

Attachment B – Narrative

A. Consistency with the Concept Proposal and Responsiveness to Reviewer Comments

All reviewer comments are listed here, according to the questions answered and in the order provided. Responses to each comment are also provided with references to sections of this proposal.

TMDL

Comment: Better explain how the proposed project will lead to implementation of control studies and the eventual attainment of LAs.

- **Response:** See section B.3. This project will coordinate the ongoing development and implementation of integrated, collaborative control studies by nonpoint source dischargers. Scientifically valid, cost-effective Management Practices (MPs) to control methylmercury (MeHg) in wetlands and irrigated agriculture do not exist yet.

Project Description

Comment: The project description could provide more detail, especially on synthesis of control studies interim results and what specific coordination efforts will lead to funding and implementation of control studies.

- **Response:** Greater detail is now provided in section B.2. for Task 1 (coordination), Task 2 (data compilation, and Task 3 (control study synthesis).

Comment: Task 2 – unclear on the purpose of compiling other MeHg data as this is a moving target and current understanding of MeHg in the Delta was well-documented in earlier report by NPS workgroups.

- **Response:** See section B.2. Partly *because* MeHg data is a moving target, data compilation and analyses will always need to be updated.

Comment: A timeline for subtask is needed.

- **Response:** This project does not have subtasks. Task deliverables and scheduled delivery dates for each task are now provided in Attachment D. The schedule relative to other activities is also described.

Funding

Comment: A large portion of the 319(h) funding (\$50K) is intended to be used for Task 2. Please clearly explain how the data compilations benefit this effort. Consider whether consulting services can be used in other ways to help NPS Workgroup members in study planning, refinement of study workplans, and evaluations of results, or even collection of some monitoring data at study sites.

- **Response:** Section B.2. explains that this task goes far beyond compiling data by evaluating data quality and utility, then analyzing available data to evaluate results and generate qualified load estimates. NPS Workgroup Members' own staff and consultants and a Technical Advisory Committee (TAC) will perform the suggested consulting services.

Technical Approach

Comment: Discuss/explain how proposed approach will lead to MM/MP implementation. More info is needed on what coordination efforts entail.

- **Response:** See section B.3. This project will coordinate the ongoing development and implementation of integrated, collaborative control studies by dischargers. The control studies will identify and characterize appropriate MPs for the control of MeHg loads from wetlands and irrigated agriculture. The culmination of this project in early 2016 will synthesize the control study results to date and update our knowledge base. That synthesize will focus application of promising MPs and design follow-on control studies to address remaining questions.

Comment: Detail comment about prioritization: Pg 3 Section 4 implies projects helps prioritization of individual studies and implementation as based on: consistency with NPS Study Workplan, studies being funded, and utilize current and shared understanding. Will project also help prioritize studies based on [1] importance of MeHg source type, [2] significant remaining questions about MeHg control, and/or [3] likely feasibility of management practice implementation?

➤ **Response:** See section C. Addressing each basis: [1] yes—land use categories will be ranked by methylation production potential; [2] somewhat—remaining questions are not prioritized, but each study work plan and its study results will be evaluated for its ability to address such questions; [3] yes—all of the MPs have been ranked by feasibility and potential benefit. This project will provide NPS Workgroup Members with opportunities to identify more control studies and evaluate existing ones by these criteria.

Monitoring

Comment: Individual stakeholders will be conducting specific control studies based on the NPS Workgroup's Study Workplan. The individual study workplans will need to describe in detail their monitoring and QA/QC plans. In the full proposal, please clarify the extent to which the NPS Workgroup's overarching Study Workplan contains field monitoring and QA/QC guidance. It is not clear if this project will include monitoring or if it will be performed by others and then documented/analyzed by applicants.

➤ **Response:** See section C. This planning project does not include monitoring, but the NPS Workgroup will support and review individual control studies. Individual control studies underway and proposed include SWAMP-comparable QAPPs. The NPS Workgroup's workplan does contain detailed guidance on monitoring and QA/QC. This project will synthesize the results reported by others, comparing and contrasting them and prioritizing subsequent efforts.

Budget

Comment: Clarify (319h funding vs match vs total cost).

