

# Master List of Individual Science Actions

Dark blue cells indicate the overarching topics reflected in Appendix C. Some individual science action areas were used as the overarching topics.

Grey cells indicate individual science actions removed according to criteria described in the 2015-2016 High Impact Science Actions report

Unique Number ID	Organization	Individual Science Action	Rationale/Documentation	Status	Relevant Mandates	Funding Category	Primary Implementing Organization	Collaborating Organizations	Delta Plan: Policy Topic	Science Action Area	Reference Type (Interview or Document)
100	U.S. Bureau of Reclamation	Drought-related projects: (synthesis of lessons learned from 2014 drought operations Plan implementation)		Proposed	D1641; RPAs	Will be funded in the future	Various	Various	A more reliable water supply for California: All sub-topics	Action Area 17. Building science capacity	Interview
224	USBR, DWR, USFWS, NMFS, CDFW, SWRCB	Determine rearing locations and survival in stressful water temperatures of juvenile Steelhead in the American River.	Central Valley Project and State Water Project Drought Operations Plan and Operations Forecast: April 1, 2014 through November 15, 2014, Balancing Multiple Needs in a Third Dry Year		ESA; BiOps; Water Project Operations; CVP and SWP Drought Operations Plan and Operations Forecast ; CESA; CA Water Code; D-1641			USBR, DWR, USFWS, NMFS, CDFW, SWRCB	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document
232	USBR, DWR, USFWS, NMFS, CDFW, SWRCB	Effects of proposed drought operation plan on outmigration survival and entrainment of larval and juvenile Delta smelt in the Interior/South Delta.	Central Valley Project and State Water Project Drought Operations Plan and Operations Forecast: April 1, 2014 through November 15, 2014, Balancing Multiple Needs in a Third Dry Year		ESA; BiOps; Water Project Operations; CVP and SWP Drought Operations Plan and Operations Forecast ; CESA; CA Water Code; D-1641		USFWS	USBR, DWR, USFWS, NMFS, CDFW, SWRCB	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 3. Entrainment of native fishes	Document
226	USBR, DWR, USFWS, NMFS, CDFW, SWRCB	Water quality effects on salmonids and green sturgeon during the summer months with the 2014 Drought Plan implemented.	Central Valley Project and State Water Project Drought Operations Plan and Operations Forecast: April 1, 2014 through November 15, 2014, Balancing Multiple Needs in a Third Dry Year		ESA; BiOps; Water Project Operations; CVP and SWP Drought Operations Plan and Operations Forecast ; CESA; CA Water Code; D-1641			USBR, DWR, USFWS, NMFS, CDFW, SWRCB	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document
233	USBR, DWR, USFWS, NMFS, CDFW, SWRCB	Effects of proposed drought operation plan on entrainment risk of adult Delta smelt in the Interior/South Delta.	Central Valley Project and State Water Project Drought Operations Plan and Operations Forecast: April 1, 2014 through November 15, 2014, Balancing Multiple Needs in a Third Dry Year		ESA; BiOps; Water Project Operations; CVP and SWP Drought Operations Plan and Operations Forecast ; CESA; CA Water Code; D-1641			USBR, DWR, USFWS, NMFS, CDFW, SWRCB	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 3. Entrainment of native fishes	Document

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227	USBR, DWR, USFWS, NMFS, CDFW, SWRCB	Effects of minimum outflows, identified in the drought operational action, on the survival of outmigrating Winter-run Chinook salmon, rearing and migrating spring-run Chinook salmon, and juvenile salmonids migrating through the North Delta.	Central Valley Project and State Water Project Drought Operations Plan and Operations Forecast: April 1, 2014 through November 15, 2014, Balancing Multiple Needs in a Third Dry Year		ESA; BiOps; Water Project Operations; CVP and SWP Drought Operations Plan and Operations Forecast ; CESA; CA Water Code; D-1641			USBR, DWR, USFWS, NMFS, CDFW, SWRCB	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 1. Watershed and water management	Document
228	USBR, DWR, USFWS, NMFS, CDFW, SWRCB	Effects of lower outflow on density of littoral predators, and on the quantity of cover available to outmigrating salmonids to avoid predators.	Central Valley Project and State Water Project Drought Operations Plan and Operations Forecast: April 1, 2014 through November 15, 2014, Balancing Multiple Needs in a Third Dry Year		ESA; BiOps; Water Project Operations; CVP and SWP Drought Operations Plan and Operations Forecast ; CESA; CA Water Code; D-1641			USBR, DWR, USFWS, NMFS, CDFW, SWRCB	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 1. Watershed and water management	Document
229	USBR, DWR, USFWS, NMFS, CDFW, SWRCB	Effect of decreased mean water velocity on residence time, and size at ocean entry, of juvenile Winter-run and Spring-run Chinook salmon.	Central Valley Project and State Water Project Drought Operations Plan and Operations Forecast: April 1, 2014 through November 15, 2014, Balancing Multiple Needs in a Third Dry Year		ESA; BiOps; Water Project Operations; CVP and SWP Drought Operations Plan and Operations Forecast ; CESA; CA Water Code; D-1641			USBR, DWR, USFWS, NMFS, CDFW, SWRCB	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 4. Needs of native species	Document
170	Delta Stewardship Council	Understand the interaction between Delta levees and ecosystem function	Delta Plan		Delta Plan				Reduce risk to people, property, and State interests in the Delta: Levees and ecosystem function	Action Area 12. Characterization of risks associated with natural disasters	Document
173	Delta Stewardship Council	Effects of seismicity on levee integrity	Delta Plan		Delta Plan				Reduce risk to people, property, and State interests in the Delta: Flood risk (floods, earthquakes, high tides and sunny-day risks)	Action Area 12. Characterization of risks associated with natural disasters	Document
	IEP Management Team, NMFS	Salmon/Steelhead/Sturgeon Assessment of Indicators by Life Stages (SAIL)	Protect, restore, and enhance the Delta ecosystem		IEP Managment Team 2014 Work Plan Recommendation					Action Area 4. Needs of native species	Document

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164	Delta Stewardship Council	The process contributing to mercury and selenium compounds in food webs and their effects on the ecosystem	Delta Plan		Delta Plan				Improve water quality to protect human health and the environment: Environmental water quality	Action Area 10. Sources and drivers of contaminants	Document
298	Interagency Ecological Program (IEP) Scientific Advisory Committee (SAG)	Move from descriptive goals, objectives and study designs to address causal mechanisms that can help explain salmon survival and the underlying factors that account for it.	Review of the IEP Delta Juvenile Fishes Monitoring Program and Delta Juvenile Salmonid Survival Studies		BiOps; ESA; SWRCB's Bay-Delta Water Quality Control Plan		IEP		Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 15. Coordinated monitoring and assessment	Document
258	USBR, USFWS	Age, Growth, and Fin ray Microchemistry of sturgeon in the Sacramento and San Joaquin River Delta	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document
223	USBR, DWR, USFWS, NMFS, CDFW, SWRCB	Determine recruitment limitations on subyearling Green Sturgeon.	Central Valley Project and State Water Project Drought Operations Plan and Operations Forecast: April 1, 2014 through November 15, 2014, Balancing Multiple Needs in a Third Dry Year		ESA; BiOps; Water Project Operations; CVP and SWP Drought Operations Plan and Operations Forecast ; CESA; CA Water Code; D-1641			USBR, DWR, USFWS, NMFS, CDFW, SWRCB	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document
284	Delta Science Program's Independent Panel for the Predation Workshop	Better understand the hydrological processes and their effects on fish behavior around specific locations with atypical characteristics, such as Clifton Court Forebay, Red Bluff Diversion Dam, some domestic water intakes, and other predation hotspots, in order to yield insights into flow/structure-based management changes that could reduce levels of salmonid predation mortality	The predation workshop report - Effects of fish predation on salmonids in the Sacramento River – San Joaquin Delta and associated ecosystems		Striped Bass Settlement; BiOps; ESA; Delta Plan; BDCP; SWRCB's Bay-Delta Water Quality Control Plan			DSP; CDFW; NMFS	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 8. Abundance and distribution of predators	Document

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285	Delta Science Program's Independent Panel for the Predation Workshop	Obtain fishery-independent, Delta-wide estimates of population size for fish predators of salmonids including estimates of precision and bias, and... encompass both the spatial and temporal variation present in environmental characteristics of the Delta	The predation workshop report - Effects of fish predation on salmonids in the Sacramento River – San Joaquin Delta and associated ecosystems		Striped Bass Settlement; BiOps; ESA; Delta Plan; BDCP; SWRCB's Bay-Delta Water Quality Control Plan			DSP; CDFW; NMFS	Protect, restore, and enhance the Delta ecosystem: Hatcheries and harvest management	Action Area 8. Abundance and distribution of predators	Document
297	Interagency Ecological Program (IEP) Scientific Advisory Committee (SAG)	Move beyond simple abundance and distribution to incorporate more life history information (e.g., more detailed analysis of length data, collection of mass on some portion of the collections, calculation of condition indices, and potentially some archival sample collection for otolith determination of growth, age, and, as noted earlier, hatchery vs. wild designation).	Review of the IEP Delta Juvenile Fishes Monitoring Program and Delta Juvenile Salmonid Survival Studies		BiOps; ESA; SWRCB's Bay-Delta Water Quality Control Plan		IEP		Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 15. Coordinated monitoring and assessment	Document
283	Delta Science Program's Independent Panel for the Predation Workshop	Obtain spatially and temporally explicit, Delta-wide estimates of predation risk for juvenile salmonids, and...quantify the percent of the prey population (by species and origin) consumed by predators	The predation workshop report - Effects of fish predation on salmonids in the Sacramento River – San Joaquin Delta and associated ecosystems		Striped Bass Settlement; BiOps; ESA; Delta Plan; BDCP; SWRCB's Bay-Delta Water Quality Control Plan			DSP; CDFW; NMFS	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 8. Abundance and distribution of predators	Document
56	Collaborative Adaptive Management Team (CAMT)	Data synthesis and meta-analysis from previous Delta salmonid tagging studies.	There are numerous salmonid tagging studies conducted in the Delta over the past several decades that, when considered together, can potentially address key uncertainties about factors affecting migrational behavior and survival of juvenile salmonids	Proposed	Biological Opinions	Currently funded, but in need of future funds	CAMT	IEP	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Interview
<b>Climate Change Research</b>											
123	U.S. Fish and Wildlife Service	Better understand the effects of climate change, especially related to regional down-scaled climate predictions	can't do other things without understanding what is going to happen in the future, specifically with the climate	Proposed	ESA and USFWS' habitat conservation mission	Funding is needed	National Weather Service, DWR, USGS, USBR		Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 2. Impacts of climate change on natural resources	Interview

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172	Delta Stewardship Council	Climate change: effects of altered hydrology on levee system integrity	Delta Plan		Delta Plan				Reduce risk to people, property, and State interests in the Delta: Flood risk (floods, earthquakes, high tides and sunny-day risks)	Action Area 12. Characterization of risks associated with natural disasters	Document
171	Delta Stewardship Council	Sea level rise: impacts on, and incorporation into, flood risk reduction standards	Delta Plan		Delta Plan				Reduce risk to people, property, and State interests in the Delta: Flood risk (floods, earthquakes, high tides and sunny-day risks)	Action Area 12. Characterization of risks associated with natural disasters	Document
310	IEP Contaminants Work Team (CWT) Independent Science advisory Panel	Investigate whether saline-tolerant phenotypes are appearing, because saltwater intrusion into estuarine systems is likely to become a more prominent issue with changing climate	Evaluating Stressors in the San Francisco Estuary using Biomarkers Report of an Independent Scientific Advisory Panel		BiOps; ESA; SWRCB's Bay-Delta Water Quality Control Plan; Delta Plan			IEP Contaminants Work Team	Protect, restore, and enhance the Delta ecosystem: Ecosystem water quality	Action Area 2. Impacts of climate change on natural resources	Document
76	NOAA- Southwest Science Center (NOAA-SWSC)	Understand effects of water temperature on salmonids	2009 Biological Opinions	Ongoing	Endangered Species Act & Magnuson-Stevens Fishery Conservation and Management Act	Funding is needed	NOAA/NMFS Southwest Fisheries Science Center	UCSC; UCSB; NASA AmES; University of Colorado, Boulder	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Interview
127	California Department of Water Resources- Division of Environmental Services (DWR-DES)	Develop a strong and adaptable science infrastructure to respond to shifting ecological and political disturbances		Ongoing	Delta Science Plan	Currently funded, but in need of future funds		IEP; Delta Science Program	Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 17. Building science capacity	Interview
93	San Francisco Regional Water Quality Control Board (SFRWQCB)	Understand the dynamics of the Bay-Delta system related to changes in freshwater flows, sediment supply, and sea-level rise		Ongoing	Clean Water Act; Porter-Cologne Water Quality Control Act; Basin Plan; Endangered Species Act	Currently funded, but in need of future funds	Various	US EPA; CVRWQCB	Improve water quality to protect human health and the environment: All sub-topics	Action Area 1. Watershed and water management	Interview

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169	Delta Stewardship Council	Fate and transport of water quality contaminants in the Delta	Delta Plan		Delta Plan				Improve water quality to protect human health and the environment: Water quality protection	Action Area 10. Sources and drivers of contaminants	Document
66	Interagency Ecological Program (IEP)	Understand the importance of contaminants to species of concern	Recent IEP data syntheses and other activities (e.g. predation workshop) have highlighted that we have little information about the importance of contaminants in determining the abundance of Delta smelt and other species of concern. This has been an IEP concern for more than 3 decades.	Ongoing	Clean Water Act; TMDL; RMP	Funding is needed	EPA; State/Regional Water Boards; SFCWA	IEP; Delta RMP; SFCWA	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 10. Sources and drivers of contaminants	Interview
161	Delta Stewardship Council	Trends in concentrations of drinking water constituents of concern	Delta Plan		Delta Plan				Improve water quality to protect human health and the environment: Drinking water quality	Action Area 15. Coordinated monitoring and assessment	Document
280	SWRCB	Understand the role of contaminants in the system, specifically regarding waste discharge.	Comprehensive (Phase 2) Review and Update to the Bay-Delta Plan: Final Bay-Delta Plan Workshops Summary Report		State Board's Bay-Delta Plan				Improve water quality to protect human health and the environment: All sub-topics	Action Area 10. Sources and drivers of contaminants	Document
167	Delta Stewardship Council	Sources and impacts of pathogens on drinking water sources and recreation in the Delta	Delta Plan		Delta Plan				Improve water quality to protect human health and the environment: Water quality protection	Action Area 15. Coordinated monitoring and assessment	Document
311	IEP Contaminants Work Team (CWT) Independent Science advisory Panel	Experiments involving binary mixtures of different toxicant classes as well as non-chemical stressors	Evaluating Stressors in the San Francisco Estuary using Biomarkers Report of an Independent Scientific Advisory Panel		BiOps; ESA; SWRCB's Bay-Delta Water Quality Control Plan; Delta Plan			IEP Contaminants Work Team; CDFW; SFCWA	Protect, restore, and enhance the Delta ecosystem: Ecosystem water quality	Action Area 10. Sources and drivers of contaminants	Document

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315	IEP Contaminants Work Team (CWT) Independent Science advisory Panel	Pair analytical chemistry with bioanalytical assays in the field to determine overall chemical equivalencies (TEQs) for endocrine related receptor transactivation	Evaluating Stressors in the San Francisco Estuary using Biomarkers Report of an Independent Scientific Advisory Panel		BiOps; ESA; SWRCB's Bay-Delta Water Quality Control Plan; Delta Plan			IEP Contaminants Work Team; CDFW; SFCWA	Protect, restore, and enhance the Delta ecosystem: Ecosystem water quality	Action Area 10. Sources and drivers of contaminants	Document
43	Central Valley Regional Water Quality Control Board (CVRWQCB)	Conduct a toxicological assessment of current use fungicides and herbicides on pelagic primary production in the freshwater Delta.	2014 Delta Strategic Work Plan	Proposed	Clean Water Act, Water Quality Control Plan for the Sacramento and San Joaquin River Basins	Funding is needed	CVRWQCB	IEP, USGS	Protect, restore, and enhance the Delta ecosystem: Ecosystem water quality	Action Area 10. Sources and drivers of contaminants	Interview
163	Delta Stewardship Council	The effects of the simultaneous presence of multiple pesticides, even at low levels, on species	Delta Plan		Delta Plan				Improve water quality to protect human health and the environment: Environmental water quality	Action Area 10. Sources and drivers of contaminants	Document
165	Delta Stewardship Council	The impacts of pharmaceutical compounds, personal care products, and other emerging contaminants on the ecosystem	Delta Plan		Delta Plan				Improve water quality to protect human health and the environment: Environmental water quality	Action Area 10. Sources and drivers of contaminants	Document
44	Central Valley Regional Water Quality Control Board (CVRWQCB)	Develop and implement a nutrient study plan to determine whether nutrient objectives are needed to protect beneficial uses in the Delta	2014 Delta Strategic Work Plan, Delta Plan WQ R8	Ongoing	Clean Water Act, Water Quality Control Plan for the Sacramento and San Joaquin River Basins, Delta Plan	Funding is needed	CVRWQCB	SF RWQCB, SFCWA, USFWS, CDF, IEP Nutrients work	Protect, restore, and enhance the Delta ecosystem: Ecosystem water quality	Action Area 11. Role of nutrients	Interview
239	San Francisco Estuary Institute	A coordinated nutrient science plan should be established for Suisun Bay and the Delta, with clearly articulated scientific questions, recommended experiments or monitoring, and a prioritization of work.	Suisun Bay Ammonium Synthesis Report		Delta Plan, CWA				Improve water quality to protect human health and the environment: All sub-topics	Action Area 11. Role of nutrients	Document
221	DWR, USBR	Understand interaction of Microcystis and abiotic habitat conditions; restored habitats; and changing flow conditions (CM1)	BDCP Appendix 5.F (2013)		BDCP; ESA; HCP; NCCP Act				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 6. Lower aquatic food webs	Document

