

Downstream Studies Contract - Breakdown by Task and Cost

Task and Title	Sub-Task and Title	Description	Cost Fiscal Year 1	Cost Fiscal Year 2	Cost Fiscal Year 3	Total Costs			
1 - Project Management and Administration	Overall task	Overall project management of entire project, with responsibility to perform all technical and administrative services associated with the project.	\$53,000	\$49,000	\$41,000	\$143,000			
	1.1 - Project Management	All project management responsibilities, including preparation and submission of all required reports, and attendance at all required meetings.							
	1.2 - Quarterly Progress Reports	Prepare and submit quarterly progress reports							
	1.3 - Quarterly Invoices	Prepare and submit quarterly invoices							
	1.4 - Subcontractor Selection	Select qualified consultants and award subcontractor agreements							
	1.5 - Data Management	Verify quality of all data and submit data generated by the project							
2 - Environmental Compliance and Permitting	Overall task	Document and include all steps to comply with CEQA and NEPA for this project	\$800	\$0	\$0	\$800			
	2.1 - CEQA/NEPA Compliance	Project is only a monitoring project an no major disturbance to the environment will result. Notice of Exemption will be submitted. NEPA not required since lead agency is not a Federal agency.							
	2.2 - Other Required Permits and Approvals	Document and include all steps to obtain necessary permits and approvals.							
3 - Quality Assurance Project Plan (QAPP)	Overall task	Complete and submit a Quality Assurance Project Plan	\$9,200	\$0	\$0	\$9,200			
4 - Data Collection and Data Distribution	Overall task	Collect flow and water quality data in the SJR, above the tidal estuary and downstream of Bear Creek (at Lander Avenue). Objectives are to maintain a coherent data record for region and maintain the model calibration.	\$831,000	\$799,000	\$656,000	\$2,286,000			
	4.1 - Water quality and flow data from Upstream SJR study area	Collect, compile and analyze water quality and flow data for the upstream reach of the San Joaquin River between Mossdale and Bear Creek to maintain a coherent data record and maintain model calibration to support stakeholder confidence.					Estimated subtask total for all three years \$340,000		
	4.2 - Collection of water quality, flow, and other data from the SJR estuary study area	Sample 19 key locations in the SJR estuary between Mossdale and Disappointment Slough that correspond to calibration points for the Link-Node Model. Sampling at these locations will consist of at least monthly depth integrated grab samples, deployed YSI 6600 sondes to investigate variances in water quality between grab sample events. In addition, measurement of rate processes, including algal productivity and respiration will be made to improve calibration and confidence of the model; zooplankton grazing rates will be made; labile oxygen demand will be measured; and, ammonia oxidation rates will be made.					Estimated subtask total for all three years \$793,000		
	4.3* - Survey water quality in the Old and Middle Rivers	At least two water quality surveys will be conducted in the 303(d) list of the impaired reach of Old and Middle Rivers to develop more information on the extent of low DO conditions in those rivers.					Estimated subtask total for all three years \$113,000		

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	4.4 - Zooplankton distribution in the SJR estuary	Zooplankton samples collected at key locations twice per month to obtain information on zooplankton density and distribution throughout the SJR estuary study area. Samples will include vertical profiles and measurements for temperature, conductivity, pH, DO, turbidity, phycocyanin, chlorophyll fluorescence, and photosynthetic activity ratio. Zooplankton grazing studies will be conducted. Statistical and geospatial data will be collected to test the hypothesis that zooplankton distribution is predictable and that the distribution may be related to physical features of the river.	Estimated subtask total for all three years \$226,000			
	4.5* - Microcystis and blue green algae in the SJR estuary	This subtask will collect data on the spatial and temporal occurrence of Microcystis, blue-green algae, and algal toxins in the SJR estuary. Samples collected during subtasks 4.1 and 4.4 will be analyzed for the presence or absence of Microcystis and the concentration of microcystin and phycocyanin. Data on the occurrence and distribution of blue-green algae will be input into the DO TMDL model, which can model individual sub-groups of planktonic algae.	Estimated subtask total for all three years \$113,000			
	4.6 - Coordination with other projects	Coordinate with other water quality and environmental studies in the area by agencies such as DFG, IEP, DWR, and USFWS to avoid duplication of effort and share study information.	Estimated subtask total \$113,000			
	4.7 - Collect and compile data from other sources	Project will combine data from past DO studies with publicly available data from IEP, DWR, and other programs. Data will be included in the model and in independent scientific and engineering analysis. Flow data will be collected from existing stations maintained by other agencies. Diversion data will be provided to EERP by cooperating water districts. Water quality data from prior studies and other sources such as City of Stockton and DWR will be collected and included. Zooplankton data from previous delta studies (DFG and IEP) will be included.	Estimated subtask total for all three years \$226,000			
	4.8 - Data analysis and interpretation	Prior data and new data will be combined for analysis. Trends will be evaluated and statistical analyses will be conducted.	Estimated subtask total for all three years \$340,000			