➤ **Response:** The new budget table in Attachment D clarifies the budget components.

Overall

Comment: Pg 2: project will enable NPS workgroup to manage and coordinate prioritized studies. NPS Workgroup is uniquely situated to provide ongoing needs assessment and prioritization. Priorities in the Workgroup's first study Workplan may need to be refined or revised based on completion of current studies and the data compilation.

➤ **Response:** Agreed. Section D includes a statement to this effect.

Comment: Prioritizations should be part of the Task 3 Interim Reports, but it was not clear.

➤ **Response:** Agreed. Section B.2. for Task 3 states that the synthesis will “Synthesize recent and current NPS MeHg Control Study results to provide a consistent, coherent message on the Phase 1 midterm conclusions and prioritized next steps.”

Comment: Coordinate with DWR before writing Scope for Task 2 Metadata compilation. DWR is planning Delta and bypass mercury modeling, which also needs existing data review.

➤ **Response:** Understood and agreed. DWR staff members do participate in the NPS Workgroup, and the NPS Workgroup Facilitator and Members support mercury modeling efforts.

Comment: NPS Workgroup's main focus should be on data and evaluation needs of irrigated ag and managed wetlands.

➤ **Response:** Agreed. The text throughout this narrative and the scope consistently refers to the NPS Workgroup, which supports wetland and irrigated agricultural land managers in the Delta.

B. Watershed and Project Description

B.1. Watershed Description

The watershed (project area) addressed by this proposal is the area defined in the Delta Methylmercury (MeHg) Total Maximum Daily Load (TMDL) to include the legal Delta and the Yolo Bypass (**Map 1**). The Delta is approximately 738,000 acres in Alameda, Contra Costa, Sacramento, San Joaquin, Solano and Yolo counties. Levees confine open water to 10% of the total area. More than 462,000 people lived in the Delta in 2000 in about 64,000 acres (8%). The Delta conveys water for irrigation and potable supplies for more than 23 million Californians. The Yolo Bypass is an integral component of the flood control system serving the greater Sacramento area. The Delta is an important waterfowl wintering area in the Pacific flyway migration corridor and contains several Audubon Society-designated Important Bird Areas. Existing beneficial uses of the project area include: municipal and domestic supply, agriculture (irrigation and stock watering), industry (process and service supply), contact recreation, non-contact recreation, freshwater habitat (warm and cold water species), spawning, reproduction and/or early development of fish (warm water species), wildlife habitat, migration of aquatic organisms (warm and cold water species), commercial and/or sport fishing, and navigation.

In 1990, the Central Valley Regional Water Quality Control Board (CV-RWQCB) listed the Delta as impaired by mercury because of elevated levels of mercury in fish that pose a risk to humans and wildlife. The MeHg TMDL requires load reductions in five Delta subareas (Marsh Creek, Mokelumne River, Sacramento River, San Joaquin River, and Yolo Bypass) and load caps in the remaining two subareas (Central Delta and West Delta). The TMDL estimates that wetlands cover 26,576 acres (4%) in the Delta yet discharge 19% of the MeHg load to the Delta. But in fact, the Delta and Yolo Bypass contain approximately 24,000 acres of unmanaged wetlands and 18,000 of managed wetlands. In addition, the CALFED Record of Decision and the Bay-Delta Conservation Plan propose 75,000 to 90,000 acres of wetlands for restoration. Irrigated agriculture lands are estimated to cover 524,475 acres (71%) in the Delta and contribute an additional 2% of the MeHg load.

B.2. Project Description

The Nonpoint Source (NPS) Workgroup for managed wetlands and irrigated agriculture was spawned from the Delta MeHg TMDL stakeholder group. Members include federal and state agencies, irrigated lands regulatory program coalitions, non-profit and for-profit wetland managers, and conservation organizations. An existing 319(h) grant has funded the formation of the NPS Workgroup, development of the knowledge base of mercury research, GIS analysis of land and water management, land managers' assessment of potential management practices (MPs), and development of a collaborative Control Study Workplan. The Workplan is a requirement of the CV-RWQCB Delta Mercury Control Program due by April 2013. The NPS Workgroup's collaborative Control Study Workplan defines the scope of work to evaluate holistically and consistently the range of source types (e.g., different wetland and agricultural types), source waters, soil types, and potential MPs. The existing 319(h) grant ends in June 2013.

