

SCOPE OF WORK

Amendment 2 to AECOM Contract for WSIP Support

November 11, 2016

The amendment is for additional tasks that are needed to complete the proposal for funding from the Water Storage Investment Program (WSIP) for the Sites Reservoir Project. This amendment also increases the ceiling on the AECOM contract.

The AECOM scope of work was finalized in October 2015. On September 2, 2016, the CWC released the following documents that contain additional requirements for the WSIP proposal:

- Proposed revisions to the quantification regulations
- Draft Technical Reference (TR)
- Physical and Ecosystem Benefits Summary Tables
- Ecosystem Priorities Application Worksheet
- Water Quality Priorities Application Tables

These recently released requirements include several additional items that will need to be addressed in the WSIP proposal.

Additional Funds for Feasibility Report/WSIP Proposal (Task 8)

8.1 Additional Economic Analysis for WSIP Proposal

The September 2016 Technical Reference Document includes unanticipated economic analysis associated with new WSIP proposal requirements. Previous economic analysis for Sites Reservoir has always used existing conditions. The WSIP proposal process requires economic analysis with climate change (even if this is reduced to sensitivity modeling as a result of public comment, it is almost certain the CWC will require economic benefit calculations under assumed future conditions). This adds new complexity to the economic analysis. Other new requirements include the following:

- Determine net benefits (subtract unmitigated ecosystem impacts)
- Future M&I Water Demand Levels (TR Section 2.7.3) – Evaluate consistency with Urban Water Management Plans (if available) or otherwise Department of Finance population forecasts and 20/20 regulations.
- Real Energy Prices for Future Cost Projections (TR Section 5.2.7, 6.5) – Adjust energy costs/benefits for Hydropower, O&M and conveyance costs to include real energy price growth of 1.7% per year between 2012 and 2024.
- Calculating Potential Losses and Delivery Costs (TR Section 4.12.6) – Clarify supply location for water supply valuations to determine delivery costs adjustments necessary for supply benefit estimates. Delivery cost data may be available from recent USBR studies. Quantify any applicable conveyance losses not included in CalSim-II (non-econ task). Estimate any consumptive and/or applied use/reuse adjustments applicable to WSIP's Unit Benefit Values.
- Water Supply Willingness to Pay (TR Section 5.4.1.3) – This analysis is necessary to support use of higher M&I benefit values than the WSIP unit values. It is not required, but the recommended evaluation to see if a higher unit value can be established includes the following:
 - Estimate Producer Surplus Benefits. Based on M&I supply revenue (i.e. quantity x retail water price) less the variable costs to providing the M&I water (i.e. variable operations, maintenance, power and replacement).
 - Estimate Consumer Surplus Benefits. Based on elasticity of demand during drought periods and the project's quantities of supplied water.
 - Determine if higher values than REMAND and/or the 2011 LCPSIM can be justified.
- Ecosystem Improvement Alternative Costs (TR Section 5.4.2.2) – Additional analysis is needed for the least cost alternative for ecosystem improvements. The WSIP Technical Reference defines the least cost alternative as “the least-cost means of providing at least the same amount of physical benefit.” This analysis could look at a raise of Shasta Dam (acknowledging these ecosystem benefits could not be secured as quickly as they could through Sites Reservoir due to the complexity of permitting the Shasta raise). This should include at least a screening level evaluation of benefits derived from the willingness to pay values provided in Appendix E of the TR to see if this approach could result in higher benefits.
- Recreation (TR Section 5.4.5) – Requires use of WSIP Visitation Model and USACE benefit values / visitor day (required for projects with more than 1.5 sq. miles of water recreation area). This is a different approach than has been used historically in work for DWR and Reclamation. It requires market analysis to support future visitation and recreational activity projections and identification and cost analysis of the least cost alternative for recreation.

