SAN FRANCISCO ESTUARY PARTNERSHIP

Implementation Committee Meeting

Wednesday, August 26, 2015, 9:30 a.m. – 12:30 p.m.

1515 Clay Street, 2nd Floor, Room 10, Oakland, CA

AGENDA

9:30	**1. Welcome and Introductions**	Amy Hutzel, Chair
9:40	**2. Public Comments** Any member of the public may address the IC on any matter regarding implementation of the Comprehensive Conservation and Management Plan. Each speaker will be limited to three minutes.	
	Action: Approve May 27, 2015 Meeting Summary (Attachment 1)	Chair
9:45	**3. Director's Report** *(Attachment 2)*	Judy Kelly, Director
10:00	**4. Reports on SFEP Activities**	
	2015 State of the Estuary Conference updates	Karen McDowell
	GreenPlan Bay Area: Report on State Board Grant / Phase I of Project	Jennifer Krebs, Josh Bradt, and Jing Wu, SFEI
10:35	*Break and Celebration of Paula's Years of Service to SFEP*	
11:00	CCMP Revision new actions briefing *(Attachment 3)*	Caitlin Sweeney
	Concluding Business	
12:20	**5.** Review Road Map; add agenda items for future meetings *(Attachment 4)*	Chair, Judy Kelly
	Announcements	
12:30	Adjourn	

San Francisco Estuary Partnership
Implementation Committee Meeting
May 27, 2015
Elihu M. Harris State Building
Oakland, California

DRAFT MEETING SUMMARY

1. Introductions

Amy Hutzel, Chair, called the meeting to order at 9:35 AM with a round of introductions.

2. Public Comments

There were no public comments.
Minutes were approved. Motion to Approve by Carol Mahoney and seconded by Harry Seraydarian. No oppositions to approval.

3. Directors Report

Judy Kelly

Staff

Paula Trigueros, SFEP's Contracts Manager, will be formally retiring after the State of the Estuary Conference in September. Judy is investigating dispensation options with ABAG to allow Paula to continue working as a contractor. This will need to be approved by ABAG's Executive Council. SFEP Contract Support position interviews will be held on June 3 at ABAG.

ABAG General Assembly

The central theme of the ABAG Spring 2015 General Assembly meeting was *Green Streets and Infrastructure Strategies*. Keynote speaker, UC Berkeley Professor and author, David Sedlak excited local officials in attendance with a vison of transforming urban water infrastructure.

New Funding

Judy expressed appreciation to EPA ($50,000 award) and John Bourgeois (lead) for Blue Carbon project investigating carbon sequestration in salt pond environments.

Publicity

Judy mentioned that the latest issue of *Bay Nature* magazine included a good piece on SFEP's Flood Control 2.0 project by Ariel Rubissow Okamoto.

4. Reports on SFEP activities

2015 State of the Estuary Conference Planning

Karen McDowell

- Postcard invitations have been mailed. The conference will be held September 17-18 in Oakland.
- Call for Posters has been issued with a June 12 deadline

- Nominations due by June 30th for both the CCMP Estuary Award (large & small on-the-ground restoration and/or educational projects) and the Jean Auer Award (individual contributors to environmental quality in the Bay-Delta Estuary).
- Final Conference Program should be available by June 15
- Judy urged IC member agencies to consider sponsoring the event as a way to control registration costs. Encouraging other agencies to become sponsors is also helpful. Water Board, SFEP, and Coastal Conservancy are already on-board as sponsors

State of the Estuary Report

Letitia Grenier

A detailed report was provided on the current status of the SoTER, planned for a September 1 printing, prior to the 2015 State of the Estuary Conference. This report will differ with the last in inclusion of the Delta and the Farallon Islands, standardized scoring, and easier to understand graphics. The report is organized around five attributes: Habitat, Ecological Processes, Living Resources, and People). Attributes will have color-coded summary pages denoting indicators, status, trends, benchmarks, and maps (as appropriate). Although report content is still being gathered and synthesized, Letitia reports the Bay is healthier than the Delta and most trends remain consistent with the 2011 SoTER. An interactive web-based tool is also planned.

Comments

- Judy noted that while most National Estuary Projects produce similar reports of trends for local data, the SoTER is a cut above with its rigorous scientific input and analyses.
- Judy asked IC members to think about the report's roll-out: what are good platforms for publicizing? The 2011 SoTER release competed with the Cosco Busan spill.
    - Carol suggested contacting local radio stations
    - Athena (SFEP staff) noted whatever is placed on the top position in the summary chart (healthy or not?) will be considered the takeaway message, and suggested selecting that intentionally. She also noted that some indicators are phrased with simple words and others contain jargon which likely wouldn't be understood by media.
    - Amy recommended pictures including people of diverse ethnicities.
    - Warner asked if the timing of the report's release will coincide with anything else that may increase its influence. Who is audience?
    - Carol suggested caution with the drought section as she is seeing that local data is not always jibing with State information. Letitia responded the interest here is in HOW we are responding to drought rather than using it as an indicator.

15-16 Final Workplan review

Judy Kelly

There was a brief discussion of the 2015-2016 Final SFEP Workplan, which has been reorganized to better synch with the SoTER and CCMP update. Judy reviewed the variety of funding sources that support SFEP programs and staff (see pages 7 & 13).

Comments

- Amy likes the layout and graphics
- Carol sees opportunity for a more regional, coalition-based approach to addressing Disadvantaged Communities (DACs).

- Prop 1 funding is available specifically for planning and implantation projects in DACs. Although the guidelines are not out yet, it is assumed that non-state matching funds must be secured (prior to award) and spent before state money is released.
- Amy, Carol, and Warner volunteered to work with Caitlin (SFEP staff) to further develop the idea of coalition forming.

The Final 2015-2016 SFEP Workplan was approved. Motion to Approve by Barbara Salzman and seconded by John Andrew. No oppositions to approval.

IRWM Update

Jennifer Krebs

Jennifer distributed an informational handout on a recent Pharmaceutical Take-Backs ruling, prior to providing IRWM update. The final Round 4 application for $41M of projects will be due August 7, 2015 for fall awards. The Coordinating Committee selected 9 projects for the regional Round 4 submittal to DWR from the 45 proposed projects which totaled $270M. SFEP will manage the grants. The committee balanced allocations to the 4 subregions based on population and area. Projects addressing the IRWM functional areas of Waste Water and Flood Management were awarded the most. No desalination projects were funded.

Comments

Matt mentioned there will be $100M of State funding available for Stormwater Management at the end of the fiscal year.

CCMP Revision new actions briefing

Caitlin Sweeney

The CCMP update process to date was reviewed with explanation of how the goals, objectives, and draft actions have developed during the process. A Resiliency goal has been added, the Living Resources topic area is now combined with Habitats, and further work is needed on the Funding and Stewardship topic areas. The subcommittee meetings are almost done with SFEP staff now working with key "owners" to refine the draft actions. Member of all subcommittees will be invited to final meeting on July 30 to review all revised actions. The updated Draft CCMP should be ready for IC member review ahead of the August meeting. Caitlin introduced Andrea Nelson of PMC (Pacific Municipal Consultants), the newly contracted marketing consultant who will be assisting with public outreach. The final draft is expected by September 16, 2015 in time for the SOE Conference.

Comments

- Amy asked about the CCMP audience.
  - Judy responded that the primary audiences are: 1) public agencies and NGOs (as implementers), 2) elected officials (policy and funding leaders).
  - Caitlin added that the PMC Inc. will also help identify other CCMP target audiences.
  - Warner thinks messaging is critical to inform, inspire the public/audiences but will be competition for attention with 5 major reports (Pulse Report, BEGHU, SoTER, CCMP, State of the Bay-Delta Science) to be released in the fall, so there should be coordination for the timing and staging among all of them. He also suggested no more than three key messages be selected for highlighting to media at the report release.

- Judy stated that the new CCMP will not be signed by the Governor this time, but instead will ask for concurrence letters from the Executive Council, comprised of state officials, regional administrators, and EPA.
- Content/Format/Process concerns raised by IC members:
    - Harry sees lack of explicit mention of fish, although many actions have direct benefit. Barbara agreed and recommended emphasizing the connections between various species.
        - Caitlin suggested "beneficiary notes" in the action's description section
    - Barbara appreciates recognition of Tidal Marsh Recovery Plan, recommends using its wording. She has concerns with Public Access language (Obj 2, Act. 4);
        - Blake proposed new Public Access action NOT under Stewardship
    - John A. thinks 49 actions too many given available resources; fewer actions carry more weight. Metrics should be called out separately, not in description.
    - Warner questioned purpose and timing of July 30 Subcommittee meeting, noting that everything should be in order for people to select key messages and coordinate with other report committees for all the competing releases in September.
        - Caitlin responded this is last chance for members to view draft actions in entirety before public release.
    - Michael V suggested calling out estuarine tie in with riparian zones (Obj 3, act1)
    - John K curious how TMDLs, pesticides, etc. are addressed. Matt looked for mention of stormwater such as trash and PCBs
        - Judy responded that SFEP cannot deal with all TMDLs in region. Urban pesticide specifically mentioned due to SFEP history with issue. Luisa and Keith responded that there may be more of a role for TMDLs in the actions given SFEP's history of funding TMDL implementation projects for others.
    - Suggested agencies to meet with prior to releasing public draft:
        - Bay Planning Coalition (Amy); BASMAA (Matt)

5. ABAG Plan Bay Area

Miriam Chion

Miriam provided an overview of Plan Bay Area (PBA), initially adopted in 2013 and now being updated for adoption in June 2017. With population growing by 1.8M by 2040, PBA looks to improve regional sustainability, resilience, and equity through improved land use, transportation, and economic planning. Miriam discussed how Priority Development Areas (PDAs) are designated through local public agency nominations and resolutions. She also discussed Priority Conservation Areas (PCAs) which in the first PBA primarily focused on farmlands and open spaces. The PBA update process provides opportunities to better incorporate water issues such as: green infrastructure and stormwater management and diversifying the regional water supply portfolio (local, imported, recycle/reuse, and desalination). Miriam asked the group for guidance on how to address and frame water issues.

<u>Comments</u>

- Carol mentioned that PBA is seems very transit oriented with no discussion of the downsides of floodplain development (since generally in our regional transportation

infrastructure is concentrated in low-lying land near the Bay's edge). Transit Oriented Development is exempted from elements of the MRP.
    - Miriam asked what we need to prepare for in a 30 year time horizon. PBA does take into account flood risk when planning investments.
- Matt agreed with Carol that PBA should include stormwater, since transportation infrastructure and motor vehicles impact stormwater and water quality and that's not typically addressed by the MTC. He suggested that MTC should specifically require green infrastructure measures (implemented concurrently with roadway improvements) in its Active Transportation grants. These could mitigate against impacts and build resilience at the same time, and would deal with water quality as well as greenhouse gas and urban heat island effects, etc.
    - Miriam suggested these could be requirements within One Bay Area grants. Matt suggested requiring a complete streets policy in order to qualify for funding.
    - Amy asked if BASMAA/BAFPAA write ups of these suggestions would be helpful. Miriam said yes.
- Keith mentioned that municipalities will be required to create GI plans and will need funding to implement. He noted that it sounds like ABAG/PBA is focusing all on growth, but much of our work will be require retrofitting existing facilities. Miriam agreed this is consistent with the plan.
- Barbara asked if there is any focus on avoiding impacts. Concerned with PCAs' emphasis on farmland and open space. Transportation infrastructure is ringing Bay and impacts tidal lands. How are these impacts being identified and compensated for?
    - Miriam responded that this is a complex question. PCAs are not necessarily a solution to all issues. PCA designations can come from entities other than municipality, such as a Park District. However, there is spectrum of stakeholders who may veto. Avoidance issue—looking at focused growth and avoidance of expansion into natural habitats.
- Michael suggested that if GI extended inland from the Bay, there may be opportunities to use Coastal Conservancy funding to match MTC's $10M for PCAs.

6. Concluding Business

Amy Hutzel, Judy Kelly

The next IC meeting is August 26th. We will review the draft CCMP and final SoTER, provide briefings on the IRWM Round 4 submitted application, and give a Prop 1 update (new guidelines). Other potential presentation items include Green Plan Bay Area and the state greenhouse gas cap and trade program.

Announcements

- The draft MRP (Municipal Regional Permit for stormwater) is out for public comment. Written comments are due July 10, 2015. The Water Board is holding two public workshops for oral comments.
- Eric Sanderson (the "East Coast Robin Grossinger"), director of the Mannahatta Project on New York historical ecology, is looking for partners/funding to create urban resiliency matrix calculating accrual of benefits associated with actions specifically for the San Francisco region.

- A solicitation for NOAA Coastal Resilience grants is out with a due date in July.

Attendees

- John Andrew, Department of Water Resources
- Bill Brostoff, U.S. Army Corps of Engineers
- Warner Chabot, SFEI
- Matt Fabry, San Mateo Countywide Water Pollution Prevention Program
- Letitia Grenier, SFEI
- Amy Hutzel, State Coastal Conservancy
- John Klochak, U.S. Fish and Wildlife Service
- Jane Lavelle, SFPUC
- Keith Lichten, SF Bay Regional Water Quality Control Board
- Carol Mahoney, Zone 7 Water Agency
- Jessica Martini-Lamb, Sonoma County Water Agency
- Blake Roberts, Delta Protection Commission
- Barbara Salzman, Marin Audubon Society
- Harry Seraydarian, North Bay Watershed Association
- Luisa Valiela, U.S. EPA Region 9
- Michael Vasey, SF Bay National Estuarine Research Reserve,

DIRECTOR'S REPORT
August 26, 2015

SFEP Program Management

Staff Changes – Retirements!

As previously mentioned, Paula Trigueros will be retiring at the end of September. Please join us in wishing her the best and thanking her for her fourteen years of selfless service to the Partnership! Paula has handled contracting for all of our projects, as well as invoicing, reporting, and compliance with grant and contract requirements, and she has managed numerous projects on top of that. ABAG's Executive Board has agreed to allow Paula to continue to provide part-time support as needed so that we can continue to tap her expertise. Athena Honore and temporary assistant Yohee Yang are learning procedures, archiving files, and preparing to continue the grants and contracts management work after Paula's retirement.

I have also announced my upcoming retirement from ABAG and SFEP effective late December. I will pursue music, art, and travel and a very part-time position as Executive Director of the North Bay Watershed Association, starting in January when Harry Seraydarian retires from that job. The recruitment process for a new Director is currently underway, with an open position announcement at http://www.abag.ca.gov/jobs/Director_of_the_San_Francisco_Estuary_Partnership_Job_Number_1508.pdf. Applications are due by September 4; please share this with qualified candidates in your networks.

Director Activities

I attended a tour of the Silicon Valley Advanced Water Purification Center on July 17, to learn more about technologies to produce highly purified water that could potentially expand Silicon Valley's future drinking water supplies.

To attend a similar tour, sign up at Santa Clara Valley Water District's recycled water website: http://purewater4u.org or take the online virtual tour with video animation and a world map showing how other major cities reuse water. An illustration there shows current recycled water use in Santa Clara County and potential future uses.

NEP Program Review

We are developing an agenda for the EPA staff who will conduct our five-year program evaluation. The team will include staff from EPA headquarters, EPA Region 9, and visiting directors from the Casco Bay Estuary Partnership and Puerto Rico's San Juan Bay Estuary Program (Programa del Estuario de la Bahía de San Juan). They will participate in the State of the Estuary Conference to capture highlights of the work going on around our region, and we are developing an agenda for the last day of their visit on Monday, September 21.