This planning project will continue the facilitation and compliance coordination of the NPS Workgroup up to an interim review of Phase 1 of the TMDL's Delta Mercury Control Program (ending in 2018). Phase I requires identified nonpoint sources to conduct control studies to develop and evaluate control methods to comply with their MeHg load allocations. The project area is composed of the wetlands and irrigated agriculture included in the Delta MeHg TMDL (**Map 2** and **Map 3**, respectively).

Specific project tasks are summarized as follows:

- **Task 1. Coordinate Stakeholder-Specific Control Studies.** Based on the NPS Workgroup's collaborative Control Study Workplan, this project will continue the planning and facilitation efforts to implement the prioritized set of control studies. The NPS Workgroup Facilitator, with support from the Steering Committee, will manage and coordinate NPS Workgroup Members to implement Phase 1 control studies. In particular, because grant funding is the primary means to implement control studies, the NPS Workgroup Facilitator will have a key role in getting grant

proposals developed for implementation projects. This project will also provide valuable communication and coordination services (web site, listserv, quarterly meetings) both among NPS Workgroup Members and between the NPS Workgroup and the broader mercury TMDL community.

- **Task 2. Compile and Analyze Available Metadata.** This project will compile and statistically analyze MeHg data and associated water quality data from regional long-term datasets and site-specific studies (not necessarily available in the regional datasets) for inter-comparison and new calculations of MeHg loads, at a variety of spatial scales and among a variety of MPs (e.g., grazing prior to flood vs routing seasonal wetland discharge through permanent ponds). Synthesis of historical data will guide future control study planning as a component of Task 3.
- **Task 3. Synthesize NPS Control Studies Interim Results.** This project will synthesize recent and current NPS MeHg control study results to provide a consistent, coherent message on the Phase 1 midterm conclusions and prioritize next steps. The midterm review will allow the Delta Mercury Control Program an opportunity to assess whether the MPs being tested are feasible and effective, or additional studies (or alternative MPs) should be implemented. This report is due to the CV-RWQCB on October 20, 2015. This final report deliverable will characterize and prioritize MPs for application and/or additional study. The project team, with NPS Workgroup Members' support, will report to the Technical Advisory Committee (TAC) in November 2015.
- **Task 4. Manage and Administer Project.** Provide all technical and administrative services needed for project completion; monitor, supervise, and review all work performed; and coordinate budgeting and scheduling to ensure that the project is completed within budget, on schedule, and in accordance with approved procedures, applicable laws, and regulations.

The goal of this project is to ensure implementation of NPS control studies in a prioritized, holistic manner. NPS Workgroup Members are very diverse and do not have funding dedicated to planning or implementing requirements of the TMDL. The NPS Workgroup has developed the control study workplan to identify prioritized MPs, control study sites, proponents and budgets, and potential funding sources. An essential goal of this planning effort of the NPS Workgroup is to efficiently seek funding for individual control studies and to ensure their implementation.

This project's objectives are to facilitate the NPS Workgroup's "three C's" (communication, coordination and collaboration), to provide technical support as project proponents design and implement new studies, adaptively manage ongoing studies, and address other TMDL requirements for Phase I control studies. The grant period end date will coincide with the Delta Mercury Control Program Phase I midterm review, and conclude with delivery of Phase I control study progress reports (due October 20, 2015) to be reviewed by the Delta MeHg TMDL TAC in November 2015.

The anticipated outcomes of the project are funding and implementation of sufficient control studies for the priority land use types in representative study sites and priority MPs. For instance, NPS Workgroup Members are conducting or proposing to conduct studies at the Cosumnes River Preserve, Twitchell Island, and Yolo Bypass. The second outcome of project is the summary of progress and results to date (as of early 2015) of all ongoing wetland and irrigated agricultural control studies. Based on the scientific knowledge base developed under the existing 319(h) grant, the NPS Workgroup has identified the need for a metadata analysis of recent MeHg research datasets (water, biota, and sediment) to assess and qualify differences among sites and hydrologic processes that control MeHg loads. The anticipated project outcome for this metadata analysis is a regional scale assessment of mercury loading and potential mercury control that can help broaden the knowledge gained from the proposed control studies.