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309	IEP Contaminants Work Team (CWT) Independent Science advisory Panel	More investigation of ion regulatory mechanisms,... due to the prevalence of non-chemical stressors in the San Francisco Estuary	Evaluating Stressors in the San Francisco Estuary using Biomarkers Report of an Independent Scientific Advisory Panel		BiOps; ESA; SWRCB's Bay-Delta Water Quality Control Plan; Delta Plan			IEP Contaminants Work Team	Protect, restore, and enhance the Delta ecosystem: Ecosystem water quality	Action Area 10. Sources and drivers of contaminants	Document
313	IEP Contaminants Work Team (CWT) Independent Science advisory Panel	Continue to develop specific molecular toxicogenomics approaches (i.e., species-specific microarrays, RNA sequence, genomic resources)	Evaluating Stressors in the San Francisco Estuary using Biomarkers Report of an Independent Scientific Advisory Panel		BiOps; ESA; SWRCB's Bay-Delta Water Quality Control Plan; Delta Plan			IEP Contaminants Work Team; CDFW; SFCWA	Protect, restore, and enhance the Delta ecosystem: Ecosystem water quality	Action Area 10. Sources and drivers of contaminants	Document
289	Delta Science Program's Independent Panel for the Predation Workshop	Obtain estimates for the cumulative effects of physical and chemical stressors during migration through the lower rivers and Delta, especially because these effects may be the true causal mechanism for mortality via predators	The predation workshop report - Effects of fish predation on salmonids in the Sacramento River – San Joaquin Delta and associated ecosystems		Striped Bass Settlement; BiOps; ESA; Delta Plan; BDCP; SWRCB's Bay-Delta Water Quality Control Plan			DSP; CDFW; NMFS	Protect, restore, and enhance the Delta ecosystem: Hatcheries and harvest management	Action Area 4. Needs of native species	Document
314	IEP Contaminants Work Team (CWT) Independent Science advisory Panel	Conduct pilot studies in the laboratory using model POD species together with toxicants known to occur in the area, to determine the potential added value over RNA abundance measures of employing other toxicogenomic methods for diagnosing fish condition and elucidating exposure history	Evaluating Stressors in the San Francisco Estuary using Biomarkers Report of an Independent Scientific Advisory Panel		BiOps; ESA; SWRCB's Bay-Delta Water Quality Control Plan; Delta Plan			IEP Contaminants Work Team; CDFW; SFCWA	Protect, restore, and enhance the Delta ecosystem: Ecosystem water quality	Action Area 10. Sources and drivers of contaminants	Document
166	Delta Stewardship Council	The combined effects of multiple contaminants and water quality conditions on the ecosystem	Delta Plan		Delta Plan				Improve water quality to protect human health and the environment: Environmental water quality	Action Area 10. Sources and drivers of contaminants	Document

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242	San Francisco Estuary Institute	Replicate the chronic toxicity experiment first (Teh et al. 2011), and determining if similar or different thresholds are observed.	Suisun Bay Ammonium Synthesis Report		Delta Plan, CWA				Improve water quality to protect human health and the environment: Environmental water quality	Action Area 10. Sources and drivers of contaminants	Document
160	Delta Stewardship Council	The effects of salinity on introduced and native plant and animal species			Delta Plan				Improve water quality to protect human health and the environment: Managing salinity	Action Area 15. Coordinated monitoring and assessment	Document
<b>Mercury</b>											
110	U.S. Environmental Protection Agency	Investigate chemical treatment as a method for removing methylmercury from wetland systems		Proposed	Clean Water Act	Funding is needed			Protect, restore, and enhance the Delta ecosystem: Ecosystem water quality	Action Area 10. Sources and drivers of contaminants	Interview
45	Central Valley Regional Water Quality Control Board (CVRWQCB)	Conduct studies to develop and evaluate best management practices to control methyl mercury consistent with the Mercury Control Program in the Delta.		Ongoing	Clean Water Act Section 303(d), Water Quality Control Plan for the Sacramento and San Joaquin River Basins, Phase I Mercury Control Plans, Delta Plan, Nutrient Study Plan	Currently funded, but in need of future funds	Unknown	CDFW, CDWR, ERP, Moss Landing Marine Labs, FRPA, OEHHA	Delta as a place: Recreation and Tourism	Action Area 10. Sources and drivers of contaminants	Interview
<b>Flow</b>											
			2014 Delta Strategic Work Plan								
276	SWRCB	Flow—better understand how and where it is measured, what its impacts are on different aspects of the ecosystem especially fish, understand its relationship to other stressors and how it should be managed	Comprehensive (Phase 2) Review and Update to the Bay-Delta Plan: Final Bay-Delta Plan Workshops Summary Report		State Board's Bay-Delta Plan				Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 1. Watershed and water management	Document

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51	Collaborative Adaptive Management Team (CAMT)	Investigate Effects of Fall Outflow on Delta smelt.	This element re-examines analyses presented in the 2008 Biological Opinions. New work would include review of new information as it applies to the original analyses, and complement or challenge existing analyses to evaluate the relationship between outflow through the Delta and demographic response in Delta smelt.	Ongoing	Biological Opinions	Currently funded, but in need of future funds	CAMT	IEP	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 4. Needs of native species	Interview
318	SWRCB	Gain a better understanding of the importance of time scales of variability in X2 and Delta outflow for protection of desirable fish and wildlife populations.			Clean Water Act; Porter-Cologne Water Quality Control Act; SWRCB's Bay-Delta Water Quality Control Plan				Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 4. Needs of native species	
277	SWRCB	Understand the effects of flow on individual fish species and the functioning of the aquatic ecosystem as a whole	Comprehensive (Phase 2) Review and Update to the Bay-Delta Plan: Final Bay-Delta Plan Workshops Summary Report		State Board's Bay-Delta Plan				Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 4. Needs of native species	Document
317	SWRCB	Develop a methodology for determining instream flow needs for protection of native fish populations, particularly in smaller and less well-studied tributaries.			Clean Water Act; Porter-Cologne Water Quality Control Act; SWRCB's Bay-Delta Water Quality Control Plan				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	
230	USBR, DWR, USFWS, NMFS, CDFW, SWRCB	Effects of proposed modifications to San Joaquin River I:E ratio and San Joaquin River flow downstream of the Head of Old River on the survival and entrainment risk of salmonids and steelhead in the South and Central Delta.	Central Valley Project and State Water Project Drought Operations Plan and Operations Forecast: April 1, 2014 through November 15, 2014, Balancing Multiple Needs in a Third Dry Year		ESA; BiOps; Water Project Operations; CVP and SWP Drought Operations Plan and Operations Forecast ; CESA; CA Water Code; D-1641			USBR, DWR, USFWS, NMFS, CDFW, SWRCB	A more reliable water supply for California: Water management information	Action Area 1. Watershed and water management	Document

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87	San Francisco Regional Water Quality Control Board (SFRWQCB)	Understand the effects of Delta flows on salmonid recovery in the San Francisco Bay watershed		Ongoing	Clean Water Act; Porter-Cologne Water Quality Control Act; Basin Plan; Endangered Species Act	Funding is needed	Various	US EPA; CVRWQCB; US Army Corps of Engineers; Resource Conservation Districts; CDFW; USFWS; NMFS; Marine Sanctuaries; SFEI; Regional Monitoring Program	Improve water quality to protect human health and the environment: All sub-topics	Action Area 4. Needs of native species	Interview
136	Public Water Agencies	Understand the mechanism of the observed relationship between spring outflow and Longfin smelt abundance.			BDCP, Biological Opinions; ESA; CWA; SWRCB's Bay-Delta Plan				A more reliable water supply for California: Water management information	Action Area 4. Needs of native species	Interview
137	Public Water Agencies	Understand the mechanism of the relationship between fall outflow in wet years and subsequent Delta smelt abundance.			BDCP, Biological Opinions; ESA; CWA; SWRCB's Bay-Delta Plan				A more reliable water supply for California: Water management information	Action Area 4. Needs of native species	Interview
244	USBR, USFWS	Mill and Deer Wild Juvenile Chinook Acoustic Tagging Investigations	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA		USFWS		Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document
186	CNRA, CDFA, CAL/EPA	Develop a pilot project to test if a new index for Old River and Middle River reverse flows enables compliance with biological opinion requirements.	California Water Action Plan		California Water Action Plan; Biological Opinions				A more reliable water supply for California: All sub-topics	Action Area 1. Watershed and water management	Document
150	Delta Stewardship Council	Assessment of how flows benefit or harm native wildlife and plants.	Delta Plan		Delta Plan				Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 4. Needs of native species	Document
120	U.S. Fish and Wildlife Service	<b>Better understand habitat needs of native estuarine species</b>	Interested in knowing how to best support public and private uses, particularly in managing an estuary while still maintaining conservation values for native species, particularly pelagic fish	Ongoing	ESA and USFWS' habitat conservation mission	Funding is needed	USFWS	DWR, CAMT, MWD, USBR	Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 4. Needs of native species	Interview

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50	Collaborative Adaptive Management Team (CAMT)	Investigate Importance of Fall Period for Delta smelt.	Needed to establish whether survivorship through the fall is important in influencing year-to-year changes in Delta smelt abundance.  Survivorship through the fall is one vital rate that may be important.	Ongoing	Biological Opinions	Currently funded, but in need of future funds	CAMT	IEP	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 4. Needs of native species	Interview
207	DWR, USBR	Understand the overlap between covered fish species' habitat use and areas infested with invasive aquatic vegetation	BDCP Appendix 5.F (2013)		BDCP; ESA; HCP; NCCP Act				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document
208	DWR, USBR	Identify important migration corridors or use of areas with invasive aquatic vegetation	BDCP Appendix 5.F (2013)		BDCP; ESA; HCP; NCCP Act				Protect, restore, and enhance the Delta ecosystem: Nonnative species	Action Area 7. Methods to manage and minimize the impacts of non-native species	Document
	IEP Management Team, USFWS	Pilot Delta Littoral Habitat Fish Study	Protect, restore, and enhance the Delta ecosystem		IEP Management Team 2014 Work Plan Recommendation					Action Area 4. Needs of native species	Document
119	U.S. Environmental Protection Agency	Identify the necessary habitat characteristics of a hydrodynamic, migratory corridor for anadromous fish across the Bay Delta Region and potential methods for establishing multiple migratory corridors.							Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Interview
245	USBR, USFWS	Green Sturgeon Juvenile Overwintering Migration Investigation	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA		USFWS		Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document
248	USBR, USFWS	San Joaquin River Sturgeon Acoustic Study	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA		USFWS		Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document
249	USBR, USFWS	Assess sturgeon habitat use in the lower San Joaquin River	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA		USFWS		Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 5. Habitat restoration	Document

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225	USBR, DWR, USFWS, NMFS, CDFW, SWRCB	Stability and productivity of <i>O. mykiss</i> populations in the Stanislaus River, given temperature operations provide summer cool water refugias.	Central Valley Project and State Water Project Drought Operations Plan and Operations Forecast: April 1, 2014 through November 15, 2014, Balancing Multiple Needs in a Third Dry Year		ESA; BiOps; Water Project Operations; CVP and SWP Drought Operations Plan and Operations Forecast ; CESA; CA Water Code; D-1641			USBR, DWR, USFWS, NMFS, CDFW, SWRCB	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document
69	Interagency Ecological Program (IEP)	<b>Understand food web dynamics and productivity and how they can be improved for native species</b>	Recent IEP data syntheses and other activities have highlighted the importance of and changes in trophic processes that are believed to have affected abundance of Delta smelt and other species of concern. An understanding of current trophic processes and factors affecting them is needed to determine if conditions can be improved for species of concern.	Ongoing	BDCP; FRPA; Biological Opinions	Funding is needed	IEP	SFCWA	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 6. Lower aquatic food webs	Interview
216	DWR, USBR	Understand the factors and conditions that facilitate invasive clam colonization	BDCP Appendix 5.F (2013)		BDCP; ESA; HCP; NCCP Act				Protect, restore, and enhance the Delta ecosystem: Nonnative species	Action Area 7. Methods to manage and minimize the impacts of non-native species	Document
217	DWR, USBR	Effect of variable nutrients on clam success	BDCP Appendix 5.F (2013)		BDCP; ESA; HCP; NCCP Act				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 6. Lower aquatic food webs	Document
218	DWR, USBR	Understand most effective methods to control invasive mollusks	BDCP Appendix 5.F (2013)		BDCP; ESA; HCP; NCCP Act				Protect, restore, and enhance the Delta ecosystem: Nonnative species	Action Area 7. Methods to manage and minimize the impacts of non-native species	Document
213	DWR, USBR	Understand how phytoplankton biomass is affected by clam grazing	BDCP Appendix 5.F (2013)		BDCP; ESA; HCP; NCCP Act				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 6. Lower aquatic food webs	Document

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214	DWR, USBR	Impact of invasive clams on food web	BDCP Appendix 5.F (2013)		BDCP; ESA; HCP; NCCP Act				Protect, restore, and enhance the Delta ecosystem: Nonnative species	Action Area 6. Lower aquatic food webs	Document
241	San Francisco Estuary Institute	Models that evaluate the potential quantitative importance of NH4+ -inhibition at the ecosystem scale, relative to other factors known to play important roles in limiting primary production rates (e.g., light limitation) or biomass accumulation (clam grazing, residence time) in Suisun Bay.	Suisun Bay Ammonium Synthesis Report		Delta Plan, CWA				Improve water quality to protect human health and the environment: Environmental water quality	Action Area 6. Lower aquatic food webs	Document
240	San Francisco Estuary Institute	Identify the specific science questions and the types of studies needed to better understand the hypothesized mechanisms of the ammonium-inhibition conceptual model.	Suisun Bay Ammonium Synthesis Report		Delta Plan, CWA				Improve water quality to protect human health and the environment: All sub-topics	Action Area 11. Role of nutrients	Document
219	DWR, USBR	Relationship of abiotic factors' (e.g. salinity) effect on invasive mollusks' distribution	BDCP Appendix 5.F (2013)		BDCP; ESA; HCP; NCCP Act				Protect, restore, and enhance the Delta ecosystem: Nonnative species	Action Area 7. Methods to manage and minimize the impacts of non-native species	Document
220	DWR, USBR	Identify mechanical and biological control strategies for established clams and prevention measures for potential invaders	BDCP Appendix 5.F (2013)		BDCP; ESA; HCP; NCCP Act				Protect, restore, and enhance the Delta ecosystem: Nonnative species	Action Area 7. Methods to manage and minimize the impacts of non-native species	Document

