM, Haltiner J, Wilcox C. 1999. Baylands Ecosystem Habitat Goals. Goals Project. A report of habitat recommendations prepared by the San Francisco Bay Area Wetlands Ecosystem Goals Project. :328.

Restoring Water Quality

Water quality in the Bay and its watersheds is impaired by some of the most challenging pollutants including sediment, trash, mercury, polychlorinated biphenyls (PCBs), nutrients, pesticides and pathogens. The SFBWQIF has invested over $15.8 million in 22 projects to help implement nine pollutant reduction action plans (known as total maximum daily loads, TMDLs). Key expected environmental results from SFBWQIF projects aimed at these impairments include:

- Stabilize eroding stream banks in Napa River and Sonoma Creek
- Reduce sources of sediment to the Napa River by 51% by 2029 (Goal: 185,000 metric tons/year)
- Remediate calcine-paved roads, removing an estimated 25 - 263 kg of mercury in the Guadalupe River watershed
- Reduce annual loading of polychlorinated biphenyls (PCBs) to the Bay by 2 - 8%; and increase awareness and understanding of fish contamination issues and options for reducing human exposure to mercury and PCBs in fish

Pesticide Reduction Campaign: Greener Pesticides for Cleaner Waterways, City of San Carlos Home Depot outreach, 2014. Photo: Our Water Our World.

- Remove over 80 tons of trash and debris from Coyote Creek
- Identify cost-effective nutrient removal technologies for wastewater treatment plants around the Bay
- Provide public access to a GIS database that includes all Bay Area wetlands, open water, streams, ditches, tidal marshes and flats, and riparian areas

Greening Development

There is growing recognition that green development practices, such as Low Impact Development (LID) which uses natural hydrologic processes to treat polluted runoff, should become common practice. To encourage widespread adoption of LID stormwater treatments, the SFBWQIF awarded $2.95 million to local governments to implement six projects throughout the Bay Area. Projects range from small one-block pilots to large-scale multi-block efforts. The projects also assist communities to develop policies and technical expertise necessary to continue to support and encourage green development practices. Key expected environmental results from SFBWQIF projects aimed at these issues include:

- Reduce stormwater volume and pollutant load as a result of LID elements on Newcomb Avenue in San Francisco by replacing over 20,000 ft.^{2} of pavement with tree plantings, native plants, and permeable pavers
- Reduce stormwater flows to the San Francisco combined sewer system by 500,000 gallons per year using LID to retrofit a one-mile segment of Cesar Chavez Street
- Treat approximately 7 acres of runoff with green stormwater treatment facilities in the seven adjacent cities along San Pablo Ave., reducing conventional stormwater pollutants by 40 - 80% (e.g., metals, PCBs, and PAHs)
- Adopt a green infrastructure ordinance or policy in at least one municipality participating in the San Pablo Ave. Green Stormwater Spine project
- Identify public lands suitable for retrofitting with stormwater BMPs in Alameda County
- Employ green infrastructure to treat 5-7 acres to restore watershed functions and improve stormwater quality along Sonoma Creek

Bioswale reduces polluted stormwater runoff at Cesar Chavez St., San Francisco, 2014. Photo: Ananda Hirsch.

Lessons Learned

There is a significant need for funding to assist the wide range of stakeholders who are doing excellent work to protect and restore SF Bay and its watersheds. While the SFBWQIF cannot satisfy the demand, it does serve to support some priority needs and leverage a large amount of federal and non-federal funds. Aligning program priorities with scientific and community needs relies on continued agency and community interaction, along with continued refinement of all program materials. Preparing proposals in response to RFPs is a significant workload for applicants and organizational capacity to prepare competitive proposals varies. Applicants have demonstrated a strong ability to address EPA feedback on proposals not selected for funding, evidenced by successful subsequent proposals for later RFPs.

The RFP has been revised each year after receiving feedback from applicants, and members of proposal review teams. Some changes have included clarifying language related to environmental outcomes, altered authorization language, and additional evaluation criteria related to climate change. In 2011, EPA began to utilize a two-step RFP process, relying on short initial proposals followed by submittal and review of a select number of full proposals. Notable additions in the 2014 RFP were inclusion of climate change considerations and pursuit of environmental results in geographic areas not represented in past awards. Future solicitations will remain consistent with requirements for a competitive process, with possibly more outreach about the program to encourage new participants and partners, and support activities throughout the Bay Area.

EPA will do its best to support the many partners working to improve water quality and enhance aquatic ecosystems with the SFBWQIF grant program based on available funding. We will strive to advance progress towards sustainability and protecting the Bay's natural resources. Partnerships will continue to play a key role in bringing these projects to fruition, since demand for funding exceeds available SFBWQIF funds. The program will continue to maintain its focus on making smart investments to achieve significant water quality results, while looking to foster widespread use of proven technologies as well as innovative approaches.

Steelhead and Chinook Parr, Napa River. Photo: Jonathan Koehler.

Appendix A: Project Summaries

The following are brief summaries of the projects supported by the San Francisco Bay Water Quality Improvement Fund with funding from FY 2008 - 2014.

FY 2008

1) Estuary 2100, Phase 1: Resilient Watersheds for a Changing Climate

Funding: SFBWQIF = $4,922,000, Non-federal match = $5,796,701
Schedule: February 2009 – February 2016
Recipient: San Francisco Estuary Partnership/Association of Bay Area Governments
Partners: Bay Conservation and Development Commission, City of San Francisco Planning Department, Community Conservation International, Save the Bay, Waterways Restoration Institute, USGS, Resource Legacy Fund, California Land Stewardship Institute, Santa Clara County Parks, Alameda County Resource Conservation District, Center for Research on Aquatic Bioinvasions, Coastal Conservancy's Invasive Spartina Project, California State Parks Foundation, Marin Audubon Society, Urban Creeks Council, San Francisco Estuary Institute, Zone 7 Water Agency, University of San Francisco, ESA, San Francisco Department of Public Works, Literacy for Environmental Justice

Sixteen discrete on-the-ground projects in 4 different program areas:

- Wetland and Watershed Restoration: remove mercury laden sediment from the Guadalupe watershed (TMDL implementation), develop and pilot water conservation techniques for vineyards, restore riparian and instream habitat to address excessive stream temperatures at Stanley Reach on the Arroyo Mocho, remove fish passage barriers on Stonybrook Creek, focused efforts on invasive Spartina eradication and initiation of Littorina eradication, use of historical ecology in bayland planning and management processes and restore estuarine habitat in Yosemite Slough, Arrowhead Marsh, Eden Landing and Bahia Marsh.
- Climate Change: Monitoring Changes in the Bay: produce conceptual adaptive management plans that address climate change effects for wetlands in the Bay Area; analyze vegetation, mudflat, and channel evolution in the South Bay Salt Ponds (SBSP); monitor the changes in mercury bioaccumulation resulting from the SBSP Pond A8 levee breaching; and develop stream restoration design curves for Marin and Sonoma watersheds.
- LID and Stormwater BMPs: identify and quantify suitable public lands for Alameda County that can be converted from impervious to pervious land cover to manage urban runoff, design and construct a Low Impact Development (LID) pilot project in a low-income San Francisco neighborhood, conduct municipal pesticide reduction trainings and target outreach to reduce urban pesticide use.
- Public Outreach: work with over fifteen partners to coordinate information on project results and conduct a public outreach campaign.

FY 2009

2) Clean Watersheds for a Clean Bay, Implementing the PCB TMDL

Funding: SFBWQIF = $5,000,000, Non-federal match = $1,940,000
Schedule: May 2010 – January 30, 2016
Recipient: Bay Area Stormwater Management Agencies Association
Partners: California Department of Health Services and the cities of Richmond, Oakland, San Carlos, and San Jose.

Bay Area stormwater agencies are accelerating PCB TMDL implementation in the watersheds surrounding the Bay. The project focuses its activities in watersheds that are contributing PCBs and other pollutants to the Bay including identifying PCB "hot spot" source areas, referring source areas where appropriate to regulatory agencies for clean-up and abatement, coordinating with municipalities to enhance removal of polluted sediments during routine sed-

iment management activities, retrofitting 8-10 urban runoff treatment facilities to remove polluted sediments, and implementing a risk-reduction program for consumers of Bay fish in partnership with the California Department of Health Services.

3) Cesar Chavez Street LID Pilot

Funding: SFBWQIF = $1,200,000, Non-federal match = $1,040,000
Schedule: June 2010 – December 2015
Recipient: San Francisco Planning Department
Partners: San Francisco Department of Public Works, San Francisco Public Utilities Commission, Friends of the Urban Forest, Plant SF, CC Puede

The project on Cesar Chavez is the largest green street retrofit in San Francisco. It incorporates Low Impact Development (LID) features such as stormwater planters, run-off reducing improvements, and permeable concrete with traditional infrastructure upgrades along a mile-long corridor to improve water quality. The LID elements are part of a larger streetscape improvement project with a budget of $11,600,000. The overall project goal is to serve as a template to foster the wide-spread utilization of LID to significantly reduce pollutant contributions to the Bay from San Francisco's combined sewer system.

4) Estuary 2100, Phase 2: Building Partnerships for Resilient Watersheds

Funding: SFBWQIF = $3,613,704, Non-federal match = $1,204,568
Schedule: March 2010 – December 2016
Recipient: San Francisco Estuary Partnership/Association of Bay Area Governments
Partners: California State Parks Foundation, California Coastal Conservancy, California Land Stewardship Institute, County of Marin, City of Mill Valley, Napa Resource Conservation District, Sonoma Ecology Center, Southern Sonoma Resource Conservation District, City of Fremont, City of Richmond, San Francisco Estuary Institute, North Bay Watershed Association, Marin Municipal Water District, Contra Costa County Public Works

Ten discrete on-the-ground projects in 4 different program areas:

- Wetland and Watershed Restoration: restoring estuarine habitat at Yosemite Slough and subtidal and eelgrass habitat in several Bay locations, and shoreline characterization and historical change analysis of San Pablo Bay.
- Water Quality Improvement: implementing TMDL actions for pathogens and sediment in Richardson Bay, Sonoma Creek and the Napa River, and tracking progress towards TMDL goals.
- LID and Stormwater BMPs: constructing and monitoring tree well filters in Fremont, and analyzing stormwater diversion options in Richmond following stormwater characterization.
- Data Management and Regional Capacity Building: creating interface for local and regional agencies to upload data into the Bay Area Aquatic Resources Inventory system

FY 2010

5) South Bay Salt Pond Tidal Marsh Restoration at Pond A17

Funding: SFBWQIF = $725,000, Non-federal match = $625,000, Leveraged = $5,850,000
Schedule: September 2011 – November 2013
Recipient: California State Coastal Conservancy
Partners: US Fish and Wildlife Service, CA Department of Water Resources

This project will restore 130 acres of tidal marsh at Pond A17, a former salt pond in South San Francisco Bay, and home to the largest wetlands restoration project on the West Coast. The project design will enhance habitat for endangered and migratory birds, improve water quality in the Bay through increased filtering of pollutants, and is anticipated to keep pace with sea level rise. The tidal wetlands habitat will be restored through levee lowering, levee breaching, and the construction of internal ditch blocks to redirect flows to remnant marsh channels.