B.3. Project Relationship to Existing TMDLs

This project addresses the Basin Plan Amendment (BPA) for a Methylmercury (MeHg) Total Maximum Daily Load (TMDL) for the Sacramento-San Joaquin Delta Estuary (Delta) and the Yolo Bypass. This Project focuses specifically on wetland (**Map 2**) and irrigated agriculture (**Map 3**) stakeholders and the management and coordination of their efforts to implement the BPA. Phase 1 of the

BPA Implementation Plan, called the Delta Mercury Control Program, requires all sources to conduct control studies to develop and evaluate new control methods to comply with the MeHg load allocations. This project will coordinate the ongoing development and implementation of integrated, collaborative control studies by dischargers.

The NPS Workgroup will facilitate development of MPs through coordination of designated responsible parties and researchers. The control studies will identify and characterize appropriate MPs for the control of methylmercury loads from wetlands and irrigated agriculture. The culmination of this project in two years will synthesize the control study results to date and update the knowledge base. That synthesize will encourage application of promising MPs and follow-on control studies to address remaining questions. MPs are unlikely to be developed on the necessary scale without the coordination provided by the NPS Workgroup. These effective MPs would then be implemented throughout the Delta during Phase 2 of the TMDL Implementation Plan.

C. Technical Approach

The CV-RWQCB's TMDL Implementation Plan incorporates an adaptive management approach by requiring planning and conducting of studies to develop appropriate MPs. The study period will be followed by the CV-RWQCB's review of the TMDL and associated requirements. This project will provide information about MP effectiveness and applicability that is needed by the CV-RWQCB in order to adjust the TMDL.

Under the current 319(h) grant, USGS mercury researchers involved in the NPS Workgroup synthesized the scientific understanding of MeHg production, bioaccumulation, and export in the Sacramento-San Joaquin Delta. The key finding is that hydrologic and labile carbon controls (rather than inorganic mercury control) are primary mechanisms that may limit MeHg production, bioaccumulation, and discharge. Department of Fish & Game researchers then identified 26 specific, potential MPs under three broad categories: hydrology, biogeochemistry, and vegetation and soils management.

Given the significant differences in MeHg production on different wetland and flooded agricultural land types and the different degrees of land and water management, the NPS Workgroup defined six major land use types: managed wetlands (permanently flooded), managed wetlands (seasonally flooded), agricultural lands (seasonally flooded), agricultural lands (irrigated crops), natural hydrology systems (floodplains), and natural hydrology systems (brackish-fresh tidal marsh). The NPS Workgroup also performed an updated spatial assessment of managed wetland types and agricultural lands (more recent than the TMDL), to understand the geographic coverage of the different land use types. NPS Workgroup Members then evaluated the initial potential list of MPs based on feasibility, relative MeHg load reduction potential, competing—and possibly conflicting—land management goals or regulatory requirements, and costs. The resultant list of potential MPs are those prioritized for control studies.

The NPS Workgroup is currently developing a suite of control studies focused on TMDL subareas that need greater load reductions, land uses that appear to have greater net MeHg production rates, among a range of water regimes (e.g., flooding conditions, irrigation cycles, tidal influence), crop/vegetation types, source water characteristics, soil characteristics, and surface sediment mercury concentrations. The NPS Workgroup will submit this collaborative Control Study Workplan, including the science synthesis, prioritized MPs for control studies, identified sites and project proponents for individual studies, and budgets, potential funding sources and approaches to funding control studies, in April 2013. The planning project follows guidance in the CV-RWQCB's 2012 MeHg Control Study Guidance Document. The CV-RWQCB and its TAC also provides directed guidance on the proposed workplan (public meetings in March 2012, September 2012, and likely May 2013). This project will not include monitoring, but rather will rely on individual control study proponents to do so with support and review by the NPS Workgroup.

This project will provide NPS Workgroup Members with the means to coordinate field studies, share experiences, and compare results in a consistent manner. This consistency will lead to:

- Optimal coordination and planning among land managers and planners throughout the Delta;

- Comparable cost functions that account for labor, materials, and opportunity costs such as reduced soil productivity and habitat degradation;
- An ability to scale study results to the broader Delta landscape; and
- An estimate of overall costs per MeHg load reduction.