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114	U.S. Environmental Protection Agency	Characterize conditions that support increasing abundance and improving composition of phytoplankton and zoo plankton communities in Suisun and Grizzly Bays. Identify potential methods for creating these conditions to stabilize the base of the food web for supporting desired native and migratory fishes.							Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 6. Lower aquatic food webs	Interview
15	California Department of Water Resources-Bay Delta (DWR-Bay Delta)	Understand factors that promote and inhibit primary production and its effects on native species in the Bay-Delta system	Primary productivity enhancement can tip the scales in terms of invasive species and provide benefit to native species.	Ongoing	Biological Opinions RPA, Fall X2 Action	Funding is needed	DWR Bay-Delta Office	DWR Bay-Delta Office; USGS	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 6. Lower aquatic food webs	Interview
209	DWR, USBR	Research the productivity and food web interaction of Egeria in the Delta	BDCP Appendix 5.F (2013)		BDCP; ESA; HCP; NCCP Act				Protect, restore, and enhance the Delta ecosystem: Nonnative species	Action Area 7. Methods to manage and minimize the impacts of non-native species	Document
231	USBR, DWR, USFWS, NMFS, CDFW, SWRCB	Effects of increased residence time of water in the North Delta on lower trophic production and potential prey availability for Delta smelt.	Central Valley Project and State Water Project Drought Operations Plan and Operations Forecast: April 1, 2014 through November 15, 2014, Balancing Multiple Needs in a Third Dry Year		ESA; BiOps; Water Project Operations; CVP and SWP Drought Operations Plan and Operations Forecast ; CESA; CA Water Code; D-1641			USBR, DWR, USFWS, NMFS, CDFW, SWRCB	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 6. Lower aquatic food webs	Document
	IEP Management Team, DWR	Use of Fall Agricultura Flows to improve the Delta Foodweb									
		<b>Predator-prey interactions</b>									
288	Delta Science Program's Independent Panel for the Predation Workshop	Refine system-wide estimates of consumption of juveniles with bioenergetics models for the dominant predator species	The predation workshop report - Effects of fish predation on salmonids in the Sacramento River – San Joaquin Delta and associated ecosystems		Striped Bass Settlement; BiOps; ESA; Delta Plan; BDCP; SWRCB's Bay-Delta Water Quality Control Plan			DSP; CDFW; NMFS	Protect, restore, and enhance the Delta ecosystem: Hatcheries and harvest management	Action Area 8. Abundance and distribution of predators	Document

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73	NOAA- Southwest Science Center (NOAA-SWSC)	Conduct in-river survival studies of juvenile salmon	cortical information to support take at pumps	Ongoing	Endangered Species Act & Magnuson-Stevens Fishery Conservation and Management Act	Currently funded, but in need of future funds	NOAA/NMFS Southwest Fisheries Science Center	UCD; USGS; CDFW; UCSC	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Interview
243	USBR, USFWS	Stanislaus River Juvenile Chinook and O.mykiss Mortality Study	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA		USFWS		Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document
290	Delta Science Program's Independent Panel for the Predation Workshop	Obtain and establish relationships between submerged aquatic vegetation, predator distributions, flow patterns and predation intensity via experimental and descriptive studies and... in particular on Franks Tract which is the largest shallow water habitat in the central Delta	The predation workshop report - Effects of fish predation on salmonids in the Sacramento River – San Joaquin Delta and associated ecosystems		Striped Bass Settlement; BiOps; ESA; Delta Plan; BDCP; SWRCB's Bay-Delta Water Quality Control Plan			DSP; CDFW; NMFS	Protect, restore, and enhance the Delta ecosystem: Hatcheries and harvest management	Action Area 8. Abundance and distribution of predators	Document
138	Public Water Agencies	Understand the abundance and distribution of predators and their importance to native fish.			BDCP, Biological Opinions; ESA; CWA; SWRCB's Bay-Delta Plan; Delta Plan				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 8. Abundance and distribution of predators	Interview
211	DWR, USBR	Understand predator-prey interactions in the Delta	BDCP Appendix 5.F (2013)		BDCP; ESA; HCP; NCCP Act					Action Area 8. Abundance and distribution of predators	Document
287	Delta Science Program's Independent Panel for the Predation Workshop	Determine if predation rates by piscivores on natural vs. hatchery origin fish differ	The predation workshop report - Effects of fish predation on salmonids in the Sacramento River – San Joaquin Delta and associated ecosystems		Striped Bass Settlement; BiOps; ESA; Delta Plan; BDCP; SWRCB's Bay-Delta Water Quality Control Plan			DSP; CDFW; NMFS	Protect, restore, and enhance the Delta ecosystem: Hatcheries and harvest management	Action Area 8. Abundance and distribution of predators	Document
286	Delta Science Program's Independent Panel for the Predation Workshop	Conduct BACI-design predator removal experiments... conducted in various Delta regions	The predation workshop report - Effects of fish predation on salmonids in the Sacramento River – San Joaquin Delta and associated ecosystems		Striped Bass Settlement; BiOps; ESA; Delta Plan; BDCP; SWRCB's Bay-Delta Water Quality Control Plan			DSP; CDFW; NMFS	Protect, restore, and enhance the Delta ecosystem: Hatcheries and harvest management	Action Area 8. Abundance and distribution of predators	Document

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		<b>Effects of Invasive Aquatic Vegetation (IAV) of Delta Ecology</b>									
210	DWR, USBR	Understand the effects of removal of invasive aquatic vegetation on native submerged aquatic vegetation species, phytoplankton growth, turbidity and ecological factors	BDCP Appendix 5.F (2013)		BDCP; ESA; HCP; NCCP Act				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 7. Methods to manage and minimize the impacts of non-native species	Document
203	Bay Delta Conservation Plan	Research regarding the ability of invasive aquatic vegetation (IAV) to recover after elimination treatments (e.g. herbicide)	BDCP Appendix 5.F (2013)		BDCP; ESA; HCP; NCCP Act				Protect, restore, and enhance the Delta ecosystem: Nonnative species	Action Area 7. Methods to manage and minimize the impacts of non-native species	Document
204	DWR, USBR	Continued research on biological control methods to eliminate invasive aquatic vegetation	BDCP Appendix 5.F (2013)		BDCP; ESA; HCP; NCCP Act				Protect, restore, and enhance the Delta ecosystem: Nonnative species	Action Area 7. Methods to manage and minimize the impacts of non-native species	Document
205	DWR, USBR	Research is needed to investigate if a pathogenic effect exists for specific invasive aquatic vegetation biological control methods	BDCP Appendix 5.F (2013)		BDCP; ESA; HCP; NCCP Act				Protect, restore, and enhance the Delta ecosystem: Nonnative species	Action Area 7. Methods to manage and minimize the impacts of non-native species	Document
222	DWR, USBR	Effect of Invasive Aquatic Vegetation (IAV) removal via herbicides on Microcystis blooms	BDCP Appendix 5.F (2013)		BDCP; ESA; HCP; NCCP Act				Protect, restore, and enhance the Delta ecosystem: Nonnative species	Action Area 7. Methods to manage and minimize the impacts of non-native species	Document
71	Interagency Ecological Program (IEP)	<b>Understand the importance of entrainment to fish populations</b>	Understanding the effects of entrainment on fish populations was an initial motivator for several IEP surveys. While this is not a priority identified in the IEP strategic plan, IEP resources will likely be used to implement this science action into the future.	Ongoing	BDCP; FRPA; Biological Opinions	Funding is needed	CAMT; DWR; CDFW; USBR	IEP	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 3. Entrainment of native fishes	Interview

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154	Delta Stewardship Council	Understand entrainment effects on fish populations. CAMT	Delta Plan		Delta Plan				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 3. Entrainment of native fishes	Document
55	Collaborative Adaptive Management Team (CAMT)	Briefing about SWFSC winter-run salmonid life cycle model LCM).	In order to ensure development of a widely accepted LCM, its development should be transparent and shared with interested parties.	Ongoing	Biological Opinions	Currently funded, but in need of future funds	CAMT	SWFSC	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 16. Collaborative modeling approaches	Interview
6	California Department of Fish and Wildlife (CDFW)	Understand the relationship between entrainment and Old and Middle River flows	CAMT Involvement	Proposed	Biological Opinions; NCCP; Delta Plan	Funding is needed	USFWS	CSAMP/CAMT, IEP	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 3. Entrainment of native fishes	Interview
18	California Department of Water Resources-Bay Delta (DWR-Bay Delta)	Fish entrainment studies to understand the effects of intakes throughout the Delta and the efficacy of fish screens at Clifton Court Forebay	Related to the RPAs	Ongoing	Biological Opinions RPAs	Currently funded, but in need of future funds	DWR Bay-Delta Office	DWR Division of Operations and Maintenance	A more reliable water supply for California: All sub-topics	Action Area 3. Entrainment of native fishes	Interview
52	Collaborative Adaptive Management Team (CAMT)	Assess factors affecting adult Delta smelt entrainment	The intent is to refine our understanding of how project operations are influencing outflow volumes.	Ongoing	Biological Opinions	Currently funded, but in need of future funds	CAMT	IEP, MWD	A more reliable water supply for California: Water management information	Action Area 3. Entrainment of native fishes	Interview
95	State and Federal Contractors Water Agencies (SFCWA)	Understand the causes and effects of entrainment	SFCWA Science Research Plan (February 2014)	Ongoing	Biological opinion RPAs and Water Quality Control Plans	Currently funded, but in need of future funds	SFCWA	IEP; private consultants; Universities; UC Davis; SF State University	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 3. Entrainment of native fishes	Interview
178	CNRA, CDFA, CAL/EPA	<b>Implement urban and agricultural water use efficiency research</b>	California Water Action Plan		California Water Action Plan				A more reliable water supply for California: Water efficiency and conservation	Action Area 1. Watershed and water management	Document

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122	U.S. Fish and Wildlife Service	Better understand how to sustainably manage water through river and tributary corridors in and through the Central Valley and out through the estuary and bay	Need to better understand how we and our partners can sustainably manage water while supporting human use of water and supporting habitat conservation through these corridors and support conservation values of national wildlife system	Ongoing	ESA, USFWS' habitat conservation mission, Central Valley Project Improvement Action (CVPIA)	Funding is needed	USFWS	NOAA, Water Project Operators (USBR and DWR); National Wildlife Refuges; CVPIA Anadromous Fish Restoration Program; Central Valley Joint Venture	Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 1. Watershed and water management	
115	U.S. Environmental Protection Agency	Identifying methods and costs for increasing water-use efficiency, water recycling & potable re-use							A more reliable water supply for California: All sub-topics	Action Area 1. Watershed and water management	Interview
116	U.S. Environmental Protection Agency	Identifying opportunities for "Regionalization" of water supplies and decreased dependence on the Delta and the CVP/SWP							A more reliable water supply for California: All sub-topics	Action Area 1. Watershed and water management	Interview
184	CNRA, CDFA, CAL/EPA	Identify additional data and studies needed to evaluate opportunities, such as capturing and recharging stormwater flows and other water not used by other users or the environment	California Water Action Plan		California Water Action Plan				A more reliable water supply for California: Water efficiency and conservation	Action Area 1. Watershed and water management	Document
<b>Delta As A Place</b>											
63	Delta Protection Commission (DPC)	Conduct research to better understand the recreational use of the Delta	Recommendation in the Economic Sustainability Plan; don't have good current data on recreational use in the Delta	Proposed	Delta Protection Act; 2009 Delta Reform Act; Delta Plan	Funding is needed	Delta Protection Commission	Delta Conservancy, State Parks	Delta as a place: Recreation and Tourism	Action Area 9. The Delta economy	Interview
158	Delta Stewardship Council	Analysis of land and water use by agriculture, including land ownership (resident vs. absentee; age of owner; size of holding, etc.), cropping patterns, soil types, and other factors to identify the Delta's agricultural regions, their competitive advantages, threats and opportunities.	Delta Plan		Delta Plan				Delta as a place: Agriculture	Action Area 9. The Delta economy	Document

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156	Delta Stewardship Council	Surveys of Delta recreation at regular intervals, such as every 5 years, to inform marketing and planning for recreation and tourism	Delta Plan		Delta Plan				Delta as a place: Recreation and Tourism	Action Area 9. The Delta economy	Document
7	California Department of Food and Agriculture (CDFA)	Implement ecosystem services studies to understand the ecological and economic benefits of agricultural lands	trying to implement because recognize the multiple benefits that farmers and ranchers provide	Ongoing	1995 Environmental Farming Act	Funding is needed	California Department of Food and Agriculture	DWR; USDA-NRCS	Delta as a place: Agriculture	Action Area 9. The Delta economy	Interview
		<b>Subsidence effects on Delta ecology/economy</b>									
157	Delta Stewardship Council	Assessments of opportunities to control or reverse subsidence of farmland	Delta Plan		Delta Plan				Delta as a place: Agriculture	Action Area 9. The Delta economy	Document
175	Delta Stewardship Council	Potential for subsidence reversal and carbon sequestration from growing native marsh plants	Delta Plan		Delta Plan				Reduce risk to people, property, and State interests in the Delta: Land subsidence	Action Area 12. Characterization of risks associated with natural disasters	Document
85	Sacramento-San Joaquin Delta Conservancy	Develop and implement Carbon sequestration protocol for California wetlands, including the implementation of pilot projects		Ongoing	AB 32; Delta Plan; BDCP	Currently funded, but in need of future funds	DWR; CDFW; Delta Conservancy; individual farmers; NRCS;	DWR; CDFW; UC Berkeley; UC Davis; Hydrofocus; SMUD; MWD; Coastal Conservancy; ARB; ACR (American Carbon Registry);	Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 2. Impacts of climate change on natural resources	Interview
1	California Department of Fish and Wildlife (CDFW)	Continue FLaSH studies	To better understand the role of flow in terms of ecosystem support	Ongoing	Biological Opinions; NCCP; Delta Plan	Currently funded (in full)	IEP	IEP	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 13. Tools and resources for adaptive management	Interview
2	California Department of Fish and Wildlife (CDFW)	Develop Spring Outflows studies	To understand how Spring flows as it relates to Longfin smelt and salmonid survival in particular	Ongoing	Biological Opinions; NCCP; Delta Plan; Longfin smelt Incidental Take Permit (ITP) 2081; CESA	Currently funded (in full)	CDFW	IEP, DWR, SFCWA	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 4. Needs of native species	Interview
3	California Department of Fish and Wildlife (CDFW)	Develop salmonid PIT tag study		Proposed	Biological Opinions; NCCP; Delta Plan	Currently funded, but in need of future funds	CDFW (Water Branch and Fisheries Branch)	NOAA, IEP	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 4. Needs of native species	Interview

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4	California Department of Fish and Wildlife (CDFW)	Develop regional approaches to monitoring and understanding the effects of tidal marsh restoration		Ongoing	Biological Opinions; NCCPs; HCPs; Delta Plan	Currently funded, but in need of future funds	CDFW	IEP Tidal Wetland Monitoring Project Work Team, FRPA	Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 13. Tools and resources for adaptive management	Interview
5	California Department of Fish and Wildlife (CDFW)	Understand the role of predation and other stressors on salmonid survival		Proposed	Biological Opinions; NCCP; Delta Plan	Currently funded, but in need of future funds	CDFW	IEP	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 8. Abundance and distribution of predators	Interview
8	California Department of Food and Agriculture (CDFA)	Implement studies to identify greenhouse gas reduction benefits from conservation practices (e.g., tillage and water reductions) and the implementation of new technologies (e.g., dairy digesters)	foster and incubate more dairy digesters to reduce methane emissions	Ongoing		Funding is needed	California Department of Food and Agriculture	ARB; SWRCB; CalEPA; EPA; USDA; CNRA	Delta as a place: Agriculture	Action Area 2. Impacts of climate change on natural resources	Interview
9	California Department of Food and Agriculture (CDFA)	Advance the environmentally safe and agronomically sound use and handling of nitrogen fertilizers, the latter of which is essential for food production and food security	Obtain a greater understanding on nitrogen use efficiency and limiting environmental impacts.	Ongoing		Funding is needed	California Department of Food and Agriculture	ARB; SWRCB; Regional Water Boards; UC Cooperative Extension; USDA-NRCS	Delta as a place: Agriculture	Action Area 9. The Delta economy	Interview
10	California Department of Food and Agriculture (CDFA)	Implement climate change adaptation studies to understand economic and infrastructure costs and benefits	important for food security in terms of adapting to climate change	Ongoing		Funding is needed	California Natural Resources Agency	ARB; CNRA	Delta as a place: Agriculture	Action Area 2. Impacts of climate change on natural resources	Interview
11	California Department of Food and Agriculture (CDFA)	Conduct pest exclusion and detection monitoring and research	safe and sound use of pesticides to address specific pests, and keeping invasive pests out	Ongoing		Funding is needed	California Department of Food and Agriculture	USDA	Delta as a place: Agriculture	Action Area 9. The Delta economy	Interview