IC Members

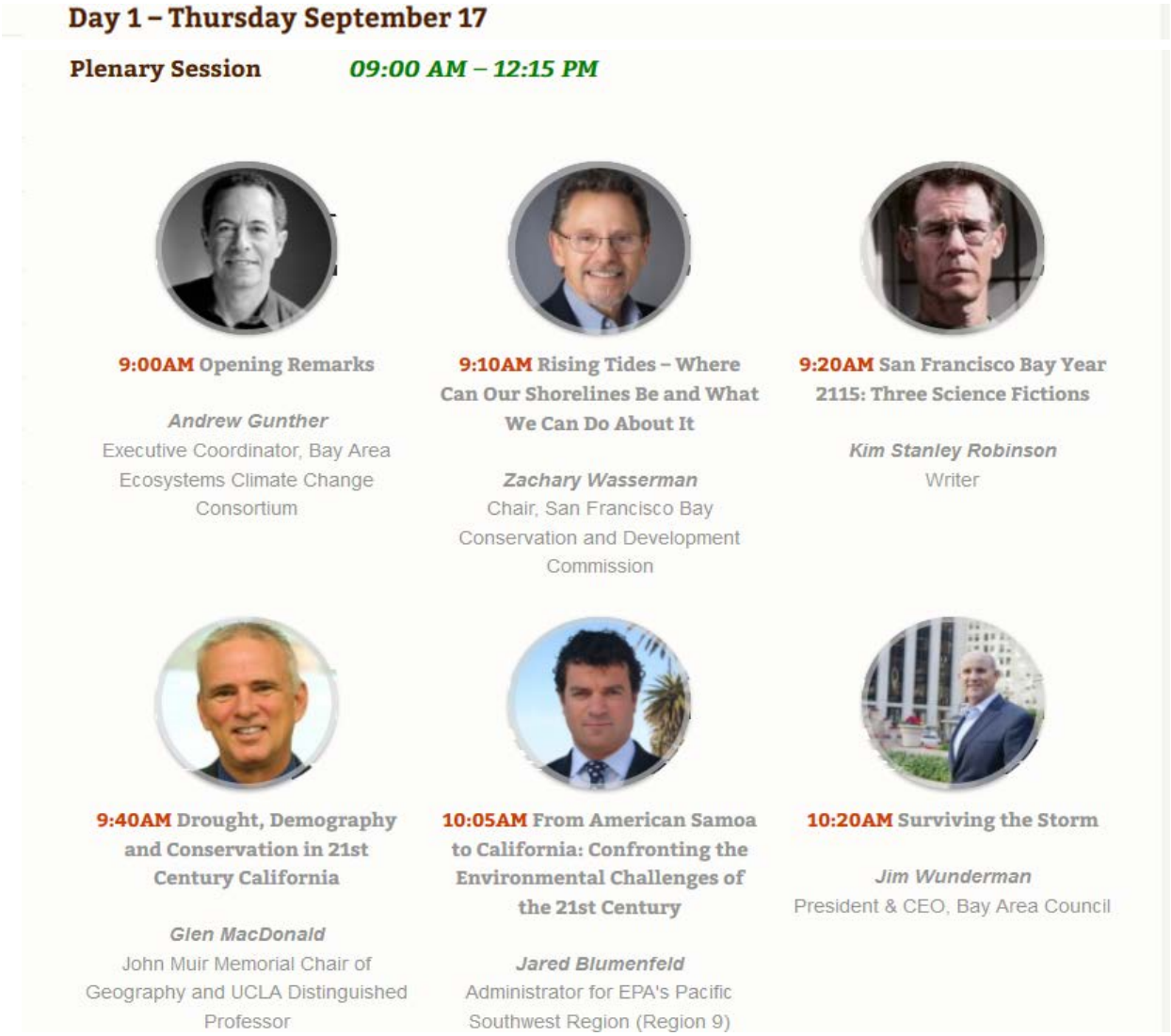
Please welcome back to the Implementation Committee Alex Westhoff, who previously served on the IC as a representative of the Delta Protection Commission. Alex will now represent Marin County, where he is a planner for the Community Development Agency working on sea level rise. Alex will join us at the November meeting.

New Funding

SFEP was awarded a new grant ($428,726) to continue its work with boaters and to expand its efforts in meeting the goals of the Clean Vessel Act. In this new grant cycle, SFEP staff will create a Best Management Practices Manual for marinas to use to prevent sewage discharge, create and launch an app to automate the upload of pumpout survey information with an interface for boaters to report broken pumpouts, and work with partners in California and other states to create a publicly funded mobile pumpout pilot program for implementation next grant cycle. These enhancements will supplement our ongoing outreach and education efforts with boaters. James Muller and Adrien Baudrimont will continue to staff the program.

State of the Estuary Conference

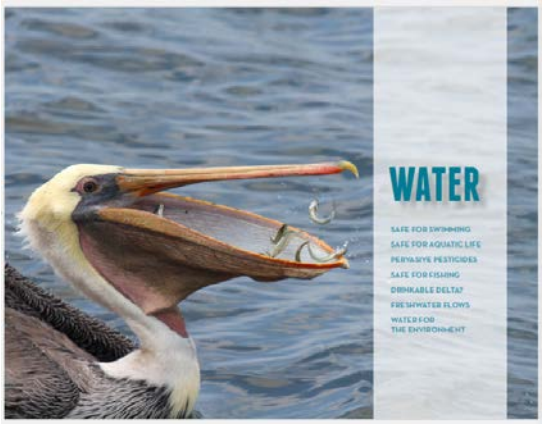
Registration for the conference opened in August (www.sfestuary.org/soe-registration). The early-bird deadline was August 20, and the last registration deadline is September 10 by 5pm. The conference this year is on September 17 and 18 in Oakland at the Marriott hotel. Keynote speakers are shown here, and the full program is available at http://www.sfestuary.org/soe-program.



State of the Estuary Report preview

The State of the Estuary Report is a data-driven look at the health of our estuary, San Francisco Bay and the Delta. Using the latest analysis, the report will inform the public, scientists, and decision makers about where we most need to direct resources to better protect and restore our estuary. The report will be published in September 2015, with more background information presented on the web.

For the first time, this report will present indicators for the health of the Delta as well as San Francisco Bay. It will assess where we are now, and where we want to go in the future. Building upon the 2011 State of the Bay report, and combining the expertise of over 30 Bay and Delta scientists, this report will present status and trends for 30 indicators of Bay and Delta health.



SoTER and Other Major Estuary Report Releases

Four major reports on the SF Bay-Estuary and the draft CCMP are set for release in the September-October timeframe, and the draft CCMP is also set for a September release to solicit public comment. All of these reports provide opportunities to educate and inspire greater support for estuary conservation by the media, key opinion leaders, policy makers and the general public.

	Report Title	Lead Agency	Content	Purpose
1	State of the Delta Science	Delta Stewardship Council	Summary of major research and findings on Delta science issues	Assessment of status & trends
2	Pulse of the Bay	Regional Monitoring Program	Biannual update on Regional Monitoring Program findings	
3	State of the Bay Delta Estuary Report (SoTER)	San Francisco Estuary Partnership	Status report on the health of the estuary based on 30 indicators	
4	Comprehensive Conservation Management Plan (CCMP) Draft	San Francisco Estuary Partnership	A draft, bay-wide restoration plan will also be released for public comment. The CCMP is a blueprint to restore and maintaining the health of the Estuary.	Vision for solutions & future actions
5	Baylands Ecosystem Habitat Goals Update (BEHGU)	State Coastal Conservancy	A 100 year vision, with recommendations, for restoration of the Bay's wetlands	

Major SF Bay Estuary Reports and Plans Expected September-October 2015

Project Highlights

IRWMP 2015 (Round 4) Application Submitted to DWR

ABAG is again serving as applicant for the San Francisco Bay Region under the fourth round of IRWMP funding, and we submitted an application to DWR in early August to fund 10 projects worth $41,305,435. The Bay Area Regional Climate Change Preparedness Program geographically spans the entire Bay Area region and addresses three primary integrated water management benefits:

- Water Supply – Drought Preparedness
- Human Right to Water
- Shoreline Resilience – Sea Level Rise Preparedness

The Bay Area Regional Climate Change Preparedness Program addresses the region's ability to respond and adapt to climate change impacts through improvements to foundational infrastructure, including the natural and built environment, and focusing on the nexus between natural events and human response. Completing these projects will render the Bay Area population less vulnerable and able to more effectively respond to and channel natural events associated with climate change.

The Bay Area Integrated Regional Water Management (IRWM) Plan integrates all water resources functional areas, from water supply and flood protection to habitat and watershed management. In considering projects to propose for this last round of Proposition 84 funding, the Bay Area Coordinating Committee reviewed Bay Area projects funded to date and considered many very strong projects representing all water resources areas. Since grant funding for the Bay Area IRWM Region under Proposition 84 (Prop 84) Rounds 1, 2, and the Drought Round has been allocated primarily for water supply, water quality, and recycled water projects, the Coordinating Committee focused this last round of Prop 84 funding on climate change adaptation projects including watershed and habitat improvement and flood protection. The proposed suite of projects supports and advances foundational Bay Area IRWM Plan principles.

Primary Benefit	Proponent	Title	Abstract	Cost
Water Supply – Drought Preparedness	San Francisco Estuary Partnership	Bay Area Advanced Quantitative Precipitation Information (AQPI) System	The AQPI system uses radars and improved modeling to provide increased lead times for government decision-makers to prepare for flooding and water supply management decisions.	$19,000,000
	Santa Clara Valley Water District	Anderson Dam Seismic Retrofit Project	This project will make improvements required for Anderson Dam and its appurtenances to withstand a maximum credible earthquake and probable maximum flood event.	$4,090,000

Primary Benefit	Proponent	Title	Abstract	Cost
	Marin Municipal Water District	Marin 2020 Turf Replacement Project	This project will remove up to 443,000 square feet of non-functional turfgrass from commercial, institutional, and industrial properties and replace it with environmentally beneficial landscapes.	$781,563
Human Right to Water	City of East Palo Alto	East Palo Alto Groundwater Supply Project	This project includes development and use of groundwater as a new source of water supply for the City of East Palo Alto and its DACs.	$1,506,050
	San Mateo County Resource Conservation District	Coastal San Mateo County Drought Relief Phase II	This project continues ongoing efforts with local communities and agricultural stakeholders to balance beneficial uses of water resources in San Mateo County.	$1,400,000
Shoreline Resilience – Sea Level Rise Preparedness	State Coastal Conservancy	San Francisquito Creek Flood Protection and Ecosystem Restoration Project	The project goals are to protect against concurrent 100-year riverine floods, 100-year high-tides, and sea-level rise while restoring 18 acres of tidal marsh.	$1,044,351
	State Coastal Conservancy	Mountain View Shoreline Portion of SBSPR Project	This project in Mountain View includes 710 acres of tidal marsh and upland habitat restoration and critical flood risk management infrastructure for residences and businesses.	$4,807,998
	State Coastal Conservancy	Eden Landing Portion of SBSPR Project	The Eden Landing project involves restoration of over 1,300 acres of tidal marsh, levee improvements to decrease flood risk, and new public access trails.	$3,265,121
	State Coastal Conservancy	Novato Creek Flood Protection and Habitat Enhancement Project	The Novato Creek Flood Protection and Habitat Enhancement Project will provide flood protection for 870 acres of land and restore 30 acres of wetland habitat.	$3,551,607
Administration	Association of Bay Area Governments /SFEP	Grant Administration	This task ensures that IRWM grant funds for the nine projects are properly managed, that projects are completed, and that schedules are met within budget.	$1,858,745
			Proposal Total	$41,305,435

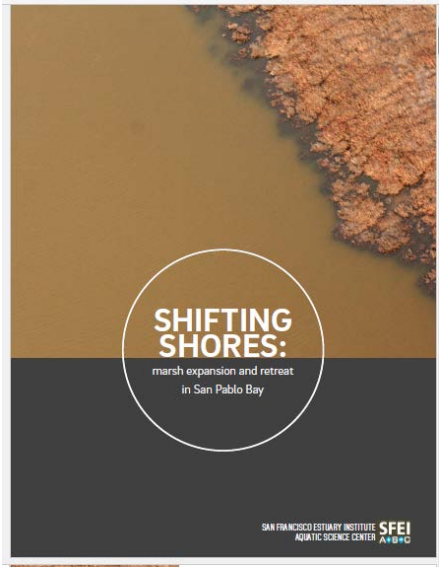
IRWMP Round 2 and Round 3 Update

Our Round 2 projects (20 projects, $20,000,000) are well underway, and we are compiling the third quarterly report and invoice package for DWR. We coordinated with DWR on a first amendment to the agreement to incorporate updates to project budgets and schedules, and will be rolling out updated agreements with each Local Project Sponsor soon. DWR has complimented the quality of our submittal packages, noting that they are very clean and well organized with minimal issues needing resolution.

Processing delays at DWR continue to occur, but we are working with them to expedite to the extent possible.

We executed an agreement for the Round 3 projects with DWR on July 20, 2015. That agreement covers 11 projects and $32,178,423.00 in funding. We issued an RFQ for project support services for our IRWMP project support services which closed August 15, and we look forward to bringing a consultant or team on board to assist us with organizing and reviewing submittals.

Estuary 2100 Phase 2 Project Completions: SFEI's Shoreline Change report available



Using funding from EPA's Bay Water Quality Improvement Fund that was managed by SFEP, SFEI mapped the location of the shorelines in San Pablo Bay at three points in time: 1855, 1993, and 2010. SFEI then measured rates of change over the long (1855-1993) and short-term (1993-2010) to identify zones of erosion, progradation, and areas that have remained stable. The report's purpose is to increase understanding of the rate, distribution, and mechanisms of marsh edge shoreline erosion and describe current understanding of changes of the mudflat-marsh transition, describe several types of shoreline edges, and provide recommendations for next steps in tracking shoreline change. See http://www.sfei.org/projects/shorelinechange

Fremont Tree Well Filters Project Complete: In 2012, the City of Fremont installed two Tree Well Filters (TWFs) on Osgood Road to improve city aesthetics and treat urban runoff. Two distinct TWF configurations were designed and built side-by-side so that they could be tested against one another for efficacy of pollutant removal and maintenance costs. The San Francisco Estuary Institute monitored both Tree Well Filters over a series of storms in order to:

- Qualitatively assess whether the TWFs were treating stormwater runoff at rainfall rates up to 0.2 in/hr, estimated to be equivalent to 80% of the total annual rainfall;
- Quantitatively assess whether the TWFs reduced pollutant concentrations in water entering the storm drain system;
- Compare the effluent concentrations exiting the TWFs to findings from other studies of Low Impact Development performance.

Fremont Tree Well Filters | LID Performance on a Redeveloped Urban Roadway

Site Summary	Project Features	Subsurface-Loaded	Surface-Loaded
The Fremont Low Impact Development Tree Well Filter pilot project retrofitted a moderate density urban feeder street with green stormwater infrastructure to improve city aesthetics and treat urban runoff to remove PCBs, mercury, copper and trash as mandated in the Municipal Regional Stormwater NPDES Permit (MRP). Two tree well filter designs were trialed: one that receives stormwater at the surface of the tree well (surface-loaded), and the other is a City of Fremont-designed subsurface-loaded filter system that receives runoff one foot below the surface. The tree wells were monitored over a series of storms to evaluate their effectiveness at reducing pollutant concentrations.	Year Constructed	2011	
	GI Elements	Subsurface and Surface loaded Tree Well Filter bioretention systems	
	Drainage Management Area (ft^2)	8,880	8,650
	% of Impervious Area Converted to GI	4%	4%
	Monitoring Period	2011/12 visual observation; 2012/13 and 2013/14 winter season stormwater quality monitoring	
	Land Use(s)	Minor arterial road; office buildings and light industrial properties	
	Parameters/Analytes Measured	Rainfall, turbidity, conductivity, SSC, total and dissolved Hg, total MeHg, total and dissolved Cu, PCBs, total nitrogen, nitrate, total phosphorous, dissolved orthophosphate and ammonia	

Figure 1. A) Subsurface-loaded tree well filter, B) surface-loaded tree well filter, and C) regional aerial of southeast and South San Francisco Bay showing location of tree well filters in the urban Fremont area.

Highlights:

- The tree well filters (TWFs) likely meet the flow and volume reduction targets.
- The TWFs reduced the concentrations of a range of pollutants but some nutrients appeared to be sourced from the TWFs.
- The magnitude of water quality performance is dependent upon influent concentrations; the use of LID for improving water quality in relatively clean landscapes will likely yield lower performance.

Results from this study show that TWFs likely meet the flow and volume reduction targets, while reducing the concentrations of a range of pollutants, even

though some nutrients appeared to be sourced from the filters. Details can be found in the Site Report and Technical Report. A report from the City of Fremont on the Operations and Maintenance aspects of the project will be coming soon.

Implementing Sediment and Pathogen TMDLs in Southern Sonoma County

Another E2100-2 project funded by the US EPA Water Quality Improvement Fund was recently completed: the Sonoma RCD worked with various landowners, of both vineyards and grazing lands, in workshop and individual consulting capacities to provide information and technical assistance in implementing BMPs to reduce sediment and pathogen loading into Sonoma watersheds. In addition, the Sonoma RCD implemented a restoration project on private lands in Sonoma County with the goal of reducing the erosion rate of an incising gully within an unnamed tributary of Sonoma Creek. This restoration was a success with an estimated 75% reduction in annual gully erosion for the project site in addition to a half acre of native plant revegetation at a success rate greater than 90%.

Figure 1: Pre-implementation, facing East

Figure 2: Post-implementation, facing West

Outreach

Administrative Wrap-up of Original Boating Education and Outreach Program

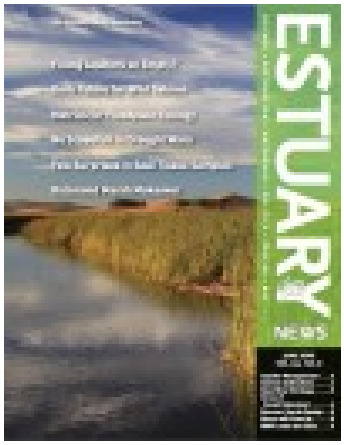
SFEP's long-running boating outreach project has worked with boaters and marinas to reduce sewage discharge though education and outreach for over 10 years. This grant was closed out and completed on June 30th of this year (to be continued, and enhanced, through new funding from Boating and Waterways; see New Funding section). We are proud of the program's accomplishments:

- Boat Show tabling events: 12
- Videos produced: 2
    - Total views as of 2015: 6,781
- Articles written: 10
- Pumpout surveys completed: 23
- Hour meters installed: 59
- Pumpout nozzles distributed: 24
- Honey Pot Day events: 11
    - Total gallons captured: 9,043

  - Vessels serviced: 309
  - Total participants: 593
- Maps printed and distributed: 102,000

Friends of the Estuary Secures Freshwater Flow Resolution from East Bay Municipal Utility District
On July 28, the East Bay Municipal Utility District (EBMUD) Board passed a resolution on the importance of improved freshwater flows and flow patterns, water quality, and habitat to the well-being of the Estuary and the quality of life of EBMUD's customers. "EBMUD remains committed to the environmental health of the San Francisco Bay-Delta Estuary," says EBMUD Board member Doug Linney. "This resolution reinforces our commitment to supply water to our customers while protecting fisheries and wildlife habitat." This resolution joins similar resolutions passed by the Association of Bay Area Governments, six Bay Area counties, two water districts, and the City of Emeryville. For more information on passed resolutions, visit Friends of the San Francisco Estuary.