6) Coyote Creek Trash Reduction Project: Clean Creeks, Healthy Communities

Funding: SFBWQIF = $680,000, Non-federal match = $262,867, Leveraged = $119,550
Schedule: September 2011 – June 2015
Recipient: City of San Jose, Environmental Services Department
Partners: Downtown Streets Team, Destination Home, Santa Clara Valley Water District, eBay

Trash is a primary cause of water quality impairments in San Francisco Bay and the Regional Water Board has instituted trash reduction goals beginning with a reduction of 40% by 2014 and a goal of zero by 2022. The project will improve water quality in Coyote Creek by addressing trash at its source: litter, illegal encampments and illegal dumping. This project will engage the surrounding neighborhoods to prevent litter and eliminate illegal dumping sites. It will work with partners to enlist homeless individuals to form clean-up crews to make progress towards improving water quality and riparian habitat needed to support fish and wildlife. The project's results will help inform other cities of ways to reduce trash flowing from their streets, storm drains, and public spaces to San Francisco Bay.

FY 2011

7) Napa River Sediment TMDL Implementation and Habitat Enhancement

Funding: SFBWQIF = $1,500,000, Non-federal match = $1,765,000
Schedule: June 2011 – December 2015
Recipient: Napa County
Partners: California Land Stewardship Institute, Napa Resource Conservation District, UC Cooperative Extension

Five discrete projects addressing sediment sources identified in the Napa River Sediment TMDL:

- Rutherford Reach Restoration: construction of a widened riparian corridor and removal of vineyards to enlarge the floodplain along 0.9 miles of a 4.5-mile reach of the Napa River.
- Oakville – Oak Knoll Restoration: restoration design of a 3.9 mile reach of the Napa River, including landowner agreements and Arundo removal to prepare the site for restoration.
- Ranch Water Quality Plans: outreach and education to ranchers to incorporate BMPs into ranch plans with a target of implementation on 80% of Napa watershed grazing lands.
- Rural Roads Assessment: county survey and assessment of rural roads and associated stream crossings to produce a prioritized list of projects necessary to meet the TMDL goal of 50% sediment delivery reduction. In addition the County Roads Maintenance Manual will be updated with improved BMPs to guide these future road improvement projects.
- TMDL Tracking and Accounting System: establish a system to track progress toward achieving the Sediment TMDL and identify necessary tools to better prioritize implementation.

8) Emerson Parcel of Dutch Slough Tidal Marsh Restoration

Funding: SFBWQIF = $1,400,000, Non-federal match = $2,754,000, Leveraged = $6,659,700
Schedule: September 2011 – September 2018
Recipient: California State Coastal Conservancy
Partners: US Fish and Wildlife Service, CA Department of Water Resources, Reclamation District 2137, CA Department of Fish and Wildlife

The California State Coastal Conservancy has been planning tidal marsh restoration at Dutch Slough, an area of 1,178 acres of diked lands, since 2002. This project will fund restoration of Dutch Slough's Emerson Parcel which will restore 240 acres of tidal marsh, 15 acres of riparian woodland and scrub, and 100 acres of open subtidal waters. Restoration activities include grading for tidal marsh elevations, levee breaching, construction of water control structures, and re-routing Marsh Creek to restore the creek delta on the Emerson parcel, providing seasonal freshwater flow cues to out-migrating salmon.

9) Cullinan Ranch Tidal Marsh Restoration

Funding: SFBWQIF = $1,400,000, Non-federal match = $500,000, Leveraged = $12,375,327
Schedule: September 2011 – March 2015
Recipient: Ducks Unlimited
Partners: US Fish and Wildlife Service, CA Department of Fish and Wildlife

This project will restore 1549 acres of tidal wetlands in the San Pablo Bay National Wildlife Refuge. Cullinan Ranch was once part of an extensive network of tidal marshes in the North Bay. It was diked in the late 1800s for farming until USFWS acquired the property in 1991 and incorporated it into the San Pablo Bay National Wildlife Refuge. Subsequent restoration was delayed because of the need to protect Highway 37 from flooding associated with tidal reintroduction. Project elements include protecting existing infrastructure, and breaching and lowering levees to allow sedimentation processes to restore tidal marsh. Restoration will improve ecologic health, habitat connectivity and water quality of the lower Napa River and San Pablo Bay.

10) San Pablo Avenue Green Stormwater Spine Project

Funding: SFBWQIF = $307,646, Non-federal match = $397,964, Leveraged = $1,800,000
Schedule: September 2011 – January 2015
Recipient: San Francisco Estuary Partnership/Association of Bay Area Governments
Partners: Caltrans and the cities of Oakland, Emeryville, Berkeley, Albany, El Cerrito, Richmond, San Pablo

This project involves seven adjacent East Bay cities working with SFEP and Caltrans to design and install highly visible green infrastructure projects to reduce stormwater pollutants, creating a green stormwater spine along San Pablo Avenue, a state highway. Cumulatively the project will treat over 7 acres of impervious surface runoff using site-specific LID technologies such as bio-swales, rain gardens, and/or permeable pavements. Outreach to local governments via green streets forums and a model ordinance is intended to foster more widespread use of LID designs and promote more implementation of sustainable infrastructure.

11) Pesticide Reduction Campaign

Funding: SFBWQIF = $250,000, Non-federal match = $83,334, Leveraged = $273,000
Schedule: September 2012 – October 2016
Recipient: San Francisco Estuary Partnership/ABAG
Partners: BASMAA, BACWA, BAPPG, San Jose, Alameda County, SCVURPPP, and other municipal stormwater and sewer districts

Using social marketing and social media, this project will conduct an advertising campaign to reach a critical mass of Bay Area residents and provide training to local retail store employees to promote less toxic pesticide options to their customers throughout the Bay Area. The project has a goal of 5% reduction in Bay Area residents applying pesticides within their households.

12) San Francisquito Creek Fish Passage Barrier Removal & Channel Stabilization

Funding: SFBWQIF = $75,000, Non-federal match = $25,000, Leveraged = $185,900
Schedule: August 2012 – October 2015
Recipient: San Mateo Resource Conservation District
Partners: National Marine Fisheries Service, California Department of Fish and Wildlife, San Francisquito Creek Joint Powers Authority, Flycasters, Inc. of San Jose, Acterra, and the Cities of Menlo Park and Palo Alto

This project removed Bonde Weir, a significant fish migration barrier in San Francisquito Creek, and constructed a new channel design to improve fish migration, stabilize the channel and reduce erosion. The new channel restores access to 40 upstream miles of steelhead spawning and rearing habitat.

13) San Pablo Bay Tidal Marsh Water Quality Improvement

Funding: SFBWQIF = $235,884, Non-federal match = $78,620, Leveraged = $1,060,500
Schedule: August 2012 – December 2014
Applicant: Audubon California
Partners: US FWS, Wildlife Conservation Board, Marin Sonoma Mosquito Vector Control District, STRAW, San Pablo Bay National Wildlife Refuge (SPBNWR)

This project will enhance approximately 300 acres of tidal marsh in Sonoma Creek marsh by excavating a new channel. Material from the excavation will be used to create new transitional ecotone habitat and the improved tidal exchange will improve water quality by reducing the need for application of pesticides to control mosquitoes.

14) Rethink Disposable: Packaging Waste Source Reduction Pilot

Funding: SFBWQIF = $257,293, Non-federal match = $85,764, Leveraged = $1,000,000
Schedule: September 2012 – November 2015
Recipient: Clean Water Fund
Partners: Oakland, San Francisco, South San Francisco and San Jose, and San Mateo County along with the business community

This project targets takeout food packaging, the largest documented source of trash in urban runoff that in turn ends up in our bays and oceans. The project will assist local municipalities to develop source reduction methods for their local businesses and will provide model approaches for municipalities to meet their trash reduction permit requirements.

15) Alameda Creek Restoration: Alameda Creek Healthy Watersheds

Funding: SFBWQIF = $181,823, Non-federal match = $60,607, Leveraged = $334,555
Schedule: September 2012 – June 2015
Recipient: Alameda County Resource Conservation District
Partners: NRCS, San Francisco Public Utilities Commission, Alameda County Flood Control & Water Conservation District, and 20-25 landowners and ranchers.

This project addresses three sub-watersheds in the Alameda Creek watershed that are important habitat for native anadromous fish and have sediment impairments. Implementation activities include: establishing stream buffers; restoring channels and riparian areas; and conducting grazing management and/or rural road improvement to manage sediment.

FY 2012

16) Rebuilding Habitat and Shoreline Resilience through Improved Flood Control Channel Design and Management

Funding: SFBWQIF = $1,552,059, Non-federal match = $1,570,000, Leveraged = $32,368,000
Schedule: September 2012 – December 2016
Recipient: San Francisco Estuary Partnership/ABAG
Partners: San Francisco Estuary Institute, San Francisco Bay Conservation and Development Commission, San Francisco Bay Joint Venture, San Francisquito Creek Joint Powers Authority, Committee for Green Foothills, Marin County Flood Control and Water Conservation District, Contra Costa County Flood Control and Water Conservation District

This project will redesign flood control channels to restore wetland habitat, water quality, and shoreline resilience at two creek mouths: Lower Novato and Lower Walnut Creeks, and document lessons learned for the flood control design at the mouth of San Francisquito Creek. The flood control districts pursuing these projects will be advancing the concept that ecologically beneficial flood management designs can work. Project benefits include creating 750 acres of tidal marsh; beneficially reusing 70,000 cubic yards of sediment; and improving 2 miles of stream channel.

