

**Mercury Projects Funded by CALFED Ecosystem Restoration Program: March 11, 2005**

ID	ERP Project number	Contract number	Title	Description	Organization	Contract Term	Funding level	Core comp.
A	Science program	ABAG contract	A Science Strategy for Mercury Investigation in the Bay-Delta Ecosystem: Development of a Unifying Framework linked to Ecological Restoration”	With input from researchers, stakeholders, and agency staff, develop a framework to guide future scientific studies	Wiener, Krabbenhoft, & Gilmour	2002-2003 Completed	\$130,000 (Science Program)	
B	ERP-97-C05	B81582 / 4600002673	Effects of Wetland Restoration on Methyl Mercury Levels	Evaluate relationship of physical, chemical, and biological gradients on methyl mercury production and bioaccumulation.	UC Davis	1998-2003 final report	\$546,171	3
C	ERP-99-B06	99FC200241 (USBR)	Assessment of Ecological and Human Health Impacts of Mercury in the Bay-Delta Watershed	This project will determine the major sources of mercury in the watershed, which forms are most bioavailable, where methylation is most active, fish tissue concentrations, and mercury effects on avian populations. Tow major study areas are Cache Creek and the Delta.	SJSUF – Moss Landing Marine Lab	1999-2003 final report	\$4,164,000	1,2,3,4,5
D	ERP-00-C01	B82243	Investigation of Abandoned Mines Sites – Yuba River Watershed	Preliminary site assessments of 100 abandoned mine sites in the Yuba River Watershed & development of abandoned mine database.	Dept. of Conservation	2000 completed	\$100,000	1,2
E	ERP-02-P40	GCAP	Evaluation of Mercury Transformations and Trophic Transfer in the San Francisco Bay/Delta: Identifying Critical Processes for ERP	This project will examine processes that affect the biogeochemical transformations and transfers of mercury among physical (sediment and water) and biotic (food web) compartments at Franks Tract and the Cosumnes River.	USGS	In progress, Work began Fall 2003	\$2,262,567	1,3
F	ERP-02-C03	4600002127	Abandoned Mine Lands Inventory & Assessment	Field evaluations of mine sites in several watersheds, including report development. Facilitate several groups related to abandoned mine issues, including statewide forum and legal workgroup.	Dept of Conservation	In progress, Work began Sept 04	\$400,000	1,2
G	ERP-03-C01	4600002762 / F-03-RE-024	Phase 1 – Fish consumption study, outreach and education for the Sacramento-San Joaquin Delta and its tributaries	Scoping study to gather information, establish priorities, and design further phases of fish consumption studies, and outreach and education activities. Cost share with RWQCB and DTMC.	Department of Health Services	Completed Final report	\$82,610	4
H	ERP-02-C06-A and ERP-02-C06-B	4600002973 and U-03-ER-021	Transport, Cycling and Fate of Mercury and Monomethyl Mercury in the San Francisco Delta and Tributaries, An Integrated Mass Balance Assessment Approach	This project will evaluate the transport, cycling and fate of mercury and methylmercury on a temporal and spatial basis using a biogeochemical mass balance framework to assess sources, sinks and biogeochemical processes.	SJSUF – Moss Landing Marine Labs	In progress, Work began April 04	\$3,881,215	1,3
I	ERP-01-C07-D	S-03-RE-039	Cache Creek Settling Basin Feasibility Study	Feasibility study to evaluate if the Cache Creek Settling Basin flood control project could be modified to trap additional mercury-laden sediment from Cache Creek watershed before it enters the Delta.	Camp, Dresser, McKee	In progress, Began Jan '05	\$100,000	2
J	ERP-03-C02	S-03-ER-020	Programmatic quality Assurance and Quality Control for CBDA Mercury research and monitoring projects	Implement and oversee a mercury QA program to ensure comparability and reliability of mercury data from multiple projects. Includes methods evaluation and interlab	DFG	In progress, Work began Jan 05	\$657,391	Oversight