- Emergency Response (TR Section 5.4.6) – It is uncertain if this benefit will be included in the Authorities WSIP proposal, but the Contractor will consider the operations of Sites Reservoir that would assist with managing water surface elevations in Folsom Lake. If the Authority decides to pursue this public benefit, the analysis is expected to include the following:
 - Determine emergency event occurrence probabilities, duration and magnitude of water needed (use of DRMS/SJRBSI data for levee failures). Seismic events/effects will require other specific data/analysis (see Section 4.11.22).
 - Apply DRMS M&I shortage values or use Mann equation (pg. 3-47).
 - Determine water supply replacement period for emergency response releases (may require additional CalSim-II analysis).
 - “Net out” value of reallocated water to estimate Emergency Response benefit value.
 - Assess projects/actions for a least cost alternative for emergency response supplies.
- Tools and Methods (TR Section 8.2) – Analysis showing how other non-capital costs allocated to public benefit (e.g. O&M costs) will be funded
- Economic Assumptions (TR Section 9.1, 9.3) – Calculate and justify the cost of the least-cost alternative means for providing the same (or more) total physical benefits as the project. Potential alternatives include a raise of Shasta Dam. Section 9.3 requires Determining the least-cost alternative’s annual and discounted costs in present value terms over the entire planning horizon
- Evaluating Sources of Uncertainty (TR Section 10) – More extensive sensitivity analyses is necessary to show “robustness” of findings and project resiliency (see also per 4.2.1.2 Quality of Analysis). Specific changes for sensitivity analysis (quantitative or qualitative) will include alternate future climate/sea level change conditions; water management; regulatory conditions; and other resource conditions. Although prior sensitivity analysis evaluated physical effects with climate change, no subsequent economic analysis was performed. Section 10.2 requires sensitivity analysis of all factors identified in the CEQA cumulative impact analysis.
- Discounting and Discount Rates (TR Appendix G, page G-2) – Suggests possible use of a private real interest rate (nominal minus two percent) for estimating the project’s capital cost (IDC and possibly repayment) for its non-public benefits.

Several of the analyses discussed above concern the evaluation of a Least Cost Alternative Project. This information will be needed for Part 4 of the Physical and Economic Benefits Summary worksheet to be filed with the WSIP proposal.

8.2 Ecosystem Priorities and Relative Environmental Value

The current version of the draft WSIP regulation has added a requirement for a description of how the proposed project's public benefits address the Program ecosystem and water quality priorities as provided in required Ecosystem Priorities Application Worksheets (August 2016) and Water Quality Priority Application Tables (August 2016).

The California Department of Fish and Wildlife (CDFW) developed 16 priorities for ecosystem benefits. Public benefits may still be claimed for other ecosystem enhancements, but these benefits will not receive the additional score for relative environmental value. It is recommended that the Sites Project Authority develop sufficient analysis of the applicable priorities to maximize the score and associated funding award. Priorities 1, 2, 3, 4, 5, 6, 7, 11, 14, and 16 are most relevant to Sites Reservoir and recommended for analysis. This analysis is required to complete the Ecosystem Priorities Application Worksheet. Additional analysis includes the following:

- Adaptive Management Plan (REV 4) – Requires discussion of how adaptive management decisions will be made, how adaptive management will be funded, and the uncertainties covered in the adaptive management strategy.
- Efficient Use of Water (REV 9) – Requires an analysis of how water released can benefit multiple ecosystem priorities.
- Cold Water (P1) – Requires species specific evaluation of temperature benefits under current conditions and in 2030. The spatial and temporal extent of cold water benefits must be described for each species that will benefit. Additional points are awarded for projects that contribute to the goals and objectives of existing recovery plans, so it will be necessary to evaluate the improvement against the recovery plans. The resilience of these benefits to temperature change, sea level rise, earthquake, and drought must also be discussed.
- Juvenile Migration (P2) – Same analysis as for P1.
- Protection of Redds (P3) – Same analysis as for P1.
- Ecosystem Water Quality (P4) – This will require an evaluation of Delta water quality improvements under existing and 2030 conditions, including the improvement in X2. It will need to discuss the changes in different year types. Additional points are awarded for projects that contribute to the goals and objectives of existing recovery plans, so it will be necessary to evaluate the improvement against the recovery plans. The resilience of

these benefits to temperature change, sea level rise, earthquake, and drought must also be discussed.

- Flows to Improve Water Temperature (P5) – Modeling data is available to support this public benefit.
- Attraction Flows (P6) – This was not evaluated previously and may not apply; however, it is possible that flows provided for P1, P2, or P3 may also provide this benefit for some species.
- Delta Outflow (P7) – This priority overlaps somewhat with P4, but will include additional discussion of Delta outflow improvements.
- Habitat Diversity (P11) – The Contractor will, at a minimum, qualitatively discuss potential habitat benefits associated with providing water to the Yolo Bypass. Modeling results will be incorporated into the Yolo Bypass discussion to the extent that they are available. Other potential benefits (e.g., periodically supporting cottonwood establishment) will be qualitatively discussed.
- Seasonal Wetlands (P14) – Provide a robust analysis of benefits to wildlife refuges and seasonal water supply to rice fields that provide wildlife benefits. Will need to discuss the magnitude of benefits, spatial and temporal scale, immediacy of improvements, adaptive management, and connectivity to other managed areas.
- Commercial and Recreational Species (P16) – The benefits to salmon, steelhead, and waterfowl will be summarized. Other species of interest will be discussed as well (e.g., benefits to sturgeon).