D. Monitoring and Assessment of Project Outcomes

This project is driven by the timeline of the Delta Mercury Control Program. The major milestone is the Phase 1 mid-term review after October 2015, which includes submittal of a progress report on ongoing control studies and a meeting with the TAC. This review will be an important adaptive management decision point, to determine if interim results indicate effective MPs or if additional studies (or alternative MPs) should be implemented. CV-RWQCB staff also participates in the NPS Workgroup, so any necessary adaptive management of this project could occur at any time. Effectiveness will be measured by compliance with TMDL reporting requirements. The NPS Workgroup is uniquely situated to assess needs and prioritize actions. Priorities in the NPS Workgroup’s collaborative Control Study Workplan may need to be refined or revised based on the Task 3 synthesis.

Control studies will monitor MeHg discharges from and bioaccumulation within their sites. Two basic approaches are recommended for individual control studies. The first approach will measure MeHg concentrations in inflows and outflows as a first variable in calculating net MeHg export (load out – load in). In the absence of a quantified hydrologic budget, surrogates for hydrology, such as conservative tracers like chloride or conductivity, should be monitored. Surrogates for MeHg in water, such as chromophoric dissolved organic matter and/or suspended particulate matter, should also be used where appropriate to develop correlative relationships, as these constituents may be monitored remotely, inexpensively, and continuously using in situ sensors. The second approach will monitor biosentinels for MeHg exposure, as biosentinels provide a time-integrated indication of MeHg concentrations in water and also provide an assessment of MeHg exposure to wildlife.

Milestones that will be tracked include: (1) regular meetings, (2) compilation of the metadata and associated analyses, and (3) synthesis of control study results.

Performance measures are tabulated at the end of this narrative.

E. Watershed Approach

E.1. Relationship to Existing Watershed Plans

The Delta has been a recognized “watershed” for decades, and as such has been the subject of substantial watershed program plans, including: the Delta MeHg TMDL Basin Plan Amendment (BPA), Bay-Delta Conservation Plan¹, CALFED Mercury Strategy², Delta Vision³, Watershed Management Initiative – Central Valley Region⁴, Delta Regional Ecosystem Restoration Implementation Plan⁵, and the Mercury Strategic Plan for the Sacramento River Watershed⁶ (developed by the grant applicant). Mercury contamination has been recognized in many of these plans as an ecosystem stressor to be considered and controlled. This project will directly address this component of watershed plans and could be used as a template for future revisions.

The BPA addresses all nine key elements of a watershed plan as follows:

¹ baydeltaconservationplan.com

² science.calwater.ca.gov/science/pdf/MercuryStrategyFinalReport.pdf

³ www.deltavision.ca.gov

⁴ www.swrcb.ca.gov/centralvalley/water_issues/watershed_management/r5_wmi_chapter.shtml

⁵ science.calwater.ca.gov/drerip/drerip_index.html

⁶ http://www.sacriver.org/documents/dtmc/documents/DTMC_FactSheet_StrategicPlan_v2.pdf