17) Quartermaster Reach Restoration Project

Funding: SFBWQIF = $1,000,000, Non-federal match = $1,000,000, Leveraged = $16,000,000
Schedule: September 2012 – August 2016
Recipient: Golden Gate National Parks Conservancy
Partners: Presidio Trust, National Park Service, Caltrans, and Community Volunteers

This project will restore the area previously covered by hundreds of thousands of square feet of paving, tens of thousands of cubic yards of fill and the former low viaduct of U.S. Highway 101 (Doyle Drive) to creek, dune and brackish marsh adjacent to the existing Crissy Field wetlands, expanding wildlife corridors in a highly urban setting. The area, known as Quartermaster Reach, is located within the Presidio of San Francisco — a national park site — and is part the ambitious Tennessee Hollow 'springs to bay' watershed-wide restoration program. Specific project benefits include creating 4.7 acres of wetlands and 3.3 acres of coastal scrub upland, and daylighting a 1,050-foot length of stream channel.

18) Napa River Restoration: Rutherford Reach & Oakville to Oak Knoll Reach, Group C Sites 11 – 14

Schedule: August 2012 – December 2016
Funding: SFBWQIF = $1,500,000, Non-federal match = $1,500,000
Recipient: Napa County
Partners: Rutherford Dust Restoration Team, California Land Stewardship Institute, and Tessera Sciences

This project will also support a portion of the first phase of construction in the Oakville to Oak Knoll (OVOK) Restoration Reach (Group C – Sites 11-14) immediately downstream of the Rutherford Project reaches. The OVOK Project is designed to enhance geomorphic channel forms and processes to support a more diverse and complex instream conditions, increase river floodplain interactions, improve wildlife habitat, manage invasive non-native vegetation and enhance native riparian plant communities.

19) Sears Point Tidal Marsh Restoration: Phase I

Funding: SFBWQIF = $941,941, Non-federal match = $941,941, Leveraged = $2,800,000
Schedule: September 2012 – September 2015
Recipient: Sonoma Land Trust
Partners: Ducks Unlimited, California Department of Fish and Game, U.S. Fish and Wildlife Service

Wetlands restoration at Sears Point has been coordinated by the Sonoma Land Trust with CA Department of Fish and Wildlife, the US Fish and Wildlife Service, and Ducks Unlimited. Because of the scale of this project and flood protection concerns, pre-breach construction activities are planned from 2012-2015. EPA funds are directed to pre-breach activities including mobilization of equipment, contaminated soil remediation, construction of a 2.5 mile flood protection/habitat levee, and construction of marsh mounds to accelerate sediment accretion. These are among the actions that will prepare the site for breaching which will restore 960 acres of tidal marsh in northern San Pablo Bay. The restored marsh will be transferred to the San Pablo Bay National Wildlife Refuge.

20) Assessing Impacts of South Bay Salt Pond Tidal Wetland Restoration on Mercury Methylation and Bioaccumulation

Funding: SFBWQIF = $500,000, Non-federal match = $500,000, Leveraged = $715,000
Schedule: September 2012 – January 2015
Recipient: California State Coastal Conservancy
Partners: USGS, UC Davis, Santa Clara Valley Water District, City of San Jose, USACE, San Francisco Estuary Institute

This project will fund mercury studies in the 15,000-acre South Bay Salt Pond Project area to provide information needed to determine the management regime of Pond A8 (the pond with the highest mercury concentrations) as well as other future management of the ponds as they are restored to tidal wetlands. These studies have been identified as needed through a comprehensive planning process for the Salt Pond Project and recommended by an inter-disciplinary Management Team that oversees the restoration as well as peer reviewed by a Science Team.

FY 2013

21) Removing Mercury in the Guadalupe River Watershed: Remediating Calcine Paved Roads and Jacques Gulch

Funding: SFBWQIF = $800,000, Non-federal match = $800,000
Schedule: October 2013 – December 2015
Recipient: San Francisco Estuary Partnership/ABAG
Partners: Santa Clara County Parks, Santa Clara Valley Water District, San Francisco Bay Regional Water Quality Control Board, and the San Francisco Estuary Institute

This project will reduce mercury entering the Guadalupe watershed and San Francisco Bay by remediating the last two high priority mine waste sites in the Almaden Quicksilver County Park in Santa Clara County. Remediation of three miles of calcine (roasted mercury ore) paved roads, where mercury concentrations range from 33 mg/kg to 233 mg/kg, will be completed by 2015. A 25% design for remediation at Jacques Gulch is the next critical step needed in developing accurate cost estimates for implementation and solidifying multi agency support for the project called for in the Guadalupe River Watershed Mercury TMDL.

22) Breuner Marsh Restoration Project

Funding: SFBWQIF = $1,500,000, Non-federal match = $1,500,000, Leveraged = $9,000,000
Schedule: January 2014 – December 2016
Recipient: East Bay Regional Park District
Partners: California State Coastal Conservancy, San Francisco Estuary Partnership, US Fish and Wildlife Service, and California Department of Fish and Wildlife, Bay Conservation and Development Commission, San Francisco Bay Trail Program, Bay Area IRWMP, California Department of Parks and Recreation Recreational Trails, Castro Cove Trustees, California Wildlife Conservation Board, ABAG Priority Conservation Areas

This project will create, restore and enhance 164 acres of wetlands and uplands habitat at Breuner Marsh along the Point Pinole Regional Shoreline in Richmond. The restored area will be a self-sustaining tidal wetlands area with adjacent seasonal wetlands and coastal prairie habitats, and will provide a key link in the Bay Trail system. The project is designed to accommodate a sea level rise of 55 inches by the year 2100 and includes uplands in order for the wetlands to be able to transgress inland. Site preparation has already begun and the project is estimated to be completed in 2016.

23) Napa River Restoration: Oakville to Oak Knoll Reach, Group A Sites 21-23

Funding: SFBWQIF = $1,218,000, Non-federal match = $1,218,000
Schedule: January 2014 – May 2017
Recipient: Napa County
Partners: Landowners, Napa County Resource Conservation, Friends of Napa River and the Farm Bureau

This project will continue implementing high priority sediment reduction measures along the Napa River to reduce fine sediment sources at Sites 21-23 of the Oakville to Oak Knoll (OVOK) reach, one of the most incised reaches of the Napa River. The purpose of the OVOK Restoration Project is to restore and enhance long-term river and floodplain function, improve the quality and resilience of aquatic and terrestrial riparian habitat, and reduce property damage and sediment delivery associated with ongoing bank erosion processes. The existing bank will be set back to provide a stable cross-section to reduce fine sediment loading from bank erosion, resulting in removal of 8.6 acres of vineyard and establishment of a new floodplain area. The project will include widening the channel, enhancing the floodplain, reducing channel bank erosion, and installing large woody debris structures to improving aquatic habitat through a joint public-private partnership. The project will also support further development of the TMDL Implementation Tracking and Accounting System (ITAS) to help track TMDL progress and implementation of water quality enhancement actions including rapid assessments and methodologies for assessing rural roads, bank erosion and restoration activities.

24) Reducing Nutrients to SF Bay through Additional WWTP Sidestream Treatment

Funding: SFBWQIF = $517,650, Non-federal match = $517,650
Schedule: January 2014 – January 2016
Recipient: East Bay Municipal Utility District
Partners: Bay Area Clean Water Agencies (BACWA), HDR Engineering, San Francisco Public Utilities Commission (SFPUC), Delta Diablo (DD), East Bay Dischargers Authority (EBDA), Oro Loma Sanitary District (OLSD), San Jose/Santa Clara Regional Wastewater Facility (SJSC) and San Francisco Regional Water Quality Control Board (SFRWQCB), San Francisco Estuary Institute (SFEI) and ReNUWIt (Re-inventing the Nation's Urban Water Infrastructure) which includes Stanford and UC Berkeley

A growing body of evidence suggests that the historic resilience of San Francisco Bay to nutrient enrichment could be weakening, and is generating increased interest from regulators and the regulated community to develop strategies to reduce nutrient loads. This regional project will evaluate new best-available treatment technologies for nitrogen-rich wastewater treatment plant "sidestreams" at a variety of different wastewater treatment plants around the Bay Area to quantify the potential nutrient load reductions to SF Bay.

25) South Bay Salt Pond Tidal Wetland Restoration Phase II Planning

Funding: SFBWQIF = $866,021, Non-federal match = $866,021
Schedule: January 2014 – December 2016
Recipient: California State Coastal Conservancy
Partners: US Fish and Wildlife Service, US Geological Survey, California Department of Fish and Wildlife, the Santa Clara Valley Water District, Alameda County Public Works Agency, National Oceanic Atmospheric Administration, and local cities

This project will fund completion of the planning and environmental documentation required for the construction of Phase II restoration projects. When Phase II projects are complete at the Ravenswood and Alviso complexes, an additional 1005 acres of tidal marsh and 60 acres of managed ponds will be restored. Phase II restoration projects include climate change adaptation features, such as large transition zones, elevation heterogeneity and plans for inland marsh transgression. Funding of these activities will keep the Conservancy's schedule of beginning Phase II construction projects in 2016.

FY 2014

26) Sears Point Tidal Marsh Restoration: Phase II

Funding: SFBWQIF = $1,500,000, Non-federal match = $1,500,000
Project Period: December 2014 – November 2018
Recipient: Sonoma Land Trust
Partners: US Fish and Wildlife Service, San Pablo Bay National Wildlife Refuge, CDFW, Ducks Unlimited, San Francisco Bay Joint Venture

This project will restore tidal action to 960 acres and provide connectivity of tidal marsh habitat from the Sonoma Baylands to San Pablo Bay. Restoration activities have been coordinated by the Sonoma Land Trust with CA Department of Fish and Wildlife (CDFW) and the US Fish and Wildlife Service (USFWS). EPA funds will be directed to grading, lowering, and breaching of the existing levee; excavation of a new channel to connect the site to the Petaluma River Navigation Channel; installation of key public access features; initial establishment of a vegetated transition zone on the new levee; and monitoring.