Estuary NEWS
As the drought tightens the screws on human use of California's evaporating water supply, conservation, restoration and collaboration grow ever more important. This issue explores some current opportunities for constructive action, from using empty aquifers as reservoirs to restoring marshes so they are "retreat-ready" for sea level rise and giving river floodplains more than another layer of rip rap. Other stories cover the darkening future of California's Chinook salmon, the lack of evidence that delta smelt can be blamed for stealing anyone's water, and a kitchen-sink test for emerging contaminants. Read the issue at http:/www.sfestuary.org/estuary-news.



		GOAL 1: Sustain and Improve Habitats and Living Resources of the Estuary			GOAL 2: Increase the Resiliency of the Estuary to Sustain Functions in the Face of Changing Climate Conditions			GOAL 3: Improve Water Quality and Increase Water Quantity to the Estuary			GOAL 4: Champion the Estuary		
		Objective a. Protect, restore, and enhance environmental conditions and processes that support self-sustaining natural communties	**Objective b. Eliminate or reduce threats to natural communities**	**Objective c. Conduct scientific research and monitoring to measure status, develop and refine management actions, and track progress**	**Objective d. Increase resilience of tidal habitats and tributaries to climate change**	**Objective e. Increase resilience of communites at risk from climate change impacts while promoting and protecting natural resources**	**Objective f. Promote integrated, coordinated, multi-benefit approaches to increasing resiliency**	**Objective g. Increase drought-resistance and water efficiency and reduce demand on imported water**	**Objective h. Improve freshwater flow patterns, quantity, and timing to better support natural resources**	**Objective i. Reduce contaminants entering the system and improve water quality**	**Objective j. Build public support for the value of natural resources and the need to protect, restore and maintain a healthy Estuary**	**Objective k. Build on regional leadership and support to protect, restore and maintain a healthy Estuary**	**Objective l. Promote efficient and coordinated regional governance**
	ACTIONS												
1	Develop and Implement watershed approaches to comprehensive aquatic resource protection	X	X	X	X	X	X						X
2	Protect, restore and enhance tidal marsh and tidal flat habitat	X	X		X	X							
3	Identify, inventory and protect transition zones	X	X		X								
4	Maximize habitat benefits of managed wetlands/ponds	X	X	X									
5	Protect, restore and enhance subtidal habitat	X	X		X	X							
6	Protect, restore and enhance riparian habitat	X	X		X	X							
7	Protect and restore critical coldwater habitat in tributary streams	X	X										
8	Establish a regional wetland and stream monitoring and assessment program	X	X	X			X						
9	Protect, restore and enhance seasonal wetlands	X	X										
10	Minimize the impact of invasive species		X										
11	Increase the efficacy of predator management		X	X									
12	Increase carbon sequestration through wetland restoration, creation and management	X		X	X		X						

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	ACTIONS												
13	Restore Estuary-watershed connections for multiple benefits	X	X	X	X	X	X						
14	Manage sediment with a regional comprehensive approach that advances beneficial use of dredged or excavated material	X		X	X	X	X						
15	Demonstrate how restored habitats serve as "natural infrastructure" that provide multiple benefits	X	X	X		X	X						
16	Advance natural resource protection while increasing shoreline community resiliency		X			X							
17	Integrate natural resource protection into local government hazard mitigation, response and recovery planning		X			X							
18	Improve regulatory processes regarding permitting and monitoring innovative multi-benefit projects						X						X
19	Develop long-term drought plans							X					
20	Reduce landscape water use							X					
21	Increase water recycling						X	X	X				

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	ACTIONS												
22	Change public's perception of the value of water to achieve long term reduction of water use							X					
23	Implement indirect potable reuse standards and public acceptance of direct potable reuse							X					
24	Assess potential application of constitutional standard of waste and unreasonable use in the Bay-Delta Estuary								X				
25	Integrate water issues into the updated Plan Bay Area and Delta Sustainable Communities Strategies							X	X	X			
26	Adopt new Bay-Delta freshwater inflow/outflow standards that better protect all beneficial uses								X				
27	Increase agricultural water use efficiency							X	X				
28	Identify and work to eliminate illegal water diversions							X	X				
29	Address emerging contaminents									X			
30	Decrease raw sewage discharges									X			
31	Manage stormwater with Low Impact Development/green infrastructure practices					X	X			X			

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	ACTIONS												
32	Implement select Total Maximum Daily Loads (TMDLs)									X			
33	Manage nutrients in the Estuary									X			
34	Reduce trash input into the Estuary									X			
35	Develop and expand public involvement, education and advocacy efforts that support CCMP goals										X		
36	Foster support for natural resources by provide public access and recreational opportunities while avoiding wildlife impacts		X								X		
37	Increase regional coordination among elected officials at all levels of government to support decisions and provide funding to implement the CCMP											X	X
38	Expand funding mechanisms to implement CCMP											X	X

2016 Comprehensive Conservation and Management Plan

DRAFT GOALS, OBJECTIVES AND ACTIONS

DRAFT – AUGUST 19, 2015

INTRODUCTION

This document includes draft goals, objectives and actions only. The complete draft CCMP will include general background information; findings that provide the framework for the goals, objectives and actions; and a section on tracking the success of the actions with specific metrics.

GOALS AND OBJECTIVES

GOAL 1:
Sustain and Improve Habitats and Living Resources of the Estuary

OBJECTIVES:

a. Protect, restore and enhance environmental conditions and processes that support self-sustaining natural communities

b. Eliminate or reduce threats to natural communities

c. Conduct scientific research and monitoring to measure status of natural communities, develop and refine management actions, and track progress towards management targets

GOAL 2:
Increase the resiliency of the Estuary to sustain functions in the face of changing climate conditions

OBJECTIVES:

d. Increase resilience of tidal habitats and tributaries to climate change

e. Increase resilience of communities at risk from climate change impacts while promoting and protecting natural resources

f. Promote integrated, coordinated, multi-benefit approaches to increasing resiliency

GOAL 3:
Improve Water Quality and Increase Water Quantity to the Estuary

OBJECTIVES:

g. Increase drought-resistance and water efficiency and reduce demand on imported water

h. Improve freshwater flow patterns, quantity, and timing to better support natural resources

i. Reduce contaminants entering the system and improve water quality

GOAL 4:
Champion the Estuary

OBJECTIVES:

j. Build public support for the value of natural resources and the need to protect, restore, and maintain a healthy Estuary

k. Build on regional leadership and support to protect, restore and maintain a healthy Estuary

l. Promote efficient and coordinated regional governance

ACTIONS

ACTION 1 **Develop and Implement watershed approaches to comprehensive aquatic resource protection**	***Action still under development*** ACTION DESCRIPTION: Develop and implement a regional approach to watershed-based environmental protection that coordinates planning, permitting, operations, monitoring, and public reporting for water quality control, flood control, water supply management, natural resource extraction, and habitat conservation to protect the lands and waters of the region and the life they should support. Task 1: Develop a White Paper identifying current regional watershed efforts that best model this action; evaluate a set of watersheds that could be used as pilots for this action and based on this review, select 1-3 pilot watersheds. Milestone: Report completed September 2016 Task 2: Conduct a pilot project in one to three watersheds through a forum of federal, state, regional, and local public agencies most responsible for environmental health to: develop and publish historical (pre-settlement) and present-day profiles to define the current abundance, diversity, and condition of land and water habitats; develop and map alternative future profiles that meet environmental management mandates and regulatory requirements; identify best available regulatory mechanisms that encourage and allow coordinated environmental health improvements (possible regulatory mechanisms to consider include cap-and-trade, watershed-based permitting, permit bundling, pollution offset credit trading, alternative compliance, in lieu fees, scaled compliance and effectiveness monitoring, and mitigation banking); and create a mechanism to work more closely on achieving the preferred alternative future watershed profile to recommend ways to apply lessons learned from the pilot throughout the region. Milestone: Pilots completed by 2021
BACKGROUND	Public agencies that administer federal or state laws governing the relationship between people and the environment face two severe threats. Threat one is that the rate at which future climate change and human population growth will alter large-scale environmental processes and baseline levels for ecosystem services will exceed the rate at which environmental regulatory and management agencies can effectively respond through conventional, localized, uncoordinated, individual actions. Threat two is that these agencies are prevented from effectively addressing climate change and population growth by the lack of consistency and coordination among their policies and programs. An important aspect of these threats is that they vary among the watersheds, which also vary in their resiliency to the threats. This will inevitably lead to tradeoffs in ecosystem services between watersheds, which cannot be made except in a regional context. Responsible agencies at all levels of government need to collaboratively implement a regional approach to watershed-based planning and management to develop complimentary local numerical objectives for water supplies, water quality, flood control, natural resource extraction, and habitat conservation in the context of climate change and human population growth. In aggregate, these objectives, plus coordinated plans to achieve the objectives, plus a system to track implementation efforts, plus the assessment and reporting of progress, plus adaptive adjustments in the objectives to reflect new understanding and changing conditions comprise a science-based, democratized health care system for our watersheds.
OWNER(s)	US EPA, USACE, NOAA, USFWS, State Water Resources Control Board, CA DWR, CDFW, SFBRWQCB, CVRWQCB, BCDC, DSC, SCC, Delta Conservancy, Special Districts (e.g., RCDs, Open Space Districts, Park Districts, Water Agencies, Flood Control Agencies, Irrigation Districts), county and municipal planning departments, academic institutions, scientific NGOS.

ACTION 2 **Protect, restore and enhance tidal marsh and tidal flat habitat**	ACTION DESCRIPTION: Restore tidal marsh and tidal flat habitats within the Estuary for multiple ecosystem benefits including recovery of threatened and endangered species. Task 1: Restore tidal habitat in the Estuary. Restoration projects in the Bay include those identified in the 2013 *Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California* Maps as "near-term tidal restoration – lands for which restoration plans have been completed and which are slated for tidal restoration within the next five years." Milestones: Restore 15,000 acres of tidal habitat in the Bay by 2021; Restore 8,000 acres of tidal habitat in the Delta by 2021 Task 2: Protect land to support preservation and enhancement of tidal habitats. Protected land may include acquiring additional land within the approved acquisition boundary of the San Francisco Bay National Wildlife Refuge Complex as well as other key parcels in the Estuary. Milestone: Protect 500 acres by 2021 acquired or protected through various mechanisms including transfer of fee title, condemnation, donation, or easement.
BACKGROUND	Tidal marshes--including those found in the San Francisco Bay-Delta Estuary (the "Estuary")--provide a wide array of ecosystem services. They provide habitat and support food webs for wildlife, stabilize shorelines and protect them from storm damage, store floodwaters and maintain water quality, preserve biodiversity, store carbon, and offer profound opportunity for scientific study, education, recreation, and aesthetic appreciation. For the Bay, the 1999 *Baylands Ecosystem Habitat Goals Report* set a goal for long term tidal marsh of 100,000 acres. This goal was the culmination of science-based public process that sought to evaluate the habitat needs of representative species and to identify changes needed to improve the Bay's ecological functioning and biodiversity. It is approximately half of the tidal marsh area that existed in the Bay at the beginning of the 19th century. The 2015 State of the Estuary Report calculates there is currently approximately 51,300 acres of tidal marsh in the Bay. The milestone of 15,000 acres in the task was derived from the list of active projects in the San Francisco Bay Joint Venture's Project Tracker and represents an ambitious, but achievable outcome based on project status. No similar quantitative long term restoration goal exists for the Delta as does for the Bay from the Baylands Goals Report. Historically, there were approximately 360,000 acres of tidal marsh that existed in the Delta. The 2015 State of the Estuary Report calculates there are currently approximately 8,000 acres of tidal marsh in the Delta. Through the California Natural Resources Agency, California EcoRestore is an initiative to help coordinate and advance critical habitat restoration in the Sacramento-San Joaquin Delta over the next four years. California EcoRestore's initial goal includes restoration of 9,000 acres of tidal and subtidal habitat. The action, however, references the 8,000 acres of tidal restoration in the Delta is required within the U.S. Fish and Wildlife Service Delta Smelt Biological Opinion (USFWS 2008) and referenced in the National Marine Fisheries Service Salmonid Biological Opinion (NMFS 2009), for coordination of the State Water Project (SWP) and the federal Central Valley Project (CVP).
OWNER(S)	SF Bay Joint Venture, Delta Conservancy, Coastal Conservancy, CDFW, USFWS

ACTION 3 **Identify, inventory and protect transition zones**	ACTION DESCRIPTION: Identify, inventory and protect existing and projected transition zones to accommodate upslope wetland migration and sustain tidal marshes under multiple sea level rise scenarios. Task 1: Identify funding and lead to identify and inventory existing and projected transition zones based on existing and planned tidal marsh habitat, land use and ownership, elevation, and other criteria Milestone: Inventory completed by 2016 Task 2: Protect identified transition zones through acquisition of fee title or partnerships to develop conservation easements or other management agreements Milestone: 10 of identified sites are protected or planned for protection by 2021 Task 3: Include creation of transition zones in tidal restoration projects where feasible Milestone: Inclusion of transition zones in 5 tidal restoration projects by 2021 ***Note: metrics in milestones needs review***
BACKGROUND	***Background section needs additional work*** With sea level rise, tidal marshes will need to migrate upland. Planning for that migration includes using projections of sea level rise and other changes to identify shifts in habitat location and connectivity over time. Existing and projected transition zone lands need to be identified and acquired or protected where feasible. A collaborative transition zone assessment program is recommended in the Baylands Habitats Goals Science Update (BEHGU) that would include potential transition zone assessment, project tracking, performance evaluation, applied research, and public reporting. BEHGU recommends developing a map of the full extent of transition zones as defined in the report and standardizing methods to assess existing and restored transition zones. In addition, the report recommends establishing a team of technical experts to advice transition zone design, restoration, management, and assessment. The Tidal Marsh Recovery Plan action 1.2 states "Based on the imminent and severe threat of sea level rise, the most important action for preserving natural and restored marshes is to allow for the landward transgression of high marsh zones onto bordering broad, sloping plains. Therefore, special focus should be placed on acquisition/protection of adjacent, undeveloped lands not yet serving as habitat." ERP conservation strategy also discusses importance of transition zones and a habitat map that includes transition habitat.
OWNER(s)	JV, others

ACTION 4 **Maximize habitat benefits of managed wetlands/ponds**	ACTION DESCRIPTION: Maximize habitat benefits of managed wetlands/ponds for all species. Focus near term actions on better understanding bird use of managed ponds as well as the long term efficacy of managed ponds as habitat. Task 1: Manage islands and levees and adjacent water levels in managed wetlands/ponds to provide increased nesting, foraging, roosting, and high tide refuge habitat for birds and analyze response of birds to specific measures with collection and analysis of monthly bird surveys in the Bay. Milestone: Produce a yearly report beginning in 2016 on bird response to specific management measures employed at ponds in the Bay. Task 2: Study the efficacy of managed wetlands/ponds on their ability to sustain waterbird numbers in the Bay by analyzing regional waterbird monitoring data with regard to managed pond use and density over time as compared to other habitats. Milestone: By 2020, produce report comparing bird use of various habitat types in the Bay. Task 3: Develop a methodology for assessing the long term costs and benefits of managed wetlands/ponds including habitat benefits for multiple species and maintenance requirements in response to impacts of climate change such as sea level rise. Milestone: By 2020, collaborative development and implementation of methodology
BACKGROUND	Managed wetlands/ponds are typically shallow open water habitat with managed tidal inputs. Managed wetlands/ponds provide habitat for a variety of wildlife species, including fish, birds and invertebrates. The water depth and salinity in the ponds affect the types of birds, fish and invertebrates that live in the ponds. Managed ponds can provide feeding, roosting (resting) and breeding areas for a variety of waterbird species, and optimizing ponds for specific birds requires continual active management, evaluation and response. Managing large areas for very targeted water depths and salinity is a time and resource intensive effort that will only grow more challenging in the face of sea level rise. Key uncertainties remain regarding bird use of managed ponds including the ability of managed ponds to sustain waterbird numbers over time. These uncertainties and ecological and economic trade-offs must be assessed in conjunction with other regional planning efforts such as the Tidal Marsh Recovery Plan and the Baylands Ecosystem Habitat Goals Update Report. As part of the South Bay Salt Ponds Project, monthly bird surveys have been conducted since 2003 to evaluate responses to changes in habitat and a Pond Management Working Group comprised of bird researchers and managers meets regularly to fine tune management responses.
OWNER(S)	SCC, CDFG, USFWS, USGS