| Key Element | How Addressed in BPA |
|---------------------------------------|---|
| 1. Causes and Sources | These are quantitatively defined in the BPA, with detailed analyses presented in the TMDL itself. This project will result in additional data to better quantify wetlands and irrigated agricultural source loadings. That is, the control studies baseline pretreatment monitoring data to assess effectiveness of MPs will provide this co-benefit. |
| 2. Expected Load Reductions | The BPA lists the required load reductions for all source types on a subarea-basis on a pure percentage basis; it does not recognize whether these reductions are feasible. The planned control studies will define what are feasible and achievable load reductions for the source types and MPs studied. At the end of Phase 1, the CV-RWQCB will perform a review and potentially revise the allocations and required load reductions. |
| 3. Management Measures | There are no established MPs for wetlands and irrigated agriculture. The BPA implementation plan requires the Phase 1 control studies to develop the MPs that will be required in Phase 2 implementation. This Project will address this goal, as described in this proposal. |
| 4. Technical and Financial Assistance | The BPA states that the CV-RWQCB staff and its TAC will provide technical assistance to stakeholders and has estimated costs for the Control Studies. This project will help to identify funding for the control studies. |
| 5. Information/Education | Stakeholder assembled during the development of the BPA continue their involvement in the BPA adaptive management implementation approach through the facilitation and organizational structure of the Delta Tributaries Mercury Council (DTMC). In addition, this project includes quarterly meetings for wetland and irrigated agricultural landowners to educate them on existing science knowledge of methylmercury production on their lands and to ensure their participation in collaborative control studies. |
| 6. Schedule | The BPA has a defined schedule for its phased, adaptive management approach to implementing the Delta Methylmercury TMDL. Phase 1 control studies covers a nine-year period and Phase 2 implementation period follows with a compliance end date of 2030. This project is planned around two Phase 1 BPA schedule requirements: 1) after submission of the NPS Workgroup's collaborative Control Study Workplan (due April 20, 2013) and 2) submittal and review of the Control Study Progress Report (due October 20, 2015). |
| 7. Measurable Milestones | The BPA includes interim, measurable milestones to determine if progress is being made on the Delta Mercury Control Program - Control Study Progress Reports due October 20, 2015 and a Control Study Review in 2020. The CV-RWQCB Executive Officer can issue individual waste discharge requirements if noncompliance with schedules. |
| 8. Evaluation of Progress | The criterion for evaluation of progress is the measurement of fish tissue concentrations at the compliance monitoring points defined in the BPA. For the Phase 1 control studies, evaluation of progress will consider participation of dischargers in control studies (required by 2012), evaluation of mid-term progress of ongoing control studies (required in 2015), and the resulting outcomes of these studies (required by 2018). CV-RWQCB will evaluate the Phase 1 Control Program in 2020. |
| 9. Monitoring | The BPA requires fish tissue compliance monitoring locations be defined in the control studies for the nonpoint sources. Monitoring of the control studies will be conducted by the individual control study project proponents. Monitoring results will be summarized and synthesized by this NPS Workgroup to characterize the wetland and irrigated agricultural types and TMDL subareas. |

E.2. Watershed Approach and Stakeholder Involvement

The NPS Workgroup for managed wetlands and irrigated agriculture was formalized from the Delta MeHg TMDL stakeholder group. The NPS Workgroup is unique among source types in its diversity and scale. Members include federal and state agencies, irrigated lands regulatory program coalitions, non-profit and for-profit wetland managers, and conservation organizations. Most NPS Workgroup Members do not have a revenue stream to conduct TMDL planning or implementation. Under its current 319(h) grant-funded planning project, the NPS Workgroup is producing a collaborative Control Study Workplan (due April 2013), which will be implemented by various NPS Workgroup Members. This project will enable the NPS Workgroup to: (1) manage and coordinate prioritized and collaborative Phase 1 control studies that have been designed with consistent, technical protocols and methodologies, (2) provide a clearinghouse for regulatory and scientific information on past and current MeHg control studies in the Delta, and (3) provide an organizational structure to outreach to the wetland and irrigated agricultural community. The control studies will then form the basis for MPs that would be required for implementation to achieve the TMDL load reductions under Phase 2 of the Delta Mercury Control Program.

The TMDL analysis for MeHg loads from all Delta wetlands was based a single wetland study (Twitchell Island) conducted in 2000 and 2003. Since then, research has identified substantial differences in MeHg production and degradation among the different years, environmental conditions, and types of Delta wetlands—tidal or upland, perennial or seasonal, brackish or freshwater, and flooding regime. Our strategy builds directly on this new knowledge base. Managers of irrigated lands, constructed wetlands, and waterfowl management areas in the Delta need to develop, test, and implement science-based MPs to reduce mercury bioaccumulation in fish and associated health risks to human and wildlife fish consumers.

All other major MeHg source types (i.e., municipal wastewater facilities and separate storm sewer systems, dredgers, water supply, and flood control managers) are also conducting control studies. Those dischargers share study plans and key findings through quarterly meetings of the Delta Tributaries Mercury Council, a mercury stakeholder group facilitated by this project's NPS Workgroup Facilitator and hosted by the Sacramento River Watershed Program (this project's grant applicant).