27) Napa River Restoration: Oakville to Oak Knoll Reach Group C, Site 14

Funding: SFBWQIF = $894,324, Non-federal match = $894,324
Project Period: January 2015 – December 2018
Recipient: Napa County
Partners: Landowners, Napa County Resource Conservation District, California Land Stewardship Institute

This project will continue implementing high priority sediment reduction measures along the Napa River to reduce fine sediment sources at Site 14 of the Oakville to Oak Knoll (OVOK) reach. The purpose of the OVOK Restoration Project is to restore and enhance long-term river and floodplain function, improve the quality and resilience of aquatic and terrestrial riparian habitat, and reduce property damage and sediment delivery associated with ongoing bank erosion processes. The project will include restoration actions on 2 properties including widening the channel, enhancing the floodplain, reducing channel bank erosion, and improving aquatic habitat through a joint public-private partnership. Project benefits include restoring 5 acres of riparian habitat, creating a 750 linear foot high flow swale and backwater alcoves, and addressing 1500 linear feet of actively eroding stream banks using biotechnical methods.

28) South Bay Salt Pond Restoration Project: Phase II Construction at Ravenswood

Funding: SFBWQIF = $1,000,000, Non-federal match = $1,000,000
Project Period: December 2014 – June 2018
Recipient: California State Coastal Conservancy
Partners: US FWS Don Edwards San Francisco Bay National Wildlife Refuge, and the Cities of Redwood City and Menlo Park

This project will restore and enhance wetlands in the Ravenswood Pond Complex as part of a second wave of implementation at the South Bay Salt Ponds (SBSP). As a result of this project, 280 acres of tidal wetlands will be restored, 60 acres will be maintained as pond habitat, tidal circulation through a 10 acre remnant tidal slough will be improved, and 15 acres of upland refugia will be created. Working with multiple federal, state, and local partners the SBSP Restoration Project is using innovative and cost-effective restoration methods to improve wetland habitats on a significant scale. The restoration design will create long-term, self-sustaining tidal wetlands, a transitional zone for accommodating sea level rise, and uplands that provide valuable habitat for special status species.

29) Upper York Creek Dam Removal, Fish Passage, and Ecosystem Restoration

Funding: SFBWQIF = $987,876, Non-federal match = $987,876, Leveraged = $3,816,349
Project Period: December 2014 – March 2019
Recipient: City of St. Helena
Partners: Department of Water Resources, National Marine Fisheries Service, Napa County, and Napa County Resource Conservation District

This project will remove an earthen dam and restore the channel cross-section on .23 miles of Upper York Creek in the upper Napa River watershed in 2016. Further, this project will open access to 1.5 miles of steelhead spawning and rearing habitat. Implementation of the project will be the culmination of 15 years of cooperative planning with resource agencies to remove an obsolete dam that is a complete barrier to fish passage and to restore aquatic habitat in the upstream degraded reservoir. Reconnecting Upper York Creek with the Napa River will help restore natural hydrologic functioning of the watershed including sediment and woody debris transport.

Appendix B: Expected Environmental Results (Logic Models)

Appendix B includes a summary table that itemizes each SFBWQIF grant, followed by 29 individual Logic Model tables that describe environmental results for each project funded between 2008 to 2014.

ID	Recipient	Title
1	San Francisco Estuary Partnership	Estuary 2100, Phase 1: Resilient Watersheds for a Changing Climate – 16 projects
2	Bay Area Stormwater Management Agencies Association	Clean Watersheds for a Clean Bay
3	City and County of San Francisco	Cesar Chavez Street LID Pilot
4	San Francisco Estuary Partnership	Estuary 2100, Phase 2: Building Partnerships for Resilient Watersheds – 10 projects
5	California State Coastal Conservancy	South Bay Salt Pond A17 Tidal Marsh Restoration
6	City of San Jose	Coyote Creek Trash Reduction Project
7	Napa County	Napa River Sediment TMDL Implementation and Habitat Enhancement Plan
8	California State Coastal Conservancy	Dutch Slough, Emerson Parcel Tidal Marsh Restoration
9	Ducks Unlimited	Cullinan Ranch Tidal Marsh Restoration Project
10	San Francisco Estuary Partnership	San Pablo Avenue Stormwater Spine
11	San Francisco Estuary Partnership	Pesticide Reduction Campaign: Greener Pesticides for Cleaner Waterways
12	San Mateo Resource Conservation District	San Francisquito Creek Stabilization at Bonde Weir
13	Audubon California	San Pablo Bay Tidal Marsh Enhancement & Water Quality Improvement
14	Clean Water Fund	Rethink Disposable: Packaging Waste Source Reduction Pilot
15	Alameda County Resource Conservation District	Alameda Creek Healthy Watersheds
16	San Francisco Estuary Partnership	Rebuilding Habitat and Shoreline Resilience through Improved Flood Control Channel Design and Management
17	Golden Gate National Parks Conservancy	Quartermaster Reach Restoration
18	Napa County	Napa River Restoration: Rutherford Reach Completion and Oakville to Oak Knoll Reach, Group C Sites 11 – 14
19	Sonoma Land Trust	Sears Point Tidal Marsh Restoration: Phase I
20	California State Coastal Conservancy	South Bay Salt Pond Mercury Studies
21	San Francisco Estuary Partnership	Removing Mercury in the Guadalupe Watershed
22	East Bay Regional Park District	Breuner Marsh Restoration
23	Napa County	Napa River Restoration: Oakville to Oak Knoll Reach, Group A Sites 21-23
24	EBMUD	Reducing Nutrients in SF Bay through WWTP Sidestream Treatment
25	California State Coastal Conservancy	South Bay Salt Ponds Restoration Project: Revegetation and Phase 2 Planning
26	Sonoma Land Trust	Sears Point Restoration Project: Phase II
27	Napa County	Napa River Restoration: Oakville to Oak Knoll Reach, Group C Site 14
28	California State Coastal Conservancy	South Bay Salt Pond Restoration Project: Phase II Construction at Ravenswood
29	City of St. Helena	Upper York Creek Dam Removal, Fish Passage, and Ecosystem Restoration

Estuary 2100, Phase 1: Resilient Watersheds for a Changing Climate
Recipient: San Francisco Estuary Partnership
Funding: $4,922,000 (non-federal match = $5,796,701), FFY: 2008
Project Period: February 2009 – February 2016

OUTPUTS (Activity, effort, and/or work product during project period) **16 Discrete Projects** (Recipient, SFBWQIF Funding)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Control erosion and sediment transport from the 4.3-acre Senador Mine, an abandoned mercury mine in the Guadalupe River watershed, and dispose of calcines on-site to reduce mercury loads to local streams and San Francisco Bay (Santa Clara County Parks and Recreation, $492,500) Collect annual satellite and aerial imagery showing the extent of mudflats and vegetation communities in the South Bay Salt Ponds, update wetland restoration design tools and document mercury cycling in restored tidal marsh and Pond A8 (Resources Legacy Fund, $403,850) Examine the resilience of Corte Madera Baylands to sea level rise, and consider how their ecosystem benefits can be preserved (Bay Conservation and Development Commission, $591,000) Develop stream design curves for creeks in Marin and Sonoma counties to aid in stream restoration projects by analyzing the morphology of a statistically significant number of stable streams and plotting bankfull width, height, and sinuosity against drainage area. Establish the correlation between the various channel characteristics and the hydrology of the region (Waterways Resources Institute, $30,000). Propagate and plant over 12,000 native plants on 10.5 acres to establish upland transition zones adjacent to the existing Bahia tidal wetlands (Marin Audubon Society, $56,000) Plant 1500 native oak trees, 3500 native riparian trees, and remove fish barriers in the Stanley Reach of Alameda Creek (Urban Creeks Council, $393,998) Improve two road culverts that are fish barriers in Stonybrook Creek, a tributary of Alameda Creek (Alameda County Resource Conservation District, $147,750)	Remove approximately 291 pounds of mercury laden calcines from the Guadalupe watershed and bury them in the San Francisco Open Cut Develop passive and active frost control measures for vineyards and pilot two different techniques Remove invasive plant species (30% reduction) and revegetate with native wetland plants at Eden Landing and Martin Luther King Regional Shoreline Park (2.24 acres total) Restore 13.4 acres of riparian habitat and ~5200 linear feet of stream habitat for salmonids Open 0.7 stream-miles of upstream aquatic habitat Restore 2.24 acres of tidal marsh ecotone habitat Create wetland habitat attractive to the Endangered Ridgway's rail, salt marsh harvest mouse, and other fauna at Bahia	Ongoing restoration and management for each watershed draining to San Francisco Bay Reduce loadings of mercury to the Guadalupe River as per the Guadalupe River Mercury TMDL Widespread use of LID to treat polluted stormwater and enhance aquatic ecosystems Increased shoreline resilience to sea level rise Increased habitat resilience and spawning habitat in the Alameda Creek watershed designated as an important watershed for recovering regional steelhead populations More widespread use of water conserving frost control measures in vineyards in the Bay area Reduction of trash entering San Francisco Bay tributaries

(continued on p. 24)

Develop best management practices to reduce vineyard water use during critical periods of salmonid migration (California Land Stewardship Institute, $98,500) Remove invasive plants and revegetate with native plants at Eden Landing and MLK shoreline to further wetlands restoration (Save the Bay, $197,000) Provide hands-on training for local youth interns on plant propagation and wetlands restoration at Yosemite Slough (California Parks Foundation, $98,500) Survey and remove Littorina littorea, an invasive snail, at three locations around San Francisco Bay: Ashby Spit, Foster City, and Dumbarton Point (Center for Research on Aquatic Bioinvasions, $30,000) Treat and remove invasive Spartina from various locations around San Francisco Bay (California State Coastal Conservancy, $172,375) Develop best management practices and case studies for single-use bags and polystyrene. Work with Bay Area cities to implement plastic bag and Styrofoam bans (Save the Bay, $394,000). Map all impervious public parcels in Alameda County to assess low impact development/green stormwater treatment potential (Community Conservation International, $246,250) Replace 20,891 ft.^{2} of concrete with new landscaping, street trees, stormwater planters and permeable pavers to allow rainwater to permeate into the ground along one block of Newcomb Ave., San Francisco (City and County of San Francisco, $492,500) Conduct Baywide outreach on water quality, low impact development, integrated pest management and wetland restoration via forums and podcasts (SFEP, $109,900)	Remove populations of Littorina littorea – from Ashby Spit, Foster City, and Dumbarton Point Remove 90 acres of invasive Spartina Adopt plastic bag and/or polystyrene bans in over three Bay Area cities Treat 1.17 acres of impervious surface with LID Create 8 educational podcasts highlighting the projects' successes to reach the public	Management and control of invasive Spartina and Littorina littorea