ACTION 5 **Protect, restore, and enhance intertidal and subtidal habitats**	ACTION DESCRIPTION: Restore and enhance intertidal and subtidal habitats in the Estuary Task 1: Increase populations of native eelgrass (*Zostera marina*) by increasing the coverage of existing beds or establishing new beds. Milestone: Identify appropriate and feasible sites, secure funds and implement restoration projects to increase eelgrass coverage in the Bay by 25 acres by 2021. Task 2: Increase population of native oyster (*Ostrea lurida*) by increasing the coverage of existing beds or establishing new beds. Milestone: Identify appropriate and feasible sites, secure funds and implement projects to increase native oyster bed coverage in the Bay by 25 acres by 2021. Task 3: Identify appropriate and feasible sites, secure funds, and implement other intertidal/subtidal restoration projects, including rocky intertidal, sand beach, macroalgal bed, and living shorelines and other integrated habitat approaches. Milestone: Implement 5 projects by 2021 that focus on rocky intertidal, sand beach, macroalgal bed, and/or living shorelines and other integrated habitat approaches in the Bay.
BACKGROUND	Intertidal and subtidal habitats are a critical component of the Estuary ecosystem. In addition to tidal wetlands, intertidal habitats can include mudflats, rocky areas, sand beaches, macroalgal beds, oyster and eelgrass beds. Eelgrass performs a wide variety of functions. Eelgrass provides shelter and food for many species of birds both directly and indirectly. Eelgrass is also used as a preferred substrate for spawning by Pacific herring. Eelgrass beds also dampens wave energy and slow currents in a manner that results in trapping sediment, reducing turbidity, and protecting shoreline area from erosion. Shellfish beds provide several ecosystem functions and support several ecosystem services. The small native Olympia oysters can be considered a "foundation species" or ecosystem engineer, altering their environment by increasing bottom roughness, reducing current speeds, and as a result, trapping sediments. Oysters also increase physical heterogeneity, which can increase diversity of other marine invertebrates and also result in higher fish diversity and abundances than in neighboring, less complex habitats. Increased abundance of native oysters can locally increase the number of other benthic invertebrates. With their associated invertebrates, oysters provide food for fish, birds, and crabs. The Olympia oyster has declined at many estuaries in its native range along the Pacific coast from Baja California to British Columbia. The San Francisco Bay Subtidal Habitat Goals Report (Subtidal Goals Report) produced in 2010 contains restoration goals for native eelgrass and oysters in San Francisco Bay. The Subtidal Habitat Goals report includes the goals of increasing eelgrass and oyster populations in the Bay within 8,000 acres of suitable subtidal/intertidal area over a 50-year time frame using a phased approach under a program of adaptive management. The benchmarks under the phased approach are to increase eelgrass and oyster coverage by 25 acres within 5 years, 100 acres within 10 years, and up to 8,000 acres within 50 years. The Subtidal Goals Report also contains protection and science goals for intertidal/subtidal mudflats, rocky areas, sand beaches, artificial structures, and macroalgal beds.
OWNER(S)	Coastal Conservancy, NOAA, Joint Venture

ACTION 6 **Protect, restore, and enhance riparian habitat**	ACTION DESCRIPTION: Protect, restore and enhance riparian habitat by providing tools to identify and implement riparian restoration projects. This action supports Bay Area watershed management by compiling and mapping information to inform and improve aquatic resource management and regulation across public policies, programs, and projects to protect, restore, and improve habitat conditions, ecosystem functions, and natural stream processes. Task 1: Upload relevant riparian assessment findings, constructed riparian project information, and potential future riparian project information to the SF Bay Joint Venture's Project Tracking Tool linked to EcoAtlas (done by individual project proponents) Milestone: on-going, starting January 2016 Task 2: Establish technical advisory working groups to identify data gaps, provide guidance on assessment and restoration design tools, and establish appropriate "Riparian Criteria" for developed and un-developed watersheds conditions Milestones: Riparian Criteria established by September 2017; continue development of sub-regional restoration design curves (as funding becomes available) Task 3: Riparian Criteria applied by project proponents and/ or regional champions to identify "good" projects, help develop partnerships, and secure funding support for projects most "ready-to-go." Milestone: Project funding secured, starting January 2018 Task 4: Implement riparian restoration projects Milestone: X Projects funded and implemented, starting April 2019 and restoration of 20,000' of riparian habitat by 2021
BACKGROUND	Riparian areas modulate and filter stormwater delivery to creeks, provide valuable habitat benefits for a wide range of wildlife taxa, and shade waterways, maintaining desirable water temperatures. Many or most mainstem channels and tributary reaches in the region are incised, for a variety of reasons, and the impact on habitat and the ability of eggs and juvenile fish to survive is seriously degraded, both in terms of the suitability of habitat and sufficient summer streamflow. *Channel condition and alignment* This action encourages protection and enhancement of natural and dynamic stream processes (such as channel migration) and acknowledges that some land uses on floodplain areas may need to be phased out over time or receive conservation easements. Projects that propose incision by raising bed-level should be scrutinized for potential flood risk increases. *Riparian corridor status* The action supports the inventory of riparian cover in key streams and stream reaches, identification of restoration priorities, which will guide riparian corridor improvement and expansion actions. The action envisions approaches based on specific, local conditions and limitations to improve overall condition. Information about riparian areas and restoration related actions have ancillary benefits for other CCMP actions. Status assessments that produce prioritized lists of watershed-specific riparian corridor enhancement projects also inform progress on reducing sediment and other contaminant input into streams, as well as reducing peaks in stormwater hydrographs.
OWNER(S)	SFBJV, CVJV, SFEI, BAWN, local governments, NGOs, SFEI with input from SFBJV

ACTION 7 **Protect and restore critical coldwater habitats in tributary streams**	ACTION DESCRIPTION: Identify, assess and map critical coldwater habitats to provide planners with the basis for defining and prioritizing streamflow conservation and enhancement opportunities on high value streams. Protect the sources of flows that maintain dry season aquatic habitats, particularly pool habitats in upstream areas. Task 1: Use available and newly-developed information to assemble a regional GIS database of streams and stream reaches in the Estuary that support salmonid populations and opportunities to protect and increase genetic diversity and resilience (including amphibian and reptile species of concern mapping). The database will also include potential priority protection and restoration areas in both rural and urban watersheds of all sizes. Milestone: Completed GIS database by 2017 Task 2: Using the database, complete an assessment of the relative importance of the stream and creek flows around the region that contribute to, or could contribute to existing or possibly reintroduced steelhead and salmon populations. Milestone: Completed assessment and report by 2018 Task 3: Where critical streamflow information is not available, establish required new gauges and surveys in a select number of important tributaries in the region. Milestone: New gauges and surveys established by January 2018 Task 4: Establish minimum flow requirements for prioritized streams and stream reaches. Milestone: Set flow standards by 2019
BACKGROUND	The database will be the basis for decision-making and tracking regarding conservation and enhancement of coldwater resources. The database should be housed at an institution with the skills, support and reputation to establish and maintain the GIS, and to coordinate with various stakeholders to add new layers and produce maps and shape files for their and the public's need. With iconic fish species struggling for survival in the regional watersheds in the Bay region, an effort is needed to locate and map the Bay Area's most important coldwater habitat resources. This work should account for three factors related to protecting and enhancing streamflow in priority aquatic habitats: sources, instream flow need (IFN) and impairment (i.e., direct diversion and groundwater withdrawals that can be associated with changes in streamflow). Each of these factors relies on the existence of streamflow data; therefore this work should also include the costs of purchasing, installing, calibrating, and maintaining new gauges through a coordinated effort aimed at collecting the minimum information required to inform management of critical surface and groundwater resources. Ongoing research by consultants, agencies, academics and non-governmental organizations will be used to refine the identified coldwater habitat resources. For example, data from salmonid outmigrant trapping efforts reveal areas most likely to produce steelhead smolts—and therefore areas having the most desirable aquatic habitat conditions in relation to stated management goals. Once established, the areas should be considered the primary focus of a regional program that protects and restores their ecological function, particularly in relation to streamflow, channel condition and alignment, and riparian corridor health.
OWNER(S)	SFEP, CDFW, CEMAR, NOAA, RCDs, and local water and parks and open space districts

ACTION 8 **Establish a regional wetland and stream monitoring and assessment program**	***Action under development*** ACTION DESCRIPTION: Plan and implement a Bay-Delta Regional Watershed Monitoring and Assessment Program to provide local, regional, state, and federal agencies with essential data and information needed to assess compliance and effectiveness of policies, programs, and projects intended to sustain a healthy aquatic resources, where the regional watersheds in aggregate include all the shallow subtidal and intertidal areas of the Estuary, and all the lands draining to these areas within the counties of Santa Clara, San Mateo, San Francisco, Marin, Sonoma, Napa, Solano, Yolo, Sacramento, San Joaquin, Contra Costa, and Alameda. This action accompanies ACTION 12. Task 1: Establish and Bay-Delta regional steering committee to oversee development of the Regional Watershed Monitoring and Assessment Program. Milestone: Report completed September 2016 Task 2: Identify the highest priority management and regulatory questions and decisions that will drive the monitoring and assessment program. Milestone: Report completed December 2016 Task 3: Develop a business model to fund the minimum program that is needed. Milestone: Report completed June 2017 Task 4: Initiate immediately needed, doable, and funded management of existing data and collection of new monitoring Milestone: Report completed September 2017
BACKGROUND	Large amounts of public funds and human resources continue to be invested in the protection, creation, restoration, and enhancement of natural aquatic resources in the region. Regional plans call for hundreds of thousands of acres of tidal marshlands and other kinds of wetland areas, as well as hundreds of miles of restoration of streams and riparian areas, while also calling for adequate flood control, indigenous water supplies, and new development to sustain local economies. These plans are being implemented as on-the-ground projects that alter the distribution, abundance, diversity, and condition of aquatic resources and their human uses. A regional monitoring and assessment program is needed to evaluate the performance of these and other plans based on the performance of their implementation projects. To track the progress of the projects, troubleshoot problems, and to assess the contribution of projects to the health status and trends of our ecosystems, projects need to be compared to each other and over time, relative to ambient or background conditions. These needs cannot be met at this time because projects are monitored in disparate and incomparable ways, plus there is little assurance of data quality, monitoring results are not readily available for analysis, and the ambient condition of most aquatic resources is unknown. While the Bay and Delta Regional Monitoring Programs systematically monitor water quality in the open waters of the Bay and Delta, and while Surface Water Ambient Monitoring Program provides basic information about the water quality of selected rivers and streams around the Estuary, there is no ambient monitoring of wetlands or riparian areas.
OWNER(S)	SFEP, Habitat Joint Ventures, IEP, USACE, USEPA, SWRCB, Region 2 and Region 5 Water Boards, Delta Conservancy, Coastal Conservancy, BCDC, Delta Science Program, USFWS Refuges,IEP, SFEI, USGS, Flood Control Agencies, Water Agencies, RCDs, Regional and State Parks

ACTION 9 **Protect, restore and enhance seasonal wetlands**	ACTION DESCRIPTION: Protect and restore seasonal wetlands (e.g.,…) within the region using conservation easements and related acquisition tools to maintain viable populations of rare plants and animals, sequester greenhouse gases, and to support ranching communities and regional food production through enlightened rangeland management ('working landscapes'). Task 1: Re-establish the Interagency Vernal Pool Stewardship Initiative among State and federal agencies, build relationships with land trusts and conservancies, landowners, Resource Conservation Districts, and municipalities, coordinate planning efforts, and leverage funding and investments (including loans from the Clean Water State Revolving Fund). Milestones: Form Task Force by September 2016; Task force report on conservation priorities for vernal pool habitats by 2017; 25% of the targeted acres in the process of being protected through easements and other agreements by 2018; Protect at least 1,000 acres of vernal pool landscapes in the San Francisco Bay region and an additional 5,000 acres in the Delta Region by 2021 Task 2: ***placeholder for other seasonal wetlands task***
BACKGROUND	***Seasonal wetlands intro*** Vernal pools are seasonal wetlands that occur when landscape depressions in grasslands and oak savannas underlain with impermeable soils fill with rainwater, floodwater, and/or shallow groundwater in the winter and spring, and then dry during the spring and summer. The extreme cycles of wetting and drying create optimal conditions for a diversity of native flora and fauna that are unique to California. The goal of this action is collaborate with public and private parties to identify, protect, and restore vernal pool landscapes in a manner that promotes sustainable grazing and livestock production. Vernal pools occur upon grasslands (rangelands) and across oak savannas that are at extreme risk of fragmentation, and conversion to cultivated agriculture and suburban development. These unique wetlands are an essential part of the Bay Delta's wetlands portfolio, but conservation work on these wetlands has lagged behind our collective work on other important aquatic habitats (e.g., freshwater marsh, riparian corridors, salt marsh). Vernal pools are protected by State and federal laws, and many of the plants and animals they support are listed under the State and federal Endangered Species Acts (CESA and ESA). Unfortunately, the mere existence of these laws has not prevented the large-scale destruction of vernal pool landscapes across California – primarily through the unauthorized conversion of rangelands to orchards, vineyards, and tree farms. Habitat loss and fragmentation is the single largest threat to the survival and recovery of sensitive species in the Recovery Plan issued by the U.S. Fish and Wildlife Service (the CDFW webpage below contains a link to the FWS Recovery Plan).
OWNER(S)	SFEP, JV, others

ACTION 10 **Minimize the impact of invasive species**	ACTION DESCRIPTION: Reduce the impact of non-native and native invasive species invasions into the Estuary through prevention, early detection, rapid response, eradication, and control. Conduct work with national and regional coordinating bodies and the key agencies implementing specific programs. Task 1: Expand and improve prevention programs for invasive species. This may include developing new policies and programs, and/or conducting more outreach to targeted communities. Key aquatic issues include improving the ballast water management program, improving management of recreational boats moving species overland (via boat trailers), and preventing introduction and spread of fouling species along the coast (via several vectors). Milestone: Develop and refine policies, coordination and streamlined programs throughout the western region, increase outreach, and identify priority activities by 2021. Task 2: Increase early detection, monitoring, and rapid response in the region. Assess and map estuary wide distribution of key invasive species. Improve on the Calflora website and expand it to wetland species and increase citizen reporting of species. Work with professional divers associations and train them to detect new invasive species as they are cleaning boat bottoms. Increase the amount of scientific monitoring to measure the number of new species coming into the region. Milestone: Identify funding sources for early detection, monitoring, and rapid response by 2021. Task 3: Implement eradication and control programs with priority given to species detected early, species that have a chance of being eradicated, and species that have extensive impacts on key habitats. Key invasive species that are currently being addressed include, but are not limited to, the following: invasive *Spartina*, *Lepidium*, water hyacinth, *Egeria*, and *Arundo donax.* Eradication and control programs should be assessed on a regular basis to determine the overall effectiveness of the program and potential impacts to threatened and endangered species. Climate change should also be taken into account developing and implementing eradication and control programs. Milestone: Number of species with populations reduced or eradicated by December 2021. Number of acres of invasive species removed of key species by 2021. Task 4: Increase specificity in permit language requirements for restoration projects with non-native plant monitoring requirements. Confirm that Best Management Practices are shared for species where they exist (ex: Invasive *Spartina* Project Best Management Practices 2010), and that % cover requirements are appropriate to individual species Milestone: Number of permits with improved non-native plant requirements, by r 2021.
BACKGROUND	Invasive species pose a threat to native species and habitats. Prevention is the best and most cost effective method to reduce the rate of invasion of new species, but management activities need to also include improving early detection programs (which could possibly allow for successful eradication) and to control invasive species that are impacting key habitats. The State Aquatic Invasive Species Management Plan, the State Weed Plan, and the State Strategic Framework for Preventing the Spread of Invasive Species, should be used as guidance documents along with the strategic plan for the Federal Aquatic Nuisance Species Task Force. Agencies should be prepared for rapid response if a species is detected, and determine if eradication and or containment is possible. In the state AIS plan, there is a Rapid Response Plan, but there is limited money for training, and limited money for implementation.
OWNER(S)	SFEP, SLC, CDFW, CDFA, DBW, Water Boards, NOAA, USFWS, USCG, US EPA, USDA, US ACE, SCC