E.3. Outreach and Education

The target audience is the wetland and irrigated agriculture land managers who are considered MeHg dischargers within the Delta or Yolo Bypass. Particular emphasis is on reaching land managers in the TMDL subareas that exceed their load allocations. Most state and federal agencies with wetland and/or irrigated agricultural land management responsibilities are NPS Workgroup Members. Coalition or representative organizations (noted in Section F) are also NPS Workgroup Members.

The strategy for conducting education and outreach is through the DTMC and through the NPS Workgroup Members. The DTMC serves as an education and outreach hub via meetings, emails, website, and contact sharing—a role that will continue beyond the Project term. NPS Workgroup Members will also be a direct conduit to individual private landowners whom they represent or have memberships, or contacts.

The TMDL requires all NPS landowners to participate in a collaborative control study or perform an individual control study. Therefore, the outreach goal is to provide the forum for all individual landowners to be educated about mercury cycling on wetland/irrigated agricultural lands, potential MPs to be vetted, and control study participation.

F. Project Team, Administration, and Partners

The NPS Workgroup management structure and organization of the existing NPS Workgroup is proposed to continue similar to its current state.

The **Grant Applicant** is the Sacramento River Watershed Program (SRWP). The **Project Director** (Chris Elliott, SRWP Board of Trustees Chair) and the **Project Manager** (Holly Jorgensen, Acting SRWP Executive Officer) will administer this project: compiling and paying invoices, hosting the NPS

Workgroup website, and tracking progress on and submitting project deliverables. The grantee, SRWP, was founded in 1996 and is a certified California not-for-profit corporation with 501(c)(3) status. The SRWP's Delta Tributaries Mercury Council (DTMC) has been the organization hub for mercury science and policy information.

The **NPS Workgroup Facilitator** (Stephen McCord, Ph.D., P.E., McCord Environmental President) will be responsible for managing the project tasks and facilitating NPS Workgroup activities. He is the current facilitator for the NPS Workgroup. He led several workgroups under the Delta MeHg TMDL stakeholder group to develop key principles and guidance documents and has provided leadership and technical support over the past decade to the DTMC and to various clients throughout the state on mercury issues.

The **NPS Workgroup Mercury Researchers** USGS mercury researchers who have been performing mercury scientific research on wetlands and irrigated agricultural lands in the Bay/Delta under the CALFED Mercury Program are existing Steering Committee members and will provide technical support in this planning effort. USGS researchers (Dr. Lisamarie Windham-Myers, Dr. Joshua Ackerman, and Jacob Fleck) will access site-specific and regional datasets, compile available metadata, and post-process MeHg concentration data to estimate loads, spatial and inter-annual variability, and sensitivity to hydrologic processes.

The **NPS Workgroup Land Use Analyst** Ducks Unlimited (DU) has been supporting the NPS Workgroup in identifying wetland and agricultural land uses throughout the Delta. DU (Kevin Petrik, Aaron Will) has been a Steering Committee member and will provide analytical support in compiling study data and making geographic linkages between sites, current land uses, land use trends, water use and drainage flows in the Delta.

NPS Workgroup Members (listed elsewhere in the FAAST application and on the NPS Workgroup's website at <http://delta-mercury-nps.org/about-us/cooperating-entities.htm>) commit to attending NPS Workgroup meetings, contributing to work products, and reviewing draft deliverables. Wetlands and irrigated agricultural stakeholders have on-the-ground management experience and environmental contaminant experience to provide realistic input as to which MPs are feasible and appropriate. CV-RWQCB is the primary regulatory agency that will ensure the planning meets the goals of the BPA.

G. Readiness to Proceed

This project will enable the NPS Workgroup to continue work on the Phase I control studies, during the critical transition from the completed development of a collaborative Control Study Workplan to getting site-specific control studies funded and implemented. There is a potential gap in funding for the NPS Workgroup, which will be overcome (as has been done previously) by in-kind work by most NPS Workgroup Members. With respect to data needs/gaps, the Workplan will provide the roadmap to identify implementation sites, funding, monitoring approaches and funding sources. The NPS Workgroup will focus next on coordinating control study implementation.