Implementing SF Bay PCB TMDL
Recipient: Bay Area Stormwater Management Agencies Association (BASMAA)
Funding: $5,000,000 (Nonfederal match: $1,940,000), FFY 2009
Project Period: May 2010 – January 2016

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Select five high priority subwatersheds that discharge urban runoff with PCBs and other pollutants to the Bay Identify PCB and mercury source areas within the project subwatersheds and refer these sites to regulatory agencies for cleanup and abatement Develop methods to enhance removal of sediment with PCBs and other pollutants during municipal sediment management activities Retrofit 8 to 10 urban sites with stormwater treatment facilities Facilitate development and implementation of a regional risk communication and exposure reduction program that focuses on educating the public about the health risks of consuming certain species of Bay fish that contain high levels of PCBs and mercury Create public education outreach materials, project web portal, guidance manual, and technical workshops	Reduce annual loading of PCBs to the Bay by approximately 0.3-1.5 kg./yr., reducing the current estimated stormwater runoff load of 20 kg./yr. by about 2-8% Treat ~2 square miles with stormwater retrofits to reduce potential hydrologic impacts on downstream receiving waters Consumers of Bay fish will have a greater awareness and understanding of fish contamination issues and options for reducing their exposure to pollutants	Identify most promising best management practices (BMPs) for fully meeting the PCB TMDL allocations (2 kg./yr.) in the future and thereby help address important impairments to the Bay's beneficial uses Enhance the desirability of commercial enterprise zones and residential neighborhoods in the project watersheds as a result of clean-up activities

Cesar Chavez Street LID Project
Recipient: City and County of San Francisco
Funding: $1,200,000 (Nonfederal match: $1,040,000), FFY: 2009
Project Period: June 2010 – December 2015

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Identify locations for stormwater improvements, including where pavement can be removed and street trees planted Produce design specifications and model hydrologic benefits of project Develop policy to integrate LID into traditional grey sewer infrastructure projects Engage local community in greening efforts, through a partnership with the San Francisco-based nonprofit Friends of the Urban Forest Develop inter-agency coordination and mobilization around integration of LID in streetscape improvements Foster synergistic relationships between LID-related non-profit organizations and City agencies	Reduced stormwater volume as a result of LID elements Reduced peak-flow contribution as a result of LID elements Reduced pollutant load in stormwater from LID treatment along Cesar Chavez Street 7,300 ft.^{2} of vegetated sidewalk gardens installed by volunteers contributing 260 volunteer hours	Develop LID construction training modules, construction management protocols, and maintenance protocols for interagency projects incorporating LID Establish an initial LID monitoring program to help inform future design and performance assumptions for LID in San Francisco

Project Type: Greening Development

Estuary 2100, Phase 2: Building Partnerships for Resilient Watershed
Recipient: San Francisco Estuary Partnership
Funding: $3,613,704 (non-federal match = $1,204,568), FFY: 2009
Project Period: March 2010 – December 2016

OUTPUTS (Activity, effort, and/or work product during project period) **10 Discrete Projects** (Recipient, SFBWQIF Funding)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Pilot two alternative full sized tree well filter designs to both treat stormwater in an industrial area of Fremont and incorporate NPDES trash capture requirements (City of Fremont, $300,000) Evaluate the feasibility of diverting stormwater flows from the North Richmond pump station to the nearby wastewater treatment facility for treatment prior to discharge to SF Bay and, if feasible, construction of retrofits to divert flows from the North Richmond Pump station to the treatment facility (Contra Costa County Public Works, $683,032) Implement two projects to address the Richardson Bay Pathogen TMDL (Marin County, $614,655) 1. Re-contour creek and floodplain, remove invasive and plant native species to increase infiltration, and install fencing on a tributary of Warner Creek in Boyle Park, Mill Valley and engage the local Boyle Park community through outreach events and stencil 20 storm drains in the area with "Drains to Bay" 2. Conduct outreach on the importance of maintaining water quality to boaters living along Richardson Bay Implement sediment TMDL projects in the Napa River watershed (Napa County Resource Conservation District, $367,500) 1. Repair and upgrade over four miles of eroding rural roads at critical erosion sites in the Heath Canyon watershed 2. Develop LandSmart water quality template and resource binder and a series of corresponding workshops to facilitate compliance with a water quality regulatory program being developed in the Napa/Sonoma regions. 3. Assess ~400 acres of private property and develop 20 site specific management plans to reduce stormwater runoff Implement sediment TMDL projects in the Napa River watershed (California Land Stewardship Institute, $119,000) 1. Hold workshops for vineyards on sediment management control	Treat stormwater from over 14,000 ft.^{2} of impervious surface in an industrial area of Fremont Treat dry weather polluted stormwater prior to discharging to SF Bay Restore stream corridor within the Boyle Park reach of a tributary to Warner Creek, and reduce pathogens to Warner Creek and Richardson Bay Treat over four miles of highly erosive road in Napa County and prevent approximately 4000 yd.^{3} of sediment from reaching the Napa River Treat 10,500 acres of agricultural land with erosion controls measures and prevent up to 50,000 metric tons of fine sediment per year from entering the Napa River	Restore native oyster and eelgrass beds in San Francisco Bay Ongoing restoration and management for each watershed draining to San Francisco Bay Widespread use of LID to treat polluted stormwater and enhance aquatic ecosystems Increase capacity of Napa County heavy equipment operators to implement best practices when performing maintenance on rural roadways Address Napa River Watershed and Sonoma Creek Watershed Sediment TMDL goals by reducing sediment inputs in the two watersheds from stream bank erosion, rural road erosion, and erosion from peak flows Reduce pathogen loading into Richardson Bay from tributaries

(continued on p. 28)

2. Provide one-on-one technical assistance to vineyard owners to develop a detailed farm conservation plan, including a comprehensive sediment source inventory, road assessment and creek assessment for sediment sources and canopy cover for water temperatures Implement sediment TMDL projects in the Sonoma Creek watershed (Sonoma Ecology Center, $363,800) 1.Conduct outreach and provide technical assistance to up to 40 property owners or land managers and provide up to 20 site assessments to reduce sediment and pathogen delivery to Sonoma Creek 2. Stabilize banks, slow runoff, and improve habitat at ~15 sites along Sonoma Creek 3. Monitor Sonoma Creek ambient water quality conditions Implement sediment TMDL projects in the southern Sonoma Creek watershed (Sonoma Resource Conservation District, $318,300) 1. Implement a bank stabilization and erosion control project on a seasonal tributary to Sonoma Creek 2. Conduct outreach on sediment management with landowners and assist them in preparing documents for the conditional grazing waiver Living Shorelines: subtidal habitat improvement and native oyster restoration (State Coastal Conservancy, $300,000) 1. Design and implement various subtidal restoration techniques 2. Monitor the effectiveness of each design in regard to habitat value and oyster restoration Shoreline Change Study and Bay Area Aquatic Resources Inventory (BAARI) Accessibility Project (San Francisco Estuary Institute, $370,000) 1. Study of short- and long-term erosion/accretion rates of the San Pablo Bay Shoreline 2. Integrate a publically accessible data function for BAARI that will be integrated into EcoAtlas	Install 3 stormwater detention structures, and remove 5 acres of riparian weeds and revegetate with 2600 native plants along Sonoma Creek Prevent approximately 5,620 ft.^{3} of sediment from eroding streambanks annually and prevent 21,600 gallons per year of peak runoff from reaching Sonoma Creek Reduce sediment loading from a seasonal tributary to Sonoma Creek and increased capacity among landowners to develop plans needed to obtain grazing waivers Create new, valuable subtidal habitat including native oyster and eelgrass beds. Develop maps and GIS layers depicting erosion/accretion rates of San Pablo Bay Develop a portal for groups to upload their habitat data into BAARI with SFEI reviewing data for quality control	

Pond A17 Tidal Marsh Restoration
Recipient: California State Coastal Conservancy
Funding: $750,000 (Nonfederal match: $625,000), FFY: 2010
Project Period: September 2011 – November 2013

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Construct a 400' berm to control water movement. Install inlet and outlet structure with fish screen Construct 16 islands at 15,000 ft.^{2} each for 240,000 ft.^{2} total Levee lowering and levee breaches to restore tidal action to 130 acres. Reconfigure trail alignment, and resurface 20,400 linear feet of public access trail Install two overlooks and four interpretative panels	Improved recreational use of site, including trail reconfiguration to protect endangered species habitat Improved signage to increase the public's knowledge of the environmental benefits of the project and natural history of site Site contouring and constructed islands provides high tide refugia for endangered salt marsh harvest mouse, Ridgway's Rail and other birds and mammals	Restore 130 acres of tidal marsh High quality roosting, feeding and nesting habitat for migratory and special status shorebirds and waterfowl Improve water quality in Artesian Slough above baseline Increase populations of migratory shorebirds, resident fish species, and mammals in the project area above baseline Increase primary productivity in mudflat areas of Coyote Slough as a result of Pond A17 marsh nutrient export Restore 9 acres of tidal channel to create fish habitat Restore tidal marsh provides flood protection benefits

Project Type: Wetland Restoration

Coyote Creek Trash Reduction Project: Clean Creeks, Healthy Communities
Recipient: City of San Jose
Funding: $680,000 (Nonfederal match: $262,867). FFY: 2010
Project Period: September 2011 – June 2015