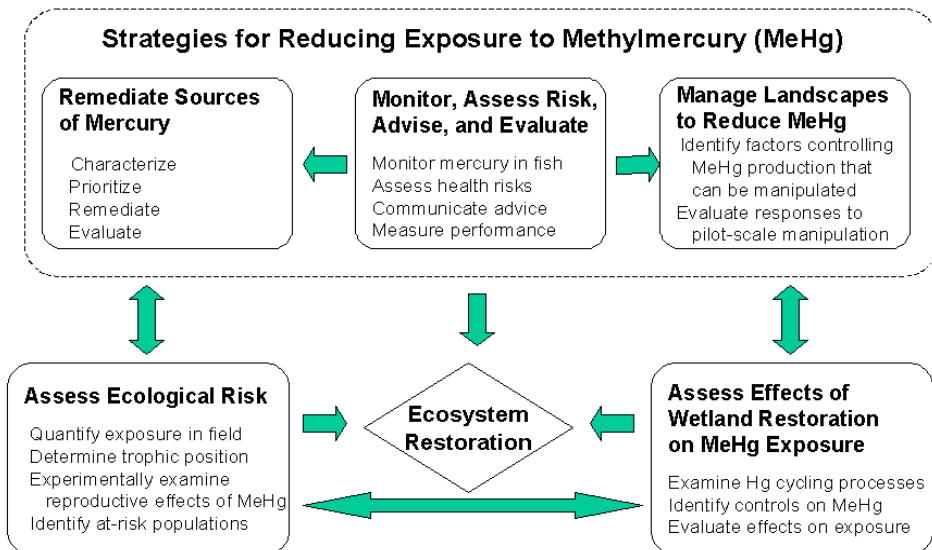
				comparisons.					
K	ERP-03-C03	S-02-ER-022	Regulatory Activities of Inactive Mercury Mine Sites Affecting Delta Water Quality	The Central Valley Regional Water Quality Control Board staff person will prepare regulatory permits and enforcement orders to control discharges from inactive mercury mines that are affecting Bay-Delta water quality.	Central Valley Regional Water Quality Control Board	In progress, Work began Nov 04	\$100,000	2	
L	ERP-01D-C18	S-03-RE-042	Development of fish tissue database and integration of existing fish tissue data	The goal of this project is to provide an integrated data management system that allows data aggregation and comparability for mercury data from researchers, agencies and other ongoing data collection programs.	DWR	Waiting for contract	\$295,000	4	
M	ERP-02D-C12	F-03-ER-037	Mercury in San Francisco Bay/Delta Birds: Trophic Pathways, Bioaccumulation, and Ecotoxicological Risk to Avian Reproduction	This project will evaluate the risks of mercury (Hg) exposure to avian reproduction. This project will integrate a field assessment of exposure and effects with a laboratory assessment of the variation in sensitivity of avian embryos to methylmercury.	USFWS	In progress, Work began Aug 04	\$5,337,012	5	
N	ERP-02D-P62	GCAP	Mercury and Methylmercury Processes in North San Francisco Bay Tidal Wetland Ecosystems	This study investigates mercury cycling in tidal wetlands of the Petaluma river, with emphasis on quantifying and understanding processes that influence the abundance of methylmercury.	SFEI	In progress, Work began summer '04	\$1,656,569	1,3,5	
O	ERP-01D-C19	S-03-RE-041	Research, Outreach, and Education on Fish Contamination in the Sacramento-San Joaquin Delta Watershed, Phase 2	Funding for Phase 2 covers pilot fish consumption studies for certain populations, formation of stakeholder and technical advisory groups, and outreach and education activities.	Department of Health Services	In progress, Work began Sept 04	\$421,791	4	
P	ERP-02-P12D	GCAP	Merced River Corridor Restoration Plan Phase IV: Dredger Tailings Reach (Task 5)	Task 6 evaluates mercury concentrations in dredge tailings and in biota in the Merced River	Stillwater Science	In progress, Work began 2003	\$339,914	3	
Q	ERP-02-C01-D	4600002330	Implement Upper Yuba Studies Program Water Quality and Sediment Studies - USGS	The overall objective is to improve understanding of sediment supply, transport, and storage of sediment in the Yuba River watershed, and to improve understanding of the current level of mercury contamination of Engelbright Lake sediments and biota.	US Geological Survey	In progress, Work began 2001	\$4,043,966	3	
R	ERP-00-G01		Measurement of Mercury Release from Delta Wetlands: Amounts, Alterations, and Implications; an amendment to existing CALFED project 00-G01	This amendment to a project on organic carbon loads from wetlands, will add mercury measurements. This project will evaluate mercury fluxes from tidal wetlands on Brown's Island and interactions between mercury and organic carbon.	US Geological Survey	In progress, Work began on amendment April 04	\$1,731,018	1,3	
S	ERP-02D-P67	Not submitted	A Pilot Program for Monitoring, Stakeholder Involvement, and Risk Communication Relating to Mercury in Fish in the Bay-Delta Watershed	This project is a collaborative pilot program to address mercury contamination in fish in the watershed with a 3-pronged approach: monitoring of mercury in fish, stakeholder involvement, and risk communication.	SFEI	Waiting for contract	\$4,323,004	4	
						<b>Total:</b>			

\* Projects with bold print are completed \*\* Projects that are shaded do not have signed contracts yet. \*\*\*Projects that are not shaded or bold are currently in progress

**Figures from: “Mercury Strategy for the Bay-Delta Ecosystem: A Unifying Framework for Science, Adaptive Management, and Ecological Restoration”**  
<http://calwater.ca.gov/Programs/EcosystemRestoration/Ecosystem.shtml>

**Components of the Mercury Strategy:**

<b>Core Component</b>	<b>Management Goal(s) Addressed</b>
1. Quantification and evaluation of mercury and methylmercury sources	To identify mercury sources that contribute most strongly to the production and bioaccumulation of methylmercury
2. Remediation of mercury source areas	To identify remedial actions that can reduce loadings of mercury from sources to surface waters and decrease the exposure of aquatic biota to methylmercury
3. Quantification of effects of ecosystem restoration on methylmercury exposure	To document and understand the effects of ecosystem restoration in wetland and floodplain habitats on the production and bioaccumulation of methylmercury in the Bay-Delta ecosystem
4. Monitoring of mercury in fish, health-risk assessment, and risk communication	To protect human health by providing informed guidance for reducing dietary exposure to methylmercury in fish  To provide a “performance measure” to gage methylmercury contamination of the Bay-Delta ecosystem during restoration
5. Assessment of ecological risk	To protect fish and wildlife from adverse effects of methylmercury exposure
6. Identification and testing of potential management approaches for reducing methylmercury contamination	To identify and evaluate potential landscape management approaches for reducing the production and abundance of methylmercury in the ecosystem, as well as the associated exposure of resident biota



**Figure 4.** Conceptual model of linkages among components of the mercury strategy. Arrows represent linkages among components of the strategy, where information should flow to provide adaptive feedback for refinement of both scientific and management actions. For simplification, strategy components 1 and 2 (both related to mercury sources) were combined into the single cell on the upper left-hand corner of the figure.