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12	California Department of Water Resources-Bay Delta (DWR-Bay Delta)	Predation reduction studies - Sacramento River and Georgiana Slough predation studies	Show how bad the predatory issues are in this region. Has a relationship to the Biological Opinions RPA about non-physical barriers and its linkage to considering engineering solutions to reduce the diversion of juvenile salmonids from the Sacramento River into the interior and southern Delta.	Ongoing	NMFS Biological Opinions RPA IV.1.3; BDCP	Currently funded, but in need of future funds	DWR Bay-Delta Office, South Delta Branch	USGS; private consultants	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 8. Abundance and distribution of predators	Interview
13	California Department of Water Resources-Bay Delta (DWR-Bay Delta)	Predation reduction studies - Evaluate the predation problem in Clifton Court Forebay	Biological Opinions RPA	Ongoing	NMFS Biological Opinions RPA IV.4.2	Currently funded (in full)	DWR Bay-Delta Office	DWR Division of Environmental Services	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 8. Abundance and distribution of predators	Interview
14	California Department of Water Resources-Bay Delta (DWR-Bay Delta)	Primary production study - understand how to grow food in shallow wetlands in Suisun Marsh to benefit native species	Primary productivity enhancement can tip the scales in terms of invasive species and provide benefit to native species.	Ongoing		Currently funded (in full)	UC Davis		Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 6. Lower aquatic food webs	Interview
16	California Department of Water Resources-Bay Delta (DWR-Bay Delta)	Develop and enhance models: River Estuary And Land Model (REALM) updates to DSM2, an open source 2D and 3D model		Ongoing		Currently funded, but in need of future funds	DWR Bay-Delta Office		A more reliable water supply for California: All sub-topics	Action Area 16. Collaborative modeling approaches	Interview
17	California Department of Water Resources-Bay Delta (DWR-Bay Delta)	Develop and enhance models: CalSIM3 enhancements that incorporate groundwater hydrology	Groundwater management	Ongoing		Currently funded, but in need of future funds	DWR Bay-Delta Office		A more reliable water supply for California: All sub-topics	Action Area 16. Collaborative modeling approaches	Interview

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19	California Department of Water Resources-Integrated Water Management (DWR-IWM)	Form an Integrated Water management technical committee	To improve communication, cooperation, and collaboration among and between technical experts and government agency decision-makers related to data collection, management, and exchange and analytical tool development and applications. California Water Plan Update 2013, Objective 10.1.	Proposed	Water Code Section 10004-10013	Funding is needed	DWR	State Water Resources Control Board; California Department of Public Health; California Public Utilities Commission; Delta Stewardship Council; California Energy Commission; U.S. Bureau of Reclamation; U.S. Army Corps of Engineer's Hydrologic Engineering Center; California Council for Science and Technology; University of California; California State University; and other interested State and federal agencies; California Water and Environmental Modeling Forum; California Urban Water	A more reliable water supply for California: All sub-topics	Action Area 17. Building science capacity	Interview

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20	California Department of Water Resources-Integrated Water Management (DWR-IWM)	Improve data and information exchange - Develop the Water Planning Information Exchange (Water PIE)	Facilitate sharing data and networking existing databases among federal, State, tribal, regional, and local agencies and governments; nonprofit organizations; and citizen monitoring efforts. California Water Plan Update 2013, Objective 10.7.	Ongoing	Water Code Section 10004-10013	Currently funded, but in need of future funds	DWR	State Water Resources Control Board; California Department of Public Health; California Public Utilities Commission; Delta Stewardship Council; California Energy Commission; U.S. Bureau of Reclamation; U.S. Army Corps of Engineer's Hydrologic Engineering Center; California Council for Science and Technology; University of California; California State University; and other interested State and federal agencies; California Water and Environmental Modeling Forum; California Urban Water	A more reliable water supply for California: All sub-topics	Action Area 14. Data and information accessibility and exchange	Interview

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21	California Department of Water Resources-Integrated Water Management (DWR-IWM)	Improve water data and information - Establish standards and protocols for data collection and management	To facilitate sharing of information among agencies and modeling studies. California Water Plan Update 2013, Objective 10.2.	Proposed	Water Code Section 10004-10013	Funding is needed	DWR	State Water Resources Control Board; California Department of Public Health; California Public Utilities Commission; Delta Stewardship Council; California Energy Commission; U.S. Bureau of Reclamation; U.S. Army Corps of Engineer's Hydrologic Engineering Center; California Council for Science and Technology; University of California; California State University; and other interested State and federal agencies; California Water and Environmental Modeling Forum; California Urban Water	A more reliable water supply for California: All sub-topics	Action Area 14. Data and information accessibility and exchange	Interview

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22	California Department of Water Resources-Integrated Water Management (DWR-IWM)	Improve water data and information - Develop a strategy and implementation plan for measuring, compiling, and reporting water use and water quality data	Facilitate better water planning and management, especially in the context of managing aquifers more sustainably. California Water Plan Update 2013, Objective 10.5.	Proposed	Water Code Section 10004-10013	Funding is needed	DWR	State Water Resources Control Board; California Department of Public Health; California Public Utilities Commission; Delta Stewardship Council; California Energy Commission; U.S. Bureau of Reclamation; U.S. Army Corps of Engineer's Hydrologic Engineering Center; California Council for Science and Technology; University of California; California State University; and other interested State and federal agencies; California Water and Environmental Modeling Forum; California Urban Water	A more reliable water supply for California: All sub-topics	Action Area 14. Data and information accessibility and exchange	Interview

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23	California Department of Water Resources-Integrated Water Management (DWR-IWM)	Improve data and information exchange - Implement Shared Vision Planning or similar collaborative modeling approaches	Integrate tried-and-true planning principles, systems modeling, and collaboration into a practical forum for making more informed and durable water resources management decisions. California Water Plan Update 2013, Objective 10.9.	Proposed	Water Code Section 10004-10013	Funding is needed	DWR	State Water Resources Control Board; California Department of Public Health; California Public Utilities Commission; Delta Stewardship Council; California Energy Commission; U.S. Bureau of Reclamation; U.S. Army Corps of Engineer's Hydrologic Engineering Center; California Council for Science and Technology; University of California; California State University; and other interested State and federal agencies; California Water and Environmental Modeling Forum; California Urban Water	A more reliable water supply for California: All sub-topics	Action Area 16. Collaborative modeling approaches	Interview

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24	California Department of Water Resources-Integrated Water Management (DWR-IWM)	Improve data and information exchange - Support establishment of an open, organized, and documented quantitative representation of the State's intertidal water system	Serve as a common and standardized data platform for model development and analysis by federal, State, tribal, regional, and local water planners. California Water Plan Update 2013, Objective 10.8.	Ongoing	Water Code Section 10004-10013	Funding is needed	UC Davis	State Water Resources Control Board; California Department of Public Health; California Public Utilities Commission; Delta Stewardship Council; California Energy Commission; U.S. Bureau of Reclamation; U.S. Army Corps of Engineer's Hydrologic Engineering Center; California Council for Science and Technology; University of California; California State University; and other interested State and federal agencies; California Water and Environmental Modeling Forum; California Urban Water	A more reliable water supply for California: All sub-topics	Action Area 14. Data and information accessibility and exchange	Interview

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25	California Department of Water Resources-Integrated Water Management (DWR-IWM)	Improve water data and information - Develop a strategic plan for data management	Prioritize long-term improvements in the monitoring network, support risk-based decision-making, and identify adequate resources for long-term maintenance of, and access to, water management information. California Water Plan Update 2013, Objective 10.3.	Proposed	Water Code Section 10004-10013	Funding is needed	DWR	State Water Resources Control Board; California Department of Public Health; California Public Utilities Commission; Delta Stewardship Council; California Energy Commission; U.S. Bureau of Reclamation; U.S. Army Corps of Engineer's Hydrologic Engineering Center; California Council for Science and Technology; University of California; California State University; and other interested State and federal agencies; California Water and Environmental Modeling Forum; California Urban Water	A more reliable water supply for California: All sub-topics	Action Area 14. Data and information accessibility and exchange	Interview

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26	California Department of Water Resources-Integrated Water Management (DWR-IWM)	Improve water data and information - Improve drought planning and preparation	Advance future drought planning by developing drought metrics and improving monitoring of key indicators and groundwater. California Water Plan Update 2013, Objective 10.4.	Proposed	Water Code Section 10004-10013	Funding is needed	DWR	State Water Resources Control Board; California Department of Public Health; California Public Utilities Commission; Delta Stewardship Council; California Energy Commission; U.S. Bureau of Reclamation; U.S. Army Corps of Engineer's Hydrologic Engineering Center; California Council for Science and Technology; University of California; California State University; and other interested State and federal agencies; California Water and Environmental Modeling Forum; California Urban Water	A more reliable water supply for California: All sub-topics	Action Area 14. Data and information accessibility and exchange	Interview

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27	California Department of Water Resources-Integrated Water Management (DWR-IWM)	Improve water data and information - Sponsor science-based, watershed adaptation research and pilot projects	To address water management and ecosystem needs, improve aquatic species and habitat monitoring, and develop an accessible and standardized database for reporting watershed and headwater conditions. California Water Plan Update 2013, Objective 10.6.	Proposed	Water Code Section 10004-10013	Funding is needed	DWR	State Water Resources Control Board; California Department of Public Health; California Public Utilities Commission; Delta Stewardship Council; California Energy Commission; U.S. Bureau of Reclamation; U.S. Army Corps of Engineer's Hydrologic Engineering Center; California Council for Science and Technology; University of California; California State University; and other interested State and federal agencies; California Water and Environmental Modeling Forum; California Urban Water	A more reliable water supply for California: All sub-topics	Action Area 14. Data and information accessibility and exchange	Interview

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28	California Department of Water Resources-Integrated Water Management (DWR-IWM)	Improve Analytical Tools - Expand the Central Valley Planning Area-based analytical tool and scenario studies developed during the California Water Plan Update 2013	Assess future vulnerabilities and management responses in the other hydrologic regions for California Water Plan Update 2018. California Water Plan Update 2013, Objective 10.10.	Ongoing	Water Code Section 10004-10013	Funding is needed	DWR	State Water Resources Control Board; California Department of Public Health; California Public Utilities Commission; Delta Stewardship Council; California Energy Commission; U.S. Bureau of Reclamation; U.S. Army Corps of Engineer's Hydrologic Engineering Center; California Council for Science and Technology; University of California; California State University; and other interested State and federal agencies; California Water and Environmental Modeling Forum; California Urban Water	A more reliable water supply for California: All sub-topics	Action Area 16. Collaborative modeling approaches	Interview

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29	California Department of Water Resources-Integrated Water Management (DWR-IWM)	Improve Analytical Tools - Develop a shared conceptual understanding, analytical framework, and quantitative description of how California watersheds and water management systems are represented in analytical tools at different spatial and temporal scales for use by federal, State, tribal, regional, and local agencies and organizations.	California Water Plan Update 2013, Objective 10.11.	Proposed	Water Code Section 10004-10013	Funding is needed	DWR	State Water Resources Control Board; California Department of Public Health; California Public Utilities Commission; Delta Stewardship Council; California Energy Commission; U.S. Bureau of Reclamation; U.S. Army Corps of Engineer's Hydrologic Engineering Center; California Council for Science and Technology; University of California; California State University; and other interested State and federal agencies; California Water and Environmental Modeling Forum; California Urban Water	A more reliable water supply for California: All sub-topics	Action Area 16. Collaborative modeling approaches	Interview

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30	California Department of Water Resources-Integrated Water Management (DWR-IWM)	Improve Analytical Tools - Support the California Water and Environmental Modeling Forum in updating its 2000 modeling protocols and standards	Provide more current guidance to water stakeholders and decision-makers, as well as their technical staff, as models are developed and used to solve California's water and environmental problems. California Water Plan Update 2013, Objective 10.12.	Proposed	Water Code Section 10004-10013	Funding is needed	DWR	State Water Resources Control Board; California Department of Public Health; California Public Utilities Commission; Delta Stewardship Council; California Energy Commission; U.S. Bureau of Reclamation; U.S. Army Corps of Engineer's Hydrologic Engineering Center; California Council for Science and Technology; University of California; California State University; and other interested State and federal agencies; California Water and Environmental Modeling Forum; California Urban Water	A more reliable water supply for California: All sub-topics	Action Area 16. Collaborative modeling approaches	Interview

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31	California Department of Water Resources-Integrated Water Management (DWR-IWM)	Identify, develop, and prioritize research needs for new technologies; advance development and implementation of existing and emerging tools, technologies and innovations; and encourage partnerships in water-related technology and science	Promote more efficient, effective, and sustainable water resources management and a better scientific understanding of California's water-related systems. California Water Plan Update 2013, Objective 11.	Proposed	Water Code Section 10004-10013	Funding is needed	DWR	State Water Resources Control Board; California Department of Public Health; California Public Utilities Commission; Delta Stewardship Council; California Energy Commission; U.S. Bureau of Reclamation; U.S. Army Corps of Engineer's Hydrologic Engineering Center; California Council for Science and Technology; University of California; California State University; and other interested State and federal agencies; California Water and Environmental Modeling Forum; California Urban Water	A more reliable water supply for California: All sub-topics	Action Area 16. Collaborative modeling approaches	Interview
32	California Water and Environmental Modeling Forum (CWEMF)	Advise on model dimensionality	Appropriate use and considerations for selecting the appropriate model dimensionality for modeling studies	Proposed		Currently funded, but in need of future funds			A more reliable water supply for California: All sub-topics	Action Area 16. Collaborative modeling approaches	Interview
33	California Water and Environmental Modeling Forum (CWEMF)	Restoration Benchmarking Study	Establish standard inputs for modeling selected problem to test model performance and validation of restoration design and implementation	Proposed		Currently funded, but in need of future funds			Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 16. Collaborative modeling approaches	Interview
34	California Water and Environmental Modeling Forum (CWEMF)	Education and outreach on technical analysis with models	Part of CWEMF's mission is to improve and innovate existing education and outreach practices/performance.	Proposed		Funding is needed			Delta as a place: All sub-topics	Action Area 14. Data and information accessibility and exchange	Interview

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35	California Water and Environmental Modeling Forum (CWEMF)	Valuable skill building workshops	A core component of CWEMF's mission and function is to provide our members training opportunities for analytical methods, tools, and models at reasonable rates.	Ongoing		Currently funded, but in need of future funds			A more reliable water supply for California: All sub-topics	Action Area 16. Collaborative modeling approaches	Interview
36	California Water and Environmental Modeling Forum (CWEMF)	Data hub for common assumptions and model data	This approach will provide great value by building/strengthening partnerships among different organizations and non-profits like CWEMF etc.	Proposed		Funding is needed			A more reliable water supply for California: All sub-topics	Action Area 16. Collaborative modeling approaches	Interview
37	California Water and Environmental Modeling Forum (CWEMF)	Model Visualization	Major modeling entities in Europe (DHI, Delft, Wallingford) are focusing on model integration and interoperability. The use of customized dashboards will allow the broader community (modelers through the public) to interact with model outputs in a more meaningful ways.	Proposed		Funding is needed			A more reliable water supply for California: All sub-topics	Action Area 16. Collaborative modeling approaches	Interview
38	California Water Quality Monitoring Council (CWQMC)	Foster collaboration for water quality and associated ecosystem monitoring, assessment and reporting	Establish management support and funding for efforts of the Water Quality Monitoring Council and its workgroups	Ongoing	iv. SB 1070 (Statutes of 2006), California Water Code §13181	Funding is needed	California Water Quality Monitoring Council and its nine workgroups (specifically the Estuary Monitoring Workgroup, Wetland Monitoring Workgroup and Data Management Workgroup)	See the Monitoring Council's web page ( <a href="http://www.mywaterquality.ca.gov/monitoring_council/">http://www.mywaterquality.ca.gov/monitoring_council/</a> ) and each of its workgroup web pages ( <a href="http://www.mywaterquality.ca.gov/monitoring_council/#workgroup">http://www.mywaterquality.ca.gov/monitoring_council/#workgroup</a> )	Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 15. Coordinated monitoring and assessment	Interview

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39	California Water Quality Monitoring Council (CWQMC)	In conjunction with the Environmental Data Summit [June 2014], develop standard approaches and tools to streamline the aggregation and sharing of data among agencies, organizations and other stakeholder groups.		Ongoing	SB 1070 (Statutes of 2006), California Water Code §13181	Funding is needed	California Water Quality Monitoring Council and its Data Management Workgroup	Delta Science Program and its Environmental Data Summit effort. See also the Monitoring Council's web page ( <a href="http://www.mywaterquality.ca.gov/monitoring_council/">http://www.mywaterquality.ca.gov/monitoring_council/</a> ) and each of its workgroup web pages ( <a href="http://www.mywaterquality.ca.gov/monitoring_council/#workgroup">http://www.mywaterquality.ca.gov/monitoring_council/#workgroup</a> )	Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 14. Data and information accessibility and exchange	Interview
40	California Water Quality Monitoring Council (CWQMC)	Support the development of standardized base maps of California's water resources that link existing State and federal efforts (e.g., California Aquatic Resources Inventory (CARI))		Ongoing	SB 1070 (Statutes of 2006), California Water Code §13181	Funding is needed	California Water Quality Monitoring Council and its Wetland Monitoring Workgroup	See the Monitoring Council's web page ( <a href="http://www.mywaterquality.ca.gov/monitoring_council/">http://www.mywaterquality.ca.gov/monitoring_council/</a> ) and each of its workgroup web pages ( <a href="http://www.mywaterquality.ca.gov/monitoring_council/#workgroup">http://www.mywaterquality.ca.gov/monitoring_council/#workgroup</a> )	Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 13. Tools and resources for adaptive management	Interview