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Organize 48 environmental education, outreach events, and creek and neighborhood cleanup events Complete a minimum of 2 public art projects Perform a minimum of 8 large scale illegal encampment cleanups and creek cleanups with professional workers at hotspots Eliminate the four chronic dump sites within target area Install surveillance cameras at chronic dumpsites Create anti-dumping outreach webpage Permanently house 50 homeless individuals who live in targeted reach of Coyote Creek Perform 14,300 hours of peer to peer outreach to homeless people living in Coyote Creek and 39,000 hours of community services cleaning up litter and monitoring riparian area Pre, midpoint and post program surveys of resident's knowledge and attitudes towards Coyote Creek Conduct 8 urban rapid trash assessments (URTA) and document change in volume of trash and appearance of Coyote Creek with URTA rating	Remove 80 tons of trash and debris from Coyote Creek via encampment cleanups Remove 400 $yd.^3$ of trash and debris from Coyote Creek during cleanup events Program surveys indicate that: - 66% of residents are aware of Coyote Creek and its environmental significance; - 50% of residents report that the health of Coyote Creek is important to them; - 66% of residents are aware that their personal conduct can result in litter in Coyote Creek; - 33% of residents report participating in recreation that directly involves Coyote Creek riparian corridor; - 66% of residents understand that litter and illegal dumping is harmful to personal well-being; and - 66% of community residents report that they feel they could safely visit the Coyote Corridor	Achieve zero trash discharge to Coyote Creek by 2022

San Pablo Avenue Green Stormwater Spine
Recipient: San Francisco Estuary Partnership
Funding: $307,646 (Nonfederal match: $397,964), FFY: 2011
Project Period: September 2011 – January 2015

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Select Project Designer and/or Design/Build Contractor Develop planting plan Complete environmental review for CEQA for each of the seven projects Build the seven cities' projects in accordance with the plans and specifications Draft, circulate, and promote a draft Green Streets Model Ordinance for Bay Area cities to advance acceptance of low impact stormwater treatment installations Draft and circulate an RFP for construction management services for a qualified firm, preferably with low impact development construction experience, to provide on-site construction management to insure that the projects are built in accordance with approved design plans and specifications	Treat ~7 acres of impervious surface with LID	40-80% reduction in conventional stormwater pollutants, such as metals, PCBs, and PAHs and other heavy metals Adoption of a LID ordinance or policy by at least one municipality Increase in LID in each of the participating cities along San Pablo Ave.

Napa River Sediment TMDL Implementation and Habitat Enhancement
Recipient: County of Napa
Funding: $1,500,000 (Nonfederal match: $1,765,000), FFY: 2011
Project Period: June 2011 – December 2015

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Repair approximately 1800 feet of eroding banks in Phase 3 of the Rutherford Reach project area Develop an online mapping tool to display, on a subwatershed area basis, an interactive map to track and report on TMDL implementation progress Work with livestock producers in the Napa River watershed to develop regional water quality control plans that assess pollutant sources and identify management practices to control sediment and pathogens coming from grazed properties Assess and prioritize unimproved public roads and stream crossings in the Napa River watershed Remove 5 acres of invasive Arundo and revegetate with native plants Develop construction designs for 59 acres of habitat and water quality improvement along 3.9 miles of the Oakville to Oak Knoll reach of the main stem of the Napa River	Reduce rates of sediment delivery (associated with incision and accelerated bank erosion) to channels by 50% by 2017 Ranchers control sediment and pathogens on 80% of grazing lands in the Napa River watershed (approximately 16,000 acres) One priority stream crossing repaired preventing an estimated 760 tons of sediment from entering Napa River and eliminating a documented fish passage barrier	Reduce human sources of sediment to the Napa River by 51% by 2029 (Goal: 185,000 metric tons/year)

Project Type: Watershed Restoration

Dutch Slough, Emerson Parcel Tidal Marsh Restoration
Recipient: California State Coastal Conservancy
Funding: $1,400,000 (Nonfederal match: $2,754,000), FFY: 2011
Project Period: September 2011 – September 2018

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Eliminate cattle grazing on 425 acres Conduct pre-project water quality monitoring Grade marsh plain and Marsh Creek channel Construct water control structures Revegetate the marsh Pre-breach revegetation of 15 acres of riparian woodland and scrub Reestablish Marsh Creek Delta and hydrologic processes by routing Marsh Creek through the Emerson parcel. New delta will replace straightened, channelized stream bed (approximately 1.25 miles) with sinuous dendritic channels (approximately 2.5 miles). Breach levees to reintroduce tidal action and reestablish a supply of natural freshwater flows and fluvial sediments to approximately 240 acres Contribute to scientific understanding of ecological restoration by implementing the project under an adaptive management framework Design and construct the project with minimal high marsh habitat, because these areas, with frequent wetting and drying, can be sources for mercury methylation	Filter pollutants from terrestrial runoff and improve water quality Create freshwater signal to attract native fishes to spawning/rearing habitats Contribute to primary productivity and enhance food supply for sensitive pelagic species potentially including Delta smelt and longfin smelt through export of nutrients Increase habitat for sensitive native species (Chinook salmon, Sacramento splittail, California Black Rail, Swainson's Hawk, Loggerhead Shrike, Tricolored blackbird) and potentially spawning habitat for Delta smelt Minimize production and export of methyl mercury	Restore tidal channels (>5 miles) Restore approximately 240 acres of freshwater intertidal marsh Restore 15 acres of riparian woodland and scrub-shrub Restore approximately 2 miles of shaded riverine aquatic habitat Preserve and enhance up to 100 acres of managed freshwater marsh

Cullinan Ranch Tidal Marsh Restoration Project
Recipient: Ducks Unlimited
Funding: $1,400,000 (Nonfederal match: $500,000), FFY: 2011
Project Period: September 2011 – September 2018

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Levee improvements for protection of Highway 37 and Pond 1, including graded intertidal bench in SW corner, earthen viewing pad (Precursor to levee breaches) Create and enhance upland transition habitat along setback levee and Pond 1 levee Build Public Access: fishing pier and kayak launch Excavate channel for access from kayak launch facility to existing channel Beneficially reuse up to 405,000 $yd.^3$ of sediment (dredge material) prior to breaching levees to restore up to 50 acres of intertidal habitat Lower approximately 26,000 linear feet of levee Breach the Cullinan Ranch perimeter levees at five points and the Pond 3 perimeter levee at three points Conduct water quality monitoring and habitat monitoring data for methylmercury, waterbirds, vegetation, channel evolution, priority species, sedimentation	Reconnect 1,549 acres of estuarine subtidal and intertidal habitat to San Pablo Bay watershed Create approximately 30 acres of habitat suitable for Salt Marsh Harvest Mouse (SMHM) colonization Restore hydrologic connectivity between Cullinan Ranch and surrounding sloughs Restore hydrologic connectivity with Pond 3 Increase waterbird utilization within 1 year and SMHM utilization within 5 years Use by target fish species	Improved habitat connectivity among wetland, transitional and upland habitat Increased SMHM population size Ridgway's rail utilization Improved water quality with restored tidal marsh Results will inform future restoration projects and used in adaptive management to ensure project is meeting objectives

Project Type: Wetland Restoration

Urban Pesticide Reduction Campaign
Recipient: San Francisco Estuary Partnership
Funding: $250,000 (Nonfederal match: $83,334), FFY: 2011
Project Period: September 2012 – October 2016

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Engage 12 additional community group partners engaged Develop a mobile phone app. for less-toxic pesticide information Complete and distribute a tabling kit Summary of number of people reached through in-person interactions New ads and PSAs for Our Water Our World (OWOW) Establish a project Facebook page Report on social media interactions, click-throughs and web visits, media pitches, articles placed and coverage, events and attendees Collect less-toxic pesticide sales data	Improve water quality through decreasing sales of most-toxic pesticides and increasing desired behaviors of residential pesticide customers	Over ten years of increased campaign visibility, a 15% reduction in residents applying pesticides and 20% reductions in those who believe toxic pesticides are necessary is expected

San Francisquito Creek Stabilization at Bonde Weir
Recipient: San Mateo Resource Conservation District
Funding: $75,000 (Nonfederal match: $25,000), FFY: 2011
Project Period: August 2012 – October 2015

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Finalize designs Obtain permits for fish barrier removal Remove in stream barrier for fish migration Re-profile streambed with engineered streambed material Cover and plant exposed bare ground adjacent to the Creek to prevent erosion Protect and enhance over 120 feet of streambed by adding new rock material designed to withstand Creek flows associated with a 100 year storm	Restore access to 40 miles of stream for anadromous fish rearing and spawning grounds below Searsville dam Functioning erosion control structures, healthy restored riparian vegetation covering the site	

Project Type: Wetland Restoration

San Pablo Bay Tidal Marsh Enhancement and Water Quality Improvement
Recipient: Audubon California
Funding: $235,884 (Nonfederal match: $60,607), FFY: 2011
Project Period: August 2012 – December 2014

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Excavate a large tidal channel through the center of the marsh and small lateral channels from the newly excavated large channel Expand the size of some existing small channels connecting to and within the relic berm area Construct several small high tide refugia within the marsh interior alongside and near the newly excavated channel, using sediments excavated from the new channel Construct wetland transition ramps along the upland edge of the marsh, using sediments excavated from the new channel Revegetate the refugia berms and wetland-transition ramp with appropriate native vegetation Conduct baseline and post construction monitoring of physical and biological conditions	Improve water quality by reducing the annual application of pesticides (pounds per acre of active ingredient) by 75% within two years and by improving the filtering capacity of the tidal marsh Tidal circulation and drainage will improve the ecological function of 300 acres of tidal marsh Acres of water impounded will be reduced by 75% within 2-3 years Mosquito populations will decline with improved tidal circulation within two years Benefits to estuarine-dependent wildlife. Abundance of SMHM, CLRA, California Black Rail, and San Pablo Song Sparrows within the impounded areas will remain stable or increase within the project area three to five years after construction.	Improve marsh vegetation health

Rethink Disposable: Packaging Waste Source Reduction Pilot
Recipient: Clean Water Fund
Funding: $257,293 (Nonfederal match: $85,764), FFY: 2011
Project Period: September 2012 – November 2015