ACTION 11 **Increase the efficacy of predator management**	ACTION DESCRIPTION: Increase the efficacy of predator management to promote healthy populations of wildlife. Task 1: Assess and guide predator management on publicly-owned conservation lands that support threatened and endangered species. • Develop protocol and data infrastructure for predator management activities including predator surveys • Assess predator management strategies in their ability to impact populations of listed threatened and endangered species (in particular Ridgway's rail, Western snowy plover, and California least terms), including including direct removal of predators as well as landscape alterations to reduce predator populations and access to habitat • Develop map of prioritized predator management needs (map will synthesize information regarding observed and predicted species-specific predator abundance and distribution, high tide refugia availability, and observed and predicted T and E species abundance) • Land managers implement more effective, targeted predator management strategies with the goal of increasing populations of target species. Milestone: Site-specific and strategy-specific predator management recommendations produced by 2017. The largest public conservation landowner, USFWS, begins implementing recommendations on Don Edwards NWR by 2018. Task 2: Develop a map showing priority areas in the San Francisco Estuary where actions can be taken to reduce feral cat predation on sensitive species, particularly Ridgway's Rail. • Cat predator threat assessment and opportunities map o Locations of known or suspected feral cat colonies and feeding stations o Identification of entity(s) maintaining each cat colony (individual, group sanctioned, or city/county authorized activity) o Jurisdictions of landowners with the authority and willingness to enforce law – map to include all landowners of marshes and adjacent areas o City and county cat-feed station laws o Critical Ridgway's Rail populations o Rail habitat suitability and high tide refugia layer o Housing and urban development layer, including landfills/transfer stations Milestone: Feral cat threat assessment and opportunities map produced by 2017
BACKGROUND	Feral cat colonies have become established in parks and other wildlife habitat areas often with the help of advocates. Unfortunately, many of these colonies create a source of predation on adjacent wildlife areas destroying vast numbers of birds and other small creatures. Through this action, high priority areas for predictor control will be defined and mapped. Conservation organizations will use the threat assessment and opportunities map to collaborate with others to increase the effectiveness of feral cat management and outreach for the purpose of increasing tidal marsh-dependent wildlife populations. ***Background to be expanded***
OWNER(S)	USFWS, Point Blue, CCC, EBRPD, CDFW

ACTION 12 **Increase carbon sequestration through wetland restoration, creation and management**	ACTION DESCRIPTION: Increase carbon sequestration through wetland restoration and creation projects. Focus near term tasks on converting subsided agricultural land to managed wetlands to reverse subsidence and to reduce greenhouse gases in the atmosphere by sequestering carbon and advancing scientific understanding of carbon sequestration. Task 1: Work with agencies and willing private landowners to identify appropriate sites, identify funding sources, and plan and implement projects to create managed wetlands on former agricultural lands in the Delta. Milestone: By 2017, convert 3,000 acres to wetlands in the Delta. Task 2***:*** Conduct applied research to inform better carbon and greenhouse gas management as part of restoration designs and management approaches. *[note – language comes from BEHGU]* Milestone: ***To be developed***
BACKGROUND	Long-standing farming practices in the Delta expose fragile peat soils to wind, rain and cultivation, emit carbon dioxide (CO_2) and cause land subsidence. To capture or contain the carbon, new wetlands can be created on agricultural lands. In doing so, they would begin to rebuild the Delta's unique peat soils, take CO_2 out of the atmosphere, and ease pressure on the Delta's aging levees. Carbon-capture farming works as CO_2 is taken out of the air by plants such as tules and cattails. As the plants die and decompose, they create new peat soil, building the land surface over time. The USGS and DWR have partnered on a pilot project on approximately 2000 acres that shows that it is highly feasible to use managed wetlands to sequester carbon and reduce subsidence. On deeply subsided Twitchell Island in the western Delta, USGS scientists recorded elevation gains and significant carbon capture has also been monitored. More studies are needed to determine the long term benefits and costs of created wetlands. Through the California Natural Resources Agency, California EcoRestore is an initiative to help coordinate and advance critical habitat restoration in the Sacramento-San Joaquin Delta over the next four years. California EcoRestore's initial goal includes creation of 3,500 acres of managed wetlands, specifically for subsidence reversal and carbon management, on Sherman Island, Twitchell Island and Staten Island. Challenges to that goal include land acquisition and resources for creation and management. The action includes a slightly reduced outcome of 3,000 acres converted over five years, both on public and private lands (based also on goals in the Delta Stewardship Plan). ***Add info/recs from BEHGU***
OWNER(S)	DWR, Delta Conservancy Bay Delta Conservation Plan implementers, Department of Fish and Wildlife, Department of Water Resources, and the Delta Conservancy

ACTION 13 **Restore Estuary-watershed connections for multiple benefits**	ACTION DESCRIPTION: Plan and implement multi-objective projects that enhance the array of habitat values, natural processes, and ecosystem services within the Head of Tide zones of tributary watersheds to the Bay and Delta floodplains. Potential benefits of integrated projects may include: tidal, floodplain, riparian, intertidal habitats such as rocky shorelines, subtidal habitats such as eelgrass and oyster beds, and open water habitat creation/restoration for a variety of aquatic and terrestrial species; flood control; water quality improvement; reduced wave energy; groundwater recharge; recreational opportunities; and sediment delivery. Task 1: Development and disseminate data, information and tools to assist the site selection and design of multi-objective projects, as part of the currently ongoing Flood Control 2.0 Project Milestone: Regional "toolbox" available online by September, 2016 Task 2: Use findings of various on-going projects, studies, research, and analyses to identify and select initial sites. Assess existing conditions against historic and projected conditions (including SLR) to develop appropriate project scopes and conceptual restoration designs for selected sites. Milestone: Project scopes and conceptual restoration designs for four sites by 2018 Task 3: Outreach to appropriate property owners and public entities to further develop restoration approach, permitting, and funding strategies. Milestone: Strategies for permitting and funding for four sites by 2019 Task 4: Secure funding from responsible parties (and grant programs as needed) to complete designs and construction documents and obtain necessary permits and approvals Milestone: Initiate implementation phase of two projects by 2021 Task 5: Develop a single integrated flood protection and floodplain habitat enhancement project for the Yolo Bypass. Milestone: Release an environmental document for an integrated Yolo Bypass project by 2017
BACKGROUND	The Estuary's connections to local creeks are integral to its health. Historically, these were the Estuary's natural deltas; places of high ecological diversity and complexity. These locations play a disproportionately important role in the sustenance of the Estuary's tidal marshlands, as the delivery points for watershed carbon and sediment. Over time these transition zones have been arrayed with levees, berms, transportation structures, and culverts that disrupt the natural hydrologic exchange and sediment delivery regimes that nourish complex habitat mosaics for native wildlife. In urbanized watersheds, it is not uncommon to find creeks connecting to the Bay through open or closed culverts. Historic patterns of interstate trade, travel, and parcel level development has infringed on lower watershed creek channel geomorphology and access to natural floodplains. With most urban watersheds fully developing after the placements of transportation infrastructure crossing local waterways, both ecological functions and community safety are impaired by hydraulic constrictions. By redesigning the tidal-fluvial interface we can supply sediment to re-create critical habitat features along marsh fronts, historic tributary deltas, and beaches, while simultaneously improving flood conveyance and re-establishing more resilient shorelines. Incorporating restoration of various habitat types including riparian, marsh and subtidal and intertidal habitats such as eelgrass and oyster beds can provide for additional ecosystem services including shoreline stabilization, water quality improvements and dampening of wave energy .Restoring natural floodplains can increase habitat, improve flood conveyance and recharge groundwater.
OWNER(S)	Flood protection agencies, SFEI, SFEP, BCDC, JV, BAECCC, Delta Conservancy

ACTION 14 **Manage sediment with a regional comprehensive approach that advances beneficial use of dredged or excavated material**	ACTION DESCRIPTION: Manage sediment comprehensively on a regional scale to assess Bay sediment processes, assesses human activities affecting sediment processes and includes best practices and an overarching strategy to manage human activities to enhance Bay habitats. Task 1: Identify funds and conduct research and monitoring to quantify all potential sediment sources to the Estuary and determine the sediment needs for maintaining current marshes, mudflats and managed ponds under various sea level rise projections Milestone: Study complete by 2017 Task 3: Strengthen the Long Term Management Strategy (LTMS) policies on beneficial reuse of dredged material by expanding the current "Sedi-Match" project's efforts to resolve logistical issues and match habitat projects and dredging/upland construction projects Milestone: Expanded and improved Sedi-Match by 2017 Task 4: Identify funding to pay the differential between least cost disposal methods and for offloaders to pump material to beneficial reuse sites. Milestone: Funding identified by 2017 Task 5: Identify funding and owner and undertake a pilot study for "seeding the mudflat." Experiment with placement of dredged material onto the Bay bottom and tracking its distribution into restored areas and existing marshes, and analyze potential negative effects on benthic environments. Milestone: Funding identified and pilot study complete by 2021 Task 6: Advance understanding of sand beach creation and sustainable replenishment projects as habitat for multiple species and as a shoreline erosion control and sea level rise adaptation strategy. Create (or enhance an existing) monitoring tool to identify potential sites for sand beach creation or replenishment projects and track completed projects. Use the tool to identify possible sites for a pilot project, and advance information about sand beaches to regulators and restoration community. Milestones: Release of monitoring and tracking tool- 2017; identify and pilot project location, coarse grain sediment source(s), and funds for implementation and begin implementation of pilot project by 2021; release of published materials, workshops, and presentations on sand beaches by 2020.
BACKGROUND	Estuary research has identified a recent significant decline in sediment supply to the Bay from the Delta. This decline has potential impacts to existing shorelines, beaches and marshes and implications for changed conditions in the water column. Management practices should be reconsidered, and potentially changed, to take advantage of the sediment activities that are ongoing to the benefit of ecological and human activities. Subsided wetlands need to be restored for the ecological health of the estuary, flood protection, to stabilize endangered species populations and to provide wildlife habitat. The ability to complete the direct placement of sediments on this restoration is a documented successful technique to accomplish the site's restoration goals. The limiting factor is often the availability of offloading equipment and the money needed to cover the incremental cost of placement. Research on sediment dynamics is needed, as are pilot projects to better understand beneficial reuse and dispersal of sediment. In addition, better coordination of projects that result in dredged or excavated sediment and restoration projects that need sediment is needed. "Sedi-Match," an outcome of the Flood Control 2.0 Project, includes a website to match projects as well as a forum to work through challenges of beneficial reuse of sediment. Sedi-Match can be further improved and expanded with further funding to better accomplish its goals.
OWNER(S)	LTMS, Joint Venture, Restoration practitioners, Flood Protection agencies, dredgers

ACTION 15 **Demonstrate how restored habitats serve as "natural infrastructure" that provide multiple benefits**	ACTION DESCRIPTION: Identify and help implement projects that demonstrate how tidal habitats and other ecosystems can serve as "natural infrastructure" to make the region more resilient to environmental stresses such as rising sea level, more frequent droughts, and water pollution. Specific approaches to wetlands restoration, living shorelines, horizontal levees, construction of high tide refuge islands, and active revegetation projects are all examples of natural infrastructure that can provide multiple biological and physical benefits. Clarify areas where ecosystem restoration can provide the most benefits, both independently and in hybrid applications with traditional engineering approaches, including shoreline protection, flood management, water storage, or wastewater treatment. Task 1: Develop a "primer" that describes how Bay projects can consider designs that optimize multiple benefits (flood protection, water quality, habitat restoration, recreation) rather than the tradition approach of single purpose projects. Milestones: Develop primer and implement outreach strategy for primer by 2016; Develop interim guiding principles for new projects, integrating multi-benefit approaches with existing guidance, plans, policies and regulations by 2017 Task 2: Develop best practices and design guidelines for natural infrastructure and hybrid approaches to designing working infrastructure that is integrated with habitat that can be used to develop projects that increase the resiliency and multiple benefits in regional ecosystems. Develop a system of shoreline typologies, and projections of future environmental conditions, that can be used to determine initial suitability of various best practices. Include guidance relating to cost and permitting, and develop a strategy for mainstreaming these practices. Milestones: Develop best practices guidelines that help achieve CCMP goals, and goals of regulatory agencies by 2017; Develop system of shoreline typologies, and use this to determine the suitability of various best practices among the different shoreline typologies by 2017; Integrate recommendations regarding suitability of various practices by typology into the guidelines by 2017 Task 3: Create a vision for the shoreline that embodies the expected evolution of the Estuary, the natural values it provides, and the needs and constraints of urban development (example is the Novato Creek Vision produced by SFEI). Overlay this vision onto the typologies developed in Task 2 to map the vision for particular reaches/watersheds, and use these maps to engage stakeholders. Milestones: Develop a vision for a specific section of shoreline and its watershed that integrates natural infrastructure, human development, and landscape processes by 2017; Present vision to local decision-makers and revise vision by 2018; Develop brief "how-to" manual for applying approach to other locations by 2018 Task 4: Construct pilot projects to will test and refine natural infrastructure approaches by applying the guidelines developed in Task 2. These pilot projects will verify the performance of multi-benefit restoration designs, and will include budget for monitoring, evaluation, and subsequent design refinement. Milestone: Identify, design, permit and implement three additional pilot projects in the Bay by 2021; update regional guidelines by 2021
BACKGROUND	"Natural infrastructure," sometimes also known as "green infrastructure" consists of a range of strategies that leverage natural processes to provide multiple benefits —such as flood protection, aquatic habitat, water quality, and carbon sequestration" – from preservation of natural systems to combinations of ecological restoration and engineered structures. *ADD MORE BACKGROUND*
OWNER(S)	SFEI, BCDC, SCC, BAECCC, JV, SFEP

ACTION 16 **Advance natural resource protection while increasing shoreline community resiliency**	ACTION DESCRIPTION: Advance protection of natural resources while undertaking work to increase the resilience of shoreline communities as risk from flooding and sea level rise. Task 1: Support local governments efforts to develop shoreline vulnerability assessments that include assessment of natural resources as an asset category. Milestone: Completion of vulnerability assessments for all 9 counties in the Bay Area by 2021 Task 2: Integrate resiliency into Plan Bay Area (Sustainable Communities Strategy) that includes protection of natural resources, laying the groundwork for a more comprehensive regional resilience/adaptation effort Milestone: Completion of resiliency chapter in Plan Bay Area by 2017 Task 3: Coordinate climate technical assistance programs to improve service to cities and counties and other key stakeholders and promote consistent quality and best practices in climate planning and implementation Milestone: Formation of multi-stakeholder Bay Area Climate Technical Assistance Task Force and development of work plan for coordinated climate technical assistance by 2016 Task 4: Coordinate deployment of grant resources in a coordinated and strategic manner, and to the highest and best use in advancing effective local and regional strategies to mitigate climate change and address climate impacts. Milestone: Report on coordinated efforts at BARC meetings - ongoing
BACKGROUND	The Bay Area Regional Collaborative (BARC) is a consortium of member agencies including the Bay Conservation and Development Commission (BCDC), the Association of Bay Area Governments (ABAG), the Metropolitan Transportation Commission (MTC) and the Bay Area Air Quality Management District (BAAQMD), that come together to address crosscutting issues of regional significance, with the ultimate goal of improving the quality of life for all Bay Area residents. The Bay Area Regional Collaborative provides a mechanism through which its member agencies can learn, explore, collaborate, incubate, coordinate, and communicate policies and best practices that agency leadership can decide to advance collectively and singularly, and in partnership with other local and regional stakeholders. Each of the Bay Area's regional agencies is deeply engaged in work to mitigate climate change and make the Bay Area more resilient to the impacts of a changing climate. The agencies are working together to create coordinated policies, increase efficiencies, leverage resources, and provide better services to local governments and special districts that are grappling with these issues. This collaborative work provides clear distinctions among the different roles and responsibilities of the four agencies in relation to climate; fosters linkages between regional, state, and federal programs; and communicates outcomes in a clear and coherent manner to regional stakeholders. BARC and its member agencies have joined in partnership with the California State Coastal Conservancy (SCC) to develop a shared understanding of local and regional risks and vulnerabilities to flooding and rising sea levels, while also developing – working closely with a broad and diverse range of local and regional stakeholders – the appropriate strategies and approaches, at the appropriate scales, to making our regional more resilient to a changing climate. l
OWNER(S)	Bay Area Regional Collaborative (BARC) and its member agencies including the Bay Conservation and Development Commission (BCDC), the Association of Bay Area Governments (ABAG), the Metropolitan Transportation Commission (MTC) and the Bay Area Air Quality Management District (BAAQMD). This effort also includes the State Coastal Conservancy who is a member of BARC's Resilient Shorelines Partnership