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41	California Water Quality Monitoring Council (CWQMC)	Establish broader use and sound financial basis for tools developed by the Monitoring Council's workgroups (e.g., SWAMP QA/QC, SWAMP data management protocols and CEDEN, wetland mapping protocols, California Rapid Assessment Method (CRAM), eCRAM database, and EcoAtlas), to inform broader-based assessments with high-quality data.		Ongoing	SB 1070 (Statutes of 2006), California Water Code §13181	Funding is needed	California Water Quality Monitoring Council and its nine workgroups; Surface Water Ambient Monitoring Program (SWAMP)	See the Monitoring Council's web page ( <a href="http://www.mywaterquality.ca.gov/monitoring_council/">http://www.mywaterquality.ca.gov/monitoring_council/</a> ) and each of its workgroup web pages ( <a href="http://www.mywaterquality.ca.gov/monitoring_council/#workgroup">http://www.mywaterquality.ca.gov/monitoring_council/#workgroup</a> )	Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 14. Data and information accessibility and exchange	Interview
42	California Water Quality Monitoring Council (CWQMC)	Develop the Estuary Portal to integrate a broader range of data types and assessments. Develop individual and multi-metric indicators to assess condition and trends related to diverse Bay-Delta aquatic resources to produce a common set of water quality and ecosystem indicators for the Bay-Delta Estuary across agencies and organizations.		Ongoing	SB 1070 (Statutes of 2006), California Water Code §13181	Currently funded, but in need of future funds	California Water Quality Monitoring Council and its Estuary Monitoring Workgroup	SFCWA, SFEP. See the Monitoring Council's web page ( <a href="http://www.mywaterquality.ca.gov/monitoring_council/">http://www.mywaterquality.ca.gov/monitoring_council/</a> ) and each of its workgroup web pages ( <a href="http://www.mywaterquality.ca.gov/monitoring_council/#workgroup">http://www.mywaterquality.ca.gov/monitoring_council/#workgroup</a> )	Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 14. Data and information accessibility and exchange	Interview
46	Central Valley Regional Water Quality Control Board (CVRWQCB)	Develop and implement a Regional Monitoring Plan	2014 Delta Strategic Work Plan	Ongoing	Delta Plan, 2008 Delta Strategic Plan	Currently funded, but in need of future funds	CVRWQCB	SFEI-ASC, CDWR, IEP, USGS, USEPA, Stakeholders (regulatory community), SFCWA, Regional Board groups (stormwater group, irrigated lands group)	Improve water quality to protect human health and the environment: Environmental water quality	Action Area 15. Coordinated monitoring and assessment	Interview

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47	Central Valley Regional Water Quality Control Board (CVRWQCB)	CV Salts	2014 Delta Strategic Work Plan				CVRWQCB	State and Federal water contractors; USFWS, CDFW, IEP	Improve water quality to protect human health and the environment: Environmental water quality	Action Area 15. Coordinated monitoring and assessment	Interview
48	Collaborative Adaptive Management Team (CAMT)	Test collaborative approaches to conducting science in the Bay-Delta	The Delta Science Plan sets a vision for One Delta, One Science. Collaborative science should not be a product of litigation. There is a need to build trust, involve stakeholders and get to legitimate, relevant and credible science and not go back to court.	Ongoing	Delta Plan, Biological Opinions	Funding is needed	CAMT	Delta Science Program	Delta as a place: All sub-topics	Action Area 17. Building science capacity	Interview
49	Collaborative Adaptive Management Team (CAMT)	Review monitoring methods for Delta smelt	Investigate and clarify characteristics of existing monitoring datasets, including potential weaknesses in spatial coverage and other details of study design. Clarification of weaknesses will help ensure that analyses based on these datasets are appropriately qualified. Could allow for corrections (or adjustments) to more accurately represent underlying variables. Findings may suggest that results of previous studies should be reviewed. Findings may also allow for improvements in future data collection.	Ongoing	Biological Opinions	Currently funded, but in need of future funds	CAMT	IEP	A more reliable water supply for California: Water management information	Action Area 15. Coordinated monitoring and assessment	Interview

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53	Collaborative Adaptive Management Team (CAMT)	Assess population effects	Summarization of environmental and fish distribution/abundance data (e.g. FMWT, SKT). Multivariate analyses and modeling (e.g. 3D particle tracking) to examine whether fall conditions affect winter distribution. Completion of First Flush Study analyses. The Delta Conditions Team (DCT) is currently developing a scope of work to use turbidity modeling to examine various "first flush" conditions, expected entrainment risks, and potential preventative actions that could be taken to reduce entrainment, consistent with key question (a). The DCT could also conduct analyses to address key question (b).	Ongoing	Biological Opinions	Currently funded, but in need of future funds	CAMT	IEP, Delta Conditions Team	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 4. Needs of native species	Interview
54	Collaborative Adaptive Management Team (CAMT)	Synthesize published reports and empirical data on water export effects and link to the current SDSRC conceptual model; identify/document scientific agreements and disagreements regarding the effects of south Delta water operations on juvenile salmonid survival in the Delta.	Unfinished business of the SDSRC in 2013; identified as a priority for 2014 in the 2013 Progress Report. Potential opportunity to consider the PWA and other interests' questions, tasks, and hypotheses yet to be considered by CAMT.	Ongoing	Biological Opinions	Currently funded, but in need of future funds	CAMT	IEP	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 4. Needs of native species	Interview
57	Collaborative Adaptive Management Team (CAMT)	Pending results of the gap analysis and initial data synthesis efforts (Elements 1 and 3); investigate alternative metric(s) for management of south Delta water operations.	SDSRC participants discussed metrics in addition to, or other than, inflow:export ratio that may be relevant to manage south Delta water operations to improve salmonid survival.	Proposed	Biological Opinions	Currently funded, but in need of future funds	CAMT	IEP	A more reliable water supply for California: Water management information	Action Area 1. Watershed and water management	Interview

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58	Delta Protection Commission (DPC)	Understand the impacts and potential damage of elevated salinity on Delta crops (including tomatoes, corn, alfalfa, and blueberries)	Could help inform Delta water quality standards	Proposed	Delta Protection Act; 2009 Delta Reform Act; Delta Plan	Funding is needed			A more reliable water supply for California: All sub-topics	Action Area 9. The Delta economy	Interview
59	Delta Protection Commission (DPC)	Understand the impacts of habitat restoration projects on neighboring agricultural lands (i.e., species migration and seepage impacts)	CDWR: Part of Ag land stewardship effort under BDCP- Part of developing a suite of mitigation measures and informing best management practices	Proposed	Delta Protection Act; 2009 Delta Reform Act; Delta Plan; BDCP	Funding is needed			Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 9. The Delta economy	Interview
60	Delta Protection Commission (DPC)	Understand and determine how to manage and minimize invasive aquatic and terrestrial weeds	Minimize impacts of non-native species on water diversions in the Delta	Ongoing	Delta Protection Act; 2009 Delta Reform Act; Delta Plan	Currently funded (in full)	Delta Conservancy; USDA; local governments	Delta Conservancy and CA State Parks Division of Boating and Waterways	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 7. Methods to manage and minimize the impacts of non-native species	Interview
61	Delta Protection Commission (DPC)	Understand what agricultural practices and operations could be implemented to be a good neighbor to restored habitat in the Delta	Need scientific support to develop incentives for changing agricultural practices to support wildlife and habitat restoration	Ongoing	Delta Protection Act; 2009 Delta Reform Act; Delta Plan	Currently funded, but in need of future funds	The Nature Conservancy; Point Blue; Audubon Society		Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 9. The Delta economy	Interview
62	Delta Protection Commission (DPC)	Understand the impacts of climate change on Delta crop mixes		Proposed	Delta Protection Act; 2009 Delta Reform Act; Delta Plan	Funding is needed			Delta as a place: Agriculture	Action Area 2. Impacts of climate change on natural resources	Interview
64	Interagency Ecological Program (IEP)	Increase the capacity for science synthesis	IEP has been criticized for collecting data but not analyzing it and turning it into useful information for others. Recent IEP synthesis efforts have been useful (POD, FLASH, and MAST) and such efforts should be continued.	Ongoing	BDCP; FRPA; Biological Opinions	Funding is needed	IEP	CAMT	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 17. Building science capacity	Interview

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65	Interagency Ecological Program (IEP)	Fill data and information gaps about biotic interactions (specifically predation and competition)	Recent IEP data syntheses and other activities (e.g. predation workshop) have highlighted that we have little information about the importance of predation and competition in determining the abundance of Delta smelt and other species of concern.	Ongoing	BDCP; FRPA; Biological Opinions; Striped Bass Settlement	Funding is needed	IEP		Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 8. Abundance and distribution of predators	Interview
67	Interagency Ecological Program (IEP)	Understand the effects of habitat restoration by conducting pre-, during and post- restoration monitoring, research and evaluations.	Recent workshops have highlighted that the benefits of tidal wetland restoration to species of concern are uncertain and there is concern about the sustainability of such benefits in response to climate change and other factors.	Ongoing	BDCP; FRPA; Biological Opinions	Funding is needed	DWR; CDFW	IEP	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 5. Habitat restoration	Interview
68	Interagency Ecological Program (IEP)	Incorporate modern science tools and methods while maintaining long-term data sets.	Use the best available science to improve and maintain long-term data sets	Ongoing	BDCP; FRPA; Biological Opinions	Funding is needed	IEP (application and evaluation), University (development)	SFCWA	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 15. Coordinated monitoring and assessment	Interview
70	Interagency Ecological Program (IEP)	Build the science capacity and infrastructure needed to be nimble and responsive to new demands, including non-routine and opportunistic science needs (i.e., monitoring and special study needs)	Ongoing science planning efforts often assume that existing infrastructure and priorities can either be quickly redirected or are sufficient to accommodate new mandates without additional resources. This is unlikely to be true. Planning should include additional resources to meet new demands or such efforts will fail.	Proposed	BDCP; FRPA; Biological Opinions; ESA; Clean Water Act	Funding is needed	IEP		Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 17. Building science capacity	Interview
72	NOAA- Southwest Science Center (NOAA-SWSC)	Develop Life Cycle Model for Chinook Salmon	In response to 2009 OCAP litigation	Ongoing	Endangered Species Act & Magnuson-Stevens Fishery Conservation and Management Act	Currently funded (in full)	NOAA/NMFS Southwest Fisheries Science Center	UCSC; NMFS; NOAA Northwest Fisheries Science Center; USGS-Cook lab in Washington; USBR	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 16. Collaborative modeling approaches	Interview
74	NOAA- Southwest Science Center (NOAA-SWSC)	Study the abundance and distribution of predators in South Delta	motivated in part by settlement agreement with water contractors and DWR	Ongoing	Endangered Species Act & Magnuson-Stevens Fishery Conservation and Management Act	Currently funded, but in need of future funds	NOAA/NMFS Southwest Fisheries Science Center	DWR; CDFW; UCSC	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 8. Abundance and distribution of predators	Interview

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75	NOAA- Southwest Science Center (NOAA-SWSC)	Estimate fisheries impacts on Winter- and Fall-run Chinook salmon	Magnuson-Stevens Fishery Conservation and Management Act	Ongoing	Endangered Species Act & Magnuson-Stevens Fishery Conservation and Management Act	Currently funded (in full)	NOAA/NMFS Southwest Fisheries Science Center	CDFW; Pacific States Marine Fisheries Commission	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Interview
77	Sacramento Regional County Sanitation District	Assist in the development of Delta Regional Monitoring Program studies, including potential assessments of nutrients, pathogens, methylmercury, and pesticides (with a focus of using toxicity as a tool and determining bioavailability of specific pesticides).		Proposed	NPDES permits; the Bay-Delta Plan; regional basin plans; Total Maximum Daily Loads (TMDLs)	Currently funded, but in need of future funds	Central Valley Regional Water Quality Control Board	Participating member agencies (including Sacramento Regional County Sanitation District)	Improve water quality to protect human health and the environment: All sub-topics	Action Area 10. Sources and drivers of contaminants	Interview
78	Sacramento Regional County Sanitation District	Assist in the development of community Delta system models (which are accessible, transparent, sustained by multiple sources) to predict the likely outcomes of regulatory requirements, management actions and environmental change.	Identified in the Delta Science Plan.	Proposed	Clean Water Act; California Water Code; Safe Drinking Water Act actions; State Water Board Bay-Delta Plan; Delta Plan, Delta Science Plan; and Bay Delta Conservation Plan (BDCP);	Will be funded in the future	Delta Science Program	Participating agencies (including Sacramento Regional County Sanitation District)	Improve water quality to protect human health and the environment: All sub-topics	Action Area 16. Collaborative modeling approaches	Interview
79	Sacramento Regional County Sanitation District	Investigate phytoplankton dynamics in the presence and absence of wastewater effluent along the lower Sacramento River.		Ongoing	NPDES permits; nutrient management; Bay-Delta Plan; BDCP; Delta Plan	Currently funded (in full)	USGS	Sacramento Regional County Sanitation District; IEP; SF State; California Maritime Academy; UC Davis	Improve water quality to protect human health and the environment: Environmental water quality	Action Area 11. Role of nutrients	Interview
80	Sacramento Regional County Sanitation District	Quantify nutrient levels and phytoplankton health throughout the lower Sacramento River and Delta.		Ongoing	NPDES permits; nutrient management; Bay-Delta Plan; BDCP; Delta Plan	Currently funded (in full)	UC Santa Cruz	Sacramento Regional County Sanitation District; Central San; SF Bay Regional Water Quality Control Board	Improve water quality to protect human health and the environment: Environmental water quality	Action Area 11. Role of nutrients	Interview

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81	Sacramento Regional County Sanitation District	Identify potential grazing effects of clam and zooplankton on phytoplankton abundance and species composition in the lower Sacramento River, in relation to the observed phytoplankton decline along the length of the river.		Ongoing	Bay-Delta Plan; BDCP; Delta Plan.	Currently funded (in full)	Sacramento Regional County Sanitation District	Applied Marine Science; USGS	Protect, restore, and enhance the Delta ecosystem: Nonnative species	Action Area 6. Lower aquatic food webs	Interview
82	Sacramento-San Joaquin Delta Conservancy	Develop and implement the Delta Restoration Network and Delta Restoration Hub that provides a big data platform, supports landscape-scale visions and develops restoration models	Develop a platform to help design restoration actions and alternatives	Ongoing	Delta Plan; BDCP; ERP; Central Valley Flood Protection Plan	Funding is needed	Delta Restoration Network	DWR; SFCWA; CDFW; NMFS; USFWS; USACE; Suisun Marsh RCD; DSC; DSP; Delta Protection Commission; Delta Conservancy; TNC; American Rivers ESA; MWH; Delta Counties Coalition; SFEI; Newfields	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 13. Tools and resources for adaptive management	Interview
83	Sacramento-San Joaquin Delta Conservancy	Enhancing Regional Capacity for Wetland Project Tracking, Assessment and Reporting	Track monitoring data and integrate the data to evaluate wetlands extent and condition/function or to inform decision-making; Develop geographically-defined wetland protection, restoration, and management plans	Ongoing	BDCP; Delta Plan;	Currently funded, but in need of future funds	Delta Conservancy	SFEI; Delta Restoration Network; SWRCB; USEPA; CWQMC- estuaries and wetland monitoring work groups	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 13. Tools and resources for adaptive management	Interview
84	Sacramento-San Joaquin Delta Conservancy	Develop a Delta Watershed Initiative Network, an information platform, that connects projects and expertise to maximize the benefits of healthy watersheds.	Work with communities to improve local water quality; Develop an estuary-wide data repository to provide accurate, accessible, and synthesized data for scientists, decision-makers, and the public	Ongoing	Clean Water Act; TMDL and Delta Science Plan	Funding is needed	Delta Conservancy	Delta Conservancy, federal and state agencies and other organizations collecting water quality data, local watersheds	Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 14. Data and information accessibility and exchange	Interview