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Work with local governments and food establishments to develop cost-effective models to reduce takeout food disposable packaging Conduct 12 audits of food establishments to develop case studies on source reduction, a takeout food source reduction outreach plan and educational materials Develop first U.S. model policy encouraging Bring Your Own beverage containers which can achieve a 13% reduction in beverage container litter	Reduce trash from takeout food packaging by 36,000 pounds/100 businesses/year Help municipalities meet the Municipal Regional Stormwater Permit 40% waste reduction target Provide new approach to reducing trash in inland and coastal waters – moving from capture and control to source reduction Reduce cradle to grave/lifecycle impacts associated with disposable packaging BYO beverage containers policy available to enable a local jurisdiction to achieve up to a 13% reduction in beverage container litter	Help municipalities meet the Municipal Regional Stormwater Permit 100% waste reduction target by 2022

Alameda Creek Healthy Watersheds
Recipient: Alameda County Resource Conservation District
Funding: $181,823 (Nonfederal match: $60,607), FFY: 2011
Project Period: September 2012 – June 2015

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Develop conservation plans for 2-3 landowners each year towards the 5 landowner program goal Assess ~10 miles of streams for current condition and recovery potential Treat ~6 miles of stream and 3,840 acres of grazing and agricultural land with nonpoint source pollutant reduction BMPs Develop a measuring protocol to evaluate and document the following physical improvements to riparian corridors quantified by assessment score increases: Total Physical Habitat Score (results will vary by site); Riparian Vegetative Zone Width (e.g. "marginal" to "optimal" over 3 years); Human Influence (e.g. "marginal" to "suboptimal" over 3 years); Canopy cover (e.g.10% increase in density over 3 years, 70% at 10 years); Riparian Vegetation (e.g. lower canopy 0 to 10-40% over 3 years; 40-75% at 10 years); Bank Stability (e.g. "eroding" to "vulnerable" or "stable") Hold 1 – 2 creek cleanups, invasive weed control, or riparian vegetation planning events per year to improve local understanding of the value of creeks and riparian areas for water quality and watershed education Provide watershed-focused technical assistance on BMP effectiveness and long-term watershed management to public and private landowners Build landowner data collection capacity through demonstration workshops/ field tours	Improve benthic community health; decrease in maximum stream temperatures, nutrient, pathogen and fine sediment loading for ~6 stream miles Improve ~3,840 acres of grazing and agricultural land as a result of site-specific planning and nonpoint source BMP implementation	Physical improvements to riparian corridors quantified by assessment score increases

Rebuilding Habitat and Shoreline Resilience through Improved Flood Control Channel Design and Management
Recipient: San Francisco Estuary Partnership
Funding: $1,552,059 (Nonfederal match: $1,570,000), FFY: 2012
Project Period: September 2012 – December 2016

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Conduct historical analysis of how streams connected to tidal regions and estimate watersheds' coarse sediment supply Develop regional classification scheme and conceptual models for channel redesign and sediment reuse Convene a regional advisory committee made up of local experts for ongoing technical input and hold a workshop with national experts for review of conceptual models Conduct economic analysis of realigning channels vs. sediment removal and disposal Analyze policies and regulations and draft recommendations for future flood control restoration projects Develop regional implementation toolbox documents, website, and sediment "match-up" online database San Francisquito Creek Implementation Project: conduct final project design and permitting; construction; transfer of lessons learned; public outreach Novato Creek Implementation Project: conduct historical ecology study, site evaluation and conceptual design; final project design and permitting; pre-project monitoring; public outreach Walnut Creek Implementation Project: develop initial conceptual models and refine conceptual models Regional Public Outreach and Education: develop museum exhibit; develop podcasts, signage, and other outreach at each pilot project site	San Francisquito Creek: improve hydrogeomorphic conditions along 2800 feet of the San Francisquito flood control channel. Novato Creek: a flood control project designed and permitted to achieve the long term environmental results stated Walnut Creek: a flood control project that has hydrogeomorphic information necessary to be designed to achieve the long term environmental results stated Reduction of millions of dollars of flood control channel maintenance costs and redeployment of these funds to restoration	San Francisquito Creek: improve ecological functions of 4.1 acres tidal marsh and 2800 feet of channel bank Novato Creek: beneficial reuse of 70,000 yd.^{3} of sediment, over 2 miles of improved stream channel, potentially 800 - 1200 acres of restored tidal marsh to improve water quality and habitat for steelhead, black rail and Ridgway's rail. Walnut Creek: improve conditions along over 2 miles of Walnut Creek and restoration of over 25 acres of tidal marsh Reclassify millions of cubic yards of "waste sediment" as a resource available for reuse (up to 800,000 yd.^{3} in Walnut Creek alone) Improve resilience to sea level rise due to improved habitat and shoreline stability resulting from increases of sediment reaching the Bay margin

Project Type: Wetland Restoration

Quartermaster Reach Restoration Project
Recipient: Golden Gate National Parks Conservancy
Funding: $1,000,000 (Nonfederal match: $1,000,000), FFY: 2012
Project Period: September 2012 – August 2016

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Install two 32' wide, 5' high box culverts and associated headwalls at Mason Street to provide sufficient floodwater and tide-water exchange between the Crissy Field Marsh and the project area to improve passage and habitat conditions for fish and wildlife Demolish and remove approximately 310,000 ft.^{2} of asphalt, concrete and compacted earth Remove approximately 61,500 yd.^{3} of artificial fill material to expose native soils and the underlying shallow, unconfined water table Remove a 9,000 ft.^{2} building, building pad, and site-wide utilities to accommodate wetland restoration Grow and plant a diverse palette of native plant species, including more than 33,000 individual plants and remove ~30 non-native trees Engage community members in restoration efforts through the Presidio Park Stewards program Build a portion of the Tennessee Hollow Trail/boardwalk to provide for public access and interpretation of the site, while maintaining ecological function and habitat connectivity. Expand and promote the community outreach programs utilizing the watershed, including volunteerism, self-guided walking tours, the "Watershed Quest" program for youth ages 8-12, and the "Watersheds Inspiring Student Education (WISE)" program for high school students	Daylight an approximately 1,050' length of stream channel. Increase and enhance tidal exchange between Crissy Field Marsh and the upstream creek system Provide a contiguous wildlife habitat corridor between the restored Thompson Reach and Crissy Field Marsh/San Francisco Bay Improve water quality entering Crissy Field Marsh by redirecting flows currently contained in a storm drain into a newly created wetland. Achieve high volunteer participation in the project, with an annual target of 3,500 hours/year for the first 5 years and 1,000 hours/year for the following 5 years.	Create approximately 8 new acres of native habitat at the edge of Crissy Field Marsh/San Francisco Bay including 4.7 acres of new wetlands (salt marsh, brackish marsh, dune slack, and other wetland habitats) and 3.3 acres of coastal scrub upland

Project Type: Wetland Restoration

Napa River Restoration: Rutherford Reach & Oakville to Oak Knoll, Group C Sites 11 – 14
Recipient: Napa County
Funding: $1,500,000 (Nonfederal match: $1,500,000), FFY: 2012
Project Period: August 2012 – December 2016

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Rutherford Reach (Reaches 5, 6, 7 and 9): Construct 3 – 8 floodplain benches, install up to 58 in-stream habitat structures along approximately 5900 feet of channel Oakville – Oak Knoll (OVOK) Reach (Group C Sites): Begin restoration activities on 0.7 miles including: constructing up to three floodplain benches complexes, and installing up to 27 in-stream habitat structures along 1400 feet of channel	Rutherford Reach: ~3,500 feet of eroding stream banks along 1.1 miles of river channel stabilized and up to 10 acres of riparian habitat created Fine sediment delivery reduced by ~111,000 yd.^{3} (Rutherford and OVOK combined) Acheive 2017 TMDL target of 51% sediment source reduction (19,000 tons/year) from channel incision and bank erosion sources on the mainstem Napa River	Oakville – Oak Knoll Reach: Stabilize 1,000 feet of eroding stream banks along 0.7 miles of river channel and create up to 2.4 acres of riparian habitat Reduce human induced sources of sediment to the Napa River by 51% by 2029 (Goal: 185,000 metric tons/year)

Sears Point Tidal Marsh Restoration: Phase I
Recipient: Sonoma Land Trust
Funding: $941,941 (Nonfederal match: $941,941), FFY: 2012
Project Period: September 2012 – November 2015

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Remediate 12,000 yd.^{3} of contaminated soil Complete new 2.5-mile Bay Trail segment Excavate ~6 miles of channels Construct 2.5-mile habitat/flood control levee Construct up to 500 marsh mounds and sidecast mounds Establish vegetation within new tidal basin in advance of breach Excavate two 285' breaches in existing levee Lower ~7,000 linear ft. of existing levee to mean high high water Construct 2,100' connector channel from Breach 1 to Petaluma River Navigation Channel Conduct post-project monitoring	Create up to 30 acres of transitional habitat on the levee Minimized erosion, maximized accretion within tidal basin Highway 37, railroad, neighbors protected from stormwater flooding Increase public access to wildlife observation opportunitiess	Restore 960 acres of tidal marsh providing habitat for Ridgway's rail, salt marsh harvest mouse, and rearing salmonids Tidal marsh will provide buffer against storm surges Filter stormwater from agricultural lands and highway Provide carbon sequestration

Assess Impacts of Tidal Wetland Restoration on Methylmercury & Bioaccumulation
Recipient: California State Coastal Conservancy
Funding: $500,000 (Nonfederal match: $500,000), FFY: 2012
Project Period: September 2012 – January 2015