8.3 Water Quality Priorities and Relative Environmental Values

The State Water Resources Control Board (SWRCB) developed 9 priorities for ecosystem benefits. Public benefits may still be claimed for other water quality improvements, but these benefits will not receive the additional score for relative environmental value. It is recommended that the Sites Project Authority develop sufficient analysis of the applicable priorities to maximize the score and associated funding award. Priorities 4, 5, 6, and 9 are most relevant to Sites Reservoir and recommended for analysis. Additional evaluation of the project's contribution to SGMA compliance if recommended to address REV 9. This analysis is required to complete the Water Quality Priorities Application Table. Additional analysis includes the following:

- Mercury and Salinity (P4 and P5) – Salinity improvements were evaluated previously, but not at 2030 conditions. The suite of models also provides

data for mercury that was not previously discussed in the text. The magnitude of the benefit, spatial and temporal extent, and adaptive management will be evaluated.

- Groundwater Restoration (P6) – The definition of P6 has been clarified to include the restoration of groundwater levels (elevations). The ability of Sites Reservoir to contribute to compliance with SGMA will be discussed. It is doubtful sufficient information exists at this time to fully quantify the benefit, but it should nevertheless be qualitatively described.
- Disadvantaged Communities (P9) – Benefits to disadvantaged and severely disadvantaged will be described, including their magnitude, timing, and resilience. Benefits for agricultural use will be provided, but the primary emphasis will be on drinking water supplies to disadvantaged communities provided by the agencies participating in the Project Agreement Committee.

8.4 Responding to Comments and Requests for Information

Additional support will be provided to respond to comments and prepare technical memorandums in response to requests for information from the CWC throughout the WSIP proposal review process.

8.5 Additional Funds for CWC Coordination

The scope of the effort to track, review, and comment on the development of the regulations and guidance for completing the WSIP proposal has been much larger than was originally anticipated. The additional budget request will enable ongoing participation in CWC meetings to review the WSIP proposal procedures that are still under development. The budget request also covers providing periodic updates in Project Agreement Committee meetings on WSIP proposal activities.

EIR/S Support (New Task 14)

Per discussions with CH2M HILL, AECOM will provide the following support to the EIR/S under their direction.

1. Ongoing help with the project description
2. Review for the soils/minerals chapter with redline/strikeout text changes to the existing chapter. AECOM will also provide impact analysis for Alternative D. CH will cover paleontology without AECOM participation.
3. Review for the seismicity and faults section with redline/strikeout text changes. AECOM will also provide analysis for Alternative D.

4. Provide redline/strikeout comments on the Socioeconomics chapter prepared by others.
5. Staff involved in the mitigation cost estimate technical memo will be available to answer questions

Initial Program Support through June 2017 (New Task 15)

Consultant shall provide technical and subject matter experts to develop a Program Management strategy and approach for Sites Reservoir Project. This task provides the following:

- A reliable management framework that can be expanded as the project matures;
- Program implementation support through 2018; and
- Supporting rationale for future program funding requirements.

This task will focus on best practices and process standards and procedures required for the most critical elements of program delivery to support decision making, management control and efficient execution of Phase 1 and to initiate Phase 2 of the program. Standards and procedures will be tailored to Sites JPA business requirements and designed to be scaled up for later phases of the program. Development of process standards and procedures will be based on a collaborative effort with the General Manager and Outreach Coordination Team (may also include an Independent Program Management Advisor). This effort will start with defining the organizational needs, roles, and responsibilities for a phased-in Program Management Organization. The process standards and procedures developed through this task will include quality requirements, cost and schedule management, document management, progress reporting, and procurement requirements. Consultant will coordinate with, and provide guidance for, the development of the Risk Management Plan that will be developed as part of the Feasibility Study, to integrate the risk management procedures with the standards and procedures developed in this Task. Consultant will establish a program document file structure and electronic document management system to capture and file program documents, and provide document management support.