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86	San Francisco Regional Water Quality Control Board (SFRWQCB)	Understand nutrient dynamics in the Bay-Delta through integrated approaches to monitoring and modelling. In particular, understand the role of ammonium, its relationship to changes in nutrient ratios, and impact on the food chain.		Ongoing	Clean Water Act; Porter-Cologne Water Quality Control Act; Basin Plan; Endangered Species Act	Currently funded, but in need of future funds	SFRWQCB	US EPA; CVRWQCB; US Army Corps of Engineers; Resource Conservation Districts; CDFW; USFWS; NMFS; CWQMC; Delta Science Program; SFEI	Improve water quality to protect human health and the environment: All sub-topics	Action Area 11. Role of nutrients	Interview
88	San Francisco Regional Water Quality Control Board (SFRWQCB)	Set-up a monitoring system to understand how Delta flows are effecting selenium concentrations in the North San Francisco Bay		Ongoing	Clean Water Act; Porter-Cologne Water Quality Control Act; Basin Plan; Endangered Species Act; TMDL Selenium in the North San Francisco Bay	Currently funded, but in need of future funds	Various	US EPA; CVRWQCB; Resource Conservation Districts; CDFW; USFWS; NMFS; CWQMC; Ducks Unlimited	Improve water quality to protect human health and the environment: All sub-topics	Action Area 10. Sources and drivers of contaminants	Interview
89	San Francisco Regional Water Quality Control Board (SFRWQCB)	Understand and monitor sources and concentrations of mercury in San Francisco Bay and Suisun Marsh		Ongoing	Clean Water Act; Porter-Cologne Water Quality Control Act; Basin Plan; San Francisco Bay Mercury TMDL; Suisun Marsh TMDL; Endangered Species Act	Currently funded, but in need of future funds	Various	US EPA; CVRWQCB; Resource Conservation Districts; CDFW; USFWS; NMFS; CWQMC; Ducks Unlimited	Improve water quality to protect human health and the environment: All sub-topics	Action Area 10. Sources and drivers of contaminants	Interview
90	San Francisco Regional Water Quality Control Board (SFRWQCB)	Understand landscape-scale effects of wetland restoration activities in the Bay-Delta through integrated monitoring		Ongoing	Clean Water Act; Porter-Cologne Water Quality Control Act; Basin Plan; Endangered Species Act; BDCP	Currently funded, but in need of future funds	Various	US EPA; CVRWQCB; Resource Conservation Districts; CDFW; USFWS; NMFS; CWQMC; Ducks Unlimited	Improve water quality to protect human health and the environment: All sub-topics	Action Area 5. Habitat restoration	Interview

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91	San Francisco Regional Water Quality Control Board (SFRWQCB)	Understand the impacts of dredging on endangered species in San Francisco Bay		Ongoing	Clean Water Act; Porter-Cologne Water Quality Control Act; Basin Plan; Endangered Species Act	Currently funded, but in need of future funds	Various	US EPA; CVRWQCB; US Army Corps of Engineers;	Improve water quality to protect human health and the environment: All sub-topics	Action Area 4. Needs of native species	Interview
92	San Francisco Regional Water Quality Control Board (SFRWQCB)	Better understand water quality parameters (i.e., dissolved oxygen, and nutrients) in Suisun Marsh		Ongoing	Clean Water Act; Porter-Cologne Water Quality Control Act; Basin Plan; Endangered Species Act	Currently funded, but in need of future funds	Various		Improve water quality to protect human health and the environment: Environmental water quality	Action Area 15. Coordinated monitoring and assessment	Interview
94	State and Federal Contractors Water Agencies (SFCWA)	Implement adaptive management of the Lower Yolo Ranch restoration project	SFCWA Mission and Implementing Strategies (SFCWA Strategic Plan)	Proposed	Biological opinion RPAs and Water Quality Control Plans	Currently funded, but in need of future funds	SFCWA	FAST; FRPA; Delta Conservancy; The Nature Conservancy; USFWS, USBR, CDFW, NMFS	Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 13. Tools and resources for adaptive management	Interview
96	State and Federal Contractors Water Agencies (SFCWA)	Identify factors affecting the distribution and abundance of fish prey within the Cache Slough Complex (e.g., food web, nutrient cycling, contaminants, and restoration effectiveness).	SFCWA Science Research Plan (February 2014)	Ongoing	Biological opinion RPAs and Water Quality Control Plans	Currently funded, but in need of future funds	SFCWA	USGS; SF State University; Cal-Maritime Academy	Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 6. Lower aquatic food webs	Interview
97	State and Federal Contractors Water Agencies (SFCWA)	Understand the effects of contaminants and other physiological stressors on the ecosystem	SFCWA Science Research Plan (February 2014)	Ongoing	Biological opinion RPAs and Water Quality Control Plans	Currently funded, but in need of future funds	SFCWA	UC Davis; USGS; SFCWA science specialist;	Protect, restore, and enhance the Delta ecosystem: Ecosystem water quality	Action Area 10. Sources and drivers of contaminants	Interview
98	State and Federal Contractors Water Agencies (SFCWA)	Continue support of collaborative science efforts (i.e., CAMT, CWQMC, Estuaries Monitoring Workgroup, IEP, Delta RMP, San Francisco Bay Nutrient Management Strategy)	SFCWA Mission and Implementing Strategies (SFCWA Strategic Plan); SFCWA Science Research Plan (February 2014)	Ongoing	Biological opinion RPAs and Water Quality Control Plans	Currently funded, but in need of future funds	SFCWA	CAMT; NMFS; CDFW; USFWS; stakeholders; Estuaries Monitoring Workgroup; Delta RMP	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 17. Building science capacity	Interview
99	U.S. Bureau of Reclamation	General Monitoring		Ongoing	D1641; RPAs	Currently funded (in full)	Various	IEP	Improve water quality to protect human health and the environment: Water quality protection	Action Area 15. Coordinated monitoring and assessment	Interview

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100	U.S. Bureau of Reclamation	Drought-related projects		Proposed	D1641; RPAs	Will be funded in the future	Various	Various	A more reliable water supply for California: All sub-topics	Action Area 17. Building science capacity	Interview
101	U.S. Bureau of Reclamation	CAMT efforts		Ongoing	D1641; RPAs	Currently funded (in full)	Various	CAMT	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 17. Building science capacity	Interview
102	U.S. Bureau of Reclamation	Delta Juvenile fish program		Ongoing	D1641; RPAs	Currently funded, but in need of future funds	Various	Various	Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 15. Coordinated monitoring and assessment	Interview
103	U.S. Bureau of Reclamation	Gear Efficiency studies		Ongoing	D1641; RPAs	Currently funded, but in need of future funds	Various	IEP, CAMT, SFCWA	Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 15. Coordinated monitoring and assessment	Interview
104	U.S. Environmental Protection Agency	Unified Monitoring Framework	It provides a mechanism for integrating monitoring data required by 401, 404, HCPs, etc. Creates a cross-cutting monitoring package with data and performance measures to answer management questions.	Ongoing	Clean Water Act (Sections 401 and 404), Endangered Species Act (Section 10), San Francisco Bay/Sacramento-San Joaquin Delta Water Quality Control Plan (Bay-Delta Plan); Natural Community Conservation Planning (NCCP) Act	Funding is needed	USFWS; CDFW; CDWR	BDCP, IEP, Delta RMP; California water Quality Monitoring Council	Protect, restore, and enhance the Delta ecosystem: Ecosystem water quality	Action Area 15. Coordinated monitoring and assessment	Interview
105	U.S. Environmental Protection Agency	San Francisco Estuary salinity field and fish abundance and distribution visualization project	This work is being done to better understand the salinity gradient and abundance relationships for many SF Estuary species in support of SWRCB update to the Bay-Delta WQCP (See project page)	Ongoing	Clean Water Act; Phase II update of the San Francisco Bay/Sacramento-San Joaquin Delta Water Quality Control Plan (Bay-Delta Plan)	Currently funded (in full)	Delta Modeling Associates (Michael MacWilliams)	IEP	Protect, restore, and enhance the Delta ecosystem: Ecosystem water quality	Action Area 4. Needs of native species	Interview

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106	U.S. Environmental Protection Agency	Estimating water volumes needed to meet EPA Temperature Criteria for Chinook Salmon on the lower San Joaquin, Stanislaus, Merced, and Tuolumne Rivers and estimating fall-run Chinook salmon response using SalSim	This work is being done to better understand the water volumes needed to meet temperature thresholds that support salmon and the population response of various flow objectives in support of SWRCB update to the Bay-Delta WQCP	Ongoing	Clean Water Act: Phase I update of the San Francisco Bay/Sacramento-San Joaquin Delta Water Quality Control Plan (Bay-Delta Plan)	Currently funded (in full)	Tetratech		Improve water quality to protect human health and the environment: Environmental water quality	Action Area 4. Needs of native species	Interview
107	U.S. Environmental Protection Agency	Funding total and methylmercury sampling in agricultural areas in the Delta and Yolo Bypass	This work is being done to support the Bay and Delta mercury TMDLs	Ongoing	Clean Water Act Section 303(d)	Funding is needed		Central Valley Regional Board	Protect, restore, and enhance the Delta ecosystem: Ecosystem water quality	Action Area 10. Sources and drivers of contaminants	Interview
108	U.S. Environmental Protection Agency	TMDL assessment and progress reporting to support acceleration of achieving TMDL water quality targets	Effective TMDL implementation is challenged by a lack of tools that track and report progress. Such tools are needed to increase accountability, identify controls that produce the best water quality results at the lowest cost in the shortest time, accelerate water quality improvements, minimize the impact of contaminants on aquatic life, and restore protection for aquatic life.	Ongoing	Clean Water Act Section 303(d)	Currently funded, but in need of future funds			Improve water quality to protect human health and the environment: Water quality protection	Action Area 15. Coordinated monitoring and assessment	Interview
109	U.S. Environmental Protection Agency	Evaluating the cost of purchasing, installing, operating, and maintaining an array of bottom salinity monitoring stations and adding two additional outflow measurement stations	to increase precision management of the estuary and support modifications to the Delta outflow objective in the update to the Bay-Delta WQCP	Proposed	Clean Water Act: update of the San Francisco Bay/Sacramento-San Joaquin Delta Water Quality Control Plan (Bay-Delta Plan)	Funding is needed			Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 15. Coordinated monitoring and assessment	Interview
111	U.S. Environmental Protection Agency	San Francisco Bay Water Quality Improvement Fund (SFBWOIF) - Competitive grant program to support projects to protect and restore San Francisco Bay	Achieving significant environmental results is the overall priority for the competitive grant program	Ongoing	Clean Water Act	Funding is needed			Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 5. Habitat restoration	Interview

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112	U.S. Environmental Protection Agency	Estimating the effects of location and sequence of tidal marsh habitat restoration projects/investments with sea level rise and climate change.	The goal is producing a plan that optimizes benefits for aquatic life and other beneficial uses.						Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 13. Tools and resources for adaptive management	Interview
113	U.S. Environmental Protection Agency	Translate the findings of the Delta Historical Ecology Study into the technical designs of on-the-ground restoration projects to increase the likelihood of their proper function and their resiliency to droughts, floods, and climate change.							Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 5. Habitat restoration	Interview
117	U.S. Environmental Protection Agency	Identify conveyance and storage system upgrades/modifications that increase system resiliency to droughts and climate change and that can increase in-stream flows							A more reliable water supply for California: All sub-topics	Action Area 1. Watershed and water management	Interview
118	U.S. Environmental Protection Agency	Estimate the cost of various methods for minimizing the discharge of selenium from agricultural lands to the San Joaquin River including large-scale land retirement.							Improve water quality to protect human health and the environment: All sub-topics	Action Area 10. Sources and drivers of contaminants	Interview
121	U.S. Fish and Wildlife Service	Better understand what habitat restoration will do in the Delta	Requirement in RPA to restore 8,000 acres, so understanding what will happen after restoration happens is important	Proposed	ESA and USFWS' habitat conservation mission	Funding is needed		CDFW, BDCP	Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 5. Habitat restoration	Interview
124	U.S. Fish and Wildlife Service	Improve our ability to monitor and assess ecological changes in the Delta (e.g., understand gear efficiency and distribution)	To answer the general question of: how do we improve monitoring and assessment?	Ongoing	ESA and USFWS' habitat conservation mission	Will be funded in the future	IEP, UC Davis	IEP	Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 15. Coordinated monitoring and assessment	Interview
125	California Department of Water Resources- Division of Environmental Services (DWR-DES)	Develop an aquatic ecology program	Delta science efforts need to expand their scope from a fisheries focus to an ecosystem focus that incorporates lower trophic level interactions, and nutrients. Tied to understanding the impacts of habitat restoration.	Ongoing		Currently funded, but in need of future funds	DWR-DES	IEP; SFCWA; Delta Science Program	Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 4. Needs of native species	Interview

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126	California Department of Water Resources-Division of Environmental Services (DWR-DES)	Expand the capacity to do analysis and synthesis related to disturbances, resource crises and regulatory crises		Ongoing		Currently funded, but in need of future funds		IEP; Delta Science Program	Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 17. Building science capacity	Interview
128	California Department of Water Resources-Division of Environmental Services (DWR-DES)	Review and improve existing fisheries monitoring programs	There is a need to identify gaps and potential improvements in current monitoring programs, There is also the need to be able to implement improvements and changes where necessary	Ongoing		Currently funded, but in need of future funds		IEP; Delta Science Program; DFW; USBR; USFWS	Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 15. Coordinated monitoring and assessment	Interview
129	California Department of Water Resources-Division of Environmental Services (DWR-DES)	Build the capacity to do collaborative science	Collaboration is a key goal in order to achieve many of the other science actions identified	Ongoing	Delta Science Plan; CAMT	Currently funded, but in need of future funds		IEP; SFCWA; Delta Science Program	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 17. Building science capacity	Interview
130	USGS	Developing techniques for effective aquatic habitat restoration: Creation of new habitat and monitoring methods for new habitat		Ongoing	BDCP; Delta Plan; Biological Opinions; FRPA; ERP Conservation Strategy; Suisun Marsh Plan; Habitat Conservation Planning; NCCP Act; FRPA; CESA	Funding is needed	USGS		Reduce risk to people, property, and State interests in the Delta: All sub-topics	Action Area 5. Habitat restoration	Interview
131	USGS	Assess and monitor earthquake hazards		Ongoing	Delta Plan, Central Valley Flood Protection Plan; Delta Reform Act; DWR's FloodSAFE Initiative; DWR's Delta Levees Program; CVP and SWP operations	Currently funded (in full)	USGS		A more reliable water supply for California: All sub-topics	Action Area 12. Characterization of risks associated with natural disasters	Interview

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132	USGS	Monitor hydrologic flows and water quality, including contaminants, sediments, etc.		Ongoing	BDCP; SWRCB's Bay-Delta Plan; Biological Opinions; Clean Water Act; Regional Water Resources Control Board's Basin Plans; ERP Conservation Strategy	Currently funded, but in need of future funds	USGS	DWR; USBR; SFCWA	A more reliable water supply for California: All sub-topics	Action Area 1. Watershed and water management	Interview
133	USGS	Develop a comprehensive model for hydrologic and species assessment and forecasting under various climate change, hazards and operational scenarios	We need a model for the whole system	Proposed	Biological Opinions; BDCP; Delta Plan; Delta Science Plan; Coordinated Operations Agreement; SWRCB's Bay-Delta Plan	Funding is needed	USGS		A more reliable water supply for California: All sub-topics	Action Area 16. Collaborative modeling approaches	Interview
134	USGS	Improve data management and accessibility		Ongoing	Delta Science Plan	Currently funded, but in need of future funds	USGS		Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 14. Data and information accessibility and exchange	Interview
135	USGS	Better understand changes in imperiled native species and invasive species populations and associated habitat through monitoring and research		Ongoing	ESA; BDCP; Delta Plan; Habitat Conservation Planning; NCCP Act; CEQA; CESA; Biological Opinions; SWRCB's Bay-Delta Plan; ERP Conservation Strategy; Suisun Marsh Plan	Currently funded, but in need of future funds	USGS	Ducks Unlimited; CDFW; USFWS; NMFS; Central Valley Joint Venture	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Interview
139	Public Water Agencies	Modernize Delta monitoring to address current key questions.			BDCP, Biological Opinions; ESA; CWA; SWRCB's Bay-Delta Plan				A more reliable water supply for California: Water management information	Action Area 15. Coordinated monitoring and assessment	Interview
140	Public Water Agencies	Plan monitoring and special studies in advance to maximize learning during both extreme drought and high flow events.			BDCP, Biological Opinions; ESA; CWA; SWRCB's Bay-Delta Plan				A more reliable water supply for California: Water management information	Action Area 17. Building science capacity	Interview