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Determine the amount of erosion in Alviso Slough and the release of mercury as a result of restoration of Pond A8 to muted tidal flows in 2011 Determine the amount of mud suspended in Alviso Slough, and the fate and transport of the mud – whether mud ends up in Pond A8, Pond A6 or the open bay Investigate seasonal changes in the amount of mercury in the mud, as well as the first big storm event of the year, to assess seasonal variation Determine the amount of mercury in fish in the 3 sloughs (Alviso, Mallard, and Guadalupe Slough) and bird eggs in the ponds after restoration in Pond A8 Provide biosentinel species results to agencies and scientists to inform other wetlands restoration projects in the Bay-Delta region	Further scientific understanding of mercury cycling in tidal wetlands and salt ponds to adaptively manage future restoration activities planned over the next 10 years Depending on results of studies, confirm that opening additional gates in the Pond A8 notch is prudent in order to eventually support full tidal restoration of 1,400 acres Depending on results of studies, implement Shoreline Study tidal wetland restoration projects (2,045 acres in Ponds A9-A15 and 856 acres in Pond A18) with shortest duration possible between phases Depending on results of studies, design measures to minimize mercury impacts in future tidal restoration phases	Restore 2,901 acres of tidal wetlands (Ponds A8-15, Pond A18) to reduce mercury inputs to the food web

Removing Mercury in the Guadalupe River Watershed
Recipient: San Francisco Estuary Partnership
Funding: $800,000 (Nonfederal match: $800,000), FFY: 2013
Project Period: October 2013 – December 2015

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Remove all calcine-paved (roasted mercury ore) roads, approximately 3 miles, within the Almaden Quicksilver County Park with heavy equipment and permanently dispose of it in the San Francisco Open Cut within the park boundaries Develop 25% design plans for remediating the Upper Jacques Gulch calcine features	Remediate all calcine-paved roads features, sequestering an estimated 25-263 kg. of mercury within the San Francisco Open Cut	Address Guadalupe River Watershed and San Francisco Bay Mercury TMDL goals by reducing mercury inputs in the Guadalupe River Watershed from mine waste and mercury-laden sediments

Breuner Marsh Restoration
Recipient: East Bay Regional Park District
Funding: $1,500,000 (Nonfederal match: $1,500,000), FFY: 2013
Project Period: January 2014 – February 2016

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Remove non-native vegetation and replace with native plants, irrigate as needed to establish plants and install fencing Construct Main Trail (Bay Trail segment) and Spit Trail Construct a broad transitional zone, gently sloping upland habitat and self-sustaining wetland areas that will transgress with sea level rise Lower the elevation of the existing upland to create tidal wetlands Grade shallow depressions in existing upland areas to enhance low quality seasonal wetlands Improve public access: Construct bridge, boardwalks, trails, picnic area, scenic overlook, and install interpretive signs	Create 24.9 acres of pickleweed habitat adjacent to enhanced transitional areas planted with native shoreline vegetation to contribute to nesting, foraging and refugia habitat for the Salt Marsh Harvest Mouse and Ridgway's Rail	Create, restore and enhance 164 acres of wetlands and habitat at Breuner Marsh along the Point Pinole Regional Shoreline in Richmond

Project Type: Wetland Restoration

Napa River Restoration: Oakville to Oak Knoll Reach, Group A Sites 21 – 23
Recipient: Napa County
Funding: $1,271,350 (Nonfederal match: $1,271,350), FFY: 2013
Project Period: January 2014 – May 2017

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Construct 2 floodplain benches and 0.9 acres of alcove features Install up to 38 in-stream habitat structures along 2,000' of channel As built drawings of construction per 100% Design & Specifications for restoration on 1-2 properties Pending construction bids, available funding may also support: Construction of .3 acres of floodplain benches and installation of up to 2 in-stream habitat structures along 3,000 feet of channel Complete protocols and data management systems for Bank Erosion and Rural Road Condition rapid assessment methodology (RAM) tools, including detailed user manuals, web based data management platforms and training modules to facilitate implementation	~1,395 feet of eroding stream banks stabilized and up to 5.2 acres of riparian habitat created Fine sediment delivery reduced by 34,900 $yd.^3$ or 2871 metric tons/year ~1 mile of the Napa River restored ~350' of eroding stream banks stabilized; fine sediment delivery reduced by ~22,500 $yd.^3$; and up to 5.3 acres of riparian and wetland habitat created (pending construction bids)	Increase stream habitat complexity, connectivity, and function of 5.2-10.5 acres along the Napa River Restore 9 miles of the Napa River Oakville – Oak Knoll Reach Reduce human induced sources of sediment to the Napa River by 51% by 2029 (Goal: 185,000 metric tons / year)

Reducing Nutrients to San Francisco Bay through Additional Wastewater Sidestream Treatment
Recipient: East Bay Municipal Utility District
Funding: $517,650 (Nonfederal match: $517,650), FFY: 2013
Project Period: January 2014 – January 2016

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Conduct a comprehensive literature review of viable sidestream nutrient removal technologies Conduct bench and pilot tests of best-available sidestream nitrogen removal technologies at multiple wastewater treatment plants and evaluate feasible nutrient reductions to the SF Bay. EBMUD, SFPUC, and OLSD will test Anammox, and Delta Diablo will pilot test CANDO. Estimate high-level cost & benefit of sidestream treatment Conduct hydrodynamic and water quality modeling using SFEI's nutrient model (under development) to simulate potential water quality improvements to SF Bay assuming full-scale implementation of sidestream treatment by publicly-owned wastewater treatment works (POTWs) in SF Bay Evaluate the role of sidestream treatment in developing a science and cost effectiveness based regional approach to nutrient management in SF Bay Host 8 workshops with collaborators	Identify cost-effective nutrient removal technologies for sidestream treatment Quantify potential nutrient load reductions to SF Bay and estimate the cost & benefit of sidestream treatment Simulate water quality improvements to SF Bay assuming full-scale implementation of sidestream treatment by POTWs in SF Bay	Project results will help determine level of treatment for POTWs discharging to San Francisco Bay under the recent SF Bay-wide POTW permit.

South Bay Salt Ponds Tidal Restoration Phase II Planning
Recipient: California State Coastal Conservancy
Funding: $866,021 (Nonfederal match: $866,021), FFY: 2013
Project Period: January 2014 – December 2016

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Complete geotechnical studies to support tidal marsh restoration and new levee construction Complete permit applications for Phase 2 South Bay Salt Pond restoration projects on US Fish and Wildlife Service property and 30% design for 4 distinct Phase II restoration projects	Plan and design for restoration of 1,005 acres of restored tidal baylands (710 acres in Alviso and 295 acres in Ravenswood) Hydrologic enhancement of an additional 325 acres of previously restored tidal baylands (Charleston Slough and Pond A19 in Alviso), and 60 acres of enhanced managed pond habitat (Ponds R5 and S5 in Ravenswood)	Restore 15,000 acres of tidal marsh

Sears Point Tidal Marsh Restoration: Phase II
Recipient: Sonoma Land Trust
Funding: $1,500,000 (Nonfederal match: $1,500,000), FFY: 2014
Project Period: December 2014 – November 2018

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Construct two 285' breaches in existing levees Dredge 2,100' connector channel Lower 6,850' of existing levee Grade 22,400' of existing levee Seed up to 50 acres of levee Open site for public access Monitor water quality (DO, temp, pH, turbidity) and marsh development	Restore hydrology to 960 acres Improve sedimentation pathway and hydrologic connectivity Create "instant marsh" on crest and sides of lowered levee	Restore tidal action to 960 acres

Napa River Restoration: Oakville to Oak Knoll Reach, Group C Site 14
Recipient: Napa County
Funding: $894,324 (Nonfederal match: $894,324), FFY: 2014
Project Period: January 2015 – December 2019

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Construct a 750-linear foot high-flows swale to enhance backwater habitats Apply biotechnical bank stabilization along 1500 linear feet of river bank Widen the river channel by 65 – 90 feet by removing 103,000 yd.^{3} of sediment from eroding banks As built drawings of construction per 100 percent Design & Specifications for restoration on two properties	1500' of eroding stream banks stabilized and 5 acres of riparian habitat enhanced Fine sediment delivery reduced by 2476 metric tons/year	Increase habitat complexity, connectivity, and function of 5 acres along the Napa River Restore 9 miles of the Napa River OVOK Reach Reduce human induced sources of sediment to the Napa River by 51% by 2029 (Goal: 185,000 metric tons/year)

South Bay Salt Pond Restoration Project: Phase II Construction at Ravenswood
Recipient: California State Coastal Conservancy
Funding: $1,000,000 (Nonfederal match: $1,000,000), FFY: 2014
Project Period: **December 2014 – June 2018**

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Reinforce over 5,000 linear feet of existing levee and create approximately 7,000 linear feet of upland transition zone Installation of one water inlet/outlet structure Construct one levee breach Install a new high flow diversion from Bayfront Canal into R5/S5 Earthwork and construction of a new nesting island Comprehensive Monitoring and Adaptive Management Plan	Adjacent areas protected from tidal waters, fringing wetland on the upland transition zone. Sufficient bay water exchange between the tidal restoration at R4 and the reconfigured 30 acre Pond R5 Discharges of water meet permit criteria for water quality (DO, salinity, pH) Full tidal inundation of 295 acres Reduction of annual flooding along Bayfront Canal Increased above baseline numbers of migratory shorebirds roosting and nesting in project area	Restore 280 acres of tidal wetlands Enhance 60 acres of non-vegetated tidal wetlands Improve tidal circulation through a 10 acre remnant tidal slough Create 15 acres of upland refugia

Upper York Creek Dam Removal, Fish Passage, and Ecosystem Restoration
Recipient: City of St. Helena
Funding: $987,876 (Nonfederal match: $987,876), FFY: 2014
Project Period: December 2014 – March 2019

OUTPUTS (Activity, effort, and/or work product during project period)	**OUTCOMES** (Environmental Results)	
	SHORT-TERM (1-5YRS)	LONG-TERM (5-20+YRS)
Remove invasive riparian vegetation and revegetate with native plants Reconstruct channel to consist of 475' long cascade reach and 710' of adjacent floodplain	Restore 2 acres of riparian forest Restore unimpaired fish access to 1.5 miles of high quality gravel and cobble dominated stream habitat Restore fish access to 63% of the watershed's sediment source area, primarily course bedload, which is better for fish habitat	Restore the 0.23 miles of in-stream habitat for salmonids Sequester 276 metric tons CO2 equivalent

Restoration of South Bay Salt Pond A 17 near completion. Photo: McMillen Ltd.

U.S. Environmental Protection Agency
Pacific Southwest/Region 9
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http://www2.epa.gov/sfbay-delta/sf-bay-water-quality-improvement-fund