Consultant will assist with maintaining a program schedule and providing cash flows. Consultant will also provide support for developing materials for Board presentations, and technical support, as needed, to support financial tracking and cashflow, and stakeholder outreach activities. Positions that are identified under this task include the following:

- Graphics Support – graphic artist or GIS support for figures, maps, and diagrams
- Cost Analysis and reporting – support for cashflow analysis, forecasting, and schedule cost loading



- Program Management Strategy Lead – senior operations manager to develop program management strategy, organization, and governance
- Reporting, Cost, and Schedule – establish format and templates for monthly reporting
- Document Management – assistance for initial setup and orientation to the document management system, including protocols/best practices
- Technical Editor – edit deliverables

The services provided are for program office support under the direction of Authority personnel and will not conflict the contractor out of future work.



EXHIBIT A: SERVICES

Services: See attached Scope of Work

Period of Performance: October 1, 2015 through March 31, 2018

Not to Exceed Amount: The not to exceed amount is increased from \$1,500,000 to \$2,000,000.

Task 8 Amendment – WSIP Proposal Support	\$347,433
Task 14 EIR/S Support	\$56,676

Deliverables: See attached Scope of Work

AECOM Project Manager

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Title	Project Manager
Address	2870 Gateway Oaks Drive, Sacramento, CA 95833
Phone Number	(916)679-2084
Email Address	Jeff.Herrin@aecom.com

<p>By signing Exhibit A, the Sites Project Authority (a) approves AECOM to begin work <u>solely</u> on the following task:</p> <p>Amended Task 8 and new Tasks 14 (per attached Scope of Work) with a budget of \$404,109.</p> <p>And (b) intends to manage AECOM's services using a 3-month rolling forecast of incurred cost as provided monthly by AECOM's Project Manager combined with the 30-day provision in Exhibit B, section 6 to the Agreement.</p>	Client: Sites Project Authority
	_____ Signature
	_____ Printed Name
	_____ Printed Title