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141	Delta Stewardship Council	Improved projections for and measurement of surface water flows (amounts, timing, quality) and how they may be impacted by environmental regulations, changing land uses, and climate change	Delta Plan		Delta Plan				A more reliable water supply for California: Water management information	Action Area 1. Watershed and water management	Document
142	Delta Stewardship Council	Improved models for assessing interaction between water management scenarios in the Delta and ecosystem function, including implications of revised instream flow requirements on inflows to the Delta and revised wet year/dry year export scenarios	Delta Plan		Delta Plan				A more reliable water supply for California: Water management information	Action Area 16. Collaborative modeling approaches	Document
143	Delta Stewardship Council	Improve water supply and demand forecasting models that incorporate vulnerability to extreme events (droughts, floods, earthquakes) and to the impacts of climate change	Delta Plan		Delta Plan				A more reliable water supply for California: Water management information	Action Area 12. Characterization of risks associated with natural disasters	Document
144	Delta Stewardship Council	Improved methods for downscaling climate change models (including dynamic downscaling) and improved models for water scenario planning that incorporates this data	Delta Plan		Delta Plan				A more reliable water supply for California: All sub-topics	Action Area 2. Impacts of climate change on natural resources	Document
145	Delta Stewardship Council	Improved characterization of groundwater basins and subbasins, and improved estimates of groundwater supplies (amounts, quality)	Delta Plan		Delta Plan				A more reliable water supply for California: Groundwater management	Action Area 1. Watershed and water management	Document

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146	Delta Stewardship Council	Improved models of aquifer and surface-groundwater relationships, which include the effects of climate change on evaporation, runoff, groundwater recharge, subsurface interactions, and the implications of these effects for safe yield and implementation of conjunctive use and water transfer programs	Delta Plan		Delta Plan				A more reliable water supply for California: Groundwater management	Action Area 1. Watershed and water management	Document
147	Delta Stewardship Council	Improved information on effective watershed management actions to restore and enhance capacity of rural and urban landscapes to process stormwater for water quality and water supply benefits	Delta Plan		Delta Plan				A more reliable water supply for California: Water management information	Action Area 1. Watershed and water management	Document
148	Delta Stewardship Council	Improved information on changing water use patterns in response to urban and agricultural water efficiency measures, including water pricing, and implications for future water demands	Delta Plan		Delta Plan				A more reliable water supply for California: Water management information	Action Area 1. Watershed and water management	Document
149	Delta Stewardship Council	Landscape-scale conceptual models for Delta ecosystem restoration.	Delta Plan		Delta Plan				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 13. Tools and resources for adaptive management	Document
151	Delta Stewardship Council	Effects of changed habitat quality and quantity on Delta fish and invertebrates. Examples might include (1) threadfin shad in the south and central Delta, (2) comparison of shallow shoal habitat and deep channel habitat to food resources of young striped bass, and (3) relationship between water turbidity and native fish migration, survival, growth, and/or reproduction.	Delta Plan		Delta Plan				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 4. Needs of native species	Document

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152	Delta Stewardship Council	Understand hatchery, harvest, and/or predation impacts on natural fish populations.	Delta Plan		Delta Plan				Protect, restore, and enhance the Delta ecosystem: Hatcheries and harvest management	Action Area 8. Abundance and distribution of predators	Document
153	Delta Stewardship Council	Tools to assess native fish response to restored habitats.	Delta Plan		Delta Plan				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 4. Needs of native species	Document
155	Delta Stewardship Council	Tools to assess potential impacts of climate change and sea level rise to viability of species in intertidal habitats.	Delta Plan		Delta Plan				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 2. Impacts of climate change on natural resources	Document
159	Delta Stewardship Council	Analysis of farm labor housing needs.	Delta Plan		Delta Plan				Delta as a place: Agriculture	Action Area 9. The Delta economy	Document
162	Delta Stewardship Council	The effects of nutrients on the Delta ecosystem and municipal water supplies: The importance of phytoplankton bloom suppression from ammonium; The role of nutrient loading on HABs in the Delta; Possible linkages between nonnative aquatic plants and nutrient inputs	Delta Plan		Delta Plan				Improve water quality to protect human health and the environment: Environmental water quality	Action Area 11. Role of nutrients	Document
168	Delta Stewardship Council	An analysis and evaluation of existing water quality models in the Delta	Delta Plan		Delta Plan				Improve water quality to protect human health and the environment: All sub-topics	Action Area 16. Collaborative modeling approaches	Document
174	Delta Stewardship Council	Update flood stage-probability functions	Delta Plan		Delta Plan				Reduce risk to people, property, and State interests in the Delta: Flood risk (floods, earthquakes, high tides and sunny-day risks)	Action Area 12. Characterization of risks associated with natural disasters	Document

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176	Delta Stewardship Council	Understanding the impacts on Delta flood management from upstream flood management infrastructure operations, including reservoir operations	Delta Plan		Delta Plan				Reduce risk to people, property, and State interests in the Delta: Flood risk (floods, earthquakes, high tides and sunny-day risks)	Action Area 1. Watershed and water management	Document
177	Delta Stewardship Council	Technologies for assessing levee integrity	Delta Plan		Delta Plan				Reduce risk to people, property, and State interests in the Delta: Flood risk (floods, earthquakes, high tides and sunny-day risks)	Action Area 12. Characterization of risks associated with natural disasters	Document
179	CNRA, CDFA, CAL/EPA	Develop an evaluation and feasibility process for addressing fish passage at California's rim dams and develop rim dam solution plan.	California Water Action Plan		California Water Action Plan				A more reliable water supply for California: Water management information	Action Area 1. Watershed and water management	Document
180	CNRA, CDFA, CAL/EPA	Make recommendations on how to achieve the salmon and steelhead and ecological flow needs for the state's natural resources through an integrated, multi-pronged approach.	California Water Action Plan		California Water Action Plan				Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 4. Needs of native species	Document
181	CNRA, CDFA, CAL/EPA	Continued improved water forecasting and promote inter and intra agency coordination and communication	California Water Action Plan		California Water Action Plan				A more reliable water supply for California: All sub-topics	Action Area 14. Data and information accessibility and exchange	Document
182	CNRA, CDFA, CAL/EPA	Provide essential data to enable sustainable groundwater management	California Water Action Plan		California Water Action Plan		California Statewide Groundwater Elevation Monitoring Program		A more reliable water supply for California: Groundwater management	Action Area 14. Data and information accessibility and exchange	Document

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183	CNRA, CDFA, CAL/EPA	Update Bulletin 118 using field data, California Statewide Groundwater Elevation Monitoring, groundwater agency reports, satellite imagery, and other best available science	California Water Action Plan		California Water Action Plan				A more reliable water supply for California: Groundwater management	Action Area 1. Watershed and water management	Document
185	CNRA, CDFA, CAL/EPA	Improve data availability, communication procedures, and analytical methods used to monitor and communicate risks to listed fish species and to water supplies when making regulatory decisions associated with implementation of incidental take provisions in the existing biological opinions	California Water Action Plan		California Water Action Plan; Biological Opinions				A more reliable water supply for California: Water management information	Action Area 14. Data and information accessibility and exchange	Document
187	CNRA, CDFA, CAL/EPA	Develop and employ new turbidity models to improve real-time turbidity management in the south Delta.	California Water Action Plan		California Water Action Plan; Biological Opinions; SWRCB's Bay-Delta Plan				A more reliable water supply for California: All sub-topics	Action Area 16. Collaborative modeling approaches	Document
188	CNRA, CDFA, CAL/EPA	Analyze through the South Delta Science Collaborative associated operational approaches for minimizing loss of salmon in the area of the Old River barrier and effects of the operations on water supply.	California Water Action Plan		California Water Action Plan; Biological Opinions		South Delta Science Collaborative		A more reliable water supply for California: All sub-topics	Action Area 4. Needs of native species	Document
189	CNRA, CDFA, CAL/EPA	Develop a Delta smelt life cycle model to help manage operations to avoid entrainment of smelt at the water projects intakes.	California Water Action Plan		California Water Action Plan; Biological Opinions				A more reliable water supply for California: All sub-topics	Action Area 16. Collaborative modeling approaches	Document

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190	CNRA, CDFA, CAL/EPA	Implement a 3.5-year study to enhance and modernize Delta smelt monitoring (fish abundance and geographic distribution in the Delta), to improve the ability to protect fish populations while minimizing the impacts of fish protective measures on water project operations.	California Water Action Plan		California Water Action Plan; Biological Opinions				A more reliable water supply for California: All sub-topics	Action Area 15. Coordinated monitoring and assessment	Document
191	CNRA, CDFA, CAL/EPA	Improve state and federal interagency coordination and water contractor coordination on real-time forecasting and management associated with meeting water quality control objectives, to optimize project operations and avoid redirected fishery impacts.	California Water Action Plan		California Water Action Plan; Biological Opinions; SWRCB's Bay-Delta Plan				A more reliable water supply for California: All sub-topics	Action Area 15. Coordinated monitoring and assessment	Document
192	CNRA, CDFA, CAL/EPA	Fund and revive the National Hydrological Dataset for California to improve high-quality framework geospatial data and the precision and accuracy of mapping and scientific studies.	California Water Action Plan		California Water Action Plan	Funding is needed			A more reliable water supply for California: All sub-topics	Action Area 14. Data and information accessibility and exchange	Document
193	Delta Independent Science Board	Coordinate and integrate planning and implementation of habitat-restoration projects to capitalize on synergies and complementarities among projects: Recognize and incorporate conceptual and spatial connectivity and the complementarities among projects into planning	Delta ISB final report: "Habitat restoration in the Sacramento-San Joaquin Delta and Suisun Marsh: a review of science programs"		BDCP; Delta Plan; FRPA; NCCP Act, HCP				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 13. Tools and resources for adaptive management	Document

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194	Delta Independent Science Board	Coordinate broad design and implementation of restoration activities and the use of science to support these activities, either by an independent body or a rigorous paper review process that can provide objective, third-party assessments	Delta ISB final report: "Habitat restoration in the Sacramento-San Joaquin Delta and Suisun Marsh: a review of science programs"		BDCP; Delta Plan; FRPA; NCCP Act, HCP				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 13. Tools and resources for adaptive management	Document
195	Delta Independent Science Board	Evaluate nonlinear and complex responses of the Delta ecosystem to changing environmental conditions and how these will affect and be affected by habitat restoration projects	Delta ISB final report: "Habitat restoration in the Sacramento-San Joaquin Delta and Suisun Marsh: a review of science programs"		BDCP; Delta Plan; FRPA; NCCP Act, HCP				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 13. Tools and resources for adaptive management	Document
196	Delta Independent Science Board	Incorporate long-term monitoring projects into habitat restoration programs to inform Adaptive Management through: 1) Selection of best targets for monitoring, 2)Ensuring appropriate frequency/duration of monitoring program, 3) Facilitating sharing and synthesis of findings by using appropriate data management and methods	Delta ISB final report: "Habitat restoration in the Sacramento-San Joaquin Delta and Suisun Marsh: a review of science programs"		BDCP; Delta Plan; FRPA; NCCP Act, HCP				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 13. Tools and resources for adaptive management	Document
197	Delta Independent Science Board	Incorporate computer modeling into habitat restoration plans	Delta ISB final report: "Habitat restoration in the Sacramento-San Joaquin Delta and Suisun Marsh: a review of science programs"		BDCP; Delta Plan; FRPA; NCCP Act, HCP				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 13. Tools and resources for adaptive management	Document
198	Delta Independent Science Board	Improve coordination and communication among all agencies/entities that manage the Delta ecosystem regarding sharing of data and information for habitat restoration projects/programs	Delta ISB final report: "Habitat restoration in the Sacramento-San Joaquin Delta and Suisun Marsh: a review of science programs"		BDCP; Delta Plan; FRPA; NCCP Act, HCP				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 13. Tools and resources for adaptive management	Document

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199	Delta Independent Science Board	Construct a comprehensive Delta-wide map showing current and planned restoration activities in the Delta	Delta ISB final report: "Habitat restoration in the Sacramento-San Joaquin Delta and Suisun Marsh: a review of science programs"		BDCP; Delta Plan; FRPA; NCCP Act, HCP				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 13. Tools and resources for adaptive management	Document
200	Delta Independent Science Board	Create a database of all habitat restoration projects in the Delta	Delta ISB final report: "Habitat restoration in the Sacramento-San Joaquin Delta and Suisun Marsh: a review of science programs"		BDCP; Delta Plan; FRPA; NCCP Act, HCP				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 13. Tools and resources for adaptive management	Document
201	Delta Independent Science Board	Promote collaboration among multiple entities (including state agencies, academia, private sector, observers in the field) to ensure necessary scientific expertise is available when planning and implementing habitat restoration plans	Delta ISB final report: "Habitat restoration in the Sacramento-San Joaquin Delta and Suisun Marsh: a review of science programs"		BDCP; Delta Plan; FRPA; NCCP Act, HCP				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 13. Tools and resources for adaptive management	Document
202	Delta Independent Science Board	Communicate and assess probable impacts of habitat restoration on stakeholders (e.g. landowners)	Delta ISB final report: "Habitat restoration in the Sacramento-San Joaquin Delta and Suisun Marsh: a review of science programs"		BDCP; Delta Plan; FRPA; NCCP Act, HCP				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 13. Tools and resources for adaptive management	Document
206	DWR, USBR	Research life history aspects of Delta smelt	BDCP Appendix 5.F (2013)		BDCP; ESA; HCP; NCCP Act				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document
212	DWR, USBR	Understand how habitat restoration will affect covered fish species	BDCP Appendix 5.F (2013)		BDCP; ESA; HCP; NCCP Act				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 5. Habitat restoration	Document
215	DWR, USBR	Monitoring of the benthic community at existing and restored habitats	BDCP Appendix 5.F (2013)		BDCP; ESA; HCP; NCCP Act				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 6. Lower aquatic food webs	Document

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234	Delta Science Program's 2013 Independent Review Panel (IRP) on the Long-term Operations Biological Opinions (LOBO) Annual Review	Need to explicitly link the success or failure of meeting physical targets prescribed in the Reasonable and Prudent Alternative (RPA) Actions to the biological/ecological responses of the listed species.	Report of the 2013 Independent Review Panel (IRP) on the Long-term Operations Biological Opinions (LOBO) Annual Review		BiOps				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document
235	Delta Science Program's 2013 Independent Review Panel (IRP) on the Long-term Operations Biological Opinions (LOBO) Annual Review	Inclusion of more ecological and behavioral responses of the fish populations or life stages targeted by the RPA actions... as multiple years of observations become available to support a more comprehensive evaluation of the co-equal goals.	Report of the 2013 Independent Review Panel (IRP) on the Long-term Operations Biological Opinions (LOBO) Annual Review		BiOps				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document
236	Delta Science Program's 2013 Independent Review Panel (IRP) on the Long-term Operations Biological Opinions (LOBO) Annual Review	Given that listed species loss estimates associated with the pumping facilities are essential for establishing levels of incidental take, accurate estimates of losses relative to the size of the at-risk populations are needed.	Report of the 2013 Independent Review Panel (IRP) on the Long-term Operations Biological Opinions (LOBO) Annual Review		BiOps				A more reliable water supply for California: Water management information	Action Area 3. Entrainment of native fishes	Document
237	Delta Science Program's 2013 Independent Review Panel (IRP) on the Long-term Operations Biological Opinions (LOBO) Annual Review	Determine whether the intentions of habitat restoration efforts are tracking toward expected outcomes.	Report of the 2013 Independent Review Panel (IRP) on the Long-term Operations Biological Opinions (LOBO) Annual Review		BiOps				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 13. Tools and resources for adaptive management	Document

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238	Delta Science Program's 2013 Independent Review Panel (IRP) on the Long-term Operations Biological Opinions (LOBO) Annual Review	Hasten progress of promised improvements intended to reduce fish losses at the pumps, expand spawning and rearing habitat, preserve cool water reservoir storage and advance temperature model development	Report of the 2013 Independent Review Panel (IRP) on the Long-term Operations Biological Opinions (LOBO) Annual Review		BiOps				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 13. Tools and resources for adaptive management	Document
246	USBR, USFWS	American River Structured Decision Making (SDM) Monitoring	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA		USFWS		Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document
247	USBR, USFWS	Sacramento River Redd Dewatering Study	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA		USFWS		Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document
250	USBR, USFWS	San Joaquin River System and Delta Contaminants, Age, and Growth, and Microchemistry Study	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA		USFWS		Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document
251	USBR, USFWS	Impacts of Illegal Marijuana Activity on Fish	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA		USFWS		Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document
252	USBR, USFWS	Stanislaus River Floodplain Model	CVPIA 2014 Annual work plan: AFRP	Ongoing	CVPIA		USFWS		Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 1. Watershed and water management	Document
253	USBR, USFWS	Yuba River Daguerre Alley Floodplain Restoration Project	CVPIA 2014 Annual work plan: AFRP	Ongoing	CVPIA		USFWS		Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 13. Tools and resources for adaptive management	Document
254	USBR, USFWS	Antelope Creek Lower Slab Passage Assessment	CVPIA 2014 Annual work plan: AFRP	Ongoing	CVPIA		USFWS		Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document