ACTION 17 **Integrate natural resource protection into local government hazard mitigation, response, and recovery planning**	ACTION DESCRIPTION: Provide technical support and resources that assists local governments in integrating natural resources into hazard mitigation, response, and recovery planning that results in planning, response and recovery plans that adequately consider the value of local natural resources for providing multiple benefits including habitat and flood protection Task 1: Complete hazard mitigation plans (in some cases integrated with climate adaptation plans) that include specific actions to protect natural resources and consider natural resources as protective functions that reduce hazard impacts and increase resiliency. Provide assistance as necessary to local governments to identify and assess natural resources as an asset. Milestone: Completion of twenty local (city or county) hazard mitigation plans that include natural resources as an asset category by 2021 Task 2: Completion of Disaster Recovery Plans that include Recovery Support Functions (modeled on FEMA's NDRF) for natural resources Milestone: Completion of ten local (city or county) Disaster Recovery Plans that include a Recovery Support Function for natural resources by 2021
BACKGROUND	Natural resources such as subtidal habitats, tidal marshes, and floodplains provide many important ecological services, including flood risk management. In addition, natural resources may be impacted by hazard events themselves as well as response and recovery efforts. The Federal Emergency Management Agency (FEMA) has developed a series of guides under a National Preparedness System. The objective of the guides is to achieve a shared understanding and a common, integrated perspective across all mission areas—Prevention, Protection, Mitigation, Response, and Recovery. FEMA's *National Mitigation Framework* points out that community resilience depends in part on "recognizing and communicating the reinforcing relationships between environmental stewardship and natural hazard risk reduction (e.g., enhancement of flood storage through wetland protection/restoration and holistic floodplain management)." In addition, FEMA is now integrating consideration of climate change into the Preparedness System. The Association of Bay Area Governments (ABAG) and the San Francisco Bay Conservation and Development Commission (BCDC) are working with Bay Area cities and counties to develop and update local resilience plans, aligning hazard mitigation, climate adaptation, and general plans. ABAG and BCDC are providing technical assistance to streamline the planning process and allow jurisdictions to more quickly get to implementation of identified actions. ABAG and BCDC are working to incorporating natural resources as an asset category to be assessed in terms of vulnerability and risk for both climate adaptation and hazard mitigation. FEMA's *National Disaster Recovery Framework* (NDRF) is a guide to promote effective recovery from incidents. The NDRF identifies "Recovery Support Functions" (RSFs) to provide a structure to facilitate problem solving, improve access to resources, and foster coordination among State and Federal agencies, nongovernmental partners and stakeholders. The NDRF identifies "Natural and Cultural Resources" as one of six RSFs. The core recovery capability for natural and cultural resources, as described by the NDRF, is the ability to protect the resources through response and recovery actions, and to restore them as necessary post-disaster. In general, the expected outcomes for the Natural and Cultural Resources RSF is the integration of management and protection of natural and cultural resources into recovery. FEMA's guidelines provide a useful framework for hazard planning at the local level. Some Bay Area cities, such as Oakland, are currently engaged in using the NDRF as a framework to help them develop the City's Recovery Plan, which includes a section focused on Natural Resources.
OWNER(S)	ABAG, BCDC, Local governments

ACTION 18 **Improve regulatory processes regarding permitting and monitoring innovative multi-benefit projects**	ACTION DESCRIPTION: Support and assist with efforts of others to encourage state and federal permitting agencies to better coordinate in light of new approaches due to need to adapt to climate change, and to adjust out-of-date policies and practices where critical and feasible. Task 1: Identify opportunities and recommendations for improved regulatory processes for multi-benefit flood control and habitat restoration projects through the Flood Control 2.0 project that is already underway. Milestone: Regulatory guidance and recommendations reports, workshops and podcasts by 2016 Task 2 : Analyze current San Francisco Bay Conservation and Development Commission policies on fill in the Bay in light of sea level rise and the need for adaptation strategies, and revise as necessary. Milestone: Revised BCDC policies by 2021 Task 3: Bring major permitting agencies together to develop a decision-making process that helps reduce time and conflicts for multi-species and multi-benefit projects over a long time frame. Provide examples and case studies of successful multi-benefit projects to agencies and work with regulatory agencies to get good information in front of them. Providing a roadmap--including the regulatory agencies with developing that roadmap. Milestone: Identify convener and funder and institute a twice yearly workshop by 2017
BACKGROUND	Given the need to create resiliency to climate change, project proponents and regulatory agencies must better align their practices and identify opportunities to improve regulatory processes that may be cumbersome, conflicting, or out-of-date. Potential opportunities to improve the processes may include; better coordination between project proponents and regulatory agencies as well as among the regulatory agencies; and revised policies or regulations that address climate change and the need for adaptation strategies, including the use of fill in the Estuary and the flexibility for experimental designs and adaptive management.
OWNER(S)	BCDC, SFEP, BAECCC, CHARG, JV

ACTION 19 **Develop long-term drought plans**	ACTION DESCRIPTION**:** Revise Urban Water Management Plans to include a water shortage contingency plan (WSCP) for multi-year drought planning to meet DWR's UWMP requirements, including drought planning that: 1) addresses the hydrologic conditions of the service area, 2) includes planning for multiple scenarios, including multi-year droughts of 5-10 years, and 3) documents efforts to implement programs and investments that will help the Bay-Delta respond to future extended droughts at the individual agency level and through multi-agency coordination efforts such as the Bay Area Regional Reliability feasibility studies and Integrated Regional Water Management Planning. Task 1: Analyze/summarize multi-year drought planning scenarios in all final 2016 Bay-Delta UWMPs. Milestone: Analyze 2016 UWMPs by July 2017 Task 2: Bay Area Water Agencies Coalition collaborates with DWR and climatologists to develop at least two recommended multi-year drought scenarios for 2020 UWMP planning efforts, including one severe drought and at least one multi-year drought scenario of 5-10 years. Milestone: At least two recommended multi-year drought scenarios for 2020 UWMPs by 2019. Task 3: Include revised multi-year drought scenarios in DWR's State Water Project Delivery Reliability Report by 2019-2020 UWMPs. Milestone: Issuance of 2020 DWR UWMP updated guidance document by 2020. Task 4: Include revised multi-year drought scenarios in 2020 UWMP updates prepared by Bay Area agencies and filing of final UWMPs by Bay Area agencies. Milestone: Final 2020 UWMPs filed by Bay Area agencies, including revised multi-year drought scenarios, by 2021. Related to Action 26
BACKGROUND	Urban Water Management Plans (UWMPs) are prepared by California's urban water suppliers to support their long-term resource planning, and ensure adequate water supplies are available to meet existing and future water demands. Every urban water supplier that either provides over 3,000 acre-feet of water annually, or serves more than 3,000 urban connections, is required to assess the reliability of its water sources over a 20-year planning horizon, and report its progress on 20% reduction in per-capita urban water consumption by the year 2020, as required in the Water Conservation Bill of 2009 (SBX7-7). The plans must be prepared every 5 years and submitted to the Department of Water Resources (DWR). Currently the draft guidance document for the 2015 update of these plans calls for an analysis of district plans in the event of a year multi-year drought of up to 36 months. Most Bay Area UWMPs include a three-year drought as the drought cycle. Final 2015 UWMPs must be submitted by July 1, 2016. Since California is already in the fourth year of a drought cycle, UWMPs should address actions that would be necessary to respond to long-term drought of five to ten years in duration. Climate change is anticipated to make California's climate more variable in the future, increasing the frequency of both droughts and floods, and reducing average Sierra Nevada snowpack. Local and regional drought planning should consider impacts to fish and wildlife resources, businesses, regional agriculture and communities, including the most vulnerable communities.
OWNER(S)	Bay Area Water Agencies Coalition (BAWAC), DWR, and regional non-BAWAC urban water supply agencies.

ACTION 20 **Reduce Bay Area landscape water use**	ACTION DESCRIPTION: Help facilitate actions by the regional water supply agencies to reduce municipal and residential potable and potential potable water use for landscapes, using tools such as local ordinances, incentive programs, and public outreach efforts. This action takes a multi-pronged approach to assist local municipalities in efforts to reduce outdoor water use and calls for a region-wide reduction in overall water use of 50%, using the state's per capita baseline date, by 2020. Reductions in landscape water use must be tied to offset of potable and potential potable water use, including potable water supplies sourced from imported water, groundwater, and local instream flow. Task 1: Using the latest technology and available real-time information, work with large and small water districts, local water agencies, DWR, large and small municipalities, and other partners to develop a standardized approach to methodology and reporting on outdoor urban water use. Milestone: June 2017 Task 2: Evaluate efficacy of current programs regionally and at the state level; work with appropriate local partners to identify gaps in current messaging and to identify actions that will amplify key effective messages in the Bay-Delta region. Milestone: June 2016 Task 3: Sponsor development and expansion of local or regional water efficient landscape training programs, using models such as the California Friendly Landscape Training Program and Bay-Friendly Landscape Program. Milestone: June 2017 Task 4: Work with land use agencies to ensure the implementation of existing landscape efficiency standards such as local Water Efficient Landscape Ordinances (WELO),Bay-Friendly ordinances, and CalGreen updates; encourage modification of local WELO ordinances to include landscapes under 2500 sq. ft. Milestone: June 2017 Task 5: Determine how best to work with local water agencies to expand or develop incentive programs such as lawn-to-garden or "cash-for-grass" rebates, stormwater capture, grey water reuse and other on-site reuse implementation for both residential and commercial water use. Milestone: February 2017
BACKGROUND	Outdoor water use is responsible for up to 60% of total water use in the urban environment, particularly in inland portions of the region. Existing state law calls for 20% reduction in *per capita* water use by 2020. However many parts of our region have already met the 20% by 2020 goal, or are very close to doing so, therefore the state-mandated reduction in per capita use is no longer an aggressive goal for many Bay Area agencies. While there is still some room to improve in the region on indoor water use [additional low-flow toilets, shower heads, leak detection, etc.], getting to the next level of per capita reduction will require a focused reduction in outdoor water use. Work is needed to transform California's urban landscapes as part of a larger effort in watershed-appropriate landscaping. Achieved reductions in outdoor water use should offset potable and potential potable water use. This action has been identified in the California Water Action Plan, Executive Order B-29-15, Wetter or Not, and has been written into state law through the Water Conservation in Landscaping Act of 2006 (AB 1881). On July 15, 2015, the California Water Commission approved a revised Model Water Efficient Landscape Ordinance. Local agencies have until December 1, 2015 to adopt the revised ordinance or adopt their own equivalent ordinance. The revised ordinance applies to landscapes over 500 sq. ft. and rehabilitated landscapes of over 2,500 sq. ft.
OWNER(S)	Local, regional governments and planning agencies, local water agencies, SFEP, DWR, California Urban Water Conservation Council

ACTION 21 **Increase water recycling**	ACTION DESCRIPTION: Increase the percentage of recycled wastewater produced by Bay-Delta Estuary wastewater treatment plants as an offset of potable and potential potable water supply. Limiting factors in developing recycled water up to now are due to project costs and funding limitations, market demand, and customer/public acceptance. Efforts will focus on building public acceptance for more use of recycled water and continuing to work with regional partners to secure funds to create new recycled water projects. Task 1: Fund report with appropriate partners, presenting a vision for a more ambitious approach to water recycling in the Bay Area. Milestone: Report completed December 2016 Task 2: Establish a goal for the Bay-Delta Estuary region in partnership with local water agencies, developing a long-term regional strategy as part of the next Bay Area IRWMP to reach the identified potential of 25% reuse of current wastewater discharges by 2020 and 50% reuse by 2030. Include a sound accounting methodology for recycled water use data reporting in the strategy. Identify potential emerging issues with increase reuse of treated wastewater, such as increases in reverse osmosis concentrate and unknown constituents. Milestone: June 2017 Task 3: Water recycling feasibility studies should be completed by each publicly owned treatment works, municipality, and/or water district. These feasibility studies should investigate a full range of recycling options and should be undertaken collaboratively with water supply agencies. Milestone: Ongoing Task 4: To the extent practical, use existing facilities and develop new treatment and conveyance facilities to deliver recycled water for beneficial reuse. Milestone: 2019 Task 5: Municipalities and counties should adopt water recycling ordinances and code changes encouraging the use of recycled water for all state-approved uses while providing for the protection of public health and the environment. San Francisco's new ordinance regarding water recycling and new construction is one possible model. Milestone: Immediately Task 6: Local entities should develop and conduct public education programs to increase public acceptance of use of recycled water for appropriate water quality applications currently underway. Milestone: Immediately
BACKGROUND	Despite the Bay Area's dependence on imported water, its relatively high reliability and low cost up to now has inhibited the use of recycled water. Recycled water use is a small but an increasingly important part of the Bay Area's water portfolio. The region, however, has not been able to achieve targets and projections for its use and lags other urbanized regions of the State in both quantity used and percentage of demand. Current recycled water use has reached 70% of the projections made in 2010, and 40% of the ambitious but outdated targets for 2010 established in 1999 by the Bay Area Regional Water Recycling Program (*reference needed*). This shortfall in developing recycled water is due to project costs and funding limitations, market demand, and customer/public acceptance.
OWNER(S)	BACWA, BAWAC

ACTION 22 **Change public's perception of the value of water to achieve long-term reduction in water use**	ACTION DESCRIPTION: Develop more effective strategies to encourage people to be more aware of their water use, more motivated to manage that use and more aware of less consuming options. Task 1: Evaluate efficacy of current programs regionally and at the state level; work with appropriate local partners to identify gaps in current messaging and to identify actions that will amplify key effective messages in the Bay-Delta region. Milestone: July 2016 Task 2: Implement social 'norming' messages through social media and other delivery methods identified with partners; test new messages to address identified gaps. Milestone: December 2016 Task 3: Design and implement an annual survey to assess public perception of the value of water. Milestone: May 2017 Task 4: Assess effectiveness of new messages and effectiveness of social media and other delivery methods of key messages; revise campaign in collaboration with local partners as necessary. Milestone: October 2019
BACKGROUND	An effective water conservation campaign will require stable funding and should be designed for maximum impact. Examples of programs include statewide programs such as DWR/ACWA's "Save our Water" campaign and other state and regional behavioral change efforts and examples from other states like Denver Water's "don't be that guy" campaign. Determine which ones are most effective for CCMP related messages and support through social media, print, event and other avenues. California must fundamentally alter its relationship with water. The current drought highlights the need for comprehensive action to ensure that we have water policies and supplies that protect both our economy and environment in the near future and during our periodic and inevitable future drought periods. Over-allocation of surface water, sever groundwater overdraft, and the sharp decline of many of our aquatic ecosystems bring us to the conclusion that California water demands exceeds safe supply. The state has experienced extended droughts in the 1930s and 1990s –paleo climate analysis shows that California has endured server droughts of much longer length than 3-5 years. Helping Californians to understand and embrace new water saving ways of doing business, at home, in business and in our communities are needed.
OWNER(S)	SFEP can lead the specifics in this action but in cooperation with the Department of Water Resources, local water agencies, ACWA and other major stakeholders who share the desire to build a new water ethic and support real change in behavior.

ACTION 23 **Implement indirect potable reuse standards and public acceptance of direct potable reuse.**	ACTION DESCRIPTION: Assist the relevant state agencies in completing and adopting consistent regulations for indirect potable reuse. Direct efforts at the regional level to create a vision and road map identifying key obstacles and opportunities to widespread implementation of indirect potable reuse. Support workshops with water agencies, NGOs, and other stakeholders to assist with road map development. This action is linked to Actions 22 and 29. Task 1: Help BAWAC develop a road map to identify key obstacles and opportunities to maximize regional indirect potable reuse. Milestone: BAWAC road map by 2016 Task 2: Facilitate information and outreach to increase public acceptance of direct potable reuse. Milestone: Ongoing
BACKGROUND	Indirect potable reuse (IPR) refers to the use of treated and purified wastewater to augment drinking water supplies through an environmental buffer, such as injection into an underground aquifer. Direct potable reuse (DPR) refers to the introduction of purified water, derived from municipal wastewater after extensive treatment and monitoring to assure that strict water quality requirements are met at all times, directly into a municipal water supply system. The resultant purified water could be blended with source water for further water treatment or even direct pipe-to-pipe blending of purified water and potable water. DPR offers the opportunity to significantly reduce the distance that purified water would need to be pumped thereby reducing costs. It also has the potential to dramatically expand use of recycled water. Public acceptance is the most important element of adoption of DPR. Key to getting public acceptance is aggressive source control of pharmaceuticals and other CECs. For example, the Orange County Water District's Groundwater Replenishment System, one of the world's largest recycling facilities, and the Los Angeles Sanitation District's Whittier Narrows Water Reclamation Plant have used highly treated water for many years to recharge groundwater and supplement drinking water. The Silicon Valley Advanced Water Purification Center provides a local example of successful IPR implementation to recharge groundwater and prevent further subsidence. The State Legislature and Congress should also provide funds and guidance needed to complete the development of regulations regarding direct potable reuse.
OWNER(S)	SFEP, BAWAC, others

ACTION 24 **Assess potential application of the constitutional standard of waste and unreasonable use in the Bay-Delta Estuary**	ACTION DESCRIPTION: Conduct a careful review of the waste and unreasonable use doctrine in the context of evolving California and western water law and need to use this Public Trust resource wisely. Based on the review, make strategic recommendations to the State Water Resources Control Board on what aspects of the doctrine should be considered for possible Board action. These actions should result in a significant increase in water (estimated savings of 200,000 AF or more) available for municipal and industrial, agriculture and ecosystem purposes. Task 1: Fund and complete an expert legal evaluation to determine the potential for further application of the waste and unreasonable use doctrine within the context of public trust law and the State Board's existing authority. Milestone: June 2016 Task 2: Develop a series of recommendations to implement the findings of the report. Milestone: December 2016
BACKGROUND	California's constitution, as most western state constitutions do, prohibits waste and unreasonable use of water; however, this requirement is rarely used to curtail water use or application methods. Article X, section 2 of the California Constitution and various provisions of the California Water Code provide the basic authority to halt unreasonable water use. Among the factors that have limited the use of these provisions are the administrative hurdles that must be crossed to make the case for unreasonable use. A thorough review of the doctrine should be conducted and recommendations made to the state regarding what aspects of the doctrine could be considered for further work. In particular, the State Water Resources Control Board (State Board) should create a new "Reasonable Water Use" unit, with already established enforcement positions, and make it easier for farmers and water districts to transfer conserved irrigation water or make it available for instream use. The 2011 Delta Watermaster Report titled "Reasonable Use Doctrine & Agricultural Water Use Efficiency" makes this recommendation. The report also proposes that the State Board convene a Reasonable Water Use Summit and/or hearings on the Delta Watermaster's recommendations. The State Board's ability to use its reasonable use authority was tested recently in a lawsuit regarding the Board's regulation of diversions for frost protection purposes in the Russian River watershed. In October 2014, the California Supreme Court declined to hear this case, letting stand a Court of Appeals ruling that upheld the Board's reasonable use authority.
OWNER(S)	State Water Resources Control Board, SFEP