Study sites will be representative of the wetland and irrigated agriculture land use types identified in the Workplan. NPS Workgroup Members, who either manage the lands themselves or represent coalitions, have pledged to find volunteers for Phase 1 control studies sites. NPS Workgroup Members will provide match funds towards this project with in-kind labor hours.

NPS Workgroup Members are not just committed to developing a plan, but are necessarily committed to the evaluation of cost-effective, feasible MPs. The NPS Workgroup's existing organization structure will be maintained by this project.

USGS researchers have identified the available studies that will be used to perform the metadata analysis and are ready to proceed with their analysis.

H. Project Financing and Funding Match

Match funding has been secured that exceeds the minimum requirement of 25%. The following NPS Workgroup Members will provide the match funds with in-kind labor hours: CA Rice Commission, The Nature Conservancy, CA Department of Water Resources, Ducks Unlimited, US Fish and Wildlife Service, San Joaquin County and Delta Water Quality Coalition, McCord Environmental, and USGS.

In-kind services match will be tracked by time vouchers submitted annually. These entities and other stakeholders have been participating in NPS Workgroup meetings and reviewing draft control study workplan documents over the past two years.

I. Transferability

Delta-based MPs developed under the Delta Mercury Control Program may be applicable in tributary watersheds. NPS Workgroup Members California Rice Commission, Sacramento Valley Water Quality Coalition, and San Joaquin and Delta Water Quality Coalition already monitor rice and irrigated agriculture runoff in the valleys, where many tributaries are also listed as impaired by mercury. However, valley soils tend to be more mineral than the Delta's soils and water is managed differently. Delta-based MPs will need to be evaluated under those conditions to evaluate their costs and benefits.

NPS Workgroup Members have been evaluating MPs in several TMDL subareas. This project will ensure that the MPs tested at these sites are prioritized for additional study elsewhere based on effectiveness. In addition, assessment techniques (such as use of biosentinels to measure the accumulation or reduction of MeHg across a wetland or agricultural field) are being used in these studies and should also be tested in future studies.

J. Environmental Justice

The Delta MeHg TMDL target is based on a safe fish consumption rate protective of subsistence fishers. By addressing the major land use in the Delta and Yolo Bypass, this project will directly address an environmental justice issue of safe fish consumption.

**Project Performance Measures Table
Planning Project**

Coordination and Synthesis of Nonpoint Source Methylmercury Control Studies in the Delta

| Project Goals | Desired Outcomes | Output Indicators | Outcome Indicators | Measurement Tools and Methods | Targets |
|--|---|---|---|--|---|
| 1. Fund and implement control studies prioritized in the Collaborative Control Study Workplan. | 1. Assessment of reduction in MeHg loading of tested MPs at control study sites 2. List of sites and MPs with control studies 3. Prioritized subsequent control studies | 1. MeHg loading data. Measurement units are specific to the individual control study. They should be following the NPS Control Study Workplan such that results can be compared/compiled across individual studies. | 1. Site-specific land/water MPs and regional overview of effectiveness. | 1. <u>Tools</u> : Monitoring data on MeHg concentration, water, and/or biosentinel monitoring to define load reductions 2. <u>Methods</u> : Individual control study workplans, NPS Control Study Workplan | 1. Phase 1 Control Study Progress Report summarizing the roll-up of progress and results from the individual control studies, and identification of what gaps still exist within the regional view of prioritized control studies, and potential course corrections in MPs that should be tested. |
| 1. Compile and analyze existing Delta MeHg research datasets for MeHg loading and regional influences on MeHg control processes. | 1. Metadata analysis of MeHg loads on nonpoint source lands by land use category. | 1. Compiled data set of mercury concentration, water, loading estimates, and other MeHg control parameters. | 1. Regional characterization of MeHg loading and response parameters | 1. <u>Tools</u> : Monitoring data on MeHg concentration, water, and/or biosentinel monitoring to define load reductions 2. <u>Methods</u> : a. Project proponent interviews b. Data compilation and analysis. | 1. Comparable estimates of MeHg loads across the Delta. 2. Analysis report included in Phase 1 Control Study Progress Report potentially providing more information on subarea loading differences and potentially broadening conclusions of individual control studies. |