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255	USBR, USFWS	American River Floodplain model	CVPIA 2014 Annual work plan: AFRP	Ongoing	CVPIA		USFWS		Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 1. Watershed and water management	Document
256	USBR, USFWS	Yuba River Floodplain model	CVPIA 2014 Annual work plan: AFRP	Ongoing	CVPIA		USFWS		Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 1. Watershed and water management	Document
257	USBR, USFWS	Tuolumne River Floodplain Model	CVPIA 2014 Annual work plan: AFRP	Ongoing	CVPIA		USFWS		Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 1. Watershed and water management	Document
259	USBR, USFWS	Stanislaus River Knights Ferry Floodplain Restoration Project	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 13. Tools and resources for adaptive management	Document
260	USBR, USFWS	Lower American River Floodplain Restoration	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 13. Tools and resources for adaptive management	Document
261	USBR, USFWS	Merced River Snelling Channel and Floodplain Restoration Project at Henderson Park	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 13. Tools and resources for adaptive management	Document
262	USBR, USFWS	Cosumnes River Juvenile outmigration monitoring	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document
263	USBR, USFWS	American River Structured Decision making (SDM) Monitoring Studies	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 13. Tools and resources for adaptive management	Document
264	USBR, USFWS	Fish Screen Optimization Model	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 16. Collaborative modeling approaches	Document

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265	USBR, USFWS	Deer Creek Impacts of Illegal Marijuana Activity on Fish	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document
266	USBR, USFWS	South Fork Cottonwood Fish Passage Improvement Project	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 5. Habitat restoration	Document
267	USBR, USFWS	Dry Creek/Spenceville Wildlife Area habitat assessment	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 4. Needs of native species	Document
268	USBR, USFWS	Stanislaus River Knights Ferry Pre-project Monitoring	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document
269	USBR, USFWS	SF Cottonwood Habitat Assessment	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 5. Habitat restoration	Document
270	USBR, USFWS	Lower Sacramento Bullock Bend Floodplain Restoration Project	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 13. Tools and resources for adaptive management	Document
271	USBR, USFWS	Merced River Ranch Floodplain and Side-channel Restoration	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA				Protect, restore, and enhance the Delta ecosystem: Habitat restoration	Action Area 13. Tools and resources for adaptive management	Document
272	USBR, USFWS	Sacramento River Redd Dewatering Study	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document
273	USBR, USFWS	San Joaquin River Sturgeon Acoustic Study	CVPIA 2014 Annual work plan: AFRP	Proposed	CVPIA				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document

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274	SWRCB	Research and Conflict Resolution Approach	Comprehensive (Phase 2) Review and Update to the Bay-Delta Plan: Final Bay-Delta Plan Workshops Summary Report		State Board's Bay-Delta Plan			Delta Science Program	A more reliable water supply for California: Water management information	Action Area 17. Building science capacity	Document
275	SWRCB	Improve the measurement and management of salinity, and the Low Salinity Zone (LSZ), and how to manage flows to maintain or restore fish populations.	Comprehensive (Phase 2) Review and Update to the Bay-Delta Plan: Final Bay-Delta Plan Workshops Summary Report [SWRCB]		SWRCB Bay-Delta Plan				Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 4. Needs of native species	Document
278	SWRCB	Understand changes in productivity and the food web, relationship to shifts in the amount and type of nutrients available, and the factors influencing pelagic fish distribution and abundance.	Comprehensive (Phase 2) Review and Update to the Bay-Delta Plan: Final Bay-Delta Plan Workshops Summary Report		State Board's Bay-Delta Plan				Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 6. Lower aquatic food webs	Document
279	SWRCB	Understand the timeframe for future invasive species invasions and the management options to prepare for likely but essentially unpredictable impacts	Comprehensive (Phase 2) Review and Update to the Bay-Delta Plan: Final Bay-Delta Plan Workshops Summary Report		State Board's Bay-Delta Plan				Protect, restore, and enhance the Delta ecosystem: Nonnative species	Action Area 7. Methods to manage and minimize the impacts of non-native species	Document
281	SWRCB	There is a need for more immediate feedback and adaptation regarding the management and regulatory context in determining whether scientific information, and associated uncertainty, are used and addressed to create effective decisions and policies.	Comprehensive (Phase 2) Review and Update to the Bay-Delta Plan: Final Bay-Delta Plan Workshops Summary Report		State Board's Bay-Delta Plan				A more reliable water supply for California: Water management information	Action Area 17. Building science capacity	Document
282	SWRCB	Promote the development of collaborative models and evaluate their application for decision support	Comprehensive (phase 2) Review and update to the bay-delta plan: Final bay-delta plan workshops summary report		State Board's Bay-Delta Plan				A more reliable water supply for California: Water management information	Action Area 16. Collaborative modeling approaches	Document

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291	Delta Science Program's Independent Panel for the Predation Workshop	Develop a spatially explicit decision model that examines where restoration/anti-predator efforts can have the biggest impact on increasing juvenile production	The predation workshop report - Effects of fish predation on salmonids in the Sacramento River – San Joaquin Delta and associated ecosystems		Striped Bass Settlement; BiOps; ESA; Delta Plan; BDCP; SWRCB's Bay-Delta Water Quality Control Plan			DSP; CDFW; NMFS	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 8. Abundance and distribution of predators	Document
292	Delta Science Program's Independent Panel for the Predation Workshop	Gain a better understanding of the relationship between tag/fish loss and predation, and specifically, what percentage of tag/juvenile loss is due to predation and what percentage to other forms of mortality	The predation workshop report - Effects of fish predation on salmonids in the Sacramento River – San Joaquin Delta and associated ecosystems		Striped Bass Settlement; BiOps; ESA; Delta Plan; BDCP; SWRCB's Bay-Delta Water Quality Control Plan			DSP; CDFW; NMFS	Protect, restore, and enhance the Delta ecosystem: Hatcheries and harvest management	Action Area 8. Abundance and distribution of predators	Document
293	Delta Science Program's Independent Panel for the Predation Workshop	Determine what might have caused the decline [in survivorship of juvenile salmonids in the late 1990s and early 2000s, especially from the San Joaquin River] and how could we yield productive hypotheses regarding the mechanisms behind the current situation.	The predation workshop report - Effects of fish predation on salmonids in the Sacramento River – San Joaquin Delta and associated ecosystems		Striped Bass Settlement; BiOps; ESA; Delta Plan; BDCP; SWRCB's Bay-Delta Water Quality Control Plan			DSP; CDFW; NMFS	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document
294	Delta Science Program's Independent Panel for the Predation Workshop	Determine the effects of flow, especially when water is diverted along an artificial pathway (i.e., Sacramento River water to the Central Delta via the DCC) on olfactory cues that salmonids use for both upstream and downstream migrations	The predation workshop report - Effects of fish predation on salmonids in the Sacramento River – San Joaquin Delta and associated ecosystems		Striped Bass Settlement; BiOps; ESA; Delta Plan; BDCP; SWRCB's Bay-Delta Water Quality Control Plan			DSP; CDFW; NMFS	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 4. Needs of native species	Document
295	Delta Science Program's Independent Panel for the Predation Workshop	Produce a meta-analysis of existing telemetry results to provide more general conclusions from the telemetry datasets	The predation workshop report - Effects of fish predation on salmonids in the Sacramento River – San Joaquin Delta and associated ecosystems		Striped Bass Settlement; BiOps; ESA; Delta Plan; BDCP; SWRCB's Bay-Delta Water Quality Control Plan			DSP; CDFW; NMFS	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 4. Needs of native species	Document

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296	Interagency Ecological Program (IEP) Scientific Advisory Committee (SAG)	Conduct a rigorous, statistically-based assessment of the basic monitoring study designs (specifically beach seine and trawl) to evaluate whether it is producing the expected level of precision, accuracy and completeness required for management decisions.	Review of the IEP Delta Juvenile Fishes Monitoring Program and Delta Juvenile Salmonid Survival Studies		BiOps; ESA; SWRCB's Bay-Delta Water Quality Control Plan		IEP		Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 15. Coordinated monitoring and assessment	Document
299	Delta Science Program's Independent Review Panel for the FLASH Study Synthesis	Develop a schematic version of the Conceptual Model (CM) that matches the revised, written version of the CM in the draft 2012 FLASH study report	Delta Science Program Independent Science Review: Fall Low Salinity Habitat (FLaSH) Study Synthesis – Year One of the Delta Fall Outflow Adaptive Management Plan Review Panel Summary Report		ESA; BiOps; SWRCB's Bay-Delta Water Quality Control Plan; BDCP		USFWS; USBR	IEP	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 16. Collaborative modeling approaches	Document
300	Delta Science Program's Independent Review Panel for the FLASH Study Synthesis	Begin a discussion of a definition of "success" for the Fall Outflow action	Delta Science Program Independent Science Review: Fall Low Salinity Habitat (FLaSH) Study Synthesis – Year One of the Delta Fall Outflow Adaptive Management Plan Review Panel Summary Report		ESA; BiOps; SWRCB's Bay-Delta Water Quality Control Plan; BDCP		USFWS; USBR	IEP	Protect, restore, and enhance the Delta ecosystem: All sub-topics	Action Area 13. Tools and resources for adaptive management	Document
301	Delta Science Program's Independent Review Panel for the FLASH Study Synthesis	Develop a simple decision matrix that identifies data collection and analysis objectives for Action years (wet and above normal years) and Non-Action years	Delta Science Program Independent Science Review: Fall Low Salinity Habitat (FLaSH) Study Synthesis – Year One of the Delta Fall Outflow Adaptive Management Plan Review Panel Summary Report		ESA; BiOps; SWRCB's Bay-Delta Water Quality Control Plan; BDCP		USFWS; USBR	IEP	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 13. Tools and resources for adaptive management	Document
302	Delta Science Program's Independent Review Panel for the FLASH Study Synthesis	Use an interactive approach to develop long-term plans for monitoring and study during each water year type, and place a greater emphasis on integration of results in the draft 2012 Adaptive Management Plan	Delta Science Program Independent Science Review: Fall Low Salinity Habitat (FLaSH) Study Synthesis – Year One of the Delta Fall Outflow Adaptive Management Plan Review Panel Summary Report		ESA; BiOps; SWRCB's Bay-Delta Water Quality Control Plan; BDCP		USFWS; USBR	IEP	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 15. Coordinated monitoring and assessment	Document

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303	Delta Science Program's Independent Review Panel for the FLaSH Study Synthesis	Determine where improvements to spatial or temporal resolution are warranted	Delta Science Program Independent Science Review: Fall Low Salinity Habitat (FLaSH) Study Synthesis – Year One of the Delta Fall Outflow Adaptive Management Plan Review Panel Summary Report		ESA; BiOps; SWRCB's Bay-Delta Water Quality Control Plan; BDCP		USFWS; USBR	IEP	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 15. Coordinated monitoring and assessment	Document
304	Delta Science Program's Independent Review Panel for the FLaSH Study Synthesis	Identify opportunities to coordinate and integrate field measurements	Delta Science Program Independent Science Review: Fall Low Salinity Habitat (FLaSH) Study Synthesis – Year One of the Delta Fall Outflow Adaptive Management Plan Review Panel Summary Report		ESA; BiOps; SWRCB's Bay-Delta Water Quality Control Plan; BDCP		USFWS; USBR	IEP	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 15. Coordinated monitoring and assessment	Document
305	Delta Science Program's Independent Review Panel for the FLaSH Study Synthesis	Organize the leadership of the draft 2012 Adaptive Management Plan, and identify and employ a Chief Scientist	Delta Science Program Independent Science Review: Fall Low Salinity Habitat (FLaSH) Study Synthesis – Year One of the Delta Fall Outflow Adaptive Management Plan Review Panel Summary Report		ESA; BiOps; SWRCB's Bay-Delta Water Quality Control Plan; BDCP		USFWS; USBR	IEP	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 17. Building science capacity	Document
306	Delta Science Program's Independent Review Panel for the FLaSH Study Synthesis	Start planning now for future modeling needs	Delta Science Program Independent Science Review: Fall Low Salinity Habitat (FLaSH) Study Synthesis – Year One of the Delta Fall Outflow Adaptive Management Plan Review Panel Summary Report		ESA; BiOps; SWRCB's Bay-Delta Water Quality Control Plan; BDCP		USFWS; USBR	IEP	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 16. Collaborative modeling approaches	Document
307	Delta Science Program's Independent Review Panel for the FLaSH Study Synthesis	Develop plans to account for uncertainty	Delta Science Program Independent Science Review: Fall Low Salinity Habitat (FLaSH) Study Synthesis – Year One of the Delta Fall Outflow Adaptive Management Plan Review Panel Summary Report		ESA; BiOps; SWRCB's Bay-Delta Water Quality Control Plan; BDCP		USFWS; USBR	IEP	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 13. Tools and resources for adaptive management	Document

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308	Delta Science Program's Independent Review Panel for the FLASH Study Synthesis	Determine how the draft 2012 Adaptive Management Plan incorporate monitoring of response variables that have a clear demographic linkage to Delta smelt, both at the individual and population level (e.g., otolith inferred growth rates, fecundity, condition factor)	Delta Science Program Independent Science Review: Fall Low Salinity Habitat (FLaSH) Study Synthesis – Year One of the Delta Fall Outflow Adaptive Management Plan Review Panel Summary Report		ESA; BiOps; SWRCB's Bay-Delta Water Quality Control Plan; BDCP		USFWS; USBR	IEP	Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 13. Tools and resources for adaptive management	Document
312	IEP Contaminants Work Team (CWT) Independent Science advisory Panel	Conduct temporal experiments that may lead to a better understanding of changes that are reversible, or adaptive, versus those that lead to permanent tissue injury	Evaluating Stressors in the San Francisco Estuary using Biomarkers Report of an Independent Scientific Advisory Panel		BiOps; ESA; SWRCB's Bay-Delta Water Quality Control Plan; Delta Plan			IEP Contaminants Work Team; CDFW; SFCWA	Protect, restore, and enhance the Delta ecosystem: Ecosystem water quality	Action Area 10. Sources and drivers of contaminants	Document
316	SWRCB	Gain a better understanding of the effects of accretions, depletions, and groundwater hydrology on important rivers and reaches, including the Delta.			Clean Water Act; Porter-Cologne Water Quality Control Act; California Water Action Plan; Antidegradation Policy				A more reliably water supply for California: Groundwater management	Action Area 1. Watershed and water management	
319	SWRCB	Implement a robust adaptive management program to improve evaluation of flow and non-flow actions, while protecting public trust and beneficial uses under the Bay-Delta Plan. This will require improved sharing of data by parties conducting monitoring pursuant to permits and licenses.			Clean Water Act; Porter-Cologne Water Quality Control Act; SWRCB's Bay-Delta Water Quality Control Plan				Protect, restore, and enhance the Delta ecosystem: Delta flows	Action Area 13. Tools and resources for adaptive management	
320	SWRCB	Timely public electronic access to physical and biological data collected for monitoring purposes related to any regulatory program in the Bay-Delta.			Clean Water Act; Porter-Cologne Water Quality Control Act; SWRCB's Bay-Delta Water Quality Control Plan				A more reliable water supply for California: Water management information	Action Area 14. Data and information accessibility and exchange	

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	IEP Management Team, DWR	Use of Fall Agricultural Flows to Improve the Delta Food Web	Protect, restore, and enhance the Delta ecosystem		IEP Managment Team 2014 Work Plan Recommendation					Action Area 6. Lower aquatic food webs	Document
	IEP Management Team, DWR	Second Generation SmeltCam	Protect, restore, and enhance the Delta ecosystem		IEP Managment Team 2014 Work Plan Recommendation					Action Area 4. Needs of native species	Document
	IEP Management Team, DWR	Use of Fall Agricultural Flows to Improve the Delta Food Web	Protect, restore, and enhance the Delta ecosystem		IEP Managment Team 2014 Work Plan Recommendation					Action Area 6. Lower aquatic food webs	Document