ACTION 25 **Integrate water into the updated Plan Bay Area and Delta Sustainable Communities Strategies**	ACTION DESCRIPTION: Expand the focus of the update for Plan Bay Area to incorporate a full range of issues related to water and San Francisco Bay. Regional planning efforts related to transportation, housing and greenhouse gas (GHG) reduction should incorporate related water issues, including water quality, stormwater management (Low Impact Development or LID/green infrastructure), landscape water use, reducing per capita water use, maximizing opportunities for water recycling and drought preparedness. Task 1: SFEP will coordinate with ABAG, MTC, and others to create a strategy to more strongly incorporate water and SF Bay-related issues into Plan Bay Area updates. Milestone: June 2016 Task 2: Using the Plan Bay Area update process as a model, evaluate opportunities to take similar action with Sustainable Communities Strategies in the Delta region. Milestone: June 2018
BACKGROUND	SB 375 is an important step forward in integrating GHG reduction, transportation, land use and housing issues into metropolitan planning processes. However, it did not address water or resource protection issues. SB 375 requires plans to be updated every four years. The update of Plan Bay Area, which was adopted in July of 2014, is anticipated in 2017, presenting an important opportunity for the Bay Area to demonstrate the benefits of integrating water issues into the SB 375 process. Sustainable Communities Strategies in the Delta also offer the opportunity for integration of water and resource protection issues. Through an integrated approach, the updated Plan Bay Area will identify strategies that provide water-related co-benefits. For example, new transportation projects will be designed to produce stormwater management benefits. Infill development presents opportunities for green infrastructure as well as greywater and recycled water use. Infill projects will also contribute to efforts to reduce per capita water use and prepare for future droughts.
OWNER(S)	ABAG, Delta SCS entities

ACTION 26 **Adopt new Bay-Delta freshwater inflow/outflow standards that better protect all beneficial uses**	ACTION DESCRIPTION: With partners, help educate elected officials and the public on the critical importance of freshwater outflow* to the health of the San Francisco Bay-Delta estuary. In combination with other CCMP actions, work to restore and enhance critical freshwater flows in rivers and tributaries throughout the estuary. Task 1: Work with partners on report highlighting the role of freshwater flows in the lower portion of the estuary-- San Francisco Bay. Milestone: Spring 2016 Task 2: Assist the State Board in updating the Delta Plan by providing clear, concise, scientifically sound data to the State Board during its deliberations and by keeping the public and local officials informed about opportunities to participate. Milestone: Completion of the new SWRCB's Delta Plan. Task 3: Assist the Delta Science Program in their work to bring sound science to these issues by supporting their expert panels and other administrative tasks. Milestone: Ongoing **Outflow includes amount, timing, and duration needed to support healthy tributary rivers, creeks, streams and waters of the estuary*.
BACKGROUND	According to the Delta Stewardship Plan, "The Delta is the upstream portion of the San Francisco Estuary, where ecosystems dominated by the Central Valley's rivers transition to the more ocean-influenced ecosystem of the downstream portions of the estuary. Water flow is a "master variable", driving the ecological health of rivers and their ability to support valued environmental services (Poff et al. 1997, Postel and Richter 2003). In estuaries, the interaction of river flows and ocean tides produces a salinity gradient from fresh water to brackish and salty water. River flows and ocean tides also deposit and erode sediment to shape the estuarine landscape and its habitats. Estuarine species are adapted to the complex natural flow, salinity, and sediment dynamics in their native estuaries." The lack of adequate freshwater flows, timing, and duration is currently insufficient to support a healthy estuary [2011 State of the Estuary Report] and has been noted in many other reports and investigations (2010 State Water Resources Control Board Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem). The State Water Board is now updating its Water Quality Control Plan for the San Francisco Bay-Sacramento/San Joaquin Delta Estuary (Bay-Delta Plan) in multiple phases. The first phase focuses on water quality objectives for the south Delta and flow objectives for the lower San Joaquin River and its three major tributaries The second phase focuses on other changes to protect fish and wildlife and other beneficial uses not addressed in Phase 1, including updates to Delta outflow objectives. Multiple federal and state regulatory agencies have commented on the need for improvements to the State Board's 1995 Bay-Delta standards for freshwater flows, including the California Department of Fish and Wildlife, National Marine Fisheries Service, U.S. Environmental Protection Agency, and U.S. Department of the Interior. This action is focused on the work that SFEP and its partners can achieve to support the larger goals of the state consistent with the work of the State Board, the Governor's California Water Action Plan, the Delta Plan and other key efforts to bring about needed changes to urban, industrial and agricultural water use so that the fundamental ecosystem processes of the estuary can be restored. One key first task is to highlight the importance of freshwater to the lower portion of the estuary—the bay proper --as there has been limited focus on this portion of the estuary relative to its need for freshwater inflows.
OWNER(S)	Lead: SFEP and the Delta Stewardship Council and the Delta Science Program. Supporting: the Bay Institute, Friends of the San Francisco Estuary and others.

ACTION 27 **Increase regional agriculture water use efficiency**	ACTION DESCRIPTION: Assess opportunities to improve agricultural water use efficiency practices in the region and, with partners, expand implementation of water use efficiency methods with intent to ensure conserved water goes to instream uses. In two areas in the Bay-Delta region, a tributary watershed and a portion of the Delta, assess current agricultural water use methods. Evaluate current practices against the range of applicable water use efficiency methods and management practices available for each area, recognizing site feasibility and geographic constraints and possible barriers to greater water conservation. The report will also outline the mechanisms by which conserved water could be secured for instream uses. Task 1: Establish an advisory group for the assessment, select pilot sites and secure a contractor Milestone: December 2016 Task 2: Review potential agricultural water use efficiency practices with Advisory Team to bring BMPs to farmers through outreach efforts. Milestone: June 2017 Task 3: Complete report with recommendations on water-saving management practices and instream flow enhancement mechanisms and opportunities. Milestone: December 2017
BACKGROUND	A number of independent studies conducted over the past 15 years (Pacific Institute, CALFED) have concluded that California agriculture presents an opportunity for significant water savings through changes to water management practices. These studies have surveyed the range of agriculture throughout California; however, the question remains: to what extent do these conclusions apply to agriculture in the Bay-Delta Estuary? Although agriculture throughout the Bay-Delta is highly variable, from crops to acreage to rainfall and soil distribution, it shares certain characteristics not found in other agricultural regions of the state: a temperate climate and powerful development pressure, for example. Water supply reliability is also generally higher for most parts of the Bay-Delta, in comparison to Central Valley agriculture. For these reasons, an assessment of Bay-Delta agricultural water use practices is needed to determine whether significant opportunities exist to conserve water for instream uses in the region. The use of two areas—a Bay Area tributary watershed and a designated area of the Delta—to conduct assessments will not capture the full range of agricultural variability in the region, but will provide a foundation for future assessments. The review will include programs such as the Sonoma and Napa RCD's mobile irrigation lab (MIL) in coordination with Sonoma RCD through the LandSmart® program. Some areas are already covered by vineyard and grazing waivers; therefore, working closely with the Regional Water Quality Control Board on the implementation of those waivers will be essential. Advice will be sought from various expects including regional agricultural business associations, RCDs, Agricultural Extension Agents, the NRCS, local agricultural representatives, appropriate agencies, and NGO representatives. The selection of a Bay tributary watershed will include an evaluation of watersheds with high restoration potential for species such as steelhead. The resulting report will be a model for assessment of agricultural practices throughout the Bay and Delta and offer regionally-based, vetted information on the opportunities for, and barriers to, increased agricultural water conservation. Action is related to coldwater and riparian protection/enhancement Actions 6 and 7.
OWNER(S)	Lead: SFEP: supporting, State and Regional Water Boards, Bay and Delta RCDs, NRCS, agricultural associations

ACTION 28 **Identify and work to eliminate illegal water diversions in the San Francisco Bay region**	ACTION DESCRIPTION: Assist State Water Resources Control Board by working to identify and eliminate illegal diversions in the San Francisco Bay region. Work with Resource Conservation Districts and others with landowner-oriented programs on solutions to restore instream flows. Encourage responsible agencies to identify and take actions against illegal diverters Task 1: Prepare a report that investigates whether this is a serious problem in San Francisco Bay region watersheds, with a focus on watersheds with high restoration potential for species such as steelhead trout. Milestone: June 2017 Task 2: Take one sample San Francisco Bay region watershed and create an estimate of how much water is being diverted illegally. Use major tributary watersheds as candidates. This task will include a review of State Water Resources Control Board water rights. It will also include an effort to distinguish water users dependent on groundwater from those dependent on surface water. It will also propose a goal and timeframe for the reduction of identified illegal diversions. Milestone: June 2018
BACKGROUND	The focus of this action is on the tributary watersheds that drain into the San Francisco Bay and not the Delta. A diversion probe by the Delta Watermaster in 2011 resulted in the conclusion that most of the diversions in the Delta are legal riparian or pre-1914 water rights (Water Right Compliance and Enforcement in the Delta report). Illegal growing operations have already been identified as a serious problem in North Coast rivers. For example, in 2004 both the Eel and Mattole rivers ran dry due to drought and illegal diversions. The State Water Resources Control Board currently has 22 staff assigned to investigate illegal diversions. The California Department of Fish and Wildlife was recently given broader authority to crack down on illegal growing operations, and often conducts its own investigations and refers illegal diversions to the State Board. Law enforcement agencies have not yet formulated a statewide strategy to address illegal diversions in their jurisdictions; however, Mendocino and Lake counties have set up water theft hotlines. Illegal diversions are a serious issue in many parts of the state. Illegal marijuana growing operations are known to exist in more remote parts of Bay-draining watershed. This action will determine to what extent illegal diversions pose a threat to beneficial uses of watersheds in the San Francisco Bay region. *Action still under development*
OWNER(S)	SFEP, SF Bay Regional Water Quality Control Board, CA Department of Fish and Wildlife

ACTION 29 **Address emerging contaminants**	ACTION DESCRIPTION: Support and advance the existing regional contaminants of emerging concern (CEC) management strategy and complete the called-for CEC action plans and special studies and partnership with the Regional Monitoring Program (RMP) and the Regional Water Quality Control Board. Support and expand pharmaceutical CEC reduction through expansion of existing education and public outreach efforts like the Alameda County Safe Drug Disposal ordinance to other counties and build on public education programs to reduce use of consumer-oriented CEC's such as triclosan, fipronil, PFOS, nonylphenol and its ethoxylates, PBDEs, pharmaceuticals, and other identified 'moderate concern' CECs. Task 1: Encourage completion of action plans for 'moderate concern' CECs and comment letters from the State Water Resources Control Board to support and strengthen federal significant new use rules. Milestone: TBD Task 2: Expand partnerships with interested municipalities through drafting model ordinance based on Alameda County Safe Drug Disposal ordinance and encourage adoption by other counties. Milestone: December 2016 Task 3: Create an education program aimed at reducing or eliminating the use of triclosan (banned recently in Minnesota), based on material developed by SFEI (cut and paste SFEI's fact sheet into Resources) evaluating the effectiveness of these efforts. Milestone: 2021 Task 4: Expand Cradle-to-Cradle certification program in Bay-Delta Estuary. Milestone: TBD
BACKGROUND	Over 100,000 chemicals have been registered or approved for commercial use in the United States, and chemical production is growing globally. Major information gaps on these chemicals limits the ability of scientists to assess their potential risk; as a result, many chemicals that have not been adequately tested for their potential impacts to humans and wildlife are continuously released into the environment, ultimately washing into aquatic ecosystems such as the San Francisco Bay. Some of these chemicals have been classified as contaminants of emerging concern (CECs). Characteristics used to identify CECs include high volume use, potential for toxicity in aquatic species, and occurrence in the environment. Determining which of the thousands of chemicals in commerce are CECs and whether or not they may be a problem is a formidable challenge. For the vast majority of chemicals in use today, the occurrence, persistence, and toxicity data needed to protect the beneficial uses of aquatic ecosystems are in short supply. Thanks largely to the Regional Monitoring Program (RMP), San Francisco Bay is one of the most thoroughly monitored aquatic ecosystems in the world with respect to CECs. CEC studies by the RMP and others have revealed the Bay to be a hotspot for contamination by certain substances, such as PFOs and PBDEs. These studies also appear to be providing evidence that actions taken to reduce the uses of CECs and their input to the Bay can be effective in lowering concentrations in the Bay, as seen for PBDEs [The Pulse of the Bay, 2013]. **Currently under review by Tom Mumley**
OWNER(S)	State fire officials, RMP, SWRCB

ACTION 30 **Decrease raw sewage discharges**	ACTION DESCRIPTION: Reduce the input of raw sewage into the estuary through enhanced sewer lateral repair programs and development of resources for marinas and recreational boaters to better manage sewage discharge. This effort will focus on providing management guidance for marinas, creating a mobile application for pumpout status reporting, and the research and implementation of a mobile pumpout pilot program that can be replicated throughout the San Francisco Bay and Delta. Task 1: Review number of sewer lateral repair ordnances currently in operation around the region. Milestone: September 2016 Task 2: Target 30% of the uncovered jurisdictions for assistance with development and passage of a sewer ordinance modeled on exiting regional programs such as Berkeley and East Bay MUD. Milestone: December 2016 Task 3: Produce and promote a white paper that describes existing and potential funding mechanism for communities to pay for private sewer line repair and replacement such as financing strategies that allow residents to fix broken laterals and pay them back through sewer bill increases. Milestone: Complete by June 2017 Task 5: Publish an industry-supported, technically vetted Sewage Management Manual for Marinas. Milestone: TBD Task 6: Develop an application for boaters to report broken pump-outs and marinas to report pump-out use and operational status; pilot a mobile pumpout program for marinas and recreational boaters in the Oakland Estuary. Milestone: June 2017
BACKGROUND	Most of the sewage systems in the Bay Area are over 50 years old and in poor condition. General wear-and-tear and pressure from tree roots have caused pipes to crack over time. Cracks allow rain water to seep into the sanitary sewer system during storms (called inflow and infiltration, or I&I), which overloads the limited capacity of the treatment plants and leads to illegal discharges of raw sewage into the Bay. An analysis in 2010 found only 15 out of 115 wastewater agencies in the Bay Area have enacted sewer lateral ordinances. Draft ordinances have been developed by the North Bay Watershed Association and others that can be modeled by other jurisdictions. Financing for private sewer lateral upgrades can be an impediment to full implementation; alternative finance methods could speed replacement efforts and should be explored. Recreational boating practices have the potential to quickly and significantly affect water quality if proper management and pollution prevention practices are not followed. According to a Department of Boating and Waterways report (2011) over half of the vessels in the San Francisco Bay have a sewage system on board. These systems can be either discharged overboard, into the water, or pumped into a land based sewage system for treatment. When discharged overboard, this concentrated sewage has dramatic localized effects on water quality, especially in shallow or low-flush areas like marinas and harbors. Richardson Bay is the only water body in the region with a pathogen TMDL, passed in 2009. It cites vessel discharges as a significant potential source of pathogen pollution in the Bay. While outreach is a critical component of addressing this issue, a multi-pronged approach to reduce the likelihood of sewage discharge in the San Francisco Bay will be undertaken. This work will support marinas and boaters in properly managing sewage, and will ensure the facilities required to properly dispose the sewage are abundant and functional.
OWNER(S)	Municipalities and wastewater agencies with guidance from RWQCB, The San Francisco Estuary Partnership