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5 - Modeling	Overall task	The model interface is a key component for the WARMF model, which allows stakeholders to access the model. Systech will perform work associated with updating the model, modifying the model interface, and provide training in the use of the modified interface.	\$173,000	\$172,000	\$106,000	\$451,000
	5.1 - Maintenance and Support of San Joaquin River Model Interface	Systech will update the Model interface to incorporate data collected during the project and other available data. With incorporated data, the model will be capable of simulating the SJR and DWSC from 10/01/1999 through end of sampling date. Another update to the model interface is the addition of a post-processing subroutine to allow estimations for load allocations. Other upgrades include built-in tools for visualization of model output. These tools will be capable of graphically displaying the individual sources of any constituent in the water at any location and on any day of the model simulation period, and a longitudinal display of output showing changes occurring as water flows downstream.	Estimated subtask total for all three years \$80,000			
	5.2 - Focused Agricultural Drainage Study	The WARMF model domain will be expanded to include the Orestimba Creek watershed to simulate inflows to the SJR. Flow and water quality data collected from two sites in the watershed will be used for model calibration. The area between the two stations is under intensive agricultural use, so model simulation of drainage from the agricultural lands can be evaluated. Once WARMF is updated and calibrated it will then be able to demonstrate how specific agricultural practices, and changes in those practices affect pollutant loading.	Estimated subtask total for all three years \$60,000			
	5.3 - Modification of WARMF and Link-Node Model Domains	The Link-Node Model domain will be extended upstream of Mossdale to the limit of tidal influence (mid-way between Mossdale and Vernalis). The interface will be modified to transfer flow and water quality from WARMF to the Link-Node Model using a time series of diverted water as an input.	Estimated subtask total for all three years \$40,000			
	5.4 - Simulation of Local Delta Nonpoint Source Loading	Simulations of shallow groundwater and non-point source pollution loadings will be added to the tidal-estuary portion of the model. To account for ag drainage and urban runoff from Stockton, WARMF catchments will be added to the model interface. These catchments will simulate the flow and loading from various land uses in the area, and the results will act as inputs to the Link-Node Model. Watersheds include French Camp Slough, Lone Tree Creek, Littlejohns Creek, Mormon Slough, Calaveras River downstream of New Hogan Reservoir, and Fourteen Mile Slough.	Estimated subtask total for all three years \$95,000			
	5.5 - Calibration of Delta Sloughs in the Model	The Link-Node model will be calibrated using data collected from Task 4. The model will undergo calibration for locations off the main stem of the SJR, including French Camp Slough, Mormon Slough, Burns Cutoff, Calaveras River, Disappointment Slough, Fourteen Mile Slough, and Turner Cut.	Estimated subtask total for all three years \$25,000			

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	5.6 - Simulation of Zooplankton Dynamics in the Link-Node Model	Link-Node Model will be modified to simulate populations dynamics for multiple types of zooplankton. The model coefficients will be set for each node since zooplankton concentration can vary greatly in different sections of the river. Data for zooplankton populations will be entered into the Model interface to calibrate the Link-Node Model.	Estimated subtask total for all three years \$110,000			
6 - Adaptive Management, Meeting Attendance, and Outreach	Overall task	Scientists involved in the directed action projects will be invited to attend technical meetings, and provide presentations at regional and national scientific meetings.	\$7,500	\$15,000	\$12,000	\$34,500
	6.1 - Technical Meetings	Technical meetings will be used to present and discuss the results from the various tasks. Participants in the meetings will be current active scientists studying the low DO conditions in the DWSC, as well as scientists from prior DO studies and scientists from other disciplines, such as estuary biologists who may not be directly involved in the project. The results from the technical meetings will be used in the adaptive management process.				
	6.2 - DO TMDL TWG Meetings	Project participants will attend the Technical Working Group (TWG) meetings, and present the annual reports under tasks 4 and 5 to the TWG for review and evaluation.				
	6.3 - Other Meetings	Technical presentations of project results will be made to stakeholders and regulating agencies at their request, and at regional and national scientific meetings.				
	6.4 - Coordination with DFG	Project participants will coordinate an exchange of information with DFG. DFG has expressed an interest in applying the SJR model to other restoration efforts and water quality activities.				
	6.5 - Adaptive Management	Adaptive management is an important component of this project. It will be used to insure proper allocation of effort and resources to answer the most pressing questions and to narrow the focus of effort to the most critical areas of scientific investigation.				
7 - Draft and Final Report	Overall task	Produce a report to summarize and explain major findings of project that will be useful to stakeholders, regulators, scientists.	\$0	\$0	\$69,000	\$69,000
	7.1 - Prepare Draft Final Report	Final report completed after final year of study that will include suggested long-term, streamlined watershed (upstream and estuary) monitoring plan to assess compliance with TMDL allocations.				
8 - Project Close-Out	Overall task ¹	Project Close-Out Summary Report to summarize project accomplishments.	\$0	\$0	\$1,000	\$1,000

Subtotals for each Fiscal Year \$1,074,500 \$1,035,000 \$885,000 **\$2,994,500**
Total of entire project **\$2.9M**

* Projects that were included to garner support from Department of Fish and Game. These could be potentially removed to reduce the overall cost of the project.

¹ This cost associated with grant requirements. If project funded under other means, this cost could be reduced or removed.