COST PROPOSAL
WSIP Feasibility Study for Sites Project Authority

Personnel	Classification	Rates*	Subtask 8.1 WSIP Economic Analyses		Subtask 8.2: Ecosystem Priorities Worksheet Analysis		Subtask 8.3: Water Quality Priorities Tables		Subtask 8.4: WSIP RFI		Subtask 8.5: CWC Coordination		Subtask 14: EIR/S Support Tasks		Subtask 15: Initial Program Support		Total Project	
			Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Jeff Herrin	Project Manager	\$ 245.52	22	\$ 5,401.44	156	\$ 38,301.12	88	\$ 21,605.76	480	\$ 117,849.60	108	\$ 26,516.16	28	\$ 6,874.56	\$ -	882	\$ 216,548.64	
TBD	Sr. Technical Advisor	\$ 298.09		\$ -		\$ -		\$ -		\$ -		\$ -	2	\$ 596.18	\$ -	2	\$ 596.18	
Roy Leidy	Scientist, Principal	\$ 252.19		\$ -	100	\$ 25,219.00		\$ -	0	\$ -		\$ -	0	\$ -	\$ -	100	\$ 25,219.00	
Meymand, Phil	Engineer, Principal	\$ 252.19		\$ -	0	\$ -		\$ -	0	\$ -		\$ -	8	\$ 2,017.52	\$ -	8	\$ 2,017.52	
Joseph Barnes	Engineer, Senior	\$ 212.37		\$ -		\$ -		\$ -	16	\$ 3,397.92		\$ -	24	\$ 5,096.88	\$ -	40	\$ 8,494.80	
TBD	Engineering Geologist, Senior	\$ 212.37		\$ -		\$ -		\$ -	0	\$ -		\$ -	60	\$ 12,742.20	\$ -	60	\$ 12,742.20	
Dave Ruark	Engineer, Senior	\$ 212.37		\$ -	24	\$ 5,096.88	24	\$ 5,096.88		\$ -	16	\$ 3,397.92	20	\$ 4,247.40	\$ -	84	\$ 17,839.08	
Natalie Smith	Engineer/Scientist, Middle	\$ 156.49		\$ -	148	\$ 23,160.52	62	\$ 9,702.38		\$ -		\$ -	24	\$ 3,755.76	\$ -	234	\$ 36,618.66	
Technical PM Support	Engineer/Scientist Middle	\$ 156.49		\$ -		\$ -		\$ -		\$ -		\$ -	80	\$ 12,519.20	\$ -	80	\$ 12,519.20	
Scott Dressler	Geologist, Senior	\$ 212.37		\$ -		\$ -	60	\$ 12,742.20		\$ -		\$ -		\$ -	\$ -	60	\$ 12,742.20	
TBD	Engineer, Junior	\$ 104.10		\$ -	81	\$ 8,432.10		\$ -		\$ -		\$ -	24	\$ 2,498.40	\$ -	105	\$ 10,930.50	
TBD	Intern, Graduate	\$ 58.98		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	\$ -	0	\$ -	
TBD	Cost Estimator, Senior	\$ 257.12		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	\$ -	0	\$ -	
TBD	Estimator/Scheduler	\$ 119.45		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	\$ -	0	\$ -	
Nik Carlson	Economist, Senior	\$ 171.20	190	\$ 32,528.00		\$ -		\$ -	33	\$ 5,649.60		\$ -	24	\$ 4,108.80	\$ -	247	\$ 42,286.40	
TBD	IT Analyst, Senior	\$ 146.14		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	\$ -	0	\$ -	
TBD	Database Specialist	\$ 93.37		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	\$ -	0	\$ -	
TBD	CADD, Senior	\$ 175.31		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	\$ -	0	\$ -	
TBD	CADD/Graphics	\$ 95.97		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	\$ -	0	\$ -	
TBD	Project Controls Specialist/Financial Tracking	\$ 134.34		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	\$ -	0	\$ -	
TBD	Document Management System Setup	\$ 134.34		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	\$ -	0	\$ -	
TBD	Subcontract Administrator	\$ 96.34		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	\$ -	0	\$ -	
TBD	Technical Editor	\$ 126.95		\$ -	12	\$ 1,523.40		\$ -		\$ -		\$ -	8	\$ 1,015.60	\$ -	20	\$ 2,539.00	
TBD	Word Processing	\$ 75.24	8	\$ 601.92	16	\$ 1,203.84		\$ -		\$ -		\$ -	16	\$ 1,203.84	\$ -	40	\$ 3,009.60	
Jess Yoder	PMP Lead	\$ 310.00		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	\$ -	0	\$ -	
TBD	TBD	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -	\$ -	0	\$ -	
Labor				\$ 38,531.36		\$ 102,936.86		\$ 49,147.22		\$ 126,897.12		\$ 29,914.08		\$ 56,676.34	\$ -		\$ 404,102.98	
ODCs																		
8.5x11		\$ 0.04	100.00	\$ 4.32	50	\$ 2.16		\$ -		\$ -		\$ -		\$ -		150	\$ 6.48	
DVD		\$ 12.18		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		0	\$ -	
Program Support	TBD	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		0	\$ -	
TBD	TBD	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		0	\$ -	
TBD	TBD	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		0	\$ -	
TBD	TBD	\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		0	\$ -	
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Personnel	Classification	Rates*	Subtask 8.1 WSIP Economic Analyses		Subtask 8.2: Ecosystem Priorities Worksheet Analysis		Subtask 8.3: Water Quality Priorities Tables		Subtask 8.4: WSIP RFI		Subtask 8.5: CWC Coordination		Subtask 14: EIR/S Support Tasks		Subtask 15: Initial Program Support		Total Project	
			Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
TBD	TBD	\$ -		\$ -		\$ -		\$ -									0	\$ -
Markup	Applied to ODCs	5%		\$ 0.22		\$ 0.11		\$ -									0	\$ 0.32
Other Direct Costs				\$ 4.54		\$ 2.27		\$ -										\$ 6.80
Travel:																		
2 RT Oakland/Colusa	234 miles RT	\$ 0.54		\$ -		\$ -		\$ -									0	\$ -
TBD	TBD	\$ -		\$ -		\$ -		\$ -									0	\$ -
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Markup	Applied to Travel	5%		\$ -		\$ -		\$ -									0	\$ -
Travel				\$ -		\$ -		\$ -										\$ -
Subcontractors																		
TBD				\$ -		\$ -		\$ -										\$ -
Fee	Applied to Subs	5%		\$ -		\$ -		\$ -										\$ -
Subcontractors				\$ -		\$ -		\$ -										\$ -
AECOM Corporation Subtotal				\$ 38,535.90		\$ 102,939.13		\$ 49,147.22		\$ 126,897.12		\$ 29,914.08		\$ 56,676.34		\$ -		\$ 404,109.78
AECOM Markup on Subcontractor																		\$ -
PROJECT TOTAL				38,536		102,939		49,147		126,897		29,914		56,676		0		404,110