ACTION 31 **Manage stormwater with Low Impact Development/Green Infrastructure practices**	ACTION DESCRIPTION: Develop planning and tracking tools, technical materials, and policy recommendations, and financing strategy guidance to support expansion of Low Impact Development (LID)/Green Infrastructure (GI) practices by local and regional public agencies to reduce stormwater runoff pollutants discharged to local waterways and the Estuary. Task 1: Enhance all components of the LID planning tool *GreenPlan-IT. Milestone: June 2017 Task 2: Partner with local jurisdictions to analyze LID/GI potential in select areas using Green Plan-IT and integrate findings into relevant agency planning mechanisms and policies for adoption and implementation. Milestone: June 2017 Task 3: Develop and promote a comprehensive regional workplan that identifies key policies, documents, legislation, agencies, and specific actions needed for integrating green infrastructure with future climate change and transportation and other infrastructure investments within the region. Milestone: March 2018 Task 4: Create and make available to municipalities and other interested parties, design tools for LID retrofits, such as: cost-effective, low maintenance Standard Design Details for LID retrofits of typical road configurations; unit cost estimates for both LID retrofit practices and non-LID standard street details; and "lessons learned" reports on previous grant- and/or local agency-funded LID retrofit projects. Milestone: March 2018 Task 5: Create a GIS-based database to track completed LID/GI projects in the public and private realms; coordinate the database with TMDL accounting systems developed by other local partners to identify and quantify the load reduction benefits of LID/GI practices. Milestone: June 2018 Task 6: Develop informational reports on lessons learned and the current state of LID benefit knowledge. Milestone: January 2021, pending available funding
BACKGROUND	Creating and then getting agencies to use the right tools is critical in transitioning the region to the widespread use of green infrastructure/Low Impact Development techniques. While parcel-level new, and re-development by regulation is required to use certain LID/GI techniques for projects of a certain size, many public agency projects are not mandated to use these methods. With impervious sidewalks and streets typically representing 15-25% of land cover in many Bay Area cities, these features contribute greatly to urban runoff peak flows, volumes, and pollutant loads. The Water Board recognizes this condition and addresses it in MRP 2.0, which requires permittees to develop GI Action Plans, use GI/LID to capture PCB- and mercury-laden runoff, and track GI/LID implementation. *Green Plan-IT is a planning level tool, created by SFEI in partnership with SFEP, to support the cost-effective selection and placement of Green Infrastructure (GI) at a watershed scale with three components: (a) a GIS-based Site Locator Tool; (b) a Modeling Tool that quantifies anticipated watershed-scale runoff and pollutant load reduction; and (c) an Optimization Tool to identify the best combinations of GI types and number of sites.
OWNER(S)	Municipalities and wastewater agencies with guidance from RWQCB, The San Francisco Estuary Partnership, SFEI, BASMAA, EPA

ACTION 32 **Implement select TMDLs**	ACTION DESCRIPTION: While there are over a dozen Total Maximum Daily Load regulations completed or under development in the estuary, this action focuses on those TMDLs where SFEP has expertise and or the ability to best support implementation efforts. Focus will be to develop projects and funding for work to reduce mercury loadings in the Guadalupe watershed; reduce pesticide impacts to the region's urban streams, addressing low dissolved oxygen (DO) and methyl mercury in Suisun Marsh and continuing work on reducing PCBs in building materials during construction demolition. *Question about selenium (2007 Action PO-1.5): Reinforce existing programs and develop new incentives where necessary to reduce selenium levels in agricultural drainage.* Task 1: For mercury in the Guadalupe watershed, manage and complete the remediation projects currently being done by the county with the assistance of SFEP [Calcine removal]. Milestone: TBD Task 2: Develop a behavior change campaign aimed at achieving reduced use of household pesticides that impact beneficial uses of the bay. Possibly modify state's pesticide regulation program to help ensure reduced consumer usage. Milestones: TBD Task 3: Support on-going work in Suisun marsh to evaluation existing water management BMPs and adjust management efforts to address DO and methyl mercury Milestone: TBD
BACKGROUND	Total Maximum Daily Loads (TMDLs) are action plans to restore clean water. Section 303(d) of the federal Clean Water Act requires that states identify water bodies -- bays, rivers, streams, creeks, and coastal areas -- that do not meet water quality standards, and the pollutants that impair them. TMDLs examine the water quality problems, identify sources of pollutants, and specify actions that create solutions. They are adopted by the Regional Water Board as amendments to our Region's Basin Plan. Currently the San Francisco Bay Regional Water Board has 22 TMDLs completed or under development focused primarily on sediments, pathogens and nutrients. Two TMDLs are bay-wide (mercury and PCBs) and an additional TMDL covers all the urban streams in the region for pesticide toxicity. Given the focus of the SFEP, it is most appropriate that the Partnership focuses on the regional TMDLs of PCBs, mercury and pesticides. All urban creeks in the San Francisco Bay Area are on California's 303(d) list of impaired water bodies due to observations of aquatic toxicity, primarily due to runoff of commonly used insecticides. According to the 2003 Mercury TMDL Report, approximately 1,220 kg of mercury enters San Francisco Bay annually from sources including bed erosion (about 460 kilograms per year (kg/yr)), the Central Valley watershed (about 440 kg/yr), urban stormwater runoff (about 160 kg/yr), the Guadalupe Riverwatershed (about 92 kg/yr), direct atmospheric deposition (about 27 kg/yr), non-urban stormwater runoff (about 25 kg/yr), and wastewater discharges (about 19 kg/yr). AAResearch done during development of the TMDL found that pesticides applied around homes according to label instructions can and do lead to toxicity in local water bodies. Education and outreach initiatives funded by State grants, wastewater and stormwater dischargers, and others promote the behavior change necessary to reduce this threat of pesticide-related toxicity in our creeks.
OWNER(S)	DPR, SWRCB, CASA have begun a partnership to address this issue--hold them accountable. RMP can assess status along with new MRP 2.0 urban stream monitoring requirements and SWAMP.

ACTION 33 **Manage nutrients in the Estuary**	ACTION DESCRIPTION: Develop an outreach program in cooperation with the RMP and stakeholder group that highlights the need for continued research and monitoring funding to support the existing Nutrient Strategy. Task 1: Ensure that the long-term data on nutrients collected by the USGS over the past 20 years continues with adequate funding and support. Highlight the need for this monitoring data with key decision makers and the public to increase support for funding this critical effort. Milestone: 2016 and ongoing Task 2: Support the Regional Monitoring Program and Regional Water Board's efforts in implementing their nutrient strategy. Milestone: TBD
BACKGROUND	According to the most recent Pulse of the Bay (RMP 2014), evidence suggests that San Francisco Bay's resistance to the harmful effect of nutrient enrichment is weakening. Since the late 1990s, regions of the bay have experienced significant increases in phytoplankton; however, recent data suggest levels may be leveling off in the South Bay. These increases could be related to higher light levels caused by declining sediment loads and a decrease in bay bottom-grazers. Treated wastewater is the biggest source of nitrogen and phosphorus south of the bay bridge. This information underscores the need for robust long-term monitoring of nutrient conditions and continuing research investigations on this issue. The existing 5-year Nutrient Strategy calls for documenting current understanding of nutrient dynamic and the key unanswered questions; conducing a monitoring program that supports regular assessment of the issue; setting guidelines [water quality objectives and assessment framework] for adverse effects of nutrients; quantity nutrient loads and create models to support decisions about nutrient management (see pages 23-24 RMP 2014). *This action is still under development; needs to address Delta priorities*
OWNER(S)	RMP, RWQCB, USGS.

ACTION 34 **Reduce trash input into the Estuary**	ACTION DESCRIPTION: Assist regional municipalities in work to reduce trash input into the estuary to attain Water Board 2022 Objective by helping to create a regional trash monitoring program and trash tracking method, and by supporting ordinances and outreach programs that change behavior to reduce trash at its source. Task 1: Review the status of the Trash Tracker program developed by SFEP and SFEI; determine how to adjust, expand, and enhance that program to better meet the tracking needs of the 2015 MRP requirements. Milestone: Publish a review with recommendations on enhancements by December 2016. Task 2: With partners, assess the options for developing a regional trash monitoring program; elements, cost, owners. Milestone: TBD Task 2: Work with state and federal funding agencies to support trash reduction social marketing campaigns with a focus on hot spot geographic areas throughout the region. Milestone: TBD
BACKGROUND	Trash is a serious problem in the urbanized estuary. As reported by BASMAA in a 2012 trash report: Every year, 1.36 million gallons of trash flows into San Francisco Bay and its creeks from storm drains. Plastic makes up approximately 49% of the trash; paper products (bags, newspapers, receipts) make up 21%, single-use plastic bags make up approximately 8%, polystyrene foam makes up 7%. Beverage containers and miscellaneous (including cigarette butts) make up the remaining 15%. In 2009, state regulators required cities and counties to reduce the amount of trash going into the bay by 40 percent by 2014 or face fines, with a goal of reducing it 100 percent by 2022. By adopting ordinances, restricting plastic bags and Styrofoam food ware and limiting outdoor smoking, cities and counties can help prevent plastics, toxic chemicals and other pollutants from impacting our waterways and the Bay.
OWNER(S)	RWQCB, SFEP, BASMAA

ACTION 35 **Develop and expand public involvement, education and advocacy efforts that support CCMP goals**	ACTION DESCRIPTION: Through conferences, workshops, print media, and our website, provide local decision makers and the general public with a reliable source of information needed to make policy and personal decisions in favor of Estuary health. Improve understanding by the public, national, local and regional leaders about the health of the Estuary and needed actions to improve its condition. Task 1: Prepare a multifaceted communications campaign that develops and promotes SFEP's core messages Milestone: Complete Plan by September 2016 Task 2: Promote public involvement in Estuary protection and restoration through expanded use of interactive web-based information delivery Milestone: Ongoing; website reviewed for quality and possible upgrade by December 1 of each year. Task 3: Educate the regional community through hosting of the biennial State of the Estuary conference, support of the biennial Delta Science Conference and support of the Estuary News magazine. Milestones: SOE 2017, 2019, 2021,; Delta Science 2016, 2018, 2020- Task 4: Create and implement an on-line CCMP reporting process that lets stakeholders, action owners, elected officials and the public see the progress being made on each of the final CCMP actions approved as part of this plan. On a 5-year cycle, provide up-to-date information about the health status of the Estuary through an updated State of the Estuary Report and update the CCMP. Milestones: Annual reporting on CCMP progress 2016-2021. Updated SOTER 2020, updated CCMP 2021.
BACKGROUND	The future health of the Estuary depends on: support from local leaders for the CCMP and for federal and state funding; and increased support for local environmental education and outreach in select Bay watersheds. Developing and expanding public engagement in the work that supports the CCMP will result in increased level of awareness about Bay health and restoration among Bay Area residents and success in increasing national, state, and local support for CCMP objectives, through ongoing funding support and legislation.
OWNER(S)	SFEP, Friends of the Estuary, SFEI, Estuary News

ACTION 36 **Foster support for resource protection and restoration by providing Estuary-oriented public access and recreational opportunities while avoiding adverse impacts to wildlife**	ACTION DESCRIPTION: Provide Estuary-oriented public access and recreational opportunities that avoids or minimizes adverse impacts to sensitive habitats and wildlife while accommodating education, biking, hiking, wildlife viewing, and other Estuary-oriented recreational activities to increase recognition by regional citizens and decision-makers about the value of natural resources and foster support for Estuary resource protection and restoration. Identifying and implementing appropriate and suitable recreational opportunities on a regional basis can foster political support for the protection and restoration of the Estuary. Task 1: Identify opportunities to create high quality public access, recreational and educational opportunities that provide diverse and desirable experiences that are designed to avoid or minimize adverse impacts to wildlife both currently and into the future. Milestone: Completion of 3 additional public access or recreational opportunities by 2021 Task 2: Promote distribution of maps to boaters that identify areas where shorebirds and waterfowl and harbor seals forage, rest and roost to various partners to help eliminate or minimize intrusion Milestone: Identify 2 appropriate forums/mechanisms and distribute maps to boaters per year 2016-2021
BACKGROUND	The Estuary and its shoreline provide important refuge, foraging, and nesting habitat for wildlife and also provide opportunities for unique recreational and educational experiences. Participating in recreational activities along the shoreline or in the water allows the public to discover, experience and appreciate the Bay's natural resources and can foster support for Bay resource protection and restoration. However, public access to the shoreline may have adverse effects on wildlife and may result in long-term population and species effects. The type and severity of effects, if any, on wildlife depend on many factors, including site planning, the type and number of species present, and the intensity and nature of human activity. Recreational activities can be located, designed, and managed to prevent significant adverse impacts from human intrusion on sensitive habitats and on wildlife species. Signage and other educational methods, such as docent programs, can be employed to promote stewardship, inform the public of the importance and sensitivity of certain habitats and wildlife, and encourage safe, environmentally responsible recreation. Recommendations for avoiding adverse impacts to wildlife have been developed by BCDC and by the Joint Venture. As sea level rises, the transition zone between tidal areas and uplands will become even more critical for wildlife species requiring high tide refuge. Public access along the shoreline should include consideration sea level rise and be designed to avoid or minimize potential future impacts on wildlife.
OWNER(S)	JV, SCC, BCDC, Bay Trail, water trail, SFEP

ACTION 37 **Increase regional coordination between elected officials at all levels of government working together to support decisions and provide funding to implement the CCMP**	ACTION DESCRIPTION: ***Action development in progress*** Outcome/Output: Better regional coordination between elected officials at all levels of government working together to support decisions and provide funding to address the issues Task 1: *Placeholder for fostering champions…Education/outreach targeted to elected officials* Milestone: Task 2: *Placeholder for BARC* Milestones: Task 3: *Placeholder for Bay and Delta coordination to achieve better outcomes across an integrated Estuary*
BACKGROUND	
OWNER(S)	SFEP, ABAG, BARC

ACTION 38 **Increase funding mechanisms to implement CCMP**	ACTION DESCRIPTION: Increase funding to undertake short and long term actions increase and sustain the health of the San Francisco Bay Delta Estuary Task 1: Create and disseminate informational materials regarding the proposal to amend Prop 218 to give stormwater "exempt" status as "utility" on par with drinking and waste water. Milestone: Amendment to Prop 218 passed by voters in November 2016 Task 2 (if needed): If Prop 218 amendment passes, support local public processes to: 1) establish the "utility", 2) determine scope and level of services, and 3) determine rates and rate structures. Allowable stormwater utility expenditures could include: watershed and GI planning; environmental restoration, capital improvements, operations & maintenance, and outreach and education. Milestone: Establish stormwater utilities, rates, and program scopes by 2018 Task 3 (if needed): Create and disseminate informational materials regarding Restoration Authority ballot measure for June or November 2016. Consider amending authority purview to include natural infrastructure investments beyond wetland boundaries. Milestone: Restoration Authority funding approved by voters, November 2016 Task 4: Explore and pilot public-private partnerships to offset recurring O&M costs through formalized volunteer stewardship programs that include site-specific routine trash and weed abatement, supplemental planting, and irrigation as appropriate Milestone: Initiate Pilot Volunteer Program in 2 local jurisdictions by January 2018. Task 5: (See GI/LID action, Task 3): Work with appropriate agencies and decision-makers to include GI/LID as allowable expenses within transportation infrastructure and climate change adaptation investment programs Milestone: Plan Bay Area and MTC grants allow for GI/LID by 2018
BACKGROUND	Existing local and regional public agencies do not have adequate dedicated funding streams to undertake a variety of desired actions (restoration, conservation, watershed planning, green infrastructure) that would result in environmental benefits. There are a number of opportunities at the state and regional level to create and/or increase existing funding mechanisms. As an example, an effort is currently underway to exempt "stormwater" from Prop 218 requirements, which would allow local governments more easily to establish or raise fees for a variety of stormwater related activities including: watershed planning, green infrastructure practices, O&M, etc. The Stormwater Initiative (Assembly Bill 1362- Omnibus Act Amendment) seeks to pass a Constitutional Amendment through the State Legislature with a November 2016 ballot measure allowing voters to designate stormwater as a utility on par with drinking water, wastewater, and refuse services (all exempt from Proposition 218 requirements). If approved, local stormwater agencies could establish or raise rates in a manner similar to water and wastewater districts. The ballot measure, by itself, will not raise revenues—a local public process would be required to: 1) establish the "utility", 2) determine scope and level of services, and 3) determine rates and rate structures. Allowable stormwater utility expenditures could include: watershed and GI planning; environmental restoration, capital improvements, operations & maintenance, and outreach and education. Other opportunities for exploration include: expanding breadth of Restoration Authority to include riparian areas and uplands; and including green infrastructure measures as eligible expenditures for Metropolitan Transportation Commission and One Plan Bay Area grants
OWNER(S)	SFEP, Save the Bay, Coastal Conservancy, BAFPAA, BASMAA

ATTACHMENT 4

Road Map for Upcoming IC Meetings

November 17, 2015

Potential

- BEHGU release and implementation plans
- State greenhouse gas cap and trade program update
- Prop 1 update on new funding guidelines or opportunities (Harry Seraydarian)
- Update on Wetter or Not conservation recommendations
- Resilient Shoreline Planning through Bay Area Regional Collaborative
- SFEP's Clean Vessel Act Program (boating outreach)

Confirmed

- CCMP revision discussion: public comment received, suggested revisions
- State of the Estuary Conference 2015 debrief and accomplishments
- NEP program evaluation findings
- Thank you to outgoing Director Judy Kelly
- Discuss nominations for Chair/Vice Chair positions; selection in March 2016; new terms take effect May 2016
- Set calendar for 2016 meeting dates

February/March 2016 (date tbd at November 2015 meeting)

Potential

- Introduce new SFEP Director
- San Pablo Avenue Stormwater Spine project overview

Confirmed

- Draft work plan
- Select Chair/Vice Chair positions for 2016-7, to take effect in May
- CCMP revision: finalizing the document

May 2016 (date tbd at November 2015 meeting)

Potential

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Confirmed

- Approve final work plan
- Chair/Vice Chair new terms begin